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	**04-2272148**
(State or Other Jurisdiction of Incorporation or Organization)	**(I.R.S. Employer Identification No.)**
600 Riverpark Drive, North Reading, Massachusetts	**01864**
(Address of Principal Executive Offices)	**(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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PART I

Item 1: Financial Statements

TERADYNE, INC.

CONDENSED CONSOLIDATED BALANCE SHEETS

(Unaudited)

	September 30, 2018	December 31, 2017
	(in thousands, except per share amount)	
ASSETS		
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
Total current assets	1,879,395	2,270,281
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
Total assets	$ 2,882,487	$ 3,109,545
LIABILITIES		
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

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
Total liabilities	1,214,727	1,155,899
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
Total shareholders equity	1,667,760	1,953,646
Total liabilities and shareholders equity	$ 2,882,487	$ 3,109,545

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

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

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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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TERADYNE, INC.

CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS

(Unaudited)

	For the Nine Months Ended	
	September 30, 2018	October 1, 2017
	(in thousands)	
Cash flows from operating activities:		
Net income	$ 307,991	$ 363,616
Adjustments to reconcile net income to net cash provided by operating activities:		
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
Changes in operating assets and liabilities, net of businesses acquired:		
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
Net cash provided by operating activities	290,505	479,022
Cash flows from investing activities:		
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)	
Net cash provided by (used for) investing activities	719,046	(188,282)

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 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.

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Revenue recognized in accordance with ASC 606 was $564.5 million and $1,571.0 million for the three and nine months ended September 30, 2018, respectively. For the three and nine months ended September 30, 2018, Teradyne also recognized $2.3 million and $10.2 million, respectively, in revenue on leases of Teradyne systems, which are accounted for outside of ASC 606.

Disaggregation of Revenue

The following table provides information about disaggregated revenue by primary geographical market, major product line and timing of revenue recognition.

For the Three Months Ended September 30, 2018

	Semiconductor Test		**System Test**			**Industrial Automation**			**Wireless Test**	**Corporate and Other**	**Consolidated**
	System on a chip (SOC)	**Memory**	**Defense/ Aerospace**	**Storage Test**	**Production Board Test**	**Universal Robots**	**Mobile Industrial Robots**	**Energid**			
					(in thousands)						
Americas											
Point in Time	$ 8,866	$ 4,600	$ 15,423	$	$ 2,625	$ 17,834	$ 1,810	$ 104	$ 3,820	$ (272)	$ 54,810
Over Time	8,810	686	6,037		789	190		167	146		16,825
Europe, Middle East and Africa											
Point in Time	9,728	2,080	161		3,223	26,445	2,647		1,504		45,788
Over Time	5,336	301	505		1,510	282		457	318		8,709
Asia Pacific											
Point in Time	258,898	76,429	931	9,916	5,201	13,656	2,087	10	26,851		393,979
Over Time	36,722	2,794	212	2,116	885	145		79	1,494		44,447
Lease Revenue	2,047				72				171		2,290
Total	$ 330,407	$ 86,890	$ 23,269	$ 12,032	$ 14,305	$ 58,552	$ 6,544	$ 817	$ 34,304	$ (272)	$ 566,848

For the Nine Months Ended September 30, 2018

Semiconductor Test	**System Test**	**Consolidated**

	SOC	Memory	Defense/ Aerospace	Storage Test	Production Board Test	Industrial Automation			Wireless Test	Corporate and Other	
						Universal Robots	Mobile Industrial Robots	Energid			
					(in thousands)						
Americas											
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
Europe, Middle East and Africa											
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
Asia Pacific											
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
Lease Revenue	9,162				337				684		10,183
Total	$ 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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Extended Warranty

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.

	September 30, 2018	**January 1, 2018 (as adjusted)**	**Increase/ Decrease**
		(in thousands)	
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.

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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:

	September 30, 2018		
	As Reported	Adjustments to Recognize under Legacy GAAP	Legacy GAAP
	(in thousands, except per share amount)		
Assets			
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
Liabilities			
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
Shareholders equity			
Accumulated deficit	$ (23,243)	$ (4,117)	$ (27,360)

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Condensed Consolidated Statement of Operation:

	For the Three Months ended September 30, 2018		
	As Reported	Adjustments to Recognize under Legacy GAAP	Legacy GAAP
	(in thousands, except per share amount)		
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

	For the Nine Months ended September, 2018		
	As Reported	Adjustments to Recognize under Legacy GAAP	Legacy GAAP
	(in thousands, except per share amount)		
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.

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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:

	Purchase Price Allocation (in thousands)	
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:

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

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:

	For the Three Months Ended	For the Nine Months Ended	
	October 1, 2017	September 30, 2018	October 1, 2017
		(in thousands)	
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.

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E. INVENTORIES

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

	September 30, 2018	December 31, 2017
	(in thousands)	
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			
	Quoted Prices in Active Markets for Identical Instruments (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
	(in thousands)			
Assets				
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
Total	$ 781,223	$ 543,191	$	$ 1,324,414
Liabilities				
Contingent consideration	$	$	$ 60,942	$ 60,942
Derivative liabilities		455		455
Total	$	$ 455	$ 60,942	$ 61,397

Reported as follows:

	(Level 1)	(Level 2)	(Level 3)	Total
	(in thousands)			
Assets				
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

Prepayments		3		3
Total	$ 781,223	$ 543,191	$	$ 1,324,414
Liabilities				
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)			
Assets				
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
Total	$ 427,720	$ 1,476,417	$	$ 1,904,137
Liabilities				
Contingent consideration	$	$	$ 45,102	$ 45,102
Derivative liabilities		446		446
Total	$	$ 446	$ 45,102	$ 45,548

Reported as follows:

	(Level 1)	(Level 2)	(Level 3)	Total
	(in thousands)			
Assets				
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
Total	$ 427,720	$ 1,476,417	$	$ 1,904,137
Liabilities				
Other accrued liabilities	$	$ 446	$	$ 446
Contingent consideration			24,497	24,497

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)			
Assets				
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
Liabilities				
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				
	Available-for-Sale				Fair Market Value of Investments with Unrealized Losses
	Cost	Unrealized Gain	Unrealized (Loss)	Fair Market Value	
	(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:

	Cost	Unrealized Gain	Unrealized (Loss)	Fair Market Value	Fair Market Value of Investments with Unrealized Losses
			(in thousands)		
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:

	December 31, 2017 Available-for-Sale				
	Cost	Unrealized Gain	Unrealized (Loss) (in thousands)	Fair Market Value	Fair Market Value of Investments with Unrealized Losses
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:

	Cost	Unrealized Gain	Unrealized (Loss) (in thousands)	Fair Market Value	Fair Market Value of Investments with Unrealized Losses
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:

	September 30, 2018	
	Cost	Fair Market Value
	(in thousands)	
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
Total	$ 485,404	$ 482,652

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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:

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

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.

	Location of Losses (Gains) Recognized in Statement 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)			
Derivatives not designated as hedging instruments:					
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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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:

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

	For the Three Months Ended		For the Nine Months Ended	
	September 30, 2018	October 1, 2017	September 30, 2018	October 1, 2017
	(in thousands)			
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
Total interest expense on the convertible debt	$ 4,958	$ 4,772	$ 14,744	$ 14,223

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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