

UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, DC 20549

FORM 10-Q

(MARK ONE)

QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES  
EXCHANGE ACT OF 1934

For the quarterly period ended June 30, 2004

or

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES  
EXCHANGE ACT OF 1934

For the transition period from \_\_\_\_\_ to \_\_\_\_\_

Commission file number 0-23621

MKS INSTRUMENTS, INC.

(Exact name of registrant as specified in its charter)

Massachusetts	04-2277512
-----	-----
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

90 Industrial Way, Wilmington, Massachusetts	01887
-----	-----
(Address of principal executive offices)	(Zip Code)

Registrant's telephone number, including area code (978) 284-4000

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes  No .

Indicate by check mark whether the registrant is an accelerated filer (as defined in Rule 12b-2 of the Exchange Act). Yes  No .

Number of shares outstanding of the issuer's common stock as of July 27, 2004:  
53,599,846

MKS INSTRUMENTS, INC.  
FORM 10-Q  
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## PART I. FINANCIAL INFORMATION

## ITEM 1. FINANCIAL STATEMENTS.

MKS INSTRUMENTS, INC.  
CONSOLIDATED BALANCE SHEETS  
(in thousands, except share data)

	June 30, 2004	December 31, 2003
	-----	-----
	(Unaudited)	
ASSETS		
Current assets:		
Cash and cash equivalents .....	\$117,540	\$ 74,660
Short-term investments .....	72,573	54,518
Trade accounts receivable, net .....	89,251	65,454
Inventories .....	105,681	82,013
Other current assets .....	9,286	5,631
	-----	-----
Total current assets .....	394,331	282,276
Long-term investments .....	8,865	13,625
Property, plant and equipment, net .....	78,003	76,121
Goodwill, net .....	259,818	259,924
Acquired intangible assets, net .....	48,732	56,192
Other assets .....	4,075	4,724
	-----	-----
Total assets .....	\$793,824	\$692,862
	=====	=====
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Short-term borrowings .....	\$ 21,932	\$ 17,736
Current portion of long-term debt .....	2,134	2,460
Accounts payable .....	31,003	25,302
Accrued compensation .....	12,484	7,711
Income taxes payable .....	12,324	--
Other accrued expenses .....	23,519	18,599
	-----	-----
Total current liabilities .....	103,396	71,808
Long-term debt .....	7,477	8,924
Other liabilities .....	4,047	3,820
Commitments and contingencies (Note 10)		
Stockholders' equity:		
Preferred Stock, \$0.01 par value, 2,000,000 shares authorized; none issued and outstanding .....	--	--
Common Stock, no par value, 200,000,000 shares authorized; 53,596,907 and 52,040,019 issued and outstanding at June 30, 2004 and December 31, 2003, respectively ....	113	113
Additional paid-in capital .....	624,347	587,910
Retained earnings .....	45,812	12,238
Accumulated other comprehensive income .....	8,632	8,049
	-----	-----
Total stockholders' equity .....	678,904	608,310
	-----	-----
Total liabilities and stockholders' equity .....	\$793,824	\$692,862
	=====	=====

The accompanying notes are an integral part of the consolidated financial statements.

MKS INSTRUMENTS, INC.  
CONSOLIDATED STATEMENTS OF OPERATIONS  
(in thousands, except per share data)  
(Unaudited)

	Three Months Ended		Six Months Ended	
	June 30,		June 30,	
	2004	2003	2004	2003
	-----	-----	-----	-----
Net sales .....	\$ 151,585	\$ 81,168	\$ 284,570	\$ 153,945
Cost of sales .....	90,192	53,723	168,948	101,094
	-----	-----	-----	-----
Gross profit .....	61,393	27,445	115,622	52,851
Research and development .....	14,620	11,453	28,956	22,685
Selling, general and administrative .....	22,661	17,459	42,813	35,278
Amortization of acquired intangible assets .....	3,691	3,617	7,384	7,395
Restructuring, asset impairment and other charges ..	--	304	437	304
	-----	-----	-----	-----
Income (loss) from operations .....	20,421	(5,388)	36,032	(12,811)
Interest expense .....	132	259	284	547
Interest income .....	458	541	882	1,109
Other income .....	5,402	--	5,402	--
	-----	-----	-----	-----
Income (loss) before income taxes .....	26,149	(5,106)	42,032	(12,249)
Provision for income taxes .....	5,281	364	8,458	651
	-----	-----	-----	-----
Net income (loss) .....	\$ 20,868	\$ (5,470)	\$ 33,574	\$ (12,900)
	=====	=====	=====	=====
Net income (loss) per share:				
Basic .....	\$ 0.39	\$ (0.11)	\$ 0.63	\$ (0.25)
	=====	=====	=====	=====
Diluted .....	\$ 0.38	\$ (0.11)	\$ 0.61	\$ (0.25)
	=====	=====	=====	=====
Weighted average common shares outstanding:				
Basic .....	53,540	51,419	53,398	51,399
	=====	=====	=====	=====
Diluted .....	54,967	51,419	55,026	51,399
	=====	=====	=====	=====

The accompanying notes are an integral part of the consolidated financial statements.

MKS INSTRUMENTS, INC.  
CONSOLIDATED STATEMENTS OF CASH FLOWS  
(in thousands)  
(Unaudited)

	Six Months Ended June 30,	
	2004	2003
Cash flows from operating activities:		
Net income (loss) .....	\$ 33,574	\$ (12,900)
Adjustments to reconcile net income (loss) to net cash provided by (used in) operating activities:		
Depreciation and amortization .....	13,900	14,971
Gain on collection of a note receivable .....	(5,042)	--
Gain on the sale of assets .....	(371)	--
Other .....	290	(71)
Changes in operating assets and liabilities:		
Trade accounts receivable .....	(24,257)	(5,028)
Inventories .....	(23,904)	(984)
Other current assets .....	(3,655)	(393)
Accrued expenses and other current liabilities .....	11,265	(3,178)
Accounts payable .....	5,712	2,714
Income taxes payable .....	12,343	172
Net cash provided by (used in) operating activities .....	19,855	(4,697)
Cash flows from investing activities:		
Purchases of short-term and long-term available for sale investments .....	(61,722)	(42,347)
Maturities and sales of short-term and long-term available for sale investments ..	48,510	31,345
Purchases of property, plant and equipment .....	(9,189)	(3,002)
Proceeds from sale of property, plant and equipment .....	1,202	--
Proceeds from collection of a note receivable .....	5,042	--
Other .....	750	422
Net cash used in investing activities .....	(15,407)	(13,582)
Cash flows from financing activities:		
Proceeds from short-term borrowings .....	46,271	23,517
Payments on short-term borrowings .....	(41,644)	(24,734)
Principal payments on long-term debt .....	(1,778)	(3,555)
Proceeds from issuance of common stock, net of issuance costs .....	32,550	--
Proceeds from exercise of stock options and employee stock purchase plan .....	3,887	1,364
Net cash provided by (used in) financing activities .....	39,286	(3,408)
Effect of exchange rate changes on cash and cash equivalents .....	(854)	1,357
Increase (decrease) in cash and cash equivalents .....	42,880	(20,330)
Cash and cash equivalents at beginning of period .....	74,660	88,820
Cash and cash equivalents at end of period .....	\$ 117,540	\$ 68,490

The accompanying notes are an integral part of the consolidated financial statements.

MKS INSTRUMENTS, INC.  
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS  
(Tables in thousands, except per share data)

1) Basis of Presentation

The terms "MKS" and the "Company" refer to MKS Instruments, Inc. and its subsidiaries. The interim financial data as of June 30, 2004 and for the three and six months ended June 30, 2004 and 2003 is unaudited; however, in the opinion of MKS, the interim data includes all adjustments, consisting only of normal recurring adjustments, necessary for a fair statement of the results for the interim periods. The unaudited consolidated financial statements presented herein have been prepared in accordance with the instructions to Form 10-Q and do not include all of the information and note disclosures required by generally accepted accounting principles. The consolidated financial statements should be read in conjunction with the December 31, 2003 audited consolidated financial statements and notes thereto included in the MKS Annual Report on Form 10-K filed with the Securities and Exchange Commission on March 11, 2004.

The preparation of these consolidated financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. On an on-going basis, management evaluates its estimates and judgments, including those related to revenue recognition, accounts receivable, inventory, intangible assets, goodwill, other long-lived assets, income taxes, deferred tax valuation allowance, and investments. Management bases its estimates and judgments on historical experience and on various other factors that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

2) Stock-Based Compensation

The Company has several stock-based employee compensation plans. The Company accounts for stock-based awards to employees using the intrinsic value method as prescribed by Accounting Principles Board ("APB") Opinion No. 25, "Accounting for Stock Issued to Employees," and related interpretations. Accordingly, no compensation expense is recorded for options issued to employees in fixed amounts with fixed exercise prices at least equal to the fair market value of the Company's common stock at the date of grant. The Company has adopted the provisions of Statement of Financial Accounting Standards ("SFAS") No. 123, "Accounting for Stock-Based Compensation," as amended by SFAS No. 148, "Accounting for Stock-Based Compensation-Transition and Disclosure," through disclosure only.

The following table illustrates the effect on net income (loss) and net income (loss) per share if the Company had applied the fair value recognition provisions of SFAS No. 123 to stock-based employee awards.

	Three Months Ended June 30,		Six Months Ended June 30,	
	2004	2003	2004	2003
	-----	-----	-----	-----
Net income (loss):				
Net income (loss) as reported .....	\$20,868	\$ (5,470)	\$ 33,574	\$ (12,900)
Deduct: Total stock-based employee compensation expense determined under the fair-value-based method for all awards, net of tax .....	(5,876)	(5,138)	(11,950)	(10,040)
Pro forma net income (loss) .....	\$14,992	\$(10,608)	\$ 21,624	\$ (22,940)
	=====	=====	=====	=====
Basic net income (loss) per share:				
Net income (loss) as reported .....	\$ 0.39	\$ (0.11)	\$ 0.63	\$ (0.25)
Pro forma net income (loss) .....	\$ 0.28	\$ (0.21)	\$ 0.40	\$ (0.45)
	=====	=====	=====	=====
Diluted net income (loss) per share:				
Net income (loss) as reported .....	\$ 0.38	\$ (0.11)	\$ 0.61	\$ (0.25)
Pro forma net income (loss) .....	\$ 0.27	\$ (0.21)	\$ 0.39	\$ (0.45)
	=====	=====	=====	=====

MKS INSTRUMENTS, INC.  
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)  
(Tables in thousands, except per share data)

There is no tax benefit included in the stock-based employee compensation expense determined under the fair-value-based method for the three and six months ended June 30, 2004 and 2003, respectively, as the Company established a full valuation allowance for its net deferred tax assets.

3) Goodwill and Intangible Assets

Intangible Assets

Acquired amortizable intangible assets consisted of the following as of June 30, 2004:

	Gross Carrying Amount -----	Accumulated Amortization -----	Net Carrying Amount -----
Completed technology .....	\$ 72,484	\$(33,812)	\$ 38,672
Customer relationships .....	6,640	(3,122)	3,518
Patents, trademarks, tradenames and other ..	12,394	(5,852)	6,542
	-----	-----	-----
	\$ 91,518	\$(42,786)	\$ 48,732
	=====	=====	=====

Acquired amortizable intangible assets consisted of the following as of December 31, 2003:

	Gross Carrying Amount -----	Accumulated Amortization -----	Net Carrying Amount -----
Completed technology .....	\$ 72,563	\$(27,654)	\$ 44,909
Customer relationships .....	6,640	(2,663)	3,977
Patents, trademarks, tradenames and other ..	12,394	(5,088)	7,306
	-----	-----	-----
	\$ 91,597	\$(35,405)	\$ 56,192
	=====	=====	=====

Aggregate amortization expense related to acquired intangibles for the three and six months ended June 30, 2004 was \$3,691,000 and \$7,384,000, respectively. Aggregate amortization expense related to acquired intangibles for the three and six months ended June 30, 2003 was \$3,617,000 and \$7,395,000, respectively. Estimated amortization expense related to acquired intangibles for the remainder of 2004 and each of the four succeeding fiscal years is as follows:

Year ----	Amount -----
2004	\$ 7,382
2005	13,864
2006	11,763
2007	11,129
2008	2,759

Goodwill

The change in the carrying amount of goodwill during the three and six months ended June 30, 2004 was not material.

MKS INSTRUMENTS, INC.  
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)  
(Tables in thousands, except per share data)

4) Net Income (Loss) Per Share

The following table sets forth the computation of basic and diluted net income (loss) per share:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2004	2003	2004	2003
	-----	-----	-----	-----
Numerator				
Net income (loss) .....	\$ 20,868	\$ (5,470)	\$ 33,574	\$(12,900)
	=====	=====	=====	=====
Denominator				
Shares used in net loss per common share - basic .....	53,540	51,419	53,398	51,399
Effect of dilutive securities:				
Stock options and employee stock purchase plan ..	1,427	--	1,628	--
	=====	=====	=====	=====
Shares used in net income (loss) per common share - diluted .....	54,967	51,419	55,026	51,399
	=====	=====	=====	=====
Net income (loss) per common share				
Basic .....	\$ 0.39	\$ (0.11)	\$ 0.63	\$ (0.25)
	=====	=====	=====	=====
Diluted .....	\$ 0.38	\$ (0.11)	\$ 0.61	\$ (0.25)
	=====	=====	=====	=====

For purposes of computing diluted earnings per share, weighted average common share equivalents do not include stock options with an exercise price greater than the average market price of the common shares, as the effect would be anti-dilutive. All options outstanding during the three and six months ended June 30, 2003 are excluded from the calculation of diluted net loss per common share because their inclusion would be anti-dilutive. There were options to purchase approximately 8,862,000 and 8,218,000 shares of the Company's common stock outstanding as of June 30, 2004 and 2003, respectively.

5) Cash and Cash Equivalents and Investments

All highly liquid investments with an original maturity of three months or less at the date of purchase are considered to be cash equivalents.

Cash and cash equivalents consists of the following:

	June 30, 2004	December 31, 2003
	-----	-----
Cash and money market instruments .....	\$ 73,764	\$ 60,869
Commercial paper .....	40,897	12,645
Federal government and government agency obligations ..	2,879	876
Corporate obligations .....	--	270
	-----	-----
	\$117,540	\$ 74,660
	=====	=====

The fair value of short-term available-for-sale investments maturing within one year consists of the following:

	June 30, 2004	December 31, 2003
	-----	-----
Federal government and government agency obligations ..	\$58,420	\$41,566
Commercial paper .....	1,953	10,449
Corporate obligations .....	12,200	2,503
	-----	-----
	\$72,573	\$54,518
	=====	=====



MKS INSTRUMENTS, INC.  
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)  
(Tables in thousands, except per share data)

The fair value of long-term available-for-sale investments with maturities greater than 1 year consists of the following:

	June 30, 2004 -----	December 31, 2003 -----
Corporate obligations .....	\$ 5,625	\$ 5,499
Federal government and government agency obligations ..	3,240	4,807
Commercial paper .....	--	3,319
	-----	-----
	\$ 8,865	\$13,625
	=====	=====

The appropriate classification of investments in securities is determined at the time of purchase. Debt securities that the Company does not have the intent and ability to hold to maturity are classified as "available-for-sale" and are carried at fair value. Unrealized gains and losses on securities classified as available-for-sale are included in accumulated other comprehensive income in consolidated stockholders' equity. Gross unrealized gains and gross unrealized losses on available-for-sale investments were not material at June 30, 2004 and December 31, 2003.

6) Inventories

Inventories consist of the following:

	June 30, 2004 -----	December 31, 2003 -----
Raw material .....	\$ 45,274	\$ 36,834
Work in process .....	24,017	15,786
Finished goods .....	36,390	29,393
	-----	-----
	\$105,681	\$ 82,013
	=====	=====

7) Stockholders' Equity

	Three Months Ended June 30,		Six Months Ended June 30,	
	2004 -----	2003 -----	2004 -----	2003 -----
Net income (loss) .....	\$ 20,868	\$ (5,470)	\$ 33,574	\$(12,900)
Other comprehensive income, net of taxes of \$0:				
Changes in value of financial instruments designated as hedges of currency .....	1,398	258	1,908	161
Foreign currency translation adjustment .....	(1,406)	1,455	(1,352)	2,225
Unrealized gain (loss) on investments .....	1	(13)	27	(12)
	-----	-----	-----	-----
Other comprehensive income (loss), net of taxes .....	(7)	1,700	583	2,374
	-----	-----	-----	-----
Total comprehensive income (loss) .....	\$ 20,861	\$ (3,770)	\$ 34,157	\$(10,526)
	=====	=====	=====	=====

Common Stock Offering

On January 21, 2004, the Company issued 1,142,857 shares of its common stock at \$26.25 per share through a public offering. Proceeds of the offering, net of underwriters' discount and offering expenses, were approximately \$28,252,000. On January 23, 2004, the underwriters exercised their over-allotment option and therefore, the Company issued an additional 171,429 shares of its common stock, which generated net proceeds of approximately \$4,298,000.

MKS INSTRUMENTS, INC.  
 NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)  
 (Tables in thousands, except per share data)

8) Income Taxes

The Company records income taxes using the asset and liability method. Deferred income tax assets and liabilities are recognized for the future tax consequences attributable to differences between the consolidated financial statement carrying amounts of existing assets and liabilities and their respective income tax bases, and operating loss and tax credit carryforwards. The Company evaluates the realizability of its net deferred tax assets and assesses the need for a valuation allowance on a quarterly basis. The future benefit to be derived from its deferred tax assets is dependent upon its ability to generate sufficient future taxable income to realize the assets. The Company records a valuation allowance to reduce its net deferred tax assets to the amount that may be more likely than not to be realized. To the extent the Company establishes a valuation allowance, an expense will be recorded within the provision for income taxes line on the consolidated statements of operations.

As a result of incurring significant operating losses from 2001 through 2003, the Company determined that it is more likely than not that its deferred tax assets may not be realized. During the fourth quarter of 2002, the Company established a full valuation allowance for its net deferred tax assets. At June 30, 2004 and December 31, 2003, the Company continued to believe that it is more likely than not that all of its deferred tax assets may not be realized. If the Company generates sustained future taxable income against which these tax attributes may be applied, some portion or all of the valuation allowance would be reversed. If the valuation allowance were reversed, a portion would be recorded as a reduction of goodwill, an additional amount would be recorded as an increase to additional paid in capital and the remainder would be recorded as a reduction to income tax expense. During the three and six months ended June 30, 2004, the Company's estimated U.S. federal tax liability has been offset by the benefit from U.S. net operating loss carryforwards. The tax rate for the three and six months ended June 30, 2004 differs from the U.S. statutory rate primarily due to the release of the valuation allowance associated with the utilization of the prior federal net operating loss.

9) Segment Information and Significant Customer

The Company operates in one segment for the development, manufacturing, sales and servicing of instruments, components, subsystems and process control solutions that measure, control, power and monitor critical parameters of semiconductor and other advanced manufacturing processes. The Company's chief decision-maker reviews operating results to make decisions about allocating resources and assessing performance for the entire Company.

Information about the Company's operations in different geographic regions is presented in the tables below. Net sales to unaffiliated customers are based on the location in which the sale originated. Transfers between geographic areas are at negotiated transfer prices and have been eliminated from consolidated net sales.

	Three Months Ended June 30,		Six Months Ended June 30,	
	2004	2003	2004	2003
	-----	-----	-----	-----
Geographic net sales				
United States ...	\$102,943	\$ 47,813	\$187,919	\$ 90,938
Japan .....	21,443	11,962	42,798	25,355
Europe .....	13,542	10,851	25,063	20,187
Asia .....	13,657	10,542	28,790	17,465
	-----	-----	-----	-----
	\$151,585	\$ 81,168	\$284,570	\$153,945
	=====	=====	=====	=====

MKS INSTRUMENTS, INC.  
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)  
(Tables in thousands, except per share data)

	June 30, 2004 -----	December 31, 2003 -----
Long-lived assets:		
United States .....	\$68,165	\$65,977
Japan .....	5,791	5,978
Europe .....	4,778	5,541
Asia .....	3,344	3,349
	-----	-----
	\$82,078	\$80,845
	=====	=====

The Company had one customer comprising 22% and 18% of net sales for the three months ended June 30, 2004 and 2003, respectively, and 21% and 17% for the six months ended June 30, 2004 and 2003, respectively.

10) Commitments and Contingencies

On July 12, 2004, Advanced Energy Industries, Inc. ("Advanced Energy") filed suit against MKS in federal district court in Delaware, seeking injunctive relief and damages for alleged infringement of a patent held by Advanced Energy. The Company is currently evaluating the merits of the claim. The Company cannot be certain of the outcome of this litigation, but does plan to oppose the claims vigorously.

On January 12, 2004, Gas Research Institute ("GRI") brought suit in federal district court in Illinois against the Company, On-Line Technologies, Inc. ("On-Line") which we acquired in 2001, and another defendant, Advanced Fuel Research, Inc. ("AFR"), for breach of contract, misappropriation of trade secrets and related claims relating to certain infra-red gas analysis technology allegedly developed under a January 1995 Contract for Research between GRI and AFR. The technology is alleged to have been incorporated into certain of the Company's products. GRI has made claims for damages, exemplary damages, attorney's fees and costs and injunctive relief. The Company has filed an answer, denying liability and asserting various defenses to GRI's claims. The Company has also asserted a cross-claim against co-defendant AFR, alleging misrepresentation, breach of contract and breach of various duties owed by AFR, and alleging that in the event the Company and On-Line are held liable to GRI, AFR would be required to reimburse, indemnify, and hold harmless On-Line and the Company for any such liability. AFR has filed a motion to dismiss the action for lack of personal jurisdiction or, in the alternative, to transfer the case to another federal court, which motion is pending. The case is in its initial stages and the Company is unable to predict its outcome.

On April 3, 2003, Advanced Energy filed suit against MKS in federal district court in Colorado ("Colorado Action"), seeking a declaratory judgment that Advanced Energy's Xstream product does not infringe three patents held by the Company's subsidiary Applied Science and Technology, Inc. ("ASTeX"). On May 14, 2003, MKS brought suit in federal district court in Delaware against Advanced Energy for infringement of five ASTeX patents, including the three patents at issue in the Colorado Action. The Company sought injunctive relief and damages for Advanced Energy's infringement. On December 24, 2003, the Colorado court granted the Company's motion to transfer Advanced Energy's Colorado Action to Delaware. In connection with the jury trial, the parties agreed to present the jury with representative claims from three of the five ASTeX patents. On July 23, 2004, the jury found that Advanced Energy infringed all three patents. The Company has filed a motion for a permanent injunction, which is pending before the court. The parties are awaiting the court to set a trial date with respect to damages.

MKS INSTRUMENTS, INC.  
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)  
(Tables in thousands, except per share data)

On November 3, 1999, On-Line brought suit in federal district court in Connecticut against Perkin-Elmer, Inc. and certain other defendants for infringement of On-Line's patent related to its FTIR spectrometer product. The suit sought injunctive relief and damages for infringement. Perkin-Elmer, Inc. filed a counterclaim seeking invalidity of the patent, costs, and attorneys' fees. In June 2002, the defendants filed a motion for summary judgment. In April 2003, the court granted the motion and dismissed the case. On August 5, 2004, we argued our appeal of this decision before the federal circuit court of appeals and are awaiting a decision.

The Company is subject to other legal proceedings and claims, which have arisen in the ordinary course of business.

In the opinion of management, the ultimate disposition of these matters will not have a material adverse effect on the Company's results of operations, financial condition or cash flows.

11) Restructuring, Asset Impairment and Other Charges

During the first quarter of 2004, the Company completed its consolidation of acquisitions, which was initiated in 2002 to accelerate product development, rationalize manufacturing operations and reduce operating costs. The Company recorded restructuring charges of \$437,000 related to lease costs of exited facilities.

During the three months ended June 30, 2003, the Company recorded restructuring, asset impairment and other charges of \$304,000 related to the consolidation of previous acquisitions. The charges consisted of \$112,000 of severance costs related to workforce reductions, an asset impairment charge of \$92,000 primarily for assets to be disposed and \$100,000 of professional fees related to the consolidation.

The following table sets forth the activity in the restructuring accruals from December 31, 2003 to June 30, 2004:

	Workforce Reductions -----	Facility Consolidations -----	Total -----
Balance as of December 31, 2003 .....	\$ 199	\$ 1,831	\$ 2,030
Restructuring provision in first quarter .....	--	437	437
Charges utilized in first quarter .....	(15)	(226)	(241)
	-----	-----	-----
Balance as of March 31, 2004 .....	184	2,042	2,226
Charges utilized in second quarter .....	(95)	(276)	(371)
	-----	-----	-----
Balance as of June 30, 2004 .....	\$ 89 =====	\$ 1,766 =====	\$ 1,855 =====

The remaining accruals for workforce reductions are expected to be paid by the end of 2004. The facilities consolidation charges will be paid over the respective lease terms, the latest of which ends in 2008. The accruals for severance costs and lease payments is recorded in Other accrued expenses and Other liabilities in the consolidated balance sheets.

12) Product Warranties

The Company provides for the estimated costs to fulfill customer warranty obligations upon the recognition of the related revenue. While the Company engages in extensive product quality programs and processes, including actively monitoring and evaluating the quality of its component suppliers, the Company's warranty obligation is affected by product failure rates, utilization levels, material usage, and supplier warranties on parts delivered to the Company. Should actual product failure rates, utilization levels, material usage, or supplier warranties on parts differ from the Company's estimates, revisions to the estimated warranty liability would be required.

MKS INSTRUMENTS, INC.  
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)  
(Tables in thousands, except per share data)

Product warranty activity for the six months ended June 30 was as follows:

	2004	2003
	-----	-----
Balance at beginning of year .....	\$ 5,804	\$ 6,921
Provisions for product warranties during the period .....	4,509	1,064
Direct charges to the warranty liability during the period .....	(2,726)	(1,839)
Balance as of June 30 .....	\$ 7,587	\$ 6,146
	=====	=====

13) Other Income

During the second quarter of 2004, the Company received \$5,042,000 related to the collection of a note receivable that had been written off in the third quarter of 2002. This amount was recorded as a gain and included in Other income in the consolidated statements of operations for the three and six months ended June 30, 2004, respectively.

ITEM 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS.

We believe that this Quarterly Report on Form 10-Q contains "forward-looking statements" within the meaning of The Private Securities Litigation Reform Act of 1995. When used herein, the words "believes," "anticipates," "plans," "expects," "estimates" and similar expressions are intended to identify forward-looking statements. These forward-looking statements reflect management's current opinions and are subject to certain risks and uncertainties that could cause results to differ materially from those stated or implied. We assume no obligation to update this information. Risks and uncertainties include, but are not limited to, those discussed in the section in this Report entitled "Factors That May Affect Future Results."

OVERVIEW

We are a leading worldwide provider of instruments, components, subsystems and process control solutions that measure, control, power and monitor critical parameters of semiconductor and other advanced manufacturing processes.

We are managed as one operating segment which is organized around three product groups: Instruments and Control Systems, Power and Reactive Gas Products, and Vacuum Products. Our products are derived from our core competencies in pressure measurement and control, materials delivery, gas and thin-film composition analysis, control and information management, power and reactive gas generation and vacuum technology. Our products are used to manufacture semiconductors and thin film coatings for diverse markets such as flat panel displays, optical and magnetic storage media, architectural glass, and electro-optical products. We also provide technologies for medical imaging equipment.

Our customers include semiconductor capital equipment manufacturers, semiconductor device manufacturers, industrial manufacturing companies, medical equipment manufacturers and university, government and industrial research laboratories. For the six months ended June 30, 2004 and the full year ended December 31, 2003, we estimate that approximately 79% and 69% of our net sales, respectively, were to semiconductor capital equipment manufacturers and semiconductor device manufacturers.

During the latter half of 2003 and continuing into 2004, the semiconductor capital equipment market experienced a market upturn after almost a three-year downturn. Starting in the fourth quarter of 2003, we have experienced an increase in orders and shipments and as a result, have returned to profitability. The semiconductor capital equipment industry has been very cyclical, and we cannot determine how long this recent improvement will last.

A portion of our sales is to operations in international markets. International sales include sales by our foreign subsidiaries, but exclude direct export sales. For the six months ended June 30, 2004 and full year ended December 31, 2003, international sales accounted for approximately 34% and 41% of net sales, respectively.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

The preparation of our consolidated financial statements and related disclosures in conformity with accounting principles generally accepted in the United States of America requires management to make judgments, assumptions and estimates that affect the amounts reported. There have been no material changes in our critical accounting policies since December 31, 2003. See the discussion of critical accounting policies in our Annual Report on Form 10-K for the year ended December 31, 2003.

## RESULTS OF OPERATIONS

The following table sets forth for the periods indicated the percentage of total net sales of certain line items included in MKS' consolidated statements of operations data.

	Three Months Ended June 30,		Six Months Ended June 30,	
	2004	2003	2004	2003
Net sales .....	100.0%	100.0%	100.0%	100.0%
Cost of sales .....	59.5	66.2	59.4	65.7
Gross profit .....	40.5	33.8	40.6	34.3
Research and development .....	9.6	14.1	10.2	14.7
Selling, general and administrative .....	15.0	21.5	15.0	22.9
Amortization of acquired intangible assets .....	2.4	4.4	2.6	4.8
Restructuring, asset impairment and other charges .....	--	0.4	0.1	0.2
Income (loss) from operations .....	13.5	(6.6)	12.7	(8.3)
Interest income, net .....	0.2	0.3	0.2	0.3
Other income (expense), net .....	3.6	--	1.9	--
Income (loss) before income taxes .....	17.3	(6.3)	14.8	(8.0)
Provision for income taxes .....	3.5	0.4	3.0	0.4
Net income (loss) .....	13.8%	(6.7)%	11.8%	(8.4)%

**Net Sales.** Net sales for the three months ended June 30, 2004 increased \$70.4 million or 87% to \$151.6 million from \$81.2 million for the three months ended June 30, 2003. The increase was due mainly to stronger worldwide demand from our semiconductor capital equipment manufacturer and semiconductor device manufacturer customers, which increased \$67.4 million or 127% compared to the prior year. International net sales were \$48.6 million for the three months ended June 30, 2004 or 32.1% of net sales compared to \$33.4 million for the same period of 2003 or 41.1% of net sales.

Net sales for the six months ended June 30, 2004 increased \$130.6 million or 85% to \$284.6 million from \$153.9 million for the six months ended June 30, 2003. The increase was due mainly to stronger worldwide demand from our semiconductor capital equipment manufacturer and semiconductor device manufacturer customers, which increased \$122.7 million or 121% compared to the prior year. International net sales were \$96.7 million for the six months ended June 30, 2004 or 34.0% of net sales compared to \$63.0 million for the same period of 2003 or 40.9% of net sales.

**Gross Profit.** Gross profit as a percentage of net sales increased to 40.5% for the three months ended June 30, 2004 from 33.8% for the three months ended June 30, 2003. The increase was mainly due to overhead being a lower percentage of net sales. In addition, the gross profit for the three months ended June 30, 2004 was positively impacted by approximately \$1.0 million from the sale of inventory previously deemed excess and written down to net realizable value, and negatively impacted by \$2.1 million of increased warranty charges.

For the six months ended June 30, 2004 gross profit increased to 40.6% from 34.3% for the six months ended June 30, 2003. The increase was mainly due to overhead being a lower percentage of net sales. In addition, gross profit for the six months ended June 30, 2004 was positively impacted by approximately \$1.3 million from the sale of inventory previously deemed excess and written down to net realizable value, and negatively impacted by \$3.4 million of increased warranty charges.

**Research and Development.** Research and development expense for the three months ended June 30, 2004 increased \$3.2 million or 28% to \$14.6 million or 9.6% of net sales from \$11.5 million or 14.1% of net sales for the three months ended June 30, 2003. The increase was primarily due to increased compensation expense of \$1.6 million as a result of higher staffing levels, restored compensation levels, salary increases and incentive compensation and \$1.1 million of higher project material expenses.

Research and development expense for the six months ended June 30, 2004 increased \$6.3 million or 27.6% to \$29.0 million or 10.2% of net sales from \$22.7 million or 14.7% of net sales for the six months ended June 30, 2003. The increase was primarily due to increased compensation expense of \$3.2 million as a result of higher staffing levels, restored compensation levels, salary increases and incentive compensation, \$2.2 million of higher project material expenses and \$0.6 million of increased consulting costs.

Selling, General and Administrative. Selling, general and administrative expenses for the three months ended June 30, 2004 increased \$5.2 million or 29.8% to \$22.7 million or 14.9% of net sales from \$17.5 million or 21.5% of net sales for the three months ended June 30, 2003. The increase was primarily due to higher compensation expense of \$2.1 million as a result of restored compensation levels, salary increases, incentive compensation and higher sales commissions, \$1.4 million related to foreign exchange, \$0.4 million increase in advertising and promotional expenses and a \$0.4 million increase in professional fees.

Selling, general and administrative expenses for the six months ended June 30, 2004 increased \$7.5 million or 21.4% to \$42.8 million or 15.0% of net sales from \$35.3 million or 22.9% of net sales for the six months ended June 30, 2003. The increase was primarily due to higher compensation expense of \$4.6 million as a result of restored compensation levels, salary increases, incentive compensation and higher sales commissions, \$1.1 million increase in professional fees and a \$0.5 million increase in advertising and promotional expenses.

Amortization of Acquired Intangible Assets. Amortization expense of \$3.7 million and \$7.4 million for the three and six months ended June 30, 2004, respectively, represents the amortization of the identifiable intangibles resulting from our completed acquisitions. Amortization of identifiable intangibles was \$3.6 million and \$7.4 million for the three and six months ended June 30, 2003, respectively.

Restructuring, Asset Impairment and Other Charges. During the first quarter of 2004, we completed our consolidation of acquisitions, which was initiated in 2002 to accelerate product development, rationalize manufacturing operations and reduce operating costs. We recorded restructuring charges of \$0.4 million related to lease costs of exited facilities. There were no restructuring charges during the second quarter of 2004.

During the three months ended June 30, 2003, we recorded restructuring, asset impairment and other charges of \$0.3 million related to the consolidation of previous acquisitions. The charges consisted of \$0.1 million of severance costs related to workforce reductions, an asset impairment charge of \$0.1 million primarily for assets to be disposed and \$0.1 million of professional fees related to the consolidation.

The following table sets forth the activity in the restructuring accruals from December 31, 2003 to June 30, 2004:

	Workforce Reductions	Facility Consolidations	Total
	-----	-----	-----
	(in thousands)		
Balance as of December 31, 2003 .....	\$ 199	\$ 1,831	\$ 2,030
Restructuring provision in first quarter .....	--	437	437
Charges utilized in first quarter .....	(15)	(226)	(241)
	-----	-----	-----
Balance as of March 31, 2004 .....	184	2,042	2,226
Charges utilized in second quarter .....	(95)	(276)	(371)
	-----	-----	-----
Balance as of June 30, 2004 .....	\$ 89	\$ 1,766	\$ 1,855
	=====	=====	=====

The remaining accruals for workforce reductions are expected to be paid by the end of 2004. The facilities consolidation charges will be paid over the respective lease terms, the latest of which ends in 2008. The accrual for severance costs and lease payments is recorded in Other accrued expenses and Other liabilities.

Interest Income, Net. During the three and six months ended June 30, 2004, the Company generated net interest income of \$0.3 million and \$0.6 million, respectively, which are comparable to the \$0.3 million and \$0.6 million for the three and six months ended June 30, 2003, respectively.



Other Income. Other income of \$5.4 million for the three and six months ended June 30, 2004, consisted primarily of a gain of \$5.0 million related to the collection of a note receivable that was written off in 2002.

Provision for Income Taxes. As a result of incurring significant operating losses from 2001 through 2003, we determined that it is more likely than not that our deferred tax assets may not be realized, and since the fourth quarter of 2002 have established a full valuation allowance for our net deferred tax assets. If we generate sustained future taxable income against which these tax attributes may be applied, some portion or all of the valuation allowance would be reversed. If the valuation allowance were reversed, a portion would be recorded as a reduction of goodwill, an additional amount would be recorded as an increase to additional paid in capital, and the remainder would be recorded as a reduction to income tax expense.

We recorded a provision for income taxes of \$5.3 million and \$8.5 million for the three and six months ended June 30, 2004, respectively, as compared to a provision of \$0.4 million and \$0.7 million for the three and six months ended June 30, 2003, respectively. During the three and six months ended June 30, 2004, our estimated U.S. federal tax liability has been offset by the benefit from U.S. net operating loss carryforwards. The tax rate for the three and six months ended June 30, 2004 differs from the U.S. statutory rate primarily due to the release of the valuation allowance associated with the utilization of the prior federal net operating loss.

#### LIQUIDITY AND CAPITAL RESOURCES

Cash, cash equivalents and short-term marketable securities totaled \$190.1 million at June 30, 2004 compared to \$129.2 million at December 31, 2003. This increase is mainly due to net proceeds of approximately \$32.6 million from our public offering of common stock in the first quarter of 2004 and \$19.9 million of cash generated from operations during the six months ended June 30, 2004.

Net cash provided by operating activities of \$19.9 million for the six months ended June 30, 2004, resulted mainly from net income of \$33.6 million, non-cash depreciation and amortization expenses of \$13.9 million and an increase in operating liabilities of \$29.3 million, partially offset by an increase in operating assets of \$51.8 million and a \$5.0 million gain related to the collection of a previously written off note receivable. The increase in operating assets consisted mainly of an increase in accounts receivable of \$24.3 million due to the higher shipments in the second quarter of 2004 as compared to the fourth quarter of 2003, and an increase in inventory of \$23.9 million as a result of higher production volumes in 2004. The increase in operating liabilities consisted primarily of an increase in accrued expenses and other current liabilities of \$11.3 million resulting mainly from increased accrued compensation, warranty reserves and non-income related tax accruals, as well as a \$12.3 million increase in income tax payable. Net cash used in operating activities of \$4.7 million for the six months ended June 30, 2003 resulted mainly from a net loss of \$12.9 million, an increase in accounts receivable of \$5.0 million and inventory of \$1.0 million and a decrease in accrued expenses of \$3.2 million, partially offset by non-cash charges of \$15.0 million for depreciation and amortization and an increase in accounts payable of \$2.7 million.

Net cash used in investing activities of \$15.4 million for the six months ended June 30, 2004 resulted from the net purchases of \$13.2 million of available for sale investments mainly from the net proceeds received from our stock offering in the first quarter, and the purchase of property, plant and equipment of \$9.2 million for investments in manufacturing equipment and for consolidation of our IT infrastructure, partially offset by proceeds of \$5.0 million received from the collection of a note receivable that was previously written off. Net cash used in investing activities of \$13.6 million for the six months ended June 30, 2003 consisted mainly of net purchases of short-term and long-term available for sale investments of \$11.0 million and purchases of property, plant and equipment of \$3.0 million.

Net cash provided by financing activities of \$39.3 million for the six months ended June 30, 2004 consisted primarily of \$32.6 million in net proceeds received from our common stock offering, \$3.9 million in proceeds from the exercise of stock options and purchases under the employee stock purchase plan, and net proceeds of \$4.6 million from short-term borrowings, partially offset by \$1.8 million of principal payments on long-term debt. Net cash used in financing activities of \$3.4 million for the six months ended June 30, 2003 consisted of principal payments of \$3.6 million on long-term debt and capital lease obligations and \$1.2 million in net payments on short-term borrowings, partially offset by \$1.4 million in proceeds from the exercise of stock options.

We believe that our working capital, together with the cash anticipated to be generated from operations and funds available from existing credit facilities, will be sufficient to satisfy our estimated working capital and planned capital expenditure requirements through at least the next twelve months.

As of June 30, 2004, we had \$76.7 million of purchase obligations compared to \$50.2 million at December 31, 2004. The increase of \$26.5 million is primarily due to increased inventory purchase commitments as a result of increased production volumes in 2004.

#### OFF-BALANCE SHEET ARRANGEMENTS

We do not have any financial partnerships with unconsolidated entities, such as entities often referred to as structured finance, special purpose entities or variable interest entities which are often established for the purpose of facilitating off-balance sheet arrangements or other contractually narrow or limited purposes. Accordingly, we are not exposed to any financing, liquidity, market or credit risk that could arise if we had such relationships.

#### FACTORS THAT MAY AFFECT FUTURE RESULTS

OUR BUSINESS DEPENDS SUBSTANTIALLY ON CAPITAL SPENDING IN THE SEMICONDUCTOR INDUSTRY WHICH IS CHARACTERIZED BY PERIODIC FLUCTUATIONS THAT MAY CAUSE A REDUCTION IN DEMAND FOR OUR PRODUCTS.

We estimate that approximately 79% of our net sales for the six months ended June 30, 2004 and 69%, 70% and 64% of our net sales for the years ended December 31, 2003, 2002 and 2001, respectively, were to semiconductor capital equipment manufacturers and semiconductor device manufacturers, and we expect that sales to such customers will continue to account for a substantial majority of our sales. Our business depends upon the capital expenditures of semiconductor device manufacturers, which in turn depend upon the demand for semiconductors. Periodic reductions in demand for the products manufactured by semiconductor capital equipment manufacturers and semiconductor device manufacturers may adversely affect our business, financial condition and results of operations. Historically, the semiconductor market has been highly cyclical and has experienced periods of overcapacity, resulting in significantly reduced demand for capital equipment. Most recently, in 2001, 2002 and the first half of 2003, we experienced a significant reduction in demand from OEM customers, and lower gross margins due to reduced absorption of manufacturing overhead. In addition, many semiconductor manufacturers have operations and customers in Asia, a region that in recent years has experienced serious economic problems including currency devaluations, debt defaults, lack of liquidity and recessions. We cannot be certain that semiconductor downturns will not continue or recur. A decline in the level of orders as a result of any future downturn or slowdown in the semiconductor capital equipment industry could have a material adverse effect on our business, financial condition and results of operations.

OUR QUARTERLY OPERATING RESULTS HAVE VARIED, AND ARE LIKELY TO CONTINUE TO VARY SIGNIFICANTLY. THIS MAY RESULT IN VOLATILITY IN THE MARKET PRICE OF OUR COMMON STOCK.

A substantial portion of our shipments occurs shortly after an order is received and therefore we operate with a low level of backlog. As a result, a decrease in demand for our products from one or more customers could occur with limited advance notice and could have a material adverse effect on our results of operations in any particular period. A significant percentage of our expenses are relatively fixed and based in part on expectations of future net sales. The inability to adjust spending quickly enough to compensate for any shortfall would magnify the adverse impact of a shortfall in net sales on our results of operations. Factors that could cause fluctuations in our net sales include:

- the timing of the receipt of orders from major customers;
- shipment delays;
- disruption in sources of supply;
- seasonal variations of capital spending by customers;
- production capacity constraints; and

- specific features requested by customers.

In addition, our quarterly operating results may be adversely affected due to charges incurred in a particular quarter, for example, relating to inventory obsolescence, bad debt or asset impairments.

As a result of the factors discussed above, it is likely that we may in the future experience quarterly or annual fluctuations and that, in one or more future quarters, our operating results may fall below the expectations of public market analysts or investors. In any such event, the price of our common stock could decline significantly.

THE LOSS OF NET SALES TO ANY ONE OF OUR MAJOR CUSTOMERS WOULD LIKELY HAVE A MATERIAL ADVERSE EFFECT ON US.

Our top ten customers accounted for approximately 51% of our net sales for the six months ended June 30, 2004, and 42%, 49% and 39% of our net sales for the years ended December 31, 2003, 2002 and 2001, respectively. The loss of a major customer or any reduction in orders by these customers, including reductions due to market or competitive conditions, would likely have a material adverse effect on our business, financial condition and results of operations. During the six months ended June 30, 2004 and years ended December 31, 2003, 2002 and 2001, one customer, Applied Materials, accounted for approximately 21%, 18%, 23% and 18%, respectively, of our net sales. None of our significant customers, including Applied Materials, has entered into an agreement requiring it to purchase any minimum quantity of our products. The demand for our products from our semiconductor capital equipment customers depends in part on orders received by them from their semiconductor device manufacturer customers.

Attempts to lessen the adverse effect of any loss or reduction of net sales through the rapid addition of new customers could be difficult because prospective customers typically require lengthy qualification periods prior to placing volume orders with a new supplier. Our future success will continue to depend upon:

- our ability to maintain relationships with existing key customers;
- our ability to attract new customers;
- our ability to introduce new products in a timely manner for existing and new customers; and
- the success of our customers in creating demand for their capital equipment products which incorporate our products.

AS PART OF OUR BUSINESS STRATEGY, WE HAVE ENTERED INTO AND MAY ENTER INTO OR SEEK TO ENTER INTO BUSINESS COMBINATIONS AND ACQUISITIONS THAT MAY BE DIFFICULT AND COSTLY TO INTEGRATE, DISRUPT OUR BUSINESS, DILUTE STOCKHOLDER VALUE OR DIVERT MANAGEMENT ATTENTION.

We made several acquisitions in the years 2000 through 2002. As a part of our business strategy, we may enter into additional business combinations and acquisitions. Acquisitions are typically accompanied by a number of risks, including the difficulty of integrating the operations and personnel of the acquired companies, the potential disruption of our ongoing business and distraction of management, expenses related to the acquisition and potential unknown liabilities associated with acquired businesses. If we are not successful in completing acquisitions that we may pursue in the future, we may be required to reevaluate our growth strategy, and we may incur substantial expenses and devote significant management time and resources in seeking to complete proposed acquisitions that will not generate benefits for us.

In addition, with future acquisitions, we could use substantial portions of our available cash as all or a portion of the purchase price. We could also issue additional securities as consideration for these acquisitions, which could cause significant stockholder dilution. Our recent acquisitions and any future acquisitions may not ultimately help us achieve our strategic goals and may pose other risks to us.

As a result of our previous acquisitions, we have added several different decentralized operating and accounting systems, resulting in a complex reporting environment. We expect that we will need to continue to modify our accounting policies, internal controls, procedures and compliance programs to provide consistency across all our operations. In order

to increase efficiency and operating effectiveness and improve corporate visibility into our decentralized operations, we are currently in the planning and design phase of implementing a new worldwide Enterprise Resource Planning ("ERP") system. We expect to implement the ERP system by converting our operations in phases over the next few years, beginning in the first half of 2005. Although we have a detailed plan to accomplish the ERP implementation, we may risk potential disruption of our operations during the conversion periods, the implementation could require significantly more management time than currently estimated and we could incur significantly higher implementation costs than currently estimated.

AN INABILITY TO CONVINCE SEMICONDUCTOR DEVICE MANUFACTURERS TO SPECIFY THE USE OF OUR PRODUCTS TO OUR CUSTOMERS, THAT ARE SEMICONDUCTOR CAPITAL EQUIPMENT MANUFACTURERS, WOULD WEAKEN OUR COMPETITIVE POSITION.

The markets for our products are highly competitive. Our competitive success often depends upon factors outside of our control. For example, in some cases, particularly with respect to mass flow controllers, semiconductor device manufacturers may direct semiconductor capital equipment manufacturers to use a specified supplier's product in their equipment. Accordingly, for such products, our success will depend in part on our ability to have semiconductor device manufacturers specify that our products be used at their semiconductor fabrication facilities. In addition, we may encounter difficulties in changing established relationships of competitors that already have a large installed base of products within such semiconductor fabrication facilities.

IF OUR PRODUCTS ARE NOT DESIGNED INTO SUCCESSIVE GENERATIONS OF OUR CUSTOMERS' PRODUCTS, WE WILL LOSE SIGNIFICANT NET SALES DURING THE LIFESPAN OF THOSE PRODUCTS.

New products designed by semiconductor capital equipment manufacturers typically have a lifespan of five to ten years. Our success depends on our products being designed into new generations of equipment for the semiconductor industry. We must develop products that are technologically current so that they are positioned to be chosen for use in each successive generation of semiconductor capital equipment. If customers do not choose our products, our net sales may be reduced during the lifespan of our customers' products. In addition, we must make a significant capital investment to develop products for our customers well before our products are introduced and before we can be sure that we will recover our capital investment through sales to the customers in significant volume. We are thus also at risk during the development phase that our products may fail to meet our customers' technical or cost requirements and may be replaced by a competitive product or alternative technology solution. If that happens, we may be unable to recover our development costs.

THE SEMICONDUCTOR INDUSTRY IS SUBJECT TO RAPID DEMAND SHIFTS WHICH ARE DIFFICULT TO PREDICT. AS A RESULT, OUR INABILITY TO EXPAND OUR MANUFACTURING CAPACITY IN RESPONSE TO THESE RAPID SHIFTS MAY CAUSE A REDUCTION IN OUR MARKET SHARE.

Our ability to increase sales of certain products depends in part upon our ability to expand our manufacturing capacity for such products in a timely manner. If we are unable to expand our manufacturing capacity on a timely basis or to manage such expansion effectively, our customers could implement our competitors' products and, as a result, our market share could be reduced. Because the semiconductor industry is subject to rapid demand shifts which are difficult to foresee, we may not be able to increase capacity quickly enough to respond to a rapid increase in demand in the semiconductor industry. Additionally, capacity expansion could increase our fixed operating expenses and if sales levels do not increase to offset the additional expense levels associated with any such expansion, our business, financial condition and results of operations could be materially adversely affected.

WE OPERATE IN A HIGHLY COMPETITIVE INDUSTRY.

The market for our products is highly competitive. Principal competitive factors include:

- historical customer relationships;
- product quality, performance and price;
- breadth of product line;

- manufacturing capabilities; and
- customer service and support.

Although we believe that we compete favorably with respect to these factors, there can be no assurance that we will continue to do so. We encounter substantial competition in most of our product lines. Certain of our competitors may have greater financial and other resources than we have. In some cases, competitors are smaller than we are, but well established in specific product niches. We may encounter difficulties in changing established relationships of competitors with a large installed base of products at such customers' fabrication facilities. In addition, our competitors can be expected to continue to improve the design and performance of their products. There can be no assurance that competitors will not develop products that offer price or performance features superior to those of our products.

SALES TO FOREIGN MARKETS CONSTITUTE A SUBSTANTIAL PORTION OF OUR NET SALES; THEREFORE, OUR NET SALES AND RESULTS OF OPERATIONS COULD BE ADVERSELY AFFECTED BY DOWNTURNS IN ECONOMIC CONDITIONS IN COUNTRIES OUTSIDE OF THE UNITED STATES.

International sales include sales by our foreign subsidiaries, but exclude direct export sales, which were less than 10% of our total net sales for each of the years ended December 31, 2003, 2002 and 2001. International sales accounted for approximately 34% of our net sales for the six months ended June 30, 2004 and 41%, 36% and 31% of net sales for the years ended December 31, 2003, 2002 and 2001, respectively, a significant portion of which were sales to Japan.

We anticipate that international sales will continue to account for a significant portion of our net sales. In addition, certain of our key domestic customers derive a significant portion of their revenues from sales in international markets. Therefore, our sales and results of operations could be adversely affected by economic slowdowns and other risks associated with international sales.

RISKS RELATING TO OUR INTERNATIONAL OPERATIONS COULD ADVERSELY AFFECT OUR OPERATING RESULTS.

We have substantial international sales, service and manufacturing operations in Europe and Asia, which exposes us to foreign operational and political risks that may harm our business. Our international operations are subject to inherent risks, which may adversely affect us, including:

- political and economic instability in countries where we have sales, service and manufacturing operations, particularly in Asia;
- fluctuations in the value of currencies and high levels of inflation, particularly in Asia and Europe;
- changes in labor conditions and difficulties in staffing and managing foreign operations, including, but not limited to, labor unions;
- greater difficulty in collecting accounts receivable and longer payment cycles;
- burdens and costs of compliance with a variety of foreign laws;
- increases in duties and taxation;
- imposition of restrictions on currency conversion or the transfer of funds;
- changes in export duties and limitations on imports or exports;
- expropriation of private enterprises; and
- unexpected changes in foreign regulations.

If any of these risks materialize, our operating results may be adversely affected.

UNFAVORABLE CURRENCY EXCHANGE RATE FLUCTUATIONS MAY LEAD TO LOWER OPERATING MARGINS, OR MAY CAUSE US TO RAISE PRICES WHICH COULD RESULT IN REDUCED SALES.

Currency exchange rate fluctuations could have an adverse effect on our net sales and results of operations and we could experience losses with respect to our hedging activities. Unfavorable currency fluctuations could require us to increase prices to foreign customers which could result in lower net sales by us to such customers. Alternatively, if we do not adjust the prices for our products in response to unfavorable currency fluctuations, our results of operations could be adversely affected. In addition, most sales made by our foreign subsidiaries are denominated in the currency of the country in which these products are sold and the currency they receive in payment for such sales could be less valuable at the time of receipt as a result of exchange rate fluctuations. We enter into forward exchange contracts and local currency purchased options to reduce currency exposure arising from intercompany sales of inventory. However, we cannot be certain that our efforts will be adequate to protect us against significant currency fluctuations or that such efforts will not expose us to additional exchange rate risks.

KEY PERSONNEL MAY BE DIFFICULT TO ATTRACT AND RETAIN.

Our success depends to a large extent upon the efforts and abilities of a number of key employees and officers, particularly those with expertise in the semiconductor manufacturing and similar industrial manufacturing industries. The loss of key employees or officers could have a material adverse effect on our business, financial condition and results of operations. We believe that our future success will depend in part on our ability to attract and retain highly skilled technical, financial, managerial and marketing personnel. We cannot be certain that we will be successful in attracting and retaining such personnel.

OUR PROPRIETARY TECHNOLOGY IS IMPORTANT TO THE CONTINUED SUCCESS OF OUR BUSINESS. OUR FAILURE TO PROTECT THIS PROPRIETARY TECHNOLOGY MAY SIGNIFICANTLY IMPAIR OUR COMPETITIVE POSITION.

As of December 31, 2003, we owned 194 U.S. patents, 123 foreign patents and had 84 pending U.S. patent applications. Although we seek to protect our intellectual property rights through patents, copyrights, trade secrets and other measures, we cannot be certain that:

- we will be able to protect our technology adequately;
- competitors will not be able to develop similar technology independently;
- any of our pending patent applications will be issued;
- intellectual property laws will protect our intellectual property rights; or
- third parties will not assert that our products infringe patent, copyright or trade secrets of such parties.

PROTECTION OF OUR INTELLECTUAL PROPERTY RIGHTS MAY RESULT IN COSTLY LITIGATION.

Litigation may be necessary in order to enforce our patents, copyrights or other intellectual property rights, to protect our trade secrets, to determine the validity and scope of the proprietary rights of others or to defend against claims of infringement. We have been in the past, and currently are, involved in lawsuits enforcing and defending our intellectual property rights and may be involved in such litigation in the future. Such litigation could result in substantial costs and diversion of resources and could have a material adverse effect on our business, financial condition and results of operations.

We may need to expend significant time and expense to protect our intellectual property regardless of the validity or successful outcome of such intellectual property claims. If we lose any litigation, we may be required to seek licenses from others or change, stop manufacturing or stop selling some of our products.

THE MARKET PRICE OF OUR COMMON STOCK HAS FLUCTUATED AND MAY CONTINUE TO FLUCTUATE FOR REASONS OVER WHICH WE HAVE NO CONTROL.

The stock market has from time to time experienced, and is likely to continue to experience, extreme price and volume fluctuations. Prices of securities of technology companies have been especially volatile and have often fluctuated for reasons that are unrelated to the operating performance of the companies. The market price of shares of our common stock has fluctuated greatly since our initial public offering and could continue to fluctuate due to a variety of factors. In the past, companies that have experienced volatility in the market price of their stock have been the objects of securities class action litigation. If we were the object of securities class action litigation, it could result in substantial costs and a diversion of our management's attention and resources.

OUR DEPENDENCE ON SOLE, LIMITED SOURCE SUPPLIERS, AND INTERNATIONAL SUPPLIERS, COULD AFFECT OUR ABILITY TO MANUFACTURE PRODUCTS AND SYSTEMS.

We rely on sole, limited source suppliers, and international suppliers, for a few of our components and subassemblies that are critical to the manufacturing of our products. This reliance involves several risks, including the following:

- the potential inability to obtain an adequate supply of required components;
- reduced control over pricing and timing of delivery of components; and
- the potential inability of our suppliers to develop technologically advanced products to support our growth and development of new systems.

We believe that in time we could obtain and qualify alternative sources for most sole, limited source and international supplier parts. Seeking alternative sources of the parts could require us to redesign our systems, resulting in increased costs and likely shipping delays. We may be unable to redesign our systems, which could result in further costs and shipping delays. These increased costs would decrease our profit margins if we could not pass the costs to our customers. Further, shipping delays could damage our relationships with current and potential customers and have a material adverse effect on our business and results of operations.

WE ARE SUBJECT TO GOVERNMENTAL REGULATIONS. IF WE FAIL TO COMPLY WITH THESE REGULATIONS, OUR BUSINESS COULD BE HARMED.

We are subject to federal, state, local and foreign regulations, including environmental regulations and regulations relating to the design and operation of our products. We must ensure that the affected products meet a variety of standards, many of which vary across the countries in which our systems are used. For example, the European Union has published directives specifically relating to power supplies. In addition, the European Union has issued directives relating to future regulation of recycling and hazardous substances, which may be applicable to our products. We must comply with these directives in order to ship affected products into countries that are members of the European Union. We believe we are in compliance with current applicable regulations, directives and standards and have obtained all necessary permits, approvals, and authorizations to conduct our business. However, compliance with future regulations, directives and standards could require us to modify or redesign certain systems, make capital expenditures or incur substantial costs. If we do not comply with current or future regulations, directives and standards:

- we could be subject to fines;
- our production could be suspended; or
- we could be prohibited from offering particular systems in specified markets.

CERTAIN STOCKHOLDERS HAVE A SUBSTANTIAL INTEREST IN US AND MAY BE ABLE TO EXERT SUBSTANTIAL INFLUENCE OVER OUR ACTIONS.

As of June 30, 2004, John R. Bertucci, our Chairman and Chief Executive Officer and certain members of his family, in the aggregate, beneficially owned approximately 18% of our outstanding common stock. As a result, these stockholders, acting together, are able to exert substantial influence over our actions. Pursuant to the acquisition of the ENI Business of Emerson Electric Co. ("Emerson"), we issued approximately 12,000,000 shares of common stock to Emerson and its wholly owned subsidiary, Astec America, Inc. Emerson owned approximately 19% of our outstanding common stock as of June 30, 2004, and James G. Berges, the President and a director of Emerson, is a member of our board of directors. Accordingly, Emerson is able to exert substantial influence over our actions.

SOME PROVISIONS OF OUR RESTATED ARTICLES OF ORGANIZATION, AS AMENDED, OUR AMENDED AND RESTATED BY-LAWS AND MASSACHUSETTS LAW COULD DISCOURAGE POTENTIAL ACQUISITION PROPOSALS AND COULD DELAY OR PREVENT A CHANGE IN CONTROL OF US.

Anti-takeover provisions could diminish the opportunities for stockholders to participate in tender offers, including tender offers at a price above the then current market price of the common stock. Such provisions may also inhibit increases in the market price of the common stock that could result from takeover attempts. For example, while we have no present plans to issue any preferred stock, our board of directors, without further stockholder approval, may issue preferred stock that could have the effect of delaying, deterring or preventing a change in control of us. The issuance of preferred stock could adversely affect the voting power of the holders of our common stock, including the loss of voting control to others. In addition, our amended and restated by-laws provide for a classified board of directors consisting of three classes. The classified board could also have the effect of delaying, deterring or preventing a change in control of us.

#### ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK.

Information concerning market risk is contained in the Management's Discussion and Analysis of Financial Condition and Results of Operations contained in our Annual Report on Form 10-K filed with the Securities and Exchange Commission on March 11, 2004. We enter into local currency purchased options and forward exchange contracts to reduce currency exposure arising from intercompany sales of inventory. There were no material changes in our exposure to market risk from December 31, 2003.

We have performed an analysis to assess the potential financial effect of reasonably possible near-term changes in interest and foreign currency exchange rates. Based upon our analysis, the effect of such rate changes is not expected to be material to our financial condition, results of operations or cash flows.

#### ITEM 4. CONTROLS AND PROCEDURES.

a) Evaluation of disclosure controls and procedures.

Our management, with the participation of our principal executive officer and principal financial officer, has evaluated the effectiveness of the design and operation of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended) as of the end of the period covered by this Quarterly Report on Form 10-Q. Based on this evaluation, our principal executive officer and principal financial officer concluded that these disclosure controls and procedures are effective and designed to ensure that the information required to be disclosed in our reports filed or submitted under the Securities Exchange Act of 1934 is recorded, processed, summarized and reported within the requisite time periods.

While our disclosure controls and procedures provide reasonable assurance that the appropriate information will be available on a timely basis, this assurance is subject to limitations inherent in any control system, no matter how well designed and administered.



b) Changes in internal controls.

There were no changes in our internal control over financial reporting identified in connection with the evaluation of our internal control performed during our last fiscal quarter that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

As a result of various acquisitions, we have added several different decentralized accounting systems, resulting in a complex reporting environment. We expect that we will need to continue to modify our accounting policies, internal controls, procedures and compliance programs to provide consistency across all of our operations.

PART II OTHER INFORMATION

ITEM 1. LEGAL PROCEEDINGS.

On July 12, 2004, Advanced Energy Industries, Inc. ("Advanced Energy") filed suit against us in federal district court in Delaware, seeking injunctive relief and damages for alleged infringement of a patent held by Advanced Energy. We currently evaluating the merits of the claim. We cannot be certain of the outcome of this litigation, but do plan to oppose the claims vigorously.

On January 12, 2004, Gas Research Institute ("GRI") brought suit in federal district court in Illinois against us, On-Line Technologies, Inc. ("On-Line") which we acquired in 2001, and another defendant, Advanced Fuel Research, Inc. ("AFR"), for breach of contract, misappropriation of trade secrets and related claims relating to certain infra-red gas analysis technology allegedly developed under a January 1995 Contract for Research between GRI and AFR. The technology is alleged to have been incorporated into certain of our products. GRI has made claims for damages, exemplary damages, attorney's fees and costs and injunctive relief. We have filed an answer, denying liability and asserting various defenses to GRI's claims. We have also asserted a cross-claim against co-defendant AFR, alleging misrepresentation, breach of contract and breach of various duties owed by AFR, and alleging that in the event we and On-Line are held liable to GRI, AFR would be required to reimburse, indemnify, and hold harmless On-Line and us for any such liability. AFR has filed a motion to dismiss the action for lack of personal jurisdiction or, in the alternative, to transfer the case to another federal court, which motion is pending. The case is in its initial stages and we are unable to predict its outcome.

On April 3, 2003, Advanced Energy filed suit against us in federal district court in Colorado ("Colorado Action"), seeking a declaratory judgment that Advanced Energy's Xstream product does not infringe three patents held by our subsidiary Applied Science and Technology, Inc. ("ASTeX"). On May 14, 2003, we brought suit in federal district court in Delaware against Advanced Energy for infringement of five ASTeX patents, including the three patents at issue in the Colorado Action. We sought injunctive relief and damages for Advanced Energy's infringement. On December 24, 2003, the Colorado court granted our motion to transfer Advanced Energy's Colorado Action to Delaware. In connection with the jury trial, the parties agreed to present the jury with representative claims from three of the five ASTeX patents. On July 23, 2004, the jury found that Advanced Energy infringed all three patents. We have filed a motion for a permanent injunction, which is pending before the court. The parties are awaiting the court to set a trial date with respect to damages.

On November 3, 1999, On-Line brought suit in federal district court in Connecticut against Perkin-Elmer, Inc. and certain other defendants for infringement of On-Line's patent related to its FTIR spectrometer product. The suit sought injunctive relief and damages for infringement. Perkin-Elmer, Inc. filed a counterclaim seeking invalidity of the patent, costs, and attorneys' fees. In June 2002, the defendants filed a motion for summary judgment. In April 2003, the court granted the motion and dismissed the case. On August 5, 2004, we argued our appeal of this decision before the federal circuit court of appeals and are awaiting a decision.

We are subject to other legal proceedings and claims, which have arisen in the ordinary course of business.

In the opinion of management, the ultimate disposition of these matters will not have a material adverse effect on our results of operations, financial condition or cash flows.

ITEM 4. SUBMISSION OF MATTERS TO A VOTE OF SECURITY HOLDERS.

At the Company's Annual Meeting of Stockholders held on May 13, 2004 (the "Annual Meeting"), the following proposals were approved as further specified below:

1. Election of Directors:

	Votes For -----	Votes Withheld -----
James G. Berges	44,968,374	1,664,330
Richard S. Chute	38,309,210	8,323,494
Owen W. Robbins	45,226,987	1,405,717

The other members of our Board of Directors whose terms of office continued after the Annual Meeting were Messrs. Bertucci, Anderson, Kahl and Valente.

2. Approval of the 2004 Stock Incentive Plan

Votes For -----	Votes Against -----	Votes Abstain -----
24,110,155	18,414,150	17,511

3. Approval of Amendment to the Amended and Restated 1997 Director Stock Option Plan

Votes For -----	Votes Against -----	Votes Abstain -----
34,267,038	8,259,153	15,625

4. Approval of Amendment to the Second Restated 1999 Employee Stock Purchase Plan

Votes For -----	Votes Against -----	Votes Abstain -----
41,315,451	1,193,409	32,956

5. Approval of Amendment to the Restated International Employee Stock Purchase Plan

Votes For -----	Votes Against -----	Votes Abstain -----
42,007,893	500,990	32,933

6. Ratification of appointment of PricewaterhouseCoopers LLP as independent auditors for the fiscal year ending December 31, 2004.

Votes For -----	Votes Against -----	Votes Abstain -----
45,533,465	1,065,028	34,211

ITEM 6. EXHIBITS AND REPORTS ON FORM 8-K.

(a) Exhibits

Exhibit No. -----	Exhibit Description -----
10.1*	2004 Stock Incentive Plan
10.2*	Third Restated 1999 Employee Stock Purchase Plan
10.3*	Second Restated International Employee Stock Purchase Plan



- 10.5\* Form of Nonstatutory Stock Option Agreement Granted under the Second Restated 1995 Stock Incentive Plan
- 10.6\* Employment Agreement dated as of July 30, 2004 between Leo Berlinghieri and the Registrant
- 10.7\* Employment Agreement dated as of July 30, 2004 between Ronald C. Weigner and the Registrant
- 10.8\* Employment Agreement dated as of July 30, 2004 between Robert L. Klimm and the Registrant
- 10.9\* Employment Agreement dated as of July 30, 2004 between John A. Smith and the Registrant
- 10.10\* Employment Agreement dated as of July 30, 2004 between Gerald G. Colella and the Registrant
- 31.1 Certification of Principal Executive Officer pursuant to Rule 13a-14(a)/Rule 15d-14(a) of the Securities Exchange Act of 1934, as amended
- 31.2 Certification of Principal Financial Officer pursuant to Rule 13a-14(a)/Rule 15d-14(a) of the Securities Exchange Act of 1934, as amended
- 32.1 Certification of Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
- 32.2 Certification of Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002

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 - Management contract or compensatory plan arrangement.

(b) Reports on Form 8-K

On April 20, 2004, the Company filed a Current Report on Form 8-K under Item 12 (Results of Operations and Financial Condition) furnishing a press release announcing its financial results for the quarter ended March 31, 2004.

On April 26, 2004, the Company filed a Current Report on Form 8-K under Item 5 (Other Events) disclosing that the Board of Directors had appointed Leo Berlinghieri, the Company's Vice President and Chief Operating Officer, as President and Chief Operating Officer on April 22, 2004.

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

MKS INSTRUMENTS, INC.

August 5, 2004

By: /s/ Ronald C. Weigner

-----  
 Ronald C. Weigner  
 Vice President and Chief Financial Officer  
 (Principal Financial Officer)

## MKS INSTRUMENTS, INC.

## 2004 STOCK INCENTIVE PLAN

## 1. Purpose

The purpose of this 2004 Stock Incentive Plan (the "Plan") of MKS Instruments, Inc., a Massachusetts corporation (the "Company"), is to advance the interests of the Company's stockholders by enhancing the Company's ability to attract, retain and motivate persons who are expected to make important contributions to the Company and by providing such persons with equity ownership opportunities and performance-based incentives that are intended to better align their interests with those of the Company's stockholders. Except where the context otherwise requires, the term "Company" shall include any of the Company's present or future subsidiary corporations as defined in Section 424(f) of the Internal Revenue Code of 1986, as amended, and any regulations promulgated thereunder (the "Code") and any other business venture (including, without limitation, joint venture or limited liability company) in which the Company has a controlling interest, as determined by the Board of Directors of the Company (the "Board").

## 2. Eligibility

All of the Company's employees, officers, directors, consultants and advisors are eligible to receive options, restricted stock awards, stock appreciation rights and other stock-based awards (each, an "Award") under the Plan. Each person who receives an Award under the Plan is deemed a "Participant".

## 3. Administration and Delegation

(a) Administration by Board of Directors. The Plan will be administered by the Board. The Board shall have authority to grant Awards and to adopt, amend and repeal such administrative rules, guidelines and practices relating to the Plan as it shall deem advisable. The Board may correct any defect, supply any omission or reconcile any inconsistency in the Plan or any Award in the manner and to the extent it shall deem expedient to carry the Plan into effect and it shall be the sole and final judge of such expediency. All decisions by the Board shall be made in the Board's sole discretion and shall be final and binding on all persons having or claiming any interest in the Plan or in any Award. No director or person acting pursuant to the authority delegated by the Board shall be liable for any action or determination relating to or under the Plan made in good faith.

## (b) Appointment of Committees.

(1) To the extent permitted by applicable law, the Board may delegate any or all of its powers under the Plan to one or more committees or subcommittees of the Board (a "Committee"). During such time as the common stock, no par value per share, of the Company (the "Common Stock") is registered under the Securities Exchange Act of 1934 (the "Exchange Act"), the Board shall appoint one such Committee of not less than two members, each member of which shall be an "outside director" within the meaning of Section 162(m) of the Code and a "non-employee director" as defined in Rule 16b-3 promulgated under the Exchange Act.

(2) To the extent permitted by applicable law, the Board may delegate to one or more officers of the Company, who, if required by law, are also members of the Board, the power to make Awards and exercise such other powers under the Plan as the Board shall determine, provided that the Board shall fix the maximum number of shares subject to Awards to be made by any such person and such other terms as the Board may determine are appropriate.

(3) All references in the Plan to the "Board" shall mean the Board, a Committee of the Board or any person described in subsection (2) above, to the extent that the Board's powers or authority under the Plan have been delegated to such Committee or person.

#### 4. Stock Available for Awards

(a) Number of Shares. Subject to adjustment under Section 9, the number of shares of Common Stock available for Awards under the Plan: (i) shall annually increase by 5% of the total shares of the Company's outstanding Common Stock on January 1 of each year; and (ii) in the event of an increase in the total shares of the Company's Common Stock after January 1 of any such year in connection with the acquisition of any corporation, partnership or other business entity by the Company (whether by merger, stock purchase or otherwise), shall increase by 5% of such increased amount. Such increases shall occur until such time as the aggregate number of shares of Common Stock which may be issued under the Plan is 15,000,000 shares, subject to adjustment under Section 9. If any Award expires or is terminated, surrendered or canceled without having been fully exercised or is forfeited in whole or in part (including as the result of shares of Common Stock subject to such Award being repurchased by the Company at the original issuance price pursuant to a contractual repurchase right) or results in any Common Stock not being issued, the unused Common Stock covered by such Award shall again be available for the grant of Awards under the Plan, subject, however, in the case of Incentive Stock Options (as hereinafter defined), to any limitations under the Code. Shares issued under the Plan may consist in whole or in part of authorized but unissued shares or treasury shares.

(b) Per-Participant Limit. Subject to adjustment under Section 9, the maximum number of shares of Common Stock with respect to which Awards may be granted to any Participant under the Plan shall be 900,000 per calendar year. The per-Participant limit described in this Section 4(b) shall be construed and applied consistently with Section 162(m) of the Code.

#### 5. Stock Options

(a) General. The Board may grant options to purchase Common Stock (each, an "Option") and determine the number of shares of Common Stock to be covered by each Option, the exercise price of each Option and the conditions and limitations applicable to the exercise of each Option, including conditions relating to applicable federal or state securities laws, as it considers necessary or advisable. An Option which is not intended to be an Incentive Stock Option (as hereinafter defined) shall be designated a "Nonstatutory Stock Option".

(b) Incentive Stock Options. An Option that the Board intends to be an "incentive stock option" as defined in Section 422 of the Code (an "Incentive Stock Option") shall only be granted to employees of MKS Instruments, Inc., any of MKS Instruments, Inc.'s present or future subsidiary corporations as defined in Section 424(f) of the Code, and any other entities the

employees of which are eligible to receive Incentive Stock Options under the Code, and shall be subject to and shall be construed consistently with the requirements of Section 422 of the Code. The Company shall have no liability to a Participant, or any other party, if an Option (or any part thereof) that is intended to be an Incentive Stock Option is not an Incentive Stock Option or for any action taken by the Board pursuant to Section 10(f), including without limitation the conversion of an Incentive Stock Option to a Nonstatutory Stock Option.

(c) Exercise Price. The Board shall establish the exercise price of each Option and specify such exercise price in the applicable option agreement.

(d) Duration of Options. Each Option shall be exercisable at such times and subject to such terms and conditions as the Board may specify in the applicable option agreement; provided, however, that no Option will be granted for a term in excess of 10 years.

(e) Exercise of Option. Options may be exercised by delivery to the Company of a written notice of exercise signed by the proper person or by any other form of notice (including electronic notice) approved by the Board together with payment in full as specified in Section 5(f) for the number of shares for which the Option is exercised.

(f) Payment Upon Exercise. Common Stock purchased upon the exercise of an Option granted under the Plan shall be paid for as follows:

(1) in cash or by check, payable to the order of the Company;

(2) except as the Board may otherwise provide in an option agreement, by (i) delivery of an irrevocable and unconditional undertaking by a creditworthy broker to deliver promptly to the Company sufficient funds to pay the exercise price and any required tax withholding or (ii) delivery by the Participant to the Company of a copy of irrevocable and unconditional instructions to a creditworthy broker to deliver promptly to the Company cash or a check sufficient to pay the exercise price and any required tax withholding;

(3) to the extent permitted by applicable law and by the Board, by (i) delivery of a promissory note of the Participant to the Company on terms determined by the Board, or (ii) payment of such other lawful consideration as the Board may determine; or

(4) by any combination of the above permitted forms of payment.

#### 6. Stock Appreciation Rights.

(a) Nature of Stock Appreciation Rights. A Stock Appreciation Right, or SAR, is an Award entitling the holder on exercise to receive an amount in cash or Common Stock or a combination thereof (such form to be determined by the Board) determined in whole or in part by reference to appreciation, from and after the date of grant, in the fair market value of a share of Common Stock. SARs may be based solely on appreciation in the fair market value of Common Stock or on a comparison of such appreciation with some other measure of market growth such as (but not limited to) appreciation in a recognized market index. The date as of which such appreciation or other measure is determined shall be the exercise date unless another date is specified by the Board in the SAR Award.

(b) Grants. Stock Appreciation Rights may be granted in tandem with, or independently of, Options granted under the Plan.

(c) Exercise. Any exercise of a Stock Appreciation Right must be in writing, signed by the proper person and delivered or mailed to the Company, accompanied by any other documents required by the Board.

#### 7. Restricted Stock.

(a) Grants. The Board may grant Awards entitling recipients to acquire shares of Common Stock, subject to the right of the Company to repurchase all or part of such shares at their issue price or other stated or formula price (or to require forfeiture of such shares if issued at no cost) from the recipient in the event that conditions specified by the Board in the applicable Award are not satisfied prior to the end of the applicable restriction period or periods established by the Board for such Award (each, a "Restricted Stock Award").

(b) Terms and Conditions. The Board shall determine the terms and conditions of a Restricted Stock Award, including the conditions for repurchase (or forfeiture) and the issue price, if any.

(c) Stock Certificates. Any stock certificates issued in respect of a Restricted Stock Award shall be registered in the name of the Participant and, unless otherwise determined by the Board, deposited by the Participant, together with a stock power endorsed in blank, with the Company (or its designee). At the expiration of the applicable restriction periods, the Company (or such designee) shall deliver the certificates no longer subject to such restrictions to the Participant or if the Participant has died, to the beneficiary designated, in a manner determined by the Board, by a Participant to receive amounts due or exercise rights of the Participant in the event of the Participant's death (the "Designated Beneficiary"). In the absence of an effective designation by a Participant, "Designated Beneficiary" shall mean the Participant's estate.

(d) Deferred Delivery of Shares. The Board may, at the time any Restricted Stock Award is granted, provide that, at the time Common Stock would otherwise be delivered pursuant to the Award, the Participant shall instead receive an instrument evidencing the right to future delivery of Common Stock at such time or times, and on such conditions, as the Board shall specify. The Board may at any time accelerate the time at which delivery of all or any part of the Common Stock shall take place.

#### 8. Other Stock-Based Awards.

Other Awards of shares of Common Stock, and other Awards that are valued in whole or in part by reference to, or are otherwise based on, shares of Common Stock or other property, may be granted hereunder to Participants ("Other Stock Unit Awards"), including without limitation Awards entitling recipients to receive shares of Common Stock to be delivered in the future. Such Other Stock Unit Awards shall also be available as a form of payment in the settlement of other Awards granted under the Plan or as payment in lieu of compensation to which a Participant is otherwise entitled. Other Stock Unit Awards may be paid in shares of Common Stock or cash, as the Board shall determine. Subject to the provisions of the Plan, the Board shall determine the conditions of each Other Stock Unit Award, including any purchase



price applicable thereto. At the time any Award is granted, the Board may provide that, at the time Common Stock would otherwise be delivered pursuant to the Award, the Participant will instead receive an instrument evidencing the Participant's right to future delivery of the Common Stock.

9. Adjustments for Changes in Common Stock and Certain Other Events.

(a) Changes in Capitalization. In the event of any stock split, reverse stock split, stock dividend, recapitalization, combination of shares, reclassification of shares, spin-off or other similar change in capitalization or event, or any distribution to holders of Common Stock other than an ordinary cash dividend, (i) the number and class of securities available under this Plan, (ii) the per-Participant limit set forth in Section 4(b), (iii) the number and class of securities and exercise price per share of each outstanding Option, (iv) the repurchase price per share subject to each outstanding Restricted Stock Award and (v) the share- and per-share-related provisions of each outstanding Stock Appreciation Right and Other Stock Unit Award, shall be appropriately adjusted by the Company (or substituted Awards may be made, if applicable) to the extent determined by the Board.

(b) Reorganization Events.

(1) Definition. A "Reorganization Event" shall mean: (a) any merger or consolidation of the Company with or into another entity as a result of which all of the Common Stock of the Company is converted into or exchanged for the right to receive cash, securities or other property, (b) any exchange of all of the Common Stock of the Company for cash, securities or other property pursuant to a share exchange transaction or (c) any liquidation or dissolution of the Company.

(2) Consequences of a Reorganization Event on Awards Other than Restricted Stock Awards. In connection with a Reorganization Event, the Board shall take any one or more of the following actions as to all or any outstanding Awards on such terms as the Board determines: (i) provide that Awards shall be assumed, or substantially equivalent Awards shall be substituted, by the acquiring or succeeding corporation (or an affiliate thereof), (ii) upon written notice to a Participant, provide that the Participant's unexercised Options or other unexercised Awards shall become exercisable in full and will terminate immediately prior to the consummation of such Reorganization Event unless exercised by the Participant within a specified period following the date of such notice, (iii) provide that outstanding Awards shall become realizable or deliverable, or restrictions applicable to an Award shall lapse, in whole or in part prior to or upon such Reorganization Event, (iv) in the event of a Reorganization Event under the terms of which holders of Common Stock will receive upon consummation thereof a cash payment for each share surrendered in the Reorganization Event (the "Acquisition Price"), make or provide for a cash payment to a Participant equal to (A) the Acquisition Price times the number of shares of Common Stock subject to the Participant's Options or other Awards (to the extent the exercise price does not exceed the Acquisition Price) minus (B) the aggregate exercise price of all such outstanding Options or other Awards, in exchange for the termination of such Options or other Awards, (v) provide that, in connection with a liquidation or dissolution of the Company, Awards shall convert into the right to receive liquidation proceeds (if applicable, net of the exercise price thereof) and (vi) any combination of the foregoing.

For purposes of clause (i) above, an Option shall be considered assumed if, following consummation of the Reorganization Event, the Option confers the right to purchase, for each share of Common Stock subject to the Option immediately prior to the consummation of the Reorganization Event, the consideration (whether cash, securities or other property) received as a result of the Reorganization Event by holders of Common Stock for each share of Common Stock held immediately prior to the consummation of the Reorganization Event (and if holders were offered a choice of consideration, the type of consideration chosen by the holders of a majority of the outstanding shares of Common Stock); provided, however, that if the consideration received as a result of the Reorganization Event is not solely common stock of the acquiring or succeeding corporation (or an affiliate thereof), the Company may, with the consent of the acquiring or succeeding corporation, provide for the consideration to be received upon the exercise of Options to consist solely of common stock of the acquiring or succeeding corporation (or an affiliate thereof) equivalent in fair market value to the per share consideration received by holders of outstanding shares of Common Stock as a result of the Reorganization Event.

To the extent all or any portion of an Option becomes exercisable solely as a result of clause (ii) above, the Board may provide that upon exercise of such Option the Participant shall receive shares subject to a right of repurchase by the Company or its successor at the Option exercise price; such repurchase right (x) shall lapse at the same rate as the Option would have become exercisable under its terms and (y) shall not apply to any shares subject to the Option that were exercisable under its terms without regard to clause (ii) above.

(3) Consequences of a Reorganization Event on Restricted Stock Awards. Upon the occurrence of a Reorganization Event other than a liquidation or dissolution of the Company, the repurchase and other rights of the Company under each outstanding Restricted Stock Award shall inure to the benefit of the Company's successor and shall apply to the cash, securities or other property which the Common Stock was converted into or exchanged for pursuant to such Reorganization Event in the same manner and to the same extent as they applied to the Common Stock subject to such Restricted Stock Award. Upon the occurrence of a Reorganization Event involving the liquidation or dissolution of the Company, except to the extent specifically provided to the contrary in the instrument evidencing any Restricted Stock Award or any other agreement between a Participant and the Company, all restrictions and conditions on all Restricted Stock Awards then outstanding shall automatically be deemed terminated or satisfied.

#### 10. General Provisions Applicable to Awards

(a) Transferability of Awards. Except as the Board may otherwise determine or provide in an Award, Awards shall not be sold, assigned, transferred, pledged or otherwise encumbered by the person to whom they are granted, either voluntarily or by operation of law, except by will or the laws of descent and distribution or, other than in the case of an Incentive Stock Option, pursuant to a qualified domestic relations order, and, during the life of the Participant, shall be exercisable only by the Participant. References to a Participant, to the extent relevant in the context, shall include references to authorized transferees.

(b) Documentation. Each Award shall be evidenced in such form (written, electronic or otherwise) as the Board shall determine. Each Award may contain terms and conditions in addition to those set forth in the Plan.

(c) Board Discretion. Except as otherwise provided by the Plan, each Award may be made alone or in addition or in relation to any other Award. The terms of each Award need not be identical, and the Board need not treat Participants uniformly.

(d) Termination of Status. The Board shall determine the effect on an Award of the disability, death, retirement, authorized leave of absence or other change in the employment or other status of a Participant and the extent to which, and the period during which, the Participant, or the Participant's legal representative, conservator, guardian or Designated Beneficiary, may exercise rights under the Award.

(e) Withholding. Each Participant shall pay to the Company, or make provision satisfactory to the Company for payment of, any taxes required by law to be withheld in connection with an Award to such Participant. The Company may, to the extent permitted by law, deduct any such tax obligations from any payment of any kind otherwise due to a Participant.

(f) Amendment of Award. The Board may amend, modify or terminate any outstanding Award, including but not limited to, substituting therefor another Award of the same or a different type, changing the date of exercise or realization, and converting an Incentive Stock Option to a Nonstatutory Stock Option, provided that the Participant's consent to such action shall be required unless the Board determines that the action, taking into account any related action, would not materially and adversely affect the Participant.

(g) Conditions on Delivery of Stock. The Company will not be obligated to deliver any shares of Common Stock pursuant to the Plan or to remove restrictions from shares previously delivered under the Plan until (i) all conditions of the Award have been met or removed to the satisfaction of the Company, (ii) in the opinion of the Company's counsel, all other legal matters in connection with the issuance and delivery of such shares have been satisfied, including any applicable securities laws and any applicable stock exchange or stock market rules and regulations, and (iii) the Participant has executed and delivered to the Company such representations or agreements as the Company may consider appropriate to satisfy the requirements of any applicable laws, rules or regulations.

(h) Acceleration. The Board may at any time provide that any Award shall become immediately exercisable in full or in part, free of some or all restrictions or conditions, or otherwise realizable in full or in part, as the case may be.

#### 11. Miscellaneous

(a) No Right To Employment or Other Status. No person shall have any claim or right to be granted an Award, and the grant of an Award shall not be construed as giving a Participant the right to continued employment or any other relationship with the Company. The Company expressly reserves the right at any time to dismiss or otherwise terminate its relationship with a Participant free from any liability or claim under the Plan, except as expressly provided in the applicable Award.

(b) No Rights As Stockholder. Subject to the provisions of the applicable Award, no Participant or Designated Beneficiary shall have any rights as a stockholder with respect to any

shares of Common Stock to be distributed with respect to an Award until becoming the record holder of such shares. Notwithstanding the foregoing, in the event the Company effects a split of the Common Stock by means of a stock dividend and the exercise price of and the number of shares subject to such Option are adjusted as of the date of the distribution of the dividend (rather than as of the record date for such dividend), then an optionee who exercises an Option between the record date and the distribution date for such stock dividend shall be entitled to receive, on the distribution date, the stock dividend with respect to the shares of Common Stock acquired upon such Option exercise, notwithstanding the fact that such shares were not outstanding as of the close of business on the record date for such stock dividend.

(c) Effective Date and Term of Plan. The Plan shall become effective on the date on which it is adopted by the Board, but no Award may be granted unless and until the Plan has been approved by the Company's stockholders. No Awards shall be granted under the Plan after the completion of 10 years from the earlier of (i) the date on which the Plan was adopted by the Board or (ii) the date the Plan was approved by the Company's stockholders, but Awards previously granted may extend beyond that date.

(d) Amendment of Plan. The Board may amend, suspend or terminate the Plan or any portion thereof at any time; provided that, to the extent determined by the Board, no amendment requiring stockholder approval under any applicable legal, regulatory or listing requirement shall become effective until such stockholder approval is obtained. No Award shall be made that is conditioned upon stockholder approval of any amendment to the Plan.

(e) Provisions for Foreign Participants. The Board may modify Awards or Options granted to Participants who are foreign nationals or employed outside the United States or establish subplans or procedures under the Plan to recognize differences in laws, rules, regulations or customs of such foreign jurisdictions with respect to tax, securities, currency, employee benefit or other matters.

(f) Governing Law. The provisions of the Plan and all Awards made hereunder shall be governed by and interpreted in accordance with the laws of the Commonwealth of Massachusetts, without regard to any applicable conflicts of law.

As approved by the Board of  
Directors on March 4, 2004  
and by the stockholders on  
May 13, 2004

## MKS INSTRUMENTS, INC.

THIRD RESTATED 1999 EMPLOYEE STOCK PURCHASE PLAN  
(AS OF MAY 13, 2004)

The purpose of this Plan is to provide eligible employees of MKS Instruments, Inc. (the "Company") and certain of its subsidiaries with opportunities to purchase shares of the Company's Common Stock, no par value per share (the "Common Stock"), commencing on June 1, 1999; provided, that at such time the Company's Common Stock shall be listed for trading on the Nasdaq National Market or a national securities exchange. An aggregate of 1,250,000 shares of Common Stock have been approved for this purpose. This Plan is intended to qualify as an "employee stock purchase plan" as defined in Section 423 of the Internal Revenue Code of 1986, as amended (the "Code") and the regulations promulgated thereunder, and shall be interpreted consistent therewith.

1. Administration. The Plan will be administered by the Company's Board of Directors (the "Board") or by a Committee appointed by the Board (the "Committee"). The Board or the Committee has authority to make rules and regulations for the administration of the Plan and its interpretation and decisions with regard thereto shall be final and conclusive.

2. Eligibility. All employees of the Company, including Directors who are employees, and all employees of any subsidiary of the Company (as defined in Section 424(f) of the Code) designated by the Board or the Committee from time to time (a "Designated Subsidiary"), including employees of the Company or any designated Subsidiary who are "highly compensated" within the meaning of Section 414(q) of the Code, are eligible to participate in any one or more of the Offerings (as defined in Section 9) to purchase Common Stock under the Plan provided that:

(a) they are customarily employed by the Company or a Designated Subsidiary for more than 20 hours a week and for more than five months in a calendar year; and

(b) they have been employed by the Company or a Designated Subsidiary for at least three (3) months prior to enrolling in the Plan; and

(c) they are employees of the Company or a Designated Subsidiary on the first day of the applicable Plan Period (as defined below).

No employee may be granted an option hereunder if such employee, immediately after the option is granted, owns 5% or more of the total combined voting power or value of the stock of the Company or any subsidiary. For purposes of the preceding sentence, the attribution rules of Section 424(d) of the Code shall apply in determining the stock ownership of an employee, and all stock which the employee has a contractual right to purchase shall be treated as stock owned by the employee.

3. Offerings. The Company will make one or more offerings ("Offerings") to employees to purchase stock under this Plan. Offerings will begin each June 1 and December 1, or the first business day thereafter (the "Offering Commencement Dates"). Each Offering Commencement Date will begin a six (6) month period (a "Plan Period") during which Payroll deductions will be made and held for the purchase of Common Stock at the end of the Plan Period. The Board or the Committee may, at its discretion, choose a different Plan Period of twelve (12) months or less for subsequent Offerings.

4. Participation. An employee eligible on the Offering Commencement Date of any Offering may participate in such Offering by completing and forwarding a payroll deduction authorization form to the employee's appropriate payroll office at least 30 days prior to the applicable Offering Commencement Date. The form will authorize a regular payroll deduction from the Compensation, as defined below, received by the employee during the Plan Period. Unless an employee files a new form or withdraws from the Plan, his deductions and purchases will continue at the same rate for future Offerings under the Plan as long as the Plan remains in effect. The term "Compensation" means the amount of money reportable on the employee's Federal Income Tax Withholding Statement, including overtime, shift premium, incentive or bonus awards and any other variable sales compensation and excluding allowances and reimbursements for expenses such as relocation allowances for travel expenses, income or gains on the exercise of Company stock options or stock appreciation rights, and similar items, whether or not shown on the employee's Federal Income Tax Withholding Statement, but including, in the case of salespersons, sales commissions to the extent determined by the Board or the Committee.

5. Deductions. The Company will maintain payroll deduction accounts for all participating employees. With respect to any Offering made under this Plan, an employee may authorize a payroll deduction in any whole percent amount up to a maximum of 10% (or such lower percentage as may be established by the Board or the Committee) of the Compensation he or she receives during the Plan Period or such shorter period during which deductions from payroll are made. The minimum payroll deduction is such percentage of compensation as may be established from time to time by the Board or the Committee.

No employee may be granted an Option (as defined in Section 9) which permits his rights to purchase Common Stock under this Plan and any other employee stock purchase plan (as defined in Section 423(b) of the Code) of the Company and its subsidiaries, to accrue at a rate which exceeds \$25,000 of the fair market value of such Common Stock (determined at the Offering Commencement Date of the Plan Period) for each calendar year in which the Option is outstanding at any time.

6. Deduction Changes. An employee may decrease, subject to section 5 hereof or discontinue his payroll deduction once during any Plan Period, by filing a new payroll deduction authorization form. However, an employee may not elect to increase his payroll deduction during

a Plan Period. If an employee elects to discontinue his payroll deductions during a Plan Period, but does not elect to withdraw his funds pursuant to Section 8 hereof, funds deducted prior to his election to discontinue will be applied to the purchase of Common Stock on the Exercise Date (as defined below).

7. Interest. Interest will not be paid on employee accounts.

8. Withdrawal of Funds. An employee may at any time prior to the close of business on the last business day in a Plan Period and for any reason permanently draw out the balance accumulated in the employee's account and thereby withdraw from participation in an Offering. Partial withdrawals are not permitted. The employee may not begin participation again during the remainder of the Plan Period. The employee may participate in any subsequent Offering in accordance with terms and conditions established by the Board or the Committee.

9. Purchase of Shares. On the Offering Commencement Date of each Plan Period, the Company will grant to each eligible employee who is then a participant in the Plan an option ("Option") to purchase on the last business day of such Plan Period (the "Exercise Date"), at the Option Price hereinafter provided for, the largest number of shares (fractional or whole) of Common Stock of the Company as does not exceed the number of shares determined by multiplying \$2,083 by the number of full months in the Offering Period and dividing the results by the closing price (as defined below) on the Offering Commencement Date of such Plan Period.

The purchase price for each share purchased will be 85% of the closing price of the Common Stock on (i) the first business day of such Plan Period or (ii) the Exercise Date, whichever closing price shall be less. Such closing price shall be (a) the closing price on any national securities exchange on which the Common Stock is listed, (b) the closing price of the Common Stock on the Nasdaq National Market or (c) the average of the closing bid and asked prices in the over-the-counter-market, whichever is applicable, as published in The Wall Street Journal. If no sales of Common Stock were made on such a day, the price of the Common Stock for purposes of clauses (a) and (b) above shall be the reported price for the next preceding day on which sales were made.

Each employee who continues to be a participant in the Plan on the Exercise Date shall be deemed to have exercised his Option at the Option Price on such date and shall be deemed to have purchased from the Company the number of full shares of Common Stock reserved for the purpose of the Plan that his accumulated payroll deductions on such date will pay for, but not in excess of the maximum number determined in the manner set forth above.

Any balance remaining in an employee's payroll deduction account at the end of a Plan Period will be automatically refunded to the employee, except that any balance which is less than the purchase price of one share of Common Stock will be carried forward into the employee's payroll deduction account for the following Offering, unless the employee elects not to participate in the following Offering under the Plan, in which case the balance in the employee's account shall be refunded.

10. Issuance of Certificates. Certificates representing shares of Common Stock purchased under the Plan may be issued only in the name of the employee, in the name of the employee and another person of legal age as joint tenants with rights of survivorship, or (in the Company's sole discretion) in the name of a brokerage firm, bank or other nominee holder designated by the employee. The Company may, in its sole discretion and in compliance with applicable laws, authorize the use of book entry registration of shares in lieu of issuing stock certificates.

11. Rights on Retirement, Death or Termination of Employment. In the event of a participating employee's termination of employment prior to the last business day of a Plan Period, no payroll deduction shall be taken from any pay due and owing to an employee and the balance in the employee's account shall be paid to the employee or, in the event of the employee's death, (a) to a beneficiary previously designated in a revocable notice signed by the employee (with any spousal consent required under state law) or (b) in the absence such a designated beneficiary, to the executor or administrator of the employee's estate or (c) if no such executor or administrator has been appointed to the knowledge of the Company, to such other person(s) as the Company may, in its discretion, designate. If, prior to the last business day of the Plan Period, the Designated Subsidiary by which an employee is employed shall cease to be a subsidiary of the Company, or if the employee is transferred to a subsidiary of the Company that is not a



Designated Subsidiary, the employee shall be deemed to have terminated employment for the purposes of this Plan.

12. Optionees not Stockholders. No employee shall have any rights as a stockholder with respect to any shares of Common Stock to be distributed with respect to an Option until becoming the record holder or such shares. Notwithstanding the foregoing, in the event the Company effects a split of the Common Stock by means of a stock dividend (and the exercise price of and the number of shares subject to such Option are adjusted as of the date of the distribution of the dividend rather than as of the record date for such dividend), then an optionee who is deemed to have exercised an Option between the record date and the distribution date for such stock dividend shall be entitled to receive, on the distribution date, the stock dividend with respect to the shares of Common Stock.

13. Rights not Transferable. Rights under this Plan are not transferable by a participating employee other than by will or the laws of descent and distribution, and are exercisable during the employee's lifetime only by the employee.

14. Application of Funds. All funds received or held by the Company under this Plan may be combined with other corporate funds and may be used for any corporate purpose.

15. Adjustment in Case of Changes Affecting Common Stock. In the event of a subdivision of outstanding shares of Common Stock, or the payment of a dividend in Common Stock, the number of shares approved for this Plan, and the share limitation set forth in Section 9, shall be increased proportionately, and such other adjustment shall be made as may be deemed equitable by the Board or the Committee. In the event of any other change affecting the Common Stock, such adjustment shall be made as may be deemed equitable by the Board or the Committee to give proper effect to such event.

16. Merger. If the Company shall at any time merge or consolidate with another corporation and the holders of the capital stock of the Company immediately prior to such merger or consolidation continue to hold at least 80% by voting power of the capital stock of the surviving corporation ("Continuity of Control"), the holder of each Option then outstanding will thereafter be entitled to receive at the next Exercise Date upon the exercise of such Option for each share as to which such Option shall be exercised the securities or property which a holder of one share of the Common Stock was entitled to upon and at the time of such merger or consolidation, and the Board or the Committee shall take such steps in connection with such merger or consolidation as the Board or the Committee shall deem necessary to assure that the provisions of Section 15 shall thereafter be applicable, as nearly as reasonably may be, in relation to the said securities or property as to which such holder of such Option might thereafter be entitled to receive thereunder.

In the event of a merger or consolidation of the Company with or into another corporation which does not involve Continuity of Control, or of a sale of all or substantially all of the assets of the Company while unexercised Options remain outstanding under the Plan, all outstanding Options shall be cancelled by the Board or the Committee as of the effective date of any such transaction, provided that notice of such cancellation shall be given to each holder of an Option, and each holder of an Option shall have the right to exercise such Option in full based on payroll deductions then credited to his account as of a date determined by the Board or the Committee, which date shall not be less than ten (10) days preceding the effective date of such transaction.

17. Amendment of the Plan. The Board may at any time, and from time to time, amend this Plan in any respect, except that (a) if the approval of any such amendment by the shareholders of the Company is required by Section 423 of the Code, such amendment shall not be effected without such approval, and (b) in no event may any amendment be made which would cause the Plan to fail to comply with Section 423 of the Code.

18. Sufficient Shares. In the event that the total number of shares of Common Stock specified in elections to be purchased under any Offering plus the number of shares purchased under previous Offerings under this Plan exceeds the maximum number of shares issuable under this Plan, the Board or the Committee will allot the shares then available on a pro rata basis.

19. Termination of the Plan. This Plan may be terminated at any time by the Board. Upon termination of this Plan all amounts in the accounts of participating employees shall be promptly refunded.

20. Governmental Regulations. The Company's obligation to sell and deliver Common Stock under this Plan is subject to listing on a national stock exchange or quotation on the Nasdaq National Market and the approval of all governmental authorities required in connection with the authorization, issuance or sale of such stock.

21. Governing Law. The Plan shall be governed by Massachusetts law except to the extent that such law is preempted by federal law.

22. Issuance of Shares. Shares may be issued upon exercise of an Option from authorized but unissued Common Stock, from shares held in the treasury of the Company, or from any other proper source.

23. Notification Upon Sales of Shares Each employee agrees, by entering the Plan, to promptly give the Company notice of any disposition of shares purchased under the Plan where such disposition occurs within two years after the date of grant of the Option pursuant to which such shares were purchased or one year after the date of exercise of the Option.

24. Withholding. Each employee shall, no later than the date of the event creating the tax liability, make provision satisfactory to the Board for payment of any taxes required by law to be withheld in connection with any transaction related to Options granted to or shares acquired by such employee pursuant to the Plan. The Company may, to the extent permitted by law, deduct any such taxes from any payment of any kind otherwise due to an employee.

25. Effective Date. The effective date of the plan is June 1, 1999.

Adopted by the Board of Directors on February 10, 1999 and approved by the stockholders on February 17, 1999; Amended and Restated by the Board of Directors on April 22, 1999; Amended and Restated by the Board of Directors on August 1, 2002; Amended by the Board of Directors on March 4, 2004 and by the stockholders on May 13, 2004.

## MKS INSTRUMENTS, INC.

## SECOND RESTATED INTERNATIONAL EMPLOYEE STOCK PURCHASE PLAN

(AS OF MAY 13, 2004)

The purpose of this Plan is to provide eligible employees of certain non-U.S. subsidiaries of MKS Instruments, Inc. (the "Company") with opportunities to purchase shares of the Company's common stock (the "Common Stock"), commencing on March 1, 2000. An Aggregate of 250,000 shares of Common Stock have been approved for this purpose.

1. Administration. The Plan will be administered by the Company's Board of Directors (the "Board") or by a Committee appointed by the Board (the "Committee"). The Board or the Committee has authority to make rules and regulations for the administration of the Plan and its interpretation and decisions with regard thereto shall be final and conclusive.

2. Eligibility. All employees of any non-U.S. subsidiary of the Company designated by the Board or the Committee from time to time (a "Subsidiary"), excluding Officers and Directors of the Company who are employees of a Subsidiary, are eligible to participate in any one or more of the offerings of Options (as defined in Section 9) to purchase Common Stock under the Plan provided that:

a. they have been employed by the Subsidiary for at least three (3) months prior to enrolling in the Plan;

b. they are employees of the Subsidiary on the first day of the applicable Plan Period (as defined below);

c. to the extent local law permits such a requirement, they are customarily employed by a Subsidiary for more than twenty (20) hours a week and for more than five (5) months in a calendar year; and

d. they meet any other requirements imposed from time to time by the Board or the Committee on employees of one or more subsidiaries.

No employee may be granted an option hereunder if such employee, immediately after the option is granted, owns 5% or more of the total combined voting power or value of the stock of the Company or any subsidiary. For purposes of the preceding sentence, the attribution rules of Section 424(d) of the U.S. Internal Revenue Code of 1986, as amended (the "Code") shall apply in determining the stock ownership of an employee, and all stock which the employee has a contractual right to purchase shall be treated as stock owned by the employee.

3. Offerings. The Company will make one or more offerings ("Offerings") to employees to purchase stock under this Plan. The first Offering will begin on March 1, 2000 or the first business day thereafter (the "Offering Commencement Dates") and end on May 31, 2000. Thereafter, each June 1 and December 1 or the first business day thereafter will be an Offering Commencement Date. Each Offering Commencement Date after March 1, 2000 will

begin a six (6) month period (a "Plan Period") during which payroll deductions will be made and held for the purchase of Common Stock at the end of the Plan Period. The Board or the Committee may, at its discretion, choose a different Plan Period of twelve (12) months or less for subsequent Offerings.

#### 4. Participation.

a. Enrollment. An employee eligible on the Offering Commencement Date of any Offering may participate in such Offering by enrolling, in such manner and at such time approved, from time to time, by the Board or the Committee, prior to the applicable Offering Commencement Date in said Offering. The enrollment will authorize a regular payroll deduction from the Compensation received by the employee during the Plan Period. Unless an employee changes his enrollment in a manner prescribed by the Committee from time to time or withdraws from the Plan, his deductions and purchases will continue at the same rate for future Offerings under the Plan as long as the Plan remains in effect. The term "Compensation" shall be defined by the Board or the Committee from time to time, but until modified shall mean regular base salary, including overtime, shift premium, incentive or bonus awards and sales commissions and excluding allowances and reimbursements for expenses such as relocation allowances for travel expenses, income or gains on the exercise of Company stock options or stock appreciation rights, and similar items whether or not taxable.

b. Tax Withholding Authorized. The enrollment of each employee shall constitute such participating employee's authorization of his or her employer to deduct from such employee's compensation in the relevant month or months (or subsequent months, if appropriate) any amount necessary for the payment or reimbursement of any tax liability payable by such employee with respect to the grant or exercise of the options hereunder, or the sale of any stock acquired through the exercise of such option.

5. Deductions. The Company will maintain payroll deduction accounts for all participating employees. With respect to any Offering made under this Plan, an employee may authorize a payroll deduction in any whole percent amount between one and ten percent (1-10%) of the Compensation he or she receives during the Plan Period or such shorter period during which deductions from payroll are made (or such other percentages as may be established by the Board or the Committee). Any change in Compensation during the Plan Period will result in an automatic corresponding change in the amount withheld. The payroll deductions shall be made in the applicable local currency and will be converted into United States currency at the prevailing rate of exchange in effect on such date as the Board or Committee shall determine. All amounts deducted may be transferred to an account of the Company or the Subsidiary outside the country in which such employee is employed.

No employee may be granted an Option (as defined in Section 9) which permits his rights to purchase Common Stock under this Plan and any other employee stock purchase plan (as defined by the Committee or Board) of the Company and its subsidiaries, to accrue at a rate which exceeds \$25,000 of the fair market value of such Common Stock (determined at the

Offering Commencement Date of the Plan Period) for each calendar year in which the Option is outstanding at any time.

6. Deduction Changes. An employee may decrease, subject to Section 5 hereof, or discontinue his payroll deduction once during any Plan Period, up to such date prior to the close of business on the last business day, and in such manner as is permitted by the Board or Committee. However, an employee may not elect to increase his payroll deduction during a Plan Period. If an employee elects to discontinue his payroll deductions during a Plan Period but does not elect to withdraw his funds pursuant to Section 8 hereof, amounts previously withheld will be applied to the purchase of Common Stock on the Exercise Date (as defined below).

7. Interest. Interest will not be paid on any employee accounts.

8. Withdrawal of Funds. An employee may at any time up to a deadline established by the Committee or the Board, prior to the close of business on the last business day in a Plan Period, and for any reason, permanently draw out the balance accumulated in the employee's account, which will be paid in the local currency or, in Euros, at the discretion of the Board or the Committee if such employee is employed in a country which maintains a fixed exchange rate between its local currency and the Euro ("Repayment in Euros"), and thereby withdraw from participation in an Offering. Partial withdrawals are not permitted. The employee may not begin participation again during the remainder of the Plan Period. The employee may participate in any subsequent Offering in accordance with terms and conditions established by the Board or the Committee.

9. Purchase of Shares. On the Offering Commencement Date of each Plan Period, the Company will grant to each eligible employee who is then a participant in the Plan an option ("Option") to purchase on the last business day of such Plan Period (the "Exercise Date"), at the Option Price hereinafter provided for, the largest number of shares (fractional or whole) of Common Stock of the Company as does not exceed the number of shares determined by multiplying \$2,083 by the number of full months in the Offering Period and dividing the results by the closing price (as defined below) on the Offering Commencement Date of such Plan Period.

The purchase price for each share purchased will be 85% of the Fair Market Value of the Common Stock on (i) the first business day of such Plan Period or (ii) the Exercise Date, whichever Fair Market Value shall be less. Such Fair Market Value shall be (a) the closing price on any national securities exchange on which the Common Stock is listed, (b) the closing price of the Common Stock on the Nasdaq National Market or (c) the average of the closing bid price and asked price in the over-the-counter-market, whichever is applicable, as published in The Wall Street Journal. If no sales of Common Stock were made on such a day, the price of the Common Stock for purposes of clauses (a) and (b) above shall be based on the reported price for the next preceding day on which sales were made.

Each employee who continues to be a participant in the Plan on the Exercise Date shall be deemed to have exercised his Option at the Option Price on such date and shall be deemed to have purchased from the Company the number of shares of Common Stock (including fractional shares) reserved for the purpose of the Plan that his accumulated payroll deductions on such date

will pay for, in United State currency as of that date, but not in excess of the maximum number determined in the manner set forth above. The Board or the Committee may, in its discretion, limit the purchase to only whole shares and not fractional shares.

Any balance remaining in an employee's payroll deduction account at the end of a Plan Period will be automatically refunded to the employee in the local currency or at the discretion of the Committee or the Board there may be Repayment in Euros, except that any balance which is less than the purchase price of one share of Common Stock will be carried forward into the employee's payroll deduction account for the following Offering, unless the employee elects not to participate in the following Offering under the Plan, in which case the balance shall be refunded.

10. Issuance of Certificates. Certificates representing shares of Common Stock purchased under the Plan may be issued only in the name of the employee, in the name of the employee and another person of legal age as joint tenants with rights of survivorship, or (in the Company's sole discretion) in the name of a brokerage firm, bank or other nominee holder designated by the employee. The Company may, in its sole discretion and in compliance with applicable laws, authorize the use of book entry registration of shares in lieu of issuing stock certificates.

11. Rights on Retirement Death or Termination of Employment. In the event of a participating employee's termination of employment prior to the last business day of a Plan Period, no payroll deduction shall be taken from any pay due and owing to an employee and the balance in the employee's account shall be paid to the employee or, in the event of the employee's death, and subject to the terms of applicable law, (a) to a beneficiary previously designated in a revocable notice signed by the employee (with any spousal consent required under local law) or (b) in the absence of such a designated beneficiary, to the personal representative of the employee's estate or (c) if no such personal representative has been appointed to the knowledge of the Company, to such other person(s) as the Company may, in its discretion, designate. If, prior to the last business day of the Plan Period, the designated Subsidiary by which an employee is employed shall cease to be a subsidiary of the Company, or if the employee is transferred to a subsidiary of the Company that is not a Subsidiary under the Plan, the employee shall be deemed to have terminated employment for the purposes of this Plan.

12. Optionees Not Stockholders. Neither the granting of an Option to an employee nor the deductions from his pay shall constitute such employee a stockholder of the shares of Common Stock covered by an Option under this Plan until such shares have been purchased by and issued to him or to an account for his benefit. Notwithstanding the foregoing, in the event the Company effects a split of the Common Stock by means of a stock dividend (and the exercise price of and the number of shares subject to such Option are adjusted as of the date of the distribution of the dividend rather than as of the record date for such dividend), then an optionee who is deemed to have exercised an Option between the record date and the distribution date for such stock dividend shall be entitled to receive, on the distribution date, the stock dividend with respect to the shares of Common Stock.

13. Rights Not Transferable. Rights under this Plan are not transferable by a participating employee other than by will or the laws of descent and distribution, and are exercisable during the employee's lifetime only by the employee.

14. Application of Funds. To the extent consistent with applicable law, all funds received or held by the Company or any Subsidiary under this Plan may be combined with other corporate funds and may be used for any corporate purpose and transferred outside the country in which they are deducted from payroll.

15. Adjustment in Case of Changes Affecting Common Stock. In the event of a subdivision of outstanding shares of Common Stock, or the payment of a dividend in Common Stock, the number of shares approved for this Plan, and the share limitation set forth in Section 9, shall be increased proportionately, and such other adjustment shall be made as may be deemed equitable by the Board or the Committee. In the event of any other change affecting the Common Stock, such adjustment shall be made as may be deemed equitable by the Board or the Committee to give proper effect to such event.

16. Merger. If the Company shall at any time merge or consolidate with another corporation and the holders of the capital stock of the Company immediately prior to such merger or consolidation continue to hold at least 80% by voting power of the capital stock of the surviving corporation ("Continuity of Control"), the holder of each Option then outstanding will thereafter be entitled to receive at the next Exercise Date upon the exercise of such Option for each share as to which such Option shall be exercised the securities or property which a holder of one share of the Common Stock was entitled to upon and at the time of such merger or consolidation, and the Board or the Committee shall take such steps in connection with such merger or consolidation as the Board or the Committee shall deem necessary to assure that the provisions of Section 15 shall thereafter be applicable, as nearly as reasonably may be, in relation to the said securities or property as to which such holder of such Option might thereafter be entitled to receive thereunder.

In the event of a merger or consolidation of the Company with or into another corporation which does not involve Continuity of Control, or of a sale of all or substantially all of the assets of the Company while unexercised Options remain outstanding under the Plan, all outstanding Options shall be cancelled by the Board or the Committee as of the effective date of any such transaction, provided that notice of such cancellation shall be given to each holder of an Option, and each holder of an Option shall have the right to exercise such Option in full based on payroll deductions then credited to his account as of a date determined by the Board or the Committee, which date shall not be less than ten (10) days preceding the effective date of such transaction.

17. Amendment of the Plan. The Board may at any time, and from time to time, amend this Plan in any respect.

18. Insufficient Shares. In the event that the total number of shares of Common Stock specified in elections to be purchased under any Offering plus the number of shares purchased under previous Offerings under this Plan exceeds the maximum number of shares issuable under this Plan, the Board or the Committee will allot the shares then available on a pro rata basis.



19. Termination of the Plan. This Plan may be terminated at any time by the Board. Upon termination of this Plan all amounts in the accounts of participating employees shall be promptly refunded in local currency or at the discretion of the Committee or the Board there may be Repayment in Euros.

20. Governmental Regulations. The Company's obligation to sell and deliver Common Stock under this Plan is subject to listing on a U.S. national stock exchange or quotation on the Nasdaq National Market and the approval of all applicable governmental authorities required in connection with the authorization, issuance or sale of such stock.

21. Governing Law. The Plan shall be governed by Massachusetts law except to the extent that such law is preempted by U.S. federal law or other applicable law.

22. Issuance of Shares. Shares may be issued upon exercise of an Option from authorized but unissued Common Stock, from shares held in the treasury of the Company, or from any other proper source.

23. Notification upon Sale of Shares. Each employee agrees, by entering the Plan, to promptly give the Company notice of any disposition of shares purchased under the Plan.

24. Withholding. Each employee shall, no later than the date of the event creating the tax liability, make provision satisfactory to the Board for payment of any taxes required by law to be withheld in connection with any transaction related to Options granted to or shares acquired by such employee pursuant to the Plan. The Company may, to the extent permitted by law, deduct any such taxes from any payment of any kind otherwise due to an employee.

25. Effective Date. The Plan shall take effect on March 1, 2000.

26. Additional Conditions. The Committee or the Board may establish additional conditions or provisions for the participation of eligible employees in the Plan in order to comply with the tax, securities and other laws and regulation of the countries in which such employees reside, even if such conditions or provisions increase the benefits accruing to such employees under the Plan.

Adopted by the Board of Directors on February 18, 2000; Amended and Restated by the Board of Directors on August 1, 2002; Amended by the Board of Directors on March 4, 2004 and by the stockholders on May 13, 2004.

## MKS INSTRUMENTS, INC.

## SECOND AMENDED AND RESTATED 1997 DIRECTOR STOCK OPTION PLAN

(as of May 13, 2004)

## 1. Purpose.

The purpose of this Amended and Restated 1997 Director Stock Option Plan (the "Plan") of MKS Instruments, Inc., a Massachusetts corporation (the "Company"), is to encourage ownership in the Company by non-employee directors of the Company whose continued services are considered essential to the Company's future progress and to provide them with a further incentive to remain as directors of the Company.

## 2. Administration.

The Board of Directors shall supervise and administer the Plan. Grants of stock options under the Plan and the amount and nature of the awards to be granted shall be automatic in accordance with Section 5. However, all questions of interpretation of the Plan or of any options issued under it shall be determined by the Board of Directors and such determination shall be final and binding upon all persons having an interest in the Plan.

## 3. Participation in the Plan.

Directors of the Company who are not employees of the Company or any subsidiary of the Company shall be eligible to participate in the Plan.

## 4. Stock subject to the Plan.

(a) Definition of Common Stock. "Common Stock" means (i) prior to the closing of the Company's initial public offering of common stock pursuant to an effective registration statement under the Securities Act of 1933 ("IPO"), the Class B Common Stock, no par value per share, of the Company, and (ii) from and after the closing of the IPO, the Common Stock, no par value per share, of the Company.

(b) The maximum number of shares of the Company's Common Stock which may be issued under the Plan shall be 750,000 shares, subject to adjustment as provided in Section 7. All share amounts set forth in this Plan reflect all stock splits effected prior to April 16, 2003 (the "Restatement Date").

(c) If any outstanding option under the Plan for any reason expires or is terminated without having been exercised in full, the shares allocable to the unexercised portion of such option shall again become available for grant pursuant to the Plan.

(d) All options granted under the Plan shall be nonstatutory options not entitled to special tax treatment under Section 422 of the Internal Revenue Code of 1986, as amended to date and as it may be amended from time to time (the "Code").

## 5. Terms, Conditions and Form of Options.

Each option granted under the Plan shall be evidenced by a written agreement in such form as the Board of Directors shall from time to time approve, which agreements shall comply with and be subject to the following terms and conditions:

(a) Option Grant Dates. Options shall automatically be granted to all eligible outside directors as follows:

(i) each person who first becomes an eligible outside director after the Restatement Date shall be granted an option to purchase 20,000 shares of Common Stock on the date of his or her initial election to the Board of Directors; and

(ii) each eligible outside director then in office on the date of each annual meeting of stockholders of the Company shall be granted an additional option to purchase 12,000 shares of Common Stock on the date of each such annual meeting of stockholders, provided that he or she was elected to serve as a director of the Company at least six months prior to the date of such meeting.

(b) Option Exercise Price. The option exercise price per share for each option granted under the Plan shall equal (i) the last reported sales price per share of the Company's Common Stock on the Nasdaq National Market (or, if the Common Stock is traded on a national securities exchange on the date of grant, the reported closing sales price per share of the Common Stock on such exchange) on the date of grant (or if no such price is reported on such date such price as reported on the nearest preceding day), (ii) if the Common Stock is not traded on the Nasdaq National Market or a national securities exchange, the fair market value per share on the date of grant as determined by the Board of Directors or (iii) the average of the closing bid and asked prices in the over-the-counter market.

(c) Transferability of Options. Except as the Board of Directors of the Company may otherwise determine or provide in a written agreement entered into in connection with the grant of an option under the Plan, options shall not be sold, assigned, transferred, pledged or otherwise encumbered by the Optionee, either voluntarily or by operation of law except by will or the laws of descent and distribution, and during the life of the optionee and shall be exercisable only by him. Reference to an optionee, to the extent relevant in the context, shall include references to authorized transferees.

(d) Vesting Period. Except as the Board may otherwise determine or provide in a written agreement entered into in connection with the grant of an option under the Plan, each option granted pursuant to paragraph (a)(i) of this Section 5 shall become exercisable in twelve (12) equal quarterly installments following the date of grant. Each option granted pursuant to paragraph (a)(ii) of this Section 5 shall become fully exercisable on the day prior to the first annual meeting of stockholders of the Company following the date of grant (or if no such meeting is held within thirteen (13) months after the date of grant, on the thirteen-month anniversary of the date of grant).

(e) Termination. Upon termination of an optionee's service as a director of the Company, each option held by him may be exercised during the one-year period following such termination of service, as to the exercisable portion of such option as of the date of termination, provided that (i) no option may be exercised more than ten (10) years after the date of grant and (ii) in the event an optionee ceases to serve as a director due to his death or disability (within the meaning of Section 22(e)(3) of the Code or any successor provision), each option may be exercised, within the one-year period following the date the optionee ceases to serve as a director, by the optionee or by the person to whom the option is transferred by will, by the laws of descent and distribution, or by written notice, as to the portion of the option that is exercisable on the date of death or disability and as to the additional portion that would have become exercisable on the next anniversary date of the date of grant of such option.

(f) Exercise Procedure. Options may be exercised only by written notice to the Company at its principal office accompanied by (i) payment in cash of the full consideration for the shares as to which they are exercised or (ii) an irrevocable undertaking, in form and substance satisfactory to the Company, by a broker to deliver promptly to the Company sufficient funds to pay the exercise price or delivery of

irrevocable instructions, in form and substance satisfactory to the Company, to a broker to deliver promptly to the Company cash or a check sufficient to pay the exercise price.

(g) Exercise by Representative Following Death of Director. An optionee, by written notice to the Company, may designate one or more persons (and from time to time change such designation), including his or her legal representative, who, by reason of the director's death, shall acquire the right to exercise all or a portion of the option. If the person or persons so designated wish to exercise any portion of the option, they must do so within the term of the option as provided herein. Any exercise by a representative shall be subject to the provisions of the Plan.

#### 6. Limitation of Rights.

(a) No Right to Continue as a Director. Neither the Plan, nor the granting of an option nor any other action taken pursuant to the Plan, shall constitute or be evidence of any agreement or understanding, express or implied, that the Company will retain the optionee as a director for any period of time.

(b) No Stockholders' Rights for Options. An optionee shall have no rights as a stockholder with respect to the shares covered by his options until the date of the issuance to him of a stock certificate therefor, and no adjustment will be made for dividends or other rights (except as provided in Section 7) for which the record date is prior to the date such certificate is issued.

#### 7. Changes in Common Stock.

(a) If, at any time after the Restatement Date, the outstanding shares of Common Stock are increased, decreased or exchanged for a different number or kind of shares or other securities, or if additional shares or new or different shares or other securities are distributed with respect to such shares of Common Stock or other securities, through merger, consolidation, sale of all or substantially all of the assets of the Company, reorganization, recapitalization, reclassification, stock dividend, stock split, reverse stock split or other distribution with respect to such shares of Common Stock, or other securities, an appropriate and proportionate adjustment will be made in (i) the maximum number and kind of shares reserved for issuance under the Plan, (ii) the number and kind of shares or other securities issuable pursuant to Sections 5(a)(i) and 5(a)(ii) above, (iii) the number and kind of shares or other securities subject to then outstanding options under the Plan and (iv) the price for each share subject to any then outstanding options under the Plan, without changing the aggregate purchase price as to which such options remain exercisable. No fractional shares will be issued under the Plan on account of any such adjustments.

(b) In the event of (i) a consolidation, merger or other reorganization in which all of the outstanding shares of Common Stock are exchanged for securities, cash or other property of any other corporation or business entity or (ii) any sale of all or substantially all of the Company's assets (in either event, an "Acquisition"), all options outstanding under the Plan immediately prior to the effective date of such Acquisition shall become automatically exercisable in full upon the effective date of such Acquisition.

#### 8. Amendment of the Plan.

The Board of Directors may suspend or discontinue the Plan or revise or amend it in any respect whatsoever; provided, however, that without approval of the stockholders of the Company no revision or amendment shall change the number of shares subject to the Plan (except as provided in Section 7).

#### 9. Notice.

Any written notice to the Company required by any of the provisions of the Plan shall be addressed to the Chief Financial Officer of the Company and shall become effective when it is received.

10. Governing Law.

The Plan and all determinations made and actions taken pursuant hereto shall be governed by the laws of The Commonwealth of Massachusetts.

Adopted by the Board of Directors on December 31, 1997 and approved by the stockholders on January 9, 1998; Amendments and restatement approved by the Board of Directors on April 16, 2003; Amendment approved by the Board of Directors on March 4, 2004, and by the stockholders on May 13, 2004.

MKS INSTRUMENTS, INC.

Nonstatutory Stock Option Agreement  
Granted Under Amended and Restated 1997 Director Stock Option Plan

1. Grant of Option.

This agreement evidences the grant by MKS Instruments, Inc., a Massachusetts corporation (the "Company"), on (the "Grant Date") to a director of the Company (the "Participant"), of an option to purchase, in whole or in part, on the terms provided herein and in the Company's Amended and Restated 1997 Director Stock Option Plan (the "Plan"), a total of 12,000 shares (the "Shares") of common stock, no par value per share, of the Company ("Common Stock") at \$ per Share. Unless earlier terminated, this option shall expire on the ("Final Exercise Date").

It is intended that the option evidenced by this agreement shall not be an incentive stock option as defined in Section 422 of the Internal Revenue Code of 1986, as amended and any regulations promulgated thereunder (the "Code"). Except as otherwise indicated by the context, the term "Participant", as used in this option, shall be deemed to include any person who acquires the right to exercise this option validly under its terms.

2. Vesting Schedule.

This option shall not be exercisable until the earlier of (a) the day prior to the first Annual Meeting of the Company's stockholders which occurs after the date hereof or (b) thirteen months after the Grant Date, at which time it shall become exercisable in full. This option shall expire upon, and will not be exercisable after, the Final Exercise Date.

3. Exercise of Option.

(a) Form of Exercise. Each election to exercise this option shall be in writing, signed by the Participant, and received by the Company at its principal office, accompanied by this agreement, and payment in full in the manner provided in the Plan. The Participant may purchase less than the number of shares covered hereby, provided that no partial exercise of this option may be for any fractional share.

(b) Continuous Relationship with the Company Required. Except as otherwise provided in this Section 3, this option may not be exercised unless the Participant, at the time he or she exercises this option, is, and has been at all times since the Grant Date, an employee, officer or a director of, or consultant or advisor to, the Company or any parent or subsidiary of the Company as defined in Section 424(e) or (f) of the Code (an "Eligible Participant").

(c) Termination of Relationship with the Company. If the Participant ceased to



OPTIONEE'S ACCEPTANCE

The undersigned hereby accepts the foregoing option and agrees to the terms and conditions thereof. The undersigned hereby acknowledges receipt of a copy of the Company's Amended and Restated 1997 Director Stock Option Plan.

<><>

-----  
(Director's Signature)

Address: <>  
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<>, <> <>  
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MKS INSTRUMENTS, INC.

Nonstatutory Option Agreement for an Initial Election Option  
Granted under the Amended and Restated 1997 Director Stock Option Plan

1. Grant of Option.

This agreement evidences the grant by MKS Instruments, Inc., a Massachusetts corporation (the "Company"), on <> (the "Grant Date") to <> a director of the Company (the "Participant"), of an option to purchase, in whole or in part, on the terms provided herein and in the Company's Amended and Restated 1997 Director Stock Option Plan (the "Plan"), a total of 20,000 shares (the "Shares") of common stock, no par value per share, of the Company ("Common Stock") at \$<> per Share. Unless earlier terminated, this option shall expire on <> the ("Final Exercise Date").

It is intended that the option evidenced by this agreement shall not be an incentive stock option as defined in Section 422 of the Internal Revenue Code of 1986, as amended and any regulations promulgated thereunder (the "Code"). Except as otherwise indicated by the context, the term "Participant", as used in this option, shall be deemed to include any person who acquires the right to exercise this option validly under its terms.

2. Vesting Schedule.

This option shall become exercisable in twelve (12) equal quarterly installments following the date of grant. This option shall expire upon, and will not be exercisable after, the Final Exercise Date.

3. Exercise of Option.

(a) Form of Exercise. Each election to exercise this option shall be in writing, signed by the Participant, and received by the Company at its principal office, accompanied by this agreement, and payment in full in the manner provided in the Plan. The Participant may purchase less than the number of shares covered hereby, provided that no partial exercise of this option may be for any fractional share.

(b) Continuous Relationship with the Company Required. Except as otherwise provided in this Section 3, this option may not be exercised unless the Participant, at the time he or she exercises this option, is, and has been at all times since the Grant Date, an employee, officer or a director of, or consultant or advisor to, the Company or any parent or subsidiary of the Company as defined in Section 424(e) or (f) of the Code (an "Eligible Participant").

(c) Termination of Relationship with the Company. If the Participant ceased to be an Eligible Participant for any reason, then, except as provided in paragraph (d)

below, the right to exercise this option shall terminate one year after such cessation (but in no event after the Final Exercise Date), provided that this option shall be exercisable only to the extent that the Participant was entitled to exercise this option on the date of such cessation. Notwithstanding any other provision of this Agreement, if the Participant, prior to the Final Exercise Date, violates the non-competition or confidentiality provisions of any agreement between the Participant and the Company, the right to exercise this option shall terminate immediately upon written notice to the Participant from the Company describing such violation.

(d) Exercise Period Upon Death or Disability. If the Participant dies or becomes disabled (within the meaning of Section 22(e) (3) of the Code) prior to the Final Exercise Date while he or she is an Eligible Participant this option shall be exercisable, within the period of one year following the date of death or disability of the Participant, by the Participant, provided that this option shall be exercisable only to the extent that this option was exercisable by the Participant on the date of his or her death or disability, and further provided that this option shall not be exercisable after the Final Exercise Date.

4. Withholding.

No shares will be issued pursuant to the exercise of this option unless and until the Participant pays to the Company, or makes provision satisfactory to the Company for payment of, any federal, state or local withholding taxes required by law to be withheld in respect of this option.

5. Nontransferability of Option.

This option may not be sold, assigned, transferred, pledged or otherwise encumbered by the Participant, either voluntarily or by operation of law, except by will or the laws of descent and distribution, and, during the lifetime of the Participant, this option shall be exercisable only by the Participant.

6. Provisions of the Plan.

This option is subject to the provisions of the Plan, a copy of which is furnished to the Participant with this option.

IN WITNESS WHEREOF, the Company has caused this option to be executed under its corporate seal by its duly authorized officer. This option shall take effect as a sealed instrument.

MKS Instruments, Inc.

Dated:     <>            By:  
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Name:  
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Title:  
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OPTIONEE'S ACCEPTANCE

The undersigned hereby accepts the foregoing option and agrees to the terms and conditions thereof. The undersigned hereby acknowledges receipt of a copy of the Company's Amended and Restated 1997 Director Stock Option Plan.

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(Director's Signature)

Address: <>

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<>, <> <>

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MKS INSTRUMENTS, INC.

NONSTATUTORY STOCK OPTION AGREEMENT  
GRANTED UNDER THE SECOND RESTATED 1995 STOCK INCENTIVE PLAN  
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1) Grant of Option.  
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This agreement evidences the grant by MKS Instruments, Inc., a Massachusetts corporation (the "Company"), on [Stock Date] (the "Grant Date") to [First Name] [Last Name] an employee of the Company (the "Participant"), of an option to purchase, in whole or in part, on the terms provided herein and in the Company's Second Restated 1995 Stock Incentive Plan (the "Plan"), a total of [Stock] shares (the "Shares") of common stock, no par value per share, of the Company ("Common Stock") at [Stock Price] per Share. Unless earlier terminated, this option shall expire on [Expire] (the "Final Exercise Date").

It is intended that the option evidenced by this agreement shall not be an incentive stock option as defined in Section 422 of the Internal Revenue Code of 1986, as amended and any regulations promulgated thereunder (the "Code"). Except as otherwise indicated by the context, the term "Participant," as used in this option, shall be deemed to include any person who acquires the right to exercise this option validly under its terms.

2) Vesting Schedule.  
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This option will become exercisable ("vest") as to \_\_\_\_% of the original number of Shares [on the first anniversary of] the Grant Date and as to an additional \_\_\_\_% of the original number of Shares at the end of each successive \_\_\_\_-month period following the first anniversary of the Grant Date until the \_\_\_\_ anniversary of the Grant Date. This option shall expire upon, and will not be exercisable after, the Final Exercise Date.

The right of exercise shall be cumulative so that to the extent the option is not exercised in any period to the maximum extent permissible it shall continue to be exercisable, in whole or in part, with respect to all shares for which it is vested until the earlier of the Final Exercise Date or the termination of this option under Section 3 hereof or the Plan.

3) Exercise of Option.  
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a) Form of Exercise. Each election to exercise this option shall be in writing, signed by the Participant, and received by the Company at its principal office, accompanied by this agreement, and payment in full in the manner provided in the Plan. The Participant may purchase less than the number of shares covered hereby, provided that no partial exercise of this option may be for any fractional share.

b) Continuous Relationship with the Company Required. Except as otherwise provided in this Section 3, this option may not be exercised unless the Participant, at the time he or she exercises this option, is, and has been at all times since the Grant Date, an employee, officer or director of, or consultant or advisor to, the Company or any parent or subsidiary of the Company as defined in Section 424(e) or (f) of the Code (an "Eligible Participant").

c) Termination of Relationship with the Company. If the Participant ceases to be an Eligible Participant for any reason, then, except as provided in paragraphs (d) and (e) below, the right to exercise this option shall terminate three months after such cessation (but in no event after the Final Exercise Date), provided that this option shall be exercisable only to the extent that the Participant was entitled to exercise this option on the date of such cessation. Notwithstanding the foregoing, if the Participant, prior to the Final Exercise Date, violates any provision of any employment contract, confidentiality and nondisclosure agreement or other agreement between the Participant and the Company, the right to exercise this option shall terminate immediately upon such violation.

d) Exercise Period Upon Death or Disability. If the Participant dies or becomes disabled (within the meaning of Section 22(e)(3) of the Code) prior to the Final Exercise Date while he or she is an Eligible Participant and the Company has not terminated such relationship for "cause" as specified in paragraph (e) below, this option shall be exercisable, within the period of one year following the date of death or disability of the Participant, by the Participant, provided that this option shall be exercisable only to the extent that this option was exercisable by the Participant on the date of his or her death or disability, and further provided that this option shall not be exercisable after the Final Exercise Date.

e) Discharge for Cause. If the Participant, prior to the Final Exercise Date, is discharged by the Company for "cause" (as defined below), the right to exercise this option shall terminate immediately upon the effective date of such discharge. "Cause" shall mean willful misconduct by the Participant or willful failure by the Participant to perform his or her responsibilities to the Company (including, without limitation, breach by the Participant of any provision of any employment, consulting, advisory, nondisclosure, or other similar agreement between the Participant and the Company), as determined by the Company, which determination shall be conclusive. The Participant shall be considered to have been discharged for "Cause" if the Company determines, within 30 days after the Participant's resignation, that discharge for cause was warranted.

#### 4. Withholding.

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No Shares will be issued pursuant to the exercise of this option unless and until the Participant pays to the Company, or makes provision satisfactory to the Company for payment of, any federal, state or local withholding taxes required by law to be withheld in respect of this option.

5. Nontransferability of Option.

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This option may not be sold, assigned, transferred, pledged or otherwise encumbered by the Participant, either voluntarily or by operation of law, except by will or the laws of descent and distribution, and, during the lifetime of the Participant, this option shall be exercisable only by the Participant.

6. Provisions of the Plan.

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This option is subject to the provisions of the Plan, a copy of which is furnished to the Participant with this option.

IN WITNESS WHEREOF, the Company has caused this option to be executed under its corporate seal by its duly authorized officer. This option shall take effect as a sealed instrument.

MKS Instruments, Inc.

Dated: [Stock Date]

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By:

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PARTICIPANT'S ACCEPTANCE

The undersigned hereby accepts the foregoing option and agrees to the terms and conditions thereof. The undersigned also acknowledges receipt of a copy of the MKS Instruments, Inc., Second Restated 1995 Stock Incentive Plan.

PARTICIPANT:

Signature: -----

Printed name: [First Name] [Last Name]

Date: -----

Address:

[Stock] Shares  
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## EMPLOYMENT AGREEMENT

EMPLOYMENT AGREEMENT dated as of July 30, 2004 ("Employment Agreement"), by and between MKS Instruments, Inc., a Massachusetts Corporation (the "Corporation"), and Leo Berlinghieri, of Andover, MA (the "Employee").

WHEREAS, the Corporation and the Employee entered into an Amended and Restated Employment Agreement dated December 15, 1995 (the "Original Employment Agreement"); and

WHEREAS, the Corporation intends to provide certain supplemental retirement benefits to the Employee as more particularly set forth herein; and

WHEREAS, the Corporation and the Employee intend that this Employment Agreement shall supercede the Original Employment Agreement and that as of the date hereof, the Original Employment Agreement shall be of no further force and effect;

NOW, THEREFORE, in consideration of the premises and the mutual promises contained herein, the Corporation and the Employee hereby agree as follows:

(1) Term of Employment: The Corporation hereby employs the Employee, and the Employee hereby accepts employment with the Corporation, for a period commencing as of July 30, 2004 and continuing from month to month thereafter until terminated as provided in this Section (1). Either the Corporation or the Employee may terminate the employment of the Employee under this Employment Agreement at any time after July 30, 2004 by giving written notice to the other party stating its or his election to terminate the employment of the Employee under this Employment Agreement. The employment of the Employee under this Employment Agreement shall terminate thirty (30) days after the date of receipt by the other party of such notice; provided, however, that the employment of the Employee under this Employment Agreement is subject to prior termination as hereinafter provided in Section (5). Notwithstanding the above, the Corporation shall be entitled, at its sole discretion, to waive the obligation of the Employee to continue to work during the thirty (30) day notice period.



(2) Capacity: The Employee shall serve as President and Chief Operating Officer of the Corporation and shall have such authority and will perform such duties as are delegated to him by the Chairman & CEO of the Corporation or his designee that are consistent with this position and his training and experience for the term of employment under this Employment Agreement.

(3) Extent of Services: During the term of employment of the Employee under this Employment Agreement, the Employee shall devote his full time to, and use his best efforts in the furtherance of, the business of the Corporation and shall not engage in any other business activity, whether or not such business activity is pursued for gain or any other pecuniary advantage, without the prior written consent of the Corporation.

(4) Compensation: In consideration of the services to be rendered by the Employee under this Employment Agreement, the Corporation agrees to pay, and the Employee agrees to accept, the following compensation:

(a) Base Salary: A base salary at the rate of three hundred fifty thousand six hundred and seventy-seven dollars (\$350,677) per year for the term of employment of the Employee under this Employment Agreement. The base salary shall be payable in equal biweekly installments, subject to usual withholding requirements, and will be subject to any changes in pay policies that may be established by the Corporation. The base salary will be reviewed regularly according to the practices of the Corporation. No overtime pay will be paid to the Employee by the Corporation.

(b) MKS Instruments Profit Sharing and Retirement Savings Plan: The Employee shall be eligible to become a participant under the profit sharing plan of the Corporation on fulfilling the conditions set forth in the MKS Instruments Profit Sharing and Retirement Savings Plan.

(c) Vacation: The Employee shall be entitled to an annual vacation leave of twenty-five (25) days at full pay during each year of this Employment Agreement, subject to the Employee arranging such vacation so as not to affect adversely the ability of the Corporation to transact its necessary business.

(d) Life Insurance: The Corporation shall provide, and pay all of the premiums for, term life insurance for the Employee during the term of employment of the Employee under this Employment Agreement in accordance with the term life insurance plan of the Corporation.

(e) Medical/Dental Insurance: The Corporation shall provide group medical/dental insurance for the Employee under the plans of the Corporation applicable to the Employee during the term of employment of the Employee under this Employment Agreement.

(f) Retirement Benefits: The Employee shall be eligible to participate in supplemental retirement benefits according to the terms and conditions set forth in Appendix A of this Employment Agreement.

(g) Other Benefits: The Corporation shall provide other benefits for the Employee under the plans of the Corporation applicable to the Employee during the term of employment of the Employee under this Employment Agreement.

(5) Termination: The employment of the Employee under this Employment Agreement shall terminate:

(a) On the expiration of the period of employment as provided in Section (1).

(b) Upon the death of the Employee.

(c) At the election of the Corporation (i) if the Employee shall refuse to perform the services required of him under this Employment Agreement, or (ii) if the Employee shall fail, or refuse, to perform the other covenants and agreements required of him under this Employment Agreement, or (iii) for "cause", which term shall mean conviction for the commission of a felony, willful failure by the Employee to perform his responsibilities to the Corporation, or willful misconduct by the Employee.

(6) Payment Upon Termination:

(a) If the employment of the Employee is terminated by the Corporation other than pursuant to Section 5 (c) hereof, the Corporation (i) shall continue to pay Employee the Base Salary in effect immediately prior to the time of such termination for twelve (12) months after the last full day Employee works under this Agreement at its normal payroll payment dates; (ii) shall reimburse Employee for the premiums (if any) he pays for continuation of life insurance should he elect to exercise the conversion feature of the Corporation's group life policy then in effect for twelve (12) months after the last full day Employee works under this Agreement; and (iii) continue to pay for such medical/dental/vision insurance as Employee may then receive for twelve (12) months after the last full day Employee works under this Agreement (such payments of Base Salary and payments or reimbursements of insurance premiums by the Corporation, the "Severance Benefits). Employee agrees that, (a) his eligibility for or entitlement to the foregoing Severance Benefits shall be subject to Employee's execution and delivery of a release, in such form as the Corporation may require, that, among other things, may be a general release of any and all claims Employee may have against Employer, (b) Employee shall have no rights or remedies in the event of his or her termination by the Corporation without Cause and other than as a result of Disability or death except for those set forth in this Agreement and (c) Employee's right to receive any of the foregoing Severance Benefits shall be expressly conditioned upon Employee's full compliance with the Confidentiality Agreement, pursuant to its continued effectiveness, and Employee's full cooperation with the Corporation in both fulfilling the terms of this Agreement and the Confidentiality Agreement and otherwise performing such actions as the Corporation may request in transitioning Employee from his employment with the Corporation and upon any breach of either such agreement by Employee, Employee's rights to any continued payment of Severance Benefits shall immediately cease and Employee shall be obligated to repay to the Corporation all amounts paid by the Corporation for the Severance Benefits except for the amount of \$1,000, which Employee shall be entitled to retain.

(b) If the employment of the Employee is terminated by death, the Corporation shall pay to the estate of the Employee the compensation which would otherwise be payable to the Employee at the end of the month in which his death occurs.

(c) In the event the employment of the Employee is terminated at the election of the Corporation pursuant to Section (5) (c) hereof, the Employee shall only be entitled to his base salary through the last day of actual employment or the date of termination, whichever is earlier.

(d) In the event the Employee voluntarily terminates his employment on the expiration of the period of employment as provided in Section (1), the Employee shall not be entitled to any compensation, and the Corporation shall have no obligation to pay the Employee any compensation, except as is provided in this Employment Agreement.

(7) Trade Secrets: The Employee covenants and agrees that he will communicate to the Corporation, and will not divulge or communicate to any other person, partnership, corporation or other entity without the prior written consent of the Corporation, any trade secrets of the Corporation or confidential information relating to the business of the Corporation or any one connected with the Corporation, and that such trade secrets and confidential information shall not be used by the Employee either on his own behalf or for the benefit of others or disclosed by the Employee to any one, except to the Corporation, during or after the term of employment of the Employee under this Employment Agreement.

(8) Inventions and Patents:

(a) The Employee shall make prompt full disclosure in writing to the Corporation of all inventions, improvements and discoveries, whether or not patentable, which the Employee conceives, devises, makes, discovers, develops, perfects or first reduces to practice, either alone or jointly with others, during the term of employment of the Employee under this Employment Agreement, which relate in any way to the fields, products or business of the Corporation, including development and research, whether during or out of the usual hours of work or on or off the premises of the Corporation or by use of the facilities of the Corporation or otherwise and whether at the request or suggestion of the Corporation or otherwise (all such inventions, improvements and discoveries being hereinafter called the "Inventions"), including any Inventions, whether or not patentable, conceived, devised, made, discovered, developed, perfected or first reduced to practice by the Employee after the employment of the Employee under this Employment Agreement is terminated if the Inventions were conceived by the Employee

during the term of employment of the Employee under this Employment Agreement. Any Inventions, whether or not patentable, conceived, devised, made, discovered, developed, perfected or first reduced to practice by the Employee within six (6) months of the date of termination of the employment of the Employee under this Employment Agreement shall be conclusively presumed to have been conceived during the term of employment of the Employee under this Employment Agreement.

(b) The Employee agrees that the Inventions shall be the sole and exclusive property of the Corporation.

(c) The Employee agrees to assist the Corporation and its nominees in every reasonable way (entirely at its or their expense) to obtain for the benefit of the Corporation letters patent for the Inventions and trademarks, trade names and copyrights relating to the Inventions, and any renewals, extensions or reissues thereof, in any and all countries, and agrees to make, execute, acknowledge and deliver, at the request of the Corporation, all written applications for letters patent, trademarks, trade names and copyrights relating to the Inventions and any renewals, extensions or reissues thereof, in any and all countries, and all documents with respect thereto, and all powers of attorney relating thereto and, without further compensation, to assign to the Corporation or its nominee all the right, title and interest of the Employee in and to such applications and to any patents, trademarks, trade names or copyrights which shall thereafter issue on any such applications, and to execute, acknowledge and deliver all other documents deemed necessary by the Corporation to transfer to or vest in the Corporation all of the right, title and interest of the Employee in and to the Inventions, and to such trademarks, trade names, patents and copyrights together with exclusive rights to make, use, license and sell them throughout the world.

(d) The Employee agrees that even though his employment is terminated under this Employment Agreement he will, at any time after such termination of employment, carry out and perform all of the agreements of Subsections (8) (a) and (8) (c) above, and will at any time and at all times cooperate with the Corporation in the prosecution and/or defense of any litigation which may arise in connection with the Inventions, provided, however, that should such services be rendered after termination of employment of the Employee under this Employment Agreement, the Employee shall be paid reasonable compensation on a per diem basis.

(e) The Employee agrees to make and maintain adequate and current written records of all Inventions in the form of notes, sketches, drawings, or reports relating thereto, which records shall be and remain the property of, and available to, the Corporation at all times.

(f) The Employee agrees that he will, upon leaving the employment of the Corporation, promptly deliver to the Corporation all originals and copies of disclosures, drawings, prints, letters, notes, and reports either typed, handwritten or otherwise memorialized, belonging to the Corporation which are in his possession or under his control and the Employee agrees that he will not retain or give away or make copies of the originals or copies of any such disclosures, drawings, prints, letters, notes or reports.

(9) Property of Corporation: All files, records, reports, documents, drawings, specifications, equipment, and similar items relating to the business of the Corporation, whether prepared by the Employee or otherwise coming into his possession, shall remain the exclusive property of the Corporation and shall not be removed by the Employee from the premises of the Corporation under any circumstances whatsoever without the prior written consent of the Corporation.

(10) Non-Competition:

(a) During the term of employment of the Employee under this Employment Agreement, and during a period of one (1) year after termination of employment of the Employee under this Employment Agreement without regard to the cause of termination of employment and whether or not such termination of employment was caused by the Employee or by the Corporation, (i) the Employee shall not engage, either directly or indirectly, in any manner or capacity, in any business or activity which is competitive with any business or activity conducted by the Corporation; (ii) the Employee shall not work for or employ, directly or indirectly, or cause to be employed by another, any person who was an employee, officer or agent of the Corporation or of any of its subsidiaries at any time during a period of twelve (12) months prior to the termination of the employment of the Employee under this Employment Agreement nor shall the Employee form any partnership with, or establish any business venture in cooperation with, any such person which is competitive with any business or activity of the Corporation; (iii) the Employee shall not give, sell or lease any goods or services

competitive with the goods or services of the Corporation or its subsidiaries to any person, partnership, corporation or other entity who purchased goods or services from the Corporation or its subsidiaries within one (1) year before the termination of the employment of the Employee under this Employment Agreement; (iv) the Employee shall not have any material financial interest, or participate as a director, officer, 5% stockholder, partner, employee, consultant or otherwise, in any corporation, partnership or other entity which is competitive with any business or activity conducted by the Corporation.

(b) The Corporation and the Employee agree that the services of the Employee are of a personal, special, unique and extraordinary character, and cannot be replaced by the Corporation without great difficulty, and that the violation by the Employee of any of his agreements under this Section (10) would damage the goodwill of the Corporation and cause the Corporation irreparable harm which could not reasonably or adequately be compensated in damages in an action at law, and that the agreements of the Employee under this Section (10) may be enforced by the Corporation in equity by an injunction or restraining order in addition to being enforced by the Corporation at law.

(c) In the event that this Section (10) shall be determined by any court of competent jurisdiction to be unenforceable by reason of its extending for too long a period of time or over too great a range of activities, it shall be interpreted to extend only over the maximum period of time or range of activities as to which it may be enforceable.

(11) Non-Solicitation: The Employee shall not, on his own behalf or in the service or on behalf of others, directly or indirectly:

(a) solicit, entice or induce any Customer (as defined below) to become a customer, distributor or supplier of any other person, firm or corporation with respect to products and/or services sold or under development by the Corporation during his employment at the Corporation, or to cease doing business with the Corporation, and the Employee shall not contact or approach any such person, firm or corporation for such purpose or authorize or knowingly approve the taking of such actions by any other person for a period of twelve (12) months from the date of the termination of

employment of the Employee under this Employment Agreement; or

(b) solicit, recruit or hire (or attempt to solicit, recruit or hire) any employee, officer or agent of the Corporation or contractor engaged by the Corporation (whether or not such person is a full-time employee or whether or not such employment is pursuant to a written agreement or at-will) to terminate such person's employment or engagement with the Corporation or work for a third party other than the Corporation for a period of twelve (12) months after the date of the termination of employment of the Employee under this Employment Agreement, or engage in any activity that would cause such employee or contractor to violate any agreement with the Corporation, nor shall the Employee form any partnership with, or establish any business venture in cooperation with, any such person.

(c) For the purposes of this Section (11), a "Customer" means any person or entity which as of the date of the termination of employment of the Employee under this Employment Agreement was, within two (2) years prior to such time, a customer, distributor or supplier of the Corporation, and references to the Corporation shall be deemed to include any affiliate or subsidiary of the Corporation.

(12) Notice: Any and all notices under this Employment Agreement shall be in writing and, if to the Corporation, shall be duly given if sent to the Corporation by registered or certified mail, postage prepaid, return receipt requested, at the address of the Corporation set forth under its name below or at such other address as the Corporation may hereafter designate to the Employee in writing for the purpose, and, if to the Employee, shall be duly given if delivered to the Employee by hand or if sent to the Employee by registered or certified mail, postage prepaid, return receipt requested, at the address of the Employee set forth under his name below or at such other address as the Employee may hereafter designate to the Corporation in writing for the purpose.

(13) Assignment: The rights and obligations of the Corporation under this Employment Agreement shall inure to the benefit of, and shall be binding upon, the successors and assigns of the Corporation. The rights and obligations of the Employee under this Employment Agreement shall inure to the benefit of, and shall be binding upon, the heirs, executors and legal representatives of the Employee.



(14) Entire Agreement and Severability:

(a) This Employment Agreement, and the attached Appendix A, supersedes any and all other agreements, either oral or in writing, between the parties hereto with respect to the employment of the Employee by the Corporation and contains all of the covenants and agreements between the parties with respect to such employment. Each party to this Employment Agreement acknowledges that no representations, inducements, promises or agreements, oral or otherwise, have been made by any party, or any one acting on behalf of any party, which are not embodied herein, and that no other agreement, statement or promise not contained in this Employment Agreement, and the attached Appendix A, shall be valid and binding. Any modification of this Employment Agreement, and the attached Appendix A, will be effective only if it is in writing signed by both parties to this Employment Agreement.

(b) If any provision in this Employment Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions shall nevertheless continue in full force and effect without being impaired or invalidated in any way.

(c) All pronouns used herein shall include the masculine, feminine, and neuter gender as the context requires.

(15) Governing Law: This Employment Agreement shall be governed by, and construed in accordance with, the laws of The Commonwealth of Massachusetts applicable to contracts made and to be performed entirely within The Commonwealth of Massachusetts without regard to its conflict of laws principles.

IN WITNESS WHEREOF, the parties hereto have executed, in The Commonwealth of Massachusetts, this Employment Agreement as a sealed instrument, all as of the day, month and year first written above.

MKS INSTRUMENTS, INC.

By: /s/ John R. Bertucci  
-----  
Chairman & CEO

90 Industrial Way  
Wilmington, MA 01887

/s/ Leo Berlinghieri  
-----  
Legal Signature

Leo Berlinghieri  
Address:

99 Thistle Road  
-----  
North Andover, MA 01845  
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APPENDIX A

SUPPLEMENTAL RETIREMENT BENEFITS

1. PURPOSE. (a) GENERAL: The purpose of this Appendix A is to provide Employee with supplemental retirement benefits to encourage his continued employment with the Corporation. Benefits will be payable only if Employee fully complies with all of the requirements of this Appendix A.

(b): For Benefit of Employee Only: Benefits under this Appendix A are provided for the benefit of Employee only. No other employee shall accrue any rights of any kind as a result of the existence of the arrangement described in this Appendix A. Supplemental retirement benefits may be provided to an employee only as specifically authorized by the Board of Directors of the Corporation.

2. DEFINITIONS. As used in this Appendix A, the following terms have the meanings set forth below, unless a different meaning is required by the context:

2.1. "Actuarially Equivalent" means a benefit of equivalent value to another benefit, determined on the following basis:

Interest Rate: The average annual interest rate on 10-year Treasury securities as published in the Internal Revenue Bulletin for the calendar quarter immediately preceding the calendar quarter in which the actuarially equivalent benefit is being determined plus 25 basis points; and

Mortality: The most recent "applicable mortality table" prescribed by Section 417(e)(3)(A)(ii) of the Internal Revenue Code (or a successor provision as determined by the Corporation).

2.2. "Base salary" means base salary as defined in the Employment Agreement, before any pre-tax salary reductions for participation in any benefits plan of the Corporation.

2.3. "Beneficiary" means one or more persons, trusts, estates or other entities, designated by Employee to receive death benefits under Sections 5.1(b), 5.2(b) or 6.1(b) of this Appendix A upon Employee's death. If Employee fails to designate a Beneficiary or if all designated

Beneficiaries predecease Employee or die prior to complete distribution of Employee's benefits under Section 5.1(b) or 5.2(b), then such death benefits shall be payable to the executor or personal representative of Employee's estate.

Employee shall designate his Beneficiary by completing and signing a beneficiary designation form prescribed by the Corporation, and returning it to the Corporation or its designated agent. Employee shall have the right to change a Beneficiary by completing, signing and otherwise complying with the terms of the beneficiary designation form and the Corporation's rules and procedures, as in effect from time to time. Upon the acceptance by the Corporation of a new beneficiary designation form, all Beneficiary designations previously filed shall be canceled. The Corporation shall be entitled to rely on the last beneficiary designation form filed by Employee and accepted by the Corporation prior to his or her death. No designation or change in designation of a Beneficiary shall be effective until received and acknowledged in writing by the Corporation or its designated agent. If the Corporation has any doubt as to the proper Beneficiary to receive payments pursuant to this Appendix A, the Corporation shall have the right, exercisable in its discretion, to withhold such payments until this matter is resolved to the Corporation's satisfaction.

2.4. "Bonus" means a bonus paid under the Corporation's Management Incentive Program.

2.5. "Change in Control" means the first to occur of any of the following events:

(a) Any "person" (as that term is used in Section 13 and 14(d)(2) of the Securities Exchange Act of 1934 ("Exchange Act")) becomes the beneficial owner (as that term is used in Section 13(d) of the Exchange Act), directly or indirectly, of fifty percent (50%) or more of the Corporation's capital stock entitled to vote in the election of directors;

(b) The shareholders of the Corporation approve any consolidation or merger of the Corporation, other than a consolidation or merger of the Corporation in which the holders of the common stock of the Corporation immediately prior to the consolidation or merger hold more than fifty percent (50%) of the common stock of the surviving corporation immediately after the consolidation or merger;

(c) The shareholders of the Corporation approve any plan or proposal for the liquidation or dissolution of the Corporation; or

(d) The shareholders of the Corporation approve the sale or transfer of all or substantially all of the assets of the Corporation to parties that are not within a

"controlled group of corporations" (as defined in Code Section 1563) in which the Corporation is a member.

2.6. "Corporation" means MKS Instruments, Inc.. and any corporation, trust, association or enterprise which is required to be considered, together with the Corporation, as one employer pursuant to the provisions of Sections 414(b), 414(c), 414(m) or 414(o) of the Code.

2.7. "Compensation" for any calendar year means the sum of Employee's Base Salary for such year plus any Bonus paid in such year.

2.8. "Early Retirement Benefit" means the Retirement benefit determined under Section 5.2 of this Appendix A upon Employee's Retirement prior to his Normal Retirement Date.

2.9. "Employment Agreement" means the Employment Agreement between Employee and the Corporation that contains this Appendix A.

2.10. "Final Average Pay" means, for purposes of Section 5 the average of Employee's three (3) highest years of Compensation during the ten (10) calendar year period immediately preceding the calendar year in which Employee Retires, and for purposes of determining death benefits under Section 6 the average of Employee's three (3) highest years of Compensation during the ten (10) calendar year period immediately preceding the calendar year containing Employee's date of death. The foregoing notwithstanding, any calendar year in which Employee has no Compensation from the Corporation shall be ignored in determining such ten calendar year period.

2.11. "Normal Retirement Age" means Employee's 62nd birthday.

2.12. "Normal Retirement Benefit" means the Retirement benefit determined under Section 5.1 of this Appendix A upon Employee's Retirement on or after his Normal Retirement Date.

2.13. "Normal Retirement Date" means the first day of the month in which Employee attains Normal Retirement Age.

2.14. "Permanent and Total Disability" means disability as defined in Section 216(i)(1) of the Social Security Act (in general, the inability to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment which can be expected to result in death or has lasted or can be expected to last for a continuous period of not less than

12 months, or blindness). Employee shall be conclusively presumed to be Permanently and Totally Disabled upon determination that he is disabled by the Social Security Administration.

2.15. "Retires" or "Retired" means Employee's termination of employment with the Corporation upon or after satisfying the vesting requirements of Section 4.1. Employee shall be deemed to have Retired with a fully vested Normal Retirement Benefit on the earliest of the date he becomes Permanently and Totally Disabled, the date the Corporation terminates Employee's employment with the Corporation for any reason other than Termination for Cause, the date of Employee's death while employed by the Corporation, or the date of Employee's qualifying termination of employment in connection with a Change in Control in accordance with the provisions of Section 7 of this Appendix A.

2.16. "Retirement Date" means the date Employee Retires or is deemed to have Retired in accordance with Section 2.15 of this Appendix A. The term "Retirement Date" shall include Employee's Early Retirement Date as defined in Section 5.2 of this Appendix A.

2.17. "Termination of Employment" means Termination for Cause, or Employee's voluntary severance from employment with the Corporation for any reason other than Retirement.

2.18. "Termination for Cause" means, solely for purposes of this Appendix A, termination of Employee's employment by the Corporation as a result of Employee's conviction for the commission of a felony, material breach of any employment or other agreements between Employee and the Corporation, or willful failure to perform the material responsibilities of his position with the Corporation.

2.19. "Trust" means the Trust established pursuant to Section 10 of this Appendix A.

### 3. ELIGIBILITY FOR RETIREMENT BENEFITS.

3.1. General: Subject to Sections 4.2, 4.3, 4.4, and 4.5 the Corporation shall pay the retirement benefits described in this Appendix A if Employee Retires from employment with the Corporation upon or after satisfying the vesting requirements set forth in Section 4.1.

3.2. Disability: Solely for purposes of determining eligibility for benefits payable under this Appendix A, Employee shall be deemed to be an employee of the Corporation during any period for which Employee receives benefits under any short term or long term disability plan of the Corporation but is not Permanently and Totally Disabled, and during such period Employee shall continue to accrue service for purposes of the vesting requirements set forth in

Section 4.1. If Employee remains disabled on the date he satisfies the vesting requirements set forth in Section 4.1, he shall be deemed to have Retired from employment from the Corporation on that date for purposes of this Appendix A. This Section 3.2 shall have no bearing on whether Employee remains an employee of the Corporation for any other purpose.

#### 4. VESTING.

4.1 General: Except as provided in Sections 4.2, 4.3, 4.4, and 4.5, and subject to Section 10.2, Employee's benefits under this Appendix A shall be fully vested and nonforfeitable if Employee satisfies both (a) and (b) while employed with the Corporation:

(a) attains age 60, and

(b) has 25 years of service with the Corporation. Employee shall have 25 years of service on the 25th anniversary of Employee's original hire date.

The foregoing notwithstanding, Employee shall be fully vested in his benefit under this Appendix A on the earliest of the date (a) Employee dies while employed by the Corporation, (b) Employee becomes Permanently and Totally Disabled, (c) the Corporation terminates Employee's employment with the Corporation for any reason other than Termination for Cause as defined in Section 2.18 of this Appendix A, or (d) of Employee's qualifying termination of employment in connection with a Change in Control in accordance with the requirements of Section 7 of this Appendix A. Death benefits shall be determined in accordance with Section 6.

4.2. Termination for Cause: All benefits shall be forfeited, and no amount shall be payable under this Appendix A, in the event of Employee's Termination for Cause.

4.3. Compliance with Noncompete, Nondisclosure, and Nonsolicitation Agreements. All benefits under this Appendix A are expressly conditioned upon Employee's compliance with the terms of any noncompetition, nondisclosure, or nonsolicitation provisions contained in the Employment Agreement, or in any other agreement between Employee and the Corporation. All benefits payable under this Appendix A shall be forfeited, and no amount shall be payable, in the event Employee violates the terms of any such provisions. If Employee violates the terms of any such provisions, and benefit payments have commenced to Employee, any such payments shall cease, and Employee shall repay all previously paid benefits to the Corporation upon demand. If Employee fails to repay such amounts upon demand, the

Corporation shall have the right to take any action necessary to recover such payments from Employee.

4.4. Notice of Intent to Retire. Benefits payable under this Appendix A are specifically conditioned upon Employee providing to the Corporation written notice of Employee's intent to Retire at least six months prior to Employee's Retirement date. In the event Employee terminates employment with the Corporation for any reason other than death without satisfying the notice requirements of this Section 4.4 all benefits shall be forfeited, and no amount shall be payable under this Appendix A. The foregoing notwithstanding, the Corporation, in its sole and absolute discretion, may elect to waive the notice requirement of this Section 4.4. The foregoing notwithstanding, this Section 4.4 shall not apply to death benefits payable under Section 6 of this Appendix A, or to Retirement benefits payable under Section 5 as a result of Employee's deemed Retirement under Section 2.15 or Section 7 of this Appendix A.

4.5. Release. Benefits payable under this Appendix A (other than death benefits payable under Section 6) are specifically conditioned upon and provided in exchange for Employee signing a separation agreement that releases the Corporation from any liabilities that may have arisen as a result of Employee's employment and/or termination of employment with the Corporation. In the event Employee terminates employment with the Corporation for any reason other than death without satisfying the requirements of this Section 4.5 all benefits shall be forfeited, and no amount shall be payable under this Appendix A.

4.6. Termination of Employment Prior to Satisfying Vesting Requirements. No benefits are payable under this Appendix A upon Employee's Termination of Employment with the Corporation prior to satisfying the vesting requirements set forth in Section 4.1.

## 5. RETIREMENT BENEFITS.

5.1. Normal Retirement Benefit. This Section 5.1 describes the Retirement benefit payable by the Corporation in the event Employee Retires (or is deemed to have Retired in accordance with Section 2.15 or Section 7 of this Appendix A) on or after his Normal Retirement Date. Employee's Normal Retirement Benefit shall be paid in the form of an Actuarially Equivalent lump sum, as set forth in Section 5.3(a), unless Employee makes the election described in Section 5.3(b).

(a) Married on Retirement Date: If Employee is married on his Retirement Date, Employee's Normal Retirement Benefit shall be:



50% times Final Average Pay

payable annually for the life of Employee with 50% of such amount continuing after Employee's death to his spouse for her life. Payments shall commence as soon as administratively practicable following Employee's Retirement Date, and subsequent payments shall be made as soon as administrative practicable following each anniversary of Employee's Retirement Date (payments shall not, however, commence earlier than the date permitted by federal law). Solely for purposes of this Section 5.1, "Spouse" shall mean the spouse to whom Employee is married on his Retirement Date (regardless of whether that is the same spouse to whom he is married on his date of death), unless the Corporation is directed by a court of competent jurisdiction to treat someone else as Employee's "spouse." If the spouse to whom Employee is married on his Retirement Date does not survive Employee, no survivor death benefit shall be payable under this Section 5.1, without regard to whether employee is married on his date of death.

(b) Not Married on Retirement Date: If Employee is not married on his Retirement Date, Employee's Normal Retirement Benefit shall be:

50% times Final Average Pay

payable annually for the life of Employee with a ten year certain guarantee. Payments shall commence as soon as administratively practicable following Employee's Retirement Date, and subsequent payments shall be made as soon as administrative practicable following each anniversary of Employee's Retirement Date (payments shall not, however, commence earlier than the date permitted by federal law). If Employee dies before receiving 10 annual installments, the Corporation shall pay a lump sum benefit to Employee's Beneficiary that is Actuarially Equivalent to the additional benefit that would have been payable to Employee had he continued to receive annual installments up to a total of 10 annual installments.

5.2. Early Retirement Benefit. This Section 5.2 describes the Retirement benefit payable by the Corporation in the event Employee Retires prior to his Normal Retirement Date. Employee may Retire from employment with the Corporation prior to his Normal Retirement Date on the first day of any month coincident with or next following the date he satisfies the vesting requirements of section 4.1. The date on which Employee Retires under this Section 5.2 shall be his Early Retirement Date. Employee's Early Retirement Benefit shall be paid in the form of an Actuarially Equivalent lump sum, as set forth in Section 5.3(a), unless Employee makes the election described in Section 5.3(b).

(a) Married on Early Retirement Date: If Employee is married on his Early Retirement Date, Employee's Early Retirement Benefit shall be:

50% times Final Average Pay

multiplied by the applicable percentage as set forth in the following schedule:

Age at which Early Retirement Benefits Commence	62	61	60
Applicable Percentage	100%	90	80

payable annually for the life of Employee with 50% of such amount continuing after Employee's death to his spouse for her life. Payments shall commence as soon as administratively practicable following Employee's Early Retirement Date, and subsequent payments shall be made as soon as administrative practicable following each anniversary of Employee's Early Retirement Date (payments shall not, however, commence earlier than the date permitted by federal law). Solely for purposes of this Section 5.2, "Spouse" shall mean the spouse to whom Employee is married on his Early Retirement Date (regardless of whether that is the same spouse to whom he is married on his date of death), unless the Corporation is directed by a court of competent jurisdiction to treat someone else as Employee's "spouse." If the spouse to whom Employee is married on his Early Retirement Date does not survive Employee, no survivor death benefit shall be payable under this Section 5.2, without regard to whether employee is married on his date of death.

(b) Not Married on Early Retirement Date: If Employee is not married on his Early Retirement Date, Employee's Early Retirement Benefit shall be:

50% times Final Average Pay

multiplied by the applicable percentage as set forth in the following schedule:

Age at which Early Retirement Benefits Commence	62	61	60
Applicable Percentage	100%	90	80

payable annually for the life of Employee with a ten year certain guarantee. Payments shall commence as soon as administratively practicable following Employee's Early Retirement Date, and subsequent payments shall be made as soon as administrative practicable following each anniversary of Employee's Early Retirement Date (payments shall not, however, commence earlier than the date permitted by federal law). If Employee dies before receiving 10 annual installments, the Corporation shall pay a lump sum benefit to Employee's Beneficiary that is Actuarially Equivalent to the additional benefit that would have been payable to Employee had he continued to receive annual installments up to a total of 10 annual installments.

#### 5.3. Form of Payment:

(a) Unless Employee makes the election described in Section 5.3(b) below, Employee's Normal Retirement Benefit or Early Retirement Benefit, determined in accordance with section 5.1 or 5.2 as applicable, shall be paid in the form of a single lump sum that is Actuarially Equivalent to such Normal Retirement Benefit or Early Retirement Benefit. Such lump sum shall be paid as soon as administratively practicable following Employee's retirement (or, if later, the earliest date permitted by Federal law).

(b) In lieu of payment of his Normal Retirement Benefit or Early Retirement Benefit in the form of a lump sum as described in Section 5.3(a), Employee may elect, in the manner prescribed by the Corporation, to receive payment of his retirement benefit in the form described in Section 5.1 or 5.2 as applicable. Any such election must be submitted to and accepted by the Corporation no later than the 13th month prior to Employee's Retirement Date.

5.4. Death While Employed by the Corporation. In the event Employee dies while employed by the Corporation, any benefits payable under this Appendix A shall be determined in accordance with Section 6.

#### 6. DEATH WHILE EMPLOYED BY THE CORPORATION.

6.1. General. In the event Employee dies while employed by the Corporation the death benefit payable under this Appendix A shall be as follows:

(a) if Employee is married on his date of death, 50% of the lump sum that is Actuarially Equivalent to the Normal Retirement Benefit determined under Section 5.1(a) of this Appendix A, such lump sum benefit to be determined as if Employee Retired on his date of death after reaching Normal Retirement Age; or

(b) if Employee is not married on his date of death, 50% of the lump sum that is Actuarially Equivalent to the Normal Retirement Benefit determined under Section 5.1(b) of this Appendix A, such lump sum benefit to be determined as if Employee Retired on his date of death after reaching Normal Retirement Age.

The death benefit shall be payable in a lump sum as soon as administratively practicable following Employee's date of death.

6.2. Payee. This death benefit shall be payable to Employee's (a) surviving spouse if Employee is married on his date of death, or (b) Beneficiary if Employee is not married on his date of death. "Surviving spouse" for purposes of this Section 6.2 means the spouse to whom Employee is married on his date of death.

7. EFFECT OF A CHANGE IN CONTROL OF THE CORPORATION. Anything in this Appendix A to the contrary notwithstanding, this Section 7 shall apply in the event of a Change in Control. If, within three years after the date of a Change in Control Employee's employment with the Corporation is involuntarily terminated by the Corporation for any reason (other than Cause), or Employee voluntarily terminates employment with the Corporation for Good Reason, and employee is not otherwise eligible for Retirement, then Employee shall be deemed to have Retired with a fully vested Normal Retirement Benefit on the date of such termination of employment. Employee's Normal Retirement Benefit shall be determined as of such deemed Retirement Date, and shall be payable in a lump sum, calculated pursuant to Sections 5.1 and 5.3, as soon as administratively practicable following such deemed Retirement Date.

Solely for purposes of this Section 7, "Good Reason" shall mean termination of Employee's employment by Employee within 90 days following (i) a material diminution in Employee's positions, duties and responsibilities from those described in this Employment Agreement (ii) a reduction in Employee's Base Salary (other than a reduction which is part of a general salary reduction program affecting senior executives of the Corporation) (iii) a material reduction in the aggregate value of the pension and welfare benefits provided to Employee from those in effect prior to the Change in Control (other than a reduction which is proportionate to the reductions applicable to other senior executives pursuant to a cost-saving plan that includes all

senior executives), (iv) a material breach of any provision of this Employment Agreement by the Corporation, (v) the Corporation's requiring Employee to be based at a location that creates for Employee a one way commute in excess of 60 miles from his primary residence, except for required travel on the Corporation's business to an extent substantially consistent with the business travel obligations of Employee under this Employment Agreement. Notwithstanding the foregoing, a termination shall not be treated as a termination for Good Reason (i) if Employee shall have consented in writing to the occurrence of the event giving rise to the claim of termination for Good Reason or (ii) unless Employee shall have delivered a written notice to the Corporation within 30 days of his having actual knowledge of the occurrence of one of such events stating that he intends to terminate his employment for Good Reason and specifying the factual basis for such termination, and such event, if capable of being cured, shall not have been cured within 30 days of the receipt of such notice.

8. EFFECT OF TERMINATION OF EMPLOYMENT AND REHIRE. Upon Employee's termination of employment with the Corporation the benefit payable under this Appendix A, if any, shall be determined by the Corporation and such determination shall be conclusive and binding (subject to Section 14). If Employee is subsequently reemployed by the Corporation such reemployment, additional service, and additional compensation shall not result in a re-determination of the benefits due under this Appendix A. If, upon reemployment, Employee is receiving installment payments pursuant to Section 5 those payments shall not be suspended during any period of reemployment.

#### 9. ADMINISTRATION.

9.1. Powers of the Corporation: The Board of Directors of the Corporation (the "Board") shall have the sole authority to act on behalf of the Corporation under this Appendix A (subject to Section 9.3), and shall have all the powers necessary to administer the benefits under this Appendix A, including, without limitation, the power to interpret the provisions of this Appendix A and to establish rules and prescribe any forms required to administer benefits under this Appendix A

9.2. Actions of the Board: All determinations, interpretations, rules, and decisions of the Board shall be conclusive and binding upon all persons having or claiming to have any interest or right under this Appendix A.

9.3. Delegation: The Board shall have the power to delegate specific duties and responsibilities to officers or other employees of the Corporation or other individuals or

entities. Any delegation by the Board may allow further delegations by the individual or entity to whom the delegation is made. Any delegation may be rescinded by the Board at any time. Each person or entity to whom a duty or responsibility has been delegated shall be responsible for the exercise of such duty or responsibility and shall not be responsible for any act or failure to act of any other person or entity.

9.4. Reports and Records: The Board and those to whom the Board has delegated duties under Section 9.3 shall keep records of all their proceedings and actions and shall maintain books of account, records, and other data as shall be necessary for the proper administration of this Appendix A and for compliance with applicable law.

9.5. Costs: The costs of providing and administering the benefits under this Appendix A shall be borne by the Corporation.

#### 10. UNFUNDED BENEFITS; ESTABLISHMENT OF TRUST.

10.1. Unfunded Status. This Appendix A shall be unfunded for tax purposes and for purposes of Title 1 of ERISA.

10.2. Establishment of Trust. The Corporation shall not be required to set aside any funds to discharge its obligations hereunder, but may set aside such funds to informally fund all or part of its obligations hereunder if it chooses to do so, including without limitation the contribution of assets to a "rabbi trust" (the Trust). Any setting aside of amounts, or acquisition of any insurance policy or any other asset, by the Corporation with which to discharge its obligations hereunder in trust or otherwise, shall not be deemed to create any beneficial ownership interest in Employee, his surviving spouse, or Beneficiary, and legal and equitable title to any funds so set aside shall remain in the Corporation, and any recipient of benefits hereunder shall have no security or other interest in such funds. The rights of Employee and his surviving spouse and Beneficiary(ies) under this Appendix A shall be no greater than the rights of a general unsecured creditor of the Corporation. Any and all funds so set aside by the Corporation shall remain the general assets of the Corporation, and subject to the claims of its general creditors, present and future.

10.3. Interrelationship of this Appendix A and the Trust. The provisions of this Appendix A shall govern the rights of Employee to receive distributions pursuant to the provisions of this Appendix A. The provisions of the Trust shall govern the rights of the Corporation, Employee, and creditors of the Corporation to the assets transferred to the Trust. The Corporation shall at all times remain liable to carry out its obligations under this Appendix A.

10.4. Distributions from the Trust. The Corporation's obligations under this Appendix A may be satisfied with Trust assets distributed pursuant to the terms of the Trust, and any such distribution shall reduce the Corporation's obligation under this Appendix A.

11. PAYMENT OF BENEFIT FOR DISABLED OR INCAPACITATED PERSON. If the Corporation determines, in its discretion, that Employee or Employee's Beneficiary or surviving spouse is under a legal disability or is incapacitated in any way so as to be unable to manage his financial affairs, the Corporation shall make payment to such person or to his legal representative or to a friend or relative of such person as the Corporation considers advisable. Any payment under this Section 11 shall be a complete discharge of any liability for the making of such payment under this Appendix A. Nothing contained in this Section 11 however, should be deemed to impose upon the Corporation any liability for paying a benefit to any person who is under such a legal disability or is so incapacitated unless it has received notice of such disability or incapacity from a competent source.

12. NONASSIGNABILITY. Neither Employee nor any other person shall have any right to commute, sell, assign, transfer, pledge, anticipate, mortgage or otherwise encumber, transfer, hypothecate, alienate or convey in advance of actual receipt, the amounts, if any, payable hereunder, or any part thereof, which are, and all rights to which are expressly declared to be, unassignable and non-transferable. No part of the amounts payable shall, prior to actual payment, be subject to seizure, attachment, garnishment or sequestration for the payment of any debts, judgments, alimony or separate maintenance owed by Employee or any other person, be transferable by operation of law in the event of Employee's or any other person's bankruptcy or insolvency or be transferable to a spouse as a result of a property settlement or otherwise. The Corporation is authorized to make any payments directed by court order.

### 13. CLAIM PROCEDURE.

13.1. Presentation of Claim. Employee, or the surviving spouse of Employee after Employee's death, or Employee's Beneficiary (such Employee, surviving spouse, or Beneficiary being referred to below as a "Claimant") may deliver to the Corporation a written claim for a determination with respect to the amounts distributable to such Claimant under this Appendix A. If such a claim relates to the contents of a notice received by the Claimant, the claim must be made within sixty (60) days after such notice was received by the Claimant. All other claims must be made within 180 days of the date on which the event that caused the claim to arise occurred. The claim must state with particularity the determination desired by the Claimant.

13.2. Notification of Decision. The Corporation shall consider a Claimant's claim within a reasonable time, but no later than ninety (90) days after receiving the claim. If the Corporation determines that special circumstances require an extension of time for processing the claim, written notice of the extension shall be furnished to the Claimant prior to the termination of the initial ninety (90) day period. In no event shall such extension exceed a period of ninety (90) days from the end of the initial period. The extension notice shall indicate the special circumstances requiring an extension of time and the date by which the Corporation expects to render the benefit determination. The Corporation shall notify the Claimant in writing:

- (a) that the Claimant's requested determination has been made, and that the claim has been allowed in full; or
- (b) that the Corporation has reached a conclusion contrary, in whole or in part, to the Claimant's requested determination, and such notice must set forth in a manner calculated to be understood by the Claimant:
  - (i) the specific reason(s) for the denial of the claim, or any part of it;
  - (ii) specific reference(s) to pertinent provisions of this Appendix A upon which such denial was based;
  - (iii) a description of any additional material or information necessary for the Claimant to perfect the claim, and an explanation of why such material or information is necessary;
  - (iv) an explanation of the claim review procedure set forth in Section 13.3 below; and
  - (v) a statement of the Claimant's right to bring a civil action under ERISA Section 502(a) following an adverse benefit determination on review.

13.3. Review of a Denied Claim. On or before sixty (60) days after receiving a notice from the Corporation that a claim has been denied, in whole or in part, a Claimant (or the Claimant's duly authorized representative) may file with the Corporation a written request for a review of the denial of the claim. The Claimant (or the Claimant's duly authorized representative):

- (a) may, upon request and free of charge, have reasonable access to, and copies of, all



documents, records and other information relevant to the claim for benefits;

(b) may submit written comments or other documents; and/or

(c) may request a hearing, which the Corporation, in its sole discretion, may grant.

13.4. Decision on Review. The Corporation shall render its decision on review promptly, and no later than sixty (60) days after the Corporation receives the Claimant's written request for a review of the denial of the claim. If the Corporation determines that special circumstances require an extension of time for processing the claim, written notice of the extension shall be furnished to the Claimant prior to the termination of the initial sixty (60) day period. In no event shall such extension exceed a period of sixty (60) days from the end of the initial period. The extension notice shall indicate the special circumstances requiring an extension of time and the date by which the Corporation expects to render the benefit determination. In rendering its decision, the Corporation shall take into account all comments, documents, records and other information submitted by the Claimant relating to the claim, without regard to whether such information was submitted or considered in the initial benefit determination. The decision must be written in a manner calculated to be understood by the Claimant, and it must contain:

(a) specific reasons for the decision;

(b) specific reference(s) to the pertinent provisions of this Appendix A upon which the decision was based;

(c) a statement that the Claimant is entitled to receive, upon request and free of charge, reasonable access to and copies of, all documents, records and other information relevant (as defined in applicable ERISA regulations) to the Claimant's claim for benefits; and

(d) a statement of the Claimant's right to bring a civil action under ERISA Section 502(a).

13.5. LEGAL ACTION. A Claimant's compliance with the foregoing provisions of this Article 13 is a mandatory prerequisite to a Claimant's right to commence any legal action with respect to any claim for benefits under this Appendix A.

14. TAX WITHHOLDING AND REPORTING; SECTION 280G EXCISE TAXES.

(a) General. The Corporation shall have the right to deduct any required withholding taxes from any payment made under this Appendix A. Except as provided in Section 14(b), the Corporation shall not be obligated to pay or reimburse Employee, or his surviving spouse or Beneficiary, for any income or other taxes or penalties that may be imposed on such person by the Internal Revenue Service or any state or other taxing authority as a result of benefits paid under this Appendix A.

(b) Excise Tax Payment. In the event that any payment or benefit (within the meaning of Section 280G(b)(2) of the Internal Revenue Code of 1986, as amended (the "Code")), to Employee or for his benefit paid or payable or distributed or distributable pursuant to the terms of this Employment Agreement (including this Appendix A) or otherwise in connection with, or arising out of, his employment with the Corporation or a Change in Control of the Corporation (a "Payment" or "Payments"), would be subject to the excise tax imposed by Section 4999 of the Code or any interest or penalties are incurred by the Employee with respect to such excise tax (such excise tax, together with any such interest and penalties, are hereinafter collectively referred to as the "Excise Tax"), then Employee will be entitled to immediately receive an additional payment (a "Gross-Up Payment") in an amount such that after payment by Employee of all taxes (including any interest or penalties, other than interest and penalties imposed by reason of Employee's failure to file timely a tax return or pay taxes shown due on his return, imposed with respect to such taxes and the Excise Tax), including any Excise Tax imposed upon the Gross-Up Payment, Employee retains an amount of the Gross-Up Payment equal to the Excise Tax imposed upon the Payments.

15. SUCCESSORS. The provisions of this Appendix A shall bind and inure to the benefit of the Corporation and its successors and assigns and Employee and Employee's surviving spouse and designated beneficiaries.

16. AMENDMENT. This Appendix A may be amended only by written agreement between Employee and the Corporation.

17. LEGEND

The securities represented by this supplemental retirement benefit have not been registered under the Securities Act of 1933, as amended, and may not be sold, transferred or otherwise disposed of in the absence of an effective registration statement under such Act or an opinion of counsel satisfactory to the corporation to the effect that such registration is not required.

## EMPLOYMENT AGREEMENT

EMPLOYMENT AGREEMENT dated as of July 30, 2004 ("Employment Agreement"), by and between MKS Instruments, Inc., a Massachusetts Corporation (the "Corporation"), and Ronald C. Weigner, of Sudbury, MA (the "Employee").

WHEREAS, the Corporation and the Employee entered into an Amended and Restated Employment Agreement dated December 15, 1995 (the "Original Employment Agreement"); and

WHEREAS, the Corporation intends to provide certain supplemental retirement benefits to the Employee as more particularly set forth herein; and

WHEREAS, the Corporation and the Employee intend that this Employment Agreement shall supercede the Original Employment Agreement and that as of the date hereof, the Original Employment Agreement shall be of no further force and effect;

NOW, THEREFORE, in consideration of the premises and the mutual promises contained herein, the Corporation and the Employee hereby agree as follows:

(1) Term of Employment: The Corporation hereby employs the Employee, and the Employee hereby accepts employment with the Corporation, for a period commencing as of July 30, 2004 and continuing from month to month thereafter until terminated as provided in this Section (1). Either the Corporation or the Employee may terminate the employment of the Employee under this Employment Agreement at any time after July 30, 2004 by giving written notice to the other party stating its or his election to terminate the employment of the Employee under this Employment Agreement. The employment of the Employee under this Employment Agreement shall terminate thirty (30) days after the date of receipt by the other party of such notice; provided, however, that the employment of the Employee under this Employment Agreement is subject to prior termination as hereinafter provided in Section (5). Notwithstanding the above, the Corporation shall be entitled, at its sole discretion, to waive the obligation of the Employee to continue to work during the thirty (30) day notice period.

(2) Capacity: The Employee shall serve as Vice President and Chief Financial Officer of the Corporation and shall have such authority and will perform such duties as are delegated to him by the Chairman & CEO of the Corporation or his designee that are consistent with this position and his training and experience for the term of employment under this Employment Agreement.

(3) Extent of Services: During the term of employment of the Employee under this Employment Agreement, the Employee shall devote his full time to, and use his best efforts in the furtherance of, the business of the Corporation and shall not engage in any other business activity, whether or not such business activity is pursued for gain or any other pecuniary advantage, without the prior written consent of the Corporation.

(4) Compensation: In consideration of the services to be rendered by the Employee under this Employment Agreement, the Corporation agrees to pay, and the Employee agrees to accept, the following compensation:

(a) Base Salary: A base salary at the rate of two hundred thirty-three thousand six hundred and ninety-four dollars (\$233,694) per year for the term of employment of the Employee under this Employment Agreement. The base salary shall be payable in equal biweekly installments, subject to usual withholding requirements, and will be subject to any changes in pay policies that may be established by the Corporation. The base salary will be reviewed regularly according to the practices of the Corporation. No overtime pay will be paid to the Employee by the Corporation.

(b) MKS Instruments Profit Sharing and Retirement Savings Plan: The Employee shall be eligible to become a participant under the profit sharing plan of the Corporation on fulfilling the conditions set forth in the MKS Instruments Profit Sharing and Retirement Savings Plan.

(c) Vacation: The Employee shall be entitled to an annual vacation leave of twenty-five (25) days at full pay during each year of this Employment Agreement, subject to the Employee arranging such vacation so as not to affect adversely the ability of the Corporation to transact its necessary business.

(d) Life Insurance: The Corporation shall provide, and pay all of the premiums for, term life insurance for the Employee during the term of employment of the Employee under this Employment Agreement in accordance with the term life insurance plan of the Corporation.

(e) Medical/Dental Insurance: The Corporation shall provide group medical/dental insurance for the Employee under the plans of the Corporation applicable to the Employee during the term of employment of the Employee under this Employment Agreement.

(f) Retirement Benefits: The Employee shall be eligible to participate in supplemental retirement benefits according to the terms and conditions set forth in Appendix A of this Employment Agreement.

(g) Other Benefits: The Corporation shall provide other benefits for the Employee under the plans of the Corporation applicable to the Employee during the term of employment of the Employee under this Employment Agreement.

(5) Termination: The employment of the Employee under this Employment Agreement shall terminate:

(a) On the expiration of the period of employment as provided in Section (1).

(b) Upon the death of the Employee.

(c) At the election of the Corporation (i) if the Employee shall refuse to perform the services required of him under this Employment Agreement, or (ii) if the Employee shall fail, or refuse, to perform the other covenants and agreements required of him under this Employment Agreement, or (iii) for "cause", which term shall mean conviction for the commission of a felony, willful failure by the Employee to perform his responsibilities to the Corporation, or willful misconduct by the Employee.

(6) Payment Upon Termination:

(a) If the employment of the Employee is terminated by the Corporation other than pursuant to Section 5 (c) hereof, the Corporation (i) shall continue to pay Employee the Base Salary in effect immediately prior to the time of such termination for six (6) months after the last full day Employee works under this Agreement at its normal payroll payment dates; (ii) shall reimburse Employee for the premiums (if any) he pays for continuation of life insurance should he elect to exercise the conversion feature of the Corporation's group life policy then in effect for six (6) months after the last full day Employee works under this Agreement; and (iii) continue to pay for such medical/dental/vision insurance as Employee may then receive for six (6) months after the last full day Employee works under this Agreement (such payments of Base Salary and payments or reimbursements of insurance premiums by the Corporation, the "Severance Benefits). Employee agrees that, (a) his eligibility for or entitlement to the foregoing Severance Benefits shall be subject to Employee's execution and delivery of a release, in such form as the Corporation may require, that, among other things, may be a general release of any and all claims Employee may have against Employer, (b) Employee shall have no rights or remedies in the event of his or her termination by the Corporation without Cause and other than as a result of Disability or death except for those set forth in this Agreement and (c) Employee's right to receive any of the foregoing Severance Benefits shall be expressly conditioned upon Employee's full compliance with the Confidentiality Agreement, pursuant to its continued effectiveness, and Employee's full cooperation with the Corporation in both fulfilling the terms of this Agreement and the Confidentiality Agreement and otherwise performing such actions as the Corporation may request in transitioning Employee from his employment with the Corporation and upon any breach of either such agreement by Employee, Employee's rights to any continued payment of Severance Benefits shall immediately cease and Employee shall be obligated to repay to the Corporation all amounts paid by the Corporation for the Severance Benefits except for the amount of \$1,000, which Employee shall be entitled to retain.

(b) If the employment of the Employee is terminated by death, the Corporation shall pay to the estate of the Employee the compensation which would otherwise be payable to the Employee at the end of the month in which his death occurs.

(c) In the event the employment of the Employee is terminated at the election of the Corporation pursuant to Section (5) (c) hereof, the Employee shall only be entitled to his base salary through the last day of actual employment or the date of termination, whichever is earlier.

(d) In the event the Employee voluntarily terminates his employment on the expiration of the period of employment as provided in Section (1), the Employee shall not be entitled to any compensation, and the Corporation shall have no obligation to pay the Employee any compensation, except as is provided in this Employment Agreement.

(7) Trade Secrets: The Employee covenants and agrees that he will communicate to the Corporation, and will not divulge or communicate to any other person, partnership, corporation or other entity without the prior written consent of the Corporation, any trade secrets of the Corporation or confidential information relating to the business of the Corporation or any one connected with the Corporation, and that such trade secrets and confidential information shall not be used by the Employee either on his own behalf or for the benefit of others or disclosed by the Employee to any one, except to the Corporation, during or after the term of employment of the Employee under this Employment Agreement.

(8) Inventions and Patents:

(a) The Employee shall make prompt full disclosure in writing to the Corporation of all inventions, improvements and discoveries, whether or not patentable, which the Employee conceives, devises, makes, discovers, develops, perfects or first reduces to practice, either alone or jointly with others, during the term of employment of the Employee under this Employment Agreement, which relate in any way to the fields, products or business of the Corporation, including development and research, whether during or out of the usual hours of work or on or off the premises of the Corporation or by use of the facilities of the Corporation or otherwise and whether at the request or suggestion of the Corporation or otherwise (all such inventions, improvements and discoveries being hereinafter called the "Inventions"), including any Inventions, whether or not patentable, conceived, devised, made, discovered, developed, perfected or first reduced to practice by the Employee after the employment of the Employee under this

Employment Agreement is terminated if the Inventions were conceived by the Employee during the term of employment of the Employee under this Employment Agreement. Any Inventions, whether or not patentable, conceived, devised, made, discovered, developed, perfected or first reduced to practice by the Employee within six (6) months of the date of termination of the employment of the Employee under this Employment Agreement shall be conclusively presumed to have been conceived during the term of employment of the Employee under this Employment Agreement.

(b) The Employee agrees that the Inventions shall be the sole and exclusive property of the Corporation.

(c) The Employee agrees to assist the Corporation and its nominees in every reasonable way (entirely at its or their expense) to obtain for the benefit of the Corporation letters patent for the Inventions and trademarks, trade names and copyrights relating to the Inventions, and any renewals, extensions or reissues thereof, in any and all countries, and agrees to make, execute, acknowledge and deliver, at the request of the Corporation, all written applications for letters patent, trademarks, trade names and copyrights relating to the Inventions and any renewals, extensions or reissues thereof, in any and all countries, and all documents with respect thereto, and all powers of attorney relating thereto and, without further compensation, to assign to the Corporation or its nominee all the right, title and interest of the Employee in and to such applications and to any patents, trademarks, trade names or copyrights which shall thereafter issue on any such applications, and to execute, acknowledge and deliver all other documents deemed necessary by the Corporation to transfer to or vest in the Corporation all of the right, title and interest of the Employee in and to the Inventions, and to such trademarks, trade names, patents and copyrights together with exclusive rights to make, use, license and sell them throughout the world.

(d) The Employee agrees that even though his employment is terminated under this Employment Agreement he will, at any time after such termination of employment, carry out and perform all of the agreements of Subsections (8) (a) and (8) (c) above, and will at any time and at all times cooperate with the Corporation in the prosecution and/or defense of any litigation which may arise in connection with the Inventions, provided, however, that should such services be rendered after termination of employment of the Employee under this Employment Agreement, the Employee shall be paid reasonable compensation on a per diem basis.



(e) The Employee agrees to make and maintain adequate and current written records of all Inventions in the form of notes, sketches, drawings, or reports relating thereto, which records shall be and remain the property of, and available to, the Corporation at all times.

(f) The Employee agrees that he will, upon leaving the employment of the Corporation, promptly deliver to the Corporation all originals and copies of disclosures, drawings, prints, letters, notes, and reports either typed, handwritten or otherwise memorialized, belonging to the Corporation which are in his possession or under his control and the Employee agrees that he will not retain or give away or make copies of the originals or copies of any such disclosures, drawings, prints, letters, notes or reports.

(9) Property of Corporation: All files, records, reports, documents, drawings, specifications, equipment, and similar items relating to the business of the Corporation, whether prepared by the Employee or otherwise coming into his possession, shall remain the exclusive property of the Corporation and shall not be removed by the Employee from the premises of the Corporation under any circumstances whatsoever without the prior written consent of the Corporation.

(10) Non-Competition:

(a) During the term of employment of the Employee under this Employment Agreement, and during a period of one (1) year after termination of employment of the Employee under this Employment Agreement without regard to the cause of termination of employment and whether or not such termination of employment was caused by the Employee or by the Corporation, (i) the Employee shall not engage, either directly or indirectly, in any manner or capacity, in any business or activity which is competitive with any business or activity conducted by the Corporation; (ii) the Employee shall not work for or employ, directly or indirectly, or cause to be employed by another, any person who was an employee, officer or agent of the Corporation or of any of its subsidiaries at any time during a period of twelve (12) months prior to the termination of the employment of the Employee under this Employment Agreement nor shall the Employee form any partnership with, or establish any business venture in cooperation with, any such person which is competitive with any business or activity of

the Corporation; (iii) the Employee shall not give, sell or lease any goods or services competitive with the goods or services of the Corporation or its subsidiaries to any person, partnership, corporation or other entity who purchased goods or services from the Corporation or its subsidiaries within one (1) year before the termination of the employment of the Employee under this Employment Agreement; (iv) the Employee shall not have any material financial interest, or participate as a director, officer, 5% stockholder, partner, employee, consultant or otherwise, in any corporation, partnership or other entity which is competitive with any business or activity conducted by the Corporation.

(b) The Corporation and the Employee agree that the services of the Employee are of a personal, special, unique and extraordinary character, and cannot be replaced by the Corporation without great difficulty, and that the violation by the Employee of any of his agreements under this Section (10) would damage the goodwill of the Corporation and cause the Corporation irreparable harm which could not reasonably or adequately be compensated in damages in an action at law, and that the agreements of the Employee under this Section (10) may be enforced by the Corporation in equity by an injunction or restraining order in addition to being enforced by the Corporation at law.

(c) In the event that this Section (10) shall be determined by any court of competent jurisdiction to be unenforceable by reason of its extending for too long a period of time or over too great a range of activities, it shall be interpreted to extend only over the maximum period of time or range of activities as to which it may be enforceable.

(11) Non-Solicitation: The Employee shall not, on his own behalf or in the service or on behalf of others, directly or indirectly:

(a) solicit, entice or induce any Customer (as defined below) to become a customer, distributor or supplier of any other person, firm or corporation with respect to products and/or services sold or under development by the Corporation during his employment at the Corporation, or to cease doing business with the Corporation, and the Employee shall not contact or approach any such person, firm or corporation for such purpose or authorize or knowingly approve the taking of such actions by any other

person for a period of twelve (12) months from the date of the termination of employment of the Employee under this Employment Agreement; or

(b) solicit, recruit or hire (or attempt to solicit, recruit or hire) any employee, officer or agent of the Corporation or contractor engaged by the Corporation (whether or not such person is a full-time employee or whether or not such employment is pursuant to a written agreement or at-will) to terminate such person's employment or engagement with the Corporation or work for a third party other than the Corporation for a period of twelve (12) months after the date of the termination of employment of the Employee under this Employment Agreement, or engage in any activity that would cause such employee or contractor to violate any agreement with the Corporation, nor shall the Employee form any partnership with, or establish any business venture in cooperation with, any such person.

(c) For the purposes of this Section (11), a "Customer" means any person or entity which as of the date of the termination of employment of the Employee under this Employment Agreement was, within two (2) years prior to such time, a customer, distributor or supplier of the Corporation, and references to the Corporation shall be deemed to include any affiliate or subsidiary of the Corporation.

(12) Notice: Any and all notices under this Employment Agreement shall be in writing and, if to the Corporation, shall be duly given if sent to the Corporation by registered or certified mail, postage prepaid, return receipt requested, at the address of the Corporation set forth under its name below or at such other address as the Corporation may hereafter designate to the Employee in writing for the purpose, and, if to the Employee, shall be duly given if delivered to the Employee by hand or if sent to the Employee by registered or certified mail, postage prepaid, return receipt requested, at the address of the Employee set forth under his name below or at such other address as the Employee may hereafter designate to the Corporation in writing for the purpose.

(13) Assignment: The rights and obligations of the Corporation under this Employment Agreement shall inure to the benefit of, and shall be binding upon, the successors and assigns of the Corporation. The rights and obligations of the Employee under this Employment Agreement shall inure to the benefit of, and shall be binding upon, the heirs, executors and legal representatives of the Employee.

(14) Entire Agreement and Severability:

(a) This Employment Agreement, and the attached Appendix A, supersedes any and all other agreements, either oral or in writing, between the parties hereto with respect to the employment of the Employee by the Corporation and contains all of the covenants and agreements between the parties with respect to such employment. Each party to this Employment Agreement acknowledges that no representations, inducements, promises or agreements, oral or otherwise, have been made by any party, or any one acting on behalf of any party, which are not embodied herein, and that no other agreement, statement or promise not contained in this Employment Agreement, and the attached Appendix A, shall be valid and binding. Any modification of this Employment Agreement, and the attached Appendix A, will be effective only if it is in writing signed by both parties to this Employment Agreement.

(b) If any provision in this Employment Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions shall nevertheless continue in full force and effect without being impaired or invalidated in any way.

(c) All pronouns used herein shall include the masculine, feminine, and neuter gender as the context requires.

(15) Governing Law: This Employment Agreement shall be governed by, and construed in accordance with, the laws of The Commonwealth of Massachusetts applicable to contracts made and to be performed entirely within The Commonwealth of Massachusetts without regard to its conflict of laws principles.

IN WITNESS WHEREOF, the parties hereto have executed, in The Commonwealth of Massachusetts, this Employment Agreement as a sealed instrument, all as of the day, month and year first written above.

MKS INSTRUMENTS, INC.

By: /s/ John R. Bertucci  
-----  
Chairman & CEO

90 Industrial Way  
Wilmington, MA 01887

/s/ Ronald C. Weigner  
-----  
Legal Signature

Ronald C. Weigner  
Address:

15 Surrey Lane  
-----  
Sudbury, MA 01776  
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APPENDIX A

SUPPLEMENTAL RETIREMENT BENEFITS

1. PURPOSE. (a) GENERAL: The purpose of this Appendix A is to provide Employee with supplemental retirement benefits to encourage his continued employment with the Corporation. Benefits will be payable only if Employee fully complies with all of the requirements of this Appendix A.

(b): For Benefit of Employee Only: Benefits under this Appendix A are provided for the benefit of Employee only. No other employee shall accrue any rights of any kind as a result of the existence of the arrangement described in this Appendix A. Supplemental retirement benefits may be provided to an employee only as specifically authorized by the Board of Directors of the Corporation.

2. DEFINITIONS. As used in this Appendix A, the following terms have the meanings set forth below, unless a different meaning is required by the context:

2.1. "Actuarially Equivalent" means a benefit of equivalent value to another benefit, determined on the following basis:

Interest Rate: The average annual interest rate on 10-year Treasury securities as published in the Internal Revenue Bulletin for the calendar quarter immediately preceding the calendar quarter in which the actuarially equivalent benefit is being determined plus 25 basis points; and

Mortality: The most recent "applicable mortality table" prescribed by Section 417(e)(3)(A)(ii) of the Internal Revenue Code (or a successor provision as determined by the Corporation).

2.2. "Base salary" means base salary as defined in the Employment Agreement, before any pre-tax salary reductions for participation in any benefits plan of the Corporation.

2.3. "Beneficiary" means one or more persons, trusts, estates or other entities, designated by Employee to receive death benefits under Sections 5.1(b), 5.2(b) or 6.1(b) of this Appendix A upon Employee's death. If Employee fails to designate a Beneficiary or if all designated

Beneficiaries predecease Employee or die prior to complete distribution of Employee's benefits under Section 5.1(b) or 5.2(b), then such death benefits shall be payable to the executor or personal representative of Employee's estate.

Employee shall designate his Beneficiary by completing and signing a beneficiary designation form prescribed by the Corporation, and returning it to the Corporation or its designated agent. Employee shall have the right to change a Beneficiary by completing, signing and otherwise complying with the terms of the beneficiary designation form and the Corporation's rules and procedures, as in effect from time to time. Upon the acceptance by the Corporation of a new beneficiary designation form, all Beneficiary designations previously filed shall be canceled. The Corporation shall be entitled to rely on the last beneficiary designation form filed by Employee and accepted by the Corporation prior to his or her death. No designation or change in designation of a Beneficiary shall be effective until received and acknowledged in writing by the Corporation or its designated agent. If the Corporation has any doubt as to the proper Beneficiary to receive payments pursuant to this Appendix A, the Corporation shall have the right, exercisable in its discretion, to withhold such payments until this matter is resolved to the Corporation's satisfaction.

2.4. "Bonus" means a bonus paid under the Corporation's Management Incentive Program.

2.5. "Change in Control" means the first to occur of any of the following events:

- (a) Any "person" (as that term is used in Section 13 and 14(d)(2) of the Securities Exchange Act of 1934 ("Exchange Act")) becomes the beneficial owner (as that term is used in Section 13(d) of the Exchange Act), directly or indirectly, of fifty percent (50%) or more of the Corporation's capital stock entitled to vote in the election of directors;
- (b) The shareholders of the Corporation approve any consolidation or merger of the Corporation, other than a consolidation or merger of the Corporation in which the holders of the common stock of the Corporation immediately prior to the consolidation or merger hold more than fifty percent (50%) of the common stock of the surviving corporation immediately after the consolidation or merger;
- (c) The shareholders of the Corporation approve any plan or proposal for the liquidation or dissolution of the Corporation; or
- (d) The shareholders of the Corporation approve the sale or transfer of all or substantially all of the assets of the Corporation to parties that are not within a

"controlled group of corporations" (as defined in Code Section 1563) in which the Corporation is a member.

2.6. "Corporation" means MKS Instruments, Inc.. and any corporation, trust, association or enterprise which is required to be considered, together with the Corporation, as one employer pursuant to the provisions of Sections 414(b), 414(c), 414(m) or 414(o) of the Code.

2.7. "Compensation" for any calendar year means the sum of Employee's Base Salary for such year plus any Bonus paid in such year.

2.8. "Early Retirement Benefit" means the Retirement benefit determined under Section 5.2 of this Appendix A upon Employee's Retirement prior to his Normal Retirement Date.

2.9. "Employment Agreement" means the Employment Agreement between Employee and the Corporation that contains this Appendix A.

2.10. "Final Average Pay" means, for purposes of Section 5 the average of Employee's three (3) highest years of Compensation during the ten (10) calendar year period immediately preceding the calendar year in which Employee Retires, and for purposes of determining death benefits under Section 6 the average of Employee's three (3) highest years of Compensation during the ten (10) calendar year period immediately preceding the calendar year containing Employee's date of death. The foregoing notwithstanding, any calendar year in which Employee has no Compensation from the Corporation shall be ignored in determining such ten calendar year period.

2.11. "Normal Retirement Age" means Employee's 65th birthday.

2.12. "Normal Retirement Benefit" means the Retirement benefit determined under Section 5.1 of this Appendix A upon Employee's Retirement on or after his Normal Retirement Date.

2.13. "Normal Retirement Date" means the first day of the month in which Employee attains Normal Retirement Age.

2.14. "Permanent and Total Disability" means disability as defined in Section 216(i)(1) of the Social Security Act (in general, the inability to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment which can be expected to result in death or has lasted or can be expected to last for a continuous period of not less than



12 months, or blindness). Employee shall be conclusively presumed to be Permanently and Totally Disabled upon determination that he is disabled by the Social Security Administration.

2.15. "Retires" or "Retired" means Employee's termination of employment with the Corporation upon or after satisfying the vesting requirements of Section 4.1. Employee shall be deemed to have Retired with a fully vested Normal Retirement Benefit on the earliest of the date he becomes Permanently and Totally Disabled, the date the Corporation terminates Employee's employment with the Corporation for any reason other than Termination for Cause, the date of Employee's death while employed by the Corporation, or the date of Employee's qualifying termination of employment in connection with a Change in Control in accordance with the provisions of Section 7 of this Appendix A.

2.16. "Retirement Date" means the date Employee Retires or is deemed to have Retired in accordance with Section 2.15 of this Appendix A. The term "Retirement Date" shall include Employee's Early Retirement Date as defined in Section 5.2 of this Appendix A.

2.17. "Termination of Employment" means Termination for Cause, or Employee's voluntary severance from employment with the Corporation for any reason other than Retirement.

2.18. "Termination for Cause" means, solely for purposes of this Appendix A, termination of Employee's employment by the Corporation as a result of Employee's conviction for the commission of a felony, material breach of any employment or other agreements between Employee and the Corporation, or willful failure to perform the material responsibilities of his position with the Corporation.

2.19. "Trust" means the Trust established pursuant to Section 10 of this Appendix A.

### 3. ELIGIBILITY FOR RETIREMENT BENEFITS.

3.1. General: Subject to Sections 4.2, 4.3, 4.4, and 4.5 the Corporation shall pay the retirement benefits described in this Appendix A if Employee Retires from employment with the Corporation upon or after satisfying the vesting requirements set forth in Section 4.1.

3.2. Disability: Solely for purposes of determining eligibility for benefits payable under this Appendix A, Employee shall be deemed to be an employee of the Corporation during any period for which Employee receives benefits under any short term or long term disability plan of the Corporation but is not Permanently and Totally Disabled, and during such period Employee shall continue to accrue service for purposes of the vesting requirements set forth in

Section 4.1. If Employee remains disabled on the date he satisfies the vesting requirements set forth in Section 4.1, he shall be deemed to have Retired from employment from the Corporation on that date for purposes of this Appendix A. This Section 3.2 shall have no bearing on whether Employee remains an employee of the Corporation for any other purpose.

#### 4. VESTING.

4.1 General: Except as provided in Sections 4.2, 4.3, 4.4, and 4.5, and subject to Section 10.2, Employee's benefits under this Appendix A shall be fully vested and nonforfeitable if Employee satisfies both (a) and (b) while employed with the Corporation:

(a) attains age 60, and

(b) has 25 years of service with the Corporation. Employee shall have 25 years of service on the 25th anniversary of Employee's original hire date.

The foregoing notwithstanding, Employee shall be fully vested in his benefit under this Appendix A on the earliest of the date (a) Employee dies while employed by the Corporation, (b) Employee becomes Permanently and Totally Disabled, (c) the Corporation terminates Employee's employment with the Corporation for any reason other than Termination for Cause as defined in Section 2.18 of this Appendix A, or (d) of Employee's qualifying termination of employment in connection with a Change in Control in accordance with the requirements of Section 7 of this Appendix A. Death benefits shall be determined in accordance with Section 6.

4.2. Termination for Cause: All benefits shall be forfeited, and no amount shall be payable under this Appendix A, in the event of Employee's Termination for Cause.

4.3. Compliance with Noncompete, Nondisclosure, and Nonsolicitation Agreements. All benefits under this Appendix A are expressly conditioned upon Employee's compliance with the terms of any noncompetition, nondisclosure, or nonsolicitation provisions contained in the Employment Agreement, or in any other agreement between Employee and the Corporation. All benefits payable under this Appendix A shall be forfeited, and no amount shall be payable, in the event Employee violates the terms of any such provisions. If Employee violates the terms of any such provisions, and benefit payments have commenced to Employee, any such payments shall cease, and Employee shall repay all previously paid benefits to the Corporation upon demand. If Employee fails to repay such amounts upon demand, the

Corporation shall have the right to take any action necessary to recover such payments from Employee.

4.4. Notice of Intent to Retire. Benefits payable under this Appendix A are specifically conditioned upon Employee providing to the Corporation written notice of Employee's intent to Retire at least six months prior to Employee's Retirement date. In the event Employee terminates employment with the Corporation for any reason other than death without satisfying the notice requirements of this Section 4.4 all benefits shall be forfeited, and no amount shall be payable under this Appendix A. The foregoing notwithstanding, the Corporation, in its sole and absolute discretion, may elect to waive the notice requirement of this Section 4.4. The foregoing notwithstanding, this Section 4.4 shall not apply to death benefits payable under Section 6 of this Appendix A, or to Retirement benefits payable under Section 5 as a result of Employee's deemed Retirement under Section 2.15 or Section 7 of this Appendix A.

4.5. Release. Benefits payable under this Appendix A (other than death benefits payable under Section 6) are specifically conditioned upon and provided in exchange for Employee signing a separation agreement that releases the Corporation from any liabilities that may have arisen as a result of Employee's employment and/or termination of employment with the Corporation. In the event Employee terminates employment with the Corporation for any reason other than death without satisfying the requirements of this Section 4.5 all benefits shall be forfeited, and no amount shall be payable under this Appendix A. 4.6. Termination of Employment Prior to Satisfying Vesting Requirements. No benefits are payable under this Appendix A upon Employee's Termination of Employment with the Corporation prior to satisfying the vesting requirements set forth in Section 4.1.

## 5. RETIREMENT BENEFITS.

5.1. Normal Retirement Benefit. This Section 5.1 describes the Retirement benefit payable by the Corporation in the event Employee Retires (or is deemed to have Retired in accordance with Section 2.15 or Section 7 of this Appendix A) on or after his Normal Retirement Date. Employee's Normal Retirement Benefit shall be paid in the form of an Actuarially Equivalent lump sum, as set forth in Section 5.3(a), unless Employee makes the election described in Section 5.3(b).

(a) Married on Retirement Date: If Employee is married on his Retirement Date, Employee's Normal Retirement Benefit shall be:

50% times Final Average Pay

payable annually for the life of Employee with 50% of such amount continuing after Employee's death to his spouse for her life. Payments shall commence as soon as administratively practicable following Employee's Retirement Date, and subsequent payments shall be made as soon as administrative practicable following each anniversary of Employee's Retirement Date (payments shall not, however, commence earlier than the date permitted by federal law). Solely for purposes of this Section 5.1, "Spouse" shall mean the spouse to whom Employee is married on his Retirement Date (regardless of whether that is the same spouse to whom he is married on his date of death), unless the Corporation is directed by a court of competent jurisdiction to treat someone else as Employee's "spouse." If the spouse to whom Employee is married on his Retirement Date does not survive Employee, no survivor death benefit shall be payable under this Section 5.1, without regard to whether employee is married on his date of death.

(b) Not Married on Retirement Date: If Employee is not married on his Retirement Date, Employee's Normal Retirement Benefit shall be:

50% times Final Average Pay

payable annually for the life of Employee with a ten year certain guarantee. Payments shall commence as soon as administratively practicable following Employee's Retirement Date, and subsequent payments shall be made as soon as administrative practicable following each anniversary of Employee's Retirement Date (payments shall not, however, commence earlier than the date permitted by federal law). If Employee dies before receiving 10 annual installments, the Corporation shall pay a lump sum benefit to Employee's Beneficiary that is Actuarially Equivalent to the additional benefit that would have been payable to Employee had he continued to receive annual installments up to a total of 10 annual installments.

5.2. Early Retirement Benefit. This Section 5.2 describes the Retirement benefit payable by the Corporation in the event Employee Retires prior to his Normal Retirement Date. Employee may Retire from employment with the Corporation prior to his Normal Retirement Date on the first day of any month coincident with or next following the date he satisfies the vesting requirements of section 4.1. The date on which Employee Retires under this Section 5.2 shall be his Early Retirement Date. Employee's Early Retirement Benefit shall be paid in the form of an Actuarially Equivalent lump sum, as set forth in Section 5.3(a), unless Employee makes the election described in Section 5.3(b).

(a) Married on Early Retirement Date: If Employee is married on his Early Retirement Date, Employee's Early Retirement Benefit shall be:

50% times Final Average Pay

multiplied by the applicable percentage as set forth in the following schedule:

Age at which Early Retirement Benefits Commence	64	63	62	61	60
Applicable Percentage	90%	80	60	40	20

payable annually for the life of Employee with 50% of such amount continuing after Employee's death to his spouse for her life. Payments shall commence as soon as administratively practicable following Employee's Early Retirement Date, and subsequent payments shall be made as soon as administrative practicable following each anniversary of Employee's Early Retirement Date (payments shall not, however, commence earlier than the date permitted by federal law). Solely for purposes of this Section 5.2, "Spouse" shall mean the spouse to whom Employee is married on his Early Retirement Date (regardless of whether that is the same spouse to whom he is married on his date of death), unless the Corporation is directed by a court of competent jurisdiction to treat someone else as Employee's "spouse." If the spouse to whom Employee is married on his Early Retirement Date does not survive Employee, no survivor death benefit shall be payable under this Section 5.2, without regard to whether employee is married on his date of death.

(b) Not Married on Early Retirement Date: If Employee is not married on his Early Retirement Date, Employee's Early Retirement Benefit shall be:

50% times Final Average Pay

multiplied by the applicable percentage as set forth in the following schedule:

Age at which Early Retirement Benefits Commence	64	63	62	61	60
Applicable Percentage	90%	80	60	40	20

payable annually for the life of Employee with a ten year certain guarantee. Payments shall commence as soon as administratively practicable following Employee's Early Retirement Date, and subsequent payments shall be made as soon as administrative practicable following each anniversary of Employee's Early Retirement Date (payments shall not, however, commence earlier than the date permitted by federal law). If Employee dies before receiving 10 annual installments, the Corporation shall pay a lump sum benefit to Employee's Beneficiary that is Actuarially Equivalent to the additional benefit that would have been payable to Employee had he continued to receive annual installments up to a total of 10 annual installments.

#### 5.3. Form of Payment:

(a) Unless Employee makes the election described in Section 5.3(b) below, Employee's Normal Retirement Benefit or Early Retirement Benefit, determined in accordance with section 5.1 or 5.2 as applicable, shall be paid in the form of a single lump sum that is Actuarially Equivalent to such Normal Retirement Benefit or Early Retirement Benefit. Such lump sum shall be paid as soon as administratively practicable following Employee's retirement (or, if later, the earliest date permitted by Federal law).

(b) In lieu of payment of his Normal Retirement Benefit or Early Retirement Benefit in the form of a lump sum as described in Section 5.3(a), Employee may elect, in the manner prescribed by the Corporation, to receive payment of his retirement benefit in the form described in Section 5.1 or 5.2 as applicable. Any such election must be submitted to and accepted by the Corporation no later than the 13th month prior to Employee's Retirement Date.

5.4. Death While Employed by the Corporation. In the event Employee dies while employed by the Corporation, any benefits payable under this Appendix A shall be determined in accordance with Section 6.

#### 6. DEATH WHILE EMPLOYED BY THE CORPORATION.

6.1. General. In the event Employee dies while employed by the Corporation the death benefit payable under this Appendix A shall be as follows:

(a) if Employee is married on his date of death, 50% of the lump sum that is Actuarially Equivalent to the Normal Retirement Benefit determined under Section 5.1(a) of this Appendix A, such lump sum benefit to be determined as if Employee Retired on his date of death after reaching Normal Retirement Age; or

(b) if Employee is not married on his date of death, 50% of the lump sum that is Actuarially Equivalent to the Normal Retirement Benefit determined under Section 5.1(b) of this Appendix A, such lump sum benefit to be determined as if Employee Retired on his date of death after reaching Normal Retirement Age.

The death benefit shall be payable in a lump sum as soon as administratively practicable following Employee's date of death.

6.2. Payee. This death benefit shall be payable to Employee's (a) surviving spouse if Employee is married on his date of death, or (b) Beneficiary if Employee is not married on his date of death. "Surviving spouse" for purposes of this Section 6.2 means the spouse to whom Employee is married on his date of death.

7. EFFECT OF A CHANGE IN CONTROL OF THE CORPORATION. Anything in this Appendix A to the contrary notwithstanding, this Section 7 shall apply in the event of a Change in Control. If, within three years after the date of a Change in Control Employee's employment with the Corporation is involuntarily terminated by the Corporation for any reason (other than Cause), or Employee voluntarily terminates employment with the Corporation for Good Reason, and employee is not otherwise eligible for Retirement, then Employee shall be deemed to have Retired with a fully vested Normal Retirement Benefit on the date of such termination of employment. Employee's Normal Retirement Benefit shall be determined as of such deemed Retirement Date, and shall be payable in a lump sum, calculated pursuant to Sections 5.1 and 5.3, as soon as administratively practicable following such deemed Retirement Date.

Solely for purposes of this Section 7, "Good Reason" shall mean termination of Employee's employment by Employee within 90 days following (i) a material diminution in Employee's positions, duties and responsibilities from those described in this Employment Agreement (ii) a reduction in Employee's Base Salary (other than a reduction which is part of a general salary reduction program affecting senior executives of the Corporation) (iii) a material reduction in the aggregate value of the pension and welfare benefits provided to Employee from those in effect prior to the Change in Control (other than a reduction which is proportionate to the reductions applicable to other senior executives pursuant to a cost-saving plan that includes all

senior executives), (iv) a material breach of any provision of this Employment Agreement by the Corporation, (v) the Corporation's requiring Employee to be based at a location that creates for Employee a one way commute in excess of 60 miles from his primary residence, except for required travel on the Corporation's business to an extent substantially consistent with the business travel obligations of Employee under this Employment Agreement. Notwithstanding the foregoing, a termination shall not be treated as a termination for Good Reason (i) if Employee shall have consented in writing to the occurrence of the event giving rise to the claim of termination for Good Reason or (ii) unless Employee shall have delivered a written notice to the Corporation within 30 days of his having actual knowledge of the occurrence of one of such events stating that he intends to terminate his employment for Good Reason and specifying the factual basis for such termination, and such event, if capable of being cured, shall not have been cured within 30 days of the receipt of such notice.

8. EFFECT OF TERMINATION OF EMPLOYMENT AND REHIRE. Upon Employee's termination of employment with the Corporation the benefit payable under this Appendix A, if any, shall be determined by the Corporation and such determination shall be conclusive and binding (subject to Section 14). If Employee is subsequently reemployed by the Corporation such reemployment, additional service, and additional compensation shall not result in a re-determination of the benefits due under this Appendix A. If, upon reemployment, Employee is receiving installment payments pursuant to Section 5 those payments shall not be suspended during any period of reemployment.

#### 9. ADMINISTRATION.

9.1. Powers of the Corporation: The Board of Directors of the Corporation (the "Board") shall have the sole authority to act on behalf of the Corporation under this Appendix A (subject to Section 9.3), and shall have all the powers necessary to administer the benefits under this Appendix A, including, without limitation, the power to interpret the provisions of this Appendix A and to establish rules and prescribe any forms required to administer benefits under this Appendix A

9.2. Actions of the Board: All determinations, interpretations, rules, and decisions of the Board shall be conclusive and binding upon all persons having or claiming to have any interest or right under this Appendix A.

9.3. Delegation: The Board shall have the power to delegate specific duties and responsibilities to officers or other employees of the Corporation or other individuals or



entities. Any delegation by the Board may allow further delegations by the individual or entity to whom the delegation is made. Any delegation may be rescinded by the Board at any time. Each person or entity to whom a duty or responsibility has been delegated shall be responsible for the exercise of such duty or responsibility and shall not be responsible for any act or failure to act of any other person or entity.

9.4. Reports and Records: The Board and those to whom the Board has delegated duties under Section 9.3 shall keep records of all their proceedings and actions and shall maintain books of account, records, and other data as shall be necessary for the proper administration of this Appendix A and for compliance with applicable law.

9.5. Costs: The costs of providing and administering the benefits under this Appendix A shall be borne by the Corporation.

#### 10. UNFUNDED BENEFITS; ESTABLISHMENT OF TRUST.

10.1. Unfunded Status. This Appendix A shall be unfunded for tax purposes and for purposes of Title 1 of ERISA.

10.2. Establishment of Trust. The Corporation shall not be required to set aside any funds to discharge its obligations hereunder, but may set aside such funds to informally fund all or part of its obligations hereunder if it chooses to do so, including without limitation the contribution of assets to a "rabbi trust" (the Trust). Any setting aside of amounts, or acquisition of any insurance policy or any other asset, by the Corporation with which to discharge its obligations hereunder in trust or otherwise, shall not be deemed to create any beneficial ownership interest in Employee, his surviving spouse, or Beneficiary, and legal and equitable title to any funds so set aside shall remain in the Corporation, and any recipient of benefits hereunder shall have no security or other interest in such funds. The rights of Employee and his surviving spouse and Beneficiary(ies) under this Appendix A shall be no greater than the rights of a general unsecured creditor of the Corporation. Any and all funds so set aside by the Corporation shall remain the general assets of the Corporation, and subject to the claims of its general creditors, present and future.

10.3. Interrelationship of this Appendix A and the Trust. The provisions of this Appendix A shall govern the rights of Employee to receive distributions pursuant to the provisions of this Appendix A. The provisions of the Trust shall govern the rights of the Corporation, Employee, and creditors of the Corporation to the assets transferred to the Trust. The Corporation shall at all times remain liable to carry out its obligations under this Appendix A.

10.4. Distributions from the Trust. The Corporation's obligations under this Appendix A may be satisfied with Trust assets distributed pursuant to the terms of the Trust, and any such distribution shall reduce the Corporation's obligation under this Appendix A.

11. PAYMENT OF BENEFIT FOR DISABLED OR INCAPACITATED PERSON. If the Corporation determines, in its discretion, that Employee or Employee's Beneficiary or surviving spouse is under a legal disability or is incapacitated in any way so as to be unable to manage his financial affairs, the Corporation shall make payment to such person or to his legal representative or to a friend or relative of such person as the Corporation considers advisable. Any payment under this Section 11 shall be a complete discharge of any liability for the making of such payment under this Appendix A. Nothing contained in this Section 11 however, should be deemed to impose upon the Corporation any liability for paying a benefit to any person who is under such a legal disability or is so incapacitated unless it has received notice of such disability or incapacity from a competent source.

12. NONASSIGNABILITY. Neither Employee nor any other person shall have any right to commute, sell, assign, transfer, pledge, anticipate, mortgage or otherwise encumber, transfer, hypothecate, alienate or convey in advance of actual receipt, the amounts, if any, payable hereunder, or any part thereof, which are, and all rights to which are expressly declared to be, unassignable and non-transferable. No part of the amounts payable shall, prior to actual payment, be subject to seizure, attachment, garnishment or sequestration for the payment of any debts, judgments, alimony or separate maintenance owed by Employee or any other person, be transferable by operation of law in the event of Employee's or any other person's bankruptcy or insolvency or be transferable to a spouse as a result of a property settlement or otherwise. The Corporation is authorized to make any payments directed by court order.

### 13. CLAIM PROCEDURE.

13.1. Presentation of Claim. Employee, or the surviving spouse of Employee after Employee's death, or Employee's Beneficiary (such Employee, surviving spouse, or Beneficiary being referred to below as a "Claimant") may deliver to the Corporation a written claim for a determination with respect to the amounts distributable to such Claimant under this Appendix A. If such a claim relates to the contents of a notice received by the Claimant, the claim must be made within sixty (60) days after such notice was received by the Claimant. All other claims must be made within 180 days of the date on which the event that caused the claim to arise occurred. The claim must state with particularity the determination desired by the Claimant.

13.2. Notification of Decision. The Corporation shall consider a Claimant's claim within a reasonable time, but no later than ninety (90) days after receiving the claim. If the Corporation determines that special circumstances require an extension of time for processing the claim, written notice of the extension shall be furnished to the Claimant prior to the termination of the initial ninety (90) day period. In no event shall such extension exceed a period of ninety (90) days from the end of the initial period. The extension notice shall indicate the special circumstances requiring an extension of time and the date by which the Corporation expects to render the benefit determination. The Corporation shall notify the Claimant in writing:

- (a) that the Claimant's requested determination has been made, and that the claim has been allowed in full; or
- (b) that the Corporation has reached a conclusion contrary, in whole or in part, to the Claimant's requested determination, and such notice must set forth in a manner calculated to be understood by the Claimant:
  - (i) the specific reason(s) for the denial of the claim, or any part of it;
  - (ii) specific reference(s) to pertinent provisions of this Appendix A upon which such denial was based;
  - (iii) a description of any additional material or information necessary for the Claimant to perfect the claim, and an explanation of why such material or information is necessary;
  - (iv) an explanation of the claim review procedure set forth in Section 13.3 below; and
  - (v) a statement of the Claimant's right to bring a civil action under ERISA Section 502(a) following an adverse benefit determination on review.

13.3. Review of a Denied Claim. On or before sixty (60) days after receiving a notice from the Corporation that a claim has been denied, in whole or in part, a Claimant (or the Claimant's duly authorized representative) may file with the Corporation a written request for a review of the denial of the claim. The Claimant (or the Claimant's duly authorized representative):

- (a) may, upon request and free of charge, have reasonable access to, and copies of, all

documents, records and other information relevant to the claim for benefits;

(b) may submit written comments or other documents; and/or

(c) may request a hearing, which the Corporation, in its sole discretion, may grant.

13.4. Decision on Review. The Corporation shall render its decision on review promptly, and no later than sixty (60) days after the Corporation receives the Claimant's written request for a review of the denial of the claim. If the Corporation determines that special circumstances require an extension of time for processing the claim, written notice of the extension shall be furnished to the Claimant prior to the termination of the initial sixty (60) day period. In no event shall such extension exceed a period of sixty (60) days from the end of the initial period. The extension notice shall indicate the special circumstances requiring an extension of time and the date by which the Corporation expects to render the benefit determination. In rendering its decision, the Corporation shall take into account all comments, documents, records and other information submitted by the Claimant relating to the claim, without regard to whether such information was submitted or considered in the initial benefit determination. The decision must be written in a manner calculated to be understood by the Claimant, and it must contain:

(a) specific reasons for the decision;

(b) specific reference(s) to the pertinent provisions of this Appendix A upon which the decision was based;

(c) a statement that the Claimant is entitled to receive, upon request and free of charge, reasonable access to and copies of, all documents, records and other information relevant (as defined in applicable ERISA regulations) to the Claimant's claim for benefits; and

(d) a statement of the Claimant's right to bring a civil action under ERISA Section 502(a).

13.5. LEGAL ACTION. A Claimant's compliance with the foregoing provisions of this Article 13 is a mandatory prerequisite to a Claimant's right to commence any legal action with respect to any claim for benefits under this Appendix A.

14. TAX WITHHOLDING AND REPORTING; SECTION 280G EXCISE TAXES.

(a) General. The Corporation shall have the right to deduct any required withholding taxes from any payment made under this Appendix A. Except as provided in Section 14(b), the Corporation shall not be obligated to pay or reimburse Employee, or his surviving spouse or Beneficiary, for any income or other taxes or penalties that may be imposed on such person by the Internal Revenue Service or any state or other taxing authority as a result of benefits paid under this Appendix A.

(b) Excise Tax Payment. In the event that any payment or benefit (within the meaning of Section 280G(b)(2) of the Internal Revenue Code of 1986, as amended (the "Code")), to Employee or for his benefit paid or payable or distributed or distributable pursuant to the terms of this Employment Agreement (including this Appendix A) or otherwise in connection with, or arising out of, his employment with the Corporation or a Change in Control of the Corporation (a "Payment" or "Payments"), would be subject to the excise tax imposed by Section 4999 of the Code or any interest or penalties are incurred by the Employee with respect to such excise tax (such excise tax, together with any such interest and penalties, are hereinafter collectively referred to as the "Excise Tax"), then Employee will be entitled to immediately receive an additional payment (a "Gross-Up Payment") in an amount such that after payment by Employee of all taxes (including any interest or penalties, other than interest and penalties imposed by reason of Employee's failure to file timely a tax return or pay taxes shown due on his return, imposed with respect to such taxes and the Excise Tax), including any Excise Tax imposed upon the Gross-Up Payment, Employee retains an amount of the Gross-Up Payment equal to the Excise Tax imposed upon the Payments.

15. SUCCESSORS. The provisions of this Appendix A shall bind and inure to the benefit of the Corporation and its successors and assigns and Employee and Employee's surviving spouse and designated beneficiaries.

16. AMENDMENT. This Appendix A may be amended only by written agreement between Employee and the Corporation.

17. LEGEND

The securities represented by this supplemental retirement benefit have not been registered under the Securities Act of 1933, as amended, and may not be sold, transferred or otherwise disposed of in the absence of an effective registration statement under such Act or an opinion of counsel satisfactory to the corporation to the effect that such registration is not required.

## EMPLOYMENT AGREEMENT

EMPLOYMENT AGREEMENT dated as of July 30, 2004 ("Employment Agreement"), by and between MKS Instruments, Inc., a Massachusetts Corporation (the "Corporation"), and Robert L. Klimm, of Wolfeboro, NH (the "Employee").

WHEREAS, the Corporation and the Employee entered into an Employment Agreement dated December 6, 1999 (the "Original Employment Agreement"); and

WHEREAS, the Corporation intends to provide certain supplemental retirement benefits to the Employee as more particularly set forth herein; and

WHEREAS, the Corporation and the Employee intend that this Employment Agreement shall supercede the Original Employment Agreement and that as of the date hereof, the Original Employment Agreement shall be of no further force and effect;

NOW, THEREFORE, in consideration of the premises and the mutual promises contained herein, the Corporation and the Employee hereby agree as follows:

(1) Term of Employment: The Corporation hereby employs the Employee, and the Employee hereby accepts employment with the Corporation, for a period commencing as of July 30, 2004 and continuing from month to month thereafter until terminated as provided in this Section (1). Either the Corporation or the Employee may terminate the employment of the Employee under this Employment Agreement at any time after July 30, 2004 by giving written notice to the other party stating its or his election to terminate the employment of the Employee under this Employment Agreement. The employment of the Employee under this Employment Agreement shall terminate thirty (30) days after the date of receipt by the other party of such notice; provided, however, that the employment of the Employee under this Employment Agreement is subject to prior termination as hereinafter provided in Section (5). Notwithstanding the above, the Corporation shall be entitled, at its sole discretion, to waive the obligation of the Employee to continue to work during the thirty (30) day notice period.

(2) Capacity: The Employee shall serve as Vice President & General Manager of PRG and shall have such authority and will perform such duties as are delegated to him by the President & COO of the Corporation or his designee that are consistent with this position and his training and experience for the term of employment under this Employment Agreement.

(3) Extent of Services: During the term of employment of the Employee under this Employment Agreement, the Employee shall devote his full time to, and use his best efforts in the furtherance of, the business of the Corporation and shall not engage in any other business activity, whether or not such business activity is pursued for gain or any other pecuniary advantage, without the prior written consent of the Corporation.

(4) Compensation: In consideration of the services to be rendered by the Employee under this Employment Agreement, the Corporation agrees to pay, and the Employee agrees to accept, the following compensation:

(a) Base Salary: A base salary at the rate of two hundred fourteen thousand three hundred and sixty-one dollars (\$214,361) per year for the term of employment of the Employee under this Employment Agreement. The base salary shall be payable in equal biweekly installments, subject to usual withholding requirements, and will be subject to any changes in pay policies that may be established by the Corporation. The base salary will be reviewed regularly according to the practices of the Corporation. No overtime pay will be paid to the Employee by the Corporation.

(b) MKS Instruments Profit Sharing and Retirement Savings Plan: The Employee shall be eligible to become a participant under the profit sharing plan of the Corporation on fulfilling the conditions set forth in the MKS Instruments Profit Sharing and Retirement Savings Plan.

(c) Vacation: The Employee shall be entitled to an annual vacation leave of eighteen (18) days at full pay during each year of this Employment Agreement, subject to the Employee arranging such vacation so as not to affect adversely the ability of the Corporation to transact its necessary business.

(d) Life Insurance: The Corporation shall provide, and pay all of the premiums for, term life insurance for the Employee during the term of employment of the Employee under this Employment Agreement in accordance with the term life insurance plan of the Corporation.

(e) Medical/Dental Insurance: The Corporation shall provide group medical/dental insurance for the Employee under the plans of the Corporation applicable to the Employee during the term of employment of the Employee under this Employment Agreement.

(f) Retirement Benefits: The Employee shall be eligible to participate in supplemental retirement benefits according to the terms and conditions set forth in Appendix A of this Employment Agreement.

(g) Other Benefits: The Corporation shall provide other benefits for the Employee under the plans of the Corporation applicable to the Employee during the term of employment of the Employee under this Employment Agreement.

(5) Termination: The employment of the Employee under this Employment Agreement shall terminate:

(a) On the expiration of the period of employment as provided in Section (1).

(b) Upon the death of the Employee.

(c) At the election of the Corporation (i) if the Employee shall refuse to perform the services required of him under this Employment Agreement, or (ii) if the Employee shall fail, or refuse, to perform the other covenants and agreements required of him under this Employment Agreement, or (iii) for "cause", which term shall mean conviction for the commission of a felony, willful failure by the Employee to perform his responsibilities to the Corporation, or willful misconduct by the Employee.



(6) Payment Upon Termination:

(a) If the employment of the Employee is terminated by the Corporation other than pursuant to Section 5 (c) hereof, the Corporation (i) shall continue to pay Employee the Base Salary in effect immediately prior to the time of such termination for six (6) months after the last full day Employee works under this Agreement at its normal payroll payment dates; (ii) shall reimburse Employee for the premiums (if any) he pays for continuation of life insurance should he elect to exercise the conversion feature of the Corporation's group life policy then in effect for six (6) months after the last full day Employee works under this Agreement; and (iii) continue to pay for such medical/dental/vision insurance as Employee may then receive for six (6) months after the last full day Employee works under this Agreement (such payments of Base Salary and payments or reimbursements of insurance premiums by the Corporation, the "Severance Benefits). Employee agrees that, (a) his eligibility for or entitlement to the foregoing Severance Benefits shall be subject to Employee's execution and delivery of a release, in such form as the Corporation may require, that, among other things, may be a general release of any and all claims Employee may have against Employer, (b) Employee shall have no rights or remedies in the event of his or her termination by the Corporation without Cause and other than as a result of Disability or death except for those set forth in this Agreement and (c) Employee's right to receive any of the foregoing Severance Benefits shall be expressly conditioned upon Employee's full compliance with the Confidentiality Agreement, pursuant to its continued effectiveness, and Employee's full cooperation with the Corporation in both fulfilling the terms of this Agreement and the Confidentiality Agreement and otherwise performing such actions as the Corporation may request in transitioning Employee from his employment with the Corporation and upon any breach of either such agreement by Employee, Employee's rights to any continued payment of Severance Benefits shall immediately cease and Employee shall be obligated to repay to the Corporation all amounts paid by the Corporation for the Severance Benefits except for the amount of \$1,000, which Employee shall be entitled to retain.

(b) If the employment of the Employee is terminated by death, the Corporation shall pay to the estate of the Employee the compensation which would otherwise be payable to the Employee at the end of the month in which his death occurs.

(c) In the event the employment of the Employee is terminated at the election of the Corporation pursuant to Section (5) (c) hereof, the Employee shall only be entitled to his base salary through the last day of actual employment or the date of termination, whichever is earlier.

(d) In the event the Employee voluntarily terminates his employment on the expiration of the period of employment as provided in Section (1), the Employee shall not be entitled to any compensation, and the Corporation shall have no obligation to pay the Employee any compensation, except as is provided in this Employment Agreement.

(7) Trade Secrets: The Employee covenants and agrees that he will communicate to the Corporation, and will not divulge or communicate to any other person, partnership, corporation or other entity without the prior written consent of the Corporation, any trade secrets of the Corporation or confidential information relating to the business of the Corporation or any one connected with the Corporation, and that such trade secrets and confidential information shall not be used by the Employee either on his own behalf or for the benefit of others or disclosed by the Employee to any one, except to the Corporation, during or after the term of employment of the Employee under this Employment Agreement.

(8) Inventions and Patents:

(a) The Employee shall make prompt full disclosure in writing to the Corporation of all inventions, improvements and discoveries, whether or not patentable, which the Employee conceives, devises, makes, discovers, develops, perfects or first reduces to practice, either alone or jointly with others, during the term of employment of the Employee under this Employment Agreement, which relate in any way to the fields, products or business of the Corporation, including development and research, whether during or out of the usual hours of work or on or off the premises of the Corporation or by use of the facilities of the Corporation or otherwise and whether at the request or suggestion of the Corporation or otherwise (all such inventions, improvements and discoveries being hereinafter called the "Inventions"), including any Inventions, whether or not patentable, conceived, devised, made, discovered, developed, perfected or first reduced to practice by the Employee after the employment of the Employee under this Employment Agreement is terminated if the Inventions were conceived by the Employee

during the term of employment of the Employee under this Employment Agreement. Any Inventions, whether or not patentable, conceived, devised, made, discovered, developed, perfected or first reduced to practice by the Employee within six (6) months of the date of termination of the employment of the Employee under this Employment Agreement shall be conclusively presumed to have been conceived during the term of employment of the Employee under this Employment Agreement.

(b) The Employee agrees that the Inventions shall be the sole and exclusive property of the Corporation.

(c) The Employee agrees to assist the Corporation and its nominees in every reasonable way (entirely at its or their expense) to obtain for the benefit of the Corporation letters patent for the Inventions and trademarks, trade names and copyrights relating to the Inventions, and any renewals, extensions or reissues thereof, in any and all countries, and agrees to make, execute, acknowledge and deliver, at the request of the Corporation, all written applications for letters patent, trademarks, trade names and copyrights relating to the Inventions and any renewals, extensions or reissues thereof, in any and all countries, and all documents with respect thereto, and all powers of attorney relating thereto and, without further compensation, to assign to the Corporation or its nominee all the right, title and interest of the Employee in and to such applications and to any patents, trademarks, trade names or copyrights which shall thereafter issue on any such applications, and to execute, acknowledge and deliver all other documents deemed necessary by the Corporation to transfer to or vest in the Corporation all of the right, title and interest of the Employee in and to the Inventions, and to such trademarks, trade names, patents and copyrights together with exclusive rights to make, use, license and sell them throughout the world.

(d) The Employee agrees that even though his employment is terminated under this Employment Agreement he will, at any time after such termination of employment, carry out and perform all of the agreements of Subsections (8) (a) and (8) (c) above, and will at any time and at all times cooperate with the Corporation in the prosecution and/or defense of any litigation which may arise in connection with the Inventions, provided, however, that should such services be rendered after termination of employment of the Employee under this Employment Agreement, the Employee shall be paid reasonable compensation on a per diem basis.

(e) The Employee agrees to make and maintain adequate and current written records of all Inventions in the form of notes, sketches, drawings, or reports relating thereto, which records shall be and remain the property of, and available to, the Corporation at all times.

(f) The Employee agrees that he will, upon leaving the employment of the Corporation, promptly deliver to the Corporation all originals and copies of disclosures, drawings, prints, letters, notes, and reports either typed, handwritten or otherwise memorialized, belonging to the Corporation which are in his possession or under his control and the Employee agrees that he will not retain or give away or make copies of the originals or copies of any such disclosures, drawings, prints, letters, notes or reports.

(9) Property of Corporation: All files, records, reports, documents, drawings, specifications, equipment, and similar items relating to the business of the Corporation, whether prepared by the Employee or otherwise coming into his possession, shall remain the exclusive property of the Corporation and shall not be removed by the Employee from the premises of the Corporation under any circumstances whatsoever without the prior written consent of the Corporation.

(10) Non-Competition:

(a) During the term of employment of the Employee under this Employment Agreement, and during a period of one (1) year after termination of employment of the Employee under this Employment Agreement without regard to the cause of termination of employment and whether or not such termination of employment was caused by the Employee or by the Corporation, (i) the Employee shall not engage, either directly or indirectly, in any manner or capacity, in any business or activity which is competitive with any business or activity conducted by the Corporation; (ii) the Employee shall not work for or employ, directly or indirectly, or cause to be employed by another, any person who was an employee, officer or agent of the Corporation or of any of its subsidiaries at any time during a period of twelve (12) months prior to the termination of the employment of the Employee under this Employment Agreement nor shall the Employee form any partnership with, or establish any business venture in cooperation with, any such person which is competitive with any business or activity of the Corporation; (iii) the Employee shall not give, sell or lease any goods or services

competitive with the goods or services of the Corporation or its subsidiaries to any person, partnership, corporation or other entity who purchased goods or services from the Corporation or its subsidiaries within one (1) year before the termination of the employment of the Employee under this Employment Agreement; (iv) the Employee shall not have any material financial interest, or participate as a director, officer, 5% stockholder, partner, employee, consultant or otherwise, in any corporation, partnership or other entity which is competitive with any business or activity conducted by the Corporation.

(b) The Corporation and the Employee agree that the services of the Employee are of a personal, special, unique and extraordinary character, and cannot be replaced by the Corporation without great difficulty, and that the violation by the Employee of any of his agreements under this Section (10) would damage the goodwill of the Corporation and cause the Corporation irreparable harm which could not reasonably or adequately be compensated in damages in an action at law, and that the agreements of the Employee under this Section (10) may be enforced by the Corporation in equity by an injunction or restraining order in addition to being enforced by the Corporation at law.

(c) In the event that this Section (10) shall be determined by any court of competent jurisdiction to be unenforceable by reason of its extending for too long a period of time or over too great a range of activities, it shall be interpreted to extend only over the maximum period of time or range of activities as to which it may be enforceable.

(11) Non-Solicitation: The Employee shall not, on his own behalf or in the service or on behalf of others, directly or indirectly:

(a) solicit, entice or induce any Customer (as defined below) to become a customer, distributor or supplier of any other person, firm or corporation with respect to products and/or services sold or under development by the Corporation during his employment at the Corporation, or to cease doing business with the Corporation, and the Employee shall not contact or approach any such person, firm or corporation for such purpose or authorize or knowingly approve the taking of such actions by any other person for a period of twelve (12) months from the date of the termination of

employment of the Employee under this Employment Agreement; or

(b) solicit, recruit or hire (or attempt to solicit, recruit or hire) any employee, officer or agent of the Corporation or contractor engaged by the Corporation (whether or not such person is a full-time employee or whether or not such employment is pursuant to a written agreement or at-will) to terminate such person's employment or engagement with the Corporation or work for a third party other than the Corporation for a period of twelve (12) months after the date of the termination of employment of the Employee under this Employment Agreement, or engage in any activity that would cause such employee or contractor to violate any agreement with the Corporation, nor shall the Employee form any partnership with, or establish any business venture in cooperation with, any such person.

(c) For the purposes of this Section (11), a "Customer" means any person or entity which as of the date of the termination of employment of the Employee under this Employment Agreement was, within two (2) years prior to such time, a customer, distributor or supplier of the Corporation, and references to the Corporation shall be deemed to include any affiliate or subsidiary of the Corporation.

(12) Notice: Any and all notices under this Employment Agreement shall be in writing and, if to the Corporation, shall be duly given if sent to the Corporation by registered or certified mail, postage prepaid, return receipt requested, at the address of the Corporation set forth under its name below or at such other address as the Corporation may hereafter designate to the Employee in writing for the purpose, and, if to the Employee, shall be duly given if delivered to the Employee by hand or if sent to the Employee by registered or certified mail, postage prepaid, return receipt requested, at the address of the Employee set forth under his name below or at such other address as the Employee may hereafter designate to the Corporation in writing for the purpose.

(13) Assignment: The rights and obligations of the Corporation under this Employment Agreement shall inure to the benefit of, and shall be binding upon, the successors and assigns of the Corporation. The rights and obligations of the Employee under this Employment Agreement shall inure to the benefit of, and shall be binding upon, the heirs, executors and legal representatives of the Employee.

(14) Entire Agreement and Severability:

(a) This Employment Agreement, and the attached Appendix A, supersedes any and all other agreements, either oral or in writing, between the parties hereto with respect to the employment of the Employee by the Corporation and contains all of the covenants and agreements between the parties with respect to such employment. Each party to this Employment Agreement acknowledges that no representations, inducements, promises or agreements, oral or otherwise, have been made by any party, or any one acting on behalf of any party, which are not embodied herein, and that no other agreement, statement or promise not contained in this Employment Agreement, and the attached Appendix A, shall be valid and binding. Any modification of this Employment Agreement, and the attached Appendix A, will be effective only if it is in writing signed by both parties to this Employment Agreement.

(b) If any provision in this Employment Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions shall nevertheless continue in full force and effect without being impaired or invalidated in any way.

(c) All pronouns used herein shall include the masculine, feminine, and neuter gender as the context requires.

(15) Governing Law: This Employment Agreement shall be governed by, and construed in accordance with, the laws of The Commonwealth of Massachusetts applicable to contracts made and to be performed entirely within The Commonwealth of Massachusetts without regard to its conflict of laws principles.

IN WITNESS WHEREOF, the parties hereto have executed, in The Commonwealth of Massachusetts, this Employment Agreement as a sealed instrument, all as of the day, month and year first written above.

MKS INSTRUMENTS, INC.

By: /s/ John R. Bertucci  
-----  
Chairman & CEO

90 Industrial Way  
Wilmington, MA 01887

/s/ Robert L. Klimm  
-----  
Legal Signature

Robert L. Klimm  
Address:

P.O. Box 859, 100 Bickford Rd.  
-----  
Wolfeboro, NH 03894  
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APPENDIX A

SUPPLEMENTAL RETIREMENT BENEFITS

1. PURPOSE. (a) General: The purpose of this Appendix A is to provide Employee with supplemental retirement benefits to encourage his continued employment with the Corporation. Benefits will be payable only if Employee fully complies with all of the requirements of this Appendix A.

(b): For Benefit of Employee Only: Benefits under this Appendix A are provided for the benefit of Employee only. No other employee shall accrue any rights of any kind as a result of the existence of the arrangement described in this Appendix A. Supplemental retirement benefits may be provided to an employee only as specifically authorized by the Board of Directors of the Corporation.

2. DEFINITIONS. Whenever used herein the following terms shall have the meanings hereinafter set forth:

2.1 "Account" or "Deferred Compensation Account" means the account established in Employee's name pursuant to Section 5.1 of this Appendix A which reflects Employee's entire interest in this Appendix A, and which includes Employee's Company Contribution Subaccount, Retirement Subaccount, and In-Service Distribution Subaccount(s).

2.2 "Base Salary" means base salary as defined in the Employment Agreement, before any pre-tax salary reductions for participation in any benefit plan of the Corporation. If Employee becomes Disabled, then during such period of Disability "base salary" means base salary as defined in the Employment Agreement for the calendar year in which such Disability commenced, or the immediately preceding calendar year, whichever is greater.

2.3 "Beneficiary" means one or more persons, trusts, estates or other entities, designated by Employee to receive death benefits under this Appendix A upon Employee's death. If Employee fails to designate a Beneficiary or if all designated Beneficiaries predecease Employee then death benefits under this

Appendix A shall be payable to Employee's surviving spouse, if any, and if not to the executor or personal representative of Employee's estate.

Employee shall designate his Beneficiary by completing and signing a beneficiary designation form prescribed by the Corporation, and returning it to the Corporation or its designated agent. Employee shall have the right to change a Beneficiary by completing, signing and otherwise complying with the terms of the beneficiary designation form and the Corporation's rules and procedures, as in effect from time to time. Upon the acceptance by the Corporation of a new beneficiary designation form, all Beneficiary designations previously filed shall be canceled. The Corporation shall be entitled to rely on the last beneficiary designation form filed by Employee and accepted by the Corporation prior to his or her death. No designation or change in designation of a Beneficiary shall be effective until received and acknowledged in writing by the Corporation or its designated agent. If the Corporation has any doubt as to the proper Beneficiary to receive payments pursuant to this Appendix A, the Corporation shall have the right, exercisable in its discretion, to withhold such payments until this matter is resolved to the Corporation's satisfaction.

2.4 "Bonus" means a bonus payable under the Corporation's Management Incentive Plan.

2.5 "Change in Control" means the first to occur of any of the following events:

(a) Any "person" (as that term is used in Section 13 and 14(d)(2) of the Securities Exchange Act of 1934 ("Exchange Act")) becomes the beneficial owner (as that term is used in Section 13(d) of the Exchange Act), directly or indirectly, of fifty percent (50%) or more of the Corporation's capital stock entitled to vote in the election of directors;

(b) The shareholders of the Corporation approve any consolidation or merger of the Corporation, other than a consolidation or merger of the Corporation in

which the holders of the common stock of the Corporation immediately prior to the consolidation or merger hold more than fifty percent (50%) of the common stock of the surviving corporation immediately after the consolidation or merger;

(c) The shareholders of the Corporation approve any plan or proposal for the liquidation or dissolution of the Corporation; or

(d) The shareholders of the Corporation approve the sale or transfer of all or substantially all of the assets of the Corporation to parties that are not within a "controlled group of corporations" (as defined in Code Section 1563) in which the Corporation is a member.

- 2.6 "Company Contribution Subaccount" means the portion of Employee's Account established in accordance with Section 4.3 of this Appendix A which is credited with the Corporations hypothetical contributions, and earnings thereon.
- 2.7 "Compensation" means, for any calendar year, the sum of Employee's Base Salary for such calendar year plus any Bonus payable in such calendar year.
- 2.8 "Corporation" means MKS Instruments, Inc. and any corporation, trust, association or enterprise which is required to be considered, together with the Corporation, as one employer pursuant to the provisions of Sections 414(b), 414(c), 414(m) or 414(o) of the Code.
- 2.9 "Deferred Compensation Agreement" means a written compensation deferral agreement entered into between Employee and the Corporation pursuant Section 3 of this Appendix A.
- 2.10 "Disability" or "Disabled" means Employee is receiving benefits under any short term or long term disability plan maintained by the Corporation, but is not Permanently and Totally Disabled. Solely for purposes of this Appendix A, Employee shall be deemed to be an employee of the Corporation during any period for which Employee continues to receive benefits under such short term

or long term disability plan. If Employee remains disabled on the date he satisfies the vesting requirements set forth in Section 4.4, he shall be deemed to have Retired from employment from the Corporation on that date for purposes of this Appendix A. This Section 2.10 shall have no bearing on whether Employee remains an employee of the Corporation for any other purpose.

2.11 "Employment Agreement" means the Employment Agreement between Employee and the Corporation that contains this Appendix A.

2.12 "In-Service Distribution Subaccount" means the portion of Employee's Account established in accordance with Section 3.4(c) of the Plan which is credited with Employee's hypothetical deferrals, and earnings thereon, deferred to an in-service distribution date.

2.13 "Permanent and Total Disability" means disability as defined in Section 216(i)(1) of the Social Security Act (in general, the inability to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment which can be expected to result in death or has lasted or can be expected to last for a continuous period of not less than 12 months, or blindness). Employee shall be conclusively presumed to be Permanently and Totally Disabled upon determination that he is disabled by the Social Security Administration..

2.14 "Retirement" or "Retired" or "Retires" means (a) Employee's termination of employment with the Corporation upon or after attaining age 63, or

(b) Employee's deemed Retirement. Employee shall be deemed to have Retired on the earliest of (i) the date he becomes Permanently and Totally Disabled, (ii) the date determined under Section 2.10 of this Appendix A, (iii) the date the Corporation terminates Employee's employment for any reason other than Termination for Cause, (iv) the date of Employee's death while employed by the Corporation, or (v) the date of Employee's qualifying termination of employment in connection with a Change in Control in accordance with the

provisions of Section 7 of this Appendix A.

- 2.15. "Retirement Subaccount" means the portion of Employee's Account established in accordance with Section 3.4(b) of the Plan which is credited with Employee's hypothetical contributions, and earnings thereon, deferred to Retirement.
- 2.16 "Termination of Employment" means Employee's Termination for Cause, or Employee's voluntary severance from employment with the Corporation for any reason other than Retirement.
- 2.17 "Termination for Cause" means, solely for purposes of this Appendix A, termination of Employee's employment by the Corporation as a result of Employee's conviction for the commission of a felony, material breach of any employment or other agreements between Employee and the Corporation, or willful failure to perform the material responsibilities of his position with the Corporation.
- 2.18 "Trust" means the Trust established pursuant to Section 11 of this Appendix A.
- 2.19 Gender and Number. Words in the masculine gender shall include the feminine and the singular shall include the plural, and vice versa, unless qualified by the context. Any headings used herein are included for ease of reference only, and are not to be construed so as to alter the terms hereof.

### 3. DEFERRAL ELECTIONS.

- 3.1 Deferred Compensation Agreement. Employee may elect to defer a portion of his Compensation by entering into a Deferred Compensation Agreement with the Corporation pursuant to the rules set forth in this Section 3. The Deferred Compensation Agreement shall be made on a form supplied by the Corporation and shall become effective only if the Corporation accepts and approves the Agreement.

The foregoing notwithstanding, Employee's deferrals of Compensation under this Appendix A shall be suspended (a) for any period of time required by Treasury Regulation 1.401(k)-1(d)(2)(iv)(B)(4) in the event Employee receives a hardship distribution from a section 401(k) plan maintained by the Corporation, and (b) for any period of time during which Employee is Disabled.

3.2 Timing of Deferred Compensation Agreement.

(a) Deferrals of Base Salary. Employee may enter into a Deferred Compensation Agreement with respect to his Base Salary prior to January 1 of each calendar year. The Deferred Compensation Agreement shall apply to Base Salary earned in the immediately following calendar year, and shall be irrevocable for such calendar year, except as provided in Section 3.1 of this Appendix A.

In the year the Employment Agreement is executed, Employee may enter into a Deferred Compensation Agreement within 30 days of the effective date of the Employment Agreement. Such Deferred Compensation Agreement shall apply to Base Salary earned after the Deferred Compensation Agreement is executed, and shall be irrevocable for the balance of the calendar year.

(b) Deferrals of Bonus. Employee may enter into a Deferred Compensation Agreement with respect to Bonus no later than September 30 of the calendar year prior to the calendar year in which the Bonus would otherwise be paid. The Corporation may, in its discretion, instead require that Employee enter into a Deferred Compensation Agreement with respect to Bonus prior to the beginning of the period during which such Bonus will be earned. Such deferral elections shall be irrevocable, except as provided in Section 3.1. Subsequent deferrals of Bonus shall be made only pursuant to a new Deferred Compensation Agreement.

3.3 Amount of Deferrals.

- (a) From Base Salary. Employee may elect to defer up to 25% of his or her Base Salary, in increments of 1%.
- (b) From Bonus. Employee may elect to defer up to 100% of his Bonus, in increments of 5%.

A Deferral Election may be reduced by the Corporation if the Corporation determines, in its sole discretion, that such action is necessary to meet Federal or State tax withholding obligations.

#### 3.4 Deferral Period.

(a) General. At the time Employee defers Compensation pursuant to a Deferred Compensation Agreement for a calendar year, he may specify an In-Service Distribution Date applicable to all or a portion of the deferrals for such calendar year, and earnings thereon. Any deferrals of Compensation not deferred to an In-Service Distribution Date shall be deemed deferred to Retirement.

(b) Retirement Subaccount. The Corporation shall establish a Retirement Subaccount on Employee's behalf representing Compensation Employee has deferred to Retirement, and earnings thereon. Payments from Employee's Retirement Subaccount shall be made at such time and in such manner as provided in Section 6.3.

(c) Deferrals to an In-Service Distribution Date. Deferrals to an In-Service Distribution Date shall be subject to the following requirements:

(i) In-Service Distribution Date. The In-Service Distribution Date must be a date at least three full calendar years after the date of such Deferred Compensation Agreement.

(ii) In-Service Distribution Subaccount. The Corporation shall establish an In-Service Distribution Subaccount on Employee's behalf to which Employee's deferrals relating to a particular In-Service Distribution Date,

and earnings thereon, shall be credited.

(iii) Limits. There are no limits on the number of In-Service Distribution Subaccounts Employee may establish.

(iv) Payments. Payments from In-Service Distribution Subaccounts shall be made at such time and in such manner as provided in Section 6.2.

(d) Postponing In-Service Distributions. Employee may elect to postpone payment of an In-Service Distribution Subaccount, and instead have such amount paid out as soon as administratively practicable after an allowable alternative In-Service Distribution Date, by submitting a new In-Service Distribution Election Form to the Corporation, subject to the following:

(i) Such Election Form must be submitted to and accepted by the Corporation in its sole discretion no later than the 13th month prior to Employee's previously elected In-Service Distribution Date; and

(ii) The new In-Service Distribution Date selected by Employee must be the first day of any calendar year that is at least three full calendar years after the end of the calendar year in which the previously elected In Service Distribution would otherwise have been paid to Employee.

### 3.5 Vesting of Retirement and In-Service Distribution Subaccounts.

Subject to Section 11.2, Employee's Retirement Subaccount and In-Service Distribution Subaccount(s) shall be fully vested and nonforfeitable.

## 4. COMPANY CONTRIBUTIONS.

4.1 Required Company Contribution. The Corporation shall make an annual hypothetical contribution on Employee's behalf equal to 15% of Employee's Compensation. Such hypothetical contribution shall commence with the



calendar year the Employment Agreement is executed by the Corporation and Employee, and shall continue each calendar year up to and including the year in which Employee severs employment with the Corporation for any reason other than Termination of Employment. Solely for purposes of this Section 4.1, "Compensation" in the calendar year Employee severs employment with the Corporation shall mean only Base Salary and Bonus actually paid to Employee in such calendar year.

4.2 Discretionary Company Contribution.

The Corporation may, in its absolute discretion, make an additional hypothetical contribution on Employee's behalf with respect to any calendar year. The fact that the Corporation makes a discretionary contribution with respect to a particular calendar year shall not obligate the Corporation to make a discretionary contribution with respect to any other calendar year.

4.3 Company Contribution Subaccount.

The Corporation shall establish a Company Contribution Subaccount on behalf of Employee to which hypothetical required company contributions and discretionary company contributions, and earnings thereon, shall be allocated.

4.4 Vesting of Company Contribution Subaccount.

Subject to Sections 4.5, 4.6, 4.7, and Section 11.2 of this Appendix A, Employee's Company Contribution Subaccount shall vest upon the earlier of (a) or (b), where (a) is the following vesting schedule:

Attained age while employed By the Corporation	Vested Percentage
65	100%
64	90%
63	80%

and (b) is the date of Employee's deemed Retirement under Section 2.14(b).

Except as provided in Section 8 of this Appendix A, Employee's Company Contribution Subaccount shall be forfeited upon Employee's Termination of Employment.

- 4.5. Compliance with Noncompete, Nondisclosure, and Nonsolicitation Agreements. Employee's Company Contribution Account shall be forfeited in the event the Corporation determines that Employee has failed to comply with the terms of any noncompetition, nondisclosure, or nonsolicitation provision contained in the Employment Agreement, or in any other agreement between Employee and the Corporation. If Employee violates the terms of any such provision, and installment payments have commenced to Employee, the Corporation shall make a reasonable determination, in its sole discretion, of the portion of such installment payments allocable Employee's Company Contribution Account, and such installment payments shall be permanently reduced by the amount so determined.
- 4.6. Notice of Intent to Retire. Benefits payable under Section 6.1(a) of this Appendix A attributable to Employee's Company Contribution Subaccount are specifically conditioned upon Employee providing to the Corporation written notice of Employee's intent to Retire at least six months prior to Employee's Retirement date. In the event Employee fails to satisfy the notice requirements of this Section 4.6 Employee's Company Contribution Subaccount shall be forfeited, and no amount attributable to such Subaccount shall be payable under this Appendix A. The foregoing notwithstanding, this section 4.6 shall not apply to benefits payable under Section 6.1(a) as a result of Employee's deemed Retirement under Section 2.14(b) of this Appendix A. The Corporation, in its sole and absolute discretion, may elect to waive the notice requirement of this Section 4.6
- 4.7. Release. Benefits payable under Section 6.1(a) of this Appendix A attributable to Employee's Company Contribution Account are specifically conditioned upon and provided in exchange for Employee signing a separation agreement that releases the Corporation from any liabilities that may have arisen as a result of

Employee's employment and/or termination of employment with the Corporation. In the event Employee terminates employment with the Corporation for any reason other than death without satisfying the requirements of this Section 4.7 Employee's Company Contribution Account shall be forfeited, and no amount attributable to such Subaccount shall be payable under this Appendix A.

4.8 Payment of Company Contribution Subaccount. Employee's vested Company Contribution Subaccount shall be paid at such time and in such manner as provided in Section 6.

5. EMPLOYEE'S DEFERRED COMPENSATION ACCOUNT.

- 5.1 Establishment of Deferred Compensation Accounts and Subaccounts. The Corporation shall establish and maintain a hypothetical account for Employee called the Deferred Compensation Account. Such Account shall be segregated from the other accounts on the books and records of the Corporation as an unfunded and unsecured liability of the Corporation to Employee. Subaccounts (including Employee's Company Contribution Subaccount, In-Service Distribution Subaccount(s), and Retirement Subaccount) shall be maintained as determined necessary by the Corporation. Accounts and subaccounts are maintained solely as a device for the measurement and determination of the amounts to be paid to Employee or his Beneficiary pursuant to this Appendix A. Any reference to "contributions to" or "payments from" Employee's Accounts or subaccounts, or similar phrases, are for convenience only.
- 5.2 Timing of Contributions to and Distributions From Employee's Deferred Compensation Account. The Corporation shall credit to Employee's Deferred Compensation Account an amount equal to the percentage of Employee's Base Salary and Bonus which he has elected to defer in accordance with Section 3.3, as of the last day of the calendar month in which Employee would have received

such amount if not for Employee's deferral election.

The Corporation shall credit to Employee's Deferred Compensation Account an amount equal to the Company Contribution(s) to which he is entitled under Sections 4.1 and 4.2 as soon as administratively practicable after the end of each calendar year.

Any distribution with respect to Employee's Deferred Compensation Account shall be charged to such Account as of the date the distribution is made by the Corporation or from the Trust established in accordance with this Appendix A.

5.3 Selection of Investment Vehicle.

Employee shall specify, in the manner prescribed by the Corporation, the allocation of his Account among investment indices available under this Appendix A. An individual's selection of an investment index will have no bearing on the actual investment or segregation of Corporation assets, but will be used as the basis for making adjustments to such individual's Account as described in Section Article 5.4 below. Employee can change his or her investment index or indices at such time, and in such manner, as determined by the Corporation. The Corporation may change the investment indices available under this Appendix A at any time in its absolute discretion.

5.4 Adjustment of Deferred Compensation Account.

As of the last day of each calendar month, or more frequently as determined in the sole discretion of the Corporation, Employee's Deferred Compensation Account shall be credited with hypothetical net income, gain and loss, including hypothetical net unrealized gain and loss, based on the hypothetical investment directions made by the Participant in accordance with Section 5.3 of this Appendix A. Such earnings will continue to accrue during any period in which installments are paid pursuant to Section 6.1(a).

6. BENEFIT PAYMENTS.

6.1 Payment of Company Contribution Subaccount.

(a) Payment upon Retirement. Payment of the vested portion of Employee's Company Contribution Subaccount shall be made, or shall commence, as soon as administratively practicable following Employee's Retirement, and the nonvested portion shall be forfeited. Payment shall be made in a lump sum unless Employee elects to receive payment of his Account under an Annual Installment Method, as defined below. Such election shall be made on a form prescribed by the Corporation, which must be received and accepted by the Corporation no later than the 13th month prior to Employee's Retirement date.

"Annual Installment Method" shall mean annual installment payments over 10, 15, or 20 years as elected by Employee, calculated as follows: (i) for the first annual installment, Employee's Company Contribution Subaccount balance shall be calculated as of the close of business on the last day of the calendar month immediately preceding the calendar month containing Employee's Retirement date, and (ii) for remaining annual installments, Employee's subaccount balance shall be calculated on the last day of the calendar month immediately preceding the calendar month containing the anniversary of Employee's Retirement Date. Each annual installment shall be calculated by multiplying this balance by a fraction, the numerator of which is one and the denominator of which is the remaining number of annual payments due to Employee. By way of example, if Employee elects a ten (10) year Annual Installment Method, the first payment shall be 1/10 of Employee's Company Contribution Subaccount balance, calculated as described in this definition. The following year, the payment shall be 1/9 of the Account balance, calculated as described in this definition, and so on.

(b) Payment Upon Death. Death benefits shall be payable under this Appendix A only as follows:

(i) In the event Employee dies while employed by the Corporation, Employee's Company Contribution Subaccount shall be payable to Employee's Beneficiary in a lump sum as soon as administratively

practicable following Employee's death.

(ii) In the event Employee dies after Retirement while receiving installment payments, installment payments shall cease and Employee's remaining vested Company Contribution Subaccount balance shall be paid to Employee's Beneficiary in a lump sum as soon as administratively practicable following Employee's death. In the event Employee dies after Retirement, but before any payment required under Section 6(a) has been paid to Employee, Employee's vested Company Contribution Subaccount balance shall be paid to Employee's Beneficiary in a lump sum as soon as administratively practicable following Employee's death.

#### 6.2 Payment of In-Service Distribution Subaccount.

Employee's In-Service Distribution Subaccount(s) shall be paid in a single lump sum. Payment shall be made as soon as administratively practicable after the earlier of (a) the Participant's In-Service Distribution Date, or (b) the date Employee terminates employment for any reason.

#### 6.3 Payment of Retirement Subaccount.

(a) Payment upon Retirement. In the event of Retirement Employee's Retirement Subaccount shall be paid at the same time, and in the same form, as Employee's Company Contribution Subaccount.

(b) Payment upon Termination of Employment. In the event of Termination of Employment, Employee's Retirement Subaccount shall be paid in a single lump sum. Payments shall be made as soon as administratively practicable after the Participant's Termination of Employment.

#### 6.4 Distribution of Taxable Amounts.

Notwithstanding the foregoing provisions of this Section 6, in the event Employee or Employee's Beneficiary is determined to be subject to federal

income tax on any amount credited to the Employee's Deferred Compensation Account prior to the time payment is otherwise due hereunder, the entire amount determined to be so taxable shall be paid from Employee's Account by the Corporation to Employee or Employee's Beneficiary. Any amount to the credit of Employee's Deferred Compensation Account shall be determined to be subject to federal income tax upon the earlier of:

(a) determination by the Internal Revenue Service addressed to Employee or Beneficiary which is not appealed; or

(b) a final determination by the United States Tax Court or any other Federal Court affirming any such determination by the Internal Revenue Service that amounts credited to Employee's Account are subject to federal income tax.

#### 6.5 Timing of Distributions- Federal Law.

Notwithstanding the foregoing provisions of this Section 6, benefit payments shall not be made or commence to Employee prior to the date otherwise permitted by federal law, as determined in the sole discretion of the Corporation.

#### 7. LIMITATIONS ON LIABILITY.

Notwithstanding any of the preceding provisions of this Appendix A, neither the Corporation, nor any individual acting as employee or agent of the Corporation, shall be liable to Employee or other person for any claim, loss, liability or expense incurred in connection with this Appendix A.

The Corporation does not in any way guarantee Employee's Deferred Compensation Account against loss or depreciation, whether caused by poor investment performance, insolvency of a deemed investment or by any other event or occurrence. In no event shall the employees, officers, directors, or stockholders of the Corporation be liable to any individual or entity on account of any claim arising by reason of the provisions of this Appendix A or any instrument or instruments implementing its provisions, or for the failure of any Employee, Beneficiary or other individual or entity to be entitled to any particular tax consequences with

respect to this Appendix A, or any credit or payment hereunder.

Nothing contained in this Appendix A shall constitute a guarantee by the Corporation or any other person or entity that the assets of the Corporation will be sufficient to pay any benefits hereunder.

Any payment made in good faith in accordance with provisions of this Appendix A shall be a complete discharge of any liability for the making of such payment under the provisions of this Appendix A.

8. EFFECT OF A CHANGE IN CONTROL OF THE CORPORATION. Anything in this Appendix A to the contrary notwithstanding, this Section 8 shall apply in the event of a Change in Control. If, within three years after the date of a Change in Control Employee voluntarily terminates employment with the Corporation for Good Reason, and employee is not otherwise eligible for Retirement, then Employee shall be deemed to have Retired with a fully vested benefit on the date of such termination of employment. Employee's Deferred Compensation Account balance, determined as of the valuation date immediately preceding Employee's termination of employment, shall be payable in a lump sum as soon as administratively practicable following such deemed Retirement Date.

Solely for purposes of this Section 8, "Good Reason" shall mean termination of Employee's employment by Employee within 90 days following (i) a material diminution in Employee's positions, duties and responsibilities from those described in this Employment Agreement (ii) if Employee is a member of the Board of Directors, the removal of Employee from, or the failure to re-elect Employee as a member of, the Board, (iii) a reduction in Employee's Base Salary (other than a reduction which is part of a general salary reduction program affecting senior executives of the Corporation) (iv) a material reduction in the aggregate value of the pension and welfare benefits provided to Employee from those in effect prior to the Change in Control (other than a reduction which is proportionate to the reductions applicable to other senior executives pursuant to a cost-saving plan that includes all senior executives), (v) a material breach of any provision of this Employment Agreement by the Corporation, (vi) the



Corporation's requiring Employee to be based at a location that creates a one-way commute for Employee in excess of 60 miles from his primary residence, except for required travel on the Corporation's business to an extent substantially consistent with the business travel obligations of Employee under this Employment Agreement. Notwithstanding the foregoing, a termination shall not be treated as a termination for Good Reason (i) if Employee shall have consented in writing to the occurrence of the event giving rise to the claim of termination for Good Reason or (ii) unless Employee shall have delivered a written notice to the Corporation within 30 days of his having actual knowledge of the occurrence of one of such events stating that he intends to terminate his employment for Good Reason and specifying the factual basis for such termination, and such event, if capable of being cured, shall not have been cured within 30 days of the receipt of such notice.

#### 9. EFFECT OF TERMINATION OF EMPLOYMENT AND REHIRE.

Upon Employee's Retirement or Termination of Employment with the Corporation the benefit payable under this Appendix A, if any, shall be determined by the Corporation and such determination shall be conclusive and binding (subject to Section 14). This Appendix A shall not apply to any subsequent period of reemployment of Employee by the Corporation. If, upon reemployment, Employee is receiving installment payments pursuant to Section 6(a) of this Appendix A those payments shall not be suspended during any period of reemployment.

#### 10. ADMINISTRATION.

10.1. Powers of the Corporation. The Board of Directors of the Corporation (the "Board") shall have the sole authority to act on behalf of the Corporation under this Appendix A (subject to Section 10.3), and shall have all the powers necessary to administer the benefits under this Appendix A, including, without limitation, the power to interpret the provisions of this Appendix A and to establish rules and prescribe any forms required to administer benefits under this Appendix A

- 10.2. Actions of the Board. All determinations, interpretations, rules, and decisions of the Corporation shall be conclusive and binding upon all persons having or claiming to have any interest or right under this Appendix A.
- 10.3. Delegation. The Board shall have the power to delegate specific duties and responsibilities to officers or other employees of the Corporation or other individuals or entities. Any delegation by the Board may allow further delegations by the individual or entity to whom the delegation is made. Any delegation may be rescinded by the Board at any time. Each person or entity to whom a duty or responsibility has been delegated shall be responsible for the exercise of such duty or responsibility and shall not be responsible for any act or failure to act of any other person or entity.
- 10.4. Reports and Records. The Board and those to whom the Board has delegated duties under Section 10.3 shall keep records of all their proceedings and actions and shall maintain books of account, records, and other data as shall be necessary for the proper administration of this Appendix A and for compliance with applicable law.
- 10.5. Costs. The costs of providing and administering the benefits under this Appendix A shall be borne by the Corporation.

11. UNFUNDED BENEFITS; ESTABLISHMENT OF TRUST.

- 11.1. Unfunded Status. This Appendix A shall be unfunded for tax purposes and for purposes of Title 1 of ERISA.
- 11.2. Establishment of Trust. The Corporation shall not be required to set aside any funds to discharge its obligations hereunder, but may set aside such funds to informally fund all or part of its obligations hereunder if it chooses to do so, including without limitation the contribution of assets to a "rabbi trust" (the Trust). Any setting aside of amounts, or acquisition of any insurance policy or any other asset, by the Corporation with which to discharge its obligations hereunder in trust or otherwise, shall not be

deemed to create any beneficial ownership interest in Employee, his surviving spouse, or Beneficiary, and legal and equitable title to any funds so set aside shall remain in the Corporation, and any recipient of benefits hereunder shall have no security or other interest in such funds. The rights of Employee and his surviving spouse and Beneficiary(ies) under this Appendix A shall be no greater than the rights of a general unsecured creditor of the Corporation. Any and all funds so set aside by the Corporation shall remain the general assets of the Corporation, and subject to the claims of its general creditors, present and future.

11.3. Interrelationship of this Appendix A and the Trust. The provisions of this Appendix A shall govern the rights of Employee to receive distributions pursuant to the provisions of this Appendix A. The provisions of the Trust shall govern the rights of the Corporation, Employee, and creditors of the Corporation to the assets transferred to the Trust. The Corporation shall at all times remain liable to carry out its obligations under this Appendix A.

11.4 Distributions from the Trust. The Corporation's obligations under this Appendix A may be satisfied with Trust assets distributed pursuant to the terms of the Trust, and any such distribution shall reduce the Corporation's obligation under this Appendix A.

## 12. PAYMENT OF BENEFIT FOR DISABLED OR INCAPACITATED PERSON.

If the Corporation determines, in its discretion, that Employee or Employee's Beneficiary is under a legal disability or is incapacitated in any way so as to be unable to manage his financial affairs, the Corporation shall make payment to such person or to his legal representative or to a friend or relative of such person as the Corporation considers advisable. Any payment under this Section 12 shall be a complete discharge of any liability for the making of such payment under this Appendix A. Nothing contained in this Section 12 however, should be deemed to impose upon the Corporation any liability for paying a benefit to any person who is under such a legal disability or is so incapacitated unless it has received notice of such disability or incapacity from a competent source.

13. NONASSIGNABILITY.

Neither Employee nor any other person shall have any right to commute, sell, assign, transfer, pledge, anticipate, mortgage or otherwise encumber, transfer, hypothecate, alienate or convey in advance of actual receipt, the amounts, if any, payable hereunder, or any part thereof, which are, and all rights to which are expressly declared to be, unassignable and non-transferable. No part of the amounts payable shall, prior to actual payment, be subject to seizure, attachment, garnishment or sequestration for the payment of any debts, judgments, alimony or separate maintenance owed by Employee or any other person, be transferable by operation of law in the event of Employee's or any other person's bankruptcy or insolvency or be transferable to a spouse as a result of a property settlement or otherwise. The Corporation is authorized to make any payments directed by court order.

14. CLAIM PROCEDURE.

- 14.1. Presentation of Claim. Employee, or Employee's Beneficiary after Employee's death (such Employee or Beneficiary being referred to below as a "Claimant") may deliver to the Corporation a written claim for a determination with respect to the amounts distributable to such Claimant under this Appendix A. If such a claim relates to the contents of a notice received by the Claimant, the claim must be made within sixty (60) days after such notice was received by the Claimant. All other claims must be made within 180 days of the date on which the event that caused the claim to arise occurred. The claim must state with particularity the determination desired by the Claimant.
- 14.2. Notification of Decision. The Corporation shall consider a Claimant's claim within a reasonable time, but no later than ninety (90) days after receiving the claim. If the Corporation determines that special circumstances require an extension of time for processing the claim, written notice of the extension shall be furnished to the Claimant prior to the termination of the initial ninety (90) day period. In no event shall such extension exceed a period of ninety (90) days from the end of the initial period. The extension notice shall indicate the special

circumstances requiring an extension of time and the date by which the Corporation expects to render the benefit determination. The Corporation shall notify the Claimant in writing:

(a) that the Claimant's requested determination has been made, and that the claim has been allowed in full; or

(b) that the Corporation has reached a conclusion contrary, in whole or in part, to the Claimant's requested determination, and such notice must set forth in a manner calculated to be understood by the Claimant:

(i) the specific reason(s) for the denial of the claim, or any part of it;

(ii) specific reference(s) to pertinent provisions of this Appendix A upon which such denial was based;

(iii) a description of any additional material or information necessary for the Claimant to perfect the claim, and an explanation of why such material or information is necessary;

(iv) an explanation of the claim review procedure set forth in Section 14.3 below; and

(v) a statement of the Claimant's right to bring a civil action under ERISA Section 502(a) following an adverse benefit determination on review.

14.3 Review of a Denied Claim. On or before sixty (60) days after receiving a notice from the Corporation that a claim has been denied, in whole or in part, a Claimant (or the Claimant's duly authorized representative) may file with the Corporation a written request for a review of the denial of the claim. The Claimant (or the Claimant's duly authorized representative):

(a) may, upon request and free of charge, have reasonable access to, and copies

of, all documents, records and other information relevant to the claim for benefits;

(b) may submit written comments or other documents; and/or

(c) may request a hearing, which the Corporation, in its sole discretion, may grant.

14.4. Decision on Review. The Corporation shall render its decision on review promptly, and no later than sixty (60) days after the Corporation receives the Claimant's written request for a review of the denial of the claim. If the Corporation determines that special circumstances require an extension of time for processing the claim, written notice of the extension shall be furnished to the Claimant prior to the termination of the initial sixty (60) day period. In no event shall such extension exceed a period of sixty (60) days from the end of the initial period. The extension notice shall indicate the special circumstances requiring an extension of time and the date by which the Corporation expects to render the benefit determination. In rendering its decision, the Corporation shall take into account all comments, documents, records and other information submitted by the Claimant relating to the claim, without regard to whether such information was submitted or considered in the initial benefit determination. The decision must be written in a manner calculated to be understood by the Claimant, and it must contain:

(a) specific reasons for the decision;

(b) specific reference(s) to the pertinent provisions of this Appendix A upon which the decision was based;

(c) a statement that the Claimant is entitled to receive, upon request and free of charge, reasonable access to and copies of, all documents, records and other information relevant (as defined in applicable ERISA regulations) to the Claimant's claim for benefits; and

(d) a statement of the Claimant's right to bring a civil action under ERISA Section 502(a).

14.5. Legal Action. A Claimant's compliance with the foregoing provisions of this Article 14 is a mandatory prerequisite to a Claimant's right to commence any legal action with respect to any claim for benefits under this Appendix A.

15. TAX WITHHOLDING AND REPORTING.

(a) General: The Corporation shall have the right to deduct any required withholding taxes from any payment made under this Appendix A. Except as provided in Section 15(b), the Corporation shall not be obligated to pay or reimburse Employee, or his surviving spouse or Beneficiary, for any income or other taxes or penalties that may be imposed on such person by the Internal Revenue Service or any state or other taxing authority as a result of benefits paid under this Appendix A.

(b) Excise Tax Payment. In the event that any payment or benefit (within the meaning of Section 280G(b)(2) of the Internal Revenue Code of 1986, as amended (the "Code")), to Employee or for his benefit paid or payable or distributed or distributable pursuant to the terms of this Employment Agreement (including this Appendix A) or otherwise in connection with, or arising out of, his employment with the Corporation or a Change in Control of the Corporation (a "Payment" or "Payments"), would be subject to the excise tax imposed by Section 4999 of the Code or any interest or penalties are incurred by the Employee with respect to such excise tax (such excise tax, together with any such interest and penalties, are hereinafter collectively referred to as the "Excise Tax"), then Employee will be entitled to immediately receive an additional payment (a "Gross-Up Payment") in an amount such that after payment by Employee of all taxes (including any interest or penalties, other than interest and penalties imposed by reason of Employee's failure to file timely a tax return or pay taxes shown due on his return, imposed with respect to such taxes and the Excise Tax), including any Excise Tax imposed upon the Gross-Up Payment, Employee retains an amount of the Gross-Up Payment equal to the Excise Tax imposed upon the Payments.

16. AMENDMENT.

This Appendix A may be amended only by written agreement between Employee and the Corporation.

17. LEGEND

The securities represented by this supplemental retirement benefit have not been registered under the Securities Act of 1933, as amended, and may not be sold, transferred or otherwise disposed of in the absence of an effective registration statement under such Act or an opinion of counsel satisfactory to the corporation to the effect that such registration is not required.



## EMPLOYMENT AGREEMENT

EMPLOYMENT AGREEMENT dated as of July 30, 2004 ("Employment Agreement"), by and between MKS Instruments, Inc., a Massachusetts Corporation (the "Corporation"), and John A. Smith, of Andover, MA (the "Employee").

WHEREAS, the Corporation and the Employee entered into an Employment Agreement dated September 14, 1992 (the "Original Employment Agreement"); and

WHEREAS, the Corporation intends to provide certain supplemental retirement benefits to the Employee as more particularly set forth herein; and

WHEREAS, the Corporation and the Employee intend that this Employment Agreement shall supercede the Original Employment Agreement and that as of the date hereof, the Original Employment Agreement shall be of no further force and effect;

NOW, THEREFORE, in consideration of the premises and the mutual promises contained herein, the Corporation and the Employee hereby agree as follows:

(1) Term of Employment: The Corporation hereby employs the Employee, and the Employee hereby accepts employment with the Corporation, for a period commencing as of July 30, 2004 and continuing from month to month thereafter until terminated as provided in this Section (1). Either the Corporation or the Employee may terminate the employment of the Employee under this Employment Agreement at any time after July 30, 2004 by giving written notice to the other party stating its or his election to terminate the employment of the Employee under this Employment Agreement. The employment of the Employee under this Employment Agreement shall terminate thirty (30) days after the date of receipt by the other party of such notice; provided, however, that the employment of the Employee under this Employment Agreement is subject to prior termination as hereinafter provided in Section (5). Notwithstanding the above, the Corporation shall be entitled, at its sole discretion, to waive the obligation of the Employee to continue to work during the thirty (30) day notice period.

(2) Capacity: The Employee shall serve as Vice President & General Manager of ICS and Vice President of Technology and shall have such authority and will perform such duties as are delegated to him by the President & COO of the Corporation or his designee that are consistent with this position and his training and experience for the term of employment under this Employment Agreement.

(3) Extent of Services: During the term of employment of the Employee under this Employment Agreement, the Employee shall devote his full time to, and use his best efforts in the furtherance of, the business of the Corporation and shall not engage in any other business activity whether or not such business activity is pursued for gain or any other pecuniary advantage, without the prior written consent of the Corporation.

(4) Compensation: In consideration of the services to be rendered by the Employee under this Employment Agreement, the Corporation agrees to pay, and the Employee agrees to accept, the following compensation:

(a) Base Salary: A base salary at the rate of two hundred fifty thousand seven hundred and eighteen dollars (\$250,718) per year for the term of employment of the Employee under this Employment Agreement. The base salary shall be payable in equal biweekly installments, subject to usual withholding requirements, and will be subject to any changes in pay policies that may be established by the Corporation. The base salary will be reviewed regularly according to the practices of the Corporation. No overtime pay will be paid to the Employee by the Corporation.

(b) MKS Instruments Profit Sharing and Retirement Savings Plan: The Employee shall be eligible to become a participant under the profit sharing plan of the Corporation on fulfilling the conditions set forth in the MKS Instruments Profit Sharing and Retirement Savings Plan.

(c) Vacation: The Employee shall be entitled to an annual vacation leave of twenty (20) days at full pay during each year of this Employment Agreement, subject to the Employee arranging such vacation so as not to affect adversely the ability of the Corporation to transact its necessary business.

(d) Life Insurance: The Corporation shall provide, and pay all of the premiums for, term life insurance for the Employee during the term of employment of the Employee under this Employment Agreement in accordance with the term life insurance plan of the Corporation.

(e) Medical/Dental Insurance: The Corporation shall provide group medical/dental insurance for the Employee under the plans of the Corporation applicable to the Employee during the term of employment of the Employee under this Employment Agreement.

(f) Retirement Benefits: The Employee shall be eligible to participate in retirement benefits according to the terms and conditions set forth in Appendix A of this Employment Agreement.

(g) Other Benefits: The Corporation shall provide other benefits for the Employee under the plans of the Corporation applicable to the Employee during the term of employment of the Employee under this Employment Agreement.

(5) Termination: The employment of the Employee under this Employment Agreement shall terminate:

(a) On the expiration of the period of employment as provided in Section (1).

(b) Upon the death of the Employee.

(c) At the election of the Corporation (i) if the Employee shall refuse to perform the services required of him under this Employment Agreement, or (ii) if the Employee shall fail, or refuse, to perform the other covenants and agreements required of him under this Employment Agreement, or (iii) for "cause", which term shall mean conviction for the commission of a felony, willful failure by the Employee to perform his responsibilities to the Corporation, or willful misconduct by the Employee.

(6) Payment Upon Termination:

(a) If the employment of the Employee is terminated by the Corporation other than pursuant to Section 5 (c) hereof, the Corporation (i) shall continue to pay Employee the Base Salary in effect immediately prior to the time of such termination for six (6) months after the last full day Employee works under this Agreement at its normal payroll payment dates; (ii) shall reimburse Employee for the premiums (if any) he pays for continuation of life insurance should he elect to exercise the conversion feature of the Corporation's group life policy then in effect for six (6) months after the last full day Employee works under this Agreement; and (iii) continue to pay for such medical/dental/vision insurance as Employee may then receive for six (6) months after the last full day Employee works under this Agreement (such payments of Base Salary and payments or reimbursements of insurance premiums by the Corporation, the "Severance Benefits). Employee agrees that, (a) his eligibility for or entitlement to the foregoing Severance Benefits shall be subject to Employee's execution and delivery of a release, in such form as the Corporation may require, that, among other things, may be a general release of any and all claims Employee may have against Employer, (b) Employee shall have no rights or remedies in the event of his or her termination by the Corporation without Cause and other than as a result of Disability or death except for those set forth in this Agreement and (c) Employee's right to receive any of the foregoing Severance Benefits shall be expressly conditioned upon Employee's full compliance with the Confidentiality Agreement, pursuant to its continued effectiveness, and Employee's full cooperation with the Corporation in both fulfilling the terms of this Agreement and the Confidentiality Agreement and otherwise performing such actions as the Corporation may request in transitioning Employee from his employment with the Corporation and upon any breach of either such agreement by Employee, Employee's rights to any continued payment of Severance Benefits shall immediately cease and Employee shall be obligated to repay to the Corporation all amounts paid by the Corporation for the Severance Benefits except for the amount of \$1,000, which Employee shall be entitled to retain.

(b) If the employment of the Employee is terminated by death, the Corporation shall pay to the estate of the Employee the compensation which would otherwise be payable to the Employee at the end of the month in which his death occurs.

(c) In the event the employment of the Employee is terminated at the election of the Corporation pursuant to Section (5) (c) hereof, the Employee shall only be entitled to his base salary through the last day of actual employment or the date of termination, whichever is earlier.

(d) In the event the Employee voluntarily terminates his employment on the expiration of the period of employment as provided in Section (1), the Employee shall not be entitled to any compensation, and the Corporation shall have no obligation to pay the Employee any compensation, except as is provided in this Employment Agreement.

(7) Trade Secrets: The Employee covenants and agrees that he will communicate to the Corporation, and will not divulge or communicate to any other person, partnership, corporation or other entity without the prior written consent of the Corporation, any trade secrets of the Corporation or confidential information relating to the business of the Corporation or any one connected with the Corporation, and that such trade secrets and confidential information shall not be used by the Employee either on his own behalf or for the benefit of others or disclosed by the Employee to any one, except to the Corporation, during or after the term of employment of the Employee under this Employment Agreement.

(8) Inventions and Patents:

(a) The Employee shall make prompt full disclosure in writing to the Corporation of all inventions, improvements and discoveries, whether or not patentable, which the Employee conceives, devises, makes, discovers, develops, perfects or first reduces to practice, either alone or jointly with others, during the term of employment of the Employee under this Employment Agreement, which relate in any way to the fields, products or business of the Corporation, including development and research, whether during or out of the usual hours of work or on or off the premises of the Corporation or by use of the facilities of the Corporation or otherwise and whether at the request or suggestion of the Corporation or otherwise (all such inventions, improvements and discoveries being hereinafter called the "Inventions"), including any Inventions, whether or not patentable, conceived, devised, made, discovered, developed, perfected or first reduced to practice by the Employee after the employment of the Employee under this Employment Agreement is terminated if the Inventions were conceived by the Employee

during the term of employment of the Employee under this Employment Agreement. Any Inventions, whether or not patentable, conceived, devised, made, discovered, developed, perfected or first reduced to practice by the Employee within six (6) months of the date of termination of the employment of the Employee under this Employment Agreement shall be conclusively presumed to have been conceived during the term of employment of the Employee under this Employment Agreement.

(b) The Employee agrees that the Inventions shall be the sole and exclusive property of the Corporation.

(c) The Employee agrees to assist the Corporation and its nominees in every reasonable way (entirely at its or their expense) to obtain for the benefit of the Corporation letters patent for the Inventions and trademarks, trade names and copyrights relating to the Inventions, and any renewals, extensions or reissues thereof, in any and all countries, and agrees to make, execute, acknowledge and deliver, at the request of the Corporation, all written applications for letters patent, trademarks, trade names and copyrights relating to the Inventions and any renewals, extensions or reissues thereof, in any and all countries, and all documents with respect thereto, and all powers of attorney relating thereto and, without further compensation, to assign to the Corporation or its nominee all the right, title and interest of the Employee in and to such applications and to any patents, trademarks, trade names or copyrights which shall thereafter issue on any such applications, and to execute, acknowledge and deliver all other documents deemed necessary by the Corporation to transfer to or vest in the Corporation all of the right, title and interest of the Employee in and to the Inventions, and to such trademarks, trade names, patents and copyrights together with exclusive rights to make, use, license and sell them throughout the world.

(d) The Employee agrees that even though his employment is terminated under this Employment Agreement he will, at any time after such termination of employment, carry out and perform all of the agreements of Subsections (8) (a) and (8) (c) above, and will at any time and at all times cooperate with the Corporation in the prosecution and/or defense of any litigation which may arise in connection with the Inventions, provided, however, that should such services be rendered after termination of employment of the Employee under this Employment Agreement, the Employee shall be paid reasonable compensation on a per diem basis.

(e) The Employee agrees to make and maintain adequate and current written records of all Inventions in the form of notes, sketches, drawings, or reports relating thereto, which records shall be and remain the property of, and available to, the Corporation at all times.

(f) The Employee agrees that he will, upon leaving the employment of the Corporation, promptly deliver to the Corporation all originals and copies of disclosures, drawings, prints, letters, notes, and reports either typed, handwritten or otherwise memorialized, belonging to the Corporation which are in his possession or under his control and the Employee agrees that he will not retain or give away or make copies of the originals or copies of any such disclosures, drawings, prints, letters, notes or reports.

(9) Property of Corporation: All files, records, reports, documents, drawings, specifications, equipment, and similar items relating to the business of the Corporation, whether prepared by the Employee or otherwise coming into his possession, shall remain the exclusive property of the Corporation and shall not be removed by the Employee from the premises of the Corporation under any circumstances whatsoever without the prior written consent of the Corporation.

(10) Non-Competition:

(a) During the term of employment of the Employee under this Employment Agreement, and during a period of one (1) year after termination of employment of the Employee under this Employment Agreement without regard to the cause of termination of employment and whether or not such termination of employment was caused by the Employee or by the Corporation, (i) the Employee shall not engage, either directly or indirectly, in any manner or capacity, in any business or activity which is competitive with any business or activity conducted by the Corporation; (ii) the Employee shall not work for or employ, directly or indirectly, or cause to be employed by another, any person who was an employee, officer or agent of the Corporation or of any of its subsidiaries at any time during a period of twelve (12) months prior to the termination of the employment of the Employee under this Employment Agreement nor shall the Employee form any partnership with, or establish any business venture in cooperation with, any such person which is competitive with any business or activity of the Corporation; (iii) the Employee shall not give, sell or lease any goods or services

competitive with the goods or services of the Corporation or its subsidiaries to any person, partnership, corporation or other entity who purchased goods or services from the Corporation or its subsidiaries within one (1) year before the termination of the employment of the Employee under this Employment Agreement; (iv) the Employee shall not have any material financial interest, or participate as a director, officer, 5% stockholder, partner, employee, consultant or otherwise, in any corporation, partnership or other entity which is competitive with any business or activity conducted by the Corporation.

(b) The Corporation and the Employee agree that the services of the Employee are of a personal, special, unique and extraordinary character, and cannot be replaced by the Corporation without great difficulty, and that the violation by the Employee of any of his agreements under this Section (10) would damage the goodwill of the Corporation and cause the Corporation irreparable harm which could not reasonably or adequately be compensated in damages in an action at law, and that the agreements of the Employee under this Section (10) may be enforced by the Corporation in equity by an injunction or restraining order in addition to being enforced by the Corporation at law.

(c) In the event that this Section (10) shall be determined by any court of competent jurisdiction to be unenforceable by reason of its extending for too long a period of time or over too great a range of activities, it shall be interpreted to extend only over the maximum period of time or range of activities as to which it may be enforceable.

(11) Non-Solicitation: The Employee shall not, on his own behalf or in the service or on behalf of others, directly or indirectly:

(a) solicit, entice or induce any Customer (as defined below) to become a customer, distributor or supplier of any other person, firm or corporation with respect to products and/or services sold or under development by the Corporation during his employment at the Corporation, or to cease doing business with the Corporation, and the Employee shall not contact or approach any such person, firm or corporation for such purpose or authorize or knowingly approve the taking of such actions by any other person for a period of twelve (12) months from the date of the termination of



employment of the Employee under this Employment Agreement; or

(b) solicit, recruit or hire (or attempt to solicit, recruit or hire) any employee, officer or agent of the Corporation or contractor engaged by the Corporation (whether or not such person is a full-time employee or whether or not such employment is pursuant to a written agreement or at-will) to terminate such person's employment or engagement with the Corporation or work for a third party other than the Corporation for a period of twelve (12) months after the date of the termination of employment of the Employee under this Employment Agreement, or engage in any activity that would cause such employee or contractor to violate any agreement with the Corporation, nor shall the Employee form any partnership with, or establish any business venture in cooperation with, any such person.

(c) For the purposes of this Section (11), a "Customer" means any person or entity which as of the date of the termination of employment of the Employee under this Employment Agreement was, within two (2) years prior to such time, a customer, distributor or supplier of the Corporation, and references to the Corporation shall be deemed to include any affiliate or subsidiary of the Corporation.

(12) Notice: Any and all notices under this Employment Agreement shall be in writing and, if to the Corporation, shall be duly given if sent to the Corporation by registered or certified mail, postage prepaid, return receipt requested, at the address of the Corporation set forth under its name below or at such other address as the Corporation may hereafter designate to the Employee in writing for the purpose, and, if to the Employee, shall be duly given if delivered to the Employee by hand or if sent to the Employee by registered or certified mail, postage prepaid, return receipt requested, at the address of the Employee set forth under his name below or at such other address as the Employee may hereafter designate to the Corporation in writing for the purpose.

(13) Assignment: The rights and obligations of the Corporation under this Employment Agreement shall inure to the benefit of, and shall be binding upon, the successors and assigns of the Corporation. The rights and obligations of the Employee under this Employment Agreement shall inure to the benefit of, and shall be binding upon, the heirs, executors and legal representatives of the Employee.

(14) Entire Agreement and Severability:

(a) This Employment Agreement, and the attached Appendix A, supersedes any and all other agreements, either oral or in writing, between the parties hereto with respect to the employment of the Employee by the Corporation and contains all of the covenants and agreements between the parties with respect to such employment. Each party to this Employment Agreement acknowledges that no representations, inducements, promises or agreements, oral or otherwise, have been made by any party, or any one acting on behalf of any party, which are not embodied herein, and that no other agreement, statement or promise not contained in this Employment Agreement, and the attached Appendix A, shall be valid and binding. Any modification of this Employment Agreement, and the attached Appendix A, will be effective only if it is in writing signed by both parties to this Employment Agreement.

(b) If any provision in this Employment Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions shall nevertheless continue in full force and effect without being impaired or invalidated in any way.

(c) All pronouns used herein shall include the masculine, feminine, and neuter gender as the context requires.

(15) Governing Law: This Employment Agreement shall be governed by, and construed in accordance with, the laws of The Commonwealth of Massachusetts applicable to contracts made and to be performed entirely within The Commonwealth of Massachusetts without regard to its conflict of laws principles.

IN WITNESS WHEREOF, the parties hereto have executed, in The Commonwealth of Massachusetts, this Employment Agreement as a sealed instrument, all as of the day, month and year first written above.

MKS INSTRUMENTS, INC.

By: /s/ John R. Bertucci  
-----  
Chairman & CEO

90 Industrial Way  
Wilmington, MA 01887

/s/ John A. Smith  
-----  
Legal Signature

John A. Smith  
Address:

10 Keyes Way  
-----  
North Andover, MA 01845  
-----

APPENDIX A

SUPPLEMENTAL RETIREMENT BENEFITS

1. PURPOSE. (a) General: The purpose of this Appendix A is to provide Employee with supplemental retirement benefits to encourage his continued employment with the Corporation. Benefits will be payable only if Employee fully complies with all of the requirements of this Appendix A.

(b): For Benefit of Employee Only: Benefits under this Appendix A are provided for the benefit of Employee only. No other employee shall accrue any rights of any kind as a result of the existence of the arrangement described in this Appendix A. Supplemental retirement benefits may be provided to an employee only as specifically authorized by the Board of Directors of the Corporation.

2. DEFINITIONS. Whenever used herein the following terms shall have the meanings hereinafter set forth:

2.1 "Account" or "Deferred Compensation Account" means the account established in Employee's name pursuant to Section 5.1 of this Appendix A which reflects Employee's entire interest in this Appendix A, and which includes Employee's Company Contribution Subaccount, Retirement Subaccount, and In-Service Distribution Subaccount(s).

2.2 "Base Salary" means base salary as defined in the Employment Agreement, before any pre-tax salary reductions for participation in any benefit plan of the Corporation. If Employee becomes Disabled, then during such period of Disability "base salary" means base salary as defined in the Employment Agreement for the calendar year in which such Disability commenced, or the immediately preceding calendar year, whichever is greater.

2.3 "Beneficiary" means one or more persons, trusts, estates or other entities, designated by Employee to receive death benefits under this Appendix A upon Employee's death. If Employee fails to designate a Beneficiary or if all designated Beneficiaries predecease Employee then death benefits under this

Appendix A shall be payable to Employee's surviving spouse, if any, and if not to the executor or personal representative of Employee's estate.

Employee shall designate his Beneficiary by completing and signing a beneficiary designation form prescribed by the Corporation, and returning it to the Corporation or its designated agent. Employee shall have the right to change a Beneficiary by completing, signing and otherwise complying with the terms of the beneficiary designation form and the Corporation's rules and procedures, as in effect from time to time. Upon the acceptance by the Corporation of a new beneficiary designation form, all Beneficiary designations previously filed shall be canceled. The Corporation shall be entitled to rely on the last beneficiary designation form filed by Employee and accepted by the Corporation prior to his or her death. No designation or change in designation of a Beneficiary shall be effective until received and acknowledged in writing by the Corporation or its designated agent. If the Corporation has any doubt as to the proper Beneficiary to receive payments pursuant to this Appendix A, the Corporation shall have the right, exercisable in its discretion, to withhold such payments until this matter is resolved to the Corporation's satisfaction.

2.4 "Bonus" means a bonus payable under the Corporation's Management Incentive Plan.

2.5 "Change in Control" means the first to occur of any of the following events:

(a) Any "person" (as that term is used in Section 13 and 14(d)(2) of the Securities Exchange Act of 1934 ("Exchange Act")) becomes the beneficial owner (as that term is used in Section 13(d) of the Exchange Act), directly or indirectly, of fifty percent (50%) or more of the Corporation's capital stock entitled to vote in the election of directors;

(b) The shareholders of the Corporation approve any consolidation or merger of the Corporation, other than a consolidation or merger of the Corporation in

which the holders of the common stock of the Corporation immediately prior to the consolidation or merger hold more than fifty percent (50%) of the common stock of the surviving corporation immediately after the consolidation or merger;

(c) The shareholders of the Corporation approve any plan or proposal for the liquidation or dissolution of the Corporation; or

(d) The shareholders of the Corporation approve the sale or transfer of all or substantially all of the assets of the Corporation to parties that are not within a "controlled group of corporations" (as defined in Code Section 1563) in which the Corporation is a member.

- 2.6 "Company Contribution Subaccount" means the portion of Employee's Account established in accordance with Section 4.3 of this Appendix A which is credited with the Corporations hypothetical contributions, and earnings thereon.
- 2.7 "Compensation" means, for any calendar year, the sum of Employee's Base Salary for such calendar year plus any Bonus payable in such calendar year.
- 2.8 "Corporation" means MKS Instruments, Inc. and any corporation, trust, association or enterprise which is required to be considered, together with the Corporation, as one employer pursuant to the provisions of Sections 414(b), 414(c), 414(m) or 414(o) of the Code.
- 2.9 "Deferred Compensation Agreement" means a written compensation deferral agreement entered into between Employee and the Corporation pursuant Section 3 of this Appendix A.
- 2.10 "Disability" or "Disabled" means Employee is receiving benefits under any short term or long term disability plan maintained by the Corporation, but is not Permanently and Totally Disabled. Solely for purposes of this Appendix A, Employee shall be deemed to be an employee of the Corporation during any period for which Employee continues to receive benefits under such short term

or long term disability plan. If Employee remains disabled on the date he satisfies the vesting requirements set forth in Section 4.4, he shall be deemed to have Retired from employment from the Corporation on that date for purposes of this Appendix A. This Section 2.10 shall have no bearing on whether Employee remains an employee of the Corporation for any other purpose.

2.11 "Employment Agreement" means the Employment Agreement between Employee and the Corporation that contains this Appendix A.

2.12 "In-Service Distribution Subaccount" means the portion of Employee's Account established in accordance with Section 3.4(c) of the Plan which is credited with Employee's hypothetical deferrals, and earnings thereon, deferred to an in-service distribution date.

2.13 "Permanent and Total Disability" means disability as defined in Section 216(i)(1) of the Social Security Act (in general, the inability to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment which can be expected to result in death or has lasted or can be expected to last for a continuous period of not less than 12 months, or blindness). Employee shall be conclusively presumed to be Permanently and Totally Disabled upon determination that he is disabled by the Social Security Administration..

2.14 "Retirement" or "Retired" or "Retires" means

(a) Employee's termination of employment with the Corporation upon or after attaining age 63, or

(b) Employee's deemed Retirement. Employee shall be deemed to have Retired on the earliest of (i) the date he becomes Permanently and Totally Disabled, (ii) the date determined under Section 2.10 of this Appendix A, (iii) the date the Corporation terminates Employee's employment for any reason other than Termination for Cause, (iv) the date of Employee's death while employed by the Corporation, or (v) the date of Employee's qualifying termination of employment in connection with a Change in Control in accordance with the

provisions of Section 7 of this Appendix A.

- 2.15. "Retirement Subaccount" means the portion of Employee's Account established in accordance with Section 3.4(b) of the Plan which is credited with Employee's hypothetical contributions, and earnings thereon, deferred to Retirement.
- 2.16 "Termination of Employment" means Employee's Termination for Cause, or Employee's voluntary severance from employment with the Corporation for any reason other than Retirement.
- 2.17 "Termination for Cause" means, solely for purposes of this Appendix A, termination of Employee's employment by the Corporation as a result of Employee's conviction for the commission of a felony, material breach of any employment or other agreements between Employee and the Corporation, or willful failure to perform the material responsibilities of his position with the Corporation.
- 2.18 "Trust" means the Trust established pursuant to Section 11 of this Appendix A.
- 2.19 Gender and Number. Words in the masculine gender shall include the feminine and the singular shall include the plural, and vice versa, unless qualified by the context. Any headings used herein are included for ease of reference only, and are not to be construed so as to alter the terms hereof.

### 3. DEFERRAL ELECTIONS.

#### 3.1 Deferred Compensation Agreement.

Employee may elect to defer a portion of his Compensation by entering into a Deferred Compensation Agreement with the Corporation pursuant to the rules set forth in this Section 3. The Deferred Compensation Agreement shall be made on a form supplied by the Corporation and shall become effective only if the Corporation accepts and approves the Agreement.



The foregoing notwithstanding, Employee's deferrals of Compensation under this Appendix A shall be suspended (a) for any period of time required by Treasury Regulation 1.401(k)-1(d)(2)(iv)(B)(4) in the event Employee receives a hardship distribution from a section 401(k) plan maintained by the Corporation, and (b) for any period of time during which Employee is Disabled.

### 3.2 Timing of Deferred Compensation Agreement.

(a) Deferrals of Base Salary. Employee may enter into a Deferred Compensation Agreement with respect to his Base Salary prior to January 1 of each calendar year. The Deferred Compensation Agreement shall apply to Base Salary earned in the immediately following calendar year, and shall be irrevocable for such calendar year, except as provided in Section 3.1 of this Appendix A.

In the year the Employment Agreement is executed, Employee may enter into a Deferred Compensation Agreement within 30 days of the effective date of the Employment Agreement. Such Deferred Compensation Agreement shall apply to Base Salary earned after the Deferred Compensation Agreement is executed, and shall be irrevocable for the balance of the calendar year.

(b) Deferrals of Bonus. Employee may enter into a Deferred Compensation Agreement with respect to Bonus no later than September 30 of the calendar year prior to the calendar year in which the Bonus would otherwise be paid. The Corporation may, in its discretion, instead require that Employee enter into a Deferred Compensation Agreement with respect to Bonus prior to the beginning of the period during which such Bonus will be earned. Such deferral elections shall be irrevocable, except as provided in Section 3.1. Subsequent deferrals of Bonus shall be made only pursuant to a new Deferred Compensation Agreement.

### 3.3 Amount of Deferrals.

- (a) From Base Salary. Employee may elect to defer up to 25% of his or her Base Salary, in increments of 1%.
- (b) From Bonus. Employee may elect to defer up to 100% of his Bonus, in increments of 5%.

A Deferral Election may be reduced by the Corporation if the Corporation determines, in its sole discretion, that such action is necessary to meet Federal or State tax withholding obligations.

#### 3.4 Deferral Period.

(a) General. At the time Employee defers Compensation pursuant to a Deferred Compensation Agreement for a calendar year, he may specify an In-Service Distribution Date applicable to all or a portion of the deferrals for such calendar year, and earnings thereon. Any deferrals of Compensation not deferred to an In-Service Distribution Date shall be deemed deferred to Retirement.

(b) Retirement Subaccount. The Corporation shall establish a Retirement Subaccount on Employee's behalf representing Compensation Employee has deferred to Retirement, and earnings thereon. Payments from Employee's Retirement Subaccount shall be made at such time and in such manner as provided in Section 6.3.

(c) Deferrals to an In-Service Distribution Date. Deferrals to an In-Service Distribution Date shall be subject to the following requirements:

(i) In-Service Distribution Date. The In-Service Distribution Date must be a date at least three full calendar years after the date of such Deferred Compensation Agreement.

(ii) In-Service Distribution Subaccount. The Corporation shall establish an In-Service Distribution Subaccount on Employee's behalf to which Employee's deferrals relating to a particular In-Service Distribution Date,

and earnings thereon, shall be credited.

(iii) Limits. There are no limits on the number of In-Service Distribution Subaccounts Employee may establish.

(iv) Payments. Payments from In-Service Distribution Subaccounts shall be made at such time and in such manner as provided in Section 6.2.

(d) Postponing In-Service Distributions. Employee may elect to postpone payment of an In-Service Distribution Subaccount, and instead have such amount paid out as soon as administratively practicable after an allowable alternative In-Service Distribution Date, by submitting a new In-Service Distribution Election Form to the Corporation, subject to the following:

(i) Such Election Form must be submitted to and accepted by the Corporation in its sole discretion no later than the 13th month prior to Employee's previously elected In-Service Distribution Date; and

(ii) The new In-Service Distribution Date selected by Employee must be the first day of any calendar year that is at least three full calendar years after the end of the calendar year in which the previously elected In Service Distribution would otherwise have been paid to Employee.

### 3.5 Vesting of Retirement and In-Service Distribution Subaccounts.

Subject to Section 11.2, Employee's Retirement Subaccount and In-Service Distribution Subaccount(s) shall be fully vested and nonforfeitable.

## 4. COMPANY CONTRIBUTIONS.

4.1 Required Company Contribution. The Corporation shall make an annual hypothetical contribution on Employee's behalf equal to 15% of Employee's Compensation. Such hypothetical contribution shall commence with the

calendar year the Employment Agreement is executed by the Corporation and Employee, and shall continue each calendar year up to and including the year in which Employee severs employment with the Corporation for any reason other than Termination of Employment. Solely for purposes of this Section 4.1, "Compensation" in the calendar year Employee severs employment with the Corporation shall mean only Base Salary and Bonus actually paid to Employee in such calendar year.

4.2 Discretionary Company Contribution.

The Corporation may, in its absolute discretion, make an additional hypothetical contribution on Employee's behalf with respect to any calendar year. The fact that the Corporation makes a discretionary contribution with respect to a particular calendar year shall not obligate the Corporation to make a discretionary contribution with respect to any other calendar year.

4.3 Company Contribution Subaccount.

The Corporation shall establish a Company Contribution Subaccount on behalf of Employee to which hypothetical required company contributions and discretionary company contributions, and earnings thereon, shall be allocated.

4.4 Vesting of Company Contribution Subaccount.

Subject to Sections 4.5, 4.6, 4.7, and Section 11.2 of this Appendix A, Employee's Company Contribution Subaccount shall vest upon the earlier of (a) or (b), where (a) is the following vesting schedule:

Attained age while employed By the Corporation	Vested Percentage
65	100%
64	90%
63	80%

and (b) is the date of Employee's deemed Retirement under Section 2.14(b).

Except as provided in Section 8 of this Appendix A, Employee's Company Contribution Subaccount shall be forfeited upon Employee's Termination of Employment.

- 4.5. Compliance with Noncompete, Nondisclosure, and Nonsolicitation Agreements. Employee's Company Contribution Account shall be forfeited in the event the Corporation determines that Employee has failed to comply with the terms of any noncompetition, nondisclosure, or nonsolicitation provision contained in the Employment Agreement, or in any other agreement between Employee and the Corporation. If Employee violates the terms of any such provision, and installment payments have commenced to Employee, the Corporation shall make a reasonable determination, in its sole discretion, of the portion of such installment payments allocable Employee's Company Contribution Account, and such installment payments shall be permanently reduced by the amount so determined.
- 4.6. Notice of Intent to Retire. Benefits payable under Section 6.1(a) of this Appendix A attributable to Employee's Company Contribution Subaccount are specifically conditioned upon Employee providing to the Corporation written notice of Employee's intent to Retire at least six months prior to Employee's Retirement date. In the event Employee fails to satisfy the notice requirements of this Section 4.6 Employee's Company Contribution Subaccount shall be forfeited, and no amount attributable to such Subaccount shall be payable under this Appendix A. The foregoing notwithstanding, this section 4.6 shall not apply to benefits payable under Section 6.1(a) as a result of Employee's deemed Retirement under Section 2.14(b) of this Appendix A. The Corporation, in its sole and absolute discretion, may elect to waive the notice requirement of this Section 4.6
- 4.7. Release. Benefits payable under Section 6.1(a) of this Appendix A attributable to Employee's Company Contribution Account are specifically conditioned upon and provided in exchange for Employee signing a separation agreement that releases the Corporation from any liabilities that may have arisen as a result of

Employee's employment and/or termination of employment with the Corporation. In the event Employee terminates employment with the Corporation for any reason other than death without satisfying the requirements of this Section 4.7 Employee's Company Contribution Account shall be forfeited, and no amount attributable to such Subaccount shall be payable under this Appendix A.

4.8 Payment of Company Contribution Subaccount. Employee's vested Company Contribution Subaccount shall be paid at such time and in such manner as provided in Section 6.

5. EMPLOYEE'S DEFERRED COMPENSATION ACCOUNT.

5.1 Establishment of Deferred Compensation Accounts and Subaccounts.

The Corporation shall establish and maintain a hypothetical account for Employee called the Deferred Compensation Account. Such Account shall be segregated from the other accounts on the books and records of the Corporation as an unfunded and unsecured liability of the Corporation to Employee. Subaccounts (including Employee's Company Contribution Subaccount, In-Service Distribution Subaccount(s), and Retirement Subaccount) shall be maintained as determined necessary by the Corporation. Accounts and subaccounts are maintained solely as a device for the measurement and determination of the amounts to be paid to Employee or his Beneficiary pursuant to this Appendix A. Any reference to "contributions to" or "payments from" Employee's Accounts or subaccounts, or similar phrases, are for convenience only.

5.2 Timing of Contributions to and Distributions From Employee's Deferred Compensation Account. The Corporation shall credit to Employee's Deferred Compensation Account an amount equal to the percentage of Employee's Base Salary and Bonus which he has elected to defer in accordance with Section 3.3, as of the last day of the calendar month in which Employee would have received

such amount if not for Employee's deferral election.

The Corporation shall credit to Employee's Deferred Compensation Account an amount equal to the Company Contribution(s) to which he is entitled under Sections 4.1 and 4.2 as soon as administratively practicable after the end of each calendar year.

Any distribution with respect to Employee's Deferred Compensation Account shall be charged to such Account as of the date the distribution is made by the Corporation or from the Trust established in accordance with this Appendix A.

#### 5.3 Selection of Investment Vehicle.

Employee shall specify, in the manner prescribed by the Corporation, the allocation of his Account among investment indices available under this Appendix A. An individual's selection of an investment index will have no bearing on the actual investment or segregation of Corporation assets, but will be used as the basis for making adjustments to such individual's Account as described in Section Article 5.4 below. Employee can change his or her investment index or indices at such time, and in such manner, as determined by the Corporation. The Corporation may change the investment indices available under this Appendix A at any time in its absolute discretion.

#### 5.4 Adjustment of Deferred Compensation Account.

As of the last day of each calendar month, or more frequently as determined in the sole discretion of the Corporation, Employee's Deferred Compensation Account shall be credited with hypothetical net income, gain and loss, including hypothetical net unrealized gain and loss, based on the hypothetical investment directions made by the Participant in accordance with Section 5.3 of this Appendix A. Such earnings will continue to accrue during any period in which installments are paid pursuant to Section 6.1(a).

#### 6. BENEFIT PAYMENTS.

6.1 Payment of Company Contribution Subaccount.

(a) Payment upon Retirement. Payment of the vested portion of Employee's Company Contribution Subaccount shall be made, or shall commence, as soon as administratively practicable following Employee's Retirement, and the nonvested portion shall be forfeited. Payment shall be made in a lump sum unless Employee elects to receive payment of his Account under an Annual Installment Method, as defined below. Such election shall be made on a form prescribed by the Corporation, which must be received and accepted by the Corporation no later than the 13th month prior to Employee's Retirement date.

"Annual Installment Method" shall mean annual installment payments over 10, 15, or 20 years as elected by Employee, calculated as follows: (i) for the first annual installment, Employee's Company Contribution Subaccount balance shall be calculated as of the close of business on the last day of the calendar month immediately preceding the calendar month containing Employee's Retirement date, and (ii) for remaining annual installments, Employee's subaccount balance shall be calculated on the last day of the calendar month immediately preceding the calendar month containing the anniversary of Employee's Retirement Date. Each annual installment shall be calculated by multiplying this balance by a fraction, the numerator of which is one and the denominator of which is the remaining number of annual payments due to Employee. By way of example, if Employee elects a ten (10) year Annual Installment Method, the first payment shall be 1/10 of Employee's Company Contribution Subaccount balance, calculated as described in this definition. The following year, the payment shall be 1/9 of the Account balance, calculated as described in this definition, and so on.

(b) Payment Upon Death. Death benefits shall be payable under this Appendix A only as follows:

(i) In the event Employee dies while employed by the Corporation, Employee's Company Contribution Subaccount shall be payable to Employee's Beneficiary in a lump sum as soon as administratively



practicable following Employee's death.

(ii) In the event Employee dies after Retirement while receiving installment payments, installment payments shall cease and Employee's remaining vested Company Contribution Subaccount balance shall be paid to Employee's Beneficiary in a lump sum as soon as administratively practicable following Employee's death. In the event Employee dies after Retirement, but before any payment required under Section 6(a) has been paid to Employee, Employee's vested Company Contribution Subaccount balance shall be paid to Employee's Beneficiary in a lump sum as soon as administratively practicable following Employee's death.

6.2 Payment of In-Service Distribution Subaccount.

Employee's In-Service Distribution Subaccount(s) shall be paid in a single lump sum. Payment shall be made as soon as administratively practicable after the earlier of (a) the Participant's In-Service Distribution Date, or (b) the date Employee terminates employment for any reason.

6.3 Payment of Retirement Subaccount.

(a) Payment upon Retirement. In the event of Retirement Employee's Retirement Subaccount shall be paid at the same time, and in the same form, as Employee's Company Contribution Subaccount.

(b) Payment upon Termination of Employment. In the event of Termination of Employment, Employee's Retirement Subaccount shall be paid in a single lump sum. Payments shall be made as soon as administratively practicable after the Participant's Termination of Employment.

6.4 Distribution of Taxable Amounts.

Notwithstanding the foregoing provisions of this Section 6, in the event Employee or Employee's Beneficiary is determined to be subject to federal

income tax on any amount credited to the Employee's Deferred Compensation Account prior to the time payment is otherwise due hereunder, the entire amount determined to be so taxable shall be paid from Employee's Account by the Corporation to Employee or Employee's Beneficiary. Any amount to the credit of Employee's Deferred Compensation Account shall be determined to be subject to federal income tax upon the earlier of:

(a) determination by the Internal Revenue Service addressed to Employee or Beneficiary which is not appealed; or

(b) a final determination by the United States Tax Court or any other Federal Court affirming any such determination by the Internal Revenue Service that amounts credited to Employee's Account are subject to federal income tax.

#### 6.5 Timing of Distributions- Federal Law.

Notwithstanding the foregoing provisions of this Section 6, benefit payments shall not be made or commence to Employee prior to the date otherwise permitted by federal law, as determined in the sole discretion of the Corporation.

#### 7. LIMITATIONS ON LIABILITY.

Notwithstanding any of the preceding provisions of this Appendix A, neither the Corporation, nor any individual acting as employee or agent of the Corporation, shall be liable to Employee or other person for any claim, loss, liability or expense incurred in connection with this Appendix A.

The Corporation does not in any way guarantee Employee's Deferred Compensation Account against loss or depreciation, whether caused by poor investment performance, insolvency of a deemed investment or by any other event or occurrence. In no event shall the employees, officers, directors, or stockholders of the Corporation be liable to any individual or entity on account of any claim arising by reason of the provisions of this Appendix A or any instrument or instruments implementing its provisions, or for the failure of any Employee, Beneficiary or other individual or entity to be entitled to any particular tax consequences with

respect to this Appendix A, or any credit or payment hereunder.

Nothing contained in this Appendix A shall constitute a guarantee by the Corporation or any other person or entity that the assets of the Corporation will be sufficient to pay any benefits hereunder.

Any payment made in good faith in accordance with provisions of this Appendix A shall be a complete discharge of any liability for the making of such payment under the provisions of this Appendix A.

8. EFFECT OF A CHANGE IN CONTROL OF THE CORPORATION. Anything in this Appendix A to the contrary notwithstanding, this Section 8 shall apply in the event of a Change in Control. If, within three years after the date of a Change in Control Employee voluntarily terminates employment with the Corporation for Good Reason, and employee is not otherwise eligible for Retirement, then Employee shall be deemed to have Retired with a fully vested benefit on the date of such termination of employment. Employee's Deferred Compensation Account balance, determined as of the valuation date immediately preceding Employee's termination of employment, shall be payable in a lump sum as soon as administratively practicable following such deemed Retirement Date.

Solely for purposes of this Section 8, "Good Reason" shall mean termination of Employee's employment by Employee within 90 days following (i) a material diminution in Employee's positions, duties and responsibilities from those described in this Employment Agreement (ii) if Employee is a member of the Board of Directors, the removal of Employee from, or the failure to re-elect Employee as a member of, the Board, (iii) a reduction in Employee's Base Salary (other than a reduction which is part of a general salary reduction program affecting senior executives of the Corporation) (iv) a material reduction in the aggregate value of the pension and welfare benefits provided to Employee from those in effect prior to the Change in Control (other than a reduction which is proportionate to the reductions applicable to other senior executives pursuant to a cost-saving plan that includes all senior executives), (v) a material breach of any provision of this Employment Agreement by the Corporation, (vi) the

Corporation's requiring Employee to be based at a location that creates a one-way commute for Employee in excess of 60 miles from his primary residence, except for required travel on the Corporation's business to an extent substantially consistent with the business travel obligations of Employee under this Employment Agreement. Notwithstanding the foregoing, a termination shall not be treated as a termination for Good Reason (i) if Employee shall have consented in writing to the occurrence of the event giving rise to the claim of termination for Good Reason or (ii) unless Employee shall have delivered a written notice to the Corporation within 30 days of his having actual knowledge of the occurrence of one of such events stating that he intends to terminate his employment for Good Reason and specifying the factual basis for such termination, and such event, if capable of being cured, shall not have been cured within 30 days of the receipt of such notice.

9. EFFECT OF TERMINATION OF EMPLOYMENT AND REHIRE.

Upon Employee's Retirement or Termination of Employment with the Corporation the benefit payable under this Appendix A, if any, shall be determined by the Corporation and such determination shall be conclusive and binding (subject to Section 14). This Appendix A shall not apply to any subsequent period of reemployment of Employee by the Corporation. If, upon reemployment, Employee is receiving installment payments pursuant to Section 6(a) of this Appendix A those payments shall not be suspended during any period of reemployment.

10. ADMINISTRATION.

10.1. Powers of the Corporation. The Board of Directors of the Corporation (the "Board") shall have the sole authority to act on behalf of the Corporation under this Appendix A (subject to Section 10.3), and shall have all the powers necessary to administer the benefits under this Appendix A, including, without limitation, the power to interpret the provisions of this Appendix A and to establish rules and prescribe any forms required to administer benefits under this Appendix A

- 10.2. Actions of the Board. All determinations, interpretations, rules, and decisions of the Corporation shall be conclusive and binding upon all persons having or claiming to have any interest or right under this Appendix A.
- 10.3. Delegation. The Board shall have the power to delegate specific duties and responsibilities to officers or other employees of the Corporation or other individuals or entities. Any delegation by the Board may allow further delegations by the individual or entity to whom the delegation is made. Any delegation may be rescinded by the Board at any time. Each person or entity to whom a duty or responsibility has been delegated shall be responsible for the exercise of such duty or responsibility and shall not be responsible for any act or failure to act of any other person or entity.
- 10.4. Reports and Records. The Board and those to whom the Board has delegated duties under Section 10.3 shall keep records of all their proceedings and actions and shall maintain books of account, records, and other data as shall be necessary for the proper administration of this Appendix A and for compliance with applicable law.
- 10.5. Costs. The costs of providing and administering the benefits under this Appendix A shall be borne by the Corporation.

11. UNFUNDED BENEFITS; ESTABLISHMENT OF TRUST.

- 11.1. Unfunded Status. This Appendix A shall be unfunded for tax purposes and for purposes of Title 1 of ERISA.
- 11.2. Establishment of Trust. The Corporation shall not be required to set aside any funds to discharge its obligations hereunder, but may set aside such funds to informally fund all or part of its obligations hereunder if it chooses to do so, including without limitation the contribution of assets to a "rabbi trust" (the Trust). Any setting aside of amounts, or acquisition of any insurance policy or any other asset, by the Corporation with which to discharge its obligations hereunder in trust or otherwise, shall not be

deemed to create any beneficial ownership interest in Employee, his surviving spouse, or Beneficiary, and legal and equitable title to any funds so set aside shall remain in the Corporation, and any recipient of benefits hereunder shall have no security or other interest in such funds. The rights of Employee and his surviving spouse and Beneficiary(ies) under this Appendix A shall be no greater than the rights of a general unsecured creditor of the Corporation. Any and all funds so set aside by the Corporation shall remain the general assets of the Corporation, and subject to the claims of its general creditors, present and future.

11.3. Interrelationship of this Appendix A and the Trust. The provisions of this Appendix A shall govern the rights of Employee to receive distributions pursuant to the provisions of this Appendix A. The provisions of the Trust shall govern the rights of the Corporation, Employee, and creditors of the Corporation to the assets transferred to the Trust. The Corporation shall at all times remain liable to carry out its obligations under this Appendix A.

11.4 Distributions from the Trust. The Corporation's obligations under this Appendix A may be satisfied with Trust assets distributed pursuant to the terms of the Trust, and any such distribution shall reduce the Corporation's obligation under this Appendix A.

## 12. PAYMENT OF BENEFIT FOR DISABLED OR INCAPACITATED PERSON.

If the Corporation determines, in its discretion, that Employee or Employee's Beneficiary is under a legal disability or is incapacitated in any way so as to be unable to manage his financial affairs, the Corporation shall make payment to such person or to his legal representative or to a friend or relative of such person as the Corporation considers advisable. Any payment under this Section 12 shall be a complete discharge of any liability for the making of such payment under this Appendix A. Nothing contained in this Section 12 however, should be deemed to impose upon the Corporation any liability for paying a benefit to any person who is under such a legal disability or is so incapacitated unless it has received notice of such disability or incapacity from a competent source.

13. NONASSIGNABILITY.

Neither Employee nor any other person shall have any right to commute, sell, assign, transfer, pledge, anticipate, mortgage or otherwise encumber, transfer, hypothecate, alienate or convey in advance of actual receipt, the amounts, if any, payable hereunder, or any part thereof, which are, and all rights to which are expressly declared to be, unassignable and non-transferable. No part of the amounts payable shall, prior to actual payment, be subject to seizure, attachment, garnishment or sequestration for the payment of any debts, judgments, alimony or separate maintenance owed by Employee or any other person, be transferable by operation of law in the event of Employee's or any other person's bankruptcy or insolvency or be transferable to a spouse as a result of a property settlement or otherwise. The Corporation is authorized to make any payments directed by court order.

14. CLAIM PROCEDURE.

- 14.1. Presentation of Claim. Employee, or Employee's Beneficiary after Employee's death (such Employee or Beneficiary being referred to below as a "Claimant") may deliver to the Corporation a written claim for a determination with respect to the amounts distributable to such Claimant under this Appendix A. If such a claim relates to the contents of a notice received by the Claimant, the claim must be made within sixty (60) days after such notice was received by the Claimant. All other claims must be made within 180 days of the date on which the event that caused the claim to arise occurred. The claim must state with particularity the determination desired by the Claimant.
- 14.2. Notification of Decision. The Corporation shall consider a Claimant's claim within a reasonable time, but no later than ninety (90) days after receiving the claim. If the Corporation determines that special circumstances require an extension of time for processing the claim, written notice of the extension shall be furnished to the Claimant prior to the termination of the initial ninety (90) day period. In no event shall such extension exceed a period of ninety (90) days from the end of the initial period. The extension notice shall indicate the special

circumstances requiring an extension of time and the date by which the Corporation expects to render the benefit determination. The Corporation shall notify the Claimant in writing:

(a) that the Claimant's requested determination has been made, and that the claim has been allowed in full; or

(b) that the Corporation has reached a conclusion contrary, in whole or in part, to the Claimant's requested determination, and such notice must set forth in a manner calculated to be understood by the Claimant:

(i) the specific reason(s) for the denial of the claim, or any part of it;

(ii) specific reference(s) to pertinent provisions of this Appendix A upon which such denial was based;

(iii) a description of any additional material or information necessary for the Claimant to perfect the claim, and an explanation of why such material or information is necessary;

(iv) an explanation of the claim review procedure set forth in Section 14.3 below; and

(v) a statement of the Claimant's right to bring a civil action under ERISA Section 502(a) following an adverse benefit determination on review.

14.3 Review of a Denied Claim. On or before sixty (60) days after receiving a notice from the Corporation that a claim has been denied, in whole or in part, a Claimant (or the Claimant's duly authorized representative) may file with the Corporation a written request for a review of the denial of the claim. The Claimant (or the Claimant's duly authorized representative):

(a) may, upon request and free of charge, have reasonable access to, and copies



of, all documents, records and other information relevant to the claim for benefits;

(b) may submit written comments or other documents; and/or

(c) may request a hearing, which the Corporation, in its sole discretion, may grant.

14.4. Decision on Review. The Corporation shall render its decision on review promptly, and no later than sixty (60) days after the Corporation receives the Claimant's written request for a review of the denial of the claim. If the Corporation determines that special circumstances require an extension of time for processing the claim, written notice of the extension shall be furnished to the Claimant prior to the termination of the initial sixty (60) day period. In no event shall such extension exceed a period of sixty (60) days from the end of the initial period. The extension notice shall indicate the special circumstances requiring an extension of time and the date by which the Corporation expects to render the benefit determination. In rendering its decision, the Corporation shall take into account all comments, documents, records and other information submitted by the Claimant relating to the claim, without regard to whether such information was submitted or considered in the initial benefit determination. The decision must be written in a manner calculated to be understood by the Claimant, and it must contain:

(a) specific reasons for the decision;

(b) specific reference(s) to the pertinent provisions of this Appendix A upon which the decision was based;

(c) a statement that the Claimant is entitled to receive, upon request and free of charge, reasonable access to and copies of, all documents, records and other information relevant (as defined in applicable ERISA regulations) to the Claimant's claim for benefits; and

(d) a statement of the Claimant's right to bring a civil action under ERISA Section 502(a).

14.5. Legal Action. A Claimant's compliance with the foregoing provisions of this Article 14 is a mandatory prerequisite to a Claimant's right to commence any legal action with respect to any claim for benefits under this Appendix A.

15. TAX WITHHOLDING AND REPORTING.

(a) General: The Corporation shall have the right to deduct any required withholding taxes from any payment made under this Appendix A. Except as provided in Section 15(b), the Corporation shall not be obligated to pay or reimburse Employee, or his surviving spouse or Beneficiary, for any income or other taxes or penalties that may be imposed on such person by the Internal Revenue Service or any state or other taxing authority as a result of benefits paid under this Appendix A.

(b) Excise Tax Payment. In the event that any payment or benefit (within the meaning of Section 280G(b)(2) of the Internal Revenue Code of 1986, as amended (the "Code")), to Employee or for his benefit paid or payable or distributed or distributable pursuant to the terms of this Employment Agreement (including this Appendix A) or otherwise in connection with, or arising out of, his employment with the Corporation or a Change in Control of the Corporation (a "Payment" or "Payments"), would be subject to the excise tax imposed by Section 4999 of the Code or any interest or penalties are incurred by the Employee with respect to such excise tax (such excise tax, together with any such interest and penalties, are hereinafter collectively referred to as the "Excise Tax"), then Employee will be entitled to immediately receive an additional payment (a "Gross-Up Payment") in an amount such that after payment by Employee of all taxes (including any interest or penalties, other than interest and penalties imposed by reason of Employee's failure to file timely a tax return or pay taxes shown due on his return, imposed with respect to such taxes and the Excise Tax), including any Excise Tax imposed upon the Gross-Up Payment, Employee retains an amount of the Gross-Up Payment equal to the Excise Tax imposed upon the Payments.

16. AMENDMENT.

This Appendix A may be amended only by written agreement between Employee and the Corporation.

17. LEGEND

The securities represented by this supplemental retirement benefit have not been registered under the Securities Act of 1933, as amended, and may not be sold, transferred or otherwise disposed of in the absence of an effective registration statement under such Act or an opinion of counsel satisfactory to the corporation to the effect that such registration is not required.

## EMPLOYMENT AGREEMENT

EMPLOYMENT AGREEMENT dated as of July 30, 2004 ("Employment Agreement"), by and between MKS Instruments, Inc., a Massachusetts Corporation (the "Corporation"), and Gerald G. Colella, of Lowell, MA (the "Employee").

WHEREAS, the Corporation and the Employee entered into an Amended and Restated Employment Agreement dated December 15, 1995 (the "Original Employment Agreement"); and

WHEREAS, the Corporation intends to provide certain supplemental retirement benefits to the Employee as more particularly set forth herein; and

WHEREAS, the Corporation and the Employee intend that this Employment Agreement shall supercede the Original Employment Agreement and that as of the date hereof, the Original Employment Agreement shall be of no further force and effect;

NOW, THEREFORE, in consideration of the premises and the mutual promises contained herein, the Corporation and the Employee hereby agree as follows:

(1) Term of Employment: The Corporation hereby employs the Employee, and the Employee hereby accepts employment with the Corporation, for a period commencing as of July 30, 2004 and continuing from month to month thereafter until terminated as provided in this Section (1). Either the Corporation or the Employee may terminate the employment of the Employee under this Employment Agreement at any time after July 30, 2004 by giving written notice to the other party stating its or his election to terminate the employment of the Employee under this Employment Agreement. The employment of the Employee under this Employment Agreement shall terminate thirty (30) days after the date of receipt by the other party of such notice; provided, however, that the employment of the Employee under this Employment Agreement is subject to prior termination as hereinafter provided in Section (5). Notwithstanding the above, the Corporation shall be entitled, at its sole discretion, to waive the obligation of the Employee to continue to work during the thirty (30) day notice period.

(2) Capacity: The Employee shall serve as Vice President of Global Business and Service Operations and shall have such authority and will perform such duties as are delegated to him by the President & COO of the Corporation or his designee that are consistent with this position and his training and experience for the term of employment under this Employment Agreement.

(3) Extent of Services: During the term of employment of the Employee under this Employment Agreement, the Employee shall devote his full time to, and use his best efforts in the furtherance of, the business of the Corporation and shall not engage in any other business activity whether or not such business activity is pursued for gain or any other pecuniary advantage, without the prior written consent of the Corporation.

(4) Compensation: In consideration of the services to be rendered by the Employee under this Employment Agreement, the Corporation agrees to pay, and the Employee agrees to accept, the following compensation:

(a) Base Salary: A base salary at the rate of two hundred fifty thousand seven hundred and eighteen dollars (\$250,718) per year for the term of employment of the Employee under this Employment Agreement. The base salary shall be payable in equal biweekly installments, subject to usual withholding requirements, and will be subject to any changes in pay policies that may be established by the Corporation. The base salary will be reviewed regularly according to the practices of the Corporation. No overtime pay will be paid to the Employee by the Corporation.

(b) MKS Instruments Profit Sharing and Retirement Savings Plan: The Employee shall be eligible to become a participant under the profit sharing plan of the Corporation on fulfilling the conditions set forth in the MKS Instruments Profit Sharing and Retirement Savings Plan.

(c) Vacation: The Employee shall be entitled to an annual vacation leave of twenty-five (25) days at full pay during each year of this Employment Agreement, subject to the Employee arranging such vacation so as not to affect adversely the ability of the Corporation to transact its necessary business.

(d) Life Insurance: The Corporation shall provide, and pay all of the premiums for, term life insurance for the Employee during the term of employment of the Employee under this Employment Agreement in accordance with the term life insurance plan of the Corporation.

(e) Medical/Dental Insurance: The Corporation shall provide group medical/dental insurance for the Employee under the plans of the Corporation applicable to the Employee during the term of employment of the Employee under this Employment Agreement.

(f) Retirement Benefits: The Employee shall be eligible to participate in supplemental retirement benefits according to the terms and conditions set forth in Appendix A of this Employment Agreement.

(g) Other Benefits: The Corporation shall provide other benefits for the Employee under the plans of the Corporation applicable to the Employee during the term of employment of the Employee under this Employment Agreement.

(5) Termination: The employment of the Employee under this Employment Agreement shall terminate:

(a) On the expiration of the period of employment as provided in Section (1).

(b) Upon the death of the Employee.

(c) At the election of the Corporation (i) if the Employee shall refuse to perform the services required of him under this Employment Agreement, or (ii) if the Employee shall fail, or refuse, to perform the other covenants and agreements required of him under this Employment Agreement, or (iii) for "cause", which term shall mean conviction for the commission of a felony, willful failure by the Employee to perform his responsibilities to the Corporation, or willful misconduct by the Employee.

(6) Payment Upon Termination:

(a) If the employment of the Employee is terminated by the Corporation other than pursuant to Section 5 (c) hereof, the Corporation (i) shall continue to pay Employee the Base Salary in effect immediately prior to the time of such termination for six (6) months after the last full day Employee works under this Agreement at its normal payroll payment dates; (ii) shall reimburse Employee for the premiums (if any) he pays for continuation of life insurance should he elect to exercise the conversion feature of the Corporation's group life policy then in effect for six (6) months after the last full day Employee works under this Agreement; and (iii) continue to pay for such medical/dental/vision insurance as Employee may then receive for six (6) months after the last full day Employee works under this Agreement (such payments of Base Salary and payments or reimbursements of insurance premiums by the Corporation, the "Severance Benefits). Employee agrees that, (a) his eligibility for or entitlement to the foregoing Severance Benefits shall be subject to Employee's execution and delivery of a release, in such form as the Corporation may require, that, among other things, may be a general release of any and all claims Employee may have against Employer, (b) Employee shall have no rights or remedies in the event of his or her termination by the Corporation without Cause and other than as a result of Disability or death except for those set forth in this Agreement and (c) Employee's right to receive any of the foregoing Severance Benefits shall be expressly conditioned upon Employee's full compliance with the Confidentiality Agreement, pursuant to its continued effectiveness, and Employee's full cooperation with the Corporation in both fulfilling the terms of this Agreement and the Confidentiality Agreement and otherwise performing such actions as the Corporation may request in transitioning Employee from his employment with the Corporation and upon any breach of either such agreement by Employee, Employee's rights to any continued payment of Severance Benefits shall immediately cease and Employee shall be obligated to repay to the Corporation all amounts paid by the Corporation for the Severance Benefits except for the amount of \$1,000, which Employee shall be entitled to retain.

(b) If the employment of the Employee is terminated by death, the Corporation shall pay to the estate of the Employee the compensation which would otherwise be payable to the Employee at the end of the month in which his death occurs.

(c) In the event the employment of the Employee is terminated at the election of the Corporation pursuant to Section (5) (c) hereof, the Employee shall only be entitled to his base salary through the last day of actual employment or the date of termination, whichever is earlier.

(d) In the event the Employee voluntarily terminates his employment on the expiration of the period of employment as provided in Section (1), the Employee shall not be entitled to any compensation, and the Corporation shall have no obligation to pay the Employee any compensation, except as is provided in this Employment Agreement.

(7) Trade Secrets: The Employee covenants and agrees that he will communicate to the Corporation, and will not divulge or communicate to any other person, partnership, corporation or other entity without the prior written consent of the Corporation, any trade secrets of the Corporation or confidential information relating to the business of the Corporation or any one connected with the Corporation, and that such trade secrets and confidential information shall not be used by the Employee either on his own behalf or for the benefit of others or disclosed by the Employee to any one, except to the Corporation, during or after the term of employment of the Employee under this Employment Agreement.

(8) Inventions and Patents:

(a) The Employee shall make prompt full disclosure in writing to the Corporation of all inventions, improvements and discoveries, whether or not patentable, which the Employee conceives, devises, makes, discovers, develops, perfects or first reduces to practice, either alone or jointly with others, during the term of employment of the Employee under this Employment Agreement, which relate in any way to the fields, products or business of the Corporation, including development and research, whether during or out of the usual hours of work or on or off the premises of the Corporation or by use of the facilities of the Corporation or otherwise and whether at the request or suggestion of the Corporation or otherwise (all such inventions, improvements and discoveries being hereinafter called the "Inventions"), including any Inventions, whether or not patentable, conceived, devised, made, discovered, developed, perfected or first reduced to practice by the Employee after the employment of the Employee under this Employment Agreement is terminated if the Inventions were conceived by the Employee



during the term of employment of the Employee under this Employment Agreement. Any Inventions, whether or not patentable, conceived, devised, made, discovered, developed, perfected or first reduced to practice by the Employee within six (6) months of the date of termination of the employment of the Employee under this Employment Agreement shall be conclusively presumed to have been conceived during the term of employment of the Employee under this Employment Agreement.

(b) The Employee agrees that the Inventions shall be the sole and exclusive property of the Corporation.

(c) The Employee agrees to assist the Corporation and its nominees in every reasonable way (entirely at its or their expense) to obtain for the benefit of the Corporation letters patent for the Inventions and trademarks, trade names and copyrights relating to the Inventions, and any renewals, extensions or reissues thereof, in any and all countries, and agrees to make, execute, acknowledge and deliver, at the request of the Corporation, all written applications for letters patent, trademarks, trade names and copyrights relating to the Inventions and any renewals, extensions or reissues thereof, in any and all countries, and all documents with respect thereto, and all powers of attorney relating thereto and, without further compensation, to assign to the Corporation or its nominee all the right, title and interest of the Employee in and to such applications and to any patents, trademarks, trade names or copyrights which shall thereafter issue on any such applications, and to execute, acknowledge and deliver all other documents deemed necessary by the Corporation to transfer to or vest in the Corporation all of the right, title and interest of the Employee in and to the Inventions, and to such trademarks, trade names, patents and copyrights together with exclusive rights to make, use, license and sell them throughout the world.

(d) The Employee agrees that even though his employment is terminated under this Employment Agreement he will, at any time after such termination of employment, carry out and perform all of the agreements of Subsections (8) (a) and (8) (c) above, and will at any time and at all times cooperate with the Corporation in the prosecution and/or defense of any litigation which may arise in connection with the Inventions, provided, however, that should such services be rendered after termination of employment of the Employee under this Employment Agreement, the Employee shall be paid reasonable compensation on a per diem basis.

(e) The Employee agrees to make and maintain adequate and current written records of all Inventions in the form of notes, sketches, drawings, or reports relating thereto, which records shall be and remain the property of, and available to, the Corporation at all times.

(f) The Employee agrees that he will, upon leaving the employment of the Corporation, promptly deliver to the Corporation all originals and copies of disclosures, drawings, prints, letters, notes, and reports either typed, handwritten or otherwise memorialized, belonging to the Corporation which are in his possession or under his control and the Employee agrees that he will not retain or give away or make copies of the originals or copies of any such disclosures, drawings, prints, letters, notes or reports.

(9) Property of Corporation: All files, records, reports, documents, drawings, specifications, equipment, and similar items relating to the business of the Corporation, whether prepared by the Employee or otherwise coming into his possession, shall remain the exclusive property of the Corporation and shall not be removed by the Employee from the premises of the Corporation under any circumstances whatsoever without the prior written consent of the Corporation.

(10) Non-Competition:

(a) During the term of employment of the Employee under this Employment Agreement, and during a period of one (1) year after termination of employment of the Employee under this Employment Agreement without regard to the cause of termination of employment and whether or not such termination of employment was caused by the Employee or by the Corporation, (i) the Employee shall not engage, either directly or indirectly, in any manner or capacity, in any business or activity which is competitive with any business or activity conducted by the Corporation; (ii) the Employee shall not work for or employ, directly or indirectly, or cause to be employed by another, any person who was an employee, officer or agent of the Corporation or of any of its subsidiaries at any time during a period of twelve (12) months prior to the termination of the employment of the Employee under this Employment Agreement nor shall the Employee form any partnership with, or establish any business venture in cooperation with, any such person which is competitive with any business or activity of the Corporation; (iii) the Employee shall not give, sell or lease any goods or services

competitive with the goods or services of the Corporation or its subsidiaries to any person, partnership, corporation or other entity who purchased goods or services from the Corporation or its subsidiaries within one (1) year before the termination of the employment of the Employee under this Employment Agreement; (iv) the Employee shall not have any material financial interest, or participate as a director, officer, 5% stockholder, partner, employee, consultant or otherwise, in any corporation, partnership or other entity which is competitive with any business or activity conducted by the Corporation.

(b) The Corporation and the Employee agree that the services of the Employee are of a personal, special, unique and extraordinary character, and cannot be replaced by the Corporation without great difficulty, and that the violation by the Employee of any of his agreements under this Section (10) would damage the goodwill of the Corporation and cause the Corporation irreparable harm which could not reasonably or adequately be compensated in damages in an action at law, and that the agreements of the Employee under this Section (10) may be enforced by the Corporation in equity by an injunction or restraining order in addition to being enforced by the Corporation at law.

(c) In the event that this Section (10) shall be determined by any court of competent jurisdiction to be unenforceable by reason of its extending for too long a period of time or over too great a range of activities, it shall be interpreted to extend only over the maximum period of time or range of activities as to which it may be enforceable.

(11) Non-Solicitation: The Employee shall not, on his own behalf or in the service or on behalf of others, directly or indirectly:

(a) solicit, entice or induce any Customer (as defined below) to become a customer, distributor or supplier of any other person, firm or corporation with respect to products and/or services sold or under development by the Corporation during his employment at the Corporation, or to cease doing business with the Corporation, and the Employee shall not contact or approach any such person, firm or corporation for such purpose or authorize or knowingly approve the taking of such actions by any other person for a period of twelve (12) months from the date of the termination of employment of the Employee under this Employment Agreement; or

(b) solicit, recruit or hire (or attempt to solicit, recruit or hire) any employee, officer or agent of the Corporation or contractor engaged by the Corporation (whether or not such person is a full-time employee or whether or not such employment is pursuant to a written agreement or at-will) to terminate such person's employment or engagement with the Corporation or work for a third party other than the Corporation for a period of twelve (12) months after the date of the termination of employment of the Employee under this Employment Agreement, or engage in any activity that would cause such employee or contractor to violate any agreement with the Corporation, nor shall the Employee form any partnership with, or establish any business venture in cooperation with, any such person.

(c) For the purposes of this Section (11), a "Customer" means any person or entity which as of the date of the termination of employment of the Employee under this Employment Agreement was, within two (2) years prior to such time, a customer, distributor or supplier of the Corporation, and references to the Corporation shall be deemed to include any affiliate or subsidiary of the Corporation.

(12) Notice: Any and all notices under this Employment Agreement shall be in writing and, if to the Corporation, shall be duly given if sent to the Corporation by registered or certified mail, postage prepaid, return receipt requested, at the address of the Corporation set forth under its name below or at such other address as the Corporation may hereafter designate to the Employee in writing for the purpose, and, if to the Employee, shall be duly given if delivered to the Employee by hand or if sent to the Employee by registered or certified mail, postage prepaid, return receipt requested, at the address of the Employee set forth under his name below or at such other address as the Employee may hereafter designate to the Corporation in writing for the purpose.

(13) Assignment: The rights and obligations of the Corporation under this Employment Agreement shall inure to the benefit of, and shall be binding upon, the successors and assigns of the Corporation. The rights and obligations of the Employee under this Employment Agreement shall inure to the benefit of, and shall be binding upon, the heirs, executors and legal representatives of the Employee.

(14) Entire Agreement and Severability:

(a) This Employment Agreement, and the attached Appendix A, supersedes any and all other agreements, either oral or in writing, between the parties hereto with respect to the employment of the Employee by the Corporation and contains all of the covenants and agreements between the parties with respect to such employment. Each party to this Employment Agreement acknowledges that no representations, inducements, promises or agreements, oral or otherwise, have been made by any party, or any one acting on behalf of any party, which are not embodied herein, and that no other agreement, statement or promise not contained in this Employment Agreement, and the attached Appendix A, shall be valid and binding. Any modification of this Employment Agreement, and the attached Appendix A, will be effective only if it is in writing signed by both parties to this Employment Agreement.

(b) If any provision in this Employment Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions shall nevertheless continue in full force and effect without being impaired or invalidated in any way.

(c) All pronouns used herein shall include the masculine, feminine, and neuter gender as the context requires.

(15) Governing Law: This Employment Agreement shall be governed by, and construed in accordance with, the laws of The Commonwealth of Massachusetts applicable to contracts made and to be performed entirely within The Commonwealth of Massachusetts without regard to its conflict of laws principles.

IN WITNESS WHEREOF, the parties hereto have executed, in The Commonwealth of Massachusetts, this Employment Agreement as a sealed instrument, all as of the day, month and year first written above.

MKS INSTRUMENTS, INC.

By: /s/ John R. Bertucci  
-----  
Chairman & CEO

90 Industrial Way  
Wilmington, MA 01887

/s/ Gerald G. Colella  
-----  
Legal Signature

Gerald G. Colella  
Address:

61 Heritage Drive  
-----  
Lowell, Mass 01852  
-----

APPENDIX A

SUPPLEMENTAL RETIREMENT BENEFITS

1. PURPOSE. (a) GENERAL: The purpose of this Appendix A is to provide Employee with supplemental retirement benefits to encourage his continued employment with the Corporation. Benefits will be payable only if Employee fully complies with all of the requirements of this Appendix A.

(b): For Benefit of Employee Only: Benefits under this Appendix A are provided for the benefit of Employee only. No other employee shall accrue any rights of any kind as a result of the existence of the arrangement described in this Appendix A. Supplemental retirement benefits may be provided to an employee only as specifically authorized by the Board of Directors of the Corporation.

2. DEFINITIONS. As used in this Appendix A, the following terms have the meanings set forth below, unless a different meaning is required by the context:

2.1. "Actuarially Equivalent" means a benefit of equivalent value to another benefit, determined on the following basis:

Interest Rate: The average annual interest rate on 10-year Treasury securities as published in the Internal Revenue Bulletin for the calendar quarter immediately preceding the calendar quarter in which the actuarially equivalent benefit is being determined plus 25 basis points; and

Mortality: The most recent "applicable mortality table" prescribed by Section 417(e)(3)(A)(ii) of the Internal Revenue Code (or a successor provision as determined by the Corporation).

2.2. "Base salary" means base salary as defined in the Employment Agreement, before any pre-tax salary reductions for participation in any benefits plan of the Corporation.

2.3. "Beneficiary" means one or more persons, trusts, estates or other entities, designated by Employee to receive death benefits under Sections 5.1(b), 5.2(b) or 6.1(b) of this Appendix A upon Employee's death. If Employee fails to designate a Beneficiary or if all designated

Beneficiaries predecease Employee or die prior to complete distribution of Employee's benefits under Section 5.1(b) or 5.2(b), then such death benefits shall be payable to the executor or personal representative of Employee's estate.

Employee shall designate his Beneficiary by completing and signing a beneficiary designation form prescribed by the Corporation, and returning it to the Corporation or its designated agent. Employee shall have the right to change a Beneficiary by completing, signing and otherwise complying with the terms of the beneficiary designation form and the Corporation's rules and procedures, as in effect from time to time. Upon the acceptance by the Corporation of a new beneficiary designation form, all Beneficiary designations previously filed shall be canceled. The Corporation shall be entitled to rely on the last beneficiary designation form filed by Employee and accepted by the Corporation prior to his or her death. No designation or change in designation of a Beneficiary shall be effective until received and acknowledged in writing by the Corporation or its designated agent. If the Corporation has any doubt as to the proper Beneficiary to receive payments pursuant to this Appendix A, the Corporation shall have the right, exercisable in its discretion, to withhold such payments until this matter is resolved to the Corporation's satisfaction.

2.4. "Bonus" means a bonus paid under the Corporation's Management Incentive Program.

2.5. "Change in Control" means the first to occur of any of the following events:

(a) Any "person" (as that term is used in Section 13 and 14(d)(2) of the Securities Exchange Act of 1934 ("Exchange Act")) becomes the beneficial owner (as that term is used in Section 13(d) of the Exchange Act), directly or indirectly, of fifty percent (50%) or more of the Corporation's capital stock entitled to vote in the election of directors;

(b) The shareholders of the Corporation approve any consolidation or merger of the Corporation, other than a consolidation or merger of the Corporation in which the holders of the common stock of the Corporation immediately prior to the consolidation or merger hold more than fifty percent (50%) of the common stock of the surviving corporation immediately after the consolidation or merger;

(c) The shareholders of the Corporation approve any plan or proposal for the liquidation or dissolution of the Corporation; or

(d) The shareholders of the Corporation approve the sale or transfer of all or substantially all of the assets of the Corporation to parties that are not within a



"controlled group of corporations" (as defined in Code Section 1563) in which the Corporation is a member.

2.6. "Corporation" means MKS Instruments, Inc.. and any corporation, trust, association or enterprise which is required to be considered, together with the Corporation, as one employer pursuant to the provisions of Sections 414(b), 414(c), 414(m) or 414(o) of the Code.

2.7. "Compensation" for any calendar year means the sum of Employee's Base Salary for such year plus any Bonus paid in such year.

2.8. "Early Retirement Benefit" means the Retirement benefit determined under Section 5.2 of this Appendix A upon Employee's Retirement prior to his Normal Retirement Date.

2.9. "Employment Agreement" means the Employment Agreement between Employee and the Corporation that contains this Appendix A.

2.10. "Final Average Pay" means, for purposes of Section 5 the average of Employee's three (3) highest years of Compensation during the ten (10) calendar year period immediately preceding the calendar year in which Employee Retires, and for purposes of determining death benefits under Section 6 the average of Employee's three (3) highest years of Compensation during the ten (10) calendar year period immediately preceding the calendar year containing Employee's date of death. The foregoing notwithstanding, any calendar year in which Employee has no Compensation from the Corporation shall be ignored in determining such ten calendar year period.

2.11. "Normal Retirement Age" means Employee's 62nd birthday.

2.12. "Normal Retirement Benefit" means the Retirement benefit determined under Section 5.1 of this Appendix A upon Employee's Retirement on or after his Normal Retirement Date.

2.13. "Normal Retirement Date" means the first day of the month in which Employee attains Normal Retirement Age.

2.14. "Permanent and Total Disability" means disability as defined in Section 216(i)(1) of the Social Security Act (in general, the inability to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment which can be expected to result in death or has lasted or can be expected to last for a continuous period of not less than

12 months, or blindness). Employee shall be conclusively presumed to be Permanently and Totally Disabled upon determination that he is disabled by the Social Security Administration.

2.15. "Retires" or "Retired" means Employee's termination of employment with the Corporation upon or after satisfying the vesting requirements of Section 4.1. Employee shall be deemed to have Retired with a fully vested Normal Retirement Benefit on the earliest of the date he becomes Permanently and Totally Disabled, the date the Corporation terminates Employee's employment with the Corporation for any reason other than Termination for Cause, the date of Employee's death while employed by the Corporation, or the date of Employee's qualifying termination of employment in connection with a Change in Control in accordance with the provisions of Section 7 of this Appendix A.

2.16. "Retirement Date" means the date Employee Retires or is deemed to have Retired in accordance with Section 2.15 of this Appendix A. The term "Retirement Date" shall include Employee's Early Retirement Date as defined in Section 5.2 of this Appendix A.

2.17. "Termination of Employment" means Termination for Cause, or Employee's voluntary severance from employment with the Corporation for any reason other than Retirement.

2.18. "Termination for Cause" means, solely for purposes of this Appendix A, termination of Employee's employment by the Corporation as a result of Employee's conviction for the commission of a felony, material breach of any employment or other agreements between Employee and the Corporation, or willful failure to perform the material responsibilities of his position with the Corporation.

2.19. "Trust" means the Trust established pursuant to Section 10 of this Appendix A.

### 3. ELIGIBILITY FOR RETIREMENT BENEFITS.

3.1. General: Subject to Sections 4.2, 4.3, 4.4, and 4.5 the Corporation shall pay the retirement benefits described in this Appendix A if Employee Retires from employment with the Corporation upon or after satisfying the vesting requirements set forth in Section 4.1. 3.2. Disability: Solely for purposes of determining eligibility for benefits payable under this Appendix A, Employee shall be deemed to be an employee of the Corporation during any period for which Employee receives benefits under any short term or long term disability plan of the Corporation but is not Permanently and Totally Disabled, and during such period Employee shall continue to accrue service for purposes of the vesting requirements set forth in

Section 4.1. If Employee remains disabled on the date he satisfies the vesting requirements set forth in Section 4.1, he shall be deemed to have Retired from employment from the Corporation on that date for purposes of this Appendix A. This Section 3.2 shall have no bearing on whether Employee remains an employee of the Corporation for any other purpose.

#### 4. VESTING.

4.1 General: Except as provided in Sections 4.2, 4.3, 4.4, and 4.5, and subject to Section 10.2, Employee's benefits under this Appendix A shall be fully vested and nonforfeitable if Employee satisfies both (a) and (b) while employed with the Corporation:

(a) attains age 60, and

(b) has 25 years of service with the Corporation. Employee shall have 25 years of service on the 25th anniversary of Employee's original hire date.

The foregoing notwithstanding, Employee shall be fully vested in his benefit under this Appendix A on the earliest of the date (a) Employee dies while employed by the Corporation, (b) Employee becomes Permanently and Totally Disabled, (c) the Corporation terminates Employee's employment with the Corporation for any reason other than Termination for Cause as defined in Section 2.18 of this Appendix A, or (d) of Employee's qualifying termination of employment in connection with a Change in Control in accordance with the requirements of Section 7 of this Appendix A. Death benefits shall be determined in accordance with Section 6.

4.2. Termination for Cause: All benefits shall be forfeited, and no amount shall be payable under this Appendix A, in the event of Employee's Termination for Cause.

4.3. Compliance with Noncompete, Nondisclosure, and Nonsolicitation Agreements. All benefits under this Appendix A are expressly conditioned upon Employee's compliance with the terms of any noncompetition, nondisclosure, or nonsolicitation provisions contained in the Employment Agreement, or in any other agreement between Employee and the Corporation. All benefits payable under this Appendix A shall be forfeited, and no amount shall be payable, in the event Employee violates the terms of any such provisions. If Employee violates the terms of any such provisions, and benefit payments have commenced to Employee, any such payments shall cease, and Employee shall repay all previously paid benefits to the Corporation upon demand. If Employee fails to repay such amounts upon demand, the

Corporation shall have the right to take any action necessary to recover such payments from Employee.

4.4. Notice of Intent to Retire. Benefits payable under this Appendix A are specifically conditioned upon Employee providing to the Corporation written notice of Employee's intent to Retire at least six months prior to Employee's Retirement date. In the event Employee terminates employment with the Corporation for any reason other than death without satisfying the notice requirements of this Section 4.4 all benefits shall be forfeited, and no amount shall be payable under this Appendix A. The foregoing notwithstanding, the Corporation, in its sole and absolute discretion, may elect to waive the notice requirement of this Section 4.4. The foregoing notwithstanding, this Section 4.4 shall not apply to death benefits payable under Section 6 of this Appendix A, or to Retirement benefits payable under Section 5 as a result of Employee's deemed Retirement under Section 2.15 or Section 7 of this Appendix A.

4.5. Release. Benefits payable under this Appendix A (other than death benefits payable under Section 6) are specifically conditioned upon and provided in exchange for Employee signing a separation agreement that releases the Corporation from any liabilities that may have arisen as a result of Employee's employment and/or termination of employment with the Corporation. In the event Employee terminates employment with the Corporation for any reason other than death without satisfying the requirements of this Section 4.5 all benefits shall be forfeited, and no amount shall be payable under this Appendix A.

4.6. Termination of Employment Prior to Satisfying Vesting Requirements. No benefits are payable under this Appendix A upon Employee's Termination of Employment with the Corporation prior to satisfying the vesting requirements set forth in Section 4.1.

## 5. RETIREMENT BENEFITS.

5.1. Normal Retirement Benefit. This Section 5.1 describes the Retirement benefit payable by the Corporation in the event Employee Retires (or is deemed to have Retired in accordance with Section 2.15 or Section 7 of this Appendix A) on or after his Normal Retirement Date. Employee's Normal Retirement Benefit shall be paid in the form of an Actuarially Equivalent lump sum, as set forth in Section 5.3(a), unless Employee makes the election described in Section 5.3(b).

(a) Married on Retirement Date: If Employee is married on his Retirement Date, Employee's Normal Retirement Benefit shall be:

50% times Final Average Pay

payable annually for the life of Employee with 50% of such amount continuing after Employee's death to his spouse for her life. Payments shall commence as soon as administratively practicable following Employee's Retirement Date, and subsequent payments shall be made as soon as administrative practicable following each anniversary of Employee's Retirement Date (payments shall not, however, commence earlier than the date permitted by federal law). Solely for purposes of this Section 5.1, "Spouse" shall mean the spouse to whom Employee is married on his Retirement Date (regardless of whether that is the same spouse to whom he is married on his date of death), unless the Corporation is directed by a court of competent jurisdiction to treat someone else as Employee's "spouse." If the spouse to whom Employee is married on his Retirement Date does not survive Employee, no survivor death benefit shall be payable under this Section 5.1, without regard to whether employee is married on his date of death.

(b) Not Married on Retirement Date: If Employee is not married on his Retirement Date, Employee's Normal Retirement Benefit shall be:

50% times Final Average Pay

payable annually for the life of Employee with a ten year certain guarantee. Payments shall commence as soon as administratively practicable following Employee's Retirement Date, and subsequent payments shall be made as soon as administrative practicable following each anniversary of Employee's Retirement Date (payments shall not, however, commence earlier than the date permitted by federal law). If Employee dies before receiving 10 annual installments, the Corporation shall pay a lump sum benefit to Employee's Beneficiary that is Actuarially Equivalent to the additional benefit that would have been payable to Employee had he continued to receive annual installments up to a total of 10 annual installments.

5.2. Early Retirement Benefit. This Section 5.2 describes the Retirement benefit payable by the Corporation in the event Employee Retires prior to his Normal Retirement Date. Employee may Retire from employment with the Corporation prior to his Normal Retirement Date on the first day of any month coincident with or next following the date he satisfies the vesting requirements of section 4.1. The date on which Employee Retires under this Section 5.2 shall be his Early Retirement Date. Employee's Early Retirement Benefit shall be paid in the form of an Actuarially Equivalent lump sum, as set forth in Section 5.3(a), unless Employee makes the election described in Section 5.3(b).

(a) Married on Early Retirement Date: If Employee is married on his Early Retirement Date, Employee's Early Retirement Benefit shall be:

50% times Final Average Pay

multiplied by the applicable percentage as set forth in the following schedule:

Age at which Early Retirement Benefits Commence	62	61	60
Applicable Percentage	100%	90	80

payable annually for the life of Employee with 50% of such amount continuing after Employee's death to his spouse for her life. Payments shall commence as soon as administratively practicable following Employee's Early Retirement Date, and subsequent payments shall be made as soon as administrative practicable following each anniversary of Employee's Early Retirement Date (payments shall not, however, commence earlier than the date permitted by federal law). Solely for purposes of this Section 5.2, "Spouse" shall mean the spouse to whom Employee is married on his Early Retirement Date (regardless of whether that is the same spouse to whom he is married on his date of death), unless the Corporation is directed by a court of competent jurisdiction to treat someone else as Employee's "spouse." If the spouse to whom Employee is married on his Early Retirement Date does not survive Employee, no survivor death benefit shall be payable under this Section 5.2, without regard to whether employee is married on his date of death.

(b) Not Married on Early Retirement Date: If Employee is not married on his Early Retirement Date, Employee's Early Retirement Benefit shall be:

50% times Final Average Pay

multiplied by the applicable percentage as set forth in the following schedule:

Age at which Early Retirement Benefits Commence	62	61	60
Applicable Percentage	100%	90	80

payable annually for the life of Employee with a ten year certain guarantee. Payments shall commence as soon as administratively practicable following Employee's Early Retirement Date, and subsequent payments shall be made as soon as administrative practicable following each anniversary of Employee's Early Retirement Date (payments shall not, however, commence earlier than the date permitted by federal law). If Employee dies before receiving 10 annual installments, the Corporation shall pay a lump sum benefit to Employee's Beneficiary that is Actuarially Equivalent to the additional benefit that would have been payable to Employee had he continued to receive annual installments up to a total of 10 annual installments.

### 5.3. Form of Payment:

(a) Unless Employee makes the election described in Section 5.3(b) below, Employee's Normal Retirement Benefit or Early Retirement Benefit, determined in accordance with section 5.1 or 5.2 as applicable, shall be paid in the form of a single lump sum that is Actuarially Equivalent to such Normal Retirement Benefit or Early Retirement Benefit.

Such lump sum shall be paid as soon as administratively practicable following Employee's retirement (or, if later, the earliest date permitted by Federal law).

(b) In lieu of payment of his Normal Retirement Benefit or Early Retirement Benefit in the form of a lump sum as described in Section 5.3(a), Employee may elect, in the manner prescribed by the Corporation, to receive payment of his retirement benefit in the form described in Section 5.1 or 5.2 as applicable. Any such election must be submitted to and accepted by the Corporation no later than the 13th month prior to Employee's Retirement Date.

5.4. Death While Employed by the Corporation. In the event Employee dies while employed by the Corporation, any benefits payable under this Appendix A shall be determined in accordance with Section 6.

## 6. DEATH WHILE EMPLOYED BY THE CORPORATION.

6.1. General. In the event Employee dies while employed by the Corporation the death benefit payable under this Appendix A shall be as follows:

(a) if Employee is married on his date of death, 50% of the lump sum that is Actuarially Equivalent to the Normal Retirement Benefit determined under Section 5.1(a) of this Appendix A, such lump sum benefit to be determined as if Employee Retired on his date of death after reaching Normal Retirement Age; or

(b) if Employee is not married on his date of death, 50% of the lump sum that is Actuarially Equivalent to the Normal Retirement Benefit determined under Section 5.1(b) of this Appendix A, such lump sum benefit to be determined as if Employee Retired on his date of death after reaching Normal Retirement Age.

The death benefit shall be payable in a lump sum as soon as administratively practicable following Employee's date of death.

6.2. Payee. This death benefit shall be payable to Employee's (a) surviving spouse if Employee is married on his date of death, or (b) Beneficiary if Employee is not married on his date of death. "Surviving spouse" for purposes of this Section 6.2 means the spouse to whom Employee is married on his date of death.

7. EFFECT OF A CHANGE IN CONTROL OF THE CORPORATION. Anything in this Appendix A to the contrary notwithstanding, this Section 7 shall apply in the event of a Change in Control. If, within three years after the date of a Change in Control Employee's employment with the Corporation is involuntarily terminated by the Corporation for any reason (other than Cause), or Employee voluntarily terminates employment with the Corporation for Good Reason, and employee is not otherwise eligible for Retirement, then Employee shall be deemed to have Retired with a fully vested Normal Retirement Benefit on the date of such termination of employment. Employee's Normal Retirement Benefit shall be determined as of such deemed Retirement Date, and shall be payable in a lump sum, calculated pursuant to Sections 5.1 and 5.3, as soon as administratively practicable following such deemed Retirement Date.

Solely for purposes of this Section 7, "Good Reason" shall mean termination of Employee's employment by Employee within 90 days following (i) a material diminution in Employee's positions, duties and responsibilities from those described in this Employment Agreement (ii) a reduction in Employee's Base Salary (other than a reduction which is part of a general salary reduction program affecting senior executives of the Corporation) (iii) a material reduction in the aggregate value of the pension and welfare benefits provided to Employee from those in effect prior to the Change in Control (other than a reduction which is proportionate to the reductions applicable to other senior executives pursuant to a cost-saving plan that includes all



senior executives), (iv) a material breach of any provision of this Employment Agreement by the Corporation, (v) the Corporation's requiring Employee to be based at a location that creates for Employee a one way commute in excess of 60 miles from his primary residence, except for required travel on the Corporation's business to an extent substantially consistent with the business travel obligations of Employee under this Employment Agreement. Notwithstanding the foregoing, a termination shall not be treated as a termination for Good Reason (i) if Employee shall have consented in writing to the occurrence of the event giving rise to the claim of termination for Good Reason or (ii) unless Employee shall have delivered a written notice to the Corporation within 30 days of his having actual knowledge of the occurrence of one of such events stating that he intends to terminate his employment for Good Reason and specifying the factual basis for such termination, and such event, if capable of being cured, shall not have been cured within 30 days of the receipt of such notice.

8. EFFECT OF TERMINATION OF EMPLOYMENT AND REHIRE. Upon Employee's termination of employment with the Corporation the benefit payable under this Appendix A, if any, shall be determined by the Corporation and such determination shall be conclusive and binding (subject to Section 14). If Employee is subsequently reemployed by the Corporation such reemployment, additional service, and additional compensation shall not result in a re-determination of the benefits due under this Appendix A. If, upon reemployment, Employee is receiving installment payments pursuant to Section 5 those payments shall not be suspended during any period of reemployment.

#### 9. ADMINISTRATION.

9.1. Powers of the Corporation: The Board of Directors of the Corporation (the "Board") shall have the sole authority to act on behalf of the Corporation under this Appendix A (subject to Section 9.3), and shall have all the powers necessary to administer the benefits under this Appendix A, including, without limitation, the power to interpret the provisions of this Appendix A and to establish rules and prescribe any forms required to administer benefits under this Appendix A

9.2. Actions of the Board: All determinations, interpretations, rules, and decisions of the Board shall be conclusive and binding upon all persons having or claiming to have any interest or right under this Appendix A.

9.3. Delegation: The Board shall have the power to delegate specific duties and responsibilities to officers or other employees of the Corporation or other individuals or

entities. Any delegation by the Board may allow further delegations by the individual or entity to whom the delegation is made. Any delegation may be rescinded by the Board at any time. Each person or entity to whom a duty or responsibility has been delegated shall be responsible for the exercise of such duty or responsibility and shall not be responsible for any act or failure to act of any other person or entity.

9.4. Reports and Records: The Board and those to whom the Board has delegated duties under Section 9.3 shall keep records of all their proceedings and actions and shall maintain books of account, records, and other data as shall be necessary for the proper administration of this Appendix A and for compliance with applicable law.

9.5. Costs: The costs of providing and administering the benefits under this Appendix A shall be borne by the Corporation.

#### 10. UNFUNDED BENEFITS; ESTABLISHMENT OF TRUST.

10.1. Unfunded Status. This Appendix A shall be unfunded for tax purposes and for purposes of Title 1 of ERISA.

10.2. Establishment of Trust. The Corporation shall not be required to set aside any funds to discharge its obligations hereunder, but may set aside such funds to informally fund all or part of its obligations hereunder if it chooses to do so, including without limitation the contribution of assets to a "rabbi trust" (the Trust). Any setting aside of amounts, or acquisition of any insurance policy or any other asset, by the Corporation with which to discharge its obligations hereunder in trust or otherwise, shall not be deemed to create any beneficial ownership interest in Employee, his surviving spouse, or Beneficiary, and legal and equitable title to any funds so set aside shall remain in the Corporation, and any recipient of benefits hereunder shall have no security or other interest in such funds. The rights of Employee and his surviving spouse and Beneficiary(ies) under this Appendix A shall be no greater than the rights of a general unsecured creditor of the Corporation. Any and all funds so set aside by the Corporation shall remain the general assets of the Corporation, and subject to the claims of its general creditors, present and future.

10.3. Interrelationship of this Appendix A and the Trust. The provisions of this Appendix A shall govern the rights of Employee to receive distributions pursuant to the provisions of this Appendix A. The provisions of the Trust shall govern the rights of the Corporation, Employee, and creditors of the Corporation to the assets transferred to the Trust. The Corporation shall at all times remain liable to carry out its obligations under this Appendix A.

10.4. Distributions from the Trust. The Corporation's obligations under this Appendix A may be satisfied with Trust assets distributed pursuant to the terms of the Trust, and any such distribution shall reduce the Corporation's obligation under this Appendix A.

11. PAYMENT OF BENEFIT FOR DISABLED OR INCAPACITATED PERSON. If the Corporation determines, in its discretion, that Employee or Employee's Beneficiary or surviving spouse is under a legal disability or is incapacitated in any way so as to be unable to manage his financial affairs, the Corporation shall make payment to such person or to his legal representative or to a friend or relative of such person as the Corporation considers advisable. Any payment under this Section 11 shall be a complete discharge of any liability for the making of such payment under this Appendix A. Nothing contained in this Section 11 however, should be deemed to impose upon the Corporation any liability for paying a benefit to any person who is under such a legal disability or is so incapacitated unless it has received notice of such disability or incapacity from a competent source.

12. NONASSIGNABILITY. Neither Employee nor any other person shall have any right to commute, sell, assign, transfer, pledge, anticipate, mortgage or otherwise encumber, transfer, hypothecate, alienate or convey in advance of actual receipt, the amounts, if any, payable hereunder, or any part thereof, which are, and all rights to which are expressly declared to be, unassignable and non-transferable. No part of the amounts payable shall, prior to actual payment, be subject to seizure, attachment, garnishment or sequestration for the payment of any debts, judgments, alimony or separate maintenance owed by Employee or any other person, be transferable by operation of law in the event of Employee's or any other person's bankruptcy or insolvency or be transferable to a spouse as a result of a property settlement or otherwise. The Corporation is authorized to make any payments directed by court order.

### 13. CLAIM PROCEDURE.

13.1. Presentation of Claim. Employee, or the surviving spouse of Employee after Employee's death, or Employee's Beneficiary (such Employee, surviving spouse, or Beneficiary being referred to below as a "Claimant") may deliver to the Corporation a written claim for a determination with respect to the amounts distributable to such Claimant under this Appendix A. If such a claim relates to the contents of a notice received by the Claimant, the claim must be made within sixty (60) days after such notice was received by the Claimant. All other claims must be made within 180 days of the date on which the event that caused the claim to arise occurred. The claim must state with particularity the determination desired by the Claimant.

13.2. Notification of Decision. The Corporation shall consider a Claimant's claim within a reasonable time, but no later than ninety (90) days after receiving the claim. If the Corporation determines that special circumstances require an extension of time for processing the claim, written notice of the extension shall be furnished to the Claimant prior to the termination of the initial ninety (90) day period. In no event shall such extension exceed a period of ninety (90) days from the end of the initial period. The extension notice shall indicate the special circumstances requiring an extension of time and the date by which the Corporation expects to render the benefit determination. The Corporation shall notify the Claimant in writing:

- (a) that the Claimant's requested determination has been made, and that the claim has been allowed in full; or
- (b) that the Corporation has reached a conclusion contrary, in whole or in part, to the Claimant's requested determination, and such notice must set forth in a manner calculated to be understood by the Claimant:
  - (i) the specific reason(s) for the denial of the claim, or any part of it;
  - (ii) specific reference(s) to pertinent provisions of this Appendix A upon which such denial was based;
  - (iii) a description of any additional material or information necessary for the Claimant to perfect the claim, and an explanation of why such material or information is necessary;
  - (iv) an explanation of the claim review procedure set forth in Section 13.3 below; and
  - (v) a statement of the Claimant's right to bring a civil action under ERISA Section 502(a) following an adverse benefit determination on review.

13.3. Review of a Denied Claim. On or before sixty (60) days after receiving a notice from the Corporation that a claim has been denied, in whole or in part, a Claimant (or the Claimant's duly authorized representative) may file with the Corporation a written request for a review of the denial of the claim. The Claimant (or the Claimant's duly authorized representative):

- (a) may, upon request and free of charge, have reasonable access to, and copies of, all

documents, records and other information relevant to the claim for benefits;

(b) may submit written comments or other documents; and/or

(c) may request a hearing, which the Corporation, in its sole discretion, may grant.

13.4. Decision on Review. The Corporation shall render its decision on review promptly, and no later than sixty (60) days after the Corporation receives the Claimant's written request for a review of the denial of the claim. If the Corporation determines that special circumstances require an extension of time for processing the claim, written notice of the extension shall be furnished to the Claimant prior to the termination of the initial sixty (60) day period. In no event shall such extension exceed a period of sixty (60) days from the end of the initial period. The extension notice shall indicate the special circumstances requiring an extension of time and the date by which the Corporation expects to render the benefit determination. In rendering its decision, the Corporation shall take into account all comments, documents, records and other information submitted by the Claimant relating to the claim, without regard to whether such information was submitted or considered in the initial benefit determination. The decision must be written in a manner calculated to be understood by the Claimant, and it must contain:

(a) specific reasons for the decision;

(b) specific reference(s) to the pertinent provisions of this Appendix A upon which the decision was based;

(c) a statement that the Claimant is entitled to receive, upon request and free of charge, reasonable access to and copies of, all documents, records and other information relevant (as defined in applicable ERISA regulations) to the Claimant's claim for benefits; and

(d) a statement of the Claimant's right to bring a civil action under ERISA Section 502(a).

13.5. LEGAL ACTION. A Claimant's compliance with the foregoing provisions of this Article 13 is a mandatory prerequisite to a Claimant's right to commence any legal action with respect to any claim for benefits under this Appendix A.

14. TAX WITHHOLDING AND REPORTING; SECTION 280G EXCISE TAXES.

(a) General. The Corporation shall have the right to deduct any required withholding taxes from any payment made under this Appendix A. Except as provided in Section 14(b), the Corporation shall not be obligated to pay or reimburse Employee, or his surviving spouse or Beneficiary, for any income or other taxes or penalties that may be imposed on such person by the Internal Revenue Service or any state or other taxing authority as a result of benefits paid under this Appendix A.

(b) Excise Tax Payment. In the event that any payment or benefit (within the meaning of Section 280G(b)(2) of the Internal Revenue Code of 1986, as amended (the "Code")), to Employee or for his benefit paid or payable or distributed or distributable pursuant to the terms of this Employment Agreement (including this Appendix A) or otherwise in connection with, or arising out of, his employment with the Corporation or a Change in Control of the Corporation (a "Payment" or "Payments"), would be subject to the excise tax imposed by Section 4999 of the Code or any interest or penalties are incurred by the Employee with respect to such excise tax (such excise tax, together with any such interest and penalties, are hereinafter collectively referred to as the "Excise Tax"), then Employee will be entitled to immediately receive an additional payment (a "Gross-Up Payment") in an amount such that after payment by Employee of all taxes (including any interest or penalties, other than interest and penalties imposed by reason of Employee's failure to file timely a tax return or pay taxes shown due on his return, imposed with respect to such taxes and the Excise Tax), including any Excise Tax imposed upon the Gross-Up Payment, Employee retains an amount of the Gross-Up Payment equal to the Excise Tax imposed upon the Payments.

15. SUCCESSORS. The provisions of this Appendix A shall bind and inure to the benefit of the Corporation and its successors and assigns and Employee and Employee's surviving spouse and designated beneficiaries.

16. AMENDMENT. This Appendix A may be amended only by written agreement between Employee and the Corporation.

17. LEGEND

The securities represented by this supplemental retirement benefit have not been registered under the Securities Act of 1933, as amended, and may not be sold, transferred or otherwise disposed of in the absence of an effective registration statement under such Act or an opinion of counsel satisfactory to the corporation to the effect that such registration is not required.

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER  
PURSUANT TO RULE 13a-14(a)/RULE 15d-14(a) OF THE  
SECURITIES EXCHANGE ACT OF 1934, AS AMENDED

I, John R. Bertucci, certify that:

1. I have reviewed this report on Form 10-Q of MKS Instruments, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) for the registrant and have:
  - a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - b) [Paragraph omitted in accordance with SEC transition instructions contained in SEC Release 34-47986];
  - c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - d) Disclosed in this report any changes in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal controls over financial reporting, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent functions):
  - a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control and financial reporting.

Dated: August 5, 2004

/s/ John R. Bertucci

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John R. Bertucci  
Chairman and Chief Executive Officer  
(Principal Executive Officer)

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER  
PURSUANT TO RULE 13a-14(a)/RULE 15d-14(a) OF THE  
SECURITIES EXCHANGE ACT OF 1934, AS AMENDED

I, Ronald C. Weigner, certify that:

1. I have reviewed this report on Form 10-Q of MKS Instruments, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) for the registrant and have:
  - a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this annual report is being prepared;
  - b) [Paragraph omitted in accordance with SEC transition instructions contained in SEC Release 34-47986];
  - c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this annual report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - d) Disclosed in this report any changes in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal controls over financial reporting, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent functions):
  - a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control and financial reporting.

Dated: August 5, 2004

/s/ Ronald C. Weigner

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Ronald C. Weigner  
Vice President and Chief Financial Officer  
(Principal Financial Officer)



CERTIFICATION OF CHIEF EXECUTIVE OFFICER  
PURSUANT TO 18 U.S.C. SECTION 1350,  
AS ADOPTED PURSUANT TO  
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report on Form 10-Q of MKS Instruments, Inc. (the "Company") for the period ended June 30, 2004 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned, John R. Bertucci, Chairman and Chief Executive Officer of the Company, hereby certifies, pursuant to 18 U.S.C. Section 1350, that:

- (1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: August 5, 2004

/s/ John R. Bertucci

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John R. Bertucci  
Chairman and Chief Executive Officer

CERTIFICATION OF CHIEF FINANCIAL OFFICER  
PURSUANT TO 18 U.S.C. SECTION 1350,  
AS ADOPTED PURSUANT TO  
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report on Form 10-Q of MKS Instruments, Inc. (the "Company") for the period ended June 30, 2004 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned, Ronald C. Weigner, Vice President and Chief Financial Officer of the Company, hereby certifies, pursuant to 18 U.S.C. Section 1350, that:

- (1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: August 5, 2004

/s/ Ronald C. Weigner

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Ronald C. Weigner  
Vice President and Chief Financial Officer