

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

(Mark One)

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

For the fiscal year ended **December 31, 2019**

or

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

For the transition period from _____ to _____

Commission file number: **0-10394**

DATA I/O CORPORATION

(Exact name of registrant as specified in its charter)

Washington
(State or other jurisdiction of incorporation)

91-0864123
(I.R.S. Employer Identification No.)

6645 185th Ave NE, Suite 100, Redmond, Washington, 98052
(425) 881-6444

(Address, including zip code, of registrant's principal executive offices and telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock	DAIO	NASDAQ

Securities registered pursuant to Section 12(g) of the Act

None

Indicate by check mark whether the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No

Indicate by check mark whether the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes No

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

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

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

Accelerated filer

Smaller reporting company

Large accelerated filer

Emerging growth company

Non-accelerated filer

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

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

Aggregate market value of voting and non-voting common equity held
by non-affiliates on the registrant as of June 30, 2019:
\$31,697,946

Shares of Common Stock, no par value, outstanding as of March 19, 2020:
8,221,447

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement relating to its May 18, 2020 Annual Meeting of Shareholders are incorporated into Part III of this Annual Report on Form 10-K.

DATA I/O CORPORATION
FORM 10-K
For the Fiscal Year Ended December 31, 2019

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PART I

Item 1. Business

This Annual Report on Form 10-K and the documents incorporated herein by reference contain forward-looking statements based on current expectations, estimates and projections about Data I/O Corporation's industry, management's beliefs and certain assumptions made by management. See "Management's Discussion and Analysis of Financial Condition and Results of Operations – Forward Looking Statements."

General

Data I/O Corporation ("Data I/O", "We", "Our", "Us") is a global market leader for advanced programming, security deployment, security provisioning and associated Intellectual Property ("IP") protection and management solutions used in electronics manufacturing with flash memory, microcontrollers, and flash memory-based intelligent devices as well as secure element devices, authentication devices and secure microcontrollers. We collectively refer to IP protection, security provisioning of devices, provisioning of security into devices, and related services such as cloud onboarding and device and provisioning documentation management as "security deployment". Data I/O® designs, manufactures and sells programming and security deployment systems and services for electronic device manufacturers, specifically targeting high-growth areas such as high-volume users of flash memory and flash memory based microcontrollers. Most electronic products today incorporate a number of programmable semiconductor devices that contain data, operating instructions and security credentials essential for the proper operation of the product and more and more products require security deployment.

Our mission is to bring the world's electronic devices to life. Programmable devices are used in products such as automobile electronics, smartphones, HDTV, tablets, gaming systems and a broad category called Internet of Things ("IoT"). IoT is a broad term that addresses the interconnectivity of devices and other electronic or smart products. Our solutions, some of which include security deployment and process control capabilities, enable us to address the demanding requirements of the electronic device market, where applications security and IP protection are essential to our customer's success. Our largest customers are heavy users of programmable semiconductor devices and include original equipment manufacturers ("OEMs") in automotive electronics, consumer electronics and IoT markets as well as their programming center partners and electronic manufacturing service ("EMS") contract manufacturers.

Data I/O was incorporated in the State of Washington in 1969 and its business was founded in 1972. Our website address is www.dataio.com.

Industry Background

We enable companies to improve productivity, increase supply-chain security and reduce costs by providing device data programming and security deployment solutions that allow our customers to take IP (large design and data files) and protect and program it into memory, microcontroller and logic devices quickly and cost-effectively. We also provide services related to hardware support, system installation and repair, and device programming. Companies that design and manufacture products utilizing programmable electronic devices, ranging from automobiles to cell phones, purchase programming solutions from us. Trends of increasing device densities, shrinking device packages, increased demands for security, and customers increasing their software content file sizes, combined with the increasing numbers of intelligent devices such as automotive electronics and IoT applications, are driving demand for our solutions.

Traditionally, our programming market opportunity focused on the number of semiconductor devices to be programmed, but because of the rapid increase in the density of devices, and increasing demands for supply-chain security, the focus has shifted in many cases from the number and type of devices to the number and type of bits per device to be programmed or securely provisioned. With expected growth in IoT applications, the business opportunity for this market differentiates on quality, security and automation.

Some of our automated programming systems integrate data programming, automated handling functions and/or security deployment into a single product solution. During 2019, we continued to integrate security deployment into some of our solutions. Quality and security-conscious customers, particularly those in high-volume manufacturing and programming, drive this portion of our business.

Products

To accommodate the expanding variety and quantities of programmable devices being manufactured today, we offer multiple solutions for the numerous types of device mix and volume usage by our customers in the various market segments and applications. We work closely with leading manufacturers of programmable devices to develop our products to meet the requirements of a particular device. Our newer products are positioned and recognized as some of the most advanced programming and security deployment solutions.

Our programming solutions include a broad range of products, systems, modules and accessories, grouped into two general categories: automated programming systems and manual programming systems. We provide two categories of automated programming systems: off-line and in-line. Our PSV family of automated programming systems delivers a broad range of programming capacity and capability to the marketplace. Our recently announced PSV2800 Automated Programming System focuses on dedicated high volume manufacturing in a lower cost platform. Our PSV7000 Automated Programming System continues to be adopted in the marketplace, in particular for automotive electronics customers. Our PSV5000 automated programming system combines mid-range capacity and flexibility with competitive pricing. Our PSV3000 Automated Programming System, developed for the Asian automation market, is a lower cost platform for basic programming needs. Our PSV family of handlers has won multiple industry awards for technical excellence and innovation. In 2018 our Lumen®X programmer won five industry awards for Universal Flash Storage (“UFS”) support. Our ConneX® software won the 2017 Circuits Assembly NPI Award, the EM Asia Innovation Award and the SMT China Vision Award. Our SentiX® security provisioning system won the Global Technology Award at Productronica in November 2017 and the Embedded Award for Innovation at the Embedded World show in February 2018. Our Job Composer software for LumenX won the Circuits Assembly NPI Award in January 2019 and January 2020. In October 2019 our Job Composer software won the Mexico Technology Award for Device Programming and in November 2019, our PSV2800 won the Global Technology Award at Productronica and in February 2020, the Circuits Assembly NPI Award. In January 2019 and February 2020, Data I/O won the Circuits Assembly Service Excellence Award.

Our automated systems have list selling prices ranging from \$75,000 to \$550,000 and our manual systems have list selling prices ranging from \$9,000 to \$20,000. Our security deployment system, SentiX®, is currently offered for security provisioning on a pay per part use basis along with related fees.

Data I/O programming technology may be integrated with the PSV family to create highly-flexible systems that deliver outstanding performance with low total cost of ownership. The LumenX programming engine is the fastest solution available for eMMC and UFS programming of large NAND FLASH. Increasing memory densities and the need for faster data interfaces are resulting in an expected transition to the use of UFS devices. LumenX is available on our PSV7000 and PSV5000 and as a standalone manual programmer. FlashCORE™, and our universal job setup tool, Tasklink™ for Windows®, are available in each family of our automated programming systems and in FlashPAK™, our manual programming system. The SentiX security system adds security deployment capability to our data programming system. SentiX allows customers of any size and demand-profile to securely add keys, certificates, and other security information to specialized regions of authentication integrated circuits (“ICs”), secure elements and secure microcontrollers. We provide device support and service on all of our products. Device support is a critical aspect of our business and consists of writing software algorithms for devices and developing socket adapters to hold and connect to the device for programming.

Our products have both an upfront solution sale and recurring revenue elements. Adapters are a consumable item and software and maintenance are typically recurring under annual subscription contracts. Our SentiX system revenue typically comes from per part use fees or minimum quarterly fees, consumables, non-recurring engineering fees, service fees and the sale of equipment related to SentiX.

Sales Percentage of Total Sales Breakdown by Type			
Sales Type	2019	2018	Drivers
Equipment Sales	58%	65%	Capacity, Process improvement, Technology
Adapter Sales	26%	24%	Capacity utilization, New customer products
Software and Maintenance Sales	16%	11%	Installed base, Added capabilities
Total	100%	100%	

The table below presents our main products and the key features that benefit our customers:

Products	Key Features	Customer Benefits
PSV Handlers: Off-line (Automated)	<ul style="list-style-type: none"> • Fast program and verify speeds • Up to 112 programming sites • Up to 3000 devices per hour throughput • UFS Support • Supports LumenX and FlashCORE III programmers • Supports multiple media types • Supports quality options – fiber laser marking, 3D coplanarity • ConneX Factory Integration, Job Composer & other Software 	<ul style="list-style-type: none"> • Managed and secure programming • High throughput for high density Flash programming • High flexibility with respect to I/O options (tray, tape, tube), marking/labeling and vision for coplanarity inspection
SentriX Security Deployment System	<ul style="list-style-type: none"> • Unique ability to securely provision keys and certificates one device at a time • Pay per use model reduces capital spending requirements as the market develops. 	<ul style="list-style-type: none"> • Create Secure IoT devices across a global network • Maintain IP control over the lifecycle of their products
RoadRunner & RoadRunner3 Series Handlers: In-line, (Automated)	<ul style="list-style-type: none"> • Just-in-time in-line programming • Direct integration with placement machine supporting SIPLACE, Fuji NXT, Panasonic, Universal/Genesis and Assembleon/K&S • Factory Integration Software • Supports FlashCORE III programmers 	<ul style="list-style-type: none"> • Dramatic reduction in inventory carrying and rework costs • “Zero” footprint • Rapid return on investment (“ROI”) typically realized in a matter of months • Integration with factory systems
LumenX Programmer	<ul style="list-style-type: none"> • Extensible architecture for fast program, verify and download speeds • Supports UFS • Large file size support • Secure Job creation • 8 sockets with tool-less changeover with single socket adapters 	<ul style="list-style-type: none"> • Managed and secure programming • Fast setup and job changeover • Highest yield and low total cost of programming • High performance
FlashPAK III programmer: (Non-Automated)	<ul style="list-style-type: none"> • Scalability • Network control via Ethernet • Stand-alone operation or PC compatible • Parallel programming 	<ul style="list-style-type: none"> • Validate designs before moving down the firmware supply chain • Unmatched ease of use in manual production systems
Unifamily programmers: Off-line, Low Volume and Engineering (Non-Automated) (Legacy Equipment)	<ul style="list-style-type: none"> • Breadth of device coverage 	<ul style="list-style-type: none"> • Universal programmer • Support for legacy devices

Customers/Markets

We sell our solutions to customers worldwide, many of whom are world-class manufacturers of electronic devices used in a broad range of industries, as described in the following table:

	OEMs		EMS	Programming Centers
	Automotive Electronics	IoT, Industrial, Consumer Electronics, including Wireless	Contract Manufacturers	
Notable end customers	Delphi, Bosch, Alpine, Visteon, Kostal, Harman, Becker, Denso, Continental, Panasonic, Magna, Magnetti Marelli	LG, TCL Siemens, Danfoss, Philips, Schneider, Endress+Hauser, Pilz, Insta, Carrier, Microsoft, Sony, Amazon, UTC	Pegatron, Flextronics, Jabil, Wistron, Sanmina SCI, Foxconn, Leeysys, Calcomp	Arrow, Avnet, BTV, CPS, EPS, Elmitech, Noa Leading
Business drivers	Safety, navigation and infotainment devices, increased electronic content to support autonomous driving, security	Higher functionality driven by increasing electronic content. Shift from analog to connected intelligent devices, security	Acquisition of OEM factories, production contract wins	Value-added services, logistics, security
Programming equipment drivers	Process improvement and simplification, new product rollouts, growing file sizes, quality control and traceability, security	Process improvement and simplification as well as new product rollouts, memory and new technology, security	New contracts from OEMs, programming solutions specified by OEMs	Capacity utilization of their installed base of equipment, small parts handling, security
Buying criteria	Quality, reliability, configuration control, traceability, global support, IP protection	Quality, reliability, configuration control, traceability, security, and security provisioning. Throughput, technical capability to support evolving technology, global support, IP protection, robust algorithms, low cost	Lowest equipment procurement cost, global support	Flexibility, lowest life-cycle cost-per programmed-part, low changeover time; use of multiple vendors provides negotiating leverage, device support availability
Security Deployment	End customer focus	End customer focus	End customer and partner Focus	Current partner focus of our SentiX deployments

Our solutions address the data programming of devices and security deployment needs of programmable semiconductor devices. Semiconductor devices are a large, growing market, in terms of devices, bits programmed and need for security. We believe that our sales are driven by many of the same forces that propel the semiconductor industry. We sell to the same firms that buy the semiconductors. When their business grows, they buy more semiconductors which, in turn, require additional programming equipment to maintain production speeds or program new device technologies.

Our device programming solutions currently target two high volume, growing markets: automotive electronics and IoT systems including Industrial and Consumer devices.

Growth drivers for automotive electronics

- Consumers desire advanced car features requiring higher levels of sophistication, including autonomous cars, infotainment options (audio, radio, dashboard displays, navigation, ADAS and wireless connectivity) and electrification, as well as increased safety features and optimized engine functionality
- Increasing numbers and size of microcontrollers per vehicle
- Proliferation of programmable microcontrollers to support the next-generation electronic car systems
- Increasing use of high-density flash to provide memory for advanced applications that require programming
- Increasing complexity to support autonomous vehicles
- Increasing need for security solutions for a secure supply chain and lifecycle firmware integrity

Growth drivers for IoT: including industrial, consumer electronics and wireless

- Securely controlling groups of connected devices through a secure supply chain and lifecycle firmware integrity management
- Adding intelligence and processing into devices
- Connecting previously unconnected devices to networks and the internet (such as intelligent thermostats and lighting)
- Emergence of new devices and applications (such as wearables)

All of the above growth drivers are long term and are likely to be adversely impacted, at least temporarily, due to the global pandemic of COVID-19 in our markets. Annual projections on spending, growth, mix, and profitability are likely to be revised substantially as new information is obtained.

During 2019, we sold products to over 200 customers throughout the world. The following customers represented greater than 10% of sales in the applicable year:

- | | |
|------|---|
| 2019 | One customer, Data Copy Limited, a distributor in China, accounted for approximately 11% of net sales. |
| 2018 | Two customers, Bosch, an Automotive Electronics OEM, and Data Copy Limited, a distributor in China, accounted for approximately 16% and 13% of net sales, respectively. |
| 2017 | One customer, Data Copy Limited, a distributor in China, accounted for approximately 15% of net sales. |

The following customers represented greater than 10% of our consolidated accounts receivable balance as of December 31 of the applicable year:

- | | |
|------|--|
| 2019 | Two customers accounted for greater than 10% of our consolidated accounts receivable balance at December 31, 2019: Flextronics and Panasonic represented 17% and 15% of that balance, respectively. |
| 2018 | Three customers accounted for greater than 10% of our consolidated accounts receivable balance at December 31, 2018: Systemation, Continental and Semitron represented 12%, 12% and 11% of that balance, respectively. |
| 2017 | One customer, Data Copy Limited, accounted for 25% of our consolidated accounts receivable balance at December 31, 2017. |

Geographic Markets and Distribution

We market and sell our products through a combination of direct sales, internal telesales, indirect sales representatives and distributors, as well as services through programming centers. We continually evaluate our sales channels against our evolving markets and customers and realign them as necessary to ensure that we reach our existing and potential customers in the most effective and efficient manner possible.

U.S. Sales

We market our products throughout the U.S. using a variety of sales channels, including our own field sales management personnel, independent sales representatives and direct telesales. Our U.S. independent sales representatives obtain orders on an agency basis, with shipments made directly to the customer by us. Net sales in the United States for 2019, 2018 and 2017 were (in millions) \$1.7, \$3.4 and \$2.9, respectively. Some of our customers' orders delivered internationally are heavily influenced by U.S. sales-based efforts.

International Sales

International sales represented approximately 92%, 88% and 92% of net sales in 2019, 2018, and 2017, respectively. We make foreign sales through our wholly-owned subsidiaries in Germany and China, as well as through independent distributors and sales representatives operating in 44 other countries. Our independent foreign distributors purchase our products for resale and we generally recognize the sale at the time of shipment to the distributor. As with U.S. sales representatives, sales made by international sales representatives are on an agency basis, with sales made directly to the customer by us.

Net international sales for 2019, 2018, and 2017 were (in millions) \$19.8, \$25.8 and \$31.2, respectively. We determine international sales by the international geographic destination into which the products are sold and delivered, and include not only sales by foreign subsidiaries but also export sales from the U.S. to our foreign distributors and to our representatives' customers. International sales do not include transfers between Data I/O and our foreign subsidiaries. Export sales are subject to U.S. Department of Commerce regulations. We have not, however, experienced difficulties to date as a result of these requirements. Certain products (such as SentiX) may require export licenses due to the technology contained and the country to which they would be shipped. We have not made sales to Iran or any Iranian governmental entities or any other blacklisted companies or countries.

Fluctuating exchange rates and other factors beyond our control, such as the coronavirus, international monetary stability, tariff and trade policies and U.S. and foreign tax and economic policies, may affect the level and profitability of international sales. We cannot predict the effect of such factors on our business, but we try to consider and respond to changes in these factors, particularly as the majority of our costs are U.S. based while the vast majority of our sales are international.

Competition

The competition in the programming systems market is highly fragmented with a small number of organizations selling directly competitive solutions and a large number of smaller organizations offering less expensive solutions. In particular, low cost automated solutions have gained market share in recent years, where the competition is primarily based on price. Typically, their equipment meets a "good enough" standard, but with reduced quality, traceability, upgradability, security and other software features such as factory integration software. Many of these competitors compete on a regional basis, with local language and support. Although competition in the security deployment market is developing, we expect competition in the market to increase as security deployment becomes more important. There are alternative security deployment solutions such as software-based security, rather than the hardware-based security of our SentiX equipment.

In addition, we compete with multiple substitute forms of device programming including "home grown" solutions. Programming after device placement may be done with In Circuit Test ("ICT"), In System Programming ("ISP"), and End of Line Downloading ("EOL"). Some automotive products may also be programmed over the air ("OTA"). IoT devices may also be programmed with ICT, ISP, EOL or OTA. In addition, new security devices may be required to be programmed using device-specific programmers developed by the semiconductor manufacturer.

While we are not aware of any published industry market information covering the programming systems or security deployment market, according to our internal analysis of competitors' revenues, we believe we continue to be the largest competitor in the programming systems equipment market and have been gaining market share in recent years, especially with our new products.

Manufacturing, Raw Materials and Backlog

We strive to manufacture and provide the best solutions for advanced programming. We primarily assemble and test our products at our principal facilities in Redmond, Washington and Shanghai, China. Both of these locations are ISO 9001:2015 certified. We outsource our circuit board manufacturing and fabrication. We use a combination of standard components and fabricated parts manufactured to our specifications. Most components used are available from a number of different suppliers and subcontractors but certain items, such as some handler and programmer and security deployment subassemblies, custom integrated circuits, hybrid circuits and connectors, are purchased from single sources. We believe that additional sources can be developed for present single-source components without significant difficulties. We cannot be sure that single-source components will always continue to be readily available. If we cannot develop alternative sources for these components, or if we experience deterioration in relationships with these suppliers, there may be price increases, minimum order quantities, end of life purchase requirements, costs associated with integrating alternatively sourced parts, and delays or reductions in product introductions or shipments, which may materially adversely affect our operating results.

In accordance with industry practices, generally all orders are subject to cancellation prior to shipment without penalty, except for contracts calling for custom configuration. To date, such cancellations have not had a material effect on our sales volume. To meet customers' delivery requirements, we manufacture certain products based upon a combination of backlog and anticipated orders. Most orders are scheduled for delivery within 1 to 90 days after receipt of the order. Our backlog of pending orders was approximately (in millions) \$2.9, \$1.9 and \$4.0 as of December 31, 2019, 2018, and 2017, respectively. The size of backlog at any particular date is not necessarily a meaningful indicator of the trend of our business.

Research and Development

We believe that continued investment in research and development is critical to our future success. We continue to develop new technologies and products and enhance existing products. Future growth is, to a large extent, dependent upon the timely development and introduction of new products, as well as the development of technology and algorithms to support the latest programmable devices. Where possible, we may pursue partnerships and other strategic relationships to add new products, capabilities and services, particularly in security deployment. We are currently focusing our research and development efforts on strategic growth markets, including automotive electronics, IoT and security deployment. We are continuing to develop technology for security deployment to program new categories of semiconductors, including Secure Elements, Authentication Chips, and Secure Microcontrollers. We plan to deliver new programming technology, automated handling systems and enhancements for security deployment in the manufacturing environment. In 2020, we are planning to expand our hiring and research and development related to our SentiX platform and the security deployment market. We also continue to focus on increasing our capacity and responsiveness for new device support requests from customers and programmable integrated circuit manufacturers by revising and enhancing our internal processes and tools. Our research and development efforts have resulted in the release of significant new products and product enhancements over the past several years.

During 2019, 2018, and 2017, we made expenditures for research and development of (in millions) \$6.5, \$7.4, and \$6.9, respectively, representing 29.9%, 25.2%, and 20.3% of net sales, respectively. Research and development costs are generally expensed as incurred.

Patents, Copyrights, Trademarks and Licenses

We rely on a combination of patents, copyrights, trade secrets and trademarks to protect our IP, as well as product development and marketing skill to establish and protect our market position. We continue to apply for and add new patents to our patent portfolio as we develop strategic new technologies.

We attempt to protect our rights in proprietary systems (architecture, implementations, software), including the SentiX Security Deployment System. We attempt to protect our software, including Lumen®X software, Flashcore software, TaskLink software, ConneX smart programming software and other software products, by retaining the title to and copyright of the software and documentation, by including appropriate contractual restrictions on use and disclosure in our licenses, and by requiring our employees to execute non-disclosure agreements. Our software products are not typically sold separately from sales of programming systems. However, on those occasions where software is sold separately, revenue is recognized when a sales agreement exists, delivery has occurred, the fee is fixed or determinable, and collectability is reasonably assured.

Because of the rapidly changing technology in the semiconductor, electronic equipment and software industries, portions of our products might infringe upon existing patents or copyrights, and we may be required to obtain licenses or discontinue the use of the infringing technology. We believe that any exposure we may have regarding possible infringement claims is a reasonable business risk similar to that assumed by other companies in the electronic equipment and software industries. However, any claim of infringement, with or without merit, could be costly and a diversion of management's attention, and an adverse determination could adversely affect our reputation, preclude us from offering certain products, and subject us to substantial liability. As of December 31, 2018, there were no pending actions regarding infringement claims.

Employees

As of December 31, 2019, we had a total of 96 employees, of which 46 were located outside the U.S. and 7 of which were part time. We also utilize independent contractors for specialty work, primarily in research and development, and utilize temporary workers to adjust capacity to fluctuating demand and for special projects. Many of our employees are highly skilled, trained and experienced in specialized areas and our continued success will depend in part upon our ability to attract and retain employees who can be in great demand within the industry. None of our employees are represented by a collective bargaining unit and we believe relations with our employees are favorable. In foreign countries we have employment agreements or, in China, the Shanghai Foreign Services Co., Ltd. ("FSCO") labor agreement.

Environmental Compliance

Our facilities are subject to numerous laws and regulations concerning the discharge of materials or otherwise relating to the environment. Compliance with environmental laws has not had, nor is it expected to have, a material effect on our capital expenditures, financial position, results of operations or competitive position.

Executive Officers of the Registrant

Set forth below is certain information concerning the executive officers of Data I/O as of March 23, 2019:

Name	Age	Position
Anthony Ambrose	58	President and Chief Executive Officer
Joel S. Hatlen	61	Vice President, Chief Operating and Financial Officer, Secretary and Treasurer
Rajeev Gulati	56	Chief Technology Officer, Vice President of Engineering
Michael Tidwell	50	Vice President Marketing and Business Development

Anthony Ambrose, age 58, was appointed a director of Data I/O effective October 25, 2012. He joined Data I/O October 25, 2012 and is our President and Chief Executive Officer (“CEO”). Prior to Data I/O, Mr. Ambrose was Owner and Principal of Cedar Mill Partners, LLC, a strategy consulting firm since 2011. From 2007 to 2011, he was Vice President and General Manager at RadiSys Corporation, a leading provider of embedded wireless infrastructure solutions, where he led all product divisions and worldwide engineering. Until 2007, he was general manager and held several other progressively responsible positions at Intel Corporation, where he led development and marketing of standards-based telecommunications platforms, and grew the industry standard server business to over \$1B in revenues. He is Chair of the EvergreenHealth Foundation Board of Trustees. In 2019 he also became a board member of CipherLoc Corporation (OTCQB: CLOK). Mr. Ambrose has a Bachelor’s of Science in Engineering from Princeton University, and completed the Stanford Graduate School of Business Director Symposium.

Joel S. Hatlen joined Data I/O in September 1991 and in July 2017 became our Chief Operating Officer in addition to serving as our Vice President, Chief Financial Officer, Secretary and Treasurer since January 1998. He was Chief Accounting Officer since February 1997 and served as Corporate Controller from December 1993 to December 1997. Previously, he was Tax Manager and Senior Tax Accountant. From September 1981 until joining Data I/O, Joel was employed by Ernst & Young LLP as a Certified Public Accountant, where his most recent position was Senior Manager. Joel is a Certified Public Accountant and holds a Masters in Taxation from Golden Gate University and a Bachelor’s in Business Administration in Accounting from Pacific Lutheran University.

Rajeev Gulati joined Data I/O in July 2013 and is our Chief Technology Officer and Vice President of Engineering. Prior to Data I/O, Rajeev served as Director of Software Engineering for AMD responsible for tools, compiler strategy and execution from 2006 to 2013. He has an extensive background in software, systems and applying technology to develop new markets. Previously, he served as Director of Strategy and Planning at Freescale from 2004 to 2006; as Director of Embedded Products at Metrowerks (acquired by Motorola) from 2000 to 2004 and Director of Compilers, Libraries & Performance Tools from 1997 to 2000; and engineering and programmer positions at Apple Computer, IBM and Pacific-Sierra Research. Rajeev holds a Master of Science in Electrical & Computer Engineering from the University of Texas, Austin and a BE in Electrical Engineering from Delhi College of Engineering, New Delhi.

Michael Tidwell joined Data I/O in May 2019 and is our Vice President of Marketing and Business Development. Prior to Data I/O, he was Vice President of Marketing & Business Development at Tignis, an AI and machine learning startup. From 2012 to 2018 Michael was head of Marketing and Business Development at Sansa Security, a leading software security IP provider that was sold to ARM Holdings. Prior to Sansa, Michael was Vice President of Business and Market Development at BSQUARE Corporation. Michael has a Master of Science in Electrical Engineering from the University of Washington and a Bachelor of Electrical Engineering (Summa Cum Laude) from Georgia Institute of Technology.

Item 1A. Risk Factors

Cautionary Factors That May Affect Future Results

Our disclosure and analysis in this Annual Report contains some forward-looking statements. Forward-looking statements include our current expectations or forecasts of future events. The reader can identify these statements by the fact that they do not relate strictly to historical or current facts. In particular, these include statements relating to future action, the impact of the coronavirus, prospective products, expected market growth, new technologies and trends, industry partnerships, foreign operations, economic expectations, future performance or results of current and anticipated products, sales efforts, expenses, outcome of contingencies, impact of regulatory requirements, tariffs and financial results.

Any or all of the forward-looking statements in this Annual Report or in any other public statement made may turn out to be wrong. They can be affected by inaccurate assumptions we might make, or known or unknown risks and uncertainties can affect these forward-looking statements. Many factors -- for example, product competition and product development -- will be important in determining future results. Moreover, neither Data I/O nor anyone else assumes responsibility for the accuracy and completeness of these forward-looking statements. Actual future results may materially vary.

We undertake no obligation to publicly update any forward-looking statements after the date of this Annual Report, whether as a result of new information, future events or otherwise. The reader should not unduly rely on our forward-looking statements. The reader is advised, however, to consult any future disclosures we make on related subjects in our 10-Q, 8-K and 10-K reports to the SEC and press releases. Also, note that we provide the following cautionary discussion of risks, uncertainties and possible inaccurate assumptions relevant to our business. These are factors that we think could cause our actual results to differ materially from expected and historical results. Other factors besides those listed here could also adversely affect us. This discussion is permitted by the Private Securities Litigation Reform Act of 1995.

RISK FACTORS:

CORONAVIRUS

The coronavirus that causes the serious disease COVID-19 (“coronavirus”), has and may continue to adversely affect our business, including revenues, suppliers, employees and facilities.

As a global company with 92% of its 2019 sales in international markets, we have been and may continue to be significantly impacted by the coronavirus outbreak, which has since spread to Asia, USA, Europe and all other markets we serve. We have already seen orders delayed due to the coronavirus. 31% of our employees are based in Shanghai, China and we have a manufacturing facility there which manufactures some of our equipment and develops most of the adapters and algorithms for our equipment. Although our facilities in Shanghai, Redmond and Germany are currently operating, they could be closed for an extended period of time if the coronavirus spreads significantly. Additionally, we source other components from China and other countries that are used to manufacture our equipment in China and in our Redmond, Washington facility and these components may not be readily available. In addition, our corporate headquarters is located in Redmond, Washington which is only a few miles from the US epicenter of the coronavirus in Kirkland, Washington. As a result, many of our Redmond based employees and executives are working from home and we are limiting visitors to our Redmond facility as the coronavirus continues to spread. All of our facilities are subject to restrictions and closure by governmental entities. As the coronavirus continues to spread, it has and may continue to impact our revenues, our ability to obtain key components and to manufacture our products, as well as sell, install and support our products around the world.

The coronavirus has and continues to impact key tradeshows and travel plans for our employees. Because of the coronavirus we are not able to visit many of our customers and prospects. We were recently scheduled to attend the Embedded World 2020 tradeshow related to our security deployment products and had to cancel our participation.

TARIFFS AND TRADE ISSUES

Changes in tariffs and trade issues may adversely affect our business, including revenues and/or gross margins.

We produce products in the United States and China. Currently, certain of our products are subject to tariffs imposed by one country on goods manufactured in the other country. There is uncertainty regarding the tariffs expected to be imposed, and any increase in tariff rates and subjecting additional items to tariffs, could impact our costs, revenues and the competitiveness of our products due to our manufacturing locations. Trade and tariff issues are creating business uncertainty and may spread to and impact other jurisdictions.

NEW PRODUCTS OR SERVICES

We are pursuing new product or service initiatives, and business models that may develop more slowly and/or to a lesser extent than expected

In order to lead in new and potentially lucrative market opportunities, for example in security deployment of programmable devices, circuit boards and electronic systems, we are making significant investments in people, technology and business development while the market is developing and uncertain. Because of the lengthy time to market from design to production in security provisioning, if these markets develop more slowly than planned, or if our security deployment solutions are not widely accepted, then we may not achieve our expected return on investment in new technologies and this may significantly affect the results of our existing business.

In the security deployment area, we have introduced a new pay per use business model that may not be accepted by our customers who are accustomed to paying for capital equipment upfront, rather than paying per use charges.

Failure to adapt to technology trends in our industry may impact our competitiveness and financial results.

Product and service technology in our industry evolves rapidly, making timely product innovation essential to success in the marketplace. Introducing products and services with improved technologies or features may render our existing products obsolete and unmarketable. Technological advances and trends that may negatively impact our business include:

- new device package types, densities, chip interfaces and technologies requiring hardware and software changes in order to be programmed by our products, particularly certain segments of the high-density flash memory markets where after placement programming is recommended by certain semiconductor manufacturers
- reduction in semiconductor process geometries for certain 3 Dimensional (3D), Multi Level Cell (MLC) and Triple Level Cell (TLC) NAND and eMMC FLASH memories impact the product data retention through Surface Mount Technology (SMT) reflow or X-ray inspection. Improper SMT process control can negatively impact the end customer's ability to successfully program devices. This can cause them to change their programming methods away from pre-programming to post placement programming techniques, including ISP, ICT. Data I/O is working with several semiconductor manufacturers to develop best practices to minimize the impact of reflow and potential concerns about X-ray induced data loss.
- changes in Flash technology speeds will eventually require us to change the architecture of our programming engines
- electronics equipment manufacturing practices, such as widespread use of in-circuit programming or downloading
- adoption of proprietary security and programming protocols and additional security capabilities and requirements
- customer software platform preferences different from those on which our products operate
- customer adoption of newer unsupported semiconductor device technologies such as UFS memory or device interface methods, particularly if these technologies are adopted by automotive electronics, IoT or wireless customers
- more rigid industry standards, which would decrease the value-added element of our products and support services

If we cannot develop products or services in a timely manner in response to industry changes, or if our products or services do not perform well, our business and financial condition may be adversely affected. Also, our new products or services may contain defects or errors that give rise to product liability claims against us or cause our products to fail to gain market acceptance. Our future success depends on our ability to successfully compete with other technology firms in attracting and retaining key technical personnel.

Failure to adapt to increasing automotive electronics customer requirements

Concentration in Automotive Electronics and our orders related to automotive electronics customers has increased in recent years to 60% in 2019, 60% in 2018, and 54% in 2017. As we become more concentrated on automotive electronics customers, any decrease in demand from these customers may materially impact our results, as it will take some time to transition our product line to other markets. Quality standards and business requirements by our automotive electronics customers, driven in turn by their automotive manufacturer customers, may demand processes, and certifications at a higher level than we currently are structured to provide. For example, although we currently meet the ISO 9001:2015 standard, new quality standards may be demanded by our customers with even more rigorous requirements. In addition, contractual provisions may expose us to greater potential liability and costs and we may be required to provide higher service levels than we currently provide. If we cannot adapt to these industry requirements or manage these contractual provisions, our business may be adversely affected.

Delays in development, introduction and shipment of new products or services may result in a decline in sales or increased costs.

We develop new engineering and automated programming systems and services. Significant technological, supplier, manufacturing or other problems may delay the development, introduction or production of these products or services.

For example, we may encounter these problems:

- technical problems in the development of a new programming and/or security deployment systems or the robotics for new automated handling systems
- inability to hire qualified personnel or turnover in existing personnel or inability to engage or retain key technology partners
- delays or failures to perform by us or third parties, including some smaller early stage or recently acquired companies, involved in our development projects
- dependence on large semiconductor companies for cooperation and support to securely provision their devices. These companies must enable us with specific technical information, and support Data I/O as a qualified solution to their customers and channel partners.
- development of new products or services that are not accepted by the market

These problems may result in a delay or decline in sales or increased costs.

We may pursue business acquisitions that could impair our financial position and profitability.

We may pursue acquisitions of complementary technologies, product lines or businesses. Future acquisitions may include risks, such as:

- burdening management and our operating teams during the integration of the acquisition
- diverting management's attention from other business concerns
- failing to successfully integrate or monetize the acquired products or technologies
- lack of acceptance of the acquired products by our sales channels or customers
- entering markets where we have no or limited prior experience
- potential loss of key employees of the acquired company
- additional burden of support for an acquired programmer architecture

Future acquisitions may also impact our financial position. For example, we may use significant cash or incur debt, which would weaken our balance sheet, or issue additional shares, potentially diluting existing shareholders. We may also capitalize goodwill and intangible assets acquired, the amortization or impairment of which would reduce our profitability. We cannot guarantee that future acquisitions will improve our business or operating results.

If we are unable to protect our IP, we may not be able to compete effectively or operate profitably.

We rely on patents, copyrights, trade secrets and trademarks to protect our IP, as well as product development and marketing skill to establish and protect our market position. In particular, patents are a key part of our security deployment strategy, and if we are not able to successfully enforce these patents, we might lose our competitive advantage in the security deployment market. We attempt to protect our rights in proprietary software products, including our user interface, product firmware, software module options and other software products by retaining the title to and copyright of the software and documentation, by including appropriate contractual restrictions on use and disclosure in our licenses, and by requiring our employees to execute non-disclosure agreements.

Because of the rapidly changing technology in the semiconductor, electronic equipment and software industries, portions of our products might possibly infringe upon existing patents or copyrights, and we might be required to obtain licenses or discontinue the use of the infringing technology. We believe that any exposure we may have regarding possible infringement claims is a reasonable business risk similar to that assumed by other companies in the electronic equipment and software industries. However, any claim of infringement, with or without merit, could be costly and a diversion of management's attention, and an adverse determination could adversely affect our reputation, preclude us from offering certain products, and subject us to substantial liability.

We might face increased competition and might not be able to compete successfully with current and future competitors.

Technological advances have reduced the barriers of entry into the programming systems market. We expect competition to increase from both established and emerging companies. If we fail to compete successfully against current and future sources of competition, our profitability and financial performance will be adversely impacted.

THIRD PARTY RELATIONSHIPS

If we do not develop, enhance and retain our relationships with security partners, our business may be adversely affected and we may not be able to timely develop new and cost effective managed and secure programming solutions.

As we enter new areas in security deployment we need to complement our skills and expertise with partners' expertise in security. Some of these partners are operating with more limited capital and/or management expertise than established firms or recently acquired firms that may have different priorities. Other partners are very large companies where prioritizing work with us may be difficult in light of competing priorities. For some of our then earlier stage partners, we have obtained unique product features and capabilities in exchange for NRE payments, pre-paid royalties, marketing incentives and sales cooperation. When these unique features and capabilities are no longer available, we will face more competition. If our partners are unable to develop and deliver solutions that we need to integrate into our security deployment programming solutions, our products might be delayed, we might have to locate alternate partners and suppliers or develop the technology ourselves, and we would still be responsible for paying any related pre-paid royalties or NRE payments and might face write-offs of any excess equipment.

If we do not develop and enhance our relationships with semiconductor manufacturers, our business may be adversely affected.

We work closely with most semiconductor manufacturers to ensure that our data programming and security deployment systems comply with their requirements. In addition, many semiconductor manufacturers recommend our managed and secure programming systems for use by users of their programmable devices. These working relationships enable us to keep our programming systems product lines up to date and provide end-users with broad and current programmable device support. As technology changes occur that could limit the effectiveness of pre-placement programming, particularly for very small high-density NAND, e-MMC and UFS devices, certain semiconductor manufacturers may not recommend or may not continue recommending our programming systems for these devices. Our business may be adversely affected if our relationships with semiconductor manufacturers deteriorate or if semiconductor manufacturers are not willing to closely work with us on security deployment. Consolidation within the semiconductor industry may also impact us. As we develop more security deployment solutions, we will need to partner more closely with semiconductor manufacturers.

Our reliance on a small number of suppliers may result in a shortage of key components, which may adversely affect our business, and our suppliers may experience financial difficulties which could impact their ability to service our needs.

Certain parts or software used in our products are currently available from either a single supplier or from a limited number of suppliers. Our small relative level of business means we frequently lack influence and significant purchasing power. If we cannot develop alternative sources of these components, if sales of parts or software are discontinued by the supplier, if we experience deterioration in our relationship with these suppliers, or if these suppliers require financing which is not available, there may be delays or reductions in product introductions or shipments, which may materially adversely affect our operating results.

Because we rely on a small number of suppliers for certain parts, we are subject to possible price increases by these suppliers. Also, we may be unable to accurately forecast our production schedule. If we underestimate our production schedule, suppliers may be unable to meet our demand for components. This delay in the supply of key components may have a materially adverse effect on our business. For suppliers who discontinue parts, we may be required to make lifetime purchases covering future requirements. Over estimation of demand or excessive minimum order quantities will lead to excess inventories that may become obsolete.

Certain of our sockets, parts, subassemblies and boards are currently manufactured to our specifications by third-party foreign contract manufacturers and we are sourcing certain parts or options from foreign manufacturers, particularly in China. For example, due to the coronavirus or other viruses impacting workers, suppliers or travel, we may not be able to obtain a sufficient quantity of these products if and when needed or the quality of these parts or options may not meet our standards, which may result in lost sales.

If we are unable to attract and retain qualified third-party distributors and representatives, our business may be adversely affected.

We have an internal sales force and also utilize third-party distributors and representatives. Therefore, the financial stability of these distributors and representatives is important. Their ability to operate, timely pay us, and to acquire any necessary financing may be affected by the current economic climate. Highly skilled professional engineers use most of our products. To be effective, third-party distributors and representatives must possess significant technical, marketing, customer relationships and sales resources and must devote their resources to sales efforts, customer education, training and support. These required qualities limit the number of potential third-party distributors and representatives. Our business will suffer if we cannot attract and retain a sufficient number of qualified third-party distributors and representatives to market our products.

MARKET CONDITIONS

A decline in economic and market conditions may result in delayed or decreased capital spending and delayed or defaulted payments from our customers.

The coronavirus appears likely to affect economic and market conditions as it continues to spread. Our business is highly impacted by capital spending plans and other economic cycles that affect the users and manufacturers of integrated circuits. The industries are highly cyclical and are characterized by rapid technological change, short product life cycles and fluctuations in manufacturing capacity and pricing and gross margin pressures. As we experienced in recent prior years, our operations may in the future reflect substantial fluctuations from period-to-period as a consequence of these industry patterns, general economic conditions affecting the timing of orders from major customers, and other factors affecting capital spending. In a difficult economic climate, it may take us longer to receive payments from our customers and some of our customers' business may fail, resulting in non-payment. Our market growth forecasts and related business decisions may be wrong. These factors could have a material adverse effect on our business and financial condition.

Our international operations may expose us to additional risks that may adversely affect our business.

International sales represented approximately 92%, 88% and 92% of net sales in 2019, 2018, and 2017, respectively. We expect that international sales will continue to be a significant portion of our net revenue. International sales may fluctuate due to various factors, including:

- the impact of the coronavirus or other viruses
- fluctuations in foreign currency exchange rates because 92% of our sales are to international markets, volatile exchange rates may also impact our competitiveness and margins
- economic uncertainty related to the European sovereign debt situation
- migration of manufacturing to low cost geographies
- unexpected changes in regulatory requirements, including Brexit
- tariffs and taxes
- Bi-lateral and Multi-lateral trade agreements
- difficulties in staffing and managing foreign operations
- longer average payment cycles and difficulty in collecting accounts receivable
- compliance with applicable export licensing requirements and the Foreign Corrupt Practices Act
- product safety and other certification requirements
- difficulties in integrating foreign and outsourced operations
- civil unrest, political and economic instability

Because we have customers located throughout the world, we have significant foreign receivables. We may experience difficulties in collecting these amounts as a result of payment practices of certain foreign customers, economic uncertainty and regulations in foreign countries, the availability and reliability of foreign credit information, and potential difficulties in enforcing collection terms.

The European Union and European Free Trade Association (“EU”) has established certain electronic emission and product safety requirements (“CE”). As applicable, our products currently meet these requirements; however, failure to obtain either a CE certification or a waiver for any product may prevent us from marketing that product in Europe. The EU also has directives concerning the Reduction of Hazardous Substances (“RoHS”) and we believe we are classified within the EU RoHS Directive category list as Industrial Monitoring and Control Equipment (category 9). We believe all current products meet the RoHS directives. Failure to meet applicable directives or qualifying exemptions may prevent us from marketing certain products in Europe or other territories with similar requirements.

We have subsidiaries in Germany, China and Canada and large balances of cash are in our foreign subsidiaries. Our business and financial condition is sensitive to currency exchange rates and any restrictions imposed on their currencies including restrictions on repatriations of cash. Any repatriation of cash could result in tax costs and corresponding deferred tax assets with related tax valuation allowances. Currency exchange fluctuations in these countries may adversely affect our investment in our subsidiaries.

OPERATIONS

Quarterly fluctuations in our operating results may adversely affect our stock price.

Our operating results tend to vary from quarter to quarter. Our revenue in each quarter substantially depends upon orders received within that quarter. Conversely, our expenditures are based on investment plans and estimates of future revenues. We may, therefore, be unable to quickly reduce our spending if our revenues decline in a given quarter. As a result, operating results for that quarter will suffer. Our results of operations for any one quarter are not necessarily indicative of results for any future periods.

Other factors, which may cause our quarterly operating results to fluctuate, include:

- increased competition
- timing of new product announcements and timing of development expenditures
- product or service releases and pricing changes by us or our competitors
- market acceptance or delays in the introduction of new products or services
- production constraints
- quality issues
- labor or material constraints
- timing of significant orders
- timing of installation or customer acceptance requirements
- sales channel mix of direct vs. indirect distribution
- civil unrest, war or terrorism
- health issues such as the outbreak of the coronavirus or other viruses impacting workers, suppliers, customers, travel, or our facilities
- customers’ budgets
- changes in accounting rules, tax or other legislation
- adverse movements in exchange rates, interest rates or tax rates
- cyclical and seasonal nature of demand for our customers’ products
- general economic conditions in the countries where we sell products
- expenses and delays obtaining authorizations in setting up new operations or locations
- facilities relocations

Due to any of the foregoing factors, it is possible that in some future quarters, our operating results will be below expectations of analysts and investors.

We have a history of operating losses and may be unable to generate enough revenue to achieve and maintain profitability.

We have incurred operating losses in four of the last ten years. We operate in a cyclical industry. We will continue to examine our level of operating expense based upon our projected revenues. Any planned increases in operating expenses, such as the increased hiring and research and development expenses related to our security deployment platform, may result in losses in future periods if projected revenues are not achieved or due the investment level. As a result, we may need to generate greater revenues than we have recently in order to maintain profitability. However, we cannot provide assurance that our revenues will continue to increase and our business strategies may not be successful, resulting in future losses.

The loss of key employees may adversely affect our operations.

We have employees located in the U.S., Germany and China. We also utilize independent contractors for specialty work, primarily in research and development, and utilize temporary workers to adjust capacity to fluctuating demand. Many of our employees are highly skilled and our continued success will depend in part upon our ability to attract and retain employees who can be in great demand within the industry. None of our employees are represented by a collective bargaining unit and we believe relations with our employees are favorable, though no assurance can be made that this will be the case in the future. In China, our workers are “leased” with the arrangements made under the “FSCO” labor agreement and we could be adversely affected if we were unable to continue that arrangement.

We may need to raise additional capital and our future access to capital is uncertain.

Our past revenues have sometimes been, and our future revenues may again be, insufficient to support the expense of our operations and any expansion of our business. We may therefore need additional equity or debt capital to finance our operations. If we are unable to generate sufficient cash flows from operations or to obtain funds through additional debt, lease or equity financing, we may have to reduce some or all of our development and sales and marketing efforts and limit the expansion of our business.

We believe that we have sufficient cash or working capital available under our operating plan to fund our operations and capital requirements through at least the next one-year period. In the event we require additional cash for U.S. operations or other needs, we may choose to repatriate some, or all, of the \$8.7 million held in our foreign subsidiaries. Although we have no current repatriation plans, there may be tax, legal and other impediments to any repatriation actions. Our working capital may be used to fund possible losses, business growth, project initiatives, share repurchases and business development initiatives including acquisitions, which could reduce our liquidity and result in a requirement for additional cash before that time. Any substantial inability to achieve our current business plan could have a material adverse impact on our financial position, liquidity, or results of operations and may require us to reduce expenditures and/or seek additional financing.

Therefore, we may seek additional funding through public or private debt or equity financing or from other sources. We have no commitments for additional financing, and given a potential future unfavorable economic climate and our financial results, we may experience difficulty in obtaining funding on favorable terms, if at all. Any financing we obtain may contain covenants that restrict our freedom to operate our business or may require us to issue securities that have rights, preferences or privileges senior to our Common Stock and may dilute your ownership interest.

Our stock price may be volatile and, as a result, our shareholders may lose some or all of their investment.

The stock prices of technology companies tend to fluctuate significantly. We believe factors such as announcements of new products or services by us or our competitors and quarterly variations in financial results and outlook may cause the market price of our Common Stock to fluctuate substantially. In addition, overall volatility in the stock market, particularly in the technology company sector, is often unrelated to the operating performance of companies. If these market fluctuations continue in the future, they may adversely affect the price of our Common Stock.

Cyber security breaches or terrorism could result in liabilities or costs as well as damage to or loss of our data or customer access to our website and information systems. The collection, storage, transmission, use and disclosure of user data and personal information, if accessed improperly, could give rise to liabilities or additional costs as a result of laws, governmental regulations and evolving views of personal privacy rights.

Cyber security breaches or terrorism could result in the exposure or theft of private or confidential information as well as interrupt our business, including denying customer access to our website and information systems. We transmit, and in some cases store, end-user data, including personal information. In jurisdictions around the world, personal information is becoming increasingly subject to legislation and regulations intended to protect consumers' privacy and security. The interpretation of privacy and data protection laws and regulations regarding the collection, storage, transmission, use and disclosure of such information in some jurisdictions is unclear and evolving. These laws may be interpreted and applied in conflicting ways from country to country and in a manner that is not consistent with our current data protection practices. Complying with these varying international requirements could cause us to incur additional costs and change our business practices. Because our services are accessible in many foreign jurisdictions, some of these jurisdictions may claim that we are required to comply with their laws, even where we have no local entity, employees or infrastructure. We could be forced to incur significant expenses if we were required to modify our products, our services or our existing security and privacy procedures in order to comply with new or expanded regulations.

REGULATORY REQUIREMENTS

Failure to comply with increasing regulatory requirements may adversely affect our stock price and business.

As a public company, we are subject to numerous governmental and stock exchange requirements, with which we believe we are in compliance. Our failure to meet regulatory requirements and exchange listing standards may result in actions such as: the delisting of our stock, impacting our stock's liquidity; SEC enforcement actions; and securities claims and litigation.

The Sarbanes-Oxley Act of 2002 and the Securities and Exchange Commission (SEC) have requirements that we may fail to meet or we may fall out of compliance with, such as the internal controls auditor attestation required under Section 404 of the Sarbanes-Oxley Act of 2002, with which we are not currently required to comply as we are a smaller reporting company. We assume that we will continue to have the status of a smaller reporting company based on the aggregate market value of the voting and non-voting shares held as of June 30, 2019. If we fail to achieve and maintain the adequacy of our internal controls, as such standards are modified, supplemented or amended from time to time, we may not be able to ensure that we can conclude on an ongoing basis that we have effective internal controls over financial reporting in accordance with Section 404 of the Sarbanes-Oxley Act of 2002. Moreover, effective internal controls, particularly those related to revenue recognition, are necessary for us to produce reliable financial reports and are important to help prevent financial fraud. If we cannot provide reliable financial reports or prevent fraud, our business and operating results could be harmed, investors could lose confidence in our reported financial information, and the trading price of our stock could drop significantly.

While we have policies and procedures in place designed to prevent corruption and bribery, because our business is significantly international, violations of the Foreign Corrupt Practices Act (FCPA) could have a significant adverse effect on our business due to the disruption and distraction of an investigation, financial penalties and criminal penalties.

Government regulations regarding the use of "conflict" minerals could adversely affect our prospects and results of operations.

Regulatory requirements regarding disclosure of our use of "conflict" minerals mined from the Democratic Republic of Congo and adjoining countries could affect the sourcing and availability of minerals used in the manufacture of certain products. Although we do not buy raw materials, manufacture, or produce any electronic equipment using conflict minerals directly, some components provided by our suppliers and contained in our products contain conflict minerals. Our goal is for our products to be conflict free. As a result, there may only be a limited pool of suppliers who provide conflict free metals, and we cannot assure you that we will be able to obtain products in sufficient quantities or at competitive prices. Single source suppliers may not respond or respond negatively regarding conflict mineral sourcing and we may be unable to find alternative sources to replace them. Also, because our supply chain is complex, we may face reputational challenges with our customers and other stakeholders if we are unable to sufficiently verify the origins for all metals used in the products that we sell. Further, if we are unable to comply with the new laws or regulations or if our efforts to comply with new laws, regulations and standards differ from the activities intended by regulatory or governing bodies due to ambiguities related to practice, regulatory authorities may initiate legal proceedings against us. We may need to incur additional costs and invest additional resources, including management's time, in order to comply with the new regulations and anticipated additional reporting and disclosure obligations.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

During the third quarter of 2017, we amended our lease agreement for the Redmond, Washington headquarters facility, extending the lease to July 31, 2022, waiving a potential space give back provision and receiving lease inducement incentives. Previously on June 8, 2015 the lease had been amended to relocate our headquarters to a nearby building and lower the square footage to approximately 20,460. The lease base annual rental payments during 2019 and 2018 were approximately \$351,000 and \$341,000, respectively.

In addition to the Redmond facility, approximately 24,000 square feet is leased at two foreign locations, including our sales, service, operations and engineering office located in Shanghai, China, and our German sales, service and engineering office located near Munich, Germany.

We signed a lease agreement effective November 1, 2015 that extends through October 31, 2021 for a facility located in Shanghai, China. This lease is for approximately 19,400 square feet. The lease base annual rental payments during 2019 and 2018 were approximately \$305,000 and \$288,000, respectively.

During the fourth quarter of 2016, we signed a lease agreement for a new facility located near Munich, Germany which was effective March 1, 2017 and extends through February 28, 2022. This lease is for approximately 4,895 square feet. The lease base annual rental payments during 2019 and 2018 were approximately \$57,000 and \$67,000, respectively.

Item 3. Legal Proceedings

From time to time, we may be involved in litigation relating to claims arising out of our operations in the normal course of business. As of December 31, 2019, we were not a party to any legal proceedings or aware of any indemnification agreement claims, the adverse outcome of which in management's opinion, individually or in the aggregate, would have a material adverse effect on our results of operations or financial position.

Item 4. Mine Safety Disclosures

Not Applicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Our Common Stock is listed on the NASDAQ Capital Market (NASDAQ symbol is DAIO). The closing price was \$4.25 on December 31, 2019.

The approximate number of shareholders of record as of March 19, 2020 was 438.

Except for special cash dividend of \$4.15 per share paid on March 8, 1989, we have not paid cash dividends on our Common Stock and do not anticipate paying regular cash dividends in the foreseeable future.

No sales of unregistered securities were made by us during the periods ended December 31, 2019, 2018 or 2017.

See Item 12 for the Equity Compensation Plan Information.

ISSUER PURCHASES OF EQUITY SECURITIES

On October 31, 2018, our Board of Directors approved a share repurchase program with provisions to buy back up to \$2.0 million of our stock during the period from November 1, 2018 through October 31, 2019. The program was established with a 10b5-1 plan under the Exchange Act to provide flexibility to make purchases throughout the period. For the quarter ended September 30, 2019, 55,904 shares of stock were repurchased at an average price of \$4.37 for a total of \$244,197 including \$1,176 in commissions and charges. The \$2.0 million buyback program was completed during the third quarter of 2019. The following is a summary of the stock repurchase program from November 1, 2018 through September 30, 2019:

Repurchases by Month	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Repurchase Program	Approximate Dollar Value of Shares that May Yet Be Purchased under the Program
Dec. 2018	101,975	\$ 5.25	101,975	\$ 1,464,470
Jan. 2019	43,701	\$ 5.39	43,701	\$ 1,229,115
Mar. 2019	13,911	\$ 5.49	13,911	\$ 1,152,793
Apr. 2019	69,141	\$ 5.34	69,141	\$ 783,687
May 2019	69,798	\$ 4.63	69,798	\$ 461,417
Jun. 2019	49,255	\$ 4.44	49,255	\$ 244,197
Jul. 2019	55,280	\$ 4.37	55,280	\$ 2,798
Aug. 2019	624	\$ 4.32	624	\$ 3
Total	<u>403,685</u>	<u>\$ 4.95</u>	<u>403,685</u>	

Item 6. Selected Financial Data

Not applicable.

Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations

FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K includes forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. This Act provides a “safe harbor” for forward-looking statements to encourage companies to provide prospective information about themselves as long as they identify these statements as forward-looking and provide meaningful cautionary statements identifying important factors that could cause actual results to differ from the projected results. All statements other than statements of historical fact made in this Annual Report on Form 10-K are forward-looking. In particular, statements herein regarding economic outlook, industry prospects and trends; industry partnerships; future results of operations or financial position; future spending; breakeven revenue point; expected market growth; market acceptance of our newly introduced or upgraded products or services; the sufficiency of our cash to fund future operations and capital requirements; development, introduction and shipment of new products or services; changing foreign operations; and any other guidance on future periods are forward-looking statements. Forward-looking statements reflect management’s current expectations and are inherently uncertain. Although we believe that the expectations reflected in these forward-looking statements are reasonable, we cannot guarantee future results, levels of activity, performance, achievements, or other future events. Moreover, neither Data I/O nor anyone else assumes responsibility for the accuracy and completeness of these forward-looking statements. We are under no duty to update any of these forward-looking statements after the date of this Annual Report. The Reader should not place undue reliance on these forward-looking statements. The following discussions and the section entitled “Risk Factors – Cautionary Factors That May Affect Future Results” describes some, but not all, of the factors that could cause these differences.

OVERVIEW

We sustained our first loss in 6 years due to a downturn in orders, combined with increased investments in our security deployment business. Our strong cash position and balance sheet combined with our long-term view of the market gives us the financial flexibility to make these security business decisions. At Data I/O, we are investing for the long term to retain and extend our leadership position. On the product side, we continue to invest with a long-term focus towards expanding our markets and creating unique value for our customers. This is true for both our traditional core business as well as the emerging security deployment business.

The automotive electronics market is cyclical and we experienced the downturn in capital spending related to it and the electronics industry. We continued our focus on automotive electronics and managing the core programming business for growth and profitability, while developing and enhancing products, particularly in security deployment, to drive future revenue and earnings growth as we invest resources in the security deployment market. Our challenge continues to be operating in a cyclical and rapidly evolving industry environment. Our efforts are to balance industry changes, industry partnerships, new technologies, business geography shifts, exchange rate volatility, trade issues and tariffs, coronavirus impacts, increasing costs and strategic investments in our business with the level of demand and mix of business we expect. We continue to manage our costs carefully and execute strategies for cost reduction.

We are focusing our research and development efforts in our strategic growth markets, namely automotive electronics and IoT new programming technologies, secure supply chain solutions, automated programming systems and their enhancements for the manufacturing environment and software. We are developing technology and products to securely provision new categories of semiconductors, including Secure Elements, Authentication Chips, and Secure Microcontrollers. We plan to deliver new programming technology and automated handling systems for managed and secure programming in the manufacturing environment. We continue to focus on extending the capabilities and support for our product lines and supporting the latest semiconductor devices, including various configurations of NAND Flash, e-MMC, UFS and microcontrollers on our newer products.

Our customer focus has been on global and strategic high-volume manufacturers in key market segments like automotive electronics, IoT, industrial controls and consumer electronics as well as programming centers.

Although the long-term prospects for our strategic growth markets should be good, these markets and our business have been, and are likely to continue to be, adversely impacted, at least temporarily, by the the global pandemic of coronavirus. See also the detailed discussion of the impacts of the coronavirus on our business and markets in Item 1A, Risk Factors. Annual projections on spending, growth, mix, and profitability are likely to be revised substantially as new information is obtained.

CRITICAL ACCOUNTING POLICY JUDGMENTS AND ESTIMATES

The preparation of financial statements in accordance with accounting principles generally accepted in the United States of America requires that we make estimates and judgments, which affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosures of contingent assets and liabilities. On an on-going basis, we evaluate our estimates, including those related to revenue recognition, sales returns, bad debts, inventories, intangible assets, income taxes, warranty obligations, restructuring charges, contingencies such as litigation and contract terms that have multiple elements and other complexities typical in the capital equipment industry. We base our estimates on historical experience and other assumptions that we believe are reasonable under the circumstances. Actual results may differ from these estimates under different assumptions or conditions.

We believe the following critical accounting policies affect the more significant judgments and estimates used in the preparation of our financial statements:

Revenue Recognition: Effective January 1, 2018, the Company adopted ASU 2014-09, Revenue (“Topic 606”): Revenue from Contracts with Customers, using the modified retrospective method. Topic 606 provides a single, principles-based five-step model to be applied to all contracts with customers. It generally provides for the recognition of revenue in an amount that reflects the consideration to which the Company expects to be entitled, net of allowances for estimated returns, discounts or sales incentives, as well as taxes collected from customers when control over the promised goods or services are transferred to the customer.

The adoption of Topic 606 did not have a material impact on our 2018 financial statement line items, either individually or in the aggregate. We have elected the practical expedient to expense contract acquisition costs, primarily sales commissions, for contracts with terms of one year or less and will capitalize and amortize incremental costs with terms that exceed one year. During 2019, the impact of capitalization of incremental costs for obtaining contracts was immaterial. We have made a sales tax policy election to exclude sales, use, value added, some excise taxes and other similar taxes from the measurement of the transaction price.

We recognize revenue upon transfer of control of the promised products or services to customers in an amount that reflects the consideration we expect to receive in exchange for those products or services. We have determined that our programming equipment has reached a point of maturity and stability such that product acceptance can be assured by testing at the factory prior to shipment and that the installation meets the criteria to be a separate performance obligation. These systems are standard products with published product specifications and are configurable with standard options. The evidence that these systems could be deemed as accepted was based upon having standardized factory production of the units, results from batteries of tests of product performance to our published specifications, quality inspections and installation standardization, as well as past product operation validation with the customer and the history provided by our installed base of products upon which the current versions were based.

The revenue related to products requiring installation that is perfunctory is recognized upon transfer of control of the product to customers, which generally is at the time of shipment. Installation that is considered perfunctory includes any installation that is expected to be performed by other parties, such as distributors, other vendors, or the customers themselves. This considers the complexity, skill and training needed as well as customer expectations regarding installation.

We enter into arrangements with multiple performance obligations that arise during the sale of a system that includes an installation component, a service and support component and a software maintenance component. The transaction price is allocated to the separate performance obligations on relative standalone sales price. We allocate the transaction price of each element based on relative selling prices. Relative selling price is based on the selling price of the standalone system. For the installation and service and support performance obligations, we use the value of the discount given to distributors who perform these components. For software maintenance performance obligations, we use what we charge for annual software maintenance renewals after the initial year the system is sold. Revenue is recognized on the system sale based on shipping terms, installation revenue is recognized after the installation is performed, and hardware service and support and software maintenance revenue is recognized ratably over the term of the agreement, typically one year. Deferred revenue includes service, support and maintenance contracts and represents the undelivered performance obligation of agreements that are typically for one year.

When we sell software separately, we recognize revenue upon the transfer of control of the software, which is generally upon shipment, provided that only inconsequential performance obligations remain on our part and substantive acceptance conditions, if any, have been met.

We recognize revenue when there is an approved contract that both parties are committed to perform, both parties rights have been identified, the contract has substance, collection of substantially all the consideration is probable, the transaction price has been determined and allocated over the performance obligations, the performance obligations including substantive acceptance conditions, if any, in the contract have been met, the obligation is not contingent on resale of the product, the buyer's obligation would not be changed in the event of theft, physical destruction or damage to the product, the buyer acquiring the product for resale has economic substance apart from us and we do not have significant obligations for future performance to directly bring about the resale of the product by the buyer. We establish a reserve for sales returns based on historical trends in product returns and estimates for new items. Payment terms are generally 30 days from shipment.

We transfer certain products out of service from their internal use and make them available for sale. The products transferred are typically our standard products in one of the following areas: service loaners, rental or test units; engineering test units; or sales demonstration equipment. Once transferred, the equipment is sold by our regular sales channels as used equipment inventory. These product units often involve refurbishing and an equipment warranty, and are conducted as sales in our normal and ordinary course of business. The transfer amount is the product unit's net book value and the sale transaction is accounted for as revenue and cost of goods sold.

Allowance for Doubtful Accounts: We base the allowance for doubtful accounts receivable on our assessment of the collectability of specific customer accounts and the aging of accounts receivable. If there is deterioration of a major customer's credit worthiness or actual defaults are higher than historical experience, our estimates of the recoverability of amounts due to us could be adversely affected.

Inventory: Inventories are stated at the lower of cost or net realizable value. Adjustments are made to standard cost, which approximates actual cost on a first-in, first-out basis. We estimate reductions to inventory for obsolete, slow-moving, excess and non-salable inventory by reviewing current transactions and forecasted product demand. We evaluate our inventories on an item by item basis and record inventory adjustments accordingly. If there is a significant decrease in demand for our products, uncertainty during product line transitions, or a higher risk of inventory obsolescence because of rapidly changing technology and customer requirements, we may be required to increase our inventory adjustments and our gross margin could be adversely affected.

Warranty Accruals: We accrue for warranty costs based on the expected material and labor costs to fulfill our warranty obligations. If we experience an increase in warranty claims, which are higher than our historical experience, our gross margin could be adversely affected.

Tax Valuation Allowances: Given the uncertainty created by our loss history, as well as the ongoing cyclical uncertain economic outlook for our industry and capital and geographic spending as well as income and net deferred tax assets by entity and country, we expect to continue to limit the recognition of net deferred tax assets and accounting for uncertain tax positions and maintain the tax valuation allowances. At the current time, we expect, therefore, that reversals of the tax valuation allowance will take place as we are able to take advantage of the underlying tax loss or other attributes in carry forward or their use by future income or circumstances allow us to realize these attributes. The transfer pricing and expense or cost sharing arrangements are complex areas where judgments, such as the determination of arms-length arrangements, can be subject to challenges by different tax jurisdictions.

Share-based Compensation: We account for share-based awards made to our employees and directors, including employee stock option awards and restricted stock unit awards, using the estimated grant date fair value method of accounting. For options, we estimate the fair value using the Black-Scholes valuation model and an estimated forfeiture rate, which requires the input of highly subjective assumptions, including the option's expected life and the price volatility of the underlying stock. The expected stock price volatility assumption was determined using the historical volatility of our common stock. Changes in the subjective assumptions required in the valuation model may significantly affect the estimated value of the awards, the related stock-based compensation expense and, consequently, our results of operations. Restricted stock unit awards are valued based on the average of the high and low price on the date of the grant and an estimated forfeiture rate. For both options and restricted awards, expense is recognized as compensation expense on the straight-line basis. Employee Stock Purchase Plan ("ESPP") shares were issued under provisions that do not require us to record any equity compensation expense.

RESULTS OF OPERATIONS:

NET SALES

	2019	Change	2018
Net sales by product line			
(in thousands)			
Automated programming systems	\$ 16,642	(28.4%)	\$ 23,252
Non-automated programming systems	4,926	(17.5%)	5,972
Total programming systems	<u>\$ 21,568</u>	<u>(26.2%)</u>	<u>\$ 29,224</u>
Net sales by location			
(in thousands)			
United States	\$ 1,735	(49.5%)	\$ 3,436
% of total	8.0%		11.8%
International	\$ 19,833	(23.1%)	\$ 25,788
% of total	92.0%		88.2%
Net sales by type			
(in thousands)			
Equipment Sales	\$ 12,553	(33.9%)	\$ 19,002
Adapter Sales	5,535	(20.4%)	6,954
Software and Maintenance Sales	3,480	6.5%	3,268
Total	<u>\$ 21,568</u>	<u>(26.2%)</u>	<u>\$ 29,224</u>

Net sales for the year ended December 31, 2019 declined approximately 26% to \$21.6 million compared to 2018 primarily as a result of a cyclical downturn in capital spending resulting in lower demand in Automotive Electronics and Programming Centers during 2019. On a regional basis, net sales decreased approximately 6% in the Americas, 33% in Europe and 32% in Asia.

Order bookings were \$22.5 million for 2019, down approximately 17% compared to \$27.0 million in 2018. Backlog at December 31, 2019 and 2018 was \$2.9 million and \$1.9 million, respectively. Tariffs impacted customer orders by creating uncertainty and delays and increased costs that could not be passed on to our customers. We believe that during the year the decline in bookings in the third quarter to \$4.3 million, in addition to cyclicality, was largely the result of the tariff concerns with the demand being delayed. Bookings recovered in the fourth quarter to \$6.9 million. Deferred revenue was \$1.5 million on December 31, 2019 compared to \$1.6 million at December 31, 2018.

GROSS MARGIN

	2019	Change	2018
(in thousands)			
Gross margin	\$ 12,550	(27.7%)	\$ 17,356
Percentage of net sales	58.2%		59.4%

Gross margin as a percentage of sales for the year ended December 31, 2019 was 58.2%, compared to 59.4% in 2018. The decline was due to the impact of lower sales volumes relative to fixed production costs and increased US/China tariffs offset in part by a favorable sales channel mix.

RESEARCH AND DEVELOPMENT

	2019	Change	2018
(in thousands)			
Research and development	\$ 6,451	(12.4%)	\$ 7,361
Percentage of net sales	29.9%		25.2%

Research and development (“R&D”) expense decreased \$910,000 for the year ended December 31, 2019 compared to 2018. The decrease was primarily related to lower employee related costs, reduced contract labor and lower incentive compensation. R&D as a percentage of sales increased primarily due to the decline in 2019 sales.

We believe it is essential to invest in R&D to significantly enhance our existing products and to create new products as markets develop and technologies change. In 2020, we are planning to expand our hiring and research and development related to our SentiX and the Security Deployment market. In addition to product development, a significant part of R&D spending is on creating software and support for new devices introduced by the semiconductor companies. We are currently focusing our research development efforts on strategic growth markets, including automotive electronics and IoT. We are developing technology and the SentiX product line to securely program new categories of semiconductors, including Secure Elements, Authentication Chips, and Secure Microcontrollers. We delivered new enhanced programming technology and automated handling systems for managed and secure programming in the manufacturing environment and extending the capabilities and support for our programmer architecture. Our R&D spending fluctuates based on the number, type, and the development stage of our product initiatives and projects.

SELLING, GENERAL AND ADMINISTRATIVE

	2019	Change	2018
(in thousands)			
Selling, general & administrative	\$ 7,377	(10.7%)	\$ 8,257
Percentage of net sales	34.2%		28.3%

Selling, General and Administrative (“SG&A”) expenses decreased \$880,000 for the year ended December 31, 2019 compared to 2018. The decrease was primarily related to reduced sales commissions on lower sales volume and lower incentive compensation. Lower stock-based compensation and cost control measures contributed to the reduction.

INTEREST

	2019	Change	2018
(in thousands)			
Interest income	\$ 53	43.2%	\$ 37

Interest income was higher for the year ended December 31, 2019 compared to 2018, primarily due to higher invested cash balances.

INCOME TAXES

	2019	Change	2018
(in thousands)			
Income tax (expense) benefit	\$ (31)	(89.3%)	\$ (291)

Income tax (expense) decreased by \$260,000 for the year ended December 31, 2019 compared to 2018. The decrease was primarily a result of the 2019 operating loss and the valuation allowance required as we were not able to recognize the benefit of the loss. In 2019, we did recognize a tax benefit of \$42,000 related to previously sequestered refundable “Alternative Minimum Tax Credits” in carryforward. Income tax (expense) in 2019 and 2018 is primarily the result of foreign subsidiary income tax and minimal US state income tax.

The effective tax rate for 2019 of (2.7%) and 2018 of 15.3% differed from the statutory tax rates in our tax reporting jurisdictions primarily due to the effect of valuation allowances as well as foreign tax incentives and credits. We have a valuation allowance of \$7.5 million and \$7.0 million as of December 31, 2019 and 2018, respectively. Our deferred tax assets and valuation allowance have been reduced by approximately \$348,000 and \$308,000 associated with the requirements of accounting for uncertain tax positions as of December 31, 2019 and 2018, respectively. Given the uncertainty created by our loss history particularly in the U.S. which is where most of our net deferred tax assets are located, and the ongoing uncertain economic outlook for our industry as well as capital and geographic spending, we currently expect to continue to limit the recognition of net deferred tax assets and maintain the tax valuation allowances.

INFLATION AND CHANGES IN FOREIGN CURRENCY EXCHANGE RATES

Sales and expenses incurred by foreign subsidiaries are denominated in the subsidiary's local currency and translated into U.S. Dollar amounts at average rates of exchange during the year. We recognized foreign currency transaction gains of \$5,000 and \$103,000 in 2019 and 2018, respectively. The transaction gains or losses resulted primarily from translation adjustments to foreign inter-company accounts and U.S. Dollar accounts held by foreign subsidiaries and sales by our German subsidiary to certain customers, which were invoiced in U.S. Dollars. Because approximately 92% of our sales are to international markets, volatile exchange rates may also impact our competitiveness and margins.

FINANCIAL CONDITION:

LIQUIDITY AND CAPITAL RESOURCES

(in thousands)	2019	Change	2018
Working capital	\$ 18,497	\$ (2,568)	\$ 21,065

At December 31, 2019, our principal sources of liquidity consisted of existing cash and cash equivalents which decreased \$4.4 million primarily due to share repurchase program and the net loss for the year as well as the impact of lower stock-based compensation and depreciation (non-cash expenses). These drove our working capital to decrease by \$2.6 million for the year ended December 31, 2019 to \$18.5 million. Our current ratio was 4.4 and 4.1 for December 31, 2019 and 2018, respectively.

Although we have no significant external capital expenditure plans currently, we expect that we will continue to make capital expenditures to support our business. We plan to increase our investment in internally developed equipment used for services, rentals, sales demonstration and test equipment as we develop and release new products. Capital expenditures are expected to be funded by existing and internally generated funds or lease financing.

As a result of our significant product development, customer support, selling and marketing efforts, we have required substantial working capital to fund our operations. In recent years, we have managed operations with planned increases in investment in our new business markets, products and technologies, while addressing rising costs, tariffs and foreign exchange rate challenges. This included geographic shifts in our operations and differentiated product development and cost strategies.

We believe that we have sufficient cash or working capital available under our operating plan to fund our operations and capital requirements through at least the next one-year period. Our working capital may be used to fund possible losses, business growth, project initiatives, share repurchases and business development initiatives including acquisitions, which could reduce our liquidity and result in a requirement for additional cash at that time. Any substantial inability to achieve our current business plan could have a material adverse impact on our financial position, liquidity, or results of operations and may require us to reduce expenditures and/or seek additional financing.

OFF-BALANCE SHEET ARRANGEMENTS

Except as noted in the accompanying consolidated financial statements in Note 7, "Operating Lease Commitments" and Note 8, "Other Commitments", we had no off-balance sheet arrangements.

SHARE REPURCHASE PROGRAMS

On October 31, 2018, our Board of Directors approved a share repurchase program with provisions to buy back up to \$2.0 million of our stock during the period from November 1, 2018 through October 31, 2019. The program was established with a 10b5-1 plan under the Exchange Act to provide flexibility to make purchases throughout the period. The \$2.0 million buyback program was completed during the third quarter of 2019. The following is a summary of the stock repurchase program from November 1, 2018 through September 30, 2019:

Repurchases by Month	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Repurchase Program	Approximate Dollar Value of Shares that May Yet Be Purchased under the Program
Dec. 2018	101,975	\$ 5.25	101,975	\$ 1,464,470
Jan. 2019	43,701	\$ 5.39	43,701	\$ 1,229,115
Mar. 2019	13,911	\$ 5.49	13,911	\$ 1,152,793
Apr. 2019	69,141	\$ 5.34	69,141	\$ 783,687
May 2019	69,798	\$ 4.63	69,798	\$ 461,417
Jun. 2019	49,255	\$ 4.44	49,255	\$ 244,197
Jul. 2019	55,280	\$ 4.37	55,280	\$ 2,798
Aug. 2019	624	\$ 4.32	624	\$ 3
Total	<u>403,685</u>	<u>\$ 4.95</u>	<u>403,685</u>	

NON-GENERALLY ACCEPTED ACCOUNTING PRINCIPLES (GAAP) FINANCIAL MEASURES

Earnings Before Interest, Taxes, Depreciation, and Amortization (“EBITDA”) and Adjusted EBITDA excluding equity compensation (a non-cash item) are set forth below. Non-GAAP financial measures should not be considered a substitute for, or superior to, measures of financial performance prepared in accordance with GAAP. We believe that these non-GAAP financial measures provide meaningful supplemental information regarding our results and facilitate the comparison of results. A reconciliation of net income to EBITDA and adjusted EBITDA follows:

	Year Ended December 31,	
	2019	2018
(in thousands)		
Net Income (loss)	\$ (1,187)	\$ 1,606
Interest (income)	(53)	(37)
Taxes	31	291
Depreciation & amortization	868	955
EBITDA earnings (loss)	\$ (341)	\$ 2,815
Equity compensation	1,171	1,230
Adjusted EBITDA earnings (loss) excluding equity compensation	<u>\$ 830</u>	<u>\$ 4,045</u>

NEW ACCOUNTING PRONOUNCEMENTS

We adopted the new lease accounting standard, ASC 842, on January 1, 2019 using the modified retrospective transition method, and recorded a balance sheet adjustment on the date of adoption. In 2018, we accounted for leases under ASC 840. In adopting ASC 842, we utilized certain practical expedients available under the standard. These practical expedients include waiving reassessment of conclusions reached under the previous lease standard as to whether contracts contain leases, not recording right-of-use assets or lease liabilities for leases with terms of 12 months or less, how to classify leases identified and how to account for initial direct costs incurred. We also utilized the practical expedient to use hindsight as of the date of adoption to determine the terms of our leases and to evaluate our right-of-use assets for impairment.

In June 2016, the Financial Accounting Standards Board (“FASB”) issued Accounting Standards Update (“ASU”) 2016-13, Financial Instruments - Credit Losses (Topic 326), which updates the guidance related to the measurement of credit losses on financial instruments, including trade receivables. This ASU requires the recognition of credit losses on financial instruments based on an estimate of expected losses, replacing the incurred loss model in the prior guidance. The new guidance is effective for annual periods beginning after December 15, 2019, including interim periods within those fiscal years. The Company does not expect the adoption of ASU 2016-13 will have a material impact on the consolidated financial statements.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Not applicable.

Item 8. Financial Statements and Supplementary Data

See pages 29 through 48.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Board of Directors and Stockholders
Data I/O Corporation

Opinion on the financial statements

We have audited the accompanying consolidated balance sheets of Data I/O Corporation (a Washington corporation) and subsidiaries (the “Company”) as of December 31, 2019 and 2018, the related consolidated statements of operations, comprehensive income (loss), stockholders’ equity, and cash flows for each of the two years in the period ended December 31, 2019, and the related notes and financial statement schedules included under Item 15(a) (collectively referred to as the “financial statements”). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2019, in conformity with accounting principles generally accepted in the United States of America.

Change in accounting principle

As discussed in Note 1 to the consolidated financial statements, the Company has changed its method of accounting for leases in 2019 due to the adoption of the new leasing standard.

Basis for opinion

These financial statements are the responsibility of the Company’s management. Our responsibility is to express an opinion on the Company’s financial statements 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 audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company’s internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the 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 supporting the amounts and disclosures in the 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 financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ GRANT THORNTON LLP

We have served as the Company’s auditor since 2001.

Seattle, Washington
March 27, 2020

DATA I/O CORPORATION
CONSOLIDATED BALANCE SHEETS
(in thousands, except share data)

	<u>December 31,</u> <u>2019</u>	<u>December 31,</u> <u>2018</u>
ASSETS		
CURRENT ASSETS:		
Cash and cash equivalents	\$ 13,936	\$ 18,343
Trade accounts receivable, net of allowance for doubtful accounts of \$80 and \$75, respectively	4,099	3,771
Inventories	5,020	5,185
Other current assets	924	621
TOTAL CURRENT ASSETS	<u>23,979</u>	<u>27,920</u>
Property, plant and equipment – net	1,668	1,985
Income tax receivable	640	598
Other assets	1,994	220
TOTAL ASSETS	<u>\$ 28,281</u>	<u>\$ 30,723</u>
LIABILITIES AND STOCKHOLDERS' EQUITY		
CURRENT LIABILITIES:		
Accounts payable	\$ 1,151	\$ 1,755
Accrued compensation	1,541	2,872
Deferred revenue	1,387	1,392
Other accrued liabilities	1,372	789
Income taxes payable	31	47
TOTAL CURRENT LIABILITIES	<u>5,482</u>	<u>6,855</u>
Operating lease liabilities	1,178	-
Long-term other payables	91	511
COMMITMENTS	-	-
STOCKHOLDERS' EQUITY		
Preferred stock -		
Authorized, 5,000,000 shares, including 200,000 shares of Series A Junior Participating		
Issued and outstanding, none	-	-
Common stock, at stated value -		
Authorized, 30,000,000 shares		
Issued and outstanding, 8,212,748 shares as of December 31, 2019 and 8,338,628 shares as of December 31, 2018	18,748	19,254
Accumulated earnings	2,508	3,695
Accumulated other comprehensive income (loss)	274	408
TOTAL STOCKHOLDERS' EQUITY	<u>21,530</u>	<u>23,357</u>
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	<u>\$ 28,281</u>	<u>\$ 30,723</u>

DATA I/O CORPORATION
CONSOLIDATED STATEMENTS OF OPERATIONS
(in thousands, except per share amounts)

	For the Years Ended December 31,	
	2019	2018
Net sales	\$ 21,568	\$ 29,224
Cost of goods sold	9,018	11,868
Gross margin	12,550	17,356
Operating expenses:		
Research and development	6,451	7,361
Selling, general and administrative	7,377	8,257
Total operating expenses	13,828	15,618
Operating income (loss)	(1,278)	1,738
Non-operating income:		
Interest income	53	37
Gain on sale of assets	64	19
Foreign currency transaction gain (loss)	5	103
Total non-operating income	122	159
Income (loss) before income taxes	(1,156)	1,897
Income tax (expense) benefit	(31)	(291)
Net income (loss)	\$ (1,187)	\$ 1,606
Basic earnings (loss) per share	\$ (0.14)	\$ 0.19
Diluted earnings (loss) per share	\$ (0.14)	\$ 0.19
Weighted-average basic shares	8,247	8,378
Weighted-average diluted shares	8,247	8,514

DATA I/O CORPORATION
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)
(in thousands)

	For the Years Ended	
	December 31,	
	2019	2018
Net Income (loss)	\$ (1,187)	\$ 1,606
Other comprehensive income:		
Foreign currency translation gain (loss)	(134)	(574)
Comprehensive income (loss)	<u>\$ (1,321)</u>	<u>\$ 1,032</u>

DATA I/O CORPORATION
CONSOLIDATED STATEMENT OF STOCKHOLDERS' EQUITY
(in thousands, except share amounts)

	<u>Common Stock</u>		<u>Retained Earnings</u> <u>(Deficit)</u>	<u>Accumulated and Other Comprehensive Income</u> <u>(Loss)</u>	<u>Total Stockholders' Equity</u>
	<u>Shares</u>	<u>Amount</u>			
Balance at December 31, 2017	8,276,813	\$ 18,989	\$ 2,089	\$ 982	\$ 22,060
Stock options exercised	10,052	-	-	-	-
Repurchased shares	(101,975)	(536)	-	-	(536)
Stock awards issued, net of tax withholding	150,726	(448)	-	-	(448)
Issuance of stock through: Employee Stock Purchase Plan	3,012	19	-	-	19
Share-based compensation	-	1,230	-	-	1,230
Net income (loss)	-	-	1,606	-	1,606
Other comprehensive income gain (loss)	-	-	-	(574)	(574)
Balance at December 31, 2018	<u>8,338,628</u>	<u>\$ 19,254</u>	<u>\$ 3,695</u>	<u>\$ 408</u>	<u>\$ 23,357</u>
Stock options exercised	-	-	-	-	-
Repurchased shares	(301,710)	(1,464)	-	-	(1,464)
Stock awards issued, net of tax withholding	169,653	(243)	-	-	(243)
Issuance of stock through: Employee Stock Purchase Plan	6,177	30	-	-	30
Share-based compensation	-	1,171	-	-	1,171
Net income (loss)	-	-	(1,187)	-	(1,187)
Other comprehensive income gain (loss)	-	-	-	(134)	(134)
Balance at December 31, 2019	<u>8,212,748</u>	<u>\$ 18,748</u>	<u>\$ 2,508</u>	<u>\$ 274</u>	<u>\$ 21,530</u>

DATA I/O CORPORATION
CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands)

	For the Years Ended	
	December 31,	
	2019	2018
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net income(loss)	\$ (1,187)	\$ 1,606
Adjustments to reconcile net income(loss) to net cash provided by (used in) operating activities:		
Depreciation and amortization	867	955
Gain on sale of assets	(64)	(19)
Equipment transferred to cost of goods sold	63	423
Share-based compensation	1,171	1,230
Net change in:		
Trade accounts receivable	(375)	(78)
Inventories	139	(1,135)
Other current assets	(307)	72
Accounts payable and accrued liabilities	(2,031)	(397)
Deferred revenue	(98)	(288)
Other long-term liabilities	(29)	(82)
Deposits and other long-term assets	(245)	(175)
Net cash provided by (used in) operating activities	(2,096)	2,112
CASH FLOWS FROM INVESTING ACTIVITIES:		
Purchases of property, plant and equipment	(612)	(907)
Net proceeds from sale of assets	64	19
Cash provided by (used in) investing activities	(548)	(888)
CASH FLOWS FROM FINANCING ACTIVITIES:		
Net proceeds from issuance of common stock, less payments for shares withheld to cover tax	(213)	(966)
Repurchase of common stock	(1,464)	-
Cash provided by (used in) financing activities	(1,677)	(966)
Increase (decrease) in cash and cash equivalents	(4,321)	258
Effects of exchange rate changes on cash	(86)	(456)
Cash and cash equivalents at beginning of period	18,343	18,541
Cash and cash equivalents at end of period	\$ 13,936	\$ 18,343
Supplemental disclosure of cash flow information:		
Cash paid during the period for:		
Income taxes	\$ 307	\$ 463

DATA I/O CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

NOTE 1 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Nature of Operations

Data I/O Corporation (“Data I/O”, “We”, “Our”, “Us”) designs, manufactures and sells programming systems used by designers and manufacturers of electronic products. Our programming system products are used to program integrated circuits (“ICs” or “devices” or “semiconductors”) with the specific unique data necessary for the ICs contained in various products, and are an important tool for the electronics industry experiencing growing use of programmable ICs. Customers for our programming system products are located around the world, primarily in Asia, Europe and the Americas. Our manufacturing operations are currently located in Redmond, Washington, United States and Shanghai, China.

Principles of Consolidation

The consolidated financial statements include the accounts of Data I/O Corporation and our wholly-owned subsidiaries. Intercompany accounts and transactions have been eliminated in consolidation.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America (“U.S. GAAP”) requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Significant estimates include:

- Revenue Recognition
- Allowance for Doubtful Accounts
- Inventory
- Warranty Accruals
- Tax Valuation Allowances
- Share-based Compensation

Foreign Currency Translation

Assets and liabilities of foreign subsidiaries are translated at the exchange rate on the balance sheet date. Revenues, costs and expenses of foreign subsidiaries are translated at average rates of exchange prevailing during the year. Translation adjustments resulting from this process are charged or credited to stockholders’ equity. Realized and unrealized gains and losses resulting from the effects of changes in exchange rates on assets and liabilities denominated in foreign currencies are included in non-operating expense as foreign currency transaction gains and losses.

Cash and Cash Equivalents

All highly liquid investments purchased with an original maturity of 90 days or less are considered cash equivalents. We maintain our cash and cash equivalents with major financial institutions in the United States of America, which are insured by the Federal Deposit Insurance Corporation (FDIC), and in foreign jurisdictions. Deposits in U.S. banks exceed the FDIC insurance limit. We have not experienced any losses on our cash and cash equivalents. Cash and cash equivalents held in foreign bank accounts, primarily China, Germany and Canada, totaled (in millions) \$8.7 at December 31, 2019 and \$6.4 at December 31, 2018.

Fair Value of Financial Instruments

Certain financial instruments are carried at cost on the consolidated balance sheets, which approximates fair value due to their short-term, highly liquid nature. These instruments include cash and cash equivalents, accounts receivable, accounts payable and accrued expenses, and other short-term liabilities.

Accounts Receivable

The majority of our accounts receivable are due from companies in the electronics manufacturing industries. Credit is extended based on an evaluation of a customer's financial condition and, generally, collateral is not required. Accounts receivable are typically due within 30 to 60 days and are stated at amounts due from customers net of an allowance for doubtful accounts. Accounts receivable outstanding longer than the contractual payment terms are considered past due. We determine the allowance by considering a number of factors, including the length of time trade accounts receivable are past due, the industry and geographic payment practices involved, our previous bad debt experience, the customer's current ability to pay their obligation to us, and the condition of the general economy and the industry as a whole. We write off accounts receivable when they become uncollectible, and payments subsequently received on such receivables are credited to the allowance for doubtful accounts. Interest may be charged, at the discretion of management and according to our standard sales terms, beginning on the day after the due date of the receivable. However, interest income is subsequently recognized on these accounts either to the extent cash is received, or when the future collection of interest and the receivable balance is considered probable by management.

Inventories

Inventories are stated at the lower of cost or net realizable value with cost being the currently adjusted standard cost, which approximates cost on a first-in, first-out basis. We estimate changes to inventory for obsolete, slow-moving, excess and non-salable inventory by reviewing current transactions and forecasted product demand. We evaluate our inventories on an item by item basis and record an adjustment (lower of cost or net realizable value) accordingly.

Property, Plant and Equipment

Property, plant and equipment, including leasehold improvements, are stated at cost and depreciation is calculated over the estimated useful lives of the related assets or lease terms on the straight-line basis. We depreciate substantially all manufacturing and office equipment over periods of three to seven years. We depreciate leasehold improvements over the remaining portion of the lease or over the expected life of the asset if less than the remaining term of the lease.

We regularly review all of our property, plant and equipment for impairment whenever events or changes in circumstances indicate that the carrying value may not be recoverable. If the total of future undiscounted cash flows is less than the carrying amount of these assets, an impairment loss, if any, based on the excess of the carrying amount over the fair value of the assets, is recorded. Based on this evaluation, no impairment was noted for property, plant and equipment for the years ended December 31, 2019 and 2018.

Patent Costs

We expense external costs, such as filing fees and associated attorney fees, incurred to obtain initial patents, but capitalize patents obtained through acquisition as intangible assets. We also expense costs associated with maintaining and defending patents subsequent to their issuance.

Income Taxes

Income taxes are computed at current enacted tax rates, less tax credits using the asset and liability method. Deferred taxes are adjusted both for items that do not have tax consequences and for the cumulative effect of any changes in tax rates from those previously used to determine deferred tax assets or liabilities. Tax provisions include amounts that are currently payable, changes in deferred tax assets and liabilities that arise because of temporary differences between the timing of when items of income and expense are recognized for financial reporting and income tax purposes, and any changes in the valuation allowance caused by a change in judgment about the realization of the related deferred tax assets. A valuation allowance is established when necessary to reduce deferred tax assets to amounts expected to be realized.

Share-Based Compensation

All stock-based compensation awards are measured based on estimated fair values on the date of grant and recognized as compensation expense on the straight-line single-option method. Our share-based compensation is reduced for estimated forfeitures at the time of grant and revised as necessary in subsequent periods if actual forfeitures differ from those estimates.

Revenue Recognition

Effective January 1, 2018, the Company adopted ASU 2014-09, Revenue (“Topic 606”): Revenue from Contracts with Customers, using the modified retrospective method. Topic 606 provides a single, principles-based five-step model to be applied to all contracts with customers. It generally provides for the recognition of revenue in an amount that reflects the consideration to which the Company expects to be entitled, net of allowances for estimated returns, discounts or sales incentives, as well as taxes collected from customers when control over the promised goods or services are transferred to the customer.

Our basic revenue recognition remains essentially the same as it was in 2017. The adoption of Topic 606 did not have a material impact on our 2018 financial statement line items, either individually or in the aggregate, and would not have been material to 2017 financial results. We have elected the practical expedient to expense contract acquisition costs, primarily sales commissions, for contracts with terms of one year or less and will capitalize and amortize incremental costs with terms that exceed one year. During 2019, the impact of capitalization of incremental costs for obtaining contracts was immaterial. We have made a sales tax policy election to exclude sales, use, value added, some excise taxes and other similar taxes from the measurement of the transaction price.

We recognize revenue upon transfer of control of the promised products or services to customers in an amount that reflects the consideration we expect to receive in exchange for those products or services. We have determined that our programming equipment has reached a point of maturity and stability such that product acceptance can be assured by testing at the factory prior to shipment and that the installation meets the criteria to be a separate performance obligation. These systems are standard products with published product specifications and are configurable with standard options. The evidence that these systems could be deemed as accepted was based upon having standardized factory production of the units, results from batteries of tests of product performance to our published specifications, quality inspections and installation standardization, as well as past product operation validation with the customer and the history provided by our installed base of products upon which the current versions were based.

The revenue related to products requiring installation that is perfunctory is recognized upon transfer of control of the product to customers, which generally is at the time of shipment. Installation that is considered perfunctory includes any installation that is expected to be performed by other parties, such as distributors, other vendors, or the customers themselves. This takes into account the complexity, skill and training needed as well as customer expectations regarding installation.

We enter into arrangements with multiple performance obligations that arise during the sale of a system that includes an installation component, a service and support component and a software maintenance component. The transaction price is allocated to the separate performance obligations on relative standalone sales price. We allocate the transaction price of each element based on relative selling prices. Relative selling price is based on the selling price of the standalone system. For the installation and service and support performance obligations, we use the value of the discount given to distributors who perform these components. For software maintenance performance obligations, we use what we charge for annual software maintenance renewals after the initial year the system is sold. Revenue is recognized on the system sale based on shipping terms, installation revenue is recognized after the installation is performed, and hardware service and support and software maintenance revenue is recognized ratably over the term of the agreement, typically one year. Deferred revenue includes service, support and maintenance contracts and represents the undelivered performance obligation of agreements that are typically for one year.

When we sell software separately, we recognize revenue upon the transfer of control of the software, which is generally upon shipment, provided that only inconsequential performance obligations remain on our part and substantive acceptance conditions, if any, have been met.

We recognize revenue when there is an approved contract that both parties are committed to perform, both parties rights have been identified, the contract has substance, collection of substantially all the consideration is probable, the transaction price has been determined and allocated over the performance obligations, the performance obligations including substantive acceptance conditions, if any, in the contract have been met, the obligation is not contingent on resale of the product, the buyer’s obligation would not be changed in the event of theft, physical destruction or damage to the product, the buyer acquiring the product for resale has economic substance apart from us and we do not have significant obligations for future performance to directly bring about the resale of the product by the buyer. We establish a reserve for sales returns based on historical trends in product returns and estimates for new items. Payment terms are generally 30 days from shipment.

We transfer certain products out of service from their internal use and make them available for sale. The products transferred are typically our standard products in one of the following areas: service loaners, rental or test units; engineering test units; or sales demonstration equipment. Once transferred, the equipment is sold by our regular sales channels as used equipment inventory. These product units often involve refurbishing and an equipment warranty, and are conducted as sales in our normal and ordinary course of business. The transfer amount is the product unit's net book value and the sale transaction is accounted for as revenue and cost of goods sold.

The following table represents our revenues by major categories:

Net sales by type	2019	2018
(in thousands)		
Equipment Sales	\$ 12,553	\$ 19,002
Adapter Sales	5,535	6,954
Software and Maintenance Sales	3,480	3,268
Total	\$ 21,568	\$ 29,224

Leases - Accounting Standards Codification 842

Leases arise from contracts which convey the right to control the use of identified property or equipment for a period of time in exchange for consideration. Our leasing arrangements are primarily for office space we use to conduct our operations. In addition, there are automobiles and a small amount of office equipment leased. We determine whether contracts include a lease at the inception date, which is generally upon contract signing, considering factors such as whether the contract includes an asset which is physically distinct, which party obtains substantially all of the capacity and economic benefit of the asset, and which party directs how, and for what purpose, the asset is used during the contractual period of use. Our leases commence when the lessor makes the asset available for our use. At commencement we record a lease liability at the present value of future lease payments, net of any future lease incentives to be received. Some of our lease agreements include cancellable future periods subject to termination or extension options. We include cancellable lease periods in our future lease payments when we are reasonably certain to continue to utilize the asset for those periods. We calculate the present value of future lease payments at commencement using a discount rate which we estimate as the collateralized borrowing rate we believe that would be incurred on our future lease payments over a similar term. At commencement we also record a corresponding right-of-use asset, which is calculated based on the amount of the lease liability, adjusted for any advance lease payments paid, initial direct costs incurred or lease incentives received prior to commencement. Right-of-use assets are subject to evaluation for impairment or disposal on a basis consistent with other long-lived assets.

Leases are classified at commencement as either operating or finance leases. As of December 31, 2019, all of our leases are classified as operating leases. Rent expense for operating leases is recognized on the straight-line method over the term of the agreement beginning on the lease commencement date.

In accounting for leases, we utilize certain practical expedients and policy elections available under the lease accounting standard. For example, we do not record right-of-use assets or lease liabilities for leases with terms of 12 months or less. For contracts containing real estate leases, we do not combine lease and non-lease components. The primary impact of this policy election is that we do not include in our calculation of lease liabilities any fixed and noncancelable future payments due under the contract for items such as common area maintenance, utilities and other costs. Lease-related costs which are variable rather than fixed are expensed in the period incurred.

Assumptions, judgments and estimates impacting the carrying value of our right-of-use assets and liabilities include evaluating whether an arrangement contains a lease, determining whether the lease term should include any cancellable future periods, estimating the discount rate used to calculate our lease liabilities, estimating the fair value and useful life of the leased asset for the purpose of classifying the lease as an operating or finance lease, evaluating whether a lease contract amendment represents a new lease agreement or a modification to the existing lease and evaluating our right-of-use assets for impairment.

Research and Development

Research and development costs are generally expensed as incurred.

Advertising Expense

Advertising costs are expensed as incurred. Total advertising expenses were approximately \$173,000 and \$174,000 in 2019 and 2018, respectively.

Warranty Expense

We record a liability for an estimate of costs that we expect to incur under our basic limited warranty when product revenue is recognized. Factors affecting our warranty liability include the number of units sold and historical and anticipated rates of claims and costs per claim. We normally provide a warranty for our products against defects for periods ranging from ninety days to one year. We provide for the estimated cost that may be incurred under our product warranties and periodically assess the adequacy of our warranty liability based on changes in the above factors. We record revenues on extended warranties on a straight-line basis over the term of the related warranty contracts. Service costs are expensed as incurred.

Earnings (Loss) Per Share

Basic earnings (loss) per share exclude any dilutive effects of stock options. Basic earnings (loss) per share are computed using the weighted-average number of common shares outstanding during the period. Diluted earnings per share are computed using the weighted-average number of common shares and common stock equivalent shares outstanding during the period. The common stock equivalent shares from equity awards used in calculating diluted earnings per share were 65,000 and 136,000 for the years ended December 31, 2019 and 2018, respectively. Options to purchase 29,752 and 25,000 shares of common stock were outstanding as of December 31, 2019 and 2018, respectively, but were excluded from the computation of diluted EPS for the period then ended because the options were anti-dilutive.

Diversification of Credit Risk

Financial instruments, which potentially subject us to concentrations of credit risk, consist primarily of trade receivables. Our trade receivables are geographically dispersed and include customers in many different industries. Two customers accounted for greater than 10% of our consolidated accounts receivable balance at December 31, 2019: Flextronics and Panasonic represented 17% and 15% of that balance, respectively. As of December 31, 2018, three customers each accounted for greater than 10% of our consolidated accounts receivable balance at December 31, 2018: Systemation, Continental and Semitron. Our consolidated accounts receivable balance as of December 31, 2019 and 2018 includes foreign accounts receivable in the functional currency of our foreign subsidiaries amounting to \$1,255,000 and \$1,931,000, respectively. We generally do business with our foreign distributors in U.S. Dollars. We believe that risk of loss is significantly reduced due to the diversity of our end-customers and geographic sales areas. We perform on-going credit evaluations of our customers' financial condition and require collateral, such as letters of credit and bank guarantees, or prepayment whenever deemed necessary.

New Accounting Pronouncements

We adopted the new lease accounting standard, ASC 842, on January 1, 2019 using the modified retrospective transition method, and recorded a balance sheet adjustment on the date of adoption. In 2018, we accounted for leases under ASC 840. In adopting ASC 842, we utilized certain practical expedients available under the standard. These practical expedients include waiving reassessment of conclusions reached under the previous lease standard as to whether contracts contain leases, not recording right-of-use assets or lease liabilities for leases with terms of 12 months or less, how to classify leases identified and how to account for initial direct costs incurred. We also utilized the practical expedient to use hindsight as of the date of adoption to determine the terms of our leases and to evaluate our right-of-use assets for impairment.

In June 2016, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2016-13, Financial Instruments - Credit Losses (Topic 326), which updates the guidance related to the measurement of credit losses on financial instruments, including trade receivables. This ASU requires the recognition of credit losses on financial instruments based on an estimate of expected losses, replacing the incurred loss model in the prior guidance. The new guidance is effective for annual periods beginning after December 15, 2019, including interim periods within those fiscal years. The Company does not expect the adoption of ASU 2016-13 will have a material impact on the consolidated financial statements.

NOTE 2 – ACCOUNTS RECEIVABLE, NET

	<u>December 31, 2019</u>	<u>December 31, 2018</u>
(in thousands)		
Trade accounts receivable	\$ 4,179	\$ 3,846
Less allowance for doubtful receivables	80	75
Trade accounts receivable, net	<u>\$ 4,099</u>	<u>\$ 3,771</u>

Changes in Data I/O's allowance for doubtful accounts are as follow:

	<u>December 31, 2019</u>	<u>December 31, 2018</u>
(in thousands)		
Beginning balance	\$ 75	\$ 73
Bad debt expense (reversal)	5	2
Accounts written-off	-	-
Recoveries	-	-
Ending balance	<u>\$ 80</u>	<u>\$ 75</u>

NOTE 3– INVENTORIES

	<u>December 31, 2019</u>	<u>December 31, 2018</u>
(in thousands)		
Raw material	\$ 2,416	\$ 2,925
Work-in-process	1,832	1,584
Finished goods	772	676
Inventories	<u>\$ 5,020</u>	<u>\$ 5,185</u>

NOTE 4 – PROPERTY, PLANT AND EQUIPMENT, NET

	<u>December 31, 2019</u>	<u>December 31, 2018</u>
(in thousands)		
Leasehold improvements	\$ 395	\$ 399
Equipment	5,606	5,378
Sales demonstration equipment	778	942
	<u>6,779</u>	<u>6,719</u>
Less accumulated depreciation	5,111	4,734
Property and equipment, net	<u>\$ 1,668</u>	<u>\$ 1,985</u>

Total depreciation expense recorded for 2019 and 2018 was \$867,000 and \$955,000, respectively.

NOTE 5 – INCOME TAX RECEIVABLE

On December 22, 2017, the Tax Cuts and Jobs Act of 2017 (the “Act”) was signed into law, making significant changes to the Internal Revenue Code. Changes include the repeal of corporate Alternative Minimum Tax (AMT) for tax years after December 31, 2017. As a result, in 2017, we have recorded a long-term income tax receivable which as of December 31, 2019 has a balance of \$640,000 for the refundable AMT credits.

NOTE 6 – OTHER ACCRUED LIABILITIES

Other accrued liabilities consisted of the following components:

	<u>December 31, 2019</u>	<u>December 31, 2018</u>
(in thousands)		
Lease liability - short term	\$ 678	\$ 0
Product warranty	367	471
Sales return reserve	77	87
Other taxes	126	102
Other	124	129
Other accrued liabilities	<u>\$ 1,372</u>	<u>\$ 789</u>

The changes in our product warranty liability for the year ending December 31, 2019 are follows:

	<u>December 31, 2019</u>
(in thousands)	
Liability, beginning balance	\$ 471
Net expenses	736
Warranty claims	(736)
Accrual revisions	(104)
Liability, ending balance	<u>\$ 367</u>

NOTE 7 – OPERATING LEASE COMMITMENTS

We have commitments under non-cancelable operating leases and other agreements, primarily for factory and office space, with initial or remaining terms of one year or more as follows:

For the years ending December 31:

	<u>Operating Lease Commitments</u>
(in thousands)	
2020	\$ 755
2021	681
2022	308
2023	89
2024	82
Thereafter	141
Total	<u>\$ 2,056</u>
Less Imputed interest	<u>(200)</u>
Total operating lease liabilities	<u>\$ 1,856</u>

Cash paid for operating lease liabilities for the twelve months ended December 31, 2019 was \$757,000. There were no new or modified leases during the twelve months ended December 31, 2019.

The following table presents supplemental balance sheet information related to leases as of December 31, 2019:

	<u>Balance at December 31, 2019</u>
(in thousands)	
Right-of-use assets (Long-term other assets)	\$ 1,574
Lease liability-short term (Other accrued liabilities)	678
Lease liability-long term (Long-term other payables)	1,178

At December 31, 2019, the weighted average remaining lease term is 3.39 years and the weighted average discount rate used is 5%.

The components of our lease expense for the twelve months ended December 31, 2019 include operating lease costs of \$685,000, which includes short-term lease costs of \$32,000.

Our real estate facility leases are described below:

During the third quarter of 2017, we amended our lease agreement for the Redmond, Washington headquarters facility, extending the lease to July 31, 2022, waiving a potential space give back provision and receiving lease inducement incentives. Previously on June 8, 2015 the lease had been amended to relocate our headquarters to a nearby building and lower the square footage to approximately 20,460. The lease base annual rental payments during 2019 and 2018 were approximately \$351,000 and \$341,000, respectively.

In addition to the Redmond facility, approximately 24,000 square feet is leased at two foreign locations, including our sales, service, operations and engineering office located in Shanghai, China, and our German sales, service and engineering office located near Munich, Germany.

We signed a lease agreement effective November 1, 2015 that extends through October 31, 2021 for a facility located in Shanghai, China. This lease is for approximately 19,400 square feet. The lease base annual rental payments during 2019 and 2018 were approximately \$305,000 and \$288,000, respectively.

During the fourth quarter of 2016, we signed a lease agreement for a new facility located near Munich, Germany which was effective March 1, 2017 and extends through February 28, 2022. This lease is for approximately 4,895 square feet. The lease base annual rental payments during 2019 and 2018 were approximately \$57,000 and \$67,000, respectively.

NOTE 8 – OTHER COMMITMENTS

We have purchase obligations for inventory and production costs as well as other obligations such as capital expenditures, service contracts, marketing, and development agreements. Arrangements are considered purchase obligations if a contract specifies all significant terms, including fixed or minimum quantities to be purchased, a pricing structure and approximate timing of the transaction. Most arrangements are cancelable without a significant penalty, and with short notice, typically less than 90 days. At December 31, 2019, the purchase commitments and other obligations totaled \$1,334,000 of which all but \$323,000 are expected to be paid over the next twelve months.

NOTE 9 – CONTINGENCIES

As of December 31, 2019, we were not a party to any legal proceedings or aware of any indemnification agreement claims, the adverse outcome of which in management's opinion, individually or in the aggregate, would have a material adverse effect on our results of operations or financial position.

NOTE 10 – STOCK AND RETIREMENT PLANS

Stock Option Plans

At December 31, 2019, there were 687,119 shares available for future grant under Data I/O Corporation 2000 Stock Compensation Incentive Plan ("2000 Plan"). At December 31, 2019 there were shares of Common Stock reserved for issuance consisting of 561,403 under the 2000 plan. Pursuant to this 2000 Plan, options are granted to our officers and key employees with exercise prices equal to the fair market value of the Common Stock at the date of grant and generally vest over four years. Options granted under the plans have a maximum term of six years from the date of grant. Stock awards are also granted under the 2000 Plan which generally vest over four years.

Employee Stock Purchase Plan

Under the Employee Stock Purchase Plan ("ESPP"), eligible employees may purchase shares of our Common Stock at six-month intervals at 95% of the fair market value on the last day of each six-month period. Employees may purchase shares having a value not exceeding ten percent of their gross compensation during an offering period. During 2019 and 2018, a total of 6,177 and 3,012 shares, respectively, were purchased under the plan at average prices of \$4.88 and 7.81 per share, respectively. At December 31, 2019, a total 39,249 shares were reserved for future issuance.

Stock Appreciation Rights Plan

We have a Stock Appreciation Rights (“SAR”) Plan under which each director, executive officer or holder of 10% or more of our Common Stock has a SAR with respect to each exercisable stock option. The SAR entitles the SAR holder to receive cash from us for the difference between the market value of the stock and the exercise price of the option in lieu of exercising the related option. SARs are only exercisable following a tender offer or exchange offer for our stock, or following approval by shareholders of Data I/O of any merger, consolidation, reorganization or other transaction providing for the conversion or exchange of more than 50% of the common shares outstanding. As no event has occurred, which would make the SARs exercisable, and no such event is deemed probable, no compensation expense has been recorded under this plan. At December 31, 2019 there were 25,000 SARs outstanding.

Director Fee Plan

We have a Director Fee Plan available to compensate directors who are not employees of Data I/O Corporation with equity. No shares were issued from the plan for 2019 or 2018 board service and 151,322 shares remain available in the plan as of December 31, 2019.

Retirement Savings Plan

We have a savings plan that qualifies as a cash or deferred salary arrangement under Section 401(k) of the Internal Revenue Code. Under the plan, participating U.S. employees may defer their pre-tax salary or post-tax salary if Roth is elected, subject to IRS limitations. In fiscal years 2019 and 2018, we contributed one dollar for each dollar contributed by a participant, with a maximum contribution of four percent of a participant’s eligible earnings. Our matching contribution expense for the savings plan, net of forfeitures, was approximately \$239,000 and \$237,000 in 2019 and 2018, respectively. Employer matching contributions owed to the plan were \$211,000 and \$271,000 at December 31, 2019 and 2018, respectively.

NOTE 11– SHARE-BASED COMPENSATION

For share-based awards granted, we have recognized compensation expense based on the estimated grant date fair value method. For these awards we have recognized compensation expense using a straight-line amortization method and reduced for estimated forfeitures. The impact on our results of operations of recording share-based compensation for the year ended December 31, 2019 and 2018 was as follows:

	Year Ended December 31,	
	2019	2018
(in thousands)		
Cost of goods sold	\$ 28	\$ 25
Research and development	288	266
Selling, general and administrative	855	939
Total share-based compensation	<u>\$ 1,171</u>	<u>\$ 1,230</u>

An immaterial amount of share-based compensation was capitalized into inventory as overhead for the years ended December 31, 2019 and 2018, respectively.

The fair values of share-based awards for employee stock option awards were estimated at the date of grant using the Black-Scholes valuation model. The volatility and expected life of the options used in calculating the fair value of share-based awards may exclude certain periods of historical data that we considered atypical and not likely to occur in future periods. The following weighted average assumptions were used to calculate the fair value of options granted during the years ended December 31:

Employee Stock Options	
2019	2018

Risk-free interest rates	2.31%	N/A
Volatility factors	62.05%	N/A
Expected life of the option in years	4.0	N/A
Expected dividend yield	None	N/A

The risk-free interest rate used in the Black-Scholes valuation method is based on the implied yield currently available in U.S. Treasury securities at maturity with an equivalent term. We have not recently declared or paid any dividends and do not currently have plans to do so in the future. The expected term of options represents the period that our stock-based awards are expected to be outstanding and has been determined based on historical weighted average holding periods and projected holding periods for the remaining unexercised shares. Consideration was given to the contractual terms of our stock-based awards, vesting schedules and expectations of future employee behavior. Expected volatility is based on the annualized daily historical volatility of our stock over a representative period.

The following table summarizes stock option activity under our stock option plans for the twelve months ended December 31:

	2019			2018		
	Options	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Life in Years	Options	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Life in Years
Outstanding at beginning of year	25,000	\$ 8.03		40,000	\$ 6.10	
Granted	25,000	4.98		-	-	
Exercised	-	0.00		(15,000)	2.83	
Cancelled, Expired or Forfeited	(25,000)	8.03		-	-	
Outstanding at end of year	<u>25,000</u>	<u>\$ 4.98</u>	<u>5.34</u>	<u>25,000</u>	<u>\$ 8.03</u>	<u>4.50</u>
Vested or expected to vest at the end of the period	24,723	\$ 4.98	5.34	22,924	\$ 8.03	4.50
Exercisable at end of year	12,500	\$ 4.98	5.34	7,813	\$ 8.03	4.50

The aggregate intrinsic value of outstanding options is \$0. There were no stock option awards exercised in 2019.

Restricted stock award including performance-based stock award activity under our share-based compensation plan was as follows:

	2019		2018	
	Awards	Weighted - Average Grant Date Fair Value	Awards	Weighted - Average Grant Date Fair Value
Outstanding at beginning of year	558,856	\$ 6.06	565,850	\$ 5.09
Granted	276,700	4.57	206,856	7.11
Vested	(224,089)	5.30	(213,100)	4.51
Cancelled	(75,064)	7.30	(750)	4.24
Outstanding at end of year	<u>536,403</u>	\$ 5.44	<u>558,856</u>	\$ 6.06

During the years ended December 31, 2019 and 2018, 54,436 and 67,322 shares respectively were withheld from issuance related to restricted stock units vesting and stock option exercises to cover employee taxes and stock options exercise price.

The remaining unamortized expected future compensation expense and remaining amortization period associated with unvested option grants and restricted stock awards are:

	December 31, 2019	December 31, 2018
Unamortized future compensation expense	\$ 2,351,324	\$ 2,835,978
Remaining weighted average amortization period in years	2.40	2.63

NOTE 12 – SHARE REPURCHASE PROGRAMS

On October 31, 2018, our Board of Directors approved a share repurchase program with provisions to buy back up to \$2.0 million of our stock during the period from November 1, 2018 through October 31, 2019. The program was established with a 10b5-1 plan under the Exchange Act to provide flexibility to make purchases throughout the period. For the quarter ended September 30, 2019, 55,904 shares of stock were repurchased at an average price of \$4.37 for a total of \$244,197 including \$1,176 in commissions and charges. The \$2.0 million buyback program was completed during the third quarter of 2019. The following is a summary of the stock repurchase program from November 1, 2018 through September 30, 2019:

Repurchases by Month	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Repurchase Program	Approximate Dollar Value of Shares that May Yet Be Purchased under the Program
Dec. 2018	101,975	\$ 5.25	101,975	\$ 1,464,470
Jan. 2019	43,701	\$ 5.39	43,701	\$ 1,229,115
Mar. 2019	13,911	\$ 5.49	13,911	\$ 1,152,793
Apr. 2019	69,141	\$ 5.34	69,141	\$ 783,687
May 2019	69,798	\$ 4.63	69,798	\$ 461,417
Jun. 2019	49,255	\$ 4.44	49,255	\$ 244,197
Jul. 2019	55,280	\$ 4.37	55,280	\$ 2,798
Aug. 2019	624	\$ 4.32	624	\$ 3
Total	<u>403,685</u>	\$ 4.95	<u>403,685</u>	

NOTE 13– INCOME TAXES

Components of income (loss) before taxes:

(in thousands)	Year Ended December 31,	
	2019	2018
U.S. operations	\$ (2,518)	\$ (137)
Foreign operations	1,362	2,034
Total income (loss) before taxes	\$ (1,156)	\$ 1,897

Income tax expense (benefit) consists of:

(in thousands)	Year Ended December 31,	
	2019	2018
Current tax expense (benefit)		
U.S. federal	\$ (42)	\$ 5
State	8	20
Foreign	65	266
	31	291
Deferred tax expense (benefit) – U.S. federal	-	-
Total income tax expense (benefit)	\$ 31	\$ 291

A reconciliation of our effective income tax and the U.S. federal tax rate is as follows:

(in thousands)	Year Ended December 31,	
	2019	2018
Statutory tax	\$ (243)	\$ 398
State and foreign income tax, net of federal income tax benefit	(230)	(159)
Valuation allowance for deferred tax assets	568	245
Federal rate change	-	-
Foreign sourced deemed dividend income	-	-
Stock based compensation	(177)	(282)
AMT credit refund	-	-
Other	113	89
Total income tax expense (benefit)	\$ 31	\$ 291

The tax effects of temporary differences that gave rise to significant portions of the deferred tax assets are presented below:

(in thousands)	Year Ended December 31,	
	2019	2018
Deferred income tax assets:		
Allowance for doubtful accounts	\$ 13	\$ 8
Inventory and product return reserves	464	467
Compensation accruals	1,723	1,515
Accrued liabilities	129	321
Book-over-tax depreciation and amortization	25	21
Foreign net operating loss carryforwards	3	132
U.S. net operating loss carryforwards	2,904	2,345
U.S. credit carryforwards	2,280	2,161
	7,541	6,970
Valuation Allowance	(7,541)	(6,970)
Total Deferred Income Tax Assets	\$ -	\$ -

The valuation allowance for deferred tax assets increased \$571,000 and \$140,000 during the years ended December 31, 2019 and 2018, respectively. The net deferred tax assets have a full valuation allowance provided due to uncertainty regarding our ability to utilize such assets in future years. This full valuation allowance evaluation is based upon our volatile history of losses and the cyclical nature of our industry and capital spending. Credit carryforwards consist primarily of research and experimental and foreign tax credits. We intend to continue to reinvest foreign earnings of our operating subsidiaries.

U.S. net operating loss carryforwards are \$13,830,000 at December 31, 2019 with expiration years from 2022 to 2039. Utilization of net operating loss and credit carryforwards is subject to certain limitations under Section 382 of the Internal Revenue Code of 1986, as amended.

The gross changes in uncertain tax positions resulting in unrecognized tax benefits are presented below:

	Year Ended December 31,	
	2019	2018
(in thousands)		
Unrecognized tax benefits, opening balance	\$ 308	\$ 272
Prior period tax position increases	10	-
Additions based on tax positions related to current year	30	36
Unrecognized tax benefits, ending balance	<u>\$ 348</u>	<u>\$ 308</u>

Historically, we have incurred minimal interest expense and no penalties associated with tax matters. We have adopted a policy whereby amounts related to penalties associated with tax matters are classified as general and administrative expense when incurred and amounts related to interest associated with tax matters are classified as interest income or interest expense.

Tax years that remain open for examination include 2016, 2017, 2018 and 2019 in the United States of America. In addition, various tax years from 2002 to 2015 may be subject to examination in the event that we utilize the net operating losses and credit carryforwards from those years in our current or future year tax returns.

NOTE 14 – SEGMENT AND GEOGRAPHIC INFORMATION

We consider our operations to be a single operating segment, focused on the design, manufacturing and sale of programming systems used by designers and manufacturers of electronic products.

Major operations outside the U.S. include sales, engineering and service support subsidiaries in Germany as well as in China, which also manufactures some of our products.

The following tables provide summary operating information by geographic area:

(in thousands)	Year Ended December 31,	
	2019	2018
Net sales:		
U.S.	\$ 1,735	\$ 3,436
Europe	8,828	13,251
Rest of World	11,005	12,537
	<u>\$ 21,568</u>	<u>\$ 29,224</u>
Included in Europe and Rest of World net sales are the following significant balances:		
Germany	\$ 2,507	\$ 4,428
China	\$ 2,934	\$ 4,489
Operating income:		
U.S.	\$ 317	\$ 802
Europe	(1,108)	258
Rest of World	(487)	678
	<u>\$ (1,278)</u>	<u>\$ 1,738</u>
Identifiable assets:		
U.S.	\$ 12,818	\$ 18,976
Europe	5,917	5,279
Rest of World	9,546	6,468
	<u>\$ 28,281</u>	<u>\$ 30,723</u>

NOTE 15 – SUBSEQUENT EVENTS

Beginning in early 2020, there has been an outbreak of coronavirus (COVID-19), initially in China and which has spread to other jurisdictions, including all locations where the Company does business. The full extent of the outbreak, related business and travel restrictions, government required closure restrictions and changes to behavior intended to reduce its spread are uncertain as of the date of the Report as this continues to evolve globally. Therefore, the full extent to which coronavirus may impact the Company's results of operations or financial position is uncertain. This outbreak has already had a significant disruption on the operations of the Company and its suppliers and customers. To the extent that the Company's customers and suppliers continue to be impacted by the coronavirus outbreak, this could reduce the availability, or result in delays, of materials or supplies to or from the Company, which in turn could significantly interrupt the Company's business operations. Management continues to monitor the impact that the COVID-19 pandemic is having on the Company, our industry and the economies in which the Company operates. While we expect this matter to negatively impact our results, the related financial impact and duration of such impact cannot be reasonably estimated at this time.

There were no other subsequent events which would require additional disclosures to the financial statements, except for those already disclosed throughout the Notes to Consolidated Financial Statements.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

(a) Evaluation of disclosure controls and procedures.

Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we evaluated the effectiveness of the design and operation of our disclosure controls and procedures (as defined in Rule 13a-15(e) and Rule 15d-15(e) under the Exchange Act) as of the end of the period covered by this report (the "Evaluation Date"). Based upon that evaluation, the Chief Executive Officer and Chief Financial Officer concluded that, as of the Evaluation Date, our disclosure controls and procedures were effective at the reasonable assurance level. Disclosure controls are controls and procedures designed to ensure that information required to be disclosed in our reports filed or submitted under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms. Disclosure controls are also designed to ensure that such information is accumulated and communicated to our management, including the CEO and CFO, as appropriate to allow timely decisions regarding required disclosure.

(b) Management's Report on Internal Control Over Financial Reporting.

Our management is responsible for establishing and maintaining adequate internal control over financial reporting. Our internal control systems are designed to provide reasonable assurance to the Company's management and board of directors regarding reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. Internal control over financial reporting is defined in Rule 13a-15(f) promulgated under the Exchange Act and 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.

All internal controls, no matter how well designed, have inherent limitations. Therefore, even those systems determined to be effective can provide only reasonable assurance with respect to financial statements preparation and presentation.

Our management assessed the effectiveness of the Company's internal control over financial reporting as of December 31, 2019. In making this assessment, we used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") in Internal Control – Integrated Framework (2013). Based on this assessment our Chief Executive Officer and Chief Financial Officer have concluded that, as of December 31, 2019, our internal control over financial reporting was effective.

This annual report does not include an attestation report of the company's registered public accounting firm regarding internal control over financial reporting. Management's report was not subject to attestation by the company's registered public accounting firm pursuant to the Dodd-Frank Wall Street Reform and Consumer Protection Act, which permanently exempts smaller reporting companies from complying with Section 404(b) of the Sarbanes-Oxley Act of 2002.

(c) Changes in internal controls.

There were no changes made in our internal controls during the period covered by this report that has materially affected or is reasonably likely to materially affect our internal control over financial reporting.

Item 9B. Other Information

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

Information regarding the Registrant’s directors is set forth under “Election of Directors” in our Proxy Statement relating to our annual meeting of shareholders to be held on May 18, 2020 and is incorporated herein by reference. Such Proxy Statement will be filed within 120 days of our year-end. Information regarding the Registrant’s executive officers is set forth in Item 1 of Part I herein under the caption “Executive Officers of the Registrant.”

Code of Ethics

We have adopted a Code of Ethics that applies to all directors, officers and employees of Data I/O, including the Chief Executive Officer and Chief Financial Officer. The key principles of the Code of Ethics are to act legally and with integrity in all work for Data I/O. The Code of Ethics is posted on the corporate governance page of our website <http://www.dataio.com/Company/InvestorRelations/CorporateGovernance.aspx>. We will post any amendments to our Code of Ethics on our website. In the unlikely event that the Board of Directors approves any sort of waiver to the Code of Ethics for our executive officers or directors, information concerning such waiver will also be posted on our website. In addition to posting information regarding amendments and waivers on our website, the same information will be included in a Current Report on Form 8-K within four business days following the date of the amendment or waiver, unless website posting of such amendments or waivers is permitted by Nasdaq’s rules.

Item 11. Executive Compensation

Information called for by Part III, Item 11, is included in our Proxy Statement relating to our annual meeting of shareholders to be held on May 18, 2020 and is incorporated herein by reference. The information appears in the Proxy Statement under the caption “Executive Compensation.” Such Proxy Statement will be filed within 120 days of our year-end.

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

Information called for by Part III, Item 12, is included in our Proxy Statement relating to our annual meeting of shareholders to be held on May 18, 2020 and is incorporated herein by reference. The information appears in the Proxy Statement under the caption “Voting Securities and Principal Holders.” Such Proxy Statement will be filed within 120 days of our year end.

Equity Compensation Plan Information

The following table gives information about our Common Stock that may be issued upon the exercise of options and rights under all of our existing equity compensation plans as of December 31, 2019. See Notes 10 and 11 of “Notes to Consolidated Financial Statements.”

	(a) Number of securities to be issued upon the exercise of outstanding options, warrants and rights	(b) Weighted-average exercise price of outstanding options, warrants and rights	(c) Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a))
Equity compensation plans approved by the security holders (1) (2)	28,509	\$ 4.84	1,351,368
Equity compensation plans not approved by the security holders	-	\$ 0.00	-
Total	<u>28,509</u>	<u>\$ 4.84</u>	<u>1,351,368</u>

(1) Represents shares of our Common Stock issuable pursuant to the Data I/O Corporation 2000 Stock Incentive Compensation Plan, 1982 Employee Stock Purchase Plan and 1996 Director Fee Plan. Table excludes unvested restricted stock awards of 536,403 from the 2000 Plan.

(2) Stock Appreciation Rights Plan (“SAR”) provides that directors, executive officers or holders of 10% or more of our Common Stock have an accompanying SAR with respect to each exercisable option. While the plan has been approved by the security holders, no amounts are included in columns (a), (b), or (c) relating to the SAR.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information required by this item is contained in, and incorporated by reference from, the Proxy Statement for our 2020 Annual Meeting of Shareholders under the caption “Certain Relationships and Related Transactions.”

Item 14. Principal Accounting Fees and Services

The information required by this Item with respect to principal accountant fees and services is incorporated by reference to the section captioned “Principal Accountant’s Fees and Services” in the Proxy Statement relating to our annual meeting of shareholders to be held on May 18, 2020. Such Proxy Statement will be filed within 120 days of our year-end.

PART IV

Item 15. Exhibits, Financial Statement Schedules

Executive Compensation Plans and Arrangements

The following list is a subset of the list of exhibits described below and contains all compensatory plans, contracts or arrangements in which any director or executive officer of Data I/O is a participant, unless the method of allocation of benefits thereunder is the same for management and non-management participants:

- (1) Amended and Restated 1982 Employee Stock Purchase Plan. See Exhibit 10.5.
- (2) Data I/O Corporation Tax Deferral Retirement Plan and Trust with Great West Financial (formerly Orchard Trust Company). See Exhibits 10.15, 10.16, 10.17, 10.30 and 10.31.
- (3) Summary of Amended and Restated Management Incentive Compensation Plan. See Exhibit 10.2.
- (4) Amended and Restated 1983 Stock Appreciation Rights Plan. See Exhibit 10.1.
- (5) Amended and Restated Executive Agreements. See Exhibit 10.8, 10.20, 10.23 and 10.27.
- (6) 1996 Director Fee Plan. See Exhibit 10.4.
- (7) Data I/O Corporation 2000 Stock Compensation Incentive Plan. See Exhibit 10.6, 10.11, 10.22 and 10.26.
- (8) Form of Option Agreement. See Exhibit 10.7.
- (9) Form of Indemnification Agreement. See Exhibit 10.18.
- (10) Letter Agreement with Anthony Ambrose. See Exhibit 10.21.
- (11) Letter Agreement with Rajeev Gulati. See Exhibit 10.24.
- (12) Form of Restricted Stock Agreement. See Exhibit 10.12.
- (13) Letter Agreement with Joel S. Hatlen. See Exhibit 10.28.
- (14) Form of Executive Agreement. See Exhibit 10.27.
- (15) Form of Restricted Stock Unit Award Agreement. See Exhibit 10.25.
- (16) Letter Agreement with Michael Tidwell. See Exhibit 10.36.

(a) <u>List of Documents Filed as a Part of This Report:</u>	Page
(1) <u>Index to Financial Statements :</u>	
Report of Independent Registered Public Accounting Firm	29
Consolidated Balance Sheets as of December 31, 2019 and 2018	30
Consolidated Statements of Operations for each of the two years ended December 31, 2019 and 31-Dec-18	31
Consolidated Statements of Comprehensive Income (Loss) for each of the two years ended December 31, 2019 and December 31, 2018	32
Consolidated Statements of Stockholders' Equity for each of the two years ended December 31, 2019 and December 31, 2018	33
Consolidated Statements of Cash Flows for each of the two years ended December 31, 2019 and 31-Dec-18	34
Notes to Consolidated Financial Statements	35
(2) <u>Index to Financial Statement Schedules :</u>	
Schedule II – Consolidated Valuation and Qualifying Accounts	58
All other schedules not listed above have been omitted because the required information is included in the consolidated financial statements or the notes thereto, or is not applicable or required.	
(3) <u>Index to Exhibits:</u>	
3 Articles of Incorporation:	
3.1 Data I/O's restated Articles of Incorporation filed November 2, 1987 (Incorporated by reference to Exhibit 3.1 of Data I/O's 1987 Annual Report on Form 10-K (File No. 0-10394) and attached as a PDF to Exhibit 3.1 in our 2017 Annual Report on Form 10-K).	
3.2 Data I/O's Bylaws as amended and restated as of July 20, 2011 (Incorporated by reference to Data I/O's Current Report on Form 8-K filed July 26, 2011).	
3.3 Certification of Designation, Preferences and Rights of Series A Junior Participating Preferred Stock (Incorporated by reference to Exhibit I of Data I/O's Registration Statement on Form 8-A filed March 13, 1998 (File No. 0-10394)).	
4 Instruments Defining the Rights of Security Holders, Including Indentures:	
4.1 Rights Agreement dated as of April 4, 1998, between Data I/O Corporation and ChaseMellon Shareholder Services, L.L.C. as Rights Agent, which includes: as Exhibit A thereto, the Form of Right Certificate; and, as Exhibit B thereto, the Summary of Rights to Purchase Series A Junior Participating Preferred Stock (Incorporated by reference to Data I/O's Current Report on Form 8-K filed on March 13, 1998).	

- [4.2 Rights Agreement, dated as of March 31, 1988, between Data I/O Corporation and First Jersey National Bank, as Rights Agent, as amended by Amendment No. 1 thereto, dated as of May 28, 1992 and Amendment No. 2 thereto, dated as of July 16, 1997 \(Incorporated by reference to Data I/O's Report on Form 8-K filed on March 13, 1998\).](#)
- [4.3 Amendment No. 1, dated as of February 10, 1999, to Rights Agreement, dated as of April 4, 1998, between Data I/O Corporation and ChaseMellon Shareholder Services, L.L.C. as Rights Agent \(Incorporated by reference to Exhibit 4.1 of Data I/O's Form 8-A/A dated February 10, 1999\).](#)
- [4.4 Amendment No. 2 to Rights Agreement, dated as of April 3, 2008, between Data I/O Corporation and Computershare \(formerly BNY Mellon Investor Services LLC, and ChaseMellon Shareholder Services, L.L.C.\). \(Incorporated by reference to Exhibit 4.3 of Data I/O's Form 8-K dated April 3, 2008\).](#)
- [4.5 Amendment No. 3 to Rights Agreement, dated as of July 13, 2016, between Data I/O Corporation and Computershare. \(Incorporated by reference to Exhibit 4.4 of Data I/O's Form 8-A/A dated July 14, 2016\).](#)
- [4.6 Description of Data I/O's Common Stock.](#)

10 Material Contracts:

- [10.1 Amended and Restated 1983 Stock Appreciation Rights Plan dated February 3, 1993 \(Incorporated by reference to Exhibit 10.23 of Data I/O's 1992 Annual Report on Form 10-K \(File No. 0-10394\) and attached as a PDF to Exhibit 10.1 in our 2017 Annual Report on Form 10-K\).](#)
 - [10.2 Amended and Restated Management Incentive Compensation Plan dated January 1, 1997 \(Incorporated by reference to Exhibit 10.25 of Data I/O's 1997 Annual Report on Form 10-K \(File No. 0-10394\)\).](#)
 - [10.3 Amended and Restated Performance Bonus Plan dated January 1, 1997 \(Incorporated by reference to Exhibit 10.26 of Data I/O's 1997 Annual Report on Form 10-K \(File No. 0-10394\)\).](#)
 - [10.4 Amended and Restated Data I/O Corporation 1996 Director Fee Plan \(Incorporated by reference to Exhibit 10.32 of Data I/O's 1997 Annual Report on Form 10-K \(File No. 0-10394\)\).](#)
 - [10.5 Amended and Restated 1982 Employee Stock Purchase Plan dated May 16, 2003 \(Incorporated by reference to Data I/O's 2003 Proxy Statement dated March 31, 2003\).](#)
 - [10.6 Amended and Restated Data I/O Corporation 2000 Stock Compensation Incentive Plan dated May 24, 2006 \(Incorporated by reference to Data I/O's 2006 Proxy Statement dated April 6, 2006\).](#)
 - [10.7 Form of Option Agreement \(Incorporated by reference to Data I/O's 2004 Annual Report on Form 10-K \(File No. 0-10394\)\).](#)
 - [10.8 Amended and Restated Executive Agreement with Joel S. Hatlen dated December 31, 2011 \(Incorporated by reference to Data I/O's 2011 Annual Report on Form 10K \(File No. 0-10394\)\).](#)
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- [10.9 Lease, Redmond East Business Campus between Data I/O Corporation and Carr Redmond PLCC dated February 28, 2006 \(Incorporated by reference to Data I/O's 2005 Annual Report on Form 10K \(File No. 0-10394\)\).](#)
 - [10.10 Second Amendment to Lease, \(Redmond East\) between Data I/O Corporation and Arden Realty Limited Partnership, made as of January 31, 2011. \(Incorporated by reference to Data I/O's 2010 Annual Report on Form 10-K \(File No. 0-10394\)\).](#)
 - [10.11 Amended and Restated Data I/O Corporation 2000 Stock Compensation Incentive Plan approved May 17, 2011 \(Incorporated by reference to Data I/O's 2011 Proxy Statement filed April 5, 2011\).](#)
 - [10.12 Form of Restricted Stock Award Agreement \(Incorporated by reference to Exhibit 10.29 of Data I/O's June 30, 2006 Quarterly Report on Form 10-O \(File No. 0-10394\)\).](#)
 - [10.13 Patent Purchase Agreement \(Incorporated by reference to Data I/O's Current Report on Form 8-K filed on March 25, 2008\)\).](#)
 - [10.14 First Amendment to the Patent Purchase Agreement \(Incorporated by reference to Data I/O's Current Report on Form 8-K filed on March 25, 2008\).](#)
 - [10.15 Great West Financial \(formerly Orchard Trust Company\) Defined Contribution Prototype Plan and Trust \(Incorporated by reference to Data I/O's 2007 Annual Report on Form 10-K \(File No. 0-10394\)\).](#)
 - [10.16 Great West Financial \(formerly Orchard Trust Company\) Non-standardized 401\(k\) Plan \(Incorporated by reference to Data I/O's 2007 Annual Report on Form 10-K \(File No. 0-10394\)\).](#)
 - [10.17 Great West Financial \(formerly Orchard Trust Company\) Defined Contribution Prototype Plan and Trust Amendment for Pension Protection Act and Heart Act. \(Incorporated by reference to Data I/O's 2009 Annual Report on Form 10-K \(File No. 0-10394\)\).](#)
 - [10.18 Form of Indemnification Agreement. \(Incorporated by reference to Data I/O's 2010 Annual Report on Form 10-K \(File No. 0-10394\)\).](#)
 - [10.19 Asset Purchase Agreement dated April 29, 2011, with the Miller Trust, for acquisition of Software Technology \(Incorporated by reference to Data I/O's Current Report on Form 8-K filed May 3, 2011 with portions omitted pursuant to a confidential treatment request, and by reference to Data I/O's Form 10-O filed April 3, 2012, which included the redacted portions that had been made in the original Form 8-K filing\).](#)
 - [10.20 Executive Agreement with Anthony Ambrose dated October 25, 2012. \(Incorporated by reference to Data I/O's 2012 Annual Report on Form 10-K \(File No. 0-10394\)\).](#)
 - [10.21 Letter Agreement with Anthony Ambrose \(Incorporated by reference to Data I/O's Current Report on Form 8-K filed on October 29, 2012\).](#)
 - [10.22 Amended and Restated Data I/O Corporation 2000 Stock Compensation Incentive Plan approved May 10, 2012 \(Incorporated by reference to Data I/O's 2012 Proxy Statement filed April 3, 2012\).](#)
 - [10.23 Executive Agreement with Rajeev Gulati dated July 25, 2013. \(Incorporated by reference to Data I/O's 2013 Annual Report on Form 10-K \(File No. 0-10394\)\).](#)
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- [10.24 Letter Agreement with Rajeev Gulati \(Incorporated by reference to Data I/O's Current Report on Form 8-K filed on July 31, 2013\).](#)
- [10.25 Form of Restricted Stock Unit Award Agreement \(Incorporated by reference to Exhibit 10.29 of Data I/O's March 31, 2014 Quarterly Report on Form 10-Q \(File No. 0-10394\)\).](#)
- [10.26 Amended and Restated Data I/O Corporation 2000 Stock Compensation Incentive Plan approved April 30, 2014 \(Incorporated by reference to Exhibit 10.30 of Data I/O's March 31, 2014 Quarterly Report on Form 10-Q \(File No. 0-10394\)\).](#)
- [10.27 Form of Executive Agreement \(Incorporated by reference to Exhibit 10.31 of Data I/O's June 30, 2014 Quarterly Report on Form 10-Q \(File No. 0-10394\)\).](#)
- [10.28 Letter Agreement with Joel S. Hatlen \(Incorporated by reference to Exhibit 10.32 of Data I/O's June 30, 2014 Quarterly Report on Form 10-Q \(File No. 0-10394\)\).](#)
- [10.29 Third Amendment to Lease, \(Redmond East\) between Data I/O Corporation and Arden Realty Limited Partnership, made as of June 1, 2015 \(Incorporated by reference to Exhibit 10.29 of Data I/O's June 30, 2015 Quarterly Report on Form 10-Q \(File No. 0-10394\)\).](#)
- [10.30 Great West Financial Adoption Agreement #005 Non-standardized 401\(k\) Plan \(Incorporated by reference to Data I/O's 2015 Annual Report on Form 10-K \(File No. 0-10394\)\).](#)
- [10.31 Great West Financial Adoption Agreement #005 Non-standardized 401\(k\) Plan \(Incorporated by reference to Data I/O's 2016 Annual Report on Form 10-K \(File No. 0-10394\)\).](#)
- [10.32 Negotiation Protocol for the Purchase of Data I/O's PSV7000, a supply agreement executed July 20, 2016, between Data I/O Corporation and Bosch Car Multimedia Group \(Incorporated by reference to Exhibit 10.31 of Data I/O's September 30, 2016 Quarterly Report on Form 10-Q \(File No. 0-10394\)\). \(Portions of this exhibit have been omitted based on confidential treatment granted by the SEC. The omitted portions of these exhibits have been filed separately with the SEC. The registrant undertakes to furnish on a supplemental basis a copy of any omitted schedules to the Securities and Exchange Commission upon request.\).](#)
- [10.33 Standstill and Voting Agreement, dated as of July 13, 2016, by and among Data I/O Corporation, David Kanen and Kanen Wealth Management LLC \(Incorporated by reference to Data I/O's Current Report on Form 8-K filed on July 14, 2016\).](#)
- [10.34 Fifth Amendment to Lease, between Data I/O Corporation and BRE WA OFFICE OWNER LLC, made as of September 12, 2017 \(Incorporated by reference to Data I/O's September 30, 2017 Quarterly Report on Form 10-Q \(File No. 0-10394\)\).](#)
- [10.35 1st Amendment to Negotiation Protocol executed on September 24, 2018 between Data I/O Corporation and Robert Bosch GmbH \(Incorporated by reference to Exhibit 10.35 of Data I/O's September 30, 2018 Quarterly Report on Form 10-Q \(File No. 0-10394\)\). \(Portions of this exhibit have been omitted based on a request for confidential treatment made to the SEC. The omitted portions of these exhibits have been filed separately with the SEC. The registrant undertakes to furnish on a supplemental basis a copy of any omitted schedules to the Securities Exchange Commission upon request.\).](#)
- [10.36 Letter Agreement with Michael Tidwell \(Incorporated by reference to Form 8-K filed on May 1, 2019\).](#)
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[21.1 Subsidiaries of the Registrant](#)

[23.1 Consent of Independent Registered Public Accounting Firm](#)

31 Certification – Section 302:

[31.1 Chief Executive Officer Certification](#)

[31.2 Chief Financial Officer Certification](#)

32 Certification – Section 906:

[32.1 Chief Executive Officer Certification](#)

[32.2 Chief Financial Officer Certification](#)

101 Interactive Data Files Pursuant to Rule 405 of Regulation S-T

Item 16. Form 10-K Summary

None.

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.

DATA I/O CORPORATION (REGISTRANT)

DATED: March 27, 2020

By: /s/ Anthony Ambrose
Anthony Ambrose
President and Chief Executive Officer

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.

<u>NAME</u>	<u>DATE</u>	<u>TITLE</u>
<u>/s/ Anthony Ambrose</u> Anthony Ambrose	March 27, 2020	President and Chief Executive Officer (Principal Executive Officer), Director
<u>/s/ Joel S. Hatlen</u> Joel S. Hatlen	March 27, 2020	Chief Operating and Financial Officer Vice President Secretary, Treasurer (Principal Financial and Accounting Officer)
<u>/s/ Douglas W. Brown</u> Douglas W. Brown	March 27, 2020	Director
<u>/s/ John D. Delafield</u> John D. Delafield	March 27, 2020	Director
<u>/s/ Alan B. Howe</u> Alan B. Howe	March 27, 2020	Director
<u>/s/ Mark J. Gallenberger</u> Mark J. Gallenberger	March 27, 2020	Director

DATA I/O CORPORATION
SCHEDULE II – CONSOLIDATED VALUATION AND QUALIFYING ACCOUNTS

	<u>Balance at Beginning of Period</u>	<u>Charged/ (Credited) to Costs and Expenses</u>	<u>Deductions- Describe</u>	<u>Balance at End of Period</u>
(in thousands)				
Year Ended December 31, 2018:				
Allowance for bad debts	\$ 73	\$ 2	\$ - (1)	\$ 75
Year Ended December 31, 2019:				
Allowance for bad debts	\$ 75	\$ 5	\$ - (1)	\$ 80

(1) Uncollectable accounts written off, net of recoveries

EXHIBIT 4.6

DATA I/O CORPORATION DESCRIPTION OF DATA I/O CORPORATION'S COMMON STOCK

The common stock of Data I/O Corporation is its only class of securities registered under Section 12 of the Securities Exchange Act of 1934, as amended (the “**Exchange Act**”).

The following description of our Common Stock is a summary and does not purport to be complete. It is subject to and qualified in its entirety by reference to our Restated Articles of Incorporation and Certificate of Designation, Preferences and Rights of Series A Junior Participating Preferred Stock (the “**Articles**”) and our Amended and Restated Bylaws (the “**Bylaws**”), each of which attached as exhibit to the Annual Report on Form 10-K. We are incorporated in the State of Washington and are subject to the Washington Business Corporation Act, Title 23B of the Revised Code of Washington.

Authorized Capital Shares

Our authorized capital shares are thirty-five million (35,000,000), consisting of thirty million (30,000,000) shares of Common Stock (“**Common Stock**”), and five million (5,000,000) shares of Preferred Stock. Two hundred thousand (200,000) shares of Series A Junior Participating Preferred Stock have been designated. The outstanding shares of our Common Stock are fully paid and nonassessable. There are no shares of Preferred Stock outstanding.

Voting Rights

Holders of Common Stock are entitled to one vote per share on all matters voted on by the shareholders, including the election of directors. Our Common Stock does not have cumulative voting rights.

Dividend Rights

The holders of Common Stock are entitled to receive dividends, if any, as may be declared from time to time by the Board of Directors in its discretion out of funds legally available for the payment of dividends.

Liquidation Rights

Holders of Common Stock will share ratably in all assets legally available for distribution to our shareholders in the event of dissolution.

Other Rights and Preferences

Our Common Stock has no sinking fund or redemption provisions or preemptive, conversion or exchange rights. Holders of Common Stock may act by unanimous written consent.

Potential Limitations on Rights of Holders of Common Stock

Our Articles authorize our board of directors to issue up to 5,000,000 shares of Preferred Stock and to determine the price, rights, preferences, privileges and restrictions, including voting rights, of those shares without any further vote or action by the shareholders. Two hundred thousand (200,000) shares of Series A Junior Participating Preferred Stock have been designated, but none are outstanding. The rights of the holders of Common Stock may be subject to, and may be adversely affected by, the rights of the holders of any Preferred Stock that may be issued in the future.

Listing

The Common Stock is traded on The Nasdaq Stock Market LLC under the trading symbol “DAIO.”

EXHIBIT 21.1**DATA I/O CORPORATION
SUBSIDIARIES OF THE REGISTRANT**

The following table indicates the name, jurisdiction of incorporation and basis of ownership of each of Data I/O's subsidiaries:

Name of Subsidiary	State or Jurisdiction of Organization	Percentage of Voting Securities Owned
Data I/O International, Inc.	Washington	100%
RTD, Inc.	Washington	100%
Data I/O FSC International, Inc.	Territory of Guam	100%
Data I/O Canada Corporation	Canada	100%
Data I/O GmbH	Germany	100%
Data I/O Electronics (Shanghai) Co., Ltd.	China	100%

EXHIBIT 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We have issued our report dated March 27, 2020, with respect to the consolidated financial statements and schedule included in the Annual Report of Data I/O Corporation on Form 10-K for the year ended December 31, 2019. We consent to the incorporation by reference of said report in the Registration Statements of Data I/O Corporation on Form S-8 (File Nos. 002-76164, 002-86785, 002-98115, 002-78394, 33-95608, 33-66824, 33-42010, 33-26472, 33-54422, 333-20657, 333-55911, 33-02254, 33-03958, 333-107543, 333-81986, 333-48595, 333-121861, 333-151006, 333-166730, 333-175840, and 333-224971) and on Form S-3 (File No. 333-121566).

/s/Grant Thornton LLP

Seattle, Washington
March 27, 2020

EXHIBIT 31.1

Certification by Chief Executive Officer
Pursuant to 18 U.S.C. Section 1350
As Adopted Pursuant to
Section 302(a) of the Sarbanes-Oxley Act of 2002

I, Anthony Ambrose, certify that:

- 1) I have reviewed this annual report on Form 10-K of Data I/O Corporation;
- 2) Based upon my knowledge, this annual report does not contain any untrue statement of material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this annual report;
- 3) Based on my knowledge, the financial statements, and other financial information included in this annual report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this annual report;
- 4) The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f)0 for the registrant and we have:
 - a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this annual report is being prepared;
 - b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, 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;
 - c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this annual report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this annual report based on such evaluation; and
 - d) Disclosed in this annual report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected or is reasonably likely to materially affect, the registrant's internal control over financial reporting.
- 5) The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent functions):
 - a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal controls over financial reporting.

Date: March 27, 2020

/s/ Anthony Ambrose
Anthony Ambrose
Chief Executive Officer
(Principal Executive Officer)

EXHIBIT 31.2

Certification by Chief Financial Officer
Pursuant to 18 U.S.C. Section 1350
As Adopted Pursuant to
Section 302(a) of the Sarbanes-Oxley Act of 2002

I, Joel S. Hatlen, certify that:

- 1) I have reviewed this annual report on Form 10-K of Data I/O Corporation;
- 2) Based upon my knowledge, this annual report does not contain any untrue statement of material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this annual report;
- 3) Based on my knowledge, the financial statements, and other financial information included in this annual report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this annual report;
- 4) The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f)0 for the registrant and we have:
 - a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this annual report is being prepared;
 - b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purpose in accordance with generally accepted accounting principles;
 - c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this annual report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this annual report based on such evaluation; and
 - d) Disclosed in this annual report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected or is reasonably likely to materially affect, the registrant's internal control over financial reporting.
- 5) The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent functions):
 - a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal controls over financial reporting.

Date: March 27, 2020

/s/ Joel S. Hatlen
Joel S. Hatlen
Chief Financial Officer
(Principal Financial Officer)

Exhibit 32.1

Certification by Chief Executive Officer
Pursuant to 18 U.S.C. Section 1350
As Adopted Pursuant to
Section 906 of the Sarbanes-Oxley Act of 2002

In connection with the annual report of Data I/O Corporation (the “Company”) on Form 10-K for the period ended December 31, 2019 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Anthony Ambrose, Chief Executive Officer of the Company, certify, that pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

- (1) The Report fully complies with the requirements of § 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Anthony Ambrose
Anthony Ambrose
Chief Executive Officer
(Principal Executive Officer)

Date: March 27, 2020

Exhibit 32.2

Certification by Chief Financial Officer
Pursuant to 18 U.S.C. Section 1350
As Adopted Pursuant to
Section 906 of the Sarbanes-Oxley Act of 2002

In connection with the annual report of Data I/O Corporation (the “Company”) on Form 10-K for the period ended December 31, 2019 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Joel S. Hatlen, Chief Financial Officer of the Company, certify, that pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

- (1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Joel S. Hatlen
Joel S. Hatlen
Chief Financial Officer
(Principal Financial Officer)

Date: March 27, 2020
