Item 8: ***Financial Statements and Supplementary Data***

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Shareholders of Teradyne, Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Teradyne, Inc. and its subsidiaries (the "Company") as of December 31, 2022 and 2021, and the related consolidated statements of operations, comprehensive income, convertible common shares and shareholders' equity and cash flows for each of the three years in the period ended December 31, 2022, including the related notes and schedule of valuation and qualifying accounts for each of the three years in the period ended December 31, 2022 appearing under Item 15(c) (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2022, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2022 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2022, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Changes in Accounting Principles

As discussed in Note B to the consolidated financial statements, the Company changed the manner in which it accounts for convertible debt in 2022.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management's Annual Report on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an

understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Critical Audit Matters

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that (i) relates to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Conversions of Senior Unsecured Notes

As described in Notes B and J to the consolidated financial statements, during 2022, forty two holders of the Company's convertible senior unsecured notes, originally issued on December 12, 2016, converted $66.8 million of the senior unsecured notes. The Company may satisfy its conversion obligation by paying cash for the principal amount of the senior unsecured notes and paying or delivering cash, shares of the Company's common stock or a combination of cash and shares of the Company's common stock, at management's election for the amount in excess of principal.

The principal considerations for our determination that performing procedures relating to the conversions of senior unsecured notes is a critical audit matter are (i) the high degree of audit effort in performing procedures and evaluating management's calculation of the conversion transactions and the related settlement calculations and (ii) the audit effort involved the use of professionals with specialized skill and knowledge.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's review of conversion transactions related to the Company's senior unsecured notes, which included controls related to the conversion values and related settlement calculations. These procedures also included, among others, on a test basis (i) evaluating the appropriateness of the conversion and settlement accounting; (ii) testing the completeness and accuracy of the conversion values; and (iii) recalculating the settlement amounts. Professionals with specialized skill and knowledge were used to assist in the evaluation of the appropriateness of the conversion and settlement accounting.

/s/ PricewaterhouseCoopers LLP
Boston, Massachusetts
February 22, 2023

We have served as the Company's auditor since 1968.

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TERADYNE, INC.

CONSOLIDATED BALANCE SHEETS

	December 31, 2022	December 31, 2021
	(in thousands, except per share amount)	
ASSETS		
Current assets:		
Cash and cash equivalents	$ 854,773	$ 1,122,199
Marketable securities	39,612	244,231
Accounts receivable, less allowance for credit losses of $1,955 and $2,012 in 2022 and 2021, respectively	491,145	550,749
Inventories, net	325,019	243,330
Prepayments	532,962	406,266
Other current assets	14,404	9,452
Total current assets	2,257,915	2,576,227
Property, plant and equipment, net	418,683	387,240
Operating lease right-of-use assets, net	73,734	68,807
Marketable securities	110,777	133,858
Deferred tax assets	142,784	102,428
Retirement plans assets	11,761	15,110
Other assets	28,925	24,096
Acquired intangible assets, net	53,478	75,635
Goodwill	403,195	426,024
Total assets	$ 3,501,252	$ 3,809,425
LIABILITIES		
Current liabilities:		
Accounts payable	$ 139,722	$ 153,133
Accrued employees' compensation and withholdings	212,266	253,667
Deferred revenue and customer advances	148,285	146,185
Other accrued liabilities	112,271	124,187
Operating lease liabilities	18,594	19,977
Income taxes payable	65,010	88,789
Current debt	50,115	19,182
Total current liabilities	746,263	805,120
Retirement plans liabilities	116,005	151,141
Long-term deferred revenue and customer advances	45,131	54,921
Deferred tax liabilities	3,267	6,327
Long-term other accrued liabilities	15,981	15,497
Long-term operating lease liabilities	64,176	56,178
Long-term income taxes payable	59,135	67,041
Debt	—	89,244
Total liabilities	1,049,958	1,245,469
Commitments and contingencies (Note M)		
Mezzanine equity:		
Convertible common shares	—	1,512
SHAREHOLDERS' EQUITY		
Common stock, $0.125 par value, 1,000,000 shares authorized, 155,759 and 162,251 shares issued and outstanding at December 31, 2022 and 2021, respectively	19,470	20,281
Additional paid-in capital	1,755,963	1,811,545
Accumulated other comprehensive loss	(49,868)	(5,948)
Retained earnings	725,729	736,566
Total shareholders' equity	2,451,294	2,562,444
Total liabilities, convertible common shares and shareholders' equity	$ 3,501,252	$ 3,809,425

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

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TERADYNE, INC.

CONSOLIDATED STATEMENTS OF OPERATIONS

	Years Ended December 31,		
	2022	2021	2020
	(in thousands, except per share amount)		
Revenues:			
Products	$ 2,591,572	$ 3,196,575	$ 2,690,906
Services	563,473	506,306	430,563
Total revenues	3,155,045	3,702,881	3,121,469
Cost of revenues:			
Cost of products	1,042,555	1,300,106	1,157,476
Cost of services	245,339	196,119	178,252
Total cost of revenues (exclusive of acquired intangible assets amortization shown separately below)	1,287,894	1,496,225	1,335,728
Gross profit	1,867,151	2,206,656	1,785,741
Operating expenses:			
Selling and administrative	558,103	547,559	464,769
Engineering and development	440,591	427,609	374,964
Acquired intangible assets amortization	19,333	21,456	30,803
Restructuring and other	17,185	9,312	(13,202)
Total operating expenses	1,035,212	1,005,936	857,334
Income from operations	831,939	1,200,720	928,407
Non-operating (income) expenses:			
Interest income	(6,379)	(2,627)	(5,982)
Interest expense	3,719	17,820	24,182
Other (income) expense, net	(5,786)	24,572	9,192
Income before income taxes	840,385	1,160,955	901,015
Income tax provision	124,884	146,366	116,868
Net income	$ 715,501	$ 1,014,589	$ 784,147
Net income per common share:			
Basic	$ 4.52	$ 6.15	$ 4.72
Diluted	$ 4.22	$ 5.53	$ 4.28
Weighted average common shares—basic	158,434	164,960	166,120
Weighted average common shares—diluted	169,734	183,625	183,042

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

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TERADYNE, INC.

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

	Years Ended December 31,		
	2022	2021	2020
		(in thousands)	
Net income	$715,501	$1,014,589	$784,147
Other comprehensive (loss) income, net of tax:			
Foreign currency translation adjustment, net of tax of $0, $0, $0, respectively	(29,031)	(36,207)	48,903
Available-for-sale marketable securities:			
Unrealized (losses) gains on marketable securities arising during period, net of tax of $(3,388), $(578), $1,629, respectively	(12,666)	(2,255)	5,839
Less: Reclassification adjustment for losses (gains) included in net income, net of tax of $25, $(277), $(665), respectively	301	(995)	(2,365)
	(12,365)	(3,250)	3,474
Cash flow hedges:			
Unrealized losses arising during period, net of tax of $(708), $0, $0, respectively	(2,517)	—	—
Defined benefit post-retirement plan:			
Amortization of prior service credit, net of tax $(2), $(2), $(2), respectively	(7)	(7)	(7)
Other comprehensive (loss) income	(43,920)	(39,464)	52,370
Comprehensive income	$671,581	$ 975,125	$836,517

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

TERADYNE, INC.

CONSOLIDATED STATEMENTS OF CONVERTIBLE COMMON SHARES AND SHAREHOLDERS' EQUITY

	Convertible Common Shares Value	Shareholders' Equity: Common Stock Shares	Common Stock Par Value	Additional Paid-in Capital	Accumulated Other Comprehensive (Loss) Income	(Accumulated Deficit) Retained Earnings	Total Shareholders' Equity
				(in thousands)			
Year Ended December 31, 2019	$ —	166,410	$ 20,801	$1,720,129	$ (18,854)	$ (241,918)	$ 1,480,158
Net issuance of common stock under stock-based plans		1,230	154	4,696			4,850
Stock-based compensation expense				44,285			44,285
Repurchase of common stock		(1,517)	(190)			(88,275)	(88,465)
Cash dividends ($0.40 per share)						(66,540)	(66,540)
Convertible common shares	3,787			(3,787)			(3,787)
Net income						784,147	784,147
Other comprehensive income					52,370		52,370
Year Ended December 31, 2020	3,787	166,123	20,765	1,765,323	33,516	387,414	2,207,018
Net issuance of common stock under stock-based plans		899	113	(225)			(112)
Stock-based compensation expense				45,632			45,632
Repurchase of common stock		(4,771)	(597)			(599,403)	(600,000)
Cash dividends ($0.40 per share)						(66,034)	(66,034)
Settlements of convertible notes		8,148	1,018	984,622			985,640
Exercise of convertible notes hedge call options		(8,148)	(1,018)	(986,082)			(987,100)
Convertible common shares	(2,275)			2,275			2,275
Net income						1,014,589	1,014,589
Other comprehensive loss					(39,464)		(39,464)
Year Ended December 31, 2021	1,512	162,251	20,281	1,811,545	(5,948)	736,566	2,562,444
Net issuance of common stock under stock-based plans		761	96	(4,471)			(4,375)
Stock-based compensation expense				48,466			48,466
Repurchase of common stock		(7,253)	(907)			(751,175)	(752,082)
Cash dividends ($0.44 per share)						(69,763)	(69,763)
Settlements of convertible notes		1,495	187	(442)			(255)
Exercise of convertible notes hedge call options		(1,495)	(187)	187			—
Convertible common shares	(1,512)			1,512			1,512
Cumulative effect of change in accounting principle related to convertible debt				(100,834)		94,600	(6,234)
Net income						715,501	715,501
Other comprehensive loss					(43,920)		(43,920)
Year Ended December 31, 2022	$ —	155,759	$ 19,470	$1,755,963	$ (49,868)	$ 725,729	$ 2,451,294

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

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TERADYNE, INC.

CONSOLIDATED STATEMENTS OF CASH FLOWS

	Years Ended December 31,		
	2022	2021	2020
		(in thousands)	
Cash flows from operating activities:			
Net income	$ 715,501	$ 1,014,589	$ 784,147
Adjustments to reconcile net income from operations to net cash provided by operating activities:			
Depreciation	90,763	91,073	80,119
Stock-based compensation	48,228	45,643	44,906
Provision for excess and obsolete inventory	31,452	15,475	17,534
Amortization	19,912	34,412	46,624
Deferred taxes	(38,693)	(17,305)	(15,688)
Retirement plans actuarial (gains) losses	(25,584)	(2,217)	10,284
Losses (gains) on investments	9,985	(6,410)	(7,898)
Gains on sale of asset	(3,410)	—	—
Loss on convertible debt conversion	—	28,828	—
Contingent consideration fair value adjustment	—	(7,227)	(23,271)
Other	2,353	271	1,557
Changes in operating assets and liabilities, net of businesses acquired:			
Accounts receivable	50,628	(57,778)	(129,451)
Inventories	(80,809)	6,495	(8,438)
Prepayments and other assets	(140,713)	(175,846)	(64,418)
Accounts payable and other accrued expenses	(60,507)	129,499	73,167
Deferred revenue and customer advances	(6,233)	9,873	39,974
Retirement plan contributions	(5,116)	(5,405)	(5,382)
Income taxes	(29,834)	(5,604)	25,169
Net cash provided by operating activities	577,923	1,098,366	868,935
Cash flows from investing activities:			
Purchases of property, plant and equipment	(163,249)	(132,472)	(184,977)
Purchases of marketable securities	(287,409)	(661,781)	(900,196)
Proceeds from maturities of marketable securities	222,941	660,148	479,678
Proceeds from sales of marketable securities	268,058	266,466	35,006
Proceeds from sale of asset	3,410	—	—
Purchase of investment and acquisition of business	—	(12,000)	149
Proceeds from insurance	—	—	546
Net cash provided by (used for) investing activities	43,751	120,361	(569,794)
Cash flows from financing activities:			
Repurchase of common stock	(752,082)	(600,000)	(88,465)
Payments of convertible debt principal	(66,759)	(342,990)	—
Dividend payments	(69,711)	(65,977)	(66,482)
Payments related to net settlement of employee stock compensation awards	(33,170)	(32,303)	(23,014)
Issuance of common stock under stock purchase and stock option plans	28,733	32,686	28,527
Payments of contingent consideration	—	—	(8,852)
Net cash used for financing activities	(892,989)	(1,008,584)	(158,286)
Effects of exchange rate changes on cash and cash equivalents	3,889	(2,065)	(658)
(Decrease) increase in cash and cash equivalents	(267,426)	208,078	140,197
Cash and cash equivalents at beginning of year	1,122,199	914,121	773,924
Cash and cash equivalents at end of year	$ 854,773	$ 1,122,199	$ 914,121
Supplementary disclosure of cash flow information:			
Cash paid for:			
Interest	$ 1,498	$ 4,236	$ 6,435
Income taxes	$ 193,246	$ 172,134	$ 106,577
Non-cash investing activities:			
Capital expenditures incurred but not yet paid:	$ 1,826	$ 1,973	$ 3,666

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

TERADYNE, INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

A. THE COMPANY

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

- semiconductor test ("Semiconductor Test") systems;
- storage and system level test ("Storage Test") systems, defense/aerospace ("Defense/Aerospace") test instrumentation and systems, and circuit-board test and inspection ("Production Board Test") systems (collectively these products represent "System Test");
- wireless test ("Wireless Test") systems; and
- robotics ("Robotics") products.

B. ACCOUNTING POLICIES

The consolidated financial statements include the accounts of Teradyne and its wholly owned subsidiaries. All significant intercompany balances and transactions are eliminated. Certain prior years' amounts were reclassified to conform to the current year presentation.

Preparation of Financial Statements and Use of Estimates

The preparation of consolidated financial statements requires management to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent liabilities. On an on-going basis, management evaluates its estimates, including those related to inventories, investments, goodwill, intangible and other long-lived assets, accounts receivable, income taxes, deferred tax assets and liabilities, pensions, warranties, contingent consideration liabilities, and loss contingencies. Management bases its estimates on historical experience and on appropriate and customary assumptions that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Due to the COVID-19 pandemic, there has been uncertainty and disruption in the global economy and our markets. Management is not aware of any specific event or circumstance that would require an update to its estimates or judgments or a revision of the carrying value of its assets or liabilities as of the date of issuance of this Annual Report on Form 10-K. These estimates may change, as new events occur and additional information is obtained. Actual results may differ significantly from these estimates under different assumptions or conditions.

Revenue Recognition

Revenue from Contracts with Customers

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.

- 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.
- Teradyne periodically enters into contracts with 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.
- Teradyne determines the transaction price to be the amount of consideration to which Teradyne expects to be entitled to.
- 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.
- 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.

Performance Obligations

Products

Teradyne products consist 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, wireless test systems and robotics products. Teradyne's hardware is recognized at a point in time upon transfer of control to the customer.

Services

Teradyne services consist of extended warranties, training and application support, service agreements, post contract customer support ("PCS") and replacement parts. Each service is recognized based on relative standalone selling price. Extended warranty, training and support, service agreements and PCS are recognized over time based on the period of service. Replacement parts are recognized at a point in time upon transfer of control to the customer.

Teradyne does not allow customer returns or provide refunds to customers for any products or services. Teradyne products include 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. Cost related to warranties are included in cost of revenues when product revenues are recognized.

As of December 31, 2022 and 2021, deferred revenue and customer advances consisted of the following and are included in the short and long-term deferred revenue and customer advances:

	2022	2021
	(in thousands)	
Maintenance, service and training	$ 78,089	$ 81,826
Customer advances, undelivered elements and other	59,147	55,112
Extended warranty	56,180	64,168
Total deferred revenue and customer advances	$ 193,416	$ 201,106

Product Warranty

Teradyne generally provides a one-year warranty on its products, commencing upon installation, acceptance or shipment. A provision is recorded upon revenue recognition to cost of revenues for estimated warranty expense based on historical experience. Related costs are charged to the warranty accrual as incurred. The balance below is included in other accrued liabilities:

	Amount (in thousands)
Balance at December 31, 2019	$ 8,996
Accruals for warranties issued during the period	28,490
Accruals related to pre-existing warranties	821
Settlements made during the period	(21,674)
Balance at December 31, 2020	16,633
Accruals for warranties issued during the period	35,727
Accruals related to pre-existing warranties	(6,846)
Settlements made during the period	(20,937)
Balance at December 31, 2021	24,577
Accruals for warranties issued during the period	21,851
Accruals related to pre-existing warranties	(5,618)
Settlements made during the period	(26,629)
Balance at December 31, 2022	$ 14,181

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:

	Amount (in thousands)
Balance at December 31, 2019	$ 30,677
Deferral of new extended warranty revenue	41,694
Recognition of extended warranty deferred revenue	(20,442)
Balance at December 31, 2020	51,929
Deferral of new extended warranty revenue	43,597
Recognition of extended warranty deferred revenue	(31,358)
Balance at December 31, 2021	64,168
Deferral of new extended warranty revenue	33,686
Recognition of extended warranty deferred revenue	(41,674)
Balance at December 31, 2022	$ 56,180

Accounts Receivable and Allowance for Doubtful Accounts

Trade accounts receivable are recorded at the invoiced amount and do not bear interest. Teradyne maintains allowances for doubtful accounts for estimated losses resulting from the inability of its customers to make required payments. Estimated allowances for doubtful accounts are reviewed periodically taking into account the customer's recent payment history, the customer's current financial statements and other information regarding the customer's credit worthiness. Account balances are written off against the allowance when it is determined the receivable will not be recovered.

Teradyne sells certain trade accounts receivables on a non-recourse basis to third-party financial institutions pursuant to factoring agreements. Teradyne accounts for these transactions as sales of receivables and presents cash proceeds as a cash provided by operating activities in the consolidated statements of cash flows. Total trade accounts receivable sold under the factoring agreements were $93.9 million and $111.3 million during 2022 and 2021, respectively. Factoring fees for the sales of receivables are recorded in interest expense and are not material.

Inventories

Inventories are stated at the lower of cost (first-in, first-out basis) or net realizable value. On a quarterly basis, Teradyne uses consistent methodologies to evaluate all inventories for net realizable value. Teradyne records a provision for both excess and obsolete inventory when such write-downs or write-offs are identified through the quarterly review process. The inventory valuation is based upon assumptions about future demand, product mix and possible alternative uses.

Investments

Teradyne accounts for its investments in debt and equity securities in accordance with the provisions of ASC 320-10, "*Investments—Debt and Equity Securities*." ASC 320-10 requires that certain debt and equity securities be classified into one of three categories; trading, available-for-sale or held-to-maturity securities. 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 twelve months ended December 31, 2022 and 2021.

Teradyne measures its debt and equity investments at fair value, in accordance with ASC 820-10 , "*Fair Value Measurements and Disclosures.*" ASC 820-10 defines fair value as 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 and 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.

Teradyne's debt investments are classified as Level 2, and equity investments 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.

Financial Assets and Financial Liabilities

Teradyne records changes in fair value of equity securities directly in earnings and realized gains and losses in other (income) expense, net, in accordance with ASU 2016-01, "*Financial Instruments—Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities*."

Prepayments

Prepayments consist of the following:

	2022	2021
	(in thousands)	
Contract manufacturer and supplier prepayments	$ 491,105	$ 364,478
Prepaid taxes	18,625	15,090
Prepaid maintenance and other services	14,545	13,660
Other prepayments	8,687	13,038
Total prepayments	$ 532,962	$ 406,266

Retirement and Postretirement Plans

Teradyne recognizes net actuarial gains and losses and the change in the fair value of the plan assets in its operating results in the year in which they occur or upon any interim remeasurement of the plans. Teradyne calculates the expected return on plan assets using the fair value of the plan assets. Actuarial gains and losses are generally measured annually as of December 31 and, accordingly, recorded during the fourth quarter of each year or upon any interim remeasurement of the plans.

Teradyne reports net periodic pension cost and net periodic postretirement benefit costs in accordance with ASU 2017-07, "*Compensation—Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost.*" The service cost component of net benefit costs is 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 reported within other (income) expense, net.

Goodwill, Intangible and Long-Lived Assets

Teradyne accounts for goodwill and intangible assets in accordance with ASC 350-10, "*Intangibles-Goodwill and Other.*" Intangible assets are amortized over their estimated useful economic life and are carried at cost less accumulated amortization. Goodwill is assessed for impairment at least annually in the fourth quarter, as of December 31, on a reporting unit basis, or more frequently when events and circumstances occur indicating that the recorded goodwill may be impaired.

In accordance with ASC 350-10, Teradyne has the option to perform a qualitative assessment to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount. If Teradyne determines this is the case, Teradyne is required to perform a quantitative goodwill impairment test to identify potential goodwill impairment and measure the amount of goodwill impairment loss to be recognized. If Teradyne determines that it is more likely than not that the fair value of the reporting unit is greater than its carrying amounts, a quantitative goodwill impairment test is not required.

In accordance with ASC 360-10, "*Impairment or Disposal of Long-Lived 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. Each impairment test is based on a comparison of the estimated undiscounted cash flows to the recorded value of the asset. If impairment is indicated, the asset is written down to its estimated fair value based on a discounted cash flows analysis. The cash flows estimates used to determine the impairment, if any, contain management's best estimates using appropriate assumptions and projections at that time.

Business Combination

Teradyne recognizes the tangible and intangible assets acquired and liabilities assumed based on their estimated fair values at the date of acquisition. The fair value of identifiable intangible assets is based on detailed cash flows valuations that use information and assumptions provided by management. Teradyne estimates the fair value of contingent consideration at the time of the acquisition using all pertinent information known to us at the time to assess the probability of payment of contingent amounts or through the use of a Monte Carlo simulation model. Teradyne allocates any excess purchase price over the fair value of the net tangible and intangible assets acquired and liabilities assumed to goodwill. The assumptions used in the valuations for our acquisitions may differ materially from actual results depending on performance of the acquired businesses and other factors. While Teradyne believes the assumptions used were appropriate, different assumptions in the valuation of assets acquired and liabilities assumed could have a material impact on the timing and extent of impact on our statements of operations. Goodwill is assigned to reporting units as of the date of the related acquisition.

Property, Plant and Equipment

Property, plant and equipment are stated at cost and depreciated over the estimated useful lives of the assets. Leasehold improvements and major renewals are capitalized and included in property, plant and equipment accounts, while expenditures for maintenance and repairs and minor renewals are charged to expense. When assets are retired, the assets and related accumulated depreciation are removed from the accounts and any resulting gain or loss is reflected in the consolidated statements of operations.

Teradyne provides for depreciation of its assets principally on the straight-line method with the cost of the assets being charged to expense over their useful lives as follows:

Buildings	40 years
Building improvements	5 to 10 years
Leasehold improvements	Lesser of lease term or 10 years
Furniture and fixtures	10 years
Test systems manufactured internally	6 years
Machinery, equipment and software	3 to 5 years

Test systems manufactured internally are used by Teradyne for customer evaluations and manufacturing and support of its customers. Teradyne depreciates the test systems manufactured internally over a six-year life to cost of revenues, engineering and development, and selling and administrative expenses. Teradyne often sells internally manufactured test equipment to customers. Upon the sale of an internally manufactured test system, the net book value of the system is transferred to inventory and expensed as cost of revenues. The net book value of internally manufactured test systems sold in the years ended December 31, 2022, 2021, and 2020 was $6.6 million, $16.6 million, and $7.3 million, respectively.

Convertible Debt

Teradyne adopted Accounting Standards Update ("ASU") ASU 2020-06 – "Debt—Debt with Conversion and Other Options and Derivatives and Hedging—Contracts in Entity's Own Equity," on January 1, 2022 using the modified retrospective method of adoption. As a result of adoption, Teradyne recorded an increase of $1.4 million to current debt for unsettled shares, an increase of $1.8 million to deferred tax assets, an increase of $6.6 million to long-term debt for unamortized debt discount, and an increase to retained earnings of $94.6 million for the reclassification of the equity component. Mezzanine equity representing unsettled shares value was reduced to zero and additional paid-in capital was reduced by $100.8 million. In accordance with ASU 2020-06, Teradyne accounts for a convertible debt instrument as a single liability measured at its amortized cost, as long as no other features require bifurcation and recognition as derivatives. Unsettled shares are recorded in current debt, and there is no recognition of a debt discount, which was previously amortized to interest expense. Settled shares reduce the outstanding debt balance in an amount equal to the cash paid, but do not result in any gain or loss on extinguishment. We use the if-converted method in the diluted EPS calculation for convertible instruments.

Leases

Under ASC 842, a contract is or contains a lease when Teradyne has the right to control the use of an identified asset. Teradyne determines if an arrangement is a lease at inception of the contract, which is the date on which the terms of the contract are agreed to and the agreement creates enforceable rights and obligations. The commencement date of the lease is the date that the lessor makes an underlying asset available for use by Teradyne. As of December 31, 2022, Teradyne does not have material leases that have not yet commenced.

Teradyne determines if the lease is an operating or finance lease at the lease commencement date based upon the terms of the lease and the nature of the asset. The lease term used to calculate the lease liability includes options to extend or terminate the lease when it is reasonably certain that the option will be exercised.

The lease liability is measured at the present value of future lease payments, discounted using the discount rate for the lease at the commencement date. As Teradyne is typically unable to determine the implicit rate, Teradyne uses an incremental borrowing rate based on the lease term and economic environment at commencement date. Teradyne initially measures payments based on an index by using the applicable rate at lease commencement. Variable payments that do not depend on an index are not included in the lease liability and are recognized as they are incurred. The right-of-use ("ROU") asset is initially measured as the amount of lease liability, adjusted for any initial lease costs, prepaid lease payments, and reduced by any lease incentives.

Teradyne's contracts often include non-lease components such as common area maintenance. Teradyne elected the practical expedient to account for the lease and non-lease components as a single lease component. For leases with a term of one year or less, Teradyne has elected not to record the lease asset or liability. The lease payments are recognized in the consolidated statement of earnings on a straight-line basis over the lease term. Teradyne includes lease costs within cost of revenues and operating expenses. See Note I: "Leases."

Engineering and Development Costs

Teradyne's products are highly technical in nature and require a large and continuing engineering and development effort. Software development costs incurred prior to the establishment of technological feasibility are charged to expense. Software development costs incurred subsequent to the establishment of technological feasibility are capitalized until the product is available for release to customers. To date, the period between achieving technological feasibility and general availability of the product has been short and software development costs eligible for capitalization have not been material. Engineering and development costs are expensed as incurred and consist primarily of salaries, contractor fees including non-recurring engineering charges related to product design, allocated facility costs, depreciation, and tooling costs.

Stock Compensation Plans and Employee Stock Purchase Plan

Stock-based compensation expense is based on the grant-date fair value estimated in accordance with the provisions of ASC 718-10, "*Compensation-Stock Compensation*." Teradyne elects to account for forfeitures by applying an estimated forfeiture rate and recognizes compensation costs only for those stock-based compensation awards expected to vest. Under its stock compensation plans, Teradyne has granted 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").

Excess tax benefits or tax deficiencies are recognized as a discrete tax benefit or discrete tax expense to the current income tax provision in Teradyne's consolidated statements of operations, all excess tax benefits related to share-based payments are reported as cash flows from operating activities, and all cash payments made to taxing authorities on the employees' behalf for withheld shares are presented as financing activities on the statement of cash flows.

Income Taxes

Deferred tax assets and liabilities are determined based on differences between financial reporting and tax basis of assets and liabilities and are measured using the enacted tax rates and laws that will be in effect when the differences are expected to reverse. The measurement of deferred tax assets is reduced by a valuation allowance if it is more likely than not that some or all of the deferred tax assets will not be realized. Teradyne performed the required assessment of positive and negative evidence regarding the realization of the net deferred tax assets in accordance with ASC 740, *"Accounting for Income Taxes."* This assessment included the evaluation of scheduled reversals of deferred tax liabilities, estimates of projected future taxable income and tax-planning strategies. Although realization is not assured, based on its assessment, Teradyne concluded that it is more likely than not that such assets, net of the existing valuation allowance, will be realized.

Advertising Costs

Teradyne expenses all advertising costs as incurred. Advertising costs were $17.3 million, $13.4 million and $12.8 million in 2022, 2021 and 2020, respectively.

Translation of Non-U.S. Currencies

The functional currency for all non-U.S. subsidiaries is the U.S. dollar, except for Universal Robots, MiR and Lemsys for which the local currency is its functional currency. All foreign currency denominated monetary assets and liabilities are remeasured on a monthly basis into the functional currency using exchange rates in effect at the end of the period. All foreign currency denominated non-monetary assets and liabilities are remeasured into the functional currency using historical exchange rates. Net foreign exchange gains and losses resulting from remeasurement are included in other (income) expense, net. For Universal Robots, MiR and Lemsys, assets and liabilities are translated into U.S. dollars using exchange rates in effect at the end of the period. Revenues and expense amounts are translated using an average of exchange rates in effect during the period. Translation adjustments are recorded within accumulated other comprehensive income (loss) on the balance sheet.

Net foreign exchange gains and losses resulting from remeasurement are included in other (income) expense, net. For the years ended December 31, 2022, 2021 and 2020, losses (gains) from the remeasurement of the monetary assets and liabilities denominated in foreign currencies were $10.8 million, $(2.1) million, and $2.6 million, respectively.

These amounts do not reflect the corresponding (gains) losses from foreign exchange contracts. See Note H: "Financial Instruments" regarding foreign exchange contracts.

Net Income per Common Share

Basic net income per common share is calculated by dividing net income by the weighted average number of common shares outstanding during the period. Except where the result would be anti-dilutive, diluted net income per common share is calculated by dividing net income by the sum of the weighted average number of common shares plus common stock equivalents, if applicable.

With respect to its convertible debt issued in 2016, Teradyne is required to settle the principal of the convertible debt in cash; accordingly, the principal amount is excluded from the determination of diluted earnings per share. As a result, Teradyne is accounting for the conversion spread using the treasury stock method.

Comprehensive Income

Comprehensive income includes net income, unrealized pension and postretirement prior service costs and benefits, unrealized gains and losses on investments in debt marketable securities, unrealized gains and losses on cash flow hedge and foreign currency translation adjustment.

C. RECENTLY ISSUED ACCOUNTING PRONOUNCEMENTS

For the year ended December 31, 2022, there were no recently issued accounting pronouncements that had, or are expected to have, a material impact to our consolidated financial statements.

D. INVESTMENT IN OTHER COMPANY

On June 1, 2021, Teradyne invested $12.0 million in MachineMetrics, Inc. ("MachineMetrics"), a private company that develops and sells products to improve manufacturing performance through automated machine data collection, alerting, and analytics. Teradyne's investment in MachineMetrics aligns with its strategy of providing and investing in leading edge products for automating industrial production processes in growing markets. The investment was recorded at cost and is evaluated for impairment or an indication of changes in fair value resulting from observable price changes in orderly transactions for the identical or similar investment of the same issuer on a quarterly basis. At December 31, 2022, the value of the investment was $12.0 million, and there was no change during the year ended December 31, 2022.

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E. REVENUE

Disaggregation of Revenue

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

	Semiconductor Test			Robotics				
	System-on-a-chip	**Memory**	**System Test**	**Universal Robots**	**Mobile Industrial Robots**	**Wireless Test**	**Corporate and Eliminations**	**Total**
				(in thousands)				
For the Year Ended December 31, 2022 (1)								
Timing of Revenue Recognition								
Point in Time	$1,445,238	$344,693	$402,074	$317,514	$ 73,812	$189,040	$ 251	$2,772,622
Over Time	261,646	29,013	67,272	8,218	3,594	12,680	—	382,423
Total	$1,706,884	$373,706	$469,346	$325,732	$ 77,406	$201,720	$ 251	$3,155,045
Geographical Market								
Asia Pacific	$1,514,964	$360,176	$294,350	$ 73,930	$ 15,724	$140,767	$ —	$2,399,911
Americas	122,575	11,987	146,040	112,203	35,213	47,350	251	475,619
Europe, Middle East and Africa	69,345	1,543	28,956	139,599	26,469	13,603	—	279,515
Total	$1,706,884	$373,706	$469,346	$325,732	$ 77,406	$201,720	$ 251	$3,155,045
For the Year Ended December 31, 2021 (1)								
Timing of Revenue Recognition								
Point in Time	$1,989,979	$365,441	$409,383	$305,512	$ 60,884	$204,247	$ —	$3,335,446
Over Time	256,751	30,171	58,356	5,670	3,839	12,648	—	367,435
Total	$2,246,730	$395,612	$467,739	$311,182	$ 64,723	$216,895	$ —	$3,702,881
Geographical Market								
Asia Pacific	$2,076,647	$381,444	$306,812	$ 81,456	$ 12,919	$172,103	$ —	$3,031,381
Americas	102,702	10,665	135,230	94,897	26,069	36,173	—	405,736
Europe, Middle East and Africa	67,381	3,503	25,697	134,829	25,735	8,619	—	265,764
Total	$2,246,730	$395,612	$467,739	$311,182	$ 64,723	$216,895	$ —	$3,702,881
For the Year Ended December 31, 2020 (1)								
Timing of Revenue Recognition								
Point in Time	$1,659,414	$363,324	$348,454	$214,212	$ 55,533	$163,834	$ (604)	$2,804,167
Over Time	217,975	18,884	61,275	7,269	2,717	9,182	—	317,302
Total	$1,877,389	$382,208	$409,729	$221,481	$ 58,250	$173,016	$ (604)	$3,121,469
Geographical Market								
Asia Pacific	$1,744,593	$364,000	$258,521	$ 60,277	$ 6,471	$143,969	$ —	$2,577,831
Americas	77,671	12,999	128,482	64,164	30,186	22,544	(604)	335,442
Europe, Middle East and Africa	55,125	5,209	22,726	97,040	21,593	6,503	—	208,196
Total	$1,877,389	$382,208	$409,729	$221,481	$ 58,250	$173,016	$ (604)	$3,121,469

(1) Includes $8.2 million, $13.2 million and $10.0 million in 2022, 2021 and 2020, respectively, for leases of Teradyne's systems recognized outside of ASC 606: *"Revenue from Contracts with Customers."*

Contract Balances

For the years ended December 31, 2022, 2021 and 2020, Teradyne recognized $112.4 million, $102.5 million and $91.0 million, respectively, that was included within the deferred revenue and customer advances balances at the beginning of the period. This revenue primarily relates to undelivered hardware, extended warranties, training, application support, and post contract support. Each of these represents a distinct performance obligation. As of December 31, 2022, Teradyne had $1,235.2 million of unsatisfied performance obligations. Teradyne expects to recognize 89% of the remaining performance obligation in the next 12 months and 11% in 1-3 years.

F. INVENTORIES

Inventories, net consisted of the following at December 31, 2022 and 2021:

	2022	2021
	(in thousands)	
Raw material	$ 256,065	$ 155,641
Work-in-process	37,982	37,740
Finished goods	30,972	49,949
	$ 325,019	$ 243,330

Inventory reserves for the years ended December 31, 2022 and 2021 were $136.8 million and $114.1 million, respectively.

G. PROPERTY, PLANT AND EQUIPMENT

Property, plant and equipment, net consisted of the following at December 31, 2022 and 2021:

	2022	2021
	(in thousands)	
Land	$ 18,481	$ 17,207
Buildings	128,991	126,468
Machinery, equipment and software	1,059,880	994,828
Furniture and fixtures	29,929	28,743
Leasehold improvements	64,631	64,110
Construction in progress	22,470	8,105
	1,324,382	1,239,461
Less: accumulated depreciation	905,699	852,221
	$ 418,683	$ 387,240

Depreciation of property, plant and equipment for the years ended December 31, 2022, 2021, and 2020 was $90.8 million, $91.1 million, and $80.1 million, respectively. As of December 31, 2022 and 2021, the gross book value included in machinery and equipment for internally manufactured test systems being leased by customers was $5.8 million and $13.4 million, respectively. As of December 31, 2022 and 2021, the accumulated depreciation on these test systems was $5.6 million and $8.7 million, respectively.

H. 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

Teradyne's equity and debt mutual funds are classified as Level 1 and available-for-sale debt securities are classified as Level 2. Contingent consideration is classified as Level 3. 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 years ended December 31, 2022 and 2021, there were no transfers in or out of Level 1, Level 2, or Level 3 financial instruments.

Realized gains recorded in 2022, 2021, and 2020 were $0.8 million, $3.1 million, and $4.6 million, respectively. Realized losses recorded in 2022 and 2020 were $1.0 million and $0.3 million, respectively. No realized losses were recorded in 2021. Realized gains and losses are included in other (income) expense, net.

Unrealized gains on equity securities recorded during the years ended December 31, 2022, 2021 and 2020 were $1.9 million, $5.1 million and $9.6 million, respectively. Unrealized losses on equity securities recorded during the years ended December 31, 2022, 2021 and 2020 were $11.6 million, $1.8 million and $6.0 million, respectively. Unrealized gains and losses on equity securities are included in other (income) expense, net. Unrealized gains and losses on available-for-sale debt securities are included in accumulated other comprehensive income (loss) on the balance sheet.

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The cost of securities sold is based on average cost.

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 December 31, 2022 and 2021:

	December 31, 2022			
	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	$ 632,417	$ —	$ —	$ 632,417
Cash equivalents	161,767	60,589	—	222,356
Available for sale securities:				
Corporate debt securities	—	50,856	—	50,856
U.S. Treasury securities	—	39,649	—	39,649
Commercial paper	—	7,159	—	7,159
Debt mutual funds	6,580	—	—	6,580
U.S. government agency securities	—	6,352	—	6,352
Certificates of deposit and time deposits	—	1,740	—	1,740
Non-U.S. government securities	—	535	—	535
Equity securities:				
Mutual funds	37,518	—	—	37,518
Total	$ 838,282	$ 166,880	$ —	$1,005,162
Derivative assets	—	86	—	86
Total	$ 838,282	$ 166,966	$ —	$1,005,248
Liabilities				
Derivative liabilities	—	4,215	—	4,215
Total	$ —	$ 4,215	$ —	$ 4,215

Reported as follows:

	(Level 1)	(Level 2)	(Level 3)	Total
		(in thousands)		
Assets				
Cash and cash equivalents	$ 794,184	$ 60,589	$ —	$ 854,773
Marketable securities	—	39,612	—	39,612
Long-term marketable securities	44,098	66,679	—	110,777
Prepayments	—	86	—	86
Total	$ 838,282	$ 166,966	$ —	$1,005,248
Liabilities				
Other current liabilities	$ —	$ 4,215	$ —	$ 4,215
Total	$ —	$ 4,215	$ —	$ 4,215

	December 31, 2021			
	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	$ 628,740	$ —	$ —	$ 628,740
Cash equivalents	412,212	81,247	—	493,459
Available for sale securities:				
Commercial paper	—	189,620	—	189,620
U.S. Treasury securities	—	77,789	—	77,789
Corporate debt securities	—	56,901	—	56,901
Debt mutual funds	7,971	—	—	7,971
U.S. government agency securities	—	4,610	—	4,610
Certificates of deposit and time deposits	—	1,356	—	1,356
Non-U.S. government securities	—	589	—	589
Equity securities:				
Mutual funds	39,253	—	—	39,253
Total	$1,088,176	$ 412,112	$ —	$1,500,288
Derivative assets	—	92	—	92
Total	$1,088,176	$ 412,204	$ —	$1,500,380
Liabilities				
Derivative liabilities	—	118	—	118
Total	$ —	$ 118	$ —	$ 118

Reported as follows:

	(Level 1)	(Level 2)	(Level 3)	Total
	(in thousands)			
Assets				
Cash and cash equivalents	$1,040,952	$ 81,247	$ —	$1,122,199
Marketable securities	—	244,231	—	244,231
Long-term marketable securities	47,224	86,634	—	133,858
Prepayments	—	92	—	92
Total	$1,088,176	$ 412,204	$ —	$1,500,380
Liabilities				
Other current liabilities	$ —	$ 118	$ —	$ 118
Total	$ —	$ 118	$ —	$ 118

Changes in the fair value of Level 3 contingent consideration for the years ended December 31, 2022 and 2021 were as follows:

	Contingent Consideration (in thousands)
Balance at December 31, 2020	$ 7,227
Fair value adjustment (1)	(7,227)
Balance at December 31, 2021	—
Fair value adjustment	—
Balance at December 31, 2022	$ —

(1) During the year ended December 31, 2021, the fair value of contingent consideration for the earn-outs in connection with the acquisition of AutoGuide was reduced to zero, which resulted in a benefit of $7.2 million, primarily due to a decrease in forecasted revenues and earnings before interest and taxes.

On March 25, 2022, the arbitration claim filed by Industrial Automation LLC, sellers of AutoGuide, against Teradyne alleging non-compliance with the earn-out provisions of the Membership Interests Purchase Agreement, dated as of October 18, 2019, among Industrial Automation LLC, Teradyne and AutoGuide was settled for $26.7 million. As a result, Teradyne has no remaining earn-out obligations.

The carrying amounts and fair values of Teradyne's financial instruments at December 31, 2022 and 2021 were as follows:

	December 31, 2022		December 31, 2021	
	Carrying Value	Fair Value	Carrying Value	Fair Value
	(in thousands)			
Assets				
Cash and cash equivalents	$ 854,773	$854,773	$ 1,122,199	$1,122,199
Marketable securities	150,389	150,389	378,089	378,089
Derivative assets	86	86	92	92
Liabilities				
Derivative liabilities	4,215	4,215	118	118
Convertible debt (1)	50,115	139,007	108,426	604,648

(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 amount due to the short-term nature of these instruments.

The following tables summarize the composition of available-for-sale marketable securities at December 31, 2022 and 2021:

	December 31, 2022				
	Available-for-Sale				
	Cost	Unrealized Gain	Unrealized (Loss)	Fair Market Value	Fair Market Value of Investments with Unrealized Losses
	(in thousands)				
Corporate debt securities	$ 57,006	$ 3	$ (6,153)	$ 50,856	$ 50,667
U.S. Treasury securities	44,030	—	(4,381)	39,649	39,649
Commercial paper	7,089	70	—	7,159	—
Debt mutual funds	6,997	—	(417)	6,580	3,095
U.S. government agency securities	6,442	—	(90)	6,352	6,352
Certificates of deposit and time deposits	1,740	—	—	1,740	—
Non-U.S. government securities	535	—	—	535	—
	$123,839	$ 73	$ (11,041)	$112,871	$ 99,763

Reported as follows:

	Cost	Unrealized Gain	Unrealized (Loss)	Fair Market Value	Fair Market Value of Investments with Unrealized Losses
	(in thousands)				
Marketable securities	$ 39,950	$ 70	$ (408)	$ 39,612	$ 30,713
Long-term marketable securities	83,889	3	(10,633)	73,259	69,050
	$123,839	$ 73	$ (11,041)	$112,871	$ 99,763

	December 31, 2021				
	Available-for-Sale				
	Cost	Unrealized Gain	Unrealized (Loss)	Fair Market Value	Fair Market Value of Investments with Unrealized Losses
	(in thousands)				
Commercial paper	$189,614	$ 15	$ (9)	$189,620	$ 22,784
U.S. Treasury securities	77,707	551	(470)	77,789	46,435
Corporate debt securities	52,266	4,863	(227)	56,901	19,422
Debt mutual funds	7,928	43	—	7,971	—
U.S. government agency securities	4,617	5	(12)	4,610	3,296
Certificates of deposit and time deposits	1,356	—	—	1,356	—
Non-U.S. government securities	589	—	—	589	—
	$334,077	$ 5,477	$ (718)	$338,836	$ 91,937

Reported as follows:

	Cost	Unrealized Gain	Unrealized (Loss)	Fair Market Value	Fair Market Value of Investments with Unrealized Losses
	(in thousands)				
Marketable securities	$244,213	$ 64	$ (46)	$244,231	$ 54,798
Long-term marketable securities	89,864	5,413	(672)	94,605	37,139
	$334,077	$ 5,477	$ (718)	$338,836	$ 91,937

As of December 31, 2022, the fair market value of investments with unrealized losses less than one year and greater than one year totaled $66.3 million and $33.4 million, respectively.

As of December 31, 2021, the fair market value of investments with unrealized losses less than one year and greater than one year totaled $85.4 million and $6.5 million, respectively.

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 December 31, 2022 and 2021, were not other than temporary.

The contractual maturities of investments in available-for-sale marketable securities held at December 31, 2022 were as follows:

	Cost	Fair Value
	(in thousands)	
Due within one year	$ 39,950	$ 39,612
Due after 1 year through 5 years	33,045	31,466
Due after 5 years through 10 years	4,782	4,232
Due after 10 years	39,065	30,981
Total	$ 116,842	$ 106,291

Contractual maturities of investments in available-for-sale marketable securities held at December 31, 2022 exclude debt mutual funds with the fair market value of $6.6 million as they do not have a contractual maturity date.

Derivatives

Teradyne conducts business in various foreign countries, with certain transactions denominated in local currencies. As a result, Teradyne is exposed to risks relating to changes in foreign currency exchange rates. Teradyne's foreign currency risk management objective is to minimize the effect of exchange rate fluctuations associated with the remeasurement of monetary assets and liabilities denominated in foreign currencies, and changes in its cash inflows attributable to the forecasted cash flows from certain foreign currency denominated revenues.

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.

Teradyne also enters into foreign currency forward and option contracts designated as cash flow hedges to hedge the risk of changes in its cash inflows attributable to changes in foreign currency exchange rates. The cash flow hedges have maturities of less than six months and mature in the period of revenue recognition for certain products and services in backlog and forecasted to be recognized in a future period. Teradyne evaluates cash flow hedges for effectiveness at inception based on the critical terms match method. The hedges are not expected to incur any ineffectiveness however a quarterly qualitative assessment of effectiveness is done to determine if the critical terms match method remains appropriate to use. The change in fair value of the contracts is recorded in accumulated other comprehensive income (loss) and reclassified to earnings at maturity date.

Teradyne does not use derivative financial instruments for speculative purposes.

At December 31, 2022 and 2021, Teradyne had the following contracts to buy and sell non-U.S. currencies for U.S. dollars and other non-U.S. currencies with the following notional amounts:

	December 31, 2022			December 31, 2021		
	Buy Position	Sell Position	Net Total	Buy Position	Sell Position	Net Total
	(in millions)					
Japanese Yen	$ (37.1)	$ —	$(37.1)	$ (31.4)	$ —	$(31.4)
Taiwan Dollar	(29.2)	—	(29.2)	(35.1)	—	(35.1)
Korean Won	(6.4)	—	(6.4)	(4.2)	—	(4.2)
British Pound Sterling	(1.2)	—	(1.2)	(1.8)	—	(1.8)
Euro	—	38.4	38.4	—	44.9	44.9
Singapore Dollar	—	33.5	33.5	—	61.9	61.9
Philippine Peso	—	2.7	2.7	—	3.9	3.9
Chinese Yuan	—	2.2	2.2	—	2.8	2.8
Total	$ (73.9)	$ 76.8	$ 2.9	$ (72.5)	$113.5	$ 41.0

The fair value of the outstanding contracts was a loss of $0.9 million and $0.1 million, respectively, at December 31, 2022 and 2021.

Unrealized 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.

At December 31, 2022 and 2021, Teradyne had the following cash flow hedge contracts to buy and sell non-U.S. currencies for U.S. dollars with the following notional amounts:

	December 31, 2022			December 31, 2021		
	Buy Position	Sell Position	Net Total	Buy Position	Sell Position	Net Total
	(in millions)					
Japanese Yen	$ (23.4)	$ 61.2	$37.8	$ —	$ —	$—
Taiwan Dollar	(5.5)	10.9	5.4	—	—	—
Total	$ (28.9)	$ 72.1	$43.2	$ —	$ —	$—

The fair value of the outstanding cash flow hedge contracts was a loss of $3.2 million at December 31, 2022.

Unrealized gains and losses on foreign currency cash flow hedge contracts are included in accumulated other comprehensive income (loss). At maturity the gains or losses associated with cash flow hedge contracts are recorded to revenue.

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The following table summarizes the fair value of derivative instruments as of December 31, 2022 and 2021:

	Balance Sheet Location	December 31, 2022	December 31, 2021
		(in thousands)	
Derivatives not designated as hedging instruments:			
Foreign exchange forward contracts	Prepayments	$ 86	$ 92
Foreign exchange forward contracts	Other current liabilities	(990)	(118)
Derivatives designated as hedging instruments:			
Foreign exchange option contracts	Other current liabilities	(3,225)	—
Total derivatives		$ (4,129)	$ (26)

The following table summarizes the effect of derivative instruments in the statements of operations recognized for the years ended December 31, 2022, 2021, and 2020:

	Location of (Gains) Losses Recognized in Statement of Operations	December 31, 2022	December 31, 2021	December 31, 2020
			(in thousands)	
Derivatives not designated as hedging instruments:				
Foreign exchange forward contracts	Other (income) expense, net	$ (2,482)	$ 6,488	$ 3,515
Derivatives designated as hedging instruments:				
Foreign exchange option contracts	Revenue	(251)	—	—
Total derivatives		$ (2,733)	$ 6,488	$ 3,515

The table does not reflect the corresponding gains and losses from the remeasurement of the monetary assets and liabilities denominated in foreign currencies. For the years ended December 31, 2022, 2021 and 2020, net losses (gains) from remeasurement of monetary assets and liabilities denominated in foreign currencies were $10.8 million, $(2.1) million, and $2.6 million, respectively.

See Note J: “Debt” regarding derivatives related to the convertible senior notes.

Concentration of Credit Risk

Financial instruments which potentially subject Teradyne to concentrations of credit risk consist principally of cash equivalents, marketable securities, forward currency contracts and accounts receivable. Teradyne’s cash equivalents consist primarily of money market funds invested in U.S. Treasuries and government agencies. Teradyne’s fixed income available-for-sale marketable securities have a minimum rating of AA by one or more of the major credit rating agencies. Teradyne places foreign currency forward contracts with high credit-quality financial institutions in order to minimize credit risk exposure. Concentrations of credit risk with respect to accounts receivable are limited due to the large number of geographically dispersed customers. Teradyne performs ongoing credit evaluations of its customers’ financial condition and from time to time may require customers to provide a letter of credit from a bank to secure accounts receivable. There were no customers who accounted for more than 10% of our accounts receivable balance as of December 31, 2022 and 2021.

I. LEASES

Teradyne has facility and auto leases, which are accounted for as operating leases. Teradyne’s facility leases are primarily used for administrative functions, research and development, manufacturing, and storage and distribution. Remaining lease terms range from less than one year to twelve years.

For the year ended December 31, 2022, 2021 and 2020, total lease expense was $40.1 million, $39.2 million, and $38.5 million respectively, and included $14.1 million, $12.6 million, and $12.1 million, respectively, of variable lease costs and $2.0 million, $1.8 million, and $3.4 million, respectively, of costs related to short-term leases, which are not recorded on the consolidated balance sheets.

At December 31, 2022, the weighted average remaining lease term and weighted average discount rate for operating leases was 5.9 years and 4.7%, respectively. At December 31, 2021, the weighted average remaining lease term and weighted average discount rate for operating leases was 5.3 years and 4.1%, respectively.

Supplemental cash flows information related to leases was as follows:

	For the Years Ended		
	December 31, 2022	December 31, 2021	December 31, 2020
	(in thousands)		
Cash paid for amounts included in the measurement of lease liabilities included in operating cash flows:	$ 20,775	$ 24,593	$ 24,136
Right-of-use assets obtained in exchange for new lease obligations	26,149	34,246	14,801

Maturities of lease liabilities as of December 31, 2022 were as follows:

	Operating Lease (in thousands)
2023	$ 20,120
2024	18,239
2025	15,308
2026	10,635
2027	8,117
Thereafter	17,963
Total lease payments	90,382
Less imputed interest	(7,612)
Total lease liabilities	$ 82,770

J. DEBT

Convertible Senior Notes

On December 12, 2016, Teradyne completed a private offering of $460.0 million aggregate principal amount of 1.25% convertible senior unsecured notes (the “Notes”) due December 15, 2023 and received net proceeds, after issuance costs, of approximately $450.8 million, $33.0 million of which was used to pay the net cost of the convertible note hedge transactions and $50.1 million of which was used to repurchase 2.0 million shares of Teradyne’s common stock under its existing stock repurchase program from purchasers of the Notes in privately negotiated transactions effected through one of the initial purchasers or its affiliates conducted concurrently with the pricing of the Note offering. The Notes will mature on December 15, 2023, unless earlier repurchased or converted. The Notes bear interest at a rate of 1.25% per year payable semiannually in arrears on June 15 and December 15 of each year. 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, only 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 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 future conversion obligation by paying cash for the principal amount of the Notes and paying or delivering cash, shares of its common stock or a combination of cash and shares of its common stock, at Teradyne’s election for the amount in excess of principal. On November 4, 2021, Teradyne made an irrevocable election under the Indenture to require the principal portion of the remaining Notes to be settled in cash. As of December 31, 2022, the conversion price was approximately $31.46 per share of Teradyne’s common stock. The conversion rate is subject to adjustment under certain circumstances.

During 2022, forty-two debt holders elected to convert $66.8 million of debt principal. The conversion of the debt was settled in cash for principal amount and in shares for the excess of conversion value over principal amount. The 1.5 million shares issued to the debt holders were received from exercising the convertible notes hedge call options.

During 2021, sixty-four holders converted $343.0 million resulting in a loss of $28.8 million recorded to other (income) expense on the consolidated statement of operations. The amount of the loss was determined using the conversion value of the conversion transactions based on the fair value of debt immediately prior to conversion using an updated remaining expected life of the debt instrument and an updated borrowing rate for a similar debt instrument that does not have an associated convertible feature.

As of February 22, 2023, one hundred and twenty-four holders had exercised the option to convert $424.9 million worth of notes.

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 $31.46. The Note Hedge Transactions cover, subject to customary anti-dilution adjustments, approximately 1.6 million shares of Teradyne’s common 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 14.6 million shares of common stock. As of December 31, 2022, the strike price of the warrants was approximately $39.48 per share. The strike price is subject to adjustment 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 Note Hedge Transactions, after being partially offset by the proceeds from the sale of the warrants, was approximately $33.0 million.

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.

Originally, Teradyne allocated $100.8 million of the $460.0 million principal amount of the Notes to the equity component, which represented a discount to the debt and was amortized to interest expense using the effective interest method through December 2023. Effective January 1, 2022, Teradyne adopted ASC 2020-06 using the modified retrospective method of transition and accounts for the debt as a single liability measured at its amortized cost. As a result of the adoption, Teradyne recorded an increase of $1.4 million to current debt for unsettled shares, an increase of $1.8 million to deferred tax assets, an increase of $6.6 million to long-term debt for unamortized debt discount, and an increase to retained earnings of $94.6 million for the reclassification of the equity component. Mezzanine equity representing unsettled shares value was reduced to zero and additional paid-in capital was reduced by $100.8 million.

Debt issuance fees of approximately $0.1 million at December 31, 2022, are being amortized to interest expense using the effective interest method over the seven-year term of the Notes.

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

	December 31, 2022	December 31, 2021
	(in thousands)	
Debt principal	$ 50,228	$ 116,980
Unamortized debt issuance fees (1)	113	8,554
Net carrying amount of convertible debt	$ 50,115	$ 108,426

Reported as follows:

	December 31, 2022	December 31, 2021
	(in thousands)	
Current debt	$ 50,115	$ 19,182
Long-term debt	—	89,244
Net carrying amount of convertible debt	$ 50,115	$ 108,426

	For the Years Ended	
	December 31, 2022	December 31, 2021
	(in thousands)	
Contractual interest expense on the coupon	$ 732	$ 3,009
Amortization of the issuance fees recognized as interest expense (2)	209	11,019
Total interest expense on the convertible debt	$ 941	$ 14,028

(1) Unamortized debt issuance fees as of December 31, 2021 include unamortized debt discount of $8.0 million, which was eliminated with the adoption of ASU 2020-06 on January 1, 2022.

(2) For the year ended December 31, 2021 includes the amortization of debt discount component, which was eliminated with the adoption of ASU 2020-06 on January 1, 2022.

As of December 31, 2022, the conversion price was approximately $31.46 per share and if converted the value of the notes was $139.5 million.

Additional conversions of approximately $15.1 million of debt principal will occur in the first quarter of 2023 and the liability is included in current debt.

Teradyne expects to make principal interest payments of $0.4 million in the next 12 months.

Revolving Credit Facility

On May 1, 2020, Teradyne entered into a credit agreement (the “Credit Agreement”) with Truist Bank, as administrative agent and collateral agent, and the lenders party thereto. The Credit Agreement provides for a three-year, senior secured revolving credit facility of $400.0 million (the “Credit Facility”).

On December 10, 2021, the Credit Agreement was amended to extend maturity date of the Credit Facility to December 10, 2026. On October 5, 2022, the Credit Agreement was amended to increase the amount of the Credit Facility to $750.0 million from $400.0 million.

The Credit Agreement provides that, subject to customary conditions, Teradyne may seek to obtain from existing or new lenders the available incremental amount under the Credit Facility, not to exceed the greater of $200.0 million or 15% of consolidated EBIDTA. The interest rate 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 0.75% per annum or SOFR plus a margin ranging from 1.10% to 1.85% per annum, based on the consolidated leverage ratio of Teradyne. In addition, Teradyne will pay a commitment fee on the unused portion of the commitments under the Credit Facility ranging from 0.15% to 0.25% 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 SOFR breakage costs.

The Credit Agreement contains customary events of default, representations, warranties and affirmative and negative covenants that, among other things, limit Teradyne’s 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.

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.

As of February 22, 2023, the Credit Agreement was undrawn and Teradyne was in compliance with all covenants under the Credit Agreement.

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K. ACCUMULATED OTHER COMPREHENSIVE INCOME (LOSS)

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

	Foreign Currency Translation Adjustment	Unrealized Gains (Losses) on Marketable Securities	Unrealized Losses on Cash Flow Hedges (in thousands)	Retirement Plans Prior Service Credit	Total
Balance at December 31, 2020, net of tax of $0, $1,910, $0, $(1,126), respectively	$ 25,389	$ 6,954	$ —	$ 1,173	$ 33,516
Other comprehensive loss before reclassifications, net of tax of $0, $(578), $0, $0, respectively	(36,207)	(2,255)	—	—	(38,462)
Amounts reclassified from accumulated other comprehensive income, net of tax of $0, $(277), $0, $(2), respectively	—	(995)	—	(7)	(1,002)
Net current period other comprehensive loss, net of tax of $0, $(855), $0, $(2), respectively	(36,207)	(3,250)	—	(7)	(39,464)
Balance at December 31, 2021, net of tax of $0, $1,055, $0, $(1,128), respectively	$ (10,818)	$ 3,704	$ —	$ 1,166	$ (5,948)
Other comprehensive loss before reclassifications, net of tax of $0, $(3,388), $(708), $0, respectively	(29,031)	(12,666)	(2,517)	—	(44,214)
Amounts reclassified from accumulated other comprehensive income (loss), net of tax of $0, $25, $0, $(2), respectively	—	301	—	(7)	294
Net current period other comprehensive loss, net of tax of $0, $(3,363), $(708), $(2), respectively	(29,031)	(12,365)	(2,517)	(7)	(43,920)
Balance at December 31, 2022, net of tax of $0, $(2,308), $(708), $(1,130), respectively	$ (39,849)	$ (8,661)	$ (2,517)	$ 1,159	$(49,868)

Reclassifications out of accumulated other comprehensive income (loss) to the statements of operations for the years ended December 31, 2022, 2021, and 2020, were as follows:

Details about Accumulated Other Comprehensive Income (Loss) Components	For the years ended December 31, 2022	December 31, 2021	December 31, 2020	Affected Line Item in the Statements of Operations
		(in thousands)		
Available-for-sale marketable securities				
Unrealized (losses) gains, net of tax of $(25), $277, $665, respectively	$ (301)	$ 995	$ 2,365	Other (income) expense, net
Defined benefit pension and postretirement plans:				
Amortization of prior service benefit, net of tax of $2, $2, $2, respectively	7	7	7	(a)
Total reclassifications, net of tax of $(23), $279, $667, respectively	$ (294)	$ 1,002	$ 2,372	Net income

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

L. GOODWILL AND 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 to be impaired when the net book value of a reporting unit exceeds its estimated fair value.

Teradyne has the option to perform a qualitative assessment to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount. If Teradyne determines this is the case, Teradyne is required to perform a quantitative goodwill impairment test to identify potential goodwill impairment and measure the amount of goodwill impairment loss to be recognized. If Teradyne determines that it is more likely than not that the fair value of the reporting unit is greater than its carrying amounts, the quantitative goodwill impairment test is not required. In performing the quantitative goodwill impairment test, Teradyne determines the fair value of a reporting unit using the results derived from an income approach and a market approach, weighting the fair value determined under each approach to determine an estimated fair value for a reporting unit. The income approach is estimated through the discounted cash flows ("DCF") analysis. Determining fair value requires the exercise of significant judgment, including judgments about appropriate discount rates, perpetual growth rates, and the amount and timing of expected future cash flows. Discount rates are based on a weighted average cost of capital ("WACC"), which represents the average rate a business must pay its providers of debt and equity, plus a risk premium. The WACC used to test goodwill is derived from a group of comparable companies. The cash flows employed in the DCF analysis are derived from internal forecasts and external market forecasts. The market approach estimates the fair value of the reporting unit by utilizing the market comparable method which is based on revenue and earnings multiples from comparable companies. If the estimated fair value of a reporting unit exceeds its carrying amount, goodwill of the reporting unit is not impaired. If the carrying amount of a reporting unit exceeds its estimated fair value, then the goodwill is written down by the amount that carrying value exceeds the fair value of the reporting unit, but not below zero.

On September 15, 2020, Teradyne announced the appointment of Gregory Smith as President of Teradyne's Robotics reportable segment effective October 1, 2020. With the appointment of Gregory Smith, the Robotics reportable segment, which includes UR and MiR, is considered one operating segment and one reporting unit. Teradyne performed a goodwill impairment test at the time of the change in operating segments, which indicated the fair value of Teradyne's reporting units exceeded their carrying values.

In the fourth quarter of 2022, Teradyne performed the annual goodwill impairment test, completing a quantitative assessment for the Robotics reporting unit and a qualitative assessment for the Wireless Test and System Test reporting units. There was no impairment as a result of the annual test performed in the fourth quarter of 2022. Key assumptions in the goodwill valuation model are forecasted revenues, discount rate, earnings before interest and taxes, and revenue multiples from comparable companies. A change in any of these key assumptions could result in the reporting unit being impaired in a future period.

In the fourth quarter of 2021, Teradyne performed the annual goodwill impairment test, completing a quantitative assessment for the Wireless Test, and System Test reporting units and qualitative assessment for the Robotics reporting unit. There was no impairment as a result of the annual test performed in the fourth quarter of 2021. Key assumptions in the goodwill valuation model are forecasted revenues, discount rate, earnings before interest and taxes, and revenue multiples from comparable companies. A change in any of these key assumptions could result in the reporting unit being impaired in a future period.

The changes in the carrying amount of goodwill by reportable segments for the years ended December 31, 2022 and 2021 are as follows:

	Robotics	Wireless Test	Semiconductor Test (in thousands)	System Test	Total
Balance at December 31, 2020:					
Goodwill	$433,752	$ 361,819	$ 262,155	$ 158,699	$1,216,425
Accumulated impairment losses	—	(353,843)	(260,540)	(148,183)	(762,566)
	433,752	7,976	1,615	10,516	453,859
Foreign currency translation adjustment	(27,781)	—	(54)	—	(27,835)
Balance at December 31, 2021:					
Goodwill	405,971	361,819	262,101	158,699	1,188,590
Accumulated impairment losses	—	(353,843)	(260,540)	(148,183)	(762,566)
	405,971	7,976	1,561	10,516	426,024
Foreign currency translation adjustment	(22,805)	—	(24)	—	(22,829)
Balance at December 31, 2022:					
Goodwill	383,166	361,819	262,077	158,699	1,165,761
Accumulated impairment losses	—	(353,843)	(260,540)	(148,183)	(762,566)
	$383,166	$ 7,976	$ 1,537	$ 10,516	$ 403,195

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.

There were no events or circumstances indicating that the carrying value of intangible and long-lived assets may not be recoverable in 2022, 2021 and 2020.

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

	December 31, 2022			
	Gross Carrying Amount (1)	Accumulated Amortization (1)	Foreign Currency Translation Adjustment	Net Carrying Amount
	(in thousands)			
Developed technology	$ 270,967	$ (234,208)	$ (5,935)	$30,824
Customer relationships	57,739	(51,186)	172	6,725
Tradenames and trademarks	59,387	(41,930)	(1,528)	15,929
Total intangible assets	$ 388,093	$ (327,324)	$ (7,291)	$53,478

	December 31, 2021			
	Gross Carrying Amount	Accumulated Amortization	Foreign Currency Translation Adjustment	Net Carrying Amount
	(in thousands)			
Developed technology	$272,547	$ (223,413)	$ (4,093)	$45,041
Customer relationships	57,739	(48,921)	209	9,027
Tradenames and trademarks	59,387	(37,237)	(583)	21,567
Total intangible assets	$389,673	$ (309,571)	$ (4,467)	$75,635

(1) In 2022, $1.6 million of amortizable intangible assets became fully amortized and have been eliminated from the gross carrying amount and accumulated amortization.

Aggregate intangible assets amortization expense for the years ended December 31, 2022, 2021, and 2020, was $19.3 million, $21.5 million, and $30.8 million, respectively. Estimated intangible assets amortization expense for each of the five succeeding fiscal years is as follows:

Year	Amortization Expense
	(in thousands)
2023	$ 18,835
2024	18,527
2025	11,230
2026	2,350
2027	1,134
Thereafter	1,402

M. COMMITMENTS AND CONTINGENCIES

Purchase Commitments

As of December 31, 2022, Teradyne had entered into non-cancelable purchase commitments for certain components and materials. The purchase commitments covered by the agreements aggregate to approximately $654.8 million, of which $570.3 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 such as, but not limited to, patent, employment, commercial and environmental matters. Teradyne believes that it has meritorious defenses against all pending claims and intends to vigorously contest them. While it is not possible to predict or determine the outcomes of any pending claims or to provide possible ranges of losses that may arise, Teradyne believes the potential losses associated with all of these actions are unlikely to have a material adverse effect on its business, financial position or results of operations.

On March 8, 2021, Industrial Automation LLC, sellers of AutoGuide, submitted a demand for arbitration against Teradyne and AutoGuide in Wilmington, Delaware alleging that Teradyne and AutoGuide breached certain provisions of the Membership Interests Purchase Agreement (the “Purchase Agreement”), dated as of October 18, 2019, among Industrial Automation LLC, Teradyne and AutoGuide. The arbitration demand sought full acceleration of the maximum earn-out amount payable under the Purchase Agreement, or $106.9 million, for the alleged breach of the earn-out provisions of the Purchase Agreement. On March 25, 2022, the arbitration claim was settled for $26.7 million. As a result, Teradyne has no remaining earn-out obligations.

Guarantees and Indemnification Obligations

Teradyne provides indemnification, to the extent permitted by law, to its officers, directors, employees and agents for liabilities arising from certain events or occurrences, while the officer, director, employee, or agent, is or was serving, at Teradyne’s request in such capacity. Teradyne may enter into indemnification agreements with certain of its officers and directors. With respect to acquisitions, Teradyne provides indemnifications to or assumes indemnification obligations for the current and former directors, officers and employees of the acquired companies in accordance with the acquired companies’ by-laws and charter. As a matter of practice, Teradyne has maintained directors’ and officers’ liability insurance coverage including coverage for directors and officers of acquired companies.

Teradyne enters into agreements in the ordinary course of business with customers, resellers, distributors, integrators and suppliers. Most of these agreements require Teradyne to defend and/or indemnify the other party against intellectual property infringement claims brought by a third party with respect to Teradyne’s products. From time to time, Teradyne also indemnifies customers and business partners for damages, losses and liabilities they may suffer or incur relating to personal injury, personal property damage, product liability, breach of confidentiality obligations and environmental claims relating to the use of Teradyne’s products and services or resulting from the acts or omissions of Teradyne, its employees, authorized agents or subcontractors. On occasion, Teradyne has also provided guarantees to customers regarding the delivery and performance of its products in addition to the warranty described below.

As a matter of ordinary course of business, Teradyne warrants that its products will substantially perform in accordance with its standard published specifications in effect at the time of delivery. Most warranties have a one-year duration commencing from installation. A provision is recorded upon revenue recognition to cost of revenues for estimated warranty expense based upon historical experience. When Teradyne receives revenue for extended warranties beyond the standard duration, the revenue is deferred and recognized on a straight-line basis over the contract period. Related costs are expensed as incurred. As of December 31, 2022, and 2021, Teradyne had a product warranty accrual of $14.2 million and $24.6 million, respectively, included in other accrued liabilities, and revenue deferrals related to extended warranties of $56.2 million and $64.2 million, respectively, included in short and long-term deferred revenue and customer advances.

In addition, in the ordinary course of business, Teradyne provides minimum purchase guarantees to certain vendors to ensure continuity of supply against the market demand. Although some of these guarantees provide penalties for cancellations and/or modifications to the purchase commitments as the market demand decreases, most of the guarantees do not. Therefore, as the market demand decreases, Teradyne re-evaluates these guarantees and determines what charges, if any, should be recorded.

With respect to its agreements covering product, business or entity divestitures and acquisitions, Teradyne provides certain representations, warranties and covenants to purchasers and agrees to indemnify and hold such purchasers harmless against breaches of such representations, warranties and covenants. Many of the indemnification claims have a definite expiration date while some remain in force indefinitely. With respect to its acquisitions, Teradyne may, from time to time, assume the liability for certain events or occurrences that took place prior to the date of acquisition.

As a matter of ordinary course of business, Teradyne occasionally guarantees certain indebtedness obligations of its subsidiary companies, limited to the borrowings from financial institutions, purchase commitments to certain vendors, and lease commitments to landlords.

Based on historical experience and information known as of December 31, 2022, and 2021, except for product warranty, Teradyne has not recorded any liabilities for these guarantees and obligations because the amount would be immaterial.

N. NET INCOME PER COMMON SHARE

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

	2022	2021	2020
	(in thousands, except per share amounts)		
Net income for basic and diluted net income per share	$ 715,501	$ 1,014,589	$ 784,147
Weighted average common shares-basic	158,434	164,960	166,120
Effect of dilutive potential common shares:			
Convertible note hedge warrant shares (1)	8,806	9,956	6,989
Incremental shares from assumed conversion of convertible notes (2)	1,763	7,435	8,528
Restricted stock units	657	1,180	1,264
Stock options	52	86	131
Employee stock purchase rights	22	8	10
Dilutive potential common shares	11,300	18,665	16,922
Weighted average common shares-diluted	169,734	183,625	183,042
Net income per common share-basic	$ 4.52	$ 6.15	$ 4.72
Net income per common share-diluted	$ 4.22	$ 5.53	$ 4.28

(1) Convertible notes hedge warrant shares were calculated using the difference between the average Teradyne stock price for the period and the warrant price, multiplied by the number of warrant 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.

(2) Incremental shares from the assumed conversion of the convertible notes was calculated using the difference between the average Teradyne stock price for the period and the conversion price, multiplied by the number of convertible notes 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.

The computation of diluted net income per common share for 2022 excludes the effect of the potential exercise of stock options to purchase approximately 0.1 million shares and restricted stock units to purchase approximately 0.4 million shares because the effect would have been anti-dilutive. The computation of diluted net income per common share for 2021 excludes the effect of the potential exercise of stock options to purchase approximately 0.1 million shares and restricted stock units to purchase approximately 0.1 million shares because the effect would have been anti-dilutive.

O. RESTRUCTURING AND OTHER

During the year ended December 31, 2022, Teradyne recorded a charge of $14.7 million related to the arbitration claim filed against Teradyne and AutoGuide related to an earn-out dispute, which was settled on March 25, 2022 for $26.7 million, $2.9 million of severance charges primarily in Robotics, and a charge of $2.7 million for an increase in environmental and legal liabilities, partially offset by a $3.4 million gain on sale of asset.

During the year ended December 31, 2021, Teradyne recorded a charge of $12.0 million related to the arbitration claim filed against Teradyne and AutoGuide related to an earn-out dispute, $1.5 million of severance charges primarily in Robotics, $0.5 million of acquisition related compensation and expenses and $2.5 million for other expenses, offset by a $7.2 million gain for the decrease in the fair value of the AutoGuide contingent consideration liability.

During the year ended December 31, 2020, Teradyne recorded a $19.7 million gain for the decrease in the fair value of the AutoGuide contingent consideration liability, and a $3.5 million gain for the decrease in the fair value of the MiR contingent consideration liability, partially offset by a charge of $4.0 million for contract termination settlement, $2.5 million of acquisition related compensation and expenses, $2.3 million of severance charges primarily in Robotics, and $1.2 million of other expenses.

P. RETIREMENT PLANS

ASC 715, "*Compensation—Retirement Benefits*," requires an employer with defined benefit plans or other postretirement benefit plans to recognize an asset or a liability on its balance sheet for the overfunded or underfunded status of the plans as defined by ASC 715. The pension asset or liability represents a difference between the fair value of the pension plan's assets and the projected benefit obligation at December 31. Teradyne uses a December 31 measurement date for all of its plans.

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 the plans in accordance with local laws and to the extent that such contributions are tax deductible. The assets of these plans consist primarily of fixed income and equity securities. In addition, Teradyne has 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 (the "IRC"), as well as unfunded qualified foreign plans.

In 2022, Teradyne's projected benefit obligations decreased primarily due to actuarial gains of approximately $59.1 million across all pension plans from increases in discount rates, and approximately $3.1 million gain from foreign exchange effects for foreign plans. In 2021, Teradyne's projected benefit obligations decreased primarily due to actuarial gains of approximately $8.7 million across all pension plans from increases in discount rates, and approximately $3.3 million gain from foreign exchange effects for foreign plans.

The December 31 balances of these defined benefit pension plans assets and obligations are shown below:

	2022		2021	
	United States	Foreign	United States	Foreign
	(in thousands)			
Assets and Obligations				
Change in benefit obligation:				
Projected benefit obligation:				
Beginning of year	$ 192,472	$ 45,774	$ 202,233	$ 50,988
Service cost	1,588	784	1,784	941
Interest cost	4,886	482	4,427	337
Actuarial (gain) loss	(45,932)	(13,181)	(6,432)	(2,257)
Benefits paid	(9,200)	(863)	(9,337)	(925)
Liability (gain) loss due to settlement	—	—	(204)	—
Non-U.S. currency movement	—	(3,061)	—	(3,310)
End of year	143,814	29,935	192,472	45,774
Change in plan assets:				
Fair value of plan assets:				
Beginning of year	149,578	2,017	158,855	1,856
Actual return on plan assets	(31,835)	153	(3,217)	33
Company contributions	3,217	949	3,276	1,022
Benefits paid	(9,200)	(863)	(9,337)	(925)
Non-U.S. currency movement	—	(169)	—	31
End of year	111,760	2,087	149,578	2,017
Funded status	$ (32,054)	$(27,848)	$ (42,894)	$(43,757)

The following table provides amounts recorded within the account line items of the statements of financial position as of December 31:

	2022		2021	
	United States	Foreign	United States	Foreign
	(in thousands)			
Retirement plans assets	$ 11,761	$ —	$ 15,110	$ —
Accrued employees' compensation and withholdings	(3,055)	(1,191)	(3,288)	(936)
Retirement plans liabilities	(40,760)	(26,657)	(54,716)	(42,821)
Funded status	$(32,054)	$(27,848)	$(42,894)	$(43,757)

The accumulated benefit obligation for the United States defined benefit pension plans was $140.6 million and $187.5 million at December 31, 2022 and 2021, respectively. The accumulated benefit obligation for foreign defined benefit pension plans was $28.6 million and $42.5 million at December 31, 2022 and 2021, respectively.

Information for pension plans with an accumulated benefit obligation in excess of plan assets as of December 31:

	2022		2021	
	United States	Foreign	United States	Foreign
	(in millions)			
Projected benefit obligation	$43.8	$ 29.9	$58.0	$ 45.8
Accumulated benefit obligation	42.3	28.6	55.7	42.5
Fair value of plan assets	—	2.1	—	2.0

Expense

For the years ended December 31, 2022, 2021, and 2020, Teradyne's net periodic pension (income) cost was comprised of the following:

	2022		2021		2020	
	United States	Foreign	United States	Foreign	United States	Foreign
			(in thousands)			
Components of Net Periodic Pension (Income) Cost:						
Service cost	$ 1,588	$ 784	$ 1,784	$ 941	$ 1,773	$ 907
Interest cost	4,886	482	4,427	337	5,770	516
Expected return on plan assets	(2,927)	(75)	(3,858)	(67)	(4,840)	(65)
Net actuarial(gain) loss	(11,170)	(13,259)	643	(2,223)	6,463	2,949
Settlement (gain) loss	—	—	(204)	—	451	—
Total net periodic pension (income) cost	$ (7,623)	$(12,068)	$ 2,792	$(1,012)	$ 9,617	$4,307

Weighted Average Assumptions to Determine Net Periodic Pension Cost at January 1:

	2022		2021		2020	
	United States	Foreign	United States	Foreign	United States	Foreign
Discount rate	2.5%	1.1%	2.2%	0.7%	2.8%	1.1%
Expected return on plan assets	2.0	4.0	2.4	3.5	3.0	3.8
Salary progression rate	2.4	2.2	2.4	2.3	2.6	2.5

Weighted Average Assumptions to Determine Pension Obligations at December 31:

	2022		2021	
	United States	Foreign	United States	Foreign
Discount rate	4.9%	3.5%	2.6%	1.1%
Salary progression rate	2.5	2.1	2.4	2.2

In developing the expected return on plan assets assumption, Teradyne evaluates input from its investment manager and pension consultants, including their forecast of asset class return expectations. Teradyne believes that 2.0% was an appropriate rate to use for fiscal year 2022 for the U.S. Qualified Pension Plan ("U.S. Plan").

Teradyne recognizes net actuarial gains and losses and the change in the fair value of the plan assets in its operating results in the year in which they occur or upon any interim remeasurement of the plans. Teradyne calculates the expected return on plan assets using the fair value of the plan assets. Actuarial gains and losses are generally measured annually as of December 31 and, accordingly, recorded during the fourth quarter of each year or upon any interim remeasurement of the plans.

The discount rate utilized to determine future pension obligations for the U.S. Plan is based on FTSE Pension Index adjusted for the plan's expected cash flows and was 4.9% at December 31, 2022, up from 2.6% at December 31, 2021.

Plan Assets

As of December 31, 2022, the fair value of Teradyne's pension plans' assets totaled $113.8 million, of which $111.8 million was related to the U.S. Plan and $2.1 million was related to the Taiwan defined benefit pension plan. Substantially all of Teradyne's pension plans' assets are held in individual trusts, which were established for the investment of assets of Teradyne's sponsored retirement plans.

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The following table provides weighted average pension asset allocation by asset category at December 31, 2022 and 2021:

	2022		2021	
	United States	Foreign	United States	Foreign
Fixed income securities	94.0%	— %	94.0%	— %
Equity securities	5.0	—	5.0	—
Other	1.0	100.0	1.0	100.0
	100.0%	100.0%	100.0%	100.0%

The assets of the U.S. Plan are overseen by the Teradyne Fiduciary Committee which is comprised of members of senior management drawn from appropriate diversified levels of the management team. The Fiduciary Committee is responsible for setting the policy that provides the framework for management of the U.S. Plan assets. In accordance with its responsibilities, the Fiduciary Committee meets on a regular basis to review the performance of the U.S. Plan assets and compliance with the investment policy. The policy sets forth an investment structure for managing U.S. Plan assets, including setting the asset allocation ranges, which are expected to provide an appropriate level of overall diversification required to maximize the long-term return on plan assets for a prudent and reasonable level of risk given prevailing market conditions, total investment return over the long term, and preservation of capital, while maintaining sufficient liquidity to pay the benefits of the U.S. Plan. The investment portfolio will not, at any time, have a direct investment in Teradyne stock. It may have indirect investment in Teradyne stock, if one of the funds selected by the investment manager invests in Teradyne stock. In developing the asset allocation ranges, third party asset allocation studies are periodically performed that consider the current and expected positions of the plan assets and funded status. Based on this study and other appropriate information, the Fiduciary Committee establishes asset allocation ranges taking into account acceptable risk targets and associated returns. The investment return objectives are to avoid excessive volatility and produce a rate of return that at least matches the Policy Index identified below. The manager's investment performance is reviewed at least annually. Results for the total portfolio and for each major category of assets are evaluated in comparison with appropriate market indices and the Policy Index.

The target asset allocation and the index for each asset category for the U.S. Plan, per the investment policy, are as follows:

Asset Category:	Policy Index:	Target Allocation
U.S. corporate fixed income	Bloomberg Barclays U.S. Corporate A or Better Index	75%
U.S. government fixed income	Bloomberg Barclays U.S. Long Government Bond Index	14
Global equity	MSCI World Minimum Volatility Index	5
High yield fixed income	Bloomberg Barclays U.S. Corporate High Yield Index	5
Cash	Citigroup Three Month U.S. Treasury Bill Index	1

Teradyne's U.S. Plan invests primarily in common trust funds. Units held in the common trust funds are valued at the unit price as reported by the investment manager based on the asset value of the underlying investments; underlying investments in equity securities are valued at the last reported sales price, and underlying investments in fixed-income securities are generally valued using methods based upon market transactions for comparable securities.

During the years ended December 31, 2022 and December 31, 2021, there were no transfers of pension assets in or out of Level 1, Level 2, and Level 3.

The fair value of pension plan assets by asset category and by level at December 31, 2022 and December 31, 2021 were as follows:

	December 31, 2022							
	United States				Foreign			
	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
	(in thousands)							
Fixed income securities:								
Corporate debt securities	$ —	$ 89,403	$ —	$ 89,403	$ —	$ —	$ —	$ —
U.S. government securities	—	15,631	—	15,631	—	—	—	—
Global equity	—	5,579	—	5,579	—	—	—	—
Other	—	—	—	—	—	2,087	—	2,087
Cash and cash equivalents	1,147	—	—	1,147	—	—	—	—
Total	$1,147	$110,613	$ —	$111,760	$ —	$2,087	$ —	$2,087

	December 31, 2021							
	United States				Foreign			
	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
	(in thousands)							
Fixed income securities:								
Corporate debt securities	$ —	$119,805	$ —	$119,805	$ —	$ —	$ —	$ —
U.S. government securities	—	20,847	—	20,847	—	—	—	—
Global equity	—	7,426	—	7,426	—	—	—	—
Other	—	—	—	—	—	2,017	—	2,017
Cash and cash equivalents	1,500	—	—	1,500	—	—	—	—
Total	$1,500	$148,078	$ —	$149,578	$ —	$2,017	$ —	$2,017

Contributions

Teradyne’s funding policy is to make contributions to the plans in accordance with local laws and to the extent that such contributions are tax deductible. During 2022, Teradyne contributed $3.2 million to the U.S. supplemental executive defined benefit pension plan and $0.9 million to certain qualified plans for non-U.S. subsidiaries. During 2021, Teradyne contributed $3.3 million to the U.S. supplemental executive defined benefit pension plan and $1.0 million to certain qualified plans for non-U.S. subsidiaries. In 2023, contributions to the U.S. supplemental executive defined benefit pension plan and certain qualified plans from non-U.S. subsidiaries will be approximately $3.1 million and $1.3 million, respectively.

Contributions to the U.S. supplemental executive defined benefit pension plan and certain non-U.S. subsidiaries qualified plans will be approximately $6.4 million and $2.1 million, respectively, in 1 to 3 years, $7.1 million and $2.3 million, respectively, in 3 to 5 years and $17.4 million and $7.0 million, respectively, thereafter.

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Expected Future Pension Benefit Payments

Future benefit payments are expected to be paid as follows:

	United States	Foreign
	(in thousands)	
2023	$ 10,323	$1,239
2024	9,274	1,055
2025	9,912	1,014
2026	9,971	1,130
2027	10,742	1,239
2028-2031	52,877	8,216

Postretirement Benefit Plans

In addition to receiving pension benefits, U.S. Teradyne employees 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.

The December 31 balances of the postretirement assets and obligations are shown below:

	2022	2021
	(in thousands)	
Assets and Obligations		
Change in benefit obligation:		
Projected benefit obligation:		
Beginning of year	$ 7,210	$ 8,515
Service cost	64	64
Interest cost	177	170
Actuarial gain	(1,155)	(433)
Benefits paid	(950)	(1,107)
End of year	5,345	7,210
Change in plan assets:		
Fair value of plan assets:		
Beginning of year	—	—
Company contributions	950	1,107
Benefits paid	(950)	(1,107)
End of year	—	—
Funded status	$(5,345)	$(7,210)

The following table provides amounts recorded within the account line items of financial position as of December 31:

	2022	2021
	(in thousands)	
Accrued employees' compensation and withholdings	$ (853)	$ (930)
Retirement plans liability	(4,492)	(6,280)
Funded status	$(5,345)	$(7,210)

The following table provides amounts recognized in accumulated other comprehensive income (loss) as of December 31:

	2022	2021
	(in thousands)	
Prior service credit, before tax	$ (31)	$ (40)
Deferred taxes	(1,689)	(1,688)
Total recognized in other comprehensive income (loss), net of tax	$(1,720)	$(1,728)

Expense

For the years ended December 31, 2022, 2021, and 2020, Teradyne's net periodic postretirement benefit (income) cost was comprised of the following:

	2022	2021	2020
		(in thousands)	
Components of Net Periodic Postretirement Benefit Income (cost):			
Service cost	$ 64	$ 64	$ 57
Interest cost	177	170	240
Amortization of prior service credit	(9)	(9)	(9)
Net actuarial (gain) loss	(1,155)	(433)	421
Total net periodic postretirement benefit (income) cost	(923)	(208)	709
Changes in Plan Assets and Benefit Obligations Recognized in Other Comprehensive Income:			
Reversal of amortization items:			
Prior service credit	9	9	9
Total recognized in other comprehensive income	9	9	9
Total recognized in net periodic postretirement (income) cost and other comprehensive income	$ (914)	$(199)	$718

Weighted Average Assumptions to Determine Net Periodic Postretirement Benefit Income as of January 1:

	2022	2021	2020
Discount rate	2.6%	2.2%	3.0%
Initial health care cost trend rate	7.3	7.3	7.1
Ultimate health care cost trend rate	4.5	4.5	4.5
Year in which ultimate health care cost trend rate is reached	2029	2029	2026

Weighted Average Assumptions to Determine Postretirement Benefit Obligation as of December 31:

	2022	2021	2020
Discount rate	5.0%	2.6%	2.2%
Initial medical trend	7.2	7.3	7.3
Ultimate health care trend	4.5	4.5	4.5
Medical cost trend rate decrease to ultimate rate in year	2032	2029	2029

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Contributions

Contributions to the U.S. postretirement benefit plan will be approximately $0.9 million in 2023, $1.3 million in 1 to 3 years, $0.8 million in 3 to 5 years and $1.3 million, thereafter.

Expected Future Benefit Payments

Future benefit payments are expected to be paid as follows:

	Benefit Payments (in thousands)
2023	$ 853
2023	688
2024	573
2025	436
2027	386
2028-2031	1,291

Q. STOCK-BASED COMPENSATION

Stock Compensation Plans

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

Service-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.

Performance-based restricted stock units ("PRSUs") granted to Teradyne's executive officers may have a performance metric based on relative total shareholder return ("TSR"). 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 0% to 200% of the target shares. 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 to the date described in the retirement provisions below. Compensation expense for executive officers meeting the retirement provisions prior to the grant date is recognized during the year following 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.

PRSUs granted to Teradyne's executive officers may also have 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 0% to 200% 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 executive officers meeting the retirement provisions prior to the grant date is recognized during the year following the 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.

If a PRSU 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. 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.

During 2022, 2021 and 2020, Teradyne granted 0.4 million, 0.3 million and 0.4 million of service-based restricted stock unit awards to employees at a weighted average grant date fair value of $109.42, $114.16, and $71.31, respectively.

During 2022, 2021, and 2020, Teradyne granted 0.1 million of service-based restricted stock unit awards to non-employee directors at a weighted average grant date fair value of $105.93, $128.70, and $66.56, respectively.

During 2022, 2021, and 2020, Teradyne granted 0.1 million of PBIT PRSUs with a grant date fair value of $110.84, $113.65 and $70.94, respectively.

During 2022, 2021 and 2020, Teradyne granted 0.1 million TSR PRSUs, with a grant date fair value of $101.06, $125.02, and $89.93, respectively. The fair value was estimated using the Monte Carlo simulation model with the following assumptions:

	2022	2021	2020
Risk-free interest rate	1.4%	0.2%	1.5%
Teradyne volatility-historical	47.1%	43.9%	34.9%
NYSE Composite Index volatility-historical	22.7%	22.9%	11.4%
Dividend yield	0.4%	0.4%	0.6%

Expected volatility was based on the historical volatility of Teradyne's stock and the NYSE Composite Index for each of the 2022, 2021 and 2020 grants 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 each of the grants. Dividend yield was based upon an estimated annual dividend amount of $0.44 per share for 2022, $0.40 per share for 2021, and $0.40 per share for 2020, divided by Teradyne's stock price on the grant date of $112.12 for the 2022 grants, $113.48 for the 2021 grants, and $72.10 for the 2020 grants.

During 2022, 2021 and 2020, Teradyne granted 0.1 million of service-based stock options to executive officers at a weighted average grant date fair value of $39.01, $36.60, and $20.93, respectively.

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

	2022	2021	2020
Expected life (years)	4.0	5.0	5.0
Risk-free interest rate	1.6%	0.4%	1.5%
Volatility-historical	43.7%	37.8%	32.0%
Dividend yield	0.4%	0.4%	0.5%

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 $0.44 per share divided by Teradyne's stock on the grant date of $112.12 for the 2022 grant, $0.40 per share divided by Teradyne's stock price on the grant date of $113.48 for the 2021 grants, and $72.61 for the 2020 grants.

Stock compensation plan activity for the years 2022, 2021, and 2020, is as follows:

	2022	2021 (in thousands)	2020
Restricted Stock Units:			
Non-vested at January 1	1,417	1,789	2,269
Awarded	660	447	616
Vested	(709)	(749)	(1,028)
Forfeited	(51)	(70)	(68)
Non-vested at December 31	1,317	1,417	1,789
Stock Options:			
Outstanding at January 1	171	216	319
Granted	42	34	56
Exercised	(25)	(78)	(159)
Forfeited	—	(1)	—
Expired	—	—	—
Outstanding at December 31	188	171	216
Vested and expected to vest at December 31	188	171	216
Exercisable at December 31	69	30	27

Total shares available for the years 2022, 2021, and 2020:

	2022	2021 (in thousands)	2020
Shares available:			
Available for grant at January 1	5,713	6,123	6,727
Options granted	(42)	(34)	(56)
Options forfeited	—	1	—
Restricted stock units awarded	(660)	(447)	(616)
Restricted stock units forfeited	51	70	68
Available for grant at December 31	5,062	5,713	6,123

Weighted average restricted stock unit award date fair value information for the years 2022, 2021, and 2020, is as follows:

	2022	2021	2020
Non-vested at January 1	$ 67.97	$ 47.84	$35.58
Awarded	108.74	115.51	72.76
Vested	54.27	43.99	31.53
Forfeited	85.71	65.52	45.36
Non-vested at December 31	$ 88.71	$ 67.97	$47.84

Restricted stock unit awards aggregate intrinsic value information at December 31 for the years 2022, 2021, and 2020 is as follows:

	2022	2021	2020
		(in thousands)	
Vested	$ 95,408	$101,679	$ 71,582
Outstanding	115,087	231,763	214,509
Expected to vest	108,666	231,246	210,301

Restricted stock units weighted average remaining contractual terms (in years) information at December 31 for the years 2022, 2021, and 2020 is as follows:

	2022	2021	2020
Outstanding	0.99	0.89	0.96
Expected to vest	0.99	0.89	0.96

Weighted average stock options exercise price information for the year ended December 31, 2022 is as follows:

	2022
Outstanding at January 1	$ 62.13
Options granted	112.12
Options exercised	37.13
Options forfeited	—
Options cancelled	—
Outstanding at December 31	76.52
Exercisable at December 31	55.90

The total cash received from employees as a result of employee stock options exercised during the years ended December 31, 2022, 2021, and 2020, was $0.9 million, $3.1 million, and $3.8 million, respectively. In connection with these exercises, the tax benefit realized by Teradyne for the years ended December 31, 2022, 2021, and 2020, was $0.1 million, $0.4 million, and $1.5 million, respectively.

Stock option aggregate intrinsic value information for the years ended December 31, 2022, 2021, and 2020 is as follows:

	2022	2021	2020
		(in thousands)	
Exercised	$2,030	$ 6,345	$ 9,682
Outstanding	3,963	17,356	16,083
Expected to vest	1,583	13,500	13,499
Vested and exercisable	2,380	3,856	2,584

Stock options weighted average remaining contractual terms (in years) information at December 31, for the years 2022, 2021, and 2020 is as follows:

	2022	2021	2020
Outstanding	4.2	4.4	4.6
Expected to vest	4.8	4.8	4.9
Vested and exercisable	3.1	2.5	2.5

As of December 31, 2022, total unrecognized expense related to non-vested restricted stock unit awards and stock options was $61.1 million and is expected to be recognized over a weighted average period of 2.5 years.

In 2022, 2021 and 2020, Teradyne recognized a discrete tax benefit of $12.3 million, $14.7 million and $9.6 million, respectively, related to net excess tax benefit.

Employee Stock Purchase Plan

Under the ESPP, eligible employees may purchase shares of common stock through regular payroll deductions of up to 10% of their compensation, to a maximum of shares with a fair market value of $25,000 per calendar year, not to exceed 6,000 shares. Under the plan, the price paid for the common stock is equal to 85% of the stock price on the last business day of the six-month purchase period.

In July 2022, 0.2 million shares of common stock were issued to employees who participated in the plan during the first half of 2022 at the price of $76.12 per share. In January 2023, Teradyne issued 0.2 million shares of common stock to employees who participated in the plan during the second half of 2022 at the price of $74.25 per share.

In July 2021, 0.1 million shares of common stock were issued to employees who participated in the plan during the first half of 2021 at the price of $113.87 per share. In January 2022, Teradyne issued 0.1 million shares of common stock to employees who participated in the plan during the second half of 2021 at the price of $139.00 per share.

In July 2020, 0.2 million shares of common stock were issued to employees who participated in the plan during the first half of 2020 at the price of $71.83 per share. In January 2021, Teradyne issued 0.1 million shares of common stock to employees who participated in the plan during the second half of 2020 at the price of $101.91 per share.

As of December 31, 2022, there were 3.9 million shares available for grant under the ESPP.

The following table provides the effect to income from operations for recording stock-based compensation for the years ended December 31, 2022, 2021, and 2020:

	2022	2021	2020
		(in thousands)	
Cost of revenues	$ 4,050	$ 4,196	$ 4,227
Engineering and development	9,992	9,783	12,039
Selling and administrative	34,186	31,664	28,640
Stock-based compensation	48,228	45,643	44,906
Income tax benefit	(11,493)	(14,389)	(13,060)
Total stock-based compensation expense after income taxes	$ 36,735	$ 31,254	$ 31,846

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R. SAVINGS PLAN

Teradyne sponsors a defined contribution employee retirement savings plan ("Savings Plan") covering substantially all U.S. employees. Under the Savings Plan, employees may contribute up to 20% of their compensation (subject to Internal Revenue Service limitations). The Savings Plan provides for a discretionary employer match that is determined each year. In 2022, 2021 and 2020, Teradyne matched 100% of eligible employee contributions up to 4% of their compensation for employees not accruing benefits in the U.S. Qualified Pension Plan. There was no match for employees still actively accruing benefits in the U.S. Qualified Pension Plan. Teradyne's contributions vest 25% per year for the first four years of employment, and contributions for those employees with four years of service vest immediately.

In addition, Teradyne sponsors an unfunded U.S. Supplemental Savings Plan to provide savings benefits in excess of those allowed by the Employee Retirement Income Security Act of 1974 and the Internal Revenue Code. The provisions of this plan are the same as the Savings Plan. The liability for the U.S. Supplemental Savings Plan at December 31, 2022 and 2021, was $44.1 million and $47.2 million, respectively, and is included in retirement plan liabilities. Teradyne contributes to defined contributions savings plans for its foreign employees. Under Teradyne's savings plans, amounts charged to the statements of operations for the years ended December 31, 2022, 2021, and 2020 were $30.1 million, $26.9 million, and $21.7 million, respectively.

S. INCOME TAXES

The components of income before income taxes and the provision (benefit) for income taxes as shown in the consolidated statements of operations were as follows:

	2022	2021 (in thousands)	2020
Income before income taxes:			
U.S.	$385,968	$ 403,451	$312,153
Non-U.S.	454,417	757,504	588,862
	$840,385	$1,160,955	$901,015
Provision (benefit) for income taxes:			
Current:			
U.S. Federal	$ 86,692	$ 58,218	$ 58,678
Non-U.S.	74,204	105,153	75,193
State	2,681	300	(1,315)
	163,577	163,671	132,556
Deferred:			
U.S. Federal	(36,739)	(15,106)	(12,604)
Non-U.S.	1,232	(4,300)	(5,127)
State	(3,186)	2,101	2,043
	(38,693)	(17,305)	(15,688)
Total provision for income taxes:	$124,884	$ 146,366	$116,868

Income tax expense for 2022, 2021 and 2020 totaled $124.9 million, $146.4 million, and $116.9 million, respectively. The effective tax rate for 2022, 2021 and 2020 was 14.9%, 12.6% and 13.0%, respectively.

At December 31, 2022, Teradyne's remaining tax liability resulting from the U.S. one-time transition tax on the mandatory deemed repatriation of foreign earnings amounts to $67.0 million. Teradyne will pay approximately $7.9 million related to the transition tax in 2023, $34.5 million in 1 to 3 years, and $24.6 million in 3 to 5 years.

Teradyne has made an accounting policy election to account for global intangible low-taxed income ("GILTI") as a component of tax expense in the period in which Teradyne is subject to the rules and therefore did not provide any deferred tax impacts of GILTI in its consolidated financial statements.

On July 27, 2015, in Altera Corp. ("Altera") v. Commissioner, the U.S. Tax Court issued an opinion invalidating the regulations relating to the treatment of stock-based compensation expense in an intercompany cost-sharing arrangement. A final decision was issued by the Tax Court in December 2015. The IRS appealed the decision in June 2016. On July 24, 2018, the U.S. Court of Appeals for the Ninth Circuit ("Ninth Circuit") issued a decision that was subsequently withdrawn and a reconstituted panel conferred on the appeal. On June 7, 2019, the Ninth Circuit upheld the cost-sharing regulations. On November 12, 2019, the Ninth Circuit denied Altera's petition for rehearing of its case. Altera's application for certiorari to the Supreme Court was declined on June 22, 2020. In the fourth quarter of 2020 and 2021, Teradyne recognized approximately $2.3 million of tax expense and $2.5 million of tax benefit in 2020 and 2021, respectively, related to the inclusion of stock-based compensation in its intercompany cost-sharing arrangement.

The increase in the effective tax rate from 2021 to 2022 is primarily attributable to a shift in the geographic distribution of income, which increased the income subject to taxation in higher tax rate jurisdictions relative to lower tax rate jurisdictions, increases in expense from U.S. global low-taxed income and increases in expense from non-deductible officer compensation. These increases in expense were partially offset by increases in benefits from the U.S. foreign derived intangible income deduction and tax credits.

The decrease in the effective tax rate from 2020 to 2021 is primarily attributable to a decrease in the expense from U.S. global low-taxed income partially offset by a decrease in the benefit from foreign tax credits and a shift in the geographic distribution of income, which increased the income subject to taxation in higher tax rate jurisdictions relative to lower tax rate jurisdictions.

A reconciliation of the effective tax rate for the years 2022, 2021 and 2020 is as follows:

	2022	2021	2020
U.S. statutory federal tax rate	21.0%	21.0%	21.0%
Non-deductible officers' compensation	1.3	0.8	0.5
U.S. global intangible low-taxed income	1.2	0.6	2.1
U.S. foreign derived intangible income	(3.1)	(2.3)	(2.2)
Foreign taxes	(1.9)	(4.5)	(5.6)
U.S. research and development credit	(1.8)	(1.4)	(1.3)
Equity compensation	(1.1)	(1.0)	(0.8)
Foreign tax credits	(1.0)	(0.5)	(1.2)
State income taxes, net of federal tax benefit	(0.1)	0.2	0.3
Other, net	0.4	(0.3)	0.2
	14.9%	12.6%	13.0%

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 attributable to the Singapore tax holiday for the years ended December 31, 2022, 2021 and 2020 were $16.0 million or $0.09 per diluted share, $33.3 million or $0.18 per diluted share, and $29.9 million or $0.16 per diluted share, respectively. In November 2020, Teradyne entered into an agreement with the Singapore Economic Development Board which extended our Singapore tax holiday under substantially similar terms to the agreement which expired on December 31, 2020. The new tax holiday is scheduled to expire on December 31, 2025.

Significant components of Teradyne's deferred tax assets (liabilities) as of December 31, 2022 and 2021 were as follows:

	2022	2021
	(in thousands)	
Deferred tax assets:		
Tax credits	$ 105,503	$ 98,378
Research and development	47,760	—
Accruals	30,747	41,459
Inventory valuations	22,554	20,991
Pension liabilities	21,335	28,722
Lease liability	18,679	16,484
Deferred revenue	14,909	11,164
Equity compensation	6,578	6,630
Vacation accrual	5,856	6,050
Investment impairment	3,292	3,292
Marketable securities	2,283	—
Net operating loss carryforwards	1,857	1,721
Intangible assets	350	—
Other	2,520	774
Gross deferred tax assets	284,223	235,665
Less: valuation allowance	(103,807)	(97,170)
Total deferred tax assets	$ 180,416	$138,495
Deferred tax liabilities:		
Depreciation	$ (19,078)	$ (10,691)
Right-of-use assets	(16,607)	(14,738)
Contingent consideration	(5,214)	(5,214)
Intangible assets	—	(8,531)
Marketable securities	—	(3,220)
Total deferred tax liabilities	$ (40,899)	$ (42,394)
Net deferred assets	$ 139,517	$ 96,101

As of December 31, 2022 and 2021, Teradyne evaluated the likelihood that it would realize deferred income taxes to offset future taxable income and concluded that it is more likely than not that a substantial majority of its deferred tax assets will be realized through consideration of both the positive and negative evidence. At December 31, 2022 and 2021, Teradyne maintained a valuation allowance for certain deferred tax assets of $103.8 million and $97.2 million, respectively, primarily related to state net operating losses and state tax credit carryforwards, due to the uncertainty regarding their realization. Adjustments could be required in the future if Teradyne estimates that the amount of deferred tax assets to be realized is more or less than the net amount recorded.

At December 31, 2022, Teradyne had tax effected operating loss carryforwards that expire in the following years:

	State Operating Loss Carryforwards	Foreign Operating Loss Carryforwards
	(in thousands)	
2023	$ 222	$ —
2024	6	—
2025	4	—
2026	—	—
2027	—	—
2028-2032	299	676
2033-2037	44	3
Beyond 2037	24	—
Non-expiring	29	550
Total	$ 628	$ 1,229

Teradyne has approximately $138.4 million of tax credit carryforwards including federal business tax credits of approximately $2.4 million which expire in 2028 through 2032, and state tax credits of $136.1 million, of which $72.0 million do not expire and the remainder expires in the years 2023 through 2042.

Teradyne's gross unrecognized tax benefits for the years ended December 31, 2022, 2021 and 2020 were as follows:

	2022	2021	2020
		(in thousands)	
Beginning balance as of January 1	$14,465	$17,903	$21,180
Additions:			
Tax positions for current year	1,398	1,417	1,082
Tax positions for prior years	13	30	66
Reductions:			
Tax positions for prior years	(56)	(1,639)	(2,989)
Expiration of statutes	(212)	(3,246)	(1,436)
Ending balance as of December 31	$15,608	$14,465	$17,903

Current year additions and prior year reductions relate to federal and state research credits. Prior year reductions and expirations of statute relate to foreign net operating loss carryforwards.

Of the $15.6 million of unrecognized tax benefits as of December 31, 2022, $10.1 million would impact the consolidated income tax rate if ultimately recognized. The remaining $5.5 million would impact deferred taxes if recognized.

As of December 31, 2022, Teradyne does not anticipate a material change in the balance of unrecognized tax benefits during the next twelve months.

Teradyne records all interest and penalties related to income taxes as a component of income tax expense. Accrued interest and penalties related to income tax items at December 31, 2022 and 2021 amounted to $0.4 million and $0.3 million, respectively. For the years ended December 31, 2022, 2021 and 2020, expense of $0.1 million, benefit of $0.9 million, and expense of $0.2 million, respectively, was recorded for interest and penalties related to income tax items.

Teradyne is subject to U.S. federal income tax, as well as income tax in multiple state, local and foreign jurisdictions. As of December 31, 2022, all material state and local income tax matters have been concluded through 2017, all material federal income tax matters have been concluded through 2017 and all material foreign income tax matters have been concluded through 2016. However, in some jurisdictions, including the United States, operating losses and tax credits may be subject to adjustment until such time as they are utilized and the year of utilization is closed to adjustment.

As of December 31, 2022, Teradyne is not permanently reinvested with respect to the unremitted earnings of non-U.S. subsidiaries to the extent that those earnings exceed local statutory and operational requirements. Remittance of those earnings is not expected to result in material income tax.

T. OPERATING SEGMENT, GEOGRAPHIC AND SIGNIFICANT CUSTOMER INFORMATION

Teradyne has four reportable segments (Semiconductor Test, System Test, Wireless Test and Robotics). Each of the reportable segments represents an individual operating segment. On September 15, 2020, Teradyne announced the appointment of Gregory Smith as President of Robotics reportable segment effective October 1, 2020. With the appointment of the President of Robotics, the Robotics reportable segment is considered one operating segment and one reporting unit. 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 storage and system level test, defense/aerospace instrumentation test, and circuit-board test. The Wireless Test segment includes operations related to the design, manufacturing and marketing of wireless test products and services. The Robotics segment includes operations related to the design, manufacturing and marketing of collaborative robotic arms, autonomous mobile robots and advanced robotic control software. Each operating segment has a segment manager who is accountable to and maintains regular contract with Teradyne’s chief operating decision maker (Teradyne’s chief executive officer) to discuss operating activities, financial results, forecasts, and plans for the segment.

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 are the same as those described in Note B: “Accounting Policies.”

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Segment information for the years ended December 31, 2022, 2021, and 2020 is as follows:

	Semiconductor Test	System Test	Robotics	Wireless Test	Corporate and Eliminations	Consolidated
			(in thousands)			
2022						
Revenues	$ 2,080,590	$469,346	$403,138	$201,720	$ 251	$3,155,045
Income (loss) before taxes (1)(2)	634,488	166,879	(16,244)	66,820	(11,558)	840,385
Total assets (3)	1,382,623	165,925	665,638	94,298	1,192,768	3,501,252
Property additions	126,898	7,275	25,712	3,364	—	163,249
Depreciation and amortization expense	76,532	3,235	25,339	4,991	578	110,675
2021						
Revenues	$ 2,642,342	$467,739	$375,905	$216,895	$ —	$3,702,881
Income (loss) before taxes (1)(2)	976,988	163,064	(8,167)	83,543	(54,473)	1,160,955
Total assets (3)	1,245,596	170,954	701,196	107,513	1,584,166	3,809,425
Property additions	115,618	3,905	9,821	3,128	—	132,472
Depreciation and amortization expense	75,982	3,156	27,336	6,055	12,956	125,485
2020						
Revenues	$ 2,259,597	$409,729	$279,731	$173,016	$ (604)	$3,121,469
Income (loss) before taxes (1)(2)	739,695	152,092	(24,019)	41,950	(8,703)	901,015
Total assets (3)	1,070,378	138,295	712,936	106,273	1,624,464	3,652,346
Property additions	168,055	3,092	8,899	4,931	—	184,977
Depreciation and amortization expense	64,998	3,426	36,242	6,258	15,819	126,743

(1) Included in Corporate and Eliminations are interest income, interest expense, net foreign exchange gains (losses), intercompany eliminations, pension and postretirement plan actuarial gains (losses), legal and environmental fees, contingent consideration adjustments, acquisition related charges and compensation and loss on convertible debt conversions in 2021.

(2) Included in income (loss) before taxes are charges and credits related to restructuring and other, inventory charges and loss on convertible debt conversions in 2021.

(3) Total assets are attributable to each segment. Corporate assets consist of cash and cash equivalents, marketable securities and certain other assets.

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

	For the Years Ended December 31, 2022	2021 (in thousands)	2020
Semiconductor Test:			
Cost of revenues—inventory charge	$21,456	$ 6,661	$ 11,013
Contract termination settlement fee	—	—	4,000
System Test:			
Cost of revenues—inventory charge	$ 1,730	$ 641	$ 887
Robotics:			
Cost of revenues—inventory charge	$ 3,668	$ 6,403	$ 834
Restructuring and other—employee severance	2,115	1,210	1,584
Restructuring and other—acquisition related expenses and compensation	—	1,000	985
Wireless Test:			
Cost of revenues—inventory charge	$ 4,598	$ 1,770	$ 4,800
Corporate and Eliminations:			
Restructuring and other—legal settlement charge	$14,700	$12,000	$ —
Restructuring and other—environmental and legal liabilities	2,700	1,971	—
Restructuring and other—gain on sale of asset	(3,410)	—	—
Other (income) expense, net—loss on convertible debt conversion	—	28,828	—
Restructuring and other—AutoGuide contingent consideration adjustment	—	(7,227)	(19,724)
Restructuring and other—MiR contingent consideration adjustment	—	—	(3,546)
Restructuring and other—acquisition related expenses and compensation	—	(513)	1,728
Selling and administrative—equity modification charge	—	—	766

Information as to Teradyne’s revenues by country is as follows:

	2022	2021 (in thousands)	2020
Revenues from customers (1):			
Taiwan	$ 626,424	$ 1,117,874	$ 1,178,068
Korea	544,816	502,167	391,571
China	491,798	631,963	465,722
United States	469,948	392,626	321,674
Europe	268,384	259,954	205,587
Japan	162,920	166,231	143,983
Malaysia	142,203	136,774	56,096
Thailand	137,356	138,812	138,787
Philippines	124,107	166,838	68,887
Singapore	99,503	121,582	76,460
Rest of the World	87,586	68,060	74,634
	$ 3,155,045	$ 3,702,881	$ 3,121,469

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

In 2021 and 2020, revenues from Taiwan Semiconductor Manufacturing Company Ltd., a customer of Teradyne’s Semiconductor Test segment, accounted for 12% and 15%, respectively, of Teradyne’s consolidated revenues. Teradyne estimates consolidated revenues driven by Qualcomm, a customer of our Semiconductor Test, System Test, and Wireless Test segments, combining direct and indirect sales, accounted for approximately 11% of its consolidated revenues in 2022 and less than 10% in 2021 and 2020. Teradyne estimates consolidated revenues driven by one OEM customer, of our Semiconductor Test and Wireless Test segments, combining direct sales to that customer with sales to the customer's OSATs (which include Taiwan Semiconductor Manufacturing Company Ltd.), accounted for less than 10% of its consolidated revenues in 2022, and 19% and 25% in 2021 and 2020, respectively.

Long-lived assets by geographic area:

	United States	Foreign (in thousands)	Total
December 31, 2022	$328,341	$164,076	$492,417
December 31, 2021	$308,438	$147,609	$456,047

U. STOCK REPURCHASE PROGRAM

In January 2021, Teradyne's Board of Directors cancelled the January 2020 repurchase program and approved a repurchase program for up to $2.0 billion of common stock. In 2022, Teradyne repurchased 7.3 million shares of common stock for $752.1 million at an average price of $103.69 per share. In 2021, Teradyne repurchased 4.8 million shares of common stock for $600.0 million at an average price of $125.74 per share. The cumulative repurchases under this repurchase program as of December 31, 2022 were 12.0 million shares of common stock for $1,352.1 million at an average price per share of $112.44.

In January 2023, Teradyne's Board of Directors cancelled the January 2021 repurchase program and approved a new repurchase program for up to $2.0 billion of common stock. Teradyne intends to repurchase up to $500.0 million of its common stock in 2023 based on market conditions.

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

V. SUBSEQUENT EVENTS

In January 2023, Teradyne's Board of Directors declared a quarterly cash dividend of $0.11 per share to be paid on March 17, 2023 to shareholders of record as of February 17, 2023. 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.

Mark E. Jagiela retired as Chief Executive Officer of Teradyne and as a member of Teradyne's Board of Directors effective February 1, 2023. In connection with his retirement, Teradyne entered into an agreement on January 31, 2023 with Mr. Jagiela (the "Retirement Agreement"). Under the Retirement Agreement, Mr. Jagiela's unvested service based restricted stock units and stock options granted prior to his Retirement Date will continue to vest in accordance with their terms through February 1, 2026; and any vested options or options that vest during that period may be exercised for the remainder of the applicable option term. In the Retirement Agreement, Mr. Jagiela agreed to be bound by non-competition and non-solicitation restrictions through February 1, 2026. The Retirement Agreement also includes additional, standard terms and conditions relating to Mr. Jagiela's separation from Teradyne. Teradyne will record a stock-based compensation expense of approximately $5.8 million in the first quarter of 2023 related to the Retirement Agreement.

SUPPLEMENTARY INFORMATION
(Unaudited)

Item 9: ***Changes in and disagreements with accountants on accounting and financial disclosure***

None.

Item 9A: ***Controls and procedures***

Disclosure Controls and Procedures

As of the end of the period covered by this report, our management, with the participation of our CEO and CFO, evaluated the effectiveness of our disclosure controls and procedures pursuant to Rule 13a-15(b) promulgated under the Exchange Act. Based upon that evaluation, our CEO and CFO 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 by us 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 CEO and CFO, as appropriate to allow timely decisions regarding required disclosure.

Changes in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting during the fourth fiscal quarter ended December 31, 2022 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Management's Annual Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rule 13a-15(f). Under the supervision and with the participation of our management, including our CEO and CFO, we conducted an evaluation of the effectiveness of our internal control over financial reporting based on the framework in *Internal Control—Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on our evaluation under the framework in *Internal Control—Integrated Framework (2013)*, our management concluded that our internal control over financial reporting was effective as of December 31, 2022.

The effectiveness of our internal control over financial reporting as of December 31, 2022 has been audited by PricewaterhouseCoopers LLP, our independent registered public accounting firm, as stated in their report which is included under Item 8 of this Annual Report.

Inherent Limitations on Effectiveness of Controls

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Item 9B: ***Other Information***

None.

Item 9C: ***Disclosure Regarding Foreign Jurisdictions that Prevent Inspections***

Not applicable.

PART III

Item 10: *Directors, Executive Officers and Corporate Governance*

Certain information relating to our directors and executive officers, committee information, reports and charters, executive compensation, security ownership of certain beneficial owners and management and related stockholder matters, and certain relationships and related transactions is incorporated by reference herein from our definitive proxy statement in connection with our Annual Meeting of Shareholders to be held on May 12, 2023. The proxy statement will be filed with the SEC not later than 120 days after the close of the fiscal year. For this purpose, the Compensation Committee Report included in such proxy statement is specifically not incorporated herein. Also see "Item 1: Business—Our Executive Officers."

Item 11: *Executive Compensation*

Certain information relating to our directors and executive officers, executive compensation, security ownership of certain beneficial owners and management and related stockholder matters, and certain relationships and related transactions is incorporated by reference herein from our definitive proxy statement in connection with our Annual Meeting of Shareholders to be held on May 12, 2023. The proxy statement will be filed with the SEC not later than 120 days after the close of the fiscal year. For this purpose, the Compensation Committee Report included in such proxy statement is specifically not incorporated herein.

Item 12: *Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters*

Certain information relating to our directors and executive officers, executive compensation, security ownership of certain beneficial owners and management and related stockholder matters, and certain relationships and related transactions is incorporated by reference herein from our definitive proxy statement in connection with our Annual Meeting of Shareholders to be held May 12, 2023. The proxy statement will be filed with the SEC not later than 120 days after the close of the fiscal year. For this purpose, the Compensation Committee Report included in such proxy statement is specifically not incorporated herein. Also see "Item 7: Management's Discussion and Analysis of Financial Condition and Results of Operations—Equity Compensation Plans."

Item 13: *Certain Relationships and Related Transactions, and Director Independence*

Certain information relating to our directors and executive officers, executive compensation, security ownership of certain beneficial owners and management and related stockholder matters, and certain relationships and related transactions is incorporated by reference herein from our definitive proxy statement in connection with our Annual Meeting of Shareholders to be held on May 12, 2023. The proxy statement will be filed with the SEC not later than 120 days after the close of the fiscal year. For this purpose, the Compensation Committee Report included in such proxy statement is specifically not incorporated herein.

Item 14: *Principal Accountant Fees and Services*

Certain information relating to audit fees and other of Teradyne's independent registered public accounting firm is incorporated by reference herein from our definitive proxy statement in connection with our Annual Meeting of Shareholders to be held on May 12, 2023. The proxy statement will be filed with the SEC not later than 120 days after the close of the fiscal year. For this purpose, the Audit Committee Report included in such proxy statement is specifically not incorporated herein.

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PART IV

Item 15: ***Exhibits and Financial Statement Schedule.***

15(a)(1) Financial Statements

The following consolidated financial statements are included in Item 8:

15(a)(2) Financial Statement Schedule

The following consolidated financial statement schedule is included in Item 15(c):

Schedule II—Valuation and Qualifying Accounts

Schedules other than those listed above have been omitted since they are either not required or information is otherwise included.

15(a)(3) Listing of Exhibits

The Exhibits which are filed with this report or which are incorporated by reference herein are set forth in the Exhibit Index.

15(c) Financial Statement Schedules

TERADYNE, INC.

SCHEDULE II—VALUATION AND QUALIFYING ACCOUNTS

Column A	Column B	Column C	Column D	Column E	Column F
Description	Balance at Beginning of Period	Additions Charged to Cost and Expenses	Other	Deductions	Balance at End of Period
			(in thousands)		
Valuation reserve deducted in the balance sheet from the asset to which it applies:					
Accounts receivable:					
2022 Allowance for doubtful account	$ 2,012	$ 500	$ (6)	$ 551	$ 1,955
2021 Allowance for doubtful account	$ 2,034	$ 500	$ (27)	$ 495	$ 2,012
2020 Allowance for doubtful account	$ 1,736	$ 356	$ 32	$ 90	$ 2,034

Column A	Column B	Column C	Column D	Column E	Column F
Description	Balance at Beginning of Period	Additions Charged to Cost and Expenses	Other	Deductions	Balance at End of Period
			(in thousands)		
Valuation reserve deducted in the balance sheet from the asset to which it applies:					
Inventory:					
2022 Inventory reserve	$ 114,055	$ 31,452	$ 1,926	$ 10,595	$ 136,838
2021 Inventory reserve	$ 110,587	$ 15,475	$ 1,335	$ 13,342	$ 114,055
2020 Inventory reserve	$ 103,556	$ 17,534	$ (521)	$ 9,982	$ 110,587

Column A	Column B	Column C	Column D	Column E	Column F
Description	Balance at Beginning of Period	Additions Charged to Cost and Expenses	Other	Deductions	Balance at End of Period
			(in thousands)		
Valuation reserve deducted in the balance sheet from the asset to which it applies:					
Deferred taxes:					
2022 Valuation allowance	$ 97,170	$ 7,652	$ 21	$ 1,036	$ 103,807
2021 Valuation allowance	$ 84,962	$ 13,502	$ —	$ 1,294	$ 97,170
2020 Valuation allowance	$ 77,177	$ 7,785	$ —	$ —	$ 84,962

Item 16: ***Form 10-K Summary***

Not applicable.

EXHIBIT INDEX

The following designated exhibits are, as indicated below, either filed herewith or have heretofore been filed with the Securities and Exchange Commission and are referred to and incorporated by reference to such filings.

Exhibit No.	Description	SEC Document Reference
3.1	Restated Articles of Organization.	Exhibit 3.1 to Teradyne's Current Report on Form 8-K filed on May 13, 2021.
3.2	Amended and Restated By-laws, as amended.	Exhibit 3.1 to Teradyne's Current Report on Form 8-K filed on September 6, 2022.
4.1	Indenture dated as of December 12, 2016, between Teradyne, Inc. and Wilmington Trust, National Association, as trustee.	Exhibit 4.1 to Teradyne's Current Report on Form 8-K filed on December 12, 2016.
4.2	First Supplemental Indenture dated as of November 4, 2021 between Teradyne, Inc. and Wilmington Trust, National Association, as trustee.	Exhibit 4.1 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended October 3, 2021.
4.3	Description of Teradyne, Inc. Securities Registered under Section 12 of the Exchange Act.	Filed herewith.
10.1†	Standard Manufacturing Agreement entered into as of November 24, 2003 by and between Teradyne and Solectron.	Exhibit 10.1 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended September 30, 2007.
10.2†	Second Amendment to Standard Manufacturing Agreement, dated as of August 27, 2007, by and between Teradyne and Solectron.	Exhibit 10.3 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended September 30, 2007.
10.3†	Sixth Amendment to Standard Manufacturing Agreement, dated as of July 27, 2009, by and between Teradyne and Flextronics Corporation.	Exhibit 10.5 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2009.
10.4	Addendum to Standard Manufacturing Agreement (Authorized Purchase Agreement)—Revised July 1, 2010.	Exhibit 10.6 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2010.
10.5	Eighth Amendment to Standard Manufacturing Agreement, dated as of April 13, 2012, by and between Teradyne and Flextronics Sales & Marketing North Asia (L) LTD.	Exhibit 10.7 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2012.
10.6†	Ninth Amendment to Standard Manufacturing Agreement, dated as of September 17, 2012, by and between Teradyne and Flextronics Sales & Marketing North Asia (L) LTD.	Exhibit 10.8 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2012.
10.7	2006 Equity and Cash Compensation Incentive Plan, as amended. *	Exhibit 10.2 to Teradyne's Current Report on Form 8-K filed on May 13, 2021.
10.8	Danish Sub-Plan to the 2006 Equity and Cash Compensation Incentive Plan.	Exhibit 10.10 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2018.

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Exhibit No.	Description	SEC Document Reference
10.9	Form of Performance-Based Restricted Stock Unit Agreement for Executive Officers under 2006 Equity and Cash Compensation Incentive Plan.*	Exhibit 10.9 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2020.
10.10	Form of Time-Based Restricted Stock Unit Agreement for Executive Officers under 2006 Equity and Cash Compensation Incentive Plan.*	Exhibit 10.10 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2020.
10.11	Form of Executive Officer Stock Option Agreement under 2006 Equity and Cash Compensation Incentive Plan, as amended. *	Exhibit 10.11 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2020.
10.12	Form of Restricted Stock Unit Agreement for Directors under 2006 Equity and Cash Compensation Incentive Plan.*	Exhibit 10.12 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2016.
10.13	1996 Employee Stock Purchase Plan, as amended.*	Filed herewith.
10.14	Danish Sub-Plan to the 1996 Employee Stock Purchase Plan.	Exhibit 10.15 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2019
10.15	Deferral Plan for Non-Employee Directors, as amended.*	Exhibit 10.1 to Teradyne's Quarterly Report on form 10-Q for the quarter ended October 3, 2021.
10.16	Supplemental Savings Plan, as amended and restated.*	Exhibit 10.18 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2008.
10.17	Supplemental Executive Retirement Plan, as restated.*	Exhibit 10.19 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2008.
10.18	Agreement Regarding Termination Benefits dated January 31, 2023 between Teradyne and Gregory S. Smith.*	Filed herewith.
10.19	Employment Agreement dated May 7, 2004 between Teradyne and Mark Jagiela.*	Exhibit 10.37 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended July 4, 2004.
10.20	Executive Officer Retirement Agreement dated July 17, 2019 between Teradyne and Gregory R. Beecher.*	Exhibit 10.1 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended June 30, 2019.
10.21	Executive Officer Agreement dated January 31, 2023 between Teradyne and Mark Jagiela.*	Filed herewith.
10.22	Amended and Restated Executive Officer Change in Control Agreement dated May 26, 2009 between Teradyne and Charles J. Gray, as amended.*	Exhibit 10.30 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2012.
10.23	Employment Agreement dated July 24, 2009 between Teradyne and Charles J. Gray.*	Exhibit 10.1 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended April 4, 2010.

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Exhibit No.	Description	SEC Document Reference
10.24	Amended and Restated Executive Officer Change in Control Agreement dated June 30, 2012 between Teradyne and Walter G. Vahey, as amended.*	Exhibit 10.32 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2012.
10.25	Employment Agreement dated February 6, 2013 between Teradyne and Walter G. Vahey.*	Exhibit 10.33 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2012.
10.26	Executive Officer Change in Control Agreement dated September 1, 2014 between Teradyne, Inc. and Bradford Robbins.*	Exhibit 10.1 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended September 28, 2014.
10.27	Employment Agreement dated September 1, 2014 between Teradyne, Inc. and Bradford Robbins.*	Exhibit 10.2 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended September 28, 2014.
10.28	Executive Change in Control Agreement dated February 8, 2016 between Teradyne, Inc. and Gregory S. Smith.*	Exhibit 10.1 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended April 3, 2016.
10.29	Employment Agreement dated February 8, 2016 between Teradyne, Inc. and Gregory S. Smith.*	Exhibit 10.2 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended April 3, 2016.
10.30	Teradyne Offer of Employment dated February 8, 2019 for Sanjay Mehta.*	Exhibit 10.1 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended March 31, 2019.
10.31	Executive Officer Change in Control Agreement dated April 25, 2019 between Teradyne, Inc. and Sanjay Mehta.*	Exhibit 10.2 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended March 31, 2019.
10.32	Employment Agreement dated April 25, 2019 between Teradyne, Inc. and Sanjay Mehta.*	Exhibit 10.3 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended March 31, 2019.
10.33	Agreement Regarding Termination Benefits dated April 25, 2019 between Teradyne, Inc. and Sanjay Mehta.*	Exhibit 10.4 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended March 31, 2019.
10.34	Executive Officer Change in Control Agreement dated October 1, 2020 between Teradyne, Inc. and Richard Burns.*	Exhibit 10.1 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended September 27, 2020.
10.35	Employment Agreement dated October 1, 2020 between Teradyne, Inc. and Richard Burns.*	Exhibit 10.2 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended September 27, 2020.
10.36	Time-Based Restricted Stock Unit Agreement dated May 1, 2019 for Sanjay Mehta under 2006 Equity and Cash Compensation Plan.*	Exhibit 10.5 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended March 31, 2019.
10.37	Form of Indemnification Agreement.*	Exhibit 10.24 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2006.
10.38	LitePoint Corporation 2002 Stock Plan.	Exhibit 10.43 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2011.

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Exhibit No.	Description	SEC Document Reference
10.39	Letter Agreement, dated December 6, 2016, between Barclays Bank PLC and Teradyne, Inc., regarding the Base Warrants.	Exhibit 10.1 to Teradyne's Current Report on Form 8-K filed December 12, 2016.
10.40	Letter Agreement, dated December 6, 2016, between Bank of America, N.A., and Teradyne, Inc. regarding the Base Warrants.	Exhibit 10.2 to Teradyne's Current Report on Form 8-K filed December 12, 2016.
10.41	Letter Agreement, dated December 6, 2016, between Wells Fargo Bank, National Association and Teradyne, Inc. regarding the Base Warrants.	Exhibit 10.3 to Teradyne's Current Report on Form 8-K filed December 12, 2016.
10.42	Letter Agreement, dated December 6, 2016, between Barclays Bank PLC and Teradyne, Inc. regarding the Base Call Option Transaction.	Exhibit 10.4 to Teradyne's Current Report on Form 8-K filed December 12, 2016.
10.43	Letter Agreement, dated December 6, 2016, between Bank of America, N.A. and Teradyne, Inc. regarding the Base Call Option Transaction.	Exhibit 10.5 to Teradyne's Current Report on Form 8-K filed December 12, 2016.
10.44	Letter Agreement, dated December 6, 2016, between Wells Fargo Bank, National Association and Teradyne, Inc. regarding the Base Call Option Transaction.	Exhibit 10.6 to Teradyne's Current Report on Form 8-K filed December 12, 2016.
10.45	Letter Agreement, dated December 9, 2016, between Barclays Bank PLC and Teradyne, Inc., regarding the Additional Warrants	Exhibit 10.7 to Teradyne's Current Report on Form 8-K filed December 12, 2016.
10.46	Letter Agreement, dated December 9, 2016, between Bank of America, N.A., and Teradyne, Inc. regarding the Additional Warrants.	Exhibit 10.8 to Teradyne's Current Report on Form 8-K filed December 12, 2016.
10.47	Letter Agreement, dated December 9, 2016, between Wells Fargo Bank, National Association and Teradyne, Inc. regarding the Additional Warrants.	Exhibit 10.9 to Teradyne's Current Report on Form 8-K filed December 12, 2016.
10.48	Letter Agreement, dated December 9, 2016, between Barclays Bank PLC and Teradyne, Inc. regarding the Additional Call Option Transaction.	Exhibit 10.10 to Teradyne's Current Report on Form 8-K filed December 12, 2016.
10.49	Letter Agreement, dated December 9, 2016, between Bank of America, N.A. and Teradyne, Inc. regarding the Additional Call Option Transaction	Exhibit 10.11 to Teradyne's Current Report on Form 8-K filed December 12, 2016.
10.50	Letter Agreement, dated December 9, 2016, between Wells Fargo Bank, National Association and Teradyne, Inc. regarding the Additional Call Option Transaction.	Exhibit 10.12 to Teradyne's Current Report on Form 8-K filed December 12, 2016.
10.51	Credit Agreement dated May 1, 2020 among Teradyne, Inc., Truist Bank, as the administrative agent, issuing bank and swingline lender, and other lenders party thereto.	Exhibit 10.1 to Teradyne's Current Report on Form 8-K filed May 5, 2020.

Exhibit No.	Description	SEC Document Reference
10.52	First Amendment to Credit Agreement dated December 10, 2021 among Teradyne, Inc., Truist Bank, as the administrative agent, issuing bank and swingline lender, and other lenders party thereto.	Exhibit 10.52 to Teradyne's Annual Report on Form 10-K for the fiscal year ended December 31, 2021.
10.53	Second Amendment to Credit Agreement dated October 5, 2022 among Teradyne, Inc., Truist Bank, as the administrative agent, issuing bank and swingline lender, and other lenders party thereto.	Exhibit 10.1 to Teradyne's Quarterly Report on Form 10-Q for the quarter ended October 2, 2022.
21.1	Subsidiaries of Teradyne.	Filed herewith.
23.1	Consent of PricewaterhouseCoopers LLP.	Filed herewith.
31.1	Rule 13a-14(a) Certification of Principal Executive Officer.	Filed herewith.
31.2	Rule 13a-14(a) Certification of Principal Financial Officer.	Filed herewith.
32.1	Section 1350 Certification of Principal Executive Officer.	Furnished herewith.
32.2	Section 1350 Certification of Principal Financial Officer.	Furnished herewith.
101	The following financial information from Teradyne, Inc.'s Annual Report on Form 10-K for the fiscal year ended December 31, 2022, formatted in Inline XBRL (eXtensible Business Reporting Language): (i) Consolidated Balance Sheets as of December 31, 2022 and December 31, 2021, (ii) Consolidated Statements of Operations for the years ended December 31, 2022, 2021 and 2020, (iii) Consolidated Statements of Comprehensive Income (Loss) for the years ended December 31, 2022, 2021 and 2020 (iv) Consolidated Statements of Shareholders' Equity for the years ended December 31, 2022, 2021 and 2020, (v) Consolidated Statements of Cash Flows for the years ended December 31, 2022, 2021 and 2020, and (vi) the Notes to Consolidated Financial Statements.	
104	The cover page of the Annual Report on Form 10-K formatted in Inline XBRL (included in Exhibit 101).	

† -Confidential treatment granted.
* -Management contract or compensatory plan.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) 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 this 22nd day of February 2023.

TERADYNE, INC.

By: /S/ SANJAY MEHTA
Sanjay Mehta,
Vice President, Chief Financial Officer and Treasurer

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Signature	Title	Date
/S/ PAUL J. TUFANO **Paul J. Tufano**	Chair of the Board	February 22, 2023
/S/ GREGORY SMITH **Gregory Smith**	Chief Executive Officer (Principal Executive Officer) and Director	February 22, 2023
/S/ SANJAY MEHTA **Sanjay Mehta**	Vice President, Chief Financial Officer and Treasurer (Principal Financial and Accounting Officer)	February 22, 2023
/S/ EDWIN J. GILLIS **Edwin J. Gillis**	Director	February 22, 2023
/S/ TIMOTHY E. GUERTIN **Timothy E. Guertin**	Director	February 22, 2023
/S/ PETER HERWECK **Peter Herweck**	Director	February 22, 2023
/S/ MERCEDES JOHNSON **Mercedes Johnson**	Director	February 22, 2023
/S/ ERNEST E. MADDOCK **Ernest E. Maddock**	Director	February 22, 2023
/S/ MARILYN MATZ **Marilyn Matz**	Director	February 22, 2023
/S/ Fouad Tamer **Fouad Tamer**	Director	February 22, 2023