

TERADYNE, INC  
Form 10-Q  
November 09, 2018  
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**UNITED STATES**  
**SECURITIES AND EXCHANGE COMMISSION**  
**Washington, D.C. 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 September 30, 2018**

**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 No. 001-06462**

**TERADYNE, INC.**

**(Exact name of registrant as specified in its charter)**

**Massachusetts**  
**(State or Other Jurisdiction of**  
**Incorporation or Organization)**

**04-2272148**  
**(I.R.S. Employer**  
**Identification No.)**

**600 Riverpark Drive, North Reading,**

**Massachusetts**  
**(Address of Principal Executive Offices)**

**01864**  
**(Zip Code)**

**978-370-2700**

**(Registrant's Telephone Number, Including Area Code)**

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 the filing requirements for the past 90 days. Yes No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files) Yes No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, smaller reporting company, or an emerging growth company. See the definitions of large accelerated filer, accelerated filer, smaller reporting company, and emerging growth company in Rule 12b-2 of the Exchange Act (check one):

Large accelerated filer

Accelerated filer

Non-accelerated filer

Emerging growth company

Smaller reporting company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

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

The number of shares outstanding of the registrant's only class of Common Stock as of November 5, 2018 was 179,249,910 shares.



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**Table of Contents****PART I****Item 1: Financial Statements****TERADYNE, INC.****CONDENSED CONSOLIDATED BALANCE SHEETS****(Unaudited)**

	<b>September 30, 2018</b>	<b>December 31, 2017</b>
	<b>(in thousands, except per share amount)</b>	
<b>ASSETS</b>		
Current assets:		
Cash and cash equivalents	\$ 814,019	\$ 429,843
Marketable securities	418,410	1,347,979
Accounts receivable, less allowance for doubtful accounts of \$2,214 and \$2,219 at September 30, 2018 and December 31, 2017, respectively	352,476	272,783
Inventories, net	154,705	107,525
Prepayments and other current assets	139,785	112,151
<b>Total current assets</b>	<b>1,879,395</b>	<b>2,270,281</b>
Property, plant and equipment, net	278,071	268,447
Marketable securities	91,982	125,926
Deferred tax assets	70,772	84,026
Retirement plans assets	17,885	17,491
Other assets	11,421	12,275
Acquired intangible assets, net	139,963	79,088
Goodwill	392,998	252,011
<b>Total assets</b>	<b>\$ 2,882,487</b>	<b>\$ 3,109,545</b>
<b>LIABILITIES</b>		
Current liabilities:		
Accounts payable	\$ 107,890	\$ 86,393
Accrued employees' compensation and withholdings	116,546	141,694
Deferred revenue and customer advances	77,953	83,614
Other accrued liabilities	95,888	59,083
Contingent consideration	35,532	24,497
Income taxes payable	24,603	59,055

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Total current liabilities	458,412	454,336
Retirement plans liabilities	127,037	119,776
Long-term deferred revenue and customer advances	29,387	30,127
Deferred tax liabilities	21,748	6,720
Long-term other accrued liabilities	28,956	10,273
Long-term contingent consideration	25,410	20,605
Long-term incomes taxes payable	147,360	148,075
Long-term debt	376,417	365,987
<b>Total liabilities</b>	<b>1,214,727</b>	<b>1,155,899</b>

Commitments and contingencies (See Note Q)

**SHAREHOLDERS EQUITY**

Common stock, \$0.125 par value, 1,000,000 shares authorized; 183,289 and 195,548 shares issued and outstanding at September 30, 2018 and December 31, 2017, respectively	22,911	24,444
Additional paid-in capital	1,664,568	1,638,413
Accumulated other comprehensive income	3,524	18,776
(Accumulated deficit) Retained earnings	(23,243)	272,013
<b>Total shareholders equity</b>	<b>1,667,760</b>	<b>1,953,646</b>
<b>Total liabilities and shareholders equity</b>	<b>\$ 2,882,487</b>	<b>\$ 3,109,545</b>

The accompanying notes, together with the Notes to Consolidated Financial Statements included in Teradyne's Annual Report on Form 10-K for the year ended December 31, 2017, are an integral part of the condensed consolidated financial statements.

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## TERADYNE, INC.

## CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS

(Unaudited)

	For the Three Months Ended		For the Nine Months Ended	
	September 30, 2018	October 1, 2017	September 30, 2018	October 1, 2017
	(in thousands, except per share amount)			
Revenues:				
Products	\$ 470,994	\$ 412,854	\$ 1,308,969	\$ 1,396,413
Services	95,854	90,524	272,275	260,778
Total revenues	566,848	503,378	1,581,244	1,657,191
Cost of revenues:				
Cost of products	195,339	169,661	557,074	592,294
Cost of services	37,816	38,848	113,311	114,373
Total cost of revenues (exclusive of acquired intangible assets amortization shown separately below)	233,155	208,509	670,385	706,667
Gross profit	333,693	294,869	910,859	950,524
Operating expenses:				
Selling and administrative	100,199	86,130	290,115	261,034
Engineering and development	77,049	76,986	226,799	235,235
Acquired intangible assets amortization	11,142	7,028	28,633	23,145
Restructuring and other	1,710	(4,407)	3,785	392
Total operating expenses	190,100	165,737	549,332	519,806
Income from operations	143,593	129,132	361,527	430,718
Non-operating (income) expense:				
Interest income	(6,213)	(4,517)	(17,620)	(11,329)
Interest expense	5,557	5,372	18,087	16,283
Other (income) expense, net	3,405	840	4,385	(565)
Income before income taxes	140,844	127,437	356,675	426,329
Income tax provision	20,863	24,017	48,684	62,713
Net income	\$ 119,981	\$ 103,420	\$ 307,991	\$ 363,616
Net income per common share:				
Basic	\$ 0.65	\$ 0.52	\$ 1.62	\$ 1.83

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Diluted	\$ 0.63	\$ 0.52	\$ 1.57	\$ 1.81
Weighted average common shares basic	185,744	197,485	190,576	198,755
Weighted average common shares diluted	190,505	200,775	196,300	201,413
Cash dividend declared per common share	\$ 0.09	\$ 0.07	\$ 0.27	\$ 0.21

The accompanying notes, together with the Notes to Consolidated Financial Statements included in Teradyne's Annual Report on Form 10-K for the year ended December 31, 2017, are an integral part of the condensed consolidated financial statements.



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## TERADYNE, INC.

## CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

(Unaudited)

	For the Three Months Ended		For the Nine Months Ended	
	September 30, 2018	October 1, 2017	September 30, 2018	October 1, 2017
	(in thousands)			
Net income	\$ 119,981	\$ 103,420	\$ 307,991	\$ 363,616
Other comprehensive income, net of tax:				
Foreign currency translation adjustment	7,213	9,291	(11,568)	34,235
Available-for-sale marketable securities:				
Unrealized gains (losses) on marketable securities arising during period, net of tax of \$(62), \$481, \$(806), \$1,666, respectively	(66)	950	(2,555)	2,448
Less: Reclassification adjustment for (gains) losses included in net income, net of tax of \$(17), \$(67), \$(6), \$(173), respectively	(57)	(87)	1,411	(264)
	(123)	863	(1,144)	2,184
Defined benefit pension and post-retirement plans:				
Amortization of prior service benefit included in net periodic pension and post-retirement benefit, net of tax of \$(18), \$(38), \$(53), \$(115), respectively	(61)	(68)	(184)	(204)
Other comprehensive income (loss)	7,029	10,086	(12,896)	36,215
Comprehensive income	\$ 127,010	\$ 113,506	\$ 295,095	\$ 399,831

The accompanying notes, together with the Notes to Consolidated Financial Statements included in Teradyne's Annual Report on Form 10-K for the year ended December 31, 2017, are an integral part of the condensed consolidated financial statements.

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	<b>For the Nine Months Ended</b>	
	<b>September 30, 2018</b>	<b>October 1, 2017</b>
	<b>(in thousands)</b>	
<b>Cash flows from operating activities:</b>		
Net income	\$ 307,991	\$ 363,616
<b>Adjustments to reconcile net income to net cash provided by operating activities:</b>		
Depreciation	49,930	49,243
Amortization	32,909	32,313
Stock-based compensation	25,327	25,620
Deferred taxes	24,442	(679)
Provision for excess and obsolete inventory	9,522	7,154
Contingent consideration adjustment	(9,236)	1,847
Retirement plan actuarial losses (gains)	196	(2,504)
Property insurance recovery		(4,309)
Other	516	429
<b>Changes in operating assets and liabilities, net of businesses acquired:</b>		
Accounts receivable	(77,807)	(75,623)
Inventories	(34,117)	23,770
Prepayments and other assets	(28,719)	7,362
Accounts payable and other accrued expenses	16,124	5,298
Deferred revenue and customer advances	9,823	34,535
Retirement plans contributions	(3,244)	(4,858)
Income taxes	(33,152)	15,808
<b>Net cash provided by operating activities</b>	<b>290,505</b>	<b>479,022</b>
<b>Cash flows from investing activities:</b>		
Purchases of property, plant and equipment	(88,269)	(73,247)
Proceeds from government subsidy for property, plant and equipment	7,920	
Purchases of marketable securities	(809,521)	(1,036,523)
Proceeds from sales of marketable securities	843,164	443,169
Proceeds from maturities of marketable securities	934,100	473,255
Proceeds from life insurance	1,126	
Proceeds from property insurance		5,064
Acquisition of businesses, net of cash acquired	(169,474)	
<b>Net cash provided by (used for) investing activities</b>	<b>719,046</b>	<b>(188,282)</b>

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Cash flows from financing activities:		
Issuance of common stock under stock purchase and stock option plans	20,959	24,462
Repurchase of common stock	(562,263)	(151,821)
Dividend payments	(51,320)	(41,730)
Payments related to net settlement of employee stock compensation awards	(19,841)	(12,584)
Payments of contingent consideration	(13,571)	(1,050)
Net cash used for financing activities	(626,036)	(182,723)
Effects of exchange rate changes on cash and cash equivalents	661	2,776
Increase in cash and cash equivalents	384,176	110,793
Cash and cash equivalents at beginning of period	429,843	307,884
Cash and cash equivalents at end of period	\$ 814,019	\$ 418,677

The accompanying notes, together with the Notes to Consolidated Financial Statements included in Teradyne's Annual Report on Form 10-K for the year ended December 31, 2017, are an integral part of the condensed consolidated financial statements.

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**TERADYNE, INC.**

**NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS**

**(Unaudited)**

**A. THE COMPANY**

Teradyne, Inc. ( Teradyne ) is a leading global supplier of automation equipment for test and industrial applications. Teradyne designs, develops, manufactures and sells automatic test systems used to test semiconductors, wireless products, data storage and complex electronics systems in the consumer electronics, wireless, automotive, industrial, computing, communications, and aerospace and defense industries. Teradyne s industrial automation products include collaborative robotic arms, autonomous mobile robots, and advanced robotic control software used by global manufacturing and light industrial customers to improve quality, increase manufacturing and material handling efficiency and decrease manufacturing costs. Teradyne s automatic test equipment and industrial automation products and services include:

semiconductor test ( Semiconductor Test ) systems;

defense/aerospace ( Defense/Aerospace ) test instrumentation and systems, storage test ( Storage Test ) systems, and circuit-board test and inspection ( Production Board Test ) systems (collectively these products represent System Test );

industrial automation ( Industrial Automation ) products; and

wireless test ( Wireless Test ) systems.

**B. ACCOUNTING POLICIES**

*Basis of Presentation*

The consolidated interim financial statements include the accounts of Teradyne and its wholly-owned subsidiaries. All significant intercompany balances and transactions have been eliminated. These interim financial statements are unaudited and reflect all normal recurring adjustments that are, in the opinion of management, necessary for the fair statement of such interim financial statements. Certain prior year amounts were reclassified to conform to the current year presentation. The December 31, 2017 condensed consolidated balance sheet data was derived from audited financial statements, but does not include all disclosures required by accounting principles generally accepted in the United States of America.

The accompanying financial information should be read in conjunction with the consolidated financial statements and notes thereto contained in Teradyne s Annual Report on Form 10-K, filed with the U.S. Securities and Exchange Commission ( SEC ) on March 1, 2018, for the year ended December 31, 2017.

*Preparation of Financial Statements and Use of Estimates*

The preparation of consolidated financial statements requires management to make estimates and judgments that affect the amounts reported in the financial statements. Actual results may differ significantly from these estimates.

*Revenue from Contracts with Customers*

Teradyne adopted Accounting Standards Update ( ASU ) 2014-09, *Revenue from Contracts with Customers* ( ASC 606 ) on January 1, 2018 using the modified retrospective method for all contracts not completed as of the date of adoption. The reported results for 2018 reflect the application of ASC 606 while the reported results for 2017 were prepared under the guidance of ASC 605, *Revenue Recognition* ( ASC 605 ), which is also referred to herein as Legacy GAAP or the previous guidance. Teradyne recorded a net increase

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to retained earnings of \$12.7 million as of January 1, 2018 due to the cumulative impact of adopting ASC 606. Refer to Note B: Accounting Policies in Teradyne's 2017 Annual Report on Form 10-K for the policies in effect for revenue prior to January 1, 2018. The adoption of ASC 606 represents a change in accounting principle that will more closely align revenue recognition with the delivery of Teradyne's hardware and services and will provide financial statement readers with enhanced disclosures. In accordance with ASC 606, revenue is recognized when or as a customer obtains control of promised goods or services. The amount of revenue recognized reflects the consideration to which Teradyne expects to be entitled to receive in exchange for fulfillment of the performance obligation. Teradyne's primary source of revenue will continue to be from the sale of systems, instruments, robots, and the delivery of services.

In accordance with ASC 606, Teradyne recognizes revenues, when or as control is transferred to a customer. Teradyne's determination of revenue is dependent upon a five step process outlined below.

### *Step 1: Identify the contract with the customer*

Teradyne accounts for a contract with a customer when there is written approval, the contract is committed, the rights of the parties, including payment terms, are identified, the contract has commercial substance and consideration is probable of collection.

### *Step 2: Identify the performance obligations in the contract*

Teradyne periodically enters into contracts with its customers in which a customer may purchase a combination of goods and services, such as products with extended warranty obligations. Teradyne determines performance obligations by assessing whether the products or services are distinct from the other elements of the contract. In order to be distinct, the product or service must perform either on its own or with readily available resources and must be separate within the context of the contract.

### *Step 3: Determine the transaction price*

Teradyne considers the amount stated on the face of the purchase order to be the transaction price. Teradyne does not have material variable consideration which could impact the stated purchase price agreed to by Teradyne and the customer.

### *Step 4: Allocate the transaction price to the performance obligations in the contract*

Transaction price is allocated to each individual performance obligation based on the standalone selling price of that performance obligation. Teradyne uses standalone transactions when available to value each performance obligation. If standalone transactions are not available, Teradyne will estimate the standalone selling price through market assessments or cost plus a reasonable margin analysis. Any discounts from standalone selling price are spread proportionally to each performance obligation.

### *Step 5: Recognize revenue when (or as) the entity satisfies a performance obligation*

In order to determine the appropriate timing for revenue recognition, Teradyne first determines if the transaction meets any of three criteria for over time recognition. If the transaction meets the criteria for over time recognition, Teradyne recognizes revenue as the good or service is delivered. Teradyne uses input variables such as hours or months utilized or costs incurred to determine the amount of revenue to recognize in a given period. Input variables are used as they best align consumption with benefit to the customer. For transactions that do not meet the criteria for

over time recognition, Teradyne will recognize revenue at a point in time based on an assessment of the five criteria for transfer of control. Teradyne has concluded that revenue should be recognized when shipped or delivered based on contractual terms. Typically acceptance of Teradyne's products and services is a formality as Teradyne delivers similar systems, instruments and robots to standard specifications. In cases where acceptance is not deemed a formality, Teradyne will defer revenue recognition until customer acceptance.





	Industrial Automation				Mobile		Wireless Test		Corporate and Other		
	SOC	Memory	Defense/ Aerospace	Storage Test Board	Production Test	Universal Robots	Industrial Robots	Energid			
	(in thousands)										
<b>Americas</b>											
Point in Time	\$ 30,577	\$ 10,291	\$ 42,276	\$ 284	\$ 5,814	\$ 48,025	\$ 3,009	\$ 104	\$ 13,515	\$ (602)	\$ 153,293
Over Time	26,536	2,092	18,462		2,342	431		578	379		50,820
<b>Europe, Middle East and Africa</b>											
Point in Time	32,079	3,066	2,104		12,109	75,631	4,647		2,570		132,206
Over Time	16,240	824	1,596		4,781	675		732	802		25,650
<b>Asia Pacific</b>											
Point in Time	702,097	202,336	1,417	51,863	10,804	39,135	3,397	10	68,180		1,079,239
Over Time	108,011	7,401	678	5,077	2,364	350		79	5,893		129,853
<b>Lease Revenue</b>	9,162				337				684		10,183
<b>Total</b>	\$ 924,702	\$ 226,010	\$ 66,533	\$ 57,224	\$ 38,551	\$ 164,247	\$ 11,053	\$ 1,503	\$ 92,023	\$ (602)	\$ 1,581,244

*Performance Obligations**Hardware*

Teradyne hardware consists primarily of semiconductor test systems and instruments, defense/aerospace test instrumentation and systems, storage test systems and instruments, circuit-board test and inspection systems and instruments, collaborative robots, autonomous mobile robots and wireless test systems. The hardware includes a standard 12-month warranty. This warranty is not considered a distinct performance obligation because it does not obligate Teradyne to provide a separate service to the customer and it cannot be purchased separately. Teradyne's hardware is recognized at a point in time upon transfer of control to the customer.

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Customers have the option to purchase an extended warranty, which extends the warranty period for systems and robots beyond the one-year standard warranty. The extended warranty is purchased in the same transaction as the system or robot purchase and is classified as a separate performance obligation, which meets the criteria for over time recognition. The relative standalone selling price of the extended warranty is recognized ratably over the course of the extended warranty based on months completed.

*Training and Applications Support*

Teradyne sells training and applications support to customers either in standalone transactions or included with system purchases. The training and support allow the customer to use Teradyne's systems efficiently and effectively. Training and applications support included in system orders are valued based on their standalone selling price and all training and applications support is recognized over time as the customer receives and consumes the benefit associated with each. Both are recognized using an input method of hours consumed as this best depicts the transfer of services to the customer.

*Service Agreements*

Service agreements are recognized ratably over the period of agreement based on months completed.

*Post-Contract Customer Support ( PCS )*

Teradyne provides support services for certain systems and robots outside of warranty. These services include telephone support, bug fixes, and when-and-if available upgrades. Standalone selling price for PCS is not directly observable as Teradyne does not sell these services separately. Teradyne has estimated the standalone selling price for these services based on adjusted market assessments. Revenue for PCS is recognized ratably over the performance period.

Teradyne does not allow customer returns or provide refunds to customers for any products or services.

*Contract Balances*

The following table provides information about contract liabilities. Teradyne does not have material contract assets on the balance sheet.

	<b>September 30, 2018</b>	<b>January 1, 2018 (as adjusted) (in thousands)</b>	<b>Increase/ Decrease</b>
Deferred revenue and customer advances	\$ 77,953	\$ 76,638	\$ 1,315
Long-term deferred revenue and customer advances	29,387	20,848	8,539

The amount of revenue recognized during the three and nine months ended September 30, 2018 that was previously included within the deferred revenue and customer advances was \$24.5 million and \$70.9 million, respectively, and primarily relates to extended warranties, training, application support, and PCS. Each of these represents a distinct

performance obligation. Customers typically pay for these services net 30 to 60 days from the date that transfer of control of the associated system or product occurs.

*Remaining Performance Obligations*

Teradyne does not have material remaining performance obligations from contracts with an original expected duration of greater than one year.

**Table of Contents***Significant Judgments*

Teradyne makes no significant judgments in determining the amount or timing of revenue recognition.

*Practical Expedients*

Teradyne has adopted the practical expedients available within ASC 340 *Other Assets and Deferred Costs* for contract assets, specifically in relation to incremental costs of obtaining a contract. Teradyne generally expenses sales commissions when incurred because the amortization period would be less than one year. Teradyne records these costs within selling and administrative expenses.

Teradyne has adopted the practical expedient, which states an entity need not adjust the promised amount of consideration for the effects of a significant financing component if the entity expects, at contract inception, that the period between when the entity transfers a promised good or service to the customer and when the customer pays for that good or service will be one year or less. Teradyne does not have material payments associated with performance obligations outside this one-year time frame.

*Impacts*

The following tables summarize the impact of ASC 606 to Teradyne's consolidated financial statements. Differences are the result of timing differences between the recognition of revenue under ASC 606 and ASC 605 primarily with respect to software transactions deferred due to lack of vendor specific objective evidence of price under ASC 605 and Teradyne's assessment of acceptance under ASC 606. Under Legacy GAAP, Teradyne did not recognize revenue prior to acceptance if payment, title, or risk of loss was tied to acceptance. Under ASC 606, Teradyne recognizes revenue prior to receipt of acceptance if acceptance is deemed a formality.

Condensed Consolidated Balance Sheet:

	<b>September 30, 2018</b>		
	<b>As</b>	<b>Adjustments to</b>	<b>Legacy</b>
	<b>Reported</b>	<b>Recognize under</b>	<b>GAAP</b>
	<b>(in thousands, except per share amount)</b>		
<b>Assets</b>			
Accounts receivable, less allowance for doubtful accounts	\$ 352,476	\$ (31,205)	\$ 321,271
Inventories, net	154,705	11,708	166,413
Deferred tax assets	70,772	(3,684)	67,088
<b>Liabilities</b>			
Deferred revenue and customer advances	\$ 77,953	\$ (4,825)	\$ 73,128
Income taxes payable	24,603	(4,271)	20,332
Long-term deferred revenue and customer advances	29,387	(9,968)	19,419
<b>Shareholders' equity</b>			
Accumulated deficit	\$ (23,243)	\$ (4,117)	\$ (27,360)



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Condensed Consolidated Statement of Operation:

	<b>For the Three Months ended September 30, 2018</b>		
	<b>As Reported</b>	<b>Adjustments to Recognize under Legacy GAAP</b>	<b>Legacy GAAP</b>
	<b>(in thousands, except per share amount)</b>		
Total revenues	\$ 566,848	\$ 59,738	\$ 626,586
Total cost of revenues	233,155	21,702	254,857
Income tax provision	20,863	4,771	25,634
Net income	119,981	33,265	153,246
Net income per common share:			
Basic	\$ 0.65	\$ 0.18	\$ 0.83
Diluted	\$ 0.63	\$ 0.17	\$ 0.80

	<b>For the Nine Months ended September, 2018</b>		
	<b>As Reported</b>	<b>Adjustments to Recognize under Legacy GAAP</b>	<b>Legacy GAAP</b>
	<b>(in thousands, except per share amount)</b>		
Total revenues	\$ 1,581,244	\$ (32,668)	\$ 1,548,576
Total cost of revenues	670,385	(11,708)	658,677
Income tax provision	48,684	(4,163)	44,521
Net income	307,991	(16,797)	291,194
Net income per common share:			
Basic	\$ 1.62	\$ (0.09)	\$ 1.53
Diluted	\$ 1.57	\$ (0.09)	\$ 1.48

**Retirement Benefits**

In March 2017, the Financial Accounting Standards Board ( FASB ) issued ASU 2017-07, *Compensation Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost*. Teradyne retrospectively adopted the new accounting guidance on presentation of net periodic pension costs and net periodic postretirement benefit costs in the first quarter of 2018. This guidance requires the service cost component of net benefit costs to be reported in the same line item in the consolidated statement of operations as other employee compensation costs. The non-service components of net benefit costs such as interest cost, expected return on assets, amortization of prior service cost, and actuarial gains or losses, are required to be reported separately outside of income or loss from operations. Following the adoption of this guidance, Teradyne continues to record the service cost component in the same line item as other employee compensation costs and the non-service components of net benefit costs such as interest cost, expected return on assets, amortization of prior service cost, and actuarial gains or losses are reported within other (income) expense, net. In the three months ended October 1, 2017, the retrospective adoption of this standard increased income from operations by \$0.4 million due to the removal of net

actuarial pension losses and decreased non-operating (income) expense by the same amount with no impact to net income. In the nine months ended October 1, 2017, the retrospective adoption of this standard decreased income from operations by \$1.3 million due to the removal of net actuarial pension gains and increased non-operating (income) expense by the same amount with no impact to net income.

### **Financial Assets and Financial Liabilities**

In January 2016, the FASB issued ASU 2016-01, *Financial Instruments Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities*. Teradyne adopted the new

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accounting guidance in the first quarter of 2018 using the modified retrospective approach. This guidance requires that changes in fair value of equity securities be accounted for directly in earnings. Previously, the changes in fair value were recorded in accumulated other comprehensive income on the balance sheet. Teradyne continues to record realized gains in interest income and realized losses in interest expense. The adoption of this new accounting guidance increased the January 1, 2018 retained earnings balance by \$3.1 million and decreased the accumulated other comprehensive income balance by the same amount.

**Contingencies and Litigation**

Teradyne may be subject to certain legal proceedings, lawsuits and other claims as discussed in Note Q: Commitments and Contingencies. Teradyne accrues for a loss contingency, including legal proceedings, lawsuits, pending claims and other legal matters, when the likelihood of a loss is probable and the amount of the loss can be reasonably estimated. When the reasonable estimate of the loss is within a range of amounts, and no amount in the range constitutes a better estimate than any other amount, Teradyne accrues the amount at the low end of the range. Teradyne adjusts the accruals from time to time as additional information is received, but the loss incurred may be significantly greater than or less than the amount accrued. Loss contingencies are disclosed when they are material and there is at least a reasonable possibility that a loss has been incurred. Attorney fees related to legal matters are expensed as incurred.

**C. RECENTLY ISSUED ACCOUNTING PRONOUNCEMENTS**

On January 26, 2017, the FASB issued ASU 2017-04, *Intangibles Goodwill and Other (Topic 350): Simplifying the Accounting for Goodwill Impairment*. The new guidance removes Step 2 of the goodwill impairment test, which requires a hypothetical purchase price allocation. Goodwill impairment will now be the amount by which a reporting unit's carrying value exceeds its fair value, not to exceed the carrying amount of goodwill. All other goodwill impairment guidance will remain largely unchanged. Entities will continue to have the option to perform a qualitative assessment to determine if a quantitative impairment test is necessary. The same one-step impairment test will be applied to goodwill at all reporting units, even those with zero or negative carrying amounts. Entities will be required to disclose the amount of goodwill at reporting units with zero or negative carrying amounts. The revised guidance will be applied prospectively, and is effective in 2020. Early adoption is permitted for any impairment tests performed after January 1, 2017. Teradyne is currently evaluating the impact of this ASU on its financial position, results of operations and statements of cash flows.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*. The guidance in this ASU supersedes the lease recognition requirements in Accounting Standards Codification (ASC) Topic 840, *Leases*. The new standard establishes a right-of-use (ROU) model that requires a lessee to record an ROU asset and a lease liability on the balance sheet for all leases with terms longer than twelve months. Leases will be classified as either finance or operating, with classification affecting the pattern of expense recognition in the statements of operations. The new standard is effective for annual periods beginning after December 15, 2018 with early adoption permitted. A modified retrospective transition approach is required for lessees for capital and operating leases existing at, or entered into after, the beginning of the earliest comparative period presented in the financial statements. In July 2018, the FASB issued ASU 2018-11, *Leases (Topic 842): Targeted Improvements*, which amends ASU 2016-02. The new ASU offers an additional transition method by which entities may elect not to recast the comparative periods presented in financial statements in the period of adoption and allows lessors to elect a practical expedient to not separate lease and non-lease components when certain conditions are met. This ASU has the same transition requirements and effective date as ASU 2016-02. Teradyne elected not to recast the comparative periods presented in financial statements in the period of adoption. Teradyne continues to assess potential changes from this ASU, but expects the adoption of this guidance to have a material impact on its consolidated balance sheets due to the requirement to recognize lease ROU



assets and corresponding liabilities related to leases, and immaterial impact on its results of operations.

**Table of Contents****D. ACQUISITIONS***Mobile Industrial Robots*

On April 25, 2018, Teradyne acquired all the issued and outstanding shares of Mobile Industrial Robots ApS ( MiR ), a Danish limited liability company located in Odense, Denmark. MiR is the leading maker of collaborative autonomous mobile robots for industrial applications. MiR is part of Teradyne's Industrial Automation segment.

The total preliminary purchase price of \$196.6 million consisted of \$145.2 million of cash paid and \$51.4 million of contingent consideration, measured at fair value. The contingent consideration is payable in Euros upon the achievement of certain thresholds and targets for revenue and earnings before interest and taxes for periods from January 1, 2018 to December 31, 2018; January 1, 2018 to December 31, 2019; and January 1, 2018 to December 31, 2020. At September 30, 2018, the maximum amount of contingent consideration that could be paid is \$118.9 million.

The valuation of the contingent consideration is dependent on the following assumptions: forecasted revenues, revenue volatility, earnings before interest and taxes, and discount rate. These assumptions were estimated based on a review of the historical and projected results.

The MiR acquisition was accounted for as a business combination and, accordingly, the results have been included in Teradyne's consolidated results of operations from the date of acquisition. The allocation of the preliminary total purchase price to MiR's net tangible liabilities and identifiable intangible assets was based on their estimated fair values as of the acquisition date. The excess of the purchase price over the identifiable intangible assets and net tangible liabilities in the amount of \$134.7 million was allocated to goodwill, which is not deductible for tax purposes. The purchase price and purchase price allocation are preliminary pending the final determination of the fair value of contingent consideration, acquired assets and assumed liabilities. Teradyne expects to finalize the purchase price calculation in the fourth quarter of 2018. MiR's results have been included in Teradyne's Industrial Automation segment from the date of acquisition.

The following table represents the allocation of the preliminary purchase price:

	<b>Purchase Price Allocation</b>	
	<b>(in thousands)</b>	
Goodwill	\$	134,737
Intangible assets		80,670
Tangible assets acquired and liabilities assumed:		
Current assets		6,039
Non-current assets		299
Accounts payable and current liabilities		(7,336)
Long-term deferred tax liabilities		(17,779)
Total purchase price	\$	196,630

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Teradyne estimated the fair value of intangible assets using the income and cost approaches with the following key assumptions: (1) forecasted cash flows and (2) discount rate. Acquired intangible assets are amortized on a straight-line basis over their estimated useful lives. Components of these intangible assets and their estimated useful lives at the acquisition date are as follows:

	<b>Fair Value (in thousands)</b>	<b>Estimated Useful Life (in years)</b>
Developed technology	\$ 58,900	7.0
Trademarks and tradenames	13,240	11.0
Customer relationships	8,500	2.5
Backlog	30	0.2
<b>Total intangible assets</b>	<b>\$ 80,670</b>	<b>7.2</b>

For the three months ended September 30, 2018, MiR contributed \$6.5 million of revenues and had a \$(3.8) million loss from operations before income taxes.

For the period from April 25, 2018 to September 30, 2018, MiR contributed \$11.1 million of revenues and had a \$(5.4) million loss from operations before income taxes.

The following unaudited pro forma information gives effect to the acquisition of MiR as if the acquisition occurred on January 1, 2017. The unaudited pro forma results are not necessarily indicative of what actually would have occurred had the acquisition been in effect for the periods presented:

	<b>For the Three Months Ended October 1, 2017</b>	<b>For the Nine Months Ended September 30, 2018 (in thousands)</b>	<b>October 1, 2017</b>
Revenue	\$ 507,982	\$ 1,588,042	\$ 1,666,075
Net income	100,339	306,768	351,626
Net income per common share:			
Basic	\$ 0.51	\$ 1.61	\$ 1.77
Diluted	\$ 0.50	\$ 1.56	\$ 1.75

Pro forma results for the nine months ended September 30, 2018 were adjusted to exclude \$2.9 million of acquisition related costs, and \$0.4 million of non-recurring expense related to fair value adjustment to acquisition-date inventory.

Pro forma results for the nine months ended October 1, 2017 were adjusted to include \$2.9 million of acquisition related costs and \$0.4 million of non-recurring expense related to fair value adjustment to acquisition-date inventory.

*Energid Technologies Corporation*

On February 26, 2018, Teradyne acquired all of the issued and outstanding shares of Energid Technologies Corporation ( Energid ) for a total purchase price of approximately \$27.6 million. Energid s technology enables and simplifies the programming of complex robotic motions used in a wide variety of end markets, ranging from heavy industry to healthcare, utilizing both traditional robots and collaborative robots. The Energid acquisition was accounted for as a business combination and, accordingly, Energid s results have been included in Teradyne s Industrial Automation segment from the date of acquisition. As of the acquisition date, Teradyne s purchase price allocation was goodwill of \$14.4 million, acquired intangible assets of \$12.3 million with an average estimated useful life of 7.7 years, and \$1.0 million of net tangible assets. The acquisition was not material to Teradyne s condensed consolidated financial statements.

**Table of Contents****E. INVENTORIES**

Inventories, net consisted of the following at September 30, 2018 and December 31, 2017:

	<b>September 30, 2018</b>	<b>December 31, 2017</b>
	<b>(in thousands)</b>	
Raw material	\$ 87,124	\$ 62,668
Work-in-process	33,788	19,464
Finished Goods	33,793	25,393
	\$ 154,705	\$ 107,525

Inventory reserves at September 30, 2018 and December 31, 2017 were \$104.3 million and \$102.9 million, respectively.

**F. FINANCIAL INSTRUMENTS****Cash Equivalents**

Teradyne considers all highly liquid investments with maturities of three months or less at the date of acquisition to be cash equivalents.

**Marketable Securities**

Effective January 1, 2018, Teradyne adopted ASU 2016-01, *Financial Instruments Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities* using the modified retrospective approach. This guidance requires that changes in fair value of equity securities be accounted for directly in earnings. Prior to 2018, the changes in fair value of equity securities were recorded in accumulated other comprehensive income on the balance sheet.

On a quarterly basis, Teradyne reviews its investments to identify and evaluate those that have an indication of a potential other-than-temporary impairment. Factors considered in determining whether a loss is other-than-temporary include:

The length of time and the extent to which the market value has been less than cost;

The financial condition and near-term prospects of the issuer; and

The intent and ability to retain the investment in the issuer for a period of time sufficient to allow for any anticipated recovery in market value.

Teradyne uses the market and income approach techniques to value its financial instruments and there were no changes in valuation techniques during the three and nine months ended September 30, 2018 and October 1, 2017. As defined in ASC 820-10, *Fair Value Measurements and Disclosures*, fair value is the price that would be received from the sale of an asset or paid to transfer a liability in an orderly transaction between market participants. ASC 820-10 requires that assets and liabilities carried at fair value be classified and disclosed in one of the following three categories:

Level 1: Quoted prices in active markets for identical assets as of the reporting date;

Level 2: Inputs other than Level 1, that are observable either directly or indirectly as of the reporting date. For example, a common approach for valuing fixed income securities is the use of matrix pricing. Matrix pricing is a mathematical technique used to value securities by relying on the securities' relationship to other benchmark quoted prices, and is considered a Level 2 input; or

Level 3: Unobservable inputs that are not supported by market data. Unobservable inputs are developed based on the best information available, which might include Teradyne's own data.

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Teradyne's available-for-sale debt securities are classified as Level 2, and equity securities are classified as Level 1. Acquisition-related contingent consideration is classified as Level 3. Teradyne determines the fair value of acquisition-related contingent consideration using a Monte Carlo simulation model. Assumptions utilized in the model include forecasted revenues, revenue volatility, earnings before interest and taxes, and discount rate. The vast majority of Level 2 securities are fixed income securities priced by third party pricing vendors. These pricing vendors utilize the most recent observable market information in pricing these securities or, if specific prices are not available, use other observable inputs like market transactions involving identical or comparable securities.

During the three and nine months ended September 30, 2018 and October 1, 2017, there were no transfers in or out of Level 1, Level 2, or Level 3 financial instruments.

Realized gains related to available-for-sale debt securities recorded in the three and nine months ended September 30, 2018 were \$0.2 million, \$0.6 million, respectively. Realized losses related to available-for-sale debt securities recorded in the nine months ended September 30, 2018 were \$1.6 million. Realized gains related to available-for-sale debt securities recorded in the three and nine months ended October 1, 2017 were \$0.2 million and \$0.7 million, respectively. Realized losses related to available-for-sale debt securities recorded in the nine months ended October 1, 2017 were \$0.3 million.

Realized gains related to available-for-sale debt securities are included in interest income and realized losses are included in interest expense. Unrealized gains and losses on available-for-sale debt securities are included in accumulated other comprehensive income (loss).

Unrealized gains related to equity securities held at September 30, 2018 recorded in the three and nine months ended September 30, 2018 were \$1.0 million and \$1.4 million, respectively. Unrealized and realized gains related to equity securities are included in interest income and unrealized and realized losses are included in interest expense.

The cost of securities sold is based on the specific identification method.

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The following table sets forth by fair value hierarchy Teradyne's financial assets and liabilities that were measured at fair value on a recurring basis as of September 30, 2018 and December 31, 2017.

	September 30, 2018			Total
	Quoted Prices in Active Markets for Identical Instruments (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	
	(in thousands)			
<b>Assets</b>				
Cash	\$ 275,614	\$	\$	\$ 275,614
Cash equivalents	477,869	60,536		538,405
Available-for-sale securities:				
U.S. Treasury securities		363,414		363,414
Commercial paper		67,202		67,202
Corporate debt securities		40,271		40,271
U.S. government agency securities		9,004		9,004
Debt mutual funds	3,055			3,055
Certificates of deposit and time deposits		2,218		2,218
Non-U.S. government securities		543		543
Equity securities:				
Mutual Funds	24,685			24,685
	\$ 781,223	\$ 543,188	\$	\$ 1,324,411
Derivative assets		3		3
<b>Total</b>	<b>\$ 781,223</b>	<b>\$ 543,191</b>	<b>\$</b>	<b>\$ 1,324,414</b>
<b>Liabilities</b>				
Contingent consideration	\$	\$	\$ 60,942	\$ 60,942
Derivative liabilities		455		455
<b>Total</b>	<b>\$</b>	<b>\$ 455</b>	<b>\$ 60,942</b>	<b>\$ 61,397</b>

Reported as follows:

	(Level 1)	(Level 2)	(Level 3)	Total
	(in thousands)			
<b>Assets</b>				
Cash and cash equivalents	\$ 753,483	\$ 60,536	\$	\$ 814,019
Marketable securities		418,410		418,410
Long-term marketable securities	27,740	64,242		91,982



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Prepayments		3		3
Total	\$ 781,223	\$ 543,191	\$	\$ 1,324,414
<b>Liabilities</b>				
Other current liabilities	\$	\$ 455	\$	\$ 455
Contingent consideration			35,532	35,532
Long-term contingent consideration			25,410	25,410
Total	\$	\$ 455	\$ 60,942	\$ 61,397

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	December 31, 2017			
	Quoted Prices in Active Markets for Identical Instruments (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
	(in thousands)			
<b>Assets</b>				
Cash	\$ 197,955	\$	\$	\$ 197,955
Cash equivalents	206,335	25,553		231,888
Available for sale securities:				
U.S. Treasury securities		855,795		855,795
Commercial paper		282,840		282,840
Certificates of deposit and time deposits		167,342		167,342
Corporate debt securities		133,186		133,186
Equity and debt mutual funds	23,430			23,430
U.S. government agency securities		10,726		10,726
Non-U.S. government securities		586		586
	\$ 427,720	\$ 1,476,028	\$	\$ 1,903,748
Derivative assets		389		389
<b>Total</b>	<b>\$ 427,720</b>	<b>\$ 1,476,417</b>	<b>\$</b>	<b>\$ 1,904,137</b>
<b>Liabilities</b>				
Contingent consideration	\$	\$	\$ 45,102	\$ 45,102
Derivative liabilities		446		446
<b>Total</b>	<b>\$</b>	<b>\$ 446</b>	<b>\$ 45,102</b>	<b>\$ 45,548</b>

Reported as follows:

	(Level 1)	(Level 2)	(Level 3)	Total
	(in thousands)			
<b>Assets</b>				
Cash and cash equivalents	\$ 404,290	\$ 25,553	\$	\$ 429,843
Marketable securities		1,347,979		1,347,979
Long-term marketable securities	23,430	102,496		125,926
Prepayments		389		389
<b>Total</b>	<b>\$ 427,720</b>	<b>\$ 1,476,417</b>	<b>\$</b>	<b>\$ 1,904,137</b>
<b>Liabilities</b>				
Other accrued liabilities	\$	\$ 446	\$	\$ 446
Contingent consideration			24,497	24,497

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Long-term contingent consideration			20,605	20,605	
Total	\$	\$	446	\$ 45,102	\$ 45,548

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Changes in the fair value of Level 3 contingent consideration for the three and nine months ended September 30, 2018 and October 1, 2017 were as follows:

	For the Three Months Ended		For the Nine Months Ended	
	September 30, 2018	October 1, 2017	September 30, 2018	October 1, 2017
	(in thousands)			
Balance at beginning of period	\$ 60,914	\$ 39,415	\$ 45,102	\$ 38,332
Acquisition of MiR			51,399	
Foreign currency impact	796		(1,770)	
Payments (a)			(24,553)	(1,050)
Fair value adjustment (b)	(768)	(286)	(9,236)	1,847
Balance at end of period	\$ 60,942	\$ 39,129	\$ 60,942	\$ 39,129

- (a) In the nine months ended September 30, 2018, Teradyne paid \$24.6 million of contingent consideration for the earn-out in connection with the acquisition of Universal Robots A/S ( Universal Robots ). In the nine months ended October 1, 2017, Teradyne paid \$1.1 million of contingent consideration for the earn-out in connection with the acquisition of Avionics Interface Technology, LLC ( AIT ).
- (b) In the three and nine months ended September 30, 2018, the fair value of contingent consideration for the earn-out in connection with the acquisition of Universal Robots was decreased by \$0.8 million and \$9.2 million, respectively, primarily due to a decrease in forecasted revenue. In the nine months ended October 1, 2017, the fair value of contingent consideration for the earn-out in connection with the acquisition of Universal Robots was increased by \$1.8 million due to an increase in forecasted revenue.

The following table provides quantitative information associated with the fair value measurement of Teradyne's Level 3 financial instruments:

Liability	September 30, 2018 Fair Value (in thousands)	Valuation Technique	Unobservable Inputs	Weighted Average
Contingent consideration (Universal Robots)	\$11,314	Monte Carlo Simulation	Revenue volatility	12.9%
			Discount Rate	3.7%
Contingent consideration (Mobile Industrial Robots)	\$49,628	Monte Carlo Simulation	Revenue volatility	18.0%
			Discount Rate	0.5%

As of September 30, 2018, the significant unobservable inputs used in the Monte Carlo simulation to fair value the Universal Robots contingent consideration include forecasted revenue, revenue volatility, and discount rate. Increases

or decreases in the inputs would result in a higher or lower fair value measurement. The maximum payment for the remaining Universal Robots revenue earn-out is \$25.0 million.

As of September 30, 2018, the significant unobservable inputs used in the Monte Carlo simulation to fair value the MiR contingent consideration include forecasted revenue, revenue volatility, earnings before interest and taxes, and discount rate. Increases or decreases in the inputs would result in a higher or lower fair value measurement. As of September 30, 2018, the maximum amount of contingent consideration that could be paid in connection with the acquisition of MiR is \$118.9 million. The earn-out periods in connection with the MiR acquisition end on December 31, 2018, December 31, 2019 and December 31, 2020.

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The carrying amounts and fair values of Teradyne's financial instruments at September 30, 2018 and December 31, 2017 were as follows:

	September 30, 2018		December 31, 2017	
	Carrying Value	Fair Value	Carrying Value	Fair Value
(in thousands)				
<b>Assets</b>				
Cash and cash equivalents	\$ 814,019	\$ 814,019	\$ 429,843	\$ 429,843
Marketable securities	510,392	510,392	1,473,905	1,473,905
Derivative assets	3	3	389	389
<b>Liabilities</b>				
Contingent consideration	60,942	60,942	45,102	45,102
Derivative liabilities	455	455	446	446
Convertible debt (1)	376,417	599,438	365,987	659,525

(1) The carrying value represents the bifurcated debt component only, while the fair value is based on quoted market prices for the convertible note, which includes the equity conversion features.

The fair values of accounts receivable, net and accounts payable approximate the carrying value due to the short-term nature of these instruments.

The following table summarizes the composition of available-for-sale marketable securities at September 30, 2018:

	September 30, 2018			Fair Market Value	Fair Market Value of Investments with Unrealized Losses
	Available-for-Sale	Unrealized Gain	Unrealized (Loss)		
	Cost				
(in thousands)					
U.S. Treasury securities	\$ 365,701	\$	\$ (2,287)	\$ 363,414	\$ 362,167
Commercial paper	67,208	7	(13)	67,202	66,186
Corporate debt securities	40,669	537	(935)	40,271	22,030
U.S. government agency securities	9,065		(61)	9,004	9,004
Debt mutual funds	3,128		(73)	3,055	1,786
Certificates of deposit and time deposits	2,218			2,218	
Non-U.S. government securities	543			543	176
	\$ 488,532	\$ 544	\$ (3,369)	\$ 485,707	\$ 461,349

Reported as follows:

	<b>Cost</b>	<b>Unrealized Gain</b>	<b>Unrealized (Loss) (in thousands)</b>	<b>Fair Market Value</b>	<b>Fair Market Value of Investments with Unrealized Losses</b>
Marketable securities	\$ 418,554	\$ 52	\$ (196)	\$ 418,410	\$ 405,959
Long-term marketable securities	69,978	492	(3,173)	67,297	55,390
	\$ 488,532	\$ 544	\$ (3,369)	\$ 485,707	\$ 461,349

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The following table summarizes the composition of available-for-sale marketable securities at December 31, 2017:

	<b>December 31, 2017</b>				<b>Fair Market Value of Investments with Unrealized Losses</b>
	<b>Available-for-Sale</b>				
	<b>Cost</b>	<b>Unrealized Gain</b>	<b>Unrealized (Loss)</b>	<b>Fair Market Value</b>	
	<b>(in thousands)</b>				
U.S. Treasury securities	\$ 858,258	\$ 72	\$ (2,535)	\$ 855,795	\$ 850,163
Commercial paper	283,009	18	(187)	282,840	258,933
Certificates of deposit and time deposits	167,523	6	(187)	167,342	138,340
Corporate debt securities	131,179	2,380	(373)	133,186	91,010
Equity and debt mutual funds	19,403	4,102	(75)	23,430	1,723
U.S. government agency securities	10,775		(49)	10,726	10,726
Non-U.S. government securities	582	4		586	
	\$ 1,470,729	\$ 6,582	\$ (3,406)	\$ 1,473,905	\$ 1,350,896

Reported as follows:

	<b>December 31, 2017</b>				<b>Fair Market Value of Investments with Unrealized Losses</b>
	<b>Available-for-Sale</b>				
	<b>Cost</b>	<b>Unrealized Gain</b>	<b>Unrealized (Loss)</b>	<b>Fair Market Value</b>	
	<b>(in thousands)</b>				
Marketable securities	\$ 1,349,970	\$ 38	\$ (2,029)	\$ 1,347,979	\$ 1,288,844
Long-term marketable securities	120,759	6,544	(1,377)	125,926	62,052
	\$ 1,470,729	\$ 6,582	\$ (3,406)	\$ 1,473,905	\$ 1,350,896

As of September 30, 2018, the fair market value of investments in available-for-sale securities with unrealized losses totaled \$461.3 million. Of this value, \$76.1 million had unrealized losses of \$2.1 million for greater than one year and \$385.3 million had unrealized losses of \$1.3 million for less than one year.

As of December 31, 2017, the fair market value of investments with unrealized losses totaled \$1,350.9 million. Of this value, \$141.0 million had unrealized losses of \$1.2 million for greater than one year and \$1,209.9 million had unrealized losses of \$2.2 million for less than one year.

Teradyne reviews its investments to identify and evaluate investments that have an indication of possible impairment. Based on this review, Teradyne determined that the unrealized losses related to these investments at September 30, 2018 and December 31, 2017 were temporary.



The contractual maturities of investments in available-for-sale securities held at September 30, 2018 were as follows:

	<b>September 30, 2018</b>	
	<b>Cost</b>	<b>Fair Market Value</b>
	<b>(in thousands)</b>	
Due within one year	\$ 418,554	\$ 418,410
Due after 1 year through 5 years	11,477	11,368
Due after 5 years through 10 years	14,906	13,949
Due after 10 years	40,467	38,925
<b>Total</b>	<b>\$ 485,404</b>	<b>\$ 482,652</b>

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Contractual maturities of investments in available-for-sale securities held at September 30, 2018 exclude \$3.1 million of debt mutual funds as they do not have a contractual maturity date.

**Derivatives**

Teradyne conducts business in a number of foreign countries, with certain transactions denominated in local currencies. The purpose of Teradyne's foreign currency management is to minimize the effect of exchange rate fluctuations on certain foreign currency denominated monetary assets and liabilities. Teradyne does not use derivative financial instruments for trading or speculative purposes.

To minimize the effect of exchange rate fluctuations associated with the remeasurement of monetary assets and liabilities denominated in foreign currencies, Teradyne enters into foreign currency forward contracts. The change in fair value of these derivatives is recorded directly in earnings, and is used to offset the change in value of monetary assets and liabilities denominated in foreign currencies.

The notional amount of foreign currency forward contracts at September 30, 2018 and December 31, 2017 was \$166.6 million and \$116.8 million, respectively.

Gains and losses on foreign currency forward contracts and foreign currency remeasurement gains and losses on monetary assets and liabilities are included in other (income) expense, net.

The following table summarizes the fair value of derivative instruments as of September 30, 2018 and December 31, 2017:

	<b>Balance Sheet Location</b>	<b>September 30, 2018</b>	<b>December 31, 2017</b>
<b>(in thousands)</b>			
<b>Derivatives not designated as hedging instruments:</b>			
Foreign currency forward contracts assets	Prepayments	\$ 3	\$ 389
Foreign currency forward contracts liabilities	Other current liabilities	(455)	(446)
<b>Total derivatives</b>		<b>\$ (452)</b>	<b>\$ (57)</b>

The following table summarizes the effect of derivative instruments recognized in the statement of operations for the three and nine months ended September 30, 2018 and October 1, 2017.

	<b>Location of Losses (Gains) Recognized in Statement of Operations</b>	<b>For the Three Months Ended</b>		<b>For the Nine Months Ended</b>	
		<b>September 30, 2018</b>	<b>October 1, 2017</b>	<b>September 30, 2018</b>	<b>October 1, 2017</b>
<b>(in thousands)</b>					
<b>Derivatives not designated as hedging instruments:</b>					
Foreign currency forward contracts	Other (income) expense, net	\$ (899)	\$ (939)	\$ 2,502	\$ (1,514)

- (1) The table does not reflect the corresponding gains and losses from the remeasurement of monetary assets and liabilities denominated in foreign currencies.
- (2) For the three and nine months ended September 30, 2018, net losses from the remeasurement of monetary assets and liabilities denominated in foreign currencies were \$3.7 million and \$1.2 million, respectively.
- (3) For the three and nine months ended October 1, 2017, net losses from the remeasurement of monetary assets and liabilities denominated in foreign currencies were \$1.4 million and \$2.3 million, respectively.

See Note G: Debt regarding derivatives related to the convertible senior notes.

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**Table of Contents****G. DEBT****Convertible Senior Notes**

On December 12, 2016, Teradyne completed a private offering of \$460.0 million convertible senior unsecured notes (the Notes). The Notes will mature on December 15, 2023, unless earlier repurchased or converted. The Notes bear interest from December 12, 2016 at a rate of 1.25% per year payable semi-annually in arrears on June 15 and December 15 of each year, beginning on June 15, 2017. The Notes will be convertible at the option of the noteholders at any time prior to the close of business on the business day immediately preceding September 15, 2023, under the following circumstances: (1) during any calendar quarter beginning after March 31, 2017 (and only during such calendar quarter), if the closing sale price of Teradyne's common stock, for at least 20 trading days (whether or not consecutive) during a period of 30 consecutive trading days ending on the last trading day of the immediately preceding calendar quarter is greater than 130% of the conversion price on each applicable trading day; (2) during the five business day period after any five consecutive trading day period (the measurement period) in which the trading price (as defined in the Indenture) per \$1,000 principal amount of Notes for each trading day of the measurement period was less than 98% of the product of the closing sale price of the Teradyne's common stock and the conversion rate on each such trading day; and (3) upon the occurrence of specified corporate events. On or after September 15, 2023 until the close of business on the second scheduled trading day immediately preceding the maturity date, holders may convert their Notes at any time, regardless of the foregoing circumstances. Teradyne may satisfy its conversion obligation by paying or delivering cash, shares of its common stock or a combination of cash and shares of its common stock, at Teradyne's election. The conversion rate for the Notes is 31.4463 shares per \$1,000 principal amount, which is equivalent to a conversion price of approximately \$31.80 per share of Teradyne's common stock. The conversion rate is subject to adjustment under certain circumstances.

Concurrent with the offering of the Notes, Teradyne entered into convertible note hedge transactions (the Note Hedge Transactions) with the initial purchasers or their affiliates (the Option Counterparties). The Note Hedge Transactions cover, subject to customary anti-dilution adjustments, the number of shares of the common stock that underlie the Notes, with a strike price equal to the conversion price of the Notes of approximately \$31.80. The Note Hedge Transactions cover, subject to customary anti-dilution adjustments, approximately 14.5 million shares of Teradyne's common stock.

The convertible note hedge is considered indexed to Teradyne's stock as the terms of the Note Hedge Transactions do not contain an exercise contingency and the settlement amount equals the difference between the fair value of a fixed number of Teradyne's shares and a fixed strike price. Because the only variable that can affect the settlement amount is Teradyne's stock price, which is an input to the fair value of a fixed-for-fixed option contract, the convertible note hedge is considered indexed to Teradyne's stock.

Separately and concurrent with the pricing of the Notes, Teradyne entered into warrant transactions with the Option Counterparties (the Warrant Transactions) in which it sold net-share-settled (or, at its election subject to certain conditions, cash-settled) warrants to the Option Counterparties. The Warrant Transactions cover, subject to customary anti-dilution adjustments, approximately 14.5 million shares of common stock. The strike price of the warrants is approximately \$39.91 per share. The strike price is subject to adjustments under certain circumstances. The Warrant Transactions could have a dilutive effect to Teradyne's common stock to the extent that the market price per share of Teradyne's common stock, as measured under the terms of the Warrant Transactions, exceeds the applicable strike price of the warrants.

The Note Hedge Transactions are expected to reduce the potential dilution to Teradyne's common stock upon any conversion of the Notes. However, the Warrant Transactions could separately have a dilutive effect to the extent that

the market value per share of Teradyne's common stock exceeds the applicable strike price of the warrant. The net cost of the Notes Hedge Transactions, after being partially offset by the proceeds from the sale of the warrants, was approximately \$33 million.

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In connection with establishing their initial hedge of these convertible note hedge and warrant transactions, the Option Counterparties have entered into various derivative transactions with respect to Teradyne's common stock and/or purchased shares of Teradyne's common stock or other securities, including the Notes, concurrent with, or shortly after, the pricing of the Notes. In addition, the Option Counterparties may modify their hedge positions by entering into or unwinding various derivative transactions with respect to Teradyne's common stock or by selling Teradyne's common stock or other securities, including the Notes, in secondary market transactions (and may do so during any observation period related to the conversion of the Notes). These activities could adversely affect the value of Teradyne's common stock and the Notes.

Teradyne's effective annual interest rate on the Notes will be approximately 5.0%. The Notes are classified as long-term debt in the balance sheet based on their December 15, 2023 maturity date. Debt issuance costs of approximately \$7.2 million are being amortized to interest expense using the effective interest method over the seven year term of the Notes. As of September 30, 2018, unamortized debt issuance costs were approximately \$5.6 million.

The below tables represent the key components of Teradyne's convertible senior notes:

	<b>September 30, 2018</b>	<b>December 31, 2017</b>
	<b>(in thousands)</b>	
Debt Principal	\$ 460,000	\$ 460,000
Unamortized discount	83,583	94,013
<b>Net Carrying amount of convertible debt</b>	<b>\$ 376,417</b>	<b>\$ 365,987</b>

	<b>For the Three Months Ended</b>		<b>For the Nine Months Ended</b>	
	<b>September 30, 2018</b>	<b>October 1, 2017</b>	<b>September 30, 2018</b>	<b>October 1, 2017</b>
	<b>(in thousands)</b>			
Contractual interest expense on the coupon	\$ 1,438	\$ 1,422	\$ 4,313	\$ 4,297
Amortization of the discount component and debt issue fees recognized as interest expense	3,520	3,350	10,431	9,926
<b>Total interest expense on the convertible debt</b>	<b>\$ 4,958</b>	<b>\$ 4,772</b>	<b>\$ 14,744</b>	<b>\$ 14,223</b>

As of September 30, 2018, the remaining unamortized discount was \$83.6 million, which will be amortized over 5.3 years using the effective interest rate method. The carrying amount of the equity component was \$100.8 million. As of September 30, 2018, the if-converted value of the Notes was \$534.9 million.

**Revolving Credit Facility**

On April 27, 2015, Teradyne entered into a Credit Agreement (the "Credit Agreement") with Barclays Bank PLC, as administrative agent and collateral agent, and the lenders party thereto. The Credit Agreement provides for a five-year, senior secured revolving credit facility of up to \$350 million (the "Credit Facility"). The Credit Agreement further

provides that, subject to customary conditions, Teradyne may seek to obtain from existing or new lenders incremental commitments under the Credit Facility in an aggregate principal amount not to exceed \$150 million.

Proceeds from the Credit Facility may be used for general corporate purposes and working capital. Teradyne incurred \$2.3 million in costs related to the revolving credit facility. These costs are being amortized over the five-year term of the revolving credit facility and are included in interest expense in the statements of operations. As of November 9, 2018, Teradyne has not borrowed any funds under the Credit Facility.

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The interest rates applicable to loans under the Credit Facility are, at Teradyne's option, equal to either a base rate plus a margin ranging from 0.00% to 1.00% per annum or LIBOR plus a margin ranging from 1.00% to 2.00% per annum, based on the Consolidated Leverage Ratio of Teradyne and its Restricted Subsidiaries. In addition, Teradyne will pay a commitment fee on the unused portion of the commitments under the Credit Facility ranging from 0.125% to 0.350% per annum, based on the then applicable Consolidated Leverage Ratio.

Teradyne is not required to repay any loans under the Credit Facility prior to maturity, subject to certain customary exceptions. Teradyne is permitted to prepay all or any portion of the loans under the Credit Facility prior to maturity without premium or penalty, other than customary LIBOR breakage costs.

The Credit Agreement contains customary events of default, representations, warranties and affirmative and negative covenants that, among other things, limit Teradyne's and its Restricted Subsidiaries' ability to sell assets, grant liens on assets, incur other secured indebtedness and make certain investments and restricted payments, all subject to exceptions set forth in the Credit Agreement. The Credit Agreement also requires Teradyne to satisfy two financial ratios measured as of the end of each fiscal quarter: a consolidated leverage ratio and an interest coverage ratio. As of November 9, 2018, Teradyne was in compliance with all covenants.

The Credit Facility is guaranteed by certain of Teradyne's domestic subsidiaries and collateralized by assets of Teradyne and such subsidiaries, including a pledge of 65% of the capital stock of certain foreign subsidiaries.

**H. PREPAYMENTS**

Prepayments consist of the following and are included in prepayments and other assets on the balance sheet:

	<b>September 30, 2018</b>	<b>December 31, 2017</b>
	<b>(in thousands)</b>	
Contract manufacturer and supplier prepayments	\$ 102,652	\$ 82,503
Prepaid taxes	10,709	5,039
Prepaid maintenance and other services	7,802	8,189
Other prepayments	12,439	12,386
<b>Total prepayments</b>	<b>\$ 133,602</b>	<b>\$ 108,117</b>

**I. DEFERRED REVENUE AND CUSTOMER ADVANCES**

Deferred revenue and customer advances consist of the following and are included in short and long-term deferred revenue and customer advances on the balance sheet:

	<b>September 30, 2018</b>	<b>December 31, 2017</b>
	<b>(in thousands)</b>	
Maintenance and training	\$ 59,681	\$ 57,256
Extended warranty	27,617	24,438



Customer advances, undelivered elements and other	20,042	32,047
Total deferred revenue and customer advances	\$ 107,340	\$ 113,741

**J. PRODUCT WARRANTY**

Teradyne generally provides a one-year warranty on its products, commencing upon installation, acceptance, delivery or shipment. A provision is recorded upon revenue recognition to cost of revenues for

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estimated warranty expense based on historical experience. Related costs are charged to the warranty accrual as incurred. The warranty balance below is included in other accrued liabilities on the balance sheet.

	For the Three Months Ended		For the Nine Months Ended	
	September 30, 2018	October 1, 2017	September 30, 2018	October 1, 2017
	(in thousands)			
Balance at beginning of period	\$ 7,136	\$ 9,093	\$ 8,200	\$ 7,203
Acquisition			41	
Accruals for warranties issued during the period	2,760	2,734	9,171	11,049
Adjustments related to pre-existing warranties	282	(35)	109	(499)
Settlements made during the period	(2,675)	(3,055)	(10,018)	(9,016)
Balance at end of period	\$ 7,503	\$ 8,737	\$ 7,503	\$ 8,737

When Teradyne receives revenue for extended warranties, beyond one year, it is deferred and recognized on a straight-line basis over the contract period. Related costs are expensed as incurred. The balance below is included in short and long-term deferred revenue and customer advances on the balance sheet.

	For the Three Months Ended		For the Nine Months Ended	
	September 30, 2018	October 1, 2017	September 30, 2018	October 1, 2017
	(in thousands)			
Balance at beginning of period	\$ 25,971	\$ 29,377	\$ 24,438	\$ 28,200
Deferral of new extended warranty revenue	7,232	2,636	19,072	17,126
Recognition of extended warranty deferred revenue	(5,586)	(5,521)	(15,893)	(18,834)
Balance at end of period	\$ 27,617	\$ 26,492	\$ 27,617	\$ 26,492

**K. STOCK-BASED COMPENSATION**

Under Teradyne's stock compensation plans, Teradyne grants stock options, restricted stock units and performance-based restricted stock units, and employees are eligible to purchase Teradyne's common stock through its Employee Stock Purchase Plan (ESPP).

Time-based restricted stock unit awards granted to employees vest in equal annual installments over four years. Restricted stock unit awards granted to non-employee directors vest after a one year period, with 100% of the award vesting on the earlier of (a) the first anniversary of the grant date or (b) the date of the following year's Annual Meeting of Shareholders. Teradyne expenses the cost of the restricted stock unit awards subject to time-based vesting, which is determined to be the fair market value of the shares at the date of grant, ratably over the period during which the restrictions lapse.

Commencing in January 2014, Teradyne granted performance-based restricted stock units ( PRSUs ) to its executive officers with a performance metric based on relative total shareholder return ( TSR ). For TSR grants issued in 2018 and 2017, Teradyne s three-year TSR performance is measured against the New York Stock Exchange ( NYSE ) Composite Index. The final number of TSR PRSUs that vest will vary based upon the level of performance achieved from 200% to 0% of the target shares capped at four times the grant date value. The TSR PRSUs will vest upon the three-year anniversary of the grant date. The TSR PRSUs are valued using a Monte Carlo simulation model. The number of units expected to be earned, based upon the achievement of the TSR market condition, is factored into the grant date Monte Carlo valuation. Compensation expense is recognized on a straight-line basis over the shorter of the three-year service period or the period from the grant date to the date described in the retirement provisions below. Compensation expense for employees meeting the

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retirement provisions prior to the grant date will be recognized in full on the date of the grant. Compensation expense is recognized regardless of the eventual number of units that are earned based upon the market condition, provided the executive officer remains an employee at the end of the three-year period. Compensation expense is reversed if at any time during the three-year service period the executive officer is no longer an employee, subject to the retirement and termination eligibility provisions noted below.

In January 2018 and 2017, Teradyne granted PRSUs to its executive officers with a performance metric based on three-year cumulative non-GAAP profit before interest and tax ( PBIT ) as a percent of Teradyne's revenue. Non-GAAP PBIT is a financial measure equal to GAAP income from operations less restructuring and other, net; amortization of acquired intangible assets; acquisition and divestiture related charges or credits; pension actuarial gains and losses; non-cash convertible debt interest expense; and other non-recurring gains and charges. The final number of PBIT PRSUs that vest will vary based upon the level of performance achieved from 200% to 0% of the target shares. The PBIT PRSUs will vest upon the three-year anniversary of the grant date. Compensation expense is recognized on a straight-line basis over the shorter of the three year service period or the period from the grant date to the date described in the retirement provisions below. Compensation expense for employees meeting the retirement provisions prior to the grant date will be recognized in full on the date of grant. Compensation expense is recognized based on the number of units that are earned based upon the three-year Teradyne PBIT as a percent of Teradyne's revenue, provided the executive officer remains an employee at the end of the three-year period subject to the retirement and termination eligibility provisions noted below.

Beginning with PRSUs granted in January 2014, if the recipient's employment ends prior to the determination of the performance percentage due to (1) permanent disability or death or (2) retirement or termination other than for cause, after attaining both at least age sixty and at least ten years of service, then all or a portion of the recipient's PRSUs (based on the actual performance percentage achieved on the determination date) will vest on the date the performance percentage is determined. Except as set forth in the preceding sentence, no PRSUs will vest if the executive officer is no longer an employee at the end of the three-year period.

During the nine months ended September 30, 2018 and October 1, 2017, Teradyne granted 0.1 million and 0.1 million TSR PRSUs, respectively, with a grant date fair value of \$54.85 and \$35.66, respectively. The fair value was estimated using the Monte Carlo simulation model with the following assumptions:

	<b>For the Nine Months Ended</b>	
	<b>September 30, 2018</b>	<b>October 1, 2017</b>
Risk-free interest rate	2.2%	1.5%
Teradyne volatility-historical	26.8%	26.6%
NYSE Composite Index volatility-historical	12.4%	13.4%
Dividend yield	0.8%	1.0%

Expected volatility was based on the historical volatility of Teradyne's stock and the NYSE Composite Index for the 2018 and 2017 grant over the most recent three-year period. The risk-free interest rate was determined using the U.S. Treasury yield curve in effect at the time of grant. Dividend yield was based upon an estimated annual dividend amount of \$0.36 per share for 2018 grants and \$0.28 per share for 2017 grants, divided by Teradyne's stock price on the grant date of \$47.70 for the 2018 grant and \$28.56 for the 2017 grant.

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During the nine months ended September 30, 2018 and October 1, 2017, Teradyne granted 0.1 million and 0.1 million, respectively, of PBIT PRSUs with a grant date fair value of \$46.62 and \$27.72, respectively.

During the nine months ended September 30, 2018, Teradyne granted 0.6 million of service-based restricted stock unit awards to employees at a weighted average grant date fair value of \$46.25, 0.1 million of service-based restricted stock unit awards to non-employee directors at a weighted average grant date fair value of \$35.81, and 0.1 million of service-based stock options to executive officers at a weighted average grant date fair value of \$12.17.

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During the nine months ended October 1, 2017, Teradyne granted 0.8 million of service-based restricted stock unit awards to employees at a weighted average grant date fair value of \$28.03, 0.1 million of service-based restricted stock unit awards to non-employee directors at a weighted average grant date fair value of \$34.48, and 0.1 million of service-based stock options to executive officers at a weighted average grant date fair value of \$7.13.

Restricted stock unit awards granted to employees vest in equal annual installments over four years. Stock options to purchase Teradyne's common stock at 100% of the fair market value on the grant date vest in equal annual installments over four years from the grant date and have a maximum term of seven years.

The fair value of stock options was estimated using the Black-Scholes option-pricing model with the following assumptions:

	<b>For the Nine Months Ended</b>	
	<b>September 30, 2018</b>	<b>October 1, 2017</b>
Expected life (years)	5.0	5.0
Risk-free interest rate	2.4%	2.0%
Volatility-historical	26.4%	27.8%
Dividend yield	0.8%	1.0%

Teradyne determined the stock options' expected life based upon historical exercise data for executive officers, the age of the executive officers and the terms of the stock option grant. Volatility was determined using historical volatility for a period equal to the expected life. The risk-free interest rate was determined using the U.S. Treasury yield curve in effect at the time of grant. Dividend yield was based upon an estimated annual dividend amount of \$0.36 per share for 2018 grants and \$0.28 per share for 2017 grants divided by Teradyne's stock price on the grant date of \$47.70 for the 2018 grant and \$28.56 for the 2017 grant.

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Changes in accumulated other comprehensive income (loss), which are presented net of tax, consist of the following:

	<b>Foreign Currency Translation Adjustment</b>	<b>Unrealized Gains (Losses) on Marketable Securities</b>	<b>Retirement Plans Prior Service Credit</b>	<b>Total</b>
	(in thousands)			
<b><i>Nine Months Ended September 30, 2018</i></b>				
Balance at December 31, 2017, net of tax of \$0, \$1,815, \$(932), respectively	\$ 15,919	\$ 1,362	\$ 1,495	\$ 18,776
Other comprehensive loss before reclassifications, net of tax of \$0, \$(806), \$0, respectively	(11,568)	(2,555)		(14,123)
Amounts reclassified from accumulated other comprehensive income, net of tax of \$0, \$(6), \$(53), respectively		1,411	(184)	1,227
Net current period other comprehensive loss, net of tax of \$0, \$(812), \$(53), respectively	(11,568)	(1,144)	(184)	(12,896)
Reclassification of tax effects resulting of the Tax Reform Act, \$0, \$(691), \$(78), respectively (a)		691	78	769
Reclassification of unrealized gains on equity securities, net of tax \$0, \$(902), \$0, respectively (b)		(3,125)		(3,125)
Balance at September 30, 2018, net of tax of \$0, \$(590), \$(1,063), respectively	\$ 4,351	\$ (2,216)	\$ 1,389	\$ 3,524

- (a) In the nine months ended September 30, 2018, Teradyne early adopted the ASU 2018-02, *Income Statement Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income*. As a result, the stranded tax effects resulting from the Tax Reform Act enacted in December 2017 were reclassified from accumulated other comprehensive income to retained earnings.
- (b) In the nine months ended September 30, 2018, Teradyne adopted the ASU 2016-01, *Financial Instruments Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities*. See Note B: Accounting Policies.

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	Foreign Currency Translation Adjustments	Unrealized Gains (Losses) on Marketable Securities (in thousands)	Retirement Plans Prior Service Credit	Total
<b><i>Nine Months Ended October 1, 2017</i></b>				
Balance at December 31, 2016, net of tax of \$0, \$209, \$(778), respectively	\$ (21,921)	\$ (60)	\$ 1,767	\$ (20,214)
Other comprehensive income before reclassifications, net of tax of \$0, \$1,666, \$0, respectively	34,235	2,448		36,683
Amounts reclassified from accumulated other comprehensive income, net of tax of \$0, \$(173), \$(115), respectively		(264)	(204)	(468)
Net current period other comprehensive income (loss), net of tax of \$0, \$1,493, \$(115), respectively	34,235	2,184	(204)	36,215
Balance as October 1, 2017, net of tax of \$0, \$1,702, \$(893), respectively	\$ 12,314	\$ 2,124	\$ 1,563	\$ 16,001

Reclassifications out of accumulated other comprehensive income (loss) to the statement of operations for the three and nine months ended September 30, 2018 and October 1, 2017 were as follows:

Details about Accumulated Other Comprehensive Income Components	For the Three Months Ended				For the Nine Months Ended		Affected Line Item in the Statements of Operations
	September 30, 2018	October 1, 2017	September 30, 2018	October 1, 2017	September 30, 2018	October 1, 2017	
(in thousands)							
Available-for-sale marketable securities:							
Unrealized gains (losses), net of tax of \$17, \$67, \$6, \$173, respectively	\$ 57	\$ 87	\$ (1,411)	\$ 264			Interest income (expense)
Defined benefit pension and postretirement plans:							
Amortization of prior service benefit, net of tax of \$18, \$38, \$53, \$115, respectively	61	68	184	204			(a)
Total reclassifications, net of tax of \$35, \$105, \$59, \$288, respectively	\$ 118	\$ 155	\$ (1,227)	\$ 468			Net income

(a) The amortization of prior service benefit is included in the computation of net periodic pension cost and postretirement benefit. See Note P: Retirement Plans.



**M. GOODWILL AND ACQUIRED INTANGIBLE ASSETS**

*Goodwill*

Teradyne performs its annual goodwill impairment test as required under the provisions of ASC 350-10, *Intangibles Goodwill and Other* on December 31 of each fiscal year unless interim indicators of impairment exist. Goodwill is considered impaired when the net book value of a reporting unit exceeds its estimated fair value.

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The changes in the carrying amount of goodwill by reportable segments for the nine months ended September 30, 2018, were as follows:

	Wireless Test	Industrial Automation	System Test	Semiconductor Test	Total
	(in thousands)				
Balance at December 31, 2017					
Goodwill	\$ 361,819	\$ 233,519	\$ 158,699	\$ 260,540	\$ 1,014,577
Accumulated impairment losses	(353,843)		(148,183)	(260,540)	(762,566)
	7,976	233,519	10,516		252,011
MiR acquisition		134,737			134,737
Energid acquisition		14,394			14,394
Foreign currency translation adjustment		(8,144)			(8,144)
Balance at September 30, 2018					
Goodwill	361,819	374,506	158,699	260,540	1,155,564
Accumulated impairment losses	(353,843)		(148,183)	(260,540)	(762,566)
	\$ 7,976	\$ 374,506	\$ 10,516	\$	\$ 392,998

*Intangible Assets*

Teradyne reviews long-lived assets for impairment whenever events or changes in business circumstances indicate that the carrying amount of the assets may not be fully recoverable or that the useful lives of these assets are no longer appropriate.

Amortizable intangible assets consist of the following and are included in intangible assets, net on the balance sheet:

	September 30, 2018			
	Gross Carrying Amount (1)(2)	Accumulated Amortization (2)	Foreign Currency Translation Adjustment	Net Carrying Amount
	(in thousands)			
Developed technology	\$ 336,306	\$ (244,833)	\$ (1,117)	\$ 90,356
Customer relationships	105,622	(89,848)	(83)	15,691
Tradenames and trademarks	64,420	(30,408)	(96)	33,916
Non-compete agreement	320	(320)		
Backlog	30	(30)		
Total intangible assets	\$ 506,698	\$ (365,439)	\$ (1,296)	\$ 139,963

	<b>December 31, 2017</b>			
	<b>Gross</b>		<b>Foreign</b>	<b>Net</b>
	<b>Carrying</b>	<b>Accumulated</b>	<b>Currency</b>	<b>Carrying</b>
	<b>Amount</b>	<b>Amortization</b>	<b>Translation</b>	<b>Amount</b>
	<b>(in thousands)</b>			
Developed technology	\$ 270,877	\$ (226,190)	\$ 1,618	\$ 46,305
Customer relationships	92,741	(83,585)	171	9,327
Tradenames and trademarks	50,100	(27,120)	416	23,396
Non-compete agreement	320	(260)		60
<b>Total intangible assets</b>	<b>\$ 414,038</b>	<b>\$ (337,155)</b>	<b>\$ 2,205</b>	<b>\$ 79,088</b>

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- (1) Includes intangible assets acquired in 2018, \$80.7 million from the MiR acquisition and \$12.3 million from the Energid acquisition.
- (2) In 2018, \$0.3 million of amortizable intangible assets became fully amortized and have been eliminated from the gross carrying amount and accumulated amortization.

Aggregate intangible asset amortization expense was \$11.1 million and \$28.6 million, respectively, for the three and nine months ended September 30, 2018 and \$7.0 million and \$23.1 million, respectively, for the three and nine months ended October 1, 2017.

Estimated intangible asset amortization expense for each of the five succeeding fiscal years is as follows:

Year	Amortization Expense (in thousands)
2018 (remainder)	10,731
2019	39,610
2020	24,928
2021	14,343
2022	13,450
Thereafter	36,901

**N. NET INCOME PER COMMON SHARE**

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

	For the Three Months Ended		For the Nine Months Ended	
	September 30, 2018	October 1, 2017	September 30, 2018	October 1, 2017
	(in thousands, except per share amounts)			
Net income for basic and diluted net income per share	\$ 119,981	\$ 103,420	\$ 307,991	\$ 363,616
Weighted average common shares-basic	185,744	197,485	190,576	198,755
Effect of dilutive potential common shares:				
Incremental shares from assumed conversion of convertible notes (1)	3,025	1,144	3,356	632
Convertible note hedge warrant shares (2)	108		646	
Restricted stock units	1,331	1,832	1,406	1,663
Stock options	275	306	290	337
Employee stock purchase plan	22	8	26	26
Dilutive potential common shares	4,761	3,290	5,724	2,658
Weighted average common shares-diluted	190,505	200,775	196,300	201,413

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Net income per common share-basic	\$	0.65	\$	0.52	\$	1.62	\$	1.83
Net income per common share-diluted	\$	0.63	\$	0.52	\$	1.57	\$	1.81

- (1) Incremental shares from assumed conversion of the convertible notes was calculated using the difference between the average Teradyne stock price for the period and the conversion price of \$31.80, multiplied by 14.5 million shares. The result of this calculation, representing the total intrinsic value of the convertible debt, was divided by the average Teradyne stock price for the period.
- (2) Convertible notes hedge warrant shares were calculated using the difference between the average Teradyne stock price for the period and the warrant price of \$39.91, multiplied by 14.5 million shares. The result of this calculation, representing the total intrinsic value of the warrant, was divided by the average Teradyne stock price for the period.

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The computation of diluted net income per common share for the three and nine months ended September 30, 2018 excludes the effect of the potential vesting of 0.5 million of restricted stock units because the effect would have been anti-dilutive.

The computation of diluted net income per common share for the three and nine months ended October 1, 2017 excludes the effect of the potential exercise of stock options to purchase approximately 0.1 million shares because the effect would have been anti-dilutive.

**O. RESTRUCTURING AND OTHER**

During the three months ended September 30, 2018, Teradyne recorded \$1.7 million for employee severance charges, primarily in Semiconductor Test, and \$0.8 million of acquisition related compensation, partially offset by a \$0.8 million gain for the decrease in the fair value of the Universal Robots contingent consideration liability.

During the nine months ended September 30, 2018, Teradyne recorded \$7.9 million for employee severance charges, primarily in Semiconductor Test, and \$4.1 million for acquisition related expenses and compensation, partially offset by a \$9.2 million gain for the decrease in the fair value of the Universal Robots contingent consideration liability.

During the three months ended October 1, 2017, Teradyne recorded \$5.1 million of property insurance recovery related to the Japan earthquake, a \$0.4 million credit related to a previously impaired lease termination of a Wireless Test facility in Sunnyvale, CA, which was terminated in September 2017, and a \$0.3 million credit for the decrease in the fair value of the Universal Robots contingent consideration liability, partially offset by \$0.8 million of Japan earthquake related expenses and \$0.6 million recorded for employee severance charges, primarily in Semiconductor Test.

During the nine months ended October 1, 2017, Teradyne recorded \$2.0 million for employee severance charges, primarily in Industrial Automation and Corporate, \$1.8 million for the increase in the fair value of the Universal Robots contingent consideration liability, \$0.9 million for a lease impairment of a Wireless Test facility in Sunnyvale, CA, which was terminated in September 2017, and \$0.8 million of Japan earthquake related expenses, partially offset by \$5.1 million of property insurance recovery related to the Japan earthquake.

**P. RETIREMENT PLANS**

ASC 715, *Compensation Retirement Benefits* requires an employer with a defined benefit plan or other postretirement benefit plan to recognize an asset or a liability on its balance sheet for the overfunded or underfunded status of the plan. The pension asset or liability represents a difference between the fair value of the pension plan's assets and the projected benefit obligation.

***Defined Benefit Pension Plans***

Teradyne has defined benefit pension plans covering a portion of domestic employees and employees of certain non-U.S. subsidiaries. Benefits under these plans are based on employees' years of service and compensation. Teradyne's funding policy is to make contributions to these plans in accordance with local laws and to the extent that such contributions are tax deductible. The assets of the U.S. qualified pension plan consist primarily of fixed income and equity securities. In addition, Teradyne has unfunded qualified foreign plans as well as an unfunded supplemental executive defined benefit plan in the United States to provide retirement benefits in excess of levels allowed by the Employment Retirement Income Security Act ( ERISA ) and the Internal Revenue Code ( IRC ).

During the nine months ended September 30, 2018, Teradyne purchased a group annuity contract for its retiree participants in the U.S. qualified pension plan. Under the group annuity, the accrued pension obligations

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for approximately 1,700 retiree participants were transferred to an insurance company. The reduction in the pension benefit obligation and pension assets was \$151.3 million. During the three and nine months ended September 30, 2018, Teradyne recorded a settlement loss of \$0.3 million related to the retiree group annuity transaction.

In the nine months ended September 30, 2018, Teradyne contributed \$1.9 million to the U.S. supplemental executive defined benefit pension plan and \$0.6 million to certain qualified pension plans for non-U.S. subsidiaries.

For the three and nine months ended September 30, 2018 and October 1, 2017, Teradyne's net periodic pension cost was comprised of the following:

	<b>For the Three Months Ended</b>			
	<b>September 30, 2018</b>		<b>October 1, 2017</b>	
	<b>United States</b>	<b>Foreign</b>	<b>United States</b>	<b>Foreign</b>
	<b>(in thousands)</b>			
Service cost	\$ 538	\$ 203	\$ 560	\$ 215
Interest cost	1,750	177	3,288	186
Expected return on plan assets	(1,551)	(5)	(3,002)	(6)
Amortization of prior service cost	14		18	
Settlement loss	267			
<b>Total net periodic pension cost</b>	<b>\$ 1,018</b>	<b>\$ 375</b>	<b>\$ 864</b>	<b>\$ 395</b>

	<b>For the Nine Months Ended</b>			
	<b>September 30, 2018</b>		<b>October 1, 2017</b>	
	<b>United States</b>	<b>Foreign</b>	<b>United States</b>	<b>Foreign</b>
	<b>(in thousands)</b>			
Service cost	\$ 1,657	\$ 609	\$ 1,679	\$ 606
Interest cost	7,188	532	9,863	527
Expected return on plan assets	(7,484)	(15)	(9,006)	(19)
Amortization of prior service cost	43		53	
Net actuarial gain	(189)		(2,732)	243
Settlement loss	345			
<b>Total net periodic pension cost (benefit)</b>	<b>\$ 1,560</b>	<b>\$ 1,126</b>	<b>\$ (143)</b>	<b>\$ 1,357</b>

**Postretirement Benefit Plan**

In addition to receiving pension benefits, Teradyne employees in the United States who meet early retirement eligibility requirements as of their termination dates may participate in Teradyne's Welfare Plan, which includes medical and dental benefits up to age 65. Death benefits provide a fixed sum to retirees' survivors and are available to all retirees. Substantially all of Teradyne's current U.S. employees could become eligible for these benefits, and the existing benefit obligation relates primarily to those employees.





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For the three and nine months ended September 30, 2018 and October 1, 2017, Teradyne's net periodic postretirement benefit cost (income) was comprised of the following:

	For the Three Months Ended		For the Nine Months Ended	
	September 30, 2018	October 1, 2017	September 30, 2018	October 1, 2017
	(in thousands)			
Service cost	\$ 10	\$ 8	\$ 29	\$ 25
Interest cost	49	50	147	151
Amortization of prior service credit	(93)	(124)	(280)	(372)
Net actuarial loss (gain)			40	(15)
Special termination benefits	601		3,419	
Total net periodic postretirement benefit cost (income)	\$ 567	\$ (66)	\$ 3,355	\$ (211)

**Q. COMMITMENTS AND CONTINGENCIES*****Purchase Commitments***

As of September 30, 2018, Teradyne had entered into purchase commitments for certain components and materials. The purchase commitments covered by the agreements aggregate to approximately \$275.6 million, of which \$263.3 million is for less than one year.

***Legal Claims***

Teradyne is subject to various 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 Teradyne's results of operations, financial condition or cash flows.

**R. INCOME TAXES**

The effective tax rate for the three months ended September 30, 2018 and October 1, 2017 was 14.8% and 18.8%, respectively. The effective tax rate for the nine months ended September 30, 2018 and October 1, 2017 was 13.6% and 14.7%, respectively.

The decrease in the effective tax rate from the three and nine months ended October 1, 2017 to the three and nine months ended September 30, 2018 primarily resulted from the benefit of the U.S. foreign derived intangible income deduction. The tax rate effect of a projected shift in the geographic distribution of income, which increases the income subject to taxation in the U.S. relative to lower tax rate jurisdictions, was substantially offset by the reduction in the U.S. corporate tax rate from 35% to 21%.

The effective tax rate for the three and nine months ended September 30, 2018 and October 1, 2017 was lower than the expected federal statutory rate primarily because of the favorable effect of statutory rates applicable to income earned outside the United States and the benefit from U.S. research and development tax credits, partially offset by

additions to the uncertain tax positions for transfer pricing. The effective rate for the three and nine months ended September 30, 2018 was also reduced by the benefit of the U.S. foreign derived intangible income deduction.

Discrete tax items recorded in the three and nine months ended September 30, 2018 amounted to \$0.2 million of expense and \$6.5 million of benefit, respectively. The \$0.2 million of discrete tax expense recorded in the three months ended September 30, 2018 consisted of \$1.1 million of expense related to non-taxable foreign exchange losses, partially offset by \$0.5 million of benefit resulting from the resolution of an

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audit and \$0.4 million of other discrete tax benefit. The \$6.5 million of discrete benefits recorded in the nine months ended September 30, 2018 consisted of \$8.9 million of discrete tax benefit net of \$2.4 million of discrete tax expense. The \$8.9 million of discrete tax benefit was composed of \$7.8 million from stock based compensation, \$0.5 million resulting from the resolution of an audit and \$0.6 million of other discrete tax benefit. The \$2.4 million of discrete tax expense was composed of \$1.7 million from the remeasurement of deferred tax assets as a result of reductions in tax rates and \$0.7 million of other discrete tax expense.

Discrete tax items recorded in the three and nine months ended October 1, 2017 amounted to expense of \$0.3 million and benefit of \$6.1 million, respectively. The \$0.3 million of discrete tax expense recorded in the three months ended October 1, 2017 was primarily composed of \$0.8 million of expense related to non-taxable foreign exchange loss, partially offset by \$0.2 million of benefit from reductions in tax reserves and \$0.2 million of benefit from stock based compensation. The \$6.1 million of discrete tax benefit recorded in the nine months ended October 1, 2017 was primarily composed of \$6.7 million of benefit from stock-based compensation, \$0.7 million of benefit related to U.S. research and development tax credits, and \$0.5 million of benefit from reductions in tax reserves, partially offset by \$1.1 million of expense related to non-taxable foreign exchange loss, and \$1.0 million of tax expense related to actuarial gains.

On a quarterly basis, Teradyne evaluates the realizability of the deferred tax assets by jurisdiction and assesses the need for a valuation allowance. As of September 30, 2018, Teradyne believes that it will ultimately realize the deferred tax assets recorded on the condensed consolidated balance sheet. However, should Teradyne believe that it is more-likely-than-not that the deferred tax assets would not be realized, the tax provision would increase in the period in which Teradyne determined that the realizability was not likely. Teradyne considers the probability of future taxable income and historical profitability, among other factors, in assessing the realizability of the deferred tax assets.

As of September 30, 2018 and December 31, 2017, Teradyne had \$38.6 million and \$36.3 million, respectively, of reserves for uncertain tax positions. The \$2.3 million net increase in reserves for uncertain tax positions is primarily composed of additions related to transfer pricing and U.S. research and development tax credits.

Teradyne is currently under examination by the U.S. Internal Revenue Service and the Inland Revenue Authority of Singapore. The timing of resolution and closure of these tax audits is highly unpredictable. Given the uncertainty, it is reasonably possible that the balance of unrecognized tax benefits could significantly change within the next twelve months. However, an estimate of the range of reasonably possible adjustments cannot presently be made.

Teradyne recognizes interest and penalties related to income tax matters in income tax expense. As of September 30, 2018 and December 31, 2017, \$0.3 million and \$0.3 million, respectively, of interest and penalties were accrued for uncertain tax positions. For the nine months ended September 30, 2018, an expense of \$0.1 million was recorded for interest and penalties related to income tax items. For the nine months ended October 1, 2017, a benefit of \$0.1 million was recorded for interest and penalties related to income tax items.

Teradyne qualifies for a tax holiday in Singapore by fulfilling the requirements of an agreement with the Singapore Economic Development Board under which certain headcount and spending requirements must be met. The tax savings due to the tax holiday for the nine months ended September 30, 2018 was \$8.9 million, or \$0.05 per diluted share. The tax savings due to the tax holiday for the nine months ended October 1, 2017 was \$20.5 million, or \$0.10 per diluted share. The tax holiday is scheduled to expire on December 31, 2020.

In the fourth quarter of 2017, Teradyne recorded a provisional amount of \$186.0 million of additional income tax expense, which represents Teradyne's best estimate of the impact of the Tax Cuts and Jobs Act of 2017 (the Tax Reform Act) in accordance with Teradyne's understanding of the Tax Reform Act and guidance available at that time.

The \$186.0 million is composed of expense of \$161.0 million related to the one-time

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transition tax on the mandatory deemed repatriation of foreign earnings, \$33.6 million of expense related to the remeasurement of certain deferred tax assets and liabilities based on the rates at which they are expected to reverse in the future, a benefit of \$10.3 million associated with the impact of correlative adjustments on uncertain tax positions, and \$1.7 million of expense related to the remeasurement of certain uncertain tax positions resulting from the reduction in the federal tax rate. Although the provisional estimates are based on the best available interpretations of the Tax Reform Act, the final impacts may differ from the estimates due to, among other things, the issuance of additional regulatory and legislative guidance related to the Tax Reform Act. As of September 30, 2018, there has been no material change to the provisional amount recorded. Any adjustment to the provisional amounts will be recorded in 2018 when the analysis is complete.

**S. SEGMENT INFORMATION**

Teradyne has four reportable segments (Semiconductor Test, System Test, Industrial Automation and Wireless Test). Each of the Semiconductor Test, System Test, and Wireless Test segments is also an individual operating segment. The Industrial Automation reportable segment consists of operating segments with discrete financial information, which have been combined into one reportable segment as they share similar economic characteristics, types of products, production processes, distribution channels, and currency risks. The Semiconductor Test segment includes operations related to the design, manufacturing and marketing of semiconductor test products and services. The System Test segment includes operations related to the design, manufacturing and marketing of products and services for defense/aerospace instrumentation test, storage test and circuit-board test. The Industrial Automation segment includes operations related to the design, manufacturing and marketing of collaborative robotic arms, autonomous mobile robots and advanced robotic control software. The Wireless Test segment includes operations related to the design, manufacturing and marketing of wireless test products and services.

Teradyne evaluates performance based on several factors, of which the primary financial measure is business segment income (loss) before income taxes. The accounting policies of the business segments in effect are described in Note B: Accounting Policies in Teradyne's Annual Report on Form 10-K for the year ended December 31, 2017, and Note B: Accounting Policies in this filing for any changes in the three and nine months ended September 30, 2018.

Segment information for the three and nine months ended September 30, 2018 and October 1, 2017 is as follows:

	Semiconductor Test	Industrial Automation	System Test	Wireless Test	Corporate and Other	Consolidated
	(in thousands)					
<b>Three Months Ended September 30, 2018</b>						
Revenues	\$ 417,297	\$ 65,913	\$ 49,606	\$ 34,304	\$ (272)	\$ 566,848
Income (loss) before income taxes (1)(2)	126,638	940	9,056	7,843	(3,633)	140,844
Total assets (3)	709,616	617,741	83,160	79,986	1,391,984	2,882,487
<b>Three Months Ended October 1, 2017</b>						
Revenues	\$ 396,881	\$ 40,063	\$ 35,569	\$ 30,865	\$	\$ 503,378
Income (loss) before income taxes (1)(2)	116,836	3,373	(3,344)	7,461	3,111	127,437

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Total assets (3)	598,925	508,943	100,083	61,206	1,820,170	3,089,327
<b><i>Nine Months Ended September 30, 2018</i></b>						
Revenues	\$ 1,150,712	\$ 176,803	\$ 162,308	\$ 92,023	\$ (602)	\$ 1,581,244
Income (loss) before income taxes						
(1)(2)	305,876	(1,198)	35,296	18,615	(1,914)	356,675
Total assets (3)	709,616	617,741	83,160	79,986	1,391,984	2,882,487
<b><i>Nine Months Ended October 1, 2017</i></b>						
Revenues	\$ 1,345,560	\$ 115,672	\$ 112,147	\$ 83,812	\$	\$ 1,657,191
Income (loss) before income taxes						
(1)(2)	426,081	(279)	(11,795)	13,508	(1,186)	426,329
Total assets (3)	598,925	508,943	100,083	61,206	1,820,170	3,089,327

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- (1) Included in Corporate and Other are: contingent consideration adjustments, severance charges, interest income, interest expense, net foreign exchange gains (losses), intercompany eliminations and acquisition related charges.
- (2) Included in the income (loss) before income taxes for each of the segments are charges and credits related to restructuring and other and inventory charges.
- (3) Total business assets are directly attributable to each business. Corporate assets consist of cash and cash equivalents, marketable securities and certain other assets.

Included in the Semiconductor Test segment are charges in the following line items in the statements of operations:

	<b>For the Three Months Ended</b>		<b>For the Nine Months Ended</b>	
	<b>September 30, 2018</b>	<b>October 1, 2017</b>	<b>September 30, 2018</b>	<b>October 1, 2017</b>
	<b>(in thousands)</b>			
Cost of revenues inventory charge	\$ 2,071	\$ 743	\$ 5,851	\$ 3,686
Restructuring and other employee severance	1,716	375	7,657	242

Included in the System Test segment are charges in the following line item in the statements of operations:

	<b>For the Three Months Ended</b>		<b>For the Nine Months Ended</b>	
	<b>September 30, 2018</b>	<b>October 1, 2017</b>	<b>September 30, 2018</b>	<b>October 1, 2017</b>
	<b>(in thousands)</b>			
Cost of revenues inventory charge	\$ 237	\$ 251	\$ 812	\$ 1,609

Included in the Industrial Automation segment are charges in the following line items in the statements of operations:

	<b>For the Three Months Ended</b>		<b>For the Nine Months Ended</b>	
	<b>September 30, 2018</b>	<b>October 1, 2017</b>	<b>September 30, 2018</b>	<b>October 1, 2017</b>
	<b>(in thousands)</b>			
Restructuring and other acquisition related expenses and compensation	\$ 811	\$	\$ 811	\$
Cost of revenues inventory charge	323	130	680	130
Restructuring and other employee severance		206	288	1,150

Included in the Wireless Test segment are charges and credits in the following line items in the statements of operations:



	<b>For the Three Months Ended</b>		<b>For the Nine Months Ended</b>	
	<b>September 30, 2018</b>	<b>October 1, 2017</b>	<b>September 30, 2018</b>	<b>October 1, 2017</b>
	(in thousands)			
Cost of revenues inventory charge	\$ 716	\$ 735	\$ 2,179	\$ 1,729
Restructuring and other lease impairment		(393)		900

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Included in Corporate and Other are charges and credits in the following line items in the statements of operations:

	For the Three Months Ended		For the Nine Months Ended	
	September 30, 2018	October 1, 2017	September 30, 2018	October 1, 2017
	(in thousands)			
Restructuring and other Universal Robots contingent consideration adjustment	\$ (768)	\$ (286)	\$ (9,236)	\$ 1,847
Restructuring and other acquisition related expenses			3,318	
Restructuring and other property insurance recovery		(5,064)		(5,064)
Restructuring and other expenses related to Japan earthquake and impairment of fixed assets		755		755
Restructuring and other employee severance				530

**T. SHAREHOLDERS EQUITY*****Stock Repurchase Program***

In January 2018, Teradyne's Board of Directors cancelled the December 2016 stock repurchase program and authorized a new stock repurchase program for up to \$1.5 billion of common stock. Teradyne intends to repurchase \$750 million in 2018. During the nine months ended September 30, 2018, Teradyne repurchased 13.8 million shares of common stock for \$562.3 million at an average price of \$40.62 per share.

In December 2016, the Board of Directors approved a \$500 million share repurchase authorization which commenced on January 1, 2017. During the nine months ended October 1, 2017, Teradyne repurchased 4.6 million shares of common stock for \$151.8 million at an average price of \$32.66 per share.

The total price includes commissions and is recorded as a reduction to retained earnings.

***Dividend***

Holders of Teradyne's common stock are entitled to receive dividends when they are declared by Teradyne's Board of Directors.

In January 2018, May 2018 and August 2018, Teradyne's Board of Directors declared a quarterly cash dividend of \$0.09 per share. Dividend payments for the three and nine months ended September 30, 2018 were \$16.6 million and \$51.3 million, respectively.

In January 2017, May 2017 and August 2017, Teradyne's Board of Directors declared a quarterly cash dividend of \$0.07 per share. Dividend payments for the three and nine months ended October 1, 2017 were \$13.8 million and

\$41.7 million, respectively.

While Teradyne declared a quarterly cash dividend and authorized a share repurchase program, it may reduce or eliminate the cash dividend or share repurchase program in the future. Future cash dividends and stock repurchases are subject to the discretion of Teradyne's Board of Directors, which will consider, among other things, Teradyne's earnings, capital requirements and financial condition.

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**Table of Contents****Item 2: Management's Discussion and Analysis of Financial Condition and Results of Operations**

Statements in this Quarterly Report on Form 10-Q which are not historical facts, so called forward-looking statements, are made pursuant to the safe harbor provisions of Section 21E of the Securities Exchange Act of 1934, as amended. Investors are cautioned that all forward-looking statements involve risks and uncertainties, including those detailed in our filings with the Securities and Exchange Commission. See also Part II, Item 1A of this Quarterly Report on Form 10-Q and Part I, Item 1A Risk Factors in our Annual Report on Form 10-K for the year ended December 31, 2017. Readers are cautioned not to place undue reliance on these forward-looking statements which reflect management's analysis only as of the date hereof. We assume no obligation to update these forward-looking statements to reflect actual results or changes in factors or assumptions affecting forward-looking statements, except as may be required by law.

**Overview**

We are a leading global supplier of automation equipment for test and industrial applications. We design, develop, manufacture and sell automatic test systems used to test semiconductors, wireless products, data storage and complex electronics systems in the consumer electronics, wireless, automotive, industrial, computing, communications, and aerospace and defense industries. Our industrial automation products include collaborative robotic arms, autonomous mobile robots and advanced robotic control software used by global manufacturing and light industrial customers to improve quality, increase manufacturing and material handling efficiency and decrease manufacturing costs. Our automatic test equipment and industrial automation products and services include:

semiconductor test ( Semiconductor Test ) systems;

defense/aerospace ( Defense/Aerospace ) test instrumentation and systems, storage test ( Storage Test ) systems, and circuit-board test and inspection ( Production Board Test ) systems (collectively these products represent System Test );

industrial automation ( Industrial Automation ) products; and

wireless test ( Wireless Test ) systems.

We have a customer base which includes integrated device manufacturers ( IDMs ), outsourced semiconductor assembly and test providers ( OSATs ), original equipment manufacturers ( OEMs ), wafer foundries, fabless companies that design, but contract with others for the manufacture of integrated circuits ( ICs ), developers of wireless devices and consumer electronics, manufacturers of circuit boards, automotive suppliers, wireless product manufacturers, storage device manufacturers, aerospace and military contractors, and distributors that sell collaborative robots, autonomous mobile robots and wireless test systems.

The market for our test products is concentrated with a limited number of significant customers accounting for a substantial portion of the purchases of test equipment. One customer drives significant demand for our products both through direct sales and sales to the customer's supply partners. We expect that sales of our test products will continue to be concentrated with a limited number of significant customers for the foreseeable future.

The sales of our products and services are dependent, to a large degree, on customers who are subject to cyclical trends in the demand for their products. These cyclical periods have had, and will continue to have, a significant effect on our business because our customers often delay or accelerate purchases in reaction to changes in their businesses and to demand fluctuations in the semiconductor and electronics industries. Historically, these demand fluctuations have resulted in significant variations in our results of operations. During the first quarter of 2018, demand outlook for mobile device test capacity in 2018 declined sharply for our Semiconductor Test business. As a result, we reduced our revenue outlook for 2018 to reflect the demand decline.

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In 2015, we acquired Universal Robots A/S ( Universal Robots ), the leading supplier of collaborative robots, which are low-cost, easy-to-deploy and simple-to-program robots that work side by side with production workers to improve quality, increase manufacturing efficiency and decrease manufacturing costs. The acquisition of Universal Robots provides a growth engine to our business. The total purchase price for Universal Robots was approximately \$315 million, which included cash paid of approximately \$284 million and \$32 million in fair value of contingent consideration payable upon achievement of revenue and earnings targets through 2018. The contingent consideration related to revenue for the period from July 1, 2015 to December 31, 2017 in the amount of \$24.6 million was paid in March 2018. The remaining maximum contingent consideration that could be paid in 2019 is \$25 million.

On February 26, 2018, we acquired Energid Technologies Corporation ( Energid ) for a total purchase price of approximately \$27.6 million. Energid s technology enables and simplifies the programming of complex robotic motions used in a wide variety of end markets, ranging from heavy industry to healthcare, utilizing both traditional robots and collaborative robots.

On April 25, 2018, we acquired Mobile Industrial Robots ApS ( MiR ), a Danish limited liability company. The total purchase price for MiR was approximately \$197 million, which included cash paid of approximately \$146 million and \$51 million in fair value of contingent consideration payable upon achievement of revenue and earnings targets through 2020. The maximum amount of contingent consideration that could be paid is \$118.9 million.

Universal Robots, MiR and Energid are included in our Industrial Automation segment.

We believe our recent acquisitions have enhanced our opportunities for growth. We intend to continue to invest in our business, grow market share in our markets and expand further our addressable markets while tightly managing our costs.

## **Critical Accounting Policies and Estimates**

We have identified the policies which are critical to understanding our business and our results of operations. There have been no significant changes during the three and nine months ended September 30, 2018 to the items disclosed as our critical accounting policies and estimates in Management s Discussion and Analysis of Financial Condition and Results of Operations in our Annual Report on Form 10-K for the fiscal year ended December 31, 2017, except as noted below.

## **Preparation of Financial Statements and Use of Estimates**

The preparation of consolidated financial statements requires management to make estimates and judgments that affect the amounts reported in the financial statements. Actual results may differ significantly from these estimates.

## **Revenue from Contracts with Customers**

We adopted Accounting Standards Update ( ASU ) 2014-09, *Revenue from Contracts with Customers* ( ASC 606 ) on January 1, 2018 using the modified retrospective method for all contracts not completed as of the date of adoption. The reported results for 2018 reflect the application of ASC 606 while the reported results for 2017 were prepared under the guidance of ASC 605, *Revenue Recognition* ( ASC 605 ), which is also referred to herein as Legacy GAAP or the previous guidance. We recorded a net increase to retained earnings of \$12.7 million as of January 1, 2018 due to the cumulative impact of adopting ASC 606. Refer to Note B: Accounting Policies in our 2017 annual report on Form 10-K for the policies in effect for revenue prior to January 1, 2018. The adoption of ASC 606 represents a change in accounting principle that will more closely align revenue recognition with the delivery of our

hardware and services and will provide financial

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statement readers with enhanced disclosures. In accordance with ASC 606, revenue is recognized when or as a customer obtains control of promised goods or services. The amount of revenue recognized reflects the consideration to which we expect to be entitled to receive in exchange for fulfillment of the performance obligation. Our primary source of revenue will continue to be from the sale of systems, instruments, robots, and the delivery of services.

In accordance with ASC 606, we recognize revenues, when or as control is transferred to a customer. Our determination of revenue is dependent upon a five step process outlined below.

### *Step 1: Identify the contract with the customer*

We account for a contract with a customer when there is written approval, the contract is committed, the rights of the parties, including payment terms, are identified, the contract has commercial substance and consideration is probable of collection.

### *Step 2: Identify the performance obligations in the contract*

We periodically enter into contracts with customers in which a customer may purchase a combination of goods and services, such as products with extended warranty obligations. We determine performance obligations by assessing whether the products or services are distinct from the other elements of the contract. In order to be distinct, the product or service must perform either on its own or with readily available resources and must be separate within the context of the contract.

### *Step 3: Determine the transaction price*

We consider the amount stated on the face of the purchase order to be the transaction price. We do not have variable consideration which could impact the stated purchase price agreed to by us and the customer.

### *Step 4: Allocate the transaction price to the performance obligations in the contract*

Transaction price is allocated to each individual performance obligation based on the standalone selling price of that performance obligation. We use standalone transactions when available to value each performance obligation. If standalone transactions are not available, we will estimate the standalone selling price through market assessments or cost plus a reasonable margin analysis. Any discounts from standalone selling price are spread over each performance obligation.

### *Step 5: Recognize revenue when (or as) the entity satisfies a performance obligation*

In order to determine the appropriate timing for revenue recognition, we first determine if the transaction meets any of three criteria for over time recognition. If the transaction meets the criteria for over time recognition, we recognize revenue as the good or service is delivered. We use input variables such as hours or months utilized or costs incurred to determine the amount of revenue to recognize in a given period. Input variables are used as they best align consumption with benefit to the customer. For transactions that do not meet the criteria for over time recognition, we will recognize revenue at a point in time based on an assessment of the five criteria for transfer of control. We have concluded that revenue should be recognized when shipped or delivered based on contractual terms. Typically, acceptance of our products and services is a formality as we deliver similar systems, instruments, and robots to standard specifications. In cases where acceptance is not deemed a formality, we will wait for customer acceptance before recognizing revenue.



**Retirement Benefits**

In March 2017, the FASB issued ASU 2017-07, *Compensation - Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost*. We

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retrospectively adopted the new accounting guidance on presentation of net periodic pension costs and net periodic postretirement benefit costs in the first quarter of 2018. This guidance requires the service cost component of net benefit costs to be reported in the same line item in the consolidated statement of operations as other employee compensation costs. The non-service components of net benefit costs such as interest cost, expected return on assets, amortization of prior service cost, and actuarial gains or losses, are required to be reported separately outside of income or loss from operations. Following the adoption of this guidance, we continue to record the service cost component in the same line item as other employee compensation costs and the non-service components of net benefit costs such as interest cost, expected return on assets, amortization of prior service cost, and actuarial gains or losses are reported within other (income) expense, net. In the three months ended October 1, 2017, the retrospective adoption of this standard increased income from operations by \$0.4 million due to the removal of net actuarial pension losses and decreased non-operating (income) expense by the same amount with no impact to net income. In the nine months ended October 1, 2017, the retrospective adoption of this standard decreased income from operations by \$1.3 million due to the removal of net actuarial pension gains and increased non-operating (income) expense by the same amount with no impact to net income.

**Financial Assets and Financial Liabilities**

In January 2016, the FASB issued ASU 2016-01, *Financial Instruments Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities*. We adopted the new accounting guidance in the first quarter of 2018 using the modified retrospective approach. This guidance requires that changes in fair value of equity securities be accounted for directly in earnings. Previously, the changes in fair value were recorded in accumulated other comprehensive income on the balance sheet. We continue to record realized gains in interest income and realized losses in interest expense. The adoption of this new accounting guidance increased the January 1, 2018 retained earnings balance by \$3.1 million and decreased the accumulated other comprehensive income balance by the same amount.

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**SELECTED RELATIONSHIPS WITHIN THE CONDENSED CONSOLIDATED  
STATEMENTS OF OPERATIONS**

	For the Three Months Ended		For the Nine Months Ended	
	September 30, 2018	October 1, 2017	September 30, 2018	October 1, 2017
Percentage of revenues:				
Revenues:				
Products	83%	82%	83%	84%
Services	17	18	17	16
<b>Total revenues</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
Cost of revenues:				
Cost of products	34	34	35	36
Cost of services	7	8	7	7
<b>Total cost of revenues (exclusive of acquired intangible assets amortization shown separately below)</b>	<b>41</b>	<b>41</b>	<b>42</b>	<b>43</b>
Gross profit	59	59	58	57
Operating expenses:				
Selling and administrative	18	17	18	16
Engineering and development	14	15	14	14
Acquired intangible assets amortization	2	1	2	1
Restructuring and other		(1)		
<b>Total operating expenses</b>	<b>34</b>	<b>33</b>	<b>35</b>	<b>31</b>
<b>Income from operations</b>	<b>25</b>	<b>26</b>	<b>23</b>	<b>26</b>
Non-operating (income) expense:				
Interest income	(1)	(1)	(1)	(1)
Interest expense	1	1	1	1
Other (income) expense, net	1			
<b>Income before income taxes</b>	<b>25</b>	<b>25</b>	<b>23</b>	<b>26</b>
<b>Income tax provision</b>	<b>4</b>	<b>5</b>	<b>3</b>	<b>4</b>
<b>Net income</b>	<b>21%</b>	<b>21%</b>	<b>19%</b>	<b>22%</b>

**Results of Operations***Third Quarter 2018 Compared to Third Quarter 2017*

*Revenues*

Revenues by our four reportable segments were as follows:

	<b>For the Three Months Ended</b>		
	<b>September 30, 2018</b>	<b>October 1, 2017</b>	<b>Dollar Change</b>
	<b>(in millions)</b>		
Semiconductor Test	\$ 417.3	\$ 396.9	\$ 20.4
Industrial Automation	65.9	40.1	25.8
System Test	49.6	35.6	14.0
Wireless Test	34.3	30.9	3.4
Corporate and Other	(0.3)		(0.3)
	\$ 566.8	\$ 503.4	\$ 63.4

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The increase in Semiconductor Test revenues of \$20.4 million, or 5.1%, was driven primarily by an increase in the memory test sales, partially offset by lower mobility test segment sales. The increase in Industrial Automation revenues of \$25.8 million, or 64.0%, was due to higher demand for collaborative robotic arms and the acquisition of MiR, completed in April 2018. MiR added \$6.5 million of revenue in the three months ended September 30, 2018. The increase in System Test revenues of \$14.0 million, or 39.3%, was primarily due to higher sales in Storage Test of 3.5 hard disk drive and system level testers. The increase in Wireless Test revenues of \$3.4 million, or 11.0%, was primarily due to higher demand for next generation wireless products, partially offset by lower demand for connectivity test systems.

Revenues by country as a percentage of total revenues were as follows (1):

	<b>For the Three Months Ended</b>	
	<b>September 30, 2018</b>	<b>October 1, 2017</b>
Taiwan	25%	31%
China	21	14
United States	12	13
Europe	9	8
Japan	7	6
Malaysia	7	6
Singapore	7	4
Korea	6	9
Philippines	3	4
Thailand	2	2
Rest of World	1	3
	100%	100%

(1) Revenues attributable to a country are based on location of customer site.

**Gross Profit**

Our gross profit was as follows:

	<b>For the Three Months Ended</b>		<b>Dollar/ Point Change</b>
	<b>September 30, 2018</b>	<b>October 1, 2017</b>	
	<b>(in millions)</b>		
Gross profit	\$ 333.7	\$ 294.9	\$ 38.8
Percent of total revenues	58.9%	58.6%	0.3

Gross profit as a percent of revenue increased by 0.3 points, primarily due to favorable product mix.

We assess the carrying value of our inventory on a quarterly basis by estimating future demand and comparing that demand against on-hand and on-order inventory positions. Forecasted revenue information is obtained from sales and marketing groups and incorporates factors such as backlog and future revenue demand. This quarterly process identifies obsolete and excess inventory. Obsolete inventory, which represents items for which there is no demand, is fully reserved. Excess inventory, which represents inventory items that are not expected to be consumed during the next twelve quarters for our Semiconductor Test, System Test and Industrial Automation segments and the next four quarters for our Wireless Test segment, is written-down to estimated net realizable value.

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During the three months ended September 30, 2018, we recorded an inventory provision of \$3.3 million included in cost of revenues primarily due to downward revisions to previously forecasted demand levels. The \$3.3 million of total excess and obsolete provisions was primarily related to Semiconductor Test (\$2.1 million) and Wireless Test (\$0.7 million).

During the three months ended October 1, 2017, we recorded an inventory provision of \$1.9 million included in cost of revenues primarily due to downward revisions to previously forecasted demand levels for certain products. The \$1.9 million of total excess and obsolete provisions was primarily related to Semiconductor Test (\$0.7 million) and Wireless Test (\$0.7 million).

During the three months ended September 30, 2018 and October 1, 2017, we scrapped \$1.7 million and \$1.2 million of inventory, respectively. During the three months ended September 30, 2018 and October 1, 2017, we sold \$1.0 million and \$3.1 million of previously written-down or written-off inventory, respectively. As of September 30, 2018, we had inventory related reserves for inventory, which had been written-down or written-off totaling \$104.3 million. We have no pre-determined timeline to scrap the remaining inventory.

*Selling and Administrative*

Selling and administrative expenses were as follows:

	<b>For the Three Months Ended</b>		
	<b>September 30, 2018</b>	<b>October 1, 2017</b>	<b>Dollar Change</b>
	<b>(in millions)</b>		
Selling and administrative	\$ 100.2	\$ 86.1	\$ 14.1
Percent of total revenues	17.7%	17.1%	

The increase of \$14.1 million in selling and administrative expenses was due primarily to higher spending in the Industrial Automation segment due to higher sales and marketing spending in Universal Robots and due to the acquisitions of MiR and Energid in 2018.

*Engineering and Development*

Engineering and development expenses were as follows:

	<b>For the Three Months Ended</b>		
	<b>September 30, 2018</b>	<b>October 1, 2017</b>	<b>Dollar Change</b>
	<b>(in millions)</b>		
Engineering and development	\$ 77.0	\$ 77.0	\$
Percent of total revenues	13.6%	15.3%	

The decrease in System Test engineering expenses was offset by an increase in engineering spending in Industrial Automation.

*Acquired Intangible Assets Amortization*

Acquired intangible assets amortization expense was as follows:

	<b>For the Three Months Ended</b>		
	<b>September 30, 2018</b>	<b>October 1, 2017</b>	<b>Dollar Change</b>
	<b>(in millions)</b>		
Acquired intangible assets amortization	\$ 11.1	\$ 7.0	\$ 4.1
Percent of total revenues	2.0%	1.4%	



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Acquired intangible assets amortization expense increased primarily due to Industrial Automation segment acquisitions of MiR and Energid in 2018.

*Restructuring and Other*

During the three months ended September 30, 2018, we recorded \$1.7 million for employee severance charges, primarily in Semiconductor Test, and \$0.8 million of acquisition related compensation, partially offset by a \$0.8 million gain for the decrease in the fair value of the Universal Robots contingent consideration liability.

During the three months ended October 1, 2017, we recorded \$5.1 million of property insurance recovery related to the Japan earthquake, a \$0.4 million credit related to a previously impaired lease termination of a Wireless Test facility in Sunnyvale, CA, which was terminated in September 2017, and a \$0.3 million credit for the decrease in the fair value of the Universal Robots contingent consideration liability, partially offset by \$0.8 million of Japan earthquake related expenses and \$0.6 million recorded for employee severance charges, primarily in Semiconductor Test.

*Interest and Other*

	<b>For the Three Months Ended</b>		<b>Dollar Change</b>
	<b>September 30, 2018</b>	<b>October 1, 2017</b>	
	<b>(in millions)</b>		
Interest income	\$ (6.2)	\$ (4.5)	\$ (1.7)
Interest expense	5.6	5.4	0.2
Other (income) expense, net	3.4	0.8	2.6

Interest income increased by \$1.7 million due primarily to higher interest rates in 2018. Other (income) expense, net increased by \$2.6 million due primarily to higher foreign exchange losses in 2018.

*Income (Loss) Before Income Taxes*

	<b>For the Three Months Ended</b>		<b>Dollar Change</b>
	<b>September 30, 2018</b>	<b>October 1, 2017</b>	
	<b>(in millions)</b>		
Semiconductor Test	\$ 126.6	\$ 116.8	\$ 9.8
System Test	9.1	(3.3)	12.4
Wireless Test	7.8	7.5	0.4
Industrial Automation	0.9	3.4	(2.4)
Corporate and Other (1)	(3.6)	3.1	(6.7)
	\$ 140.8	\$ 127.4	\$ 13.4

- (1) Included in Corporate and Other are: contingent consideration adjustments, employee severance, interest income, interest expense, net foreign exchange gains and losses, intercompany eliminations, and acquisition related expenses.

The increase in income before income taxes in Semiconductor Test was driven primarily by an increase in memory test sales partially offset by lower mobility segment sales. The increase in income before income taxes in System Test was primarily due to higher sales in Storage Test of 3.5 hard disk drive and system level testers. The increase in income before income taxes in Wireless Test was primarily due to higher demand for next generation wireless products, partially offset by lower demand for connectivity test systems. The decrease in income before income taxes in Industrial Automation was primarily due to increased intangible assets amortization expense from the acquisitions of MiR and Energid in 2018.

**Table of Contents***Income Taxes*

The effective tax rate for the three months ended September 30, 2018 and October 1, 2017 was 14.8% and 18.8%, respectively. The decrease in the effective tax rate from the three months ended October 1, 2017 to the three months ended September 30, 2018 primarily resulted from the benefit of the U.S. foreign derived intangible income deduction. The tax rate effect of a projected shift in the geographic distribution of income, which increases the income subject to taxation in the U.S. relative to lower tax rate jurisdictions, was substantially offset by the reduction in the U.S. corporate tax rate from 35% to 21%.

*Nine Months 2018 Compared to Nine Months 2017**Revenues*

Revenues by our four reportable segments were as follows:

	<b>For the Nine Months Ended</b>		
	<b>September 30, 2018</b>	<b>October 1, 2017</b>	<b>Dollar Change</b>
	<b>(in millions)</b>		
Semiconductor Test	\$ 1,150.7	\$ 1,345.6	\$ (194.9)
Industrial Automation	176.8	115.7	61.1
System Test	162.3	112.1	50.2
Wireless Test	92.0	83.8	8.2
Corporate and Other	(0.6)		(0.6)
	\$ 1,581.2	\$ 1,657.2	\$ (76.0)

The decrease in Semiconductor Test revenues of \$194.9 million, or 14.5%, was driven primarily by a decrease in sales in the mobility, image sensor and microcontroller test segments, partially offset by an increase in memory test segment sales. The increase in Industrial Automation revenues of \$61.1 million, or 52.8%, was due to higher demand for collaborative robotic arms and the acquisition of MiR, completed in April 2018. MiR added \$11.1 million of revenue in the nine months ended September 30, 2018. The increase in System Test revenues of \$50.2 million, or 44.8%, was primarily due to higher sales of 3.5 hard disk drive and system level testers in Storage Test. The increase in Wireless Test revenues of \$8.2 million, or 9.8%, was primarily due to higher demand for next generation wireless products, partially offset by lower demand for connectivity test systems.

Revenues by country as a percentage of total revenues were as follows (1):

	<b>For the Nine Months Ended</b>	
	<b>September 30, 2018</b>	<b>October 1, 2017</b>
Taiwan	26%	38%

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China	18	11
United States	13	11
Europe	10	7
Korea	8	7
Japan	6	7
Malaysia	6	6
Singapore	5	5
Philippines	4	5
Thailand	3	2
Rest of World	1	1
	100%	100%

(1) Revenues attributable to a country are based on location of customer site.

**Table of Contents***Gross Profit*

Our gross profit was as follows:

	<b>For the Nine Months Ended</b>		<b>Dollar/ Point Change</b>
	<b>September 30, 2018</b>	<b>October 1, 2017</b>	
	<b>(in millions)</b>		
Gross profit	\$ 910.9	\$ 950.5	\$ (39.7)
Percent of total revenues	57.6%	57.4%	0.2

Gross profit as a percent of revenue increased by 0.2 points, primarily due to favorable product mix.

We assess the carrying value of our inventory on a quarterly basis by estimating future demand and comparing that demand against on-hand and on-order inventory positions. Forecasted revenue information is obtained from sales and marketing groups and incorporates factors such as backlog and future revenue demand. This quarterly process identifies obsolete and excess inventory. Obsolete inventory, which represents items for which there is no demand, is fully reserved. Excess inventory, which represents inventory items that are not expected to be consumed during the next twelve quarters for our Semiconductor Test, System Test and Industrial Automation segments and the next four quarters for our Wireless Test segment, is written-down to estimated net realizable value.

During the nine months ended September 30, 2018, we recorded an inventory provision of \$9.5 million included in cost of revenues primarily due to downward revisions to previously forecasted demand levels. The \$9.5 million of total excess and obsolete provisions was primarily related to Semiconductor (\$5.9 million) and Wireless Test (\$2.2 million).

During the nine months ended October 1, 2017, we recorded an inventory provision of \$7.2 million included in cost of revenues primarily due to downward revisions to previously forecasted demand levels for certain products. The \$7.2 million of total excess and obsolete provisions was primarily related to Semiconductor Test (\$3.7 million), Wireless Test (\$1.7 million), and System Test (\$1.6 million).

During the nine months ended September 30, 2018 and October 1, 2017, we scrapped \$3.2 million and \$4.1 million of inventory, respectively. During the nine months ended September 30, 2018 and October 1, 2017, we sold \$5.2 million and \$6.4 million of previously written-down or written-off inventory, respectively. As of September 30, 2018, we had inventory related reserves for inventory, which had been written-down or written-off totaling \$104.3 million. We have no pre-determined timeline to scrap the remaining inventory.

*Selling and Administrative*

Selling and administrative expenses were as follows:

	<b>For the Nine Months Ended</b>	<b>Dollar Change</b>
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	<b>September 30, 2018</b>	<b>October 1, 2017</b>	
		<b>(in millions)</b>	
Selling and administrative	\$ 290.1	\$ 261.0	\$ 29.1
Percent of total revenues	18.3%	15.8%	

The increase of \$29.1 million in selling and administrative expenses was due primarily to higher spending in Industrial Automation segment due to higher sales and marketing spending in Universal Robots and due to the acquisitions of MiR and Energid in 2018, partially offset by lower variable compensation.

**Table of Contents***Engineering and Development*

Engineering and development expenses were as follows:

	<b>For the Nine Months Ended</b>		
	<b>September 30, 2018</b>	<b>October 1, 2017</b>	<b>Dollar Change</b>
	<b>(in millions)</b>		
Engineering and development	\$ 226.8	\$ 235.2	\$ (8.4)
Percent of total revenues	14.3%	14.2%	

The decrease of \$8.4 million in engineering and development expenses was primarily due to lower variable compensation and lower spending in Storage Test and Semiconductor Test, partially offset by higher spending in Industrial Automation.

*Acquired Intangible Assets Amortization*

Acquired intangible assets amortization expense was as follows:

	<b>For the Nine Months Ended</b>		
	<b>September 30, 2018</b>	<b>October 1, 2017</b>	<b>Dollar Change</b>
	<b>(in millions)</b>		
Acquired intangible assets amortization	\$ 28.6	\$ 23.1	\$ 5.5
Percent of total revenues	1.8%	1.4%	

Acquired intangible assets amortization expense increased primarily due to Industrial Automation segment acquisitions of MiR and Energid in 2018.

*Restructuring and Other*

During the nine months ended September 30, 2018, we recorded \$7.9 million for employee severance charges, primarily in Semiconductor Test and Industrial Automation, and \$4.1 million for acquisition related expenses and compensation, partially offset by a \$9.2 million gain for the decrease in the fair value of the Universal Robots contingent consideration liability.

During the nine months ended October 1, 2017, we recorded \$2.0 million for employee severance charges, primarily in Industrial Automation and Corporate, \$1.8 million for the increase in the fair value of the Universal Robots contingent consideration liability, \$0.9 million for a lease impairment of a Wireless Test facility in Sunnyvale, CA, which was terminated in September 2017, and \$0.8 million of Japan earthquake related expenses, partially offset by \$5.1 million of property insurance recovery related to the Japan earthquake.

*Interest and Other*

	<b>For the Nine Months Ended</b>		
	<b>September 30, 2018</b>	<b>October 1, 2017</b>	<b>Dollar Change</b>
	<b>(in millions)</b>		
Interest income	\$ (17.6)	\$ (11.3)	\$ (6.3)
Interest expense	18.1	16.3	1.8
Other (income) expense, net	4.4	(0.6)	5.0



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Interest income increased by \$6.3 million due primarily to higher interest rates in 2018. Interest expense increased by \$1.8 million due primarily to realized losses on sales of marketable securities. Other (income) expense, net increased by \$5 million due primarily to higher foreign exchange losses in 2018 and pension actuarial losses in 2018 compared to pension actuarial gains in 2017.

*Income (Loss) Before Income Taxes*

	<b>For the Nine Months Ended</b>		<b>Dollar Change</b>
	<b>September 30, 2018</b>	<b>October 1, 2017</b>	
		<b>(in millions)</b>	
Semiconductor Test	\$ 305.9	\$ 426.1	\$ (120.2)
System Test	35.3	(11.8)	47.1
Wireless Test	18.6	13.5	5.1
Industrial Automation	(1.2)	(0.3)	(0.9)
Corporate and Other (1)	(1.9)	(1.2)	(0.7)
	\$ 356.7	\$ 426.3	\$ (69.7)

(1) Included in Corporate and Other are: contingent consideration adjustments, employee severance, interest income, interest expense, net foreign exchange gains and losses, intercompany eliminations, and acquisition related expenses.

The decrease in income before income taxes in Semiconductor Test was driven primarily by lower revenues due to a decrease in sales in the mobility, image sensor, and microcontroller test segments, partially offset by an increase in memory test segment sales. The increase in income before income taxes in System Test was primarily due to higher sales in Storage Test of 3.5 hard disk drive and system level testers. The increase in income before income taxes in Wireless Test was primarily due to higher demand for next generation wireless products, partially offset by lower demand for connectivity test systems. The increase in loss before income taxes in Industrial Automation was primarily due to an increase in intangible assets amortization expense from the acquisitions of MiR and Energid in 2018.

*Income Taxes*

The effective tax rate for the nine months ended September 30, 2018 and October 1, 2017 was 13.6% and 14.7%, respectively. The decrease in the effective tax rate from the nine months ended October 1, 2017 to the nine months ended September 30, 2018 primarily resulted from the benefit of the U.S. foreign derived intangible income deduction. The tax rate effect of a projected shift in the geographic distribution of income, which increases the income subject to taxation in the U.S. relative to lower tax rate jurisdictions, was substantially offset by the reduction in the U.S. corporate tax rate from 35% to 21%.

**Table of Contents****Contractual Obligations**

The following table reflects our contractual obligations as of September 30, 2018:

	Total	Payments Due by Period				Other
		Less than 1 year	1-3 years	3-5 years	More than 5 years	
Convertible debt	\$ 460,000	\$	\$	\$	\$ 460,000	\$
Purchase obligations	275,593	263,286	12,307			
Transition tax payable (1)	160,896	13,535	25,641	25,707	96,013	
Retirement plans contributions	131,004	4,592	8,875	9,334	108,203	
Operating lease obligations	76,220	18,454	32,100	15,719	9,947	
Fair value of contingent consideration	60,942	35,532	25,410			
Interest on long-term debt	31,625	5,750	11,500	11,500	2,875	
Other long-term liabilities reflected on the balance sheet under GAAP (2)	80,091		29,387			50,704
<b>Total</b>	<b>\$ 1,276,371</b>	<b>\$ 341,149</b>	<b>\$ 145,220</b>	<b>\$ 62,260</b>	<b>\$ 677,038</b>	<b>\$ 50,704</b>

- (1) Represents our estimate of a provisional tax amount for the transition tax liability associated with our accumulated foreign earnings as a result of the enactment of the Tax Reform Act on December 22, 2017.
- (2) Included in other long-term liabilities are liabilities for customer advances, extended warranty, uncertain tax positions, deferred tax liabilities and other obligations. For certain long-term obligations, we are unable to provide a reasonably reliable estimate of the timing of future payments relating to these obligations and therefore we included these amounts in the column marked Other.

**Liquidity and Capital Resources**

Our cash, cash equivalents and marketable securities balances decreased by \$579.3 million in the nine months ended September 30, 2018 to \$1,324.4 million.

Operating activities during the nine months ended September 30, 2018 provided cash of \$290.5 million. Changes in operating assets and liabilities used cash of \$151.1 million. This was due to a \$140.6 million increase in operating assets and a \$10.4 million decrease in operating liabilities.

The increase in operating assets was primarily due to a \$77.8 million increase in accounts receivable due to increased sales and the impact of the new revenue recognition standard, a \$34.1 million increase in inventories, and a \$28.7 million increase in prepayments and other assets.

The decrease in operating liabilities was due to a \$26.1 million decrease in accrued employee compensation due primarily to first quarter payments related to variable compensation, a \$33.2 million decrease in income taxes, and \$3.2 million of retirement plan contributions, partially offset by a \$22.9 million increase in other accrued liabilities, a

\$19.4 million increase in accounts payable, and a \$9.8 million increase in deferred revenue and customer advance payments.

Investing activities during the nine months ended September 30, 2018 provided cash of \$719.0 million, due to \$843.2 million and \$934.1 million in proceeds from sales and maturities of marketable securities, respectively, proceeds from a government subsidy of \$7.9 million for property, plant and equipment and proceeds from life insurance of \$1.1 million related to the cash surrender value from the cancellation of Teradyne owned life insurance policies, partially offset by \$809.5 million used for purchases of marketable securities, \$169.5 million used for the acquisitions of MiR and Energid, and \$88.3 million used for purchases of property, plant and equipment.

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Financing activities during the nine months ended September 30, 2018 used cash of \$626.0 million, due to \$562.3 million used for the repurchase of 13.8 million shares of common stock at an average price of \$40.62 per share, \$51.3 million used for dividend payments, \$19.8 million used for payments related to net settlements of employee stock compensation awards, and \$13.6 million used for a payment related to Universal Robots acquisition contingent consideration, partially offset by \$21.0 million from the issuance of common stock under employee stock purchase and stock option plans.

Operating activities during the nine months ended October 1, 2017 provided cash of \$479.0 million. Changes in operating assets and liabilities provided cash of \$6.3 million. This was due to a \$50.8 million increase in operating liabilities partially offset by a \$44.5 million increase in operating assets.

The increase in operating assets was primarily due to a \$75.6 million increase in accounts receivable due to higher sales, partially offset by a \$23.8 million decrease in inventories and a \$7.4 million decrease in prepayments and other assets.

The increase in operating liabilities was due to a \$20.5 million increase in other accrued liabilities, a \$15.8 million increase in income taxes, a \$3.0 million increase in accrued employee compensation due primarily to variable compensation, and a \$34.5 million increase in deferred revenue and customer advance payments, partially offset by an \$18.1 million decrease in accounts payable and \$4.9 million of retirement plan contributions.

Investing activities during the nine months ended October 1, 2017 used cash of \$188.3 million, due to \$1,036.5 million used for purchases of marketable securities and \$73.2 million used for purchases of property, plant and equipment, partially offset by \$473.3 million and \$443.2 million in proceeds from maturities and sales of marketable securities, respectively, and proceeds from property insurance of \$5.1 million related to the Japan earthquake.

Financing activities during the nine months ended October 1, 2017, used cash of \$182.7 million, due to \$151.8 million used for the repurchase of 4.6 million shares of common stock at an average price of \$32.66 per share, \$41.7 million used for dividend payments, \$12.6 million used for payments related to net settlements of employee stock compensation awards and \$1.1 million used for a payment related to AIT acquisition contingent consideration, partially offset by \$24.5 million from the issuance of common stock under employee stock purchase and stock option plans.

In January 2018, May 2018 and August 2018, our Board of Directors declared a quarterly cash dividend of \$0.09 per share. Dividend payments for the nine months ended September 30, 2018 were \$51.3 million.

In January 2017 and May 2017 and August 2017, our Board of Directors declared a quarterly cash dividend of \$0.07 per share. Dividend payments for the nine months ended October 1, 2017 were \$41.7 million.

In January 2018, our Board of Directors cancelled the December 2016 stock repurchase program and authorized a new stock repurchase program for up to \$1.5 billion of common stock. We intend to repurchase \$750 million in 2018. During the nine months ended September 30, 2018, we repurchased 13.8 million shares of common stock for \$562.3 million at an average price of \$40.62 per share.

In December 2016, our Board of Directors approved a \$500 million share repurchase authorization, which commenced on January 1, 2017. During the nine months ended October 1, 2017, we repurchased 4.6 million shares of common stock for \$151.8 million at an average price of \$32.66 per share.

While we declared a quarterly cash dividend and authorized a share repurchase program, we may reduce or eliminate the cash dividend or share repurchase program in the future. Future cash dividends and stock repurchases are subject to the discretion of our Board of Directors, which will consider, among other things, our earnings, capital requirements and financial condition.

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We believe our cash, cash equivalents and marketable securities balance will be sufficient to pay our quarterly dividend, execute our authorized share repurchase program and meet our working capital and expenditure needs for at least the next twelve months. Inflation has not had a significant long-term impact on earnings.

**Equity Compensation Plans**

As discussed in Note O: Stock Based Compensation in our 2017 Annual Report on Form 10-K, we have a 1996 Employee Stock Purchase Plan and a 2006 Equity and Cash Compensation Incentive Plan (the 2006 Equity Plan ).

The purpose of the 1996 Employee Stock Purchase Plan is to encourage stock ownership by all eligible employees of Teradyne. The purpose of the 2006 Equity Plan is to provide equity ownership and compensation opportunities in Teradyne to our employees, officers, directors, consultants and/or advisors. Both plans were approved by our shareholders.

**Recently Issued Accounting Pronouncements**

On January 26, 2017, the FASB issued ASU 2017-04, *Intangibles – Goodwill and Other (Topic 350): Simplifying the Accounting for Goodwill Impairment*. The new guidance removes Step 2 of the goodwill impairment test, which requires a hypothetical purchase price allocation. Goodwill impairment will now be the amount by which a reporting unit's carrying value exceeds its fair value, not to exceed the carrying amount of goodwill. All other goodwill impairment guidance will remain largely unchanged. Entities will continue to have the option to perform a qualitative assessment to determine if a quantitative impairment test is necessary. The same one-step impairment test will be applied to goodwill at all reporting units, even those with zero or negative carrying amounts. Entities will be required to disclose the amount of goodwill at reporting units with zero or negative carrying amounts. The revised guidance will be applied prospectively, and is effective in 2020. Early adoption is permitted for any impairment tests performed after January 1, 2017. We are currently evaluating the impact of this ASU on our financial position, results of operations and statements of cash flows.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*. The guidance in this ASU supersedes the lease recognition requirements in Accounting Standards Codification (ASC) Topic 840, *Leases*. The new standard establishes a right-of-use (ROU) model that requires a lessee to record an ROU asset and a lease liability on the balance sheet for all leases with terms longer than twelve months. Leases will be classified as either finance or operating, with classification affecting the pattern of expense recognition in the statements of operations. The new standard is effective for annual periods beginning after December 15, 2018 with early adoption permitted. A modified retrospective transition approach is required for lessees for capital and operating leases existing at, or entered into after, the beginning of the earliest comparative period presented in the financial statements. In July 2018, the FASB issued ASU 2018-11, *Leases (Topic 842): Targeted Improvements*, which amends ASU 2016-02. The new ASU offers an additional transition method by which entities may elect not to recast the comparative periods presented in financial statements in the period of adoption and allows lessors to elect a practical expedient to not separate lease and non-lease components when certain conditions are met. This ASU has the same transition requirements and effective date as ASU 2016-02. We elected not to recast the comparative periods presented in financial statements in the period of adoption. We continue to assess potential changes from this ASU, but expect the adoption of this guidance to have a material impact on our consolidated balance sheets due to the requirement to recognize lease ROU assets and corresponding liabilities related to leases, and immaterial impact on our results of operations.

**Item 3: Quantitative and Qualitative Disclosures about Market Risks**

For Quantitative and Qualitative Disclosures about Market Risk affecting Teradyne, see Part 2 Item 7a, Quantitative and Qualitative Disclosures about Market Risks, in our Annual Report on Form 10-K filed with the SEC on March 1, 2018. There were no material changes in our exposure to market risk from those set forth in our Annual Report for the fiscal year ended December 31, 2017.

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In addition to market risks described in our Annual Report on Form 10-K, we have an equity price risk related to the fair value of our convertible senior unsecured notes issued in December 2016. In December 2016, Teradyne issued \$460 million aggregate principal amount of 1.25% convertible senior unsecured notes (the Notes) due December 15, 2023. As of September 30, 2018, the Notes had a fair value of \$599.4 million. The table below provides a sensitivity analysis of hypothetical 10% changes of Teradyne's stock price as of the end of the third quarter of 2018 and the estimated impact on the fair value of the Notes. The selected scenarios are not predictions of future events, but rather are intended to illustrate the effect such event may have on the fair value of the Notes. The fair value of the Notes is subject to equity price risk due to the convertible feature. The fair value of the Notes will generally increase as Teradyne's common stock price increases and will generally decrease as the common stock price declines in value. The change in stock price affects the fair value of the convertible senior notes, but does not impact Teradyne's financial position, cash flows or results of operations due to the fixed nature of the debt obligation. Additionally, we carry the Notes at face value less unamortized discount on our balance sheet, and we present the fair value for required disclosure purposes only. In connection with the offering of the Notes we also sold warrants to the option counterparties. These transactions have been accounted for as an adjustment to our shareholders' equity. The convertible note hedge transactions are expected to reduce the potential equity dilution upon conversion of the Notes. The warrants along with any shares issuable upon conversion of the Notes will have a dilutive effect on our earnings per share to the extent that the average market price of our common stock for a given reporting period exceeds the applicable strike price or conversion price of the warrants or Notes, respectively.

Hypothetical Change in Teradyne Stock Price	Fair Value	Hypothetical percentage	
		Estimated change in fair value	increase (decrease) in fair value
10% Increase	\$ 637,900	\$ 38,462	6.4%
No Change	599,438		
10% Decrease	555,606	(43,832)	(7.3)

See Note G: Debt for further information.

**Item 4: Controls and Procedures**

As of the end of the period covered by this report, our management, with the participation of our Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures pursuant to Rule 13a-15(b) or Rule 15d-15(f) promulgated under the Exchange Act. Based upon that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that, as of the end of the period covered by this report, our disclosure controls and procedures were effective in ensuring that material information required to be disclosed in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, including ensuring that such material information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure.



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**PART II. OTHER INFORMATION**

**Item 1: Legal Proceedings**

We are subject to various 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 1A: Risk Factors**

In addition to other information set forth in this Form 10-Q, you should carefully consider the factors discussed in Part I, Item 1A: Risk Factors in our Annual Report on Form 10-K for the year ended December 31, 2017, which could materially affect our business, financial condition or future results. The risk factors described in our Annual Report on Form 10-K remain applicable to our business.

The risks described in our Annual Report on Form 10-K are not the only risks that we face. Additional risks and uncertainties not currently known to us or that we currently deem to be immaterial also may materially adversely affect our business, financial condition and/or operating results.

*The implementation of tariffs and export controls on our products may have a material impact on our business.*

Our business operations and supply chain are global and may be disrupted by the implementation of tariffs and export controls on our products.

On July 6, 2018 and August 23, 2018, the United States Trade Representative imposed a 25% tariff on two lists of products, including certain Teradyne products that are made in China and imported into the United States. We have submitted requests for exclusion of our products from the tariff, but there is no assurance that our requests will be approved. We have implemented operational changes that will mitigate the impact of the 25% tariff on the import of our impacted products into the United States. As a result, we do not expect that the tariff will have a material adverse effect on our business, financial condition or results of operations.

On September 24, 2018, the United States Trade Representative imposed a 10% tariff on many additional products made in China and imported into the United States. The tariff rate is expected to increase to 25% in January 2019. At this time, we do not expect that this tariff will significantly impact any Teradyne products and thus the tariff should not have a material adverse effect on our business, financial condition or results of operations.

On June 29, 2018, the United States Department of Commerce announced that it has commenced a review of new export controls focusing on emerging and foundational technologies. While there is uncertainty as to the technologies that will be covered, the new export controls could cover technologies used in one or more Teradyne products and, therefore, could impact the sale of certain Teradyne products and have a material adverse effect on our business, financial condition or results of operations.

The United States Department of Commerce from time to time has taken action to restrict the access of U.S. origin technologies to Chinese companies by adding them to the Entity List under U.S. Export Administration Regulations. The addition to the Entity List of Chinese companies who are customers or potential customers could impact the sale and/or support of certain Teradyne products to those customers or potential customers and, therefore, have a material

adverse effect on our business, financial condition or results of operations.

In addition to the actions taken by the United States, China has implemented retaliatory tariffs on products made in the United States and imported into China, including certain Teradyne products. We plan to assess and implement, if appropriate, operational changes that would mitigate the impact of the retaliatory tariffs. However, notwithstanding our efforts, the retaliatory tariffs or other trade restrictions implemented by China could disrupt our business operations, sales and supply chain and, therefore, have a material adverse effect on our business, financial condition or results of operations.

**Table of Contents****Item 2: Unregistered Sales of Equity Securities and Use of Proceeds**

In January 2018, our Board of Directors cancelled the December 2016 stock repurchase program and authorized a new stock repurchase program for up to \$1.5 billion of common stock. We intend to repurchase \$750 million in 2018. During the nine months ended September 30, 2018, we repurchased 13.8 million shares of common stock for \$562.3 million at an average price of \$40.62 per share.

In December 2016, our Board of Directors approved a \$500 million share repurchase authorization, which commenced on January 1, 2017. During the nine months ended October 1, 2017, we repurchased 4.3 million shares of common stock for \$151.8 million at an average price of \$32.66 per share.

The following table includes information with respect to repurchases we made of our common stock during the three months ended September 30, 2018 (in thousands except per share price):

Period	(a) Total Number of Shares (or Units) Purchased	(b) Average Price Paid per Share (or Unit)	(c) Total Number (of Approximate Dollar Shares (or Units) Value) of Shares (or Purchased as Part of Publicly Announced Plans or Programs		(d) Maximum Number of Shares (or Units) that may Yet Be Purchased Under the Plans or Programs
			Plans or Programs	Plans or Programs	Plans or Programs
July 2, 2018 - July 29, 2018	1,532	\$ 39.69	1,531	\$	1,078,445
July 30, 2018 - August 26, 2018	1,515	\$ 42.23	1,515	\$	1,014,490
August 27, 2018 - September 30, 2018	1,960	\$ 39.18	1,959	\$	937,737
	5,007	(1) \$ 40.26	(1)		5,005

(1) Includes 2,225 shares at an average price of \$40.46 withheld from employees for the payment of taxes. We satisfy U.S. federal and state minimum withholding tax obligations due upon the vesting and the conversion of restricted stock units into shares of our common stock, by automatically withholding from the shares being issued, a number of shares with an aggregate fair market value on the date of such vesting and conversion that would satisfy the minimum withholding amount due.

**Item 4: Mine Safety Disclosures**

Not Applicable

**Item 6: Exhibits**

Exhibit	Description
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**Number**

31.1	<u>Certification of Principal Executive Officer, pursuant to Rule 13a-14(a) of Securities and Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith)</u>
31.2	<u>Certification of Principal Financial Officer, pursuant to Rule 13a-14(a) of Securities and Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith)</u>
32.1	<u>Certification of Principal Executive Officer pursuant to 18 U.S.C. 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (furnished herewith)</u>
32.2	<u>Certification of Principal Financial Officer pursuant to 18 U.S.C. 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (furnished herewith)</u>
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document

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**SIGNATURES**

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.

**TERADYNE, INC.**  
Registrant

/s/ GREGORY R. BEECHER  
**Gregory R. Beecher**

**Vice President,**

**Chief Financial Officer and Treasurer**

**(Duly Authorized Officer**

**and Principal Financial Officer)**

**November 9, 2018**