UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

(Mark One)

FORM 10-K

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

For the fiscal year ended **December 31, 2022**

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	91-0864123
(State or other jurisdiction of incorporation)	(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 principle 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 ☐
Large accelerated filer ☐	Smaller reporting company ☒
Non-accelerated filer ☐	Emerging growth company ☐

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

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☐

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, 2022:
$25,222,310

Shares of Common Stock, no par value, outstanding as of March 20, 2023:
8,818,076

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement relating to its May 18, 2023 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, 2022

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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, smart meters, 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, industrial 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.

COVID-19

During 2022, we continued to react to and manage our business relative to the COVID-19 pandemic. During 2020 and throughout 2021, COVID-19 impacted all aspects of our business, from customer demand, to supply chain integrity, employee safety, business processes, and financial management. During 2022, as a result of vaccinations and the reduced impact of COVID-19, our business started to return to more normal in parts of the world. As a global company, we had to manage these aspects of our business while working within the guidelines of local and national policy in the U.S., China and Germany. During parts of the first and second quarters, our Shanghai facility and operations were shut down for two and a half months as required by China's requirements pursuant to their COVID Zero policy. This shutdown impacted our supply chains, shipping times, travel, trade shows, and forced remote work. We were largely able to resume operations and begin recovery late in the second quarter and throughout the third quarter. For most of 2022, waves of COVID-19 infection and variants have kept or re-imposed revised travel restrictions. Customers continued to restrict in-person sales and other visits. We have continued to do business by converting these interactions to remote and virtual means as we have implemented new processes and technology. Our resilient supply chain model was able to support our customers by having alternate facilities that were open and responded to the critical impacts of the shutdown. Later in the year China's COVID Zero policy was effectively cancelled. In December most of our employees in Shanghai China were out briefly with COVID and then we resumed normal operations.

Other Major Impacts on 2022

The war in Ukraine had many impacts on our business. While we had little direct impact from Russia or Ukraine, the war's effect on supply chains, shipping, European economic uncertainty and energy concerns disrupted our business. Later in the year, the impacts seemed to diminish. Inflation impacted everyone. We believe we were able to adequately address inflation with pricing adjustments such that our margins were mostly maintained. Certain labor markets were tight during the year, with assembly technicians and software development engineers being challenging to recruit. Interest rate hikes by central banks is a concern especially for cyclical industries with resulting worries about capital spending and planning for recessionary impacts. Currency changes caused significant headwinds to our translated consolidated revenues. This resulted from the strengthening of the US Dollar versus most foreign currencies, especially the Euro and Yuan in which our subsidiaries do business. Later in the fourth quarter and continuing into early 2023, the US Dollar weakened somewhat, providing some tailwinds to revenue growth. The impact of semiconductor chip shortages that began mid 2021 continued well into 2022 and are not completely resolved going into 2023. Many of the issues described here in the overview have caused supply chain disruptions and lead time unreliability, which we have managed though carefully maintaining and increasing key inventory levels. Finally, the continued outlook by industry analysts for automotive electronics remains strong based on the long-term forecast for a decade, which remains our primary market focus.

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, security 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 2022, we continued to simplify and integrate security deployment into some of our solutions adding the capability to our PSV5000 and as a field upgrade to installed systems. 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. Our PSV family of automated programming systems delivers a broad range of programming capacity and capability to the marketplace. Our PSV2800 Automated Programming System focuses on dedicated high-volume manufacturing in a lower cost platform. Our PSV7000 Automated Programming System continues to be well adopted in the marketplace, in particular for automotive electronics customers and as a base for security deployment upgrades. Our PSV5000 Automated Programming System combines mid-range capacity and flexibility with competitive pricing and also supports security deployment. Our PSV3000 Automated Programming System is a lower cost platform for basic programming needs. Our PSV family of handlers has won multiple industry awards for technical excellence and innovation and has a large global installed base.

Our automated systems have list selling prices ranging from $95,000 to $635,000 and our manual systems have list selling prices ranging from $10,000 to $36,000. Our security deployment system, SentriX®, is offered for security provisioning on a pay per part use basis along with related fees.

Data I/O programming technology is integrated with the PSV family to create highly-flexible systems that deliver outstanding performance with low total cost of ownership. The Lumen®X programming engine is our highest performance programming engine, designed to support eMMC and UFS programming of large NAND FLASH, as well as microcontrollers, serial FLASH and other devices. 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 SentriX security system adds security deployment capability to our data programming system. SentriX 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 element. Adapters are a consumable item and software and maintenance are typically recurring under subscription contracts. Our SentriX system revenue typically comes from per part use fees, set-up or minimum quarterly fees, consumables, non-recurring engineering fees, service fees and the sale of equipment related to SentriX.

Sales Percentage of Total Sales Breakdown by Type

Sales Type	**2022**	**2021**	**Drivers**
Equipment Sales	57%	58%	Capacity, Process improvement, Technology
Adapter Sales	30%	30%	Capacity utilization, New customer products
Software and Maintenance Sales	13%	12%	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)	• 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	• 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	• 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.	• Create Secure IoT devices across a global network • Maintain IP control over the lifecycle of their products
LumenX Programmer	• Extensible architecture for fast program, verify and download speeds • Supports UFS, microcontrollers, Serial FLASH, secure elements and other device types • Large file size support • Secure Job creation • 8 sockets with tool-less changeover with single socket adapters	• Managed and secure programming • Fast setup and job changeover • Highest yield and low total cost of programming • High performance
FlashPAK III programmer: (Non-Automated)	• Scalability • Network control via Ethernet • Stand-alone operation or PC compatible • Parallel programming	• Validate designs before moving down the firmware supply chain • Unmatched ease of use in manual production systems

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	Borg Warner, Bosch, Alps Alpine, Visteon, Kostal, JVCKenwood, Harman, Denso Ten, Continental, Aptiv Panasonic, Magna, Marelli, Tesla	LG, TCL, Siemens, Danfoss, Philips, Schneider, Endress+Hauser, Insta, Microsoft, Sony, Amazon, UTEC	Pegatron, Flex, Jabil, Wistron, Sanmina SCI, Foxconn, Leesys, Calcomp	Arrow, Avnet, BTV, CPS, Elsil, Elmitech, NOA Leading
Business drivers	Infotainment, Advanced Driver Assist (ADAS), Electrification, Connectivity and Security	Higher functionality driven by increasing electronic content. Shift from analog to connected intelligent devices, security	Production contract wins	Value-added services, logistics, security
Programming equipment drivers	Growing Electronic Content, Global Support, Resilient Supply Chains, new product rollouts, growing file sizes, quality control and traceability, security	Growing Electronic Content, need for IP protection. 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, security	Quality, reliability, configuration control, traceability, global support, IP protection, Security.	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	Partner focus of our SentriX 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, wireless connectivity and electrification
- 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
- Growing software size is a programming capacity driver

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 smart home, including intelligent thermostats and lighting)
- Emergence of new devices and applications (such as health and wellness wearable devices and applications)

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 and other global political and economic factors in our markets. Annual projections on spending, growth, mix, and profitability are likely to be revised substantially as new information is obtained.

Diversification of accounts receivable and net sales

During 2022, we sold products to approximately 200 customers throughout the world.

The following represented greater than 10% of net sales for the applicable year:

Percentage of Net Sales	**2022**	**2021**	**2020**
Number of customers (a distributor)	**1**	**1**	**1**
Approximate percentage of net sales	**23%**	**14%**	**12%**

The following represented greater than 10% of our consolidated accounts receivable for the applicable year:

Percentage of Consolidated Accounts Receivable	**2022**	**2021**	**2020**
Number of customers	**3**	**3**	**3**
Approximate percentage of consolidated accounts receivable balance	**39%**	**36%**	**41%**
Percentage of each	**15%**	**13%**	**17%**
Percentage of each	**13%**	**12%**	**12%**
Percentage of each	**11%**	**11%**	**12%**

Geographic Markets and Distribution

We market and sell our products through a combination of direct sales, 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 sales. 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 U.S. for 2022, 2021 and 2020 were (in millions)

$1.8, $2.6 and $1.5, respectively. Some of our customers' orders delivered internationally are heavily influenced by U.S. sales-based efforts.

International Sales

International sales represented approximately 93%, 90% and 93% of net sales in 2022, 2021 and 2020, 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 45 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 2022, 2021 and 2020 were (in millions) $22.4, $23.2 and $18.8, 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. Our products typically do not require export licenses. 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 SentriX 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. As a resilient supply chain strategy, we manufacture various products in both of our production facilities. This strategy allows opportunity to mitigate some of the risks of having only one location, as well as enabling tariff and tax optimization strategies. 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 most present single-source components without significant difficulties. Single-source components may not always continue to be readily available or may be subject to part shortage delays. 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) $4.8, $2.9 and $3.9 as of December 31, 2022, 2021 and 2020, 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, TPMs, Authentication Chips, and Secure Microcontrollers. We plan to deliver new programming technology, automated handling systems and enhancements for security deployment in the manufacturing environment. 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 2022, 2021 and 2020, we made expenditures for research and development of (in millions) $6.1, $6.6 and $6.4, respectively, representing 25%, 26% and 31% 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 believe patent protection enforcement may be increasingly important in our security provisioning business and we have approximately 20 U.S. and international awarded patents related to the SentriX platform and security provisioning architecture, processes, and methods.

We attempt to protect our rights in proprietary systems (architecture, implementations, software), including the SentriX 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, 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.

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, potentially preclude us from offering certain products, and subject us to substantial liability. As of December 31, 2022, we were not subject to any pending actions regarding infringement claims.

Employees

As of December 31, 2022, we had a total of 95 employees, of which 45 were located outside the U.S. and 10 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.

When hiring and retaining talent, we create specialized knowledge that is difficult to replace short term. We experienced tight labor markets during 2022 which resulted in challenges in recruiting assembly technicians and software development engineers.

Environmental, Social and Governance (“ESG”)

Data I/O is committed to the responsibilities associated with modern age ESG. The Company’s key pillars for ESG support a framework for sustainable growth and include Leadership & Governance, Environment, Innovation, Human Capital, Social Capital, and Financial Excellence. Initiatives within these areas apply to the company’s daily global operations as well as within its supply chains.

We believe we are the only supplier in our industry with a published conflict mineral policy and public company governance. We believe we are the only programming industry supplier with a diverse Board of Directors. Our facilities are subject to numerous laws and regulations concerning the discharge of materials or otherwise relating to the environment. In addition to this commitment, the company has a track record of meeting its ESG regulatory obligations, being a solid corporate citizen, delivering superior value to its customers and partners, and demonstrating corporate stewardship including returning capital to shareholders through past share buybacks.

As the largest and only publicly traded company in its sector, according to our internal analysis, Data I/O has led its industry in disclosing significant operational and financial information. The Company's Board currently includes Data I/O's CEO and four Independent Directors. It is diverse in gender, education, professional experience and differences in viewpoints and skills. Through its continuous improvement practices and our operations’ focus on assembly and test with no fabrication, the company consumes relatively little energy, has minimal or no emissions or pollutants to air and wastewater, and complies with workplace labor, safety and business practices on three continents.

Data I/O is also committed to giving back to our local communities through volunteer and internship programs. The Company provides employees time-off to volunteer and also coordinates group projects. In addition, the Company provides internships to local high school and college students through STEM and technical colleges.

Compliance with environmental laws has not had, nor is it currently expected to have, a material effect on our capital expenditures, financial position, results of operations or competitive position. Potential regulations regarding climate change measurements and disclosures could require significant effort and costs.

Executive Officers of the Registrant

Set forth below is certain information concerning the executive officers of Data I/O as of March 20, 2023:

Name	Age	Position
Anthony Ambrose	61	President and Chief Executive Officer
Joel S. Hatlen	64	Vice President, Chief Operating and Financial Officer, Secretary and Treasurer
Rajeev Gulati	59	Chief Technology Officer, Vice President of Engineering
Michael Tidwell	54	Vice President of Marketing and Business Development

Anthony Ambrose joined Data I/O on October 25, 2012, and is our President and Chief Executive Officer (“CEO”), and a member of the Board of Directors. 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. He is also a board member of SideChannel, Inc. ((OTCQB: SDCH) retained after their 2022 merger with Cipherloc Corporation (OTCQB: CLOK) where he joined the board in 2019 and has also been lead independent director since 2019). Mr. Ambrose has a Bachelor’s of Science in Engineering from Princeton

University. He has completed the Stanford Graduate School of Business Director Symposium and earned the Carnegie Mellon University Certificate in Cybersecurity Oversight.

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. Joel plans to retire during the second half of 2023 and a search for his replacement is underway.

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, supply chain expectations, semiconductor chip shortages, Russia-Ukraine war impacts, 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 approximately 93% of our 2022 sales in international markets, we have been and may continue to be, significantly impacted by the word wide coronavirus outbreak, which has affected all markets we serve. Twenty seven 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 due to outbreaks of new variants of coronavirus. 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. Many of our Redmond based employees and executives are working from home or under hybrid schedules and we limit visitors to our facilities. All of our facilities are subject to restrictions and closure by governmental entities. Travel restrictions have in some cases prevented and may continue to impact equipment installations, repairs and selling at customer sites. As the coronavirus continues as a pandemic, 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 have experienced limitations on visiting many of our customers and prospects. Many tradeshows, marketing activities and conferences have been canceled, postponed or made virtual. However, we are experiencing reduced limitations on visiting customers and resumption of in person events.

TARIFFS AND TRADE ISSUES

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

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. This has materially impacted our gross margins negatively. 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.

Additionally, trade tensions between the United States and China are impacting our ability to seamlessly design, build, market and sell our products. Some customers have moved production away from China, further from our facilities and engineers. We endeavor to have multi-sourced manufacturing, but this is not currently practical for all products in all locations.

War based restrictions, embargos, and supply chain disruptions are occurring as a result of the Russian invasion of Ukraine, which could have economic and other indirect impacts to our business. We do not have any operations in Russia or Ukraine, nor do we rely on any software or hardware components sourced from these two countries.

NEW PRODUCTS OR SERVICES

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

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. Due to the length of 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, which may significantly affect the results of our existing business.

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

<u>Failure to adapt to technology trends in our industry may impact our competitiveness and financial results.</u>

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 programing methods away from pre-programming to post placement programming techniques, including ISP, ICT. Data I/O has, and continues to work 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 NVMe memory or device interface methods, particularly if these technologies are adopted by automotive electronics, IoT or wireless customers; and/or
- 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.

<u>Failure to adapt to increasing automotive electronics customer requirements may impact our competitiveness and result in a decline in sales or increased costs.</u>

Concentration in automotive electronics and our orders related to automotive electronics customers has been dominant in recent years at 61% in 2022, 58% in 2021 and 53% in 2020. As we have been 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.

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

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 handing 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; and/or
- experience delays in supply chain for parts needed for new products.

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, scale 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; and/or
- 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 market in which we compete. 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 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, eMMC 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. In 2022, we have seen more part shortages and larger price increases than in recent years. 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. Part shortages, especially semiconductor parts in 2021 and 2022, impact availability, lead times, and pricing that may be disruptive to our production plans, lead times, margins and may result in lost sales.

Some 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, security, 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 will continue to affect economic and market conditions as it continues to spread. Global impacts of the Russian invasion of Ukraine are uncertain at the present time. 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 this and 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 93%, 90% and 93% of net sales in 2022, 2021 and 2020, 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 COVID-19, the coronavirus and variants of it, or other viruses;
- fluctuations in foreign currency exchange rates because 93% of our sales are to international markets, volatile exchange rates may also impact our competitiveness and margins, especially where we have subsidiary operations;
- economic uncertainty related to the European energy cost increases;
- migration of manufacturing to low cost geographies;
- unexpected changes in regulatory requirements;
- 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;
- war, civil unrest, political and economic instability, including the Russian invasion of Ukraine;
- ability to protect our intellectual property in multiple patent jurisdictions; and/or
- ability to move cash freely from subsidiaries.

Because we have customers located throughout the world, we have significant foreign receivables, although none are based in Russia or Ukraine. 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 and China 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. A repatriation of cash has, and could in the future, 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, including part shortages impact on us and our supply chains;
- 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, inflation 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; and/or
- 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.

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

We have incurred operating losses in five 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 may result in losses in future periods if projected revenues are not achieved or the investment level required is too large. 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.

<u>The loss of key employees may adversely affect our operations.</u>

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 have benefits and similar arrangements provided under a "FSCO" labor agreement, and we could be adversely affected if we were unable to continue that arrangement.

<u>We may need to raise additional capital and our future access to capital is uncertain.</u>

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 cash held in our foreign subsidiaries. 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.

Cybersecurity 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.

Cybersecurity attacks may increase as a result of the Russian invasion of Ukraine. Cybersecurity 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.

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. Additionally, securities of certain companies have recently experienced significant and extreme volatility in stock price due to short sellers of shares of common stock, known as a "short squeeze." These short squeezes have caused extreme volatility in both the stock prices of those companies and in the market, and have led to the price per share of those companies to trade at a significantly inflated rate that is disconnected from the underlying value of the company. Many investors who have purchased shares in those companies at an inflated rate face the risk of losing a significant portion of their original investment, as in many cases the price per share has declined steadily as interest in those stocks have abated. While we have no reason to believe our shares would be the target of a short squeeze, there can be no assurance that we won't be in the future, and you may lose a significant portion or all of your investment if you purchase our shares at a rate that is significantly disconnected from our underlying value.

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, 2022. 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 and potential climate and ESG requirements 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.

Climate focused regulations and related disclosures are a similar evolving regulatory area and we may be required to invest in systems, processes and personnel to address new requirements in the ESG area. These could require significant costs, work and reputational risk for failing to meet requirements,

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

During the fourth quarter of 2021, we amended our lease agreement for the Redmond, Washington headquarters facility, extending the lease to January 31, 2026. The lease is for approximately 20,460 square feet. The lease base annual rental payments during 2022 and 2021 were approximately $331,000 and $372,000, 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.

In April 2021, we signed a lease extension for our facility located in Shanghai, China, effective November 1, 2021, that extends the lease through October 31, 2024. This lease is for approximately 19,400 square feet. The lease base annual rental payments during 2022 and 2021 were approximately $314,000 and $317,000, respectively.

In March of 2022, we entered into a lease extension through 2027 for our facility located near Munich, Germany. This lease is for approximately 4,895 square feet. The lease base annual rental payments during 2022 and 2021 were approximately $62,000 and $58,000, 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, 2022, 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 $3.97 on December 30, 2022.

The approximate number of shareholders of record as of March 20, 2023 was 377.

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, 2022, 2021 or 2020.

See Item 12 for the Equity Compensation Plan Information.

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, impact of COVID-19; Shanghai COVID-19 resurgence lockdown impact and timing; industry prospects and trends; expected business recovery; industry partnerships; future results of operations or financial position; future spending; breakeven revenue point; expected market decline, bottom or 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; trade issues and tariffs; expected inventory levels; expectations for unsupported platform or product versions and related inventory and other charges; Russian invasion of Ukraine impacts; supply chain expectations; semiconductor chip shortages; inflation; currency rates and movements; 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

During 2022, we continued to react to and manage our business relative to the COVID-19 pandemic. During 2020 and throughout 2021, COVID-19 impacted all aspects of our business, from customer demand, to supply chain integrity, employee safety, business processes, and financial management. During 2022, as a result of vaccinations and the reduced impact of COVID-19, our business started to return to more normal in parts of the world. As a global company, we had to manage these aspects of our business while working within the guidelines of local and national policy in the U.S., China and Germany. During parts of the first and second quarters, our Shanghai facility and operations were shut down for two and a half months as required by China's requirements pursuant to their COVID Zero policy. This shutdown impacted our supply chains, shipping times, travel, trade shows, and forced remote work. We were largely able to resume operations and begin recovery late in the second quarter and throughout the third quarter. For most of 2022, waves of COVID-19 infection and variants have kept or re-imposed revised travel restrictions. Customers continued to restrict in-person sales and other visits. We have continued to do business by converting these interactions to remote and virtual means as we have implemented new processes and technology. Our resilient supply chain model was able to support our customers by having alternate facilities that were open and responded to the critical impacts of the shutdown. Later in the year China's COVID Zero policy was effectively cancelled. In December most of our employees in Shanghai China were out briefly with COVID and then we resumed normal operations.

Other Major Impacts on 2022

The war in Ukraine had many impacts on our business. While we had little direct impact from Russia or Ukraine, the war's affect on supply chains, shipping, European economic uncertainty and energy concerns disrupted our business. Later in the year, the impacts seemed to diminish. Inflation impacted everyone. We believe we were able to adequately address inflation with pricing adjustments such that our margins were mostly maintained. Certain labor markets were tight during the year, with assembly technicians and software development engineers being challenging to recruit. Interest rate hikes by central banks is a concern especially for cyclical industries with resulting worries about capital spending and planning for recessionary impacts. Currency changes caused significant headwinds to our translated consolidated revenues. This resulted from the strengthening of the US Dollar versus most foreign currencies, especially the Euro and Yuan in which our subsidiaries do business. Later in the fourth quarter and continuing into early 2023, the US Dollar weakened somewhat, providing some tailwinds to revenue growth. The impact of semiconductor chip shortages that began mid 2021 continued well into 2022 and are not completely resolved going into 2023. Many of the issues described here in the overview have caused supply chain disruptions and lead time unreliability, which we have managed though carefully maintaining and increasing key inventory levels. Finally, the continued outlook by industry analysts for automotive electronics remains strong based on the long-term forecast for a decade, which remains our primary market focus.

Moving forward, our short-term challenge continues to be operating in a cyclical, COVID-19 impacted, and rapidly evolving industry environment with volatile currencies, inflation, supply chain issues, and improved but remaining semiconductor part shortages. We also continue to balance a host of current issues including industry changes, industry partnerships, new technologies, business geography shifts, travel and customer restrictions, trade issues and tariffs, shipping challenges, and strategic investments in our business with the level of demand and mix of business we expect. We have taken steps to be a resilient supplier to our customers by enhancing our remote service and support capabilities, increased stocking of inventory, and having product production in multiple locations. We continue to manage our costs carefully and execute strategies for cash preservation, protecting our employee base, and managing supply chain price increases and uncertainties.

Revenues were down 6% for 2022, compared to 2021. However, bookings were up 4% for 2022, compared to 2021, resulting in an increase in backlog going into 2023. The second half of the year saw a recovery in demand and quarterly profitability. Despite negative macroeconomic news, we enter into 2023 with strong sales funnels, more favorable currency rate tailwinds with a weakening US Dollar, and the strong long-term growth outlook for automotive electronics.

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. At Data I/O, we are investing for the long-term to retain and extend our leadership position in automotive electronics and security deployment. We are continuing to develop technology to securely provision newer categories of semiconductors, including Secure Microcontrollers, Authentication Chips, and Secure Elements. 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, eMMC, 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 remain good, these markets and our business have been, and are likely to continue to be, adversely impacted by the global COVID-19 pandemic and other global political and economic factors.

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: Accounting Standards Codification (ASC) Topic 606, Revenue from Contracts with Customers (ASC 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.

We 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 2022 and 2021, the impact of capitalization of incremental costs for obtaining contracts was immaterial. We 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 analysis 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. 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 of $1.8 million on December 31, 2022, 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 delivery, provided that only immaterial items in the context of the contract with the customer 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 30-60 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 current and ongoing cyclical and COVID-19 related uncertain economic outlook for our industry and capital and geographic spending, as well as income and current 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. 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

Net sales by product line	2022	Change	2021
(in thousands)			
Automated programming systems	$18,926	(9.3%)	$20,864
Non-automated programming systems	5,291	6.4%	4,971
Total programming systems	$24,217	(6.3%)	$25,835

Net sales by location	2022	Change	2021
(in thousands)			
United States	$1,774	(32.0%)	$2,607
% of total	7.3%		10.1%
International	$22,443	(3.4%)	$23,228
% of total	92.7%		89.9%

Net sales by type	2022	Change	2021
(in thousands)			
Equipment Sales	$13,803	(7.9%)	$14,989
Adapter Sales	7,336	(6.2%)	7,818
Software and Maintenance Sales	3,078	1.7%	3,028
Total	$24,217	(6.3%)	$25,835

Net sales for the year ended December 31, 2022 decreased approximately 6.3% to $24.2 million compared to 2021 primarily as a result of COVID-19 shutdown in the first half of 2022, economic uncertainty resulting from the war in Ukraine, semiconductor shortages and a stronger dollar, offset in part during the second half of the 2022 by improved semiconductor supply with higher demand in automotive electronics and industrial/IOT. On a regional basis, net sales increased approximately 15% in Asia and declined approximately 10% in the Americas and 21% in Europe.

Order bookings were $26.4 million for 2022, up approximately 4% compared to $25.5 million in 2021. Backlog at December 31, 2022 and 2021 was $4.8 million and $2.9 million, respectively. Deferred revenue was $1.8 million at December 31, 2022 compared to $1.5 million at December 31, 2021.

Net sales in 2021 reflected the initial recovery from COVID-19 conditions in 2020.

GROSS MARGIN

	2022	Change	2021
(in thousands)			
Gross margin	$13,210	(10.3%)	$14,720
Percentage of net sales	54.5%		57.0%

Gross margin as a percentage of sales for the year ended December 31, 2022 was 54.5%, compared to 57.0% in 2021. The decline in gross margin percentage was due to the impact of sale volume relative to fixed cost; currency rate impacts of the strengthening US Dollar, channel mix, and inventory charges.

RESEARCH AND DEVELOPMENT

	2022	Change	2021
(in thousands)			
Research and development	$6,083	(8.3%)	$6,635
Percentage of net sales	25.1%		25.7%

Research and development ("R&D") expense decreased $552,000 for the year ended December 31, 2022 compared to 2021. The decrease was primarily related to lower incentive compensation.

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. During 2022, we continued strategically investing in supporting SentriX, ConneX and our LumenX programmer capabilities. 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 SentriX product line to securely program new categories of semiconductors, including Secure Microcontrollers, Secure Elements, and Authentication Chips. Our R&D spending fluctuates based on the number, type, and the development stage of our product initiatives and projects.

SELLING, GENERAL AND ADMINISTRATIVE

	2022	Change	2021
(in thousands)			
Selling, general & administrative	$7,876	(5.8%)	$8,358
Percentage of net sales	32.5%		32.4%

Selling, General and Administrative ("SG&A") expenses decreased approximately $482,000 for the year ended December 31, 2022 compared to 2021. The decrease was primarily related to lower sales commissions and incentive compensation. Cost control measures remain in effect.

INTEREST

	2022	Change	2021
(in thousands)			
Interest income	$34	209.1%	$11

Interest income was slightly higher for the year ended December 31, 2022 compared to 2021 primarily due to higher invested balances.

INCOME TAXES

	2022	Change	2021
(in thousands)			
Income tax (expense) benefit	($683)	509.8%	($112)

Income tax (expense) increased by $571,000 for the year ended December 31, 2022 compared to 2021. The increase was primarily a result of the withholding tax of $442,000 on the repatriation of cash from subsidiaries in 2022. Income tax (expense) in 2022 and 2021 is primarily the result of foreign subsidiary income tax and minimal U.S. state income tax.

The effective tax rate for 2022 of (156.3%) and 2021 of (25.4%) differed from the statutory tax rates in our tax reporting jurisdictions primarily due to subsidiary income with consolidated losses and the effect of valuation allowances. We have a valuation allowance of $9.3 million and $7.9 million as of December 31, 2022 and 2021, respectively. Our deferred tax assets and valuation allowance have increased by approximately $422,000 and $392,000 associated with the requirements of accounting for uncertain tax positions as of December 31, 2022 and 2021, 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 gain of $221,000 in 2022 and foreign currency transaction loss of $(202,000) in 2021. 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 93% of our sales are to international markets, volatile exchange rates may also impact our competitiveness and margins. We increased prices in response to cost increases caused by inflation and part shortages and believe we will continue to utilize this strategy.

FINANCIAL CONDITION:

LIQUIDITY AND CAPITAL RESOURCES

(in thousands)	2022	Change	2021
Working capital	$17,579	($905)	$18,484

At December 31, 2022, our principal sources of liquidity consisted of existing cash and cash equivalents. Cash at December 31, 2022 and 2021 was $11.5 million and $14.2 million, respectively. Our working capital decreased by $905,000 during 2022 due primarily to our operating loss and taxes related to a cash repatriation from China. Our current ratio was 3.8 and 3.7 for December 31, 2022 and 2021, respectively. The company continues to have no debt.

Although we have no significant external capital expenditure plans currently, we expect to continue to carefully make and manage capital expenditures to support our business. We plan to increase our internally developed rental, security provisioning, sales demonstration and test equipment as we develop and release new products. Capital expenditures are currently expected to be funded by existing and internally generated funds.

As a result of our cyclical and seasonal industry, significant product development, customer support and selling and marketing efforts, we have required substantial working capital to fund our operations. We have tried to balance our level of development spending with the goal of profitable operations or managing down business levels related to COVID-19, inflation, war in Ukraine impacts, interest rates hikes, currency rate moves, and part shortages. We have implemented or have initiatives to implement geographic shifts in our operations, optimize real estate usage, adjusting pricing for cost inflation, reduce exposure to the impact of currency volatility and tariffs, increase product development differentiation, and reduce costs.

We believe that we have sufficient cash or working capital available under our operating plan to fund our operations and capital requirements through the next one-year period, and beyond. We have not had exposure to recent bank takeovers and have cash holdings in a number of banks. We may require additional cash at the U.S. headquarters, which could cause potential repatriation of cash that is held in our foreign subsidiaries. We have repatriated cash from our China subsidiary during 2022 and incurred dividend withholding tax, which was unable to receive a current tax benefit for. For any repatriation, there may be tax and other impediments to any repatriation actions. As many repatriations typically have associated withholding taxes, those withheld will be a current tax without generating a current or deferred tax benefit. 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 possible additional financing.

OFF-BALANCE SHEET ARRANGEMENTS

Except as noted in the accompanying consolidated financial statements in Note 7, “Other Commitments”, we had no material off-balance sheet arrangements.

SHARE REPURCHASE PROGRAMS

Data I/O did not have a share repurchase program in 2022.

NON-GENERALLY ACCEPTED ACCOUNTING PRINCIPLES (GAAP) FINANCIAL MEASURES

Earnings Before Interest, Taxes, Depreciation, and Amortization (“EBITDA”) and Adjusted EBITDA excluding equity compensation and impairment & related charges (non-cash, one-time items) 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:

	For Year Ended December 31,	
	2022	2021
(in thousands)		
Net Income (loss)	($1,120)	($555)
Interest (income)	(34)	(11)
Taxes	683	112
Depreciation and amortization	560	667
EBITDA	$89	$213
Equity compensation	1,176	1,238
Adjusted EBITDA, excluding equity compensation	$1,265	$1,451

NEW ACCOUNTING PRONOUNCEMENTS - STANDARDS ISSUED AND NOT YET IMPLEMENTED

In June 2016, the Financial Accounting Standards Board issued ASU 2016-13, Financial Instruments - Credit Losses (Topic 326). Topic 326 is effective (Smaller Reporting Company) for reporting periods beginning after December 15, 2022. Topic 326 replaces the incurred loss impairment methodology under current Generally Accepted Accounting Principles ("GAAP") with a methodology that reflects expected credit losses and requires the use of a forward-looking expected credit loss model for accounts receivables, loans, and other financial instruments. The standard requires a modified retrospective approach through a cumulative-effect adjustment to retained earnings as of the beginning of the first reporting period in which the guidance is effective. We plan to adopt the new credit loss standard effective January 1, 2023. We do not expect the new credit loss standard to have a material impact on our financial condition, results of operations and cash flows, or financial statement disclosures.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Not applicable.

Item 8. Financial Statements and Supplementary Data

See pages 28 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, 2022 and 2021, 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, 2022, and the related notes and financial statement schedules included under Item 15(a)(2) (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, 2022 and 2021, and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2022, in conformity with accounting principles generally accepted in the United States of America.

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 regarding 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.

Critical audit matter

The critical audit matter communicated below is a matter arising from the current period audit of the financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Net realizable value of inventory

As described further in Note 1 to the financial statements, management measures the net realizable value of inventory based on estimated reductions to inventory for obsolete, slow-moving, excess and non-salable inventory by reviewing current transactions and forecasted demand. We identified the net realizable value of inventory specifically as a critical audit matter.

The principal considerations for our determination that the net realizable value of inventory represents a critical audit matter are that the assessment of the valuation of inventory is complex and includes an estimate of forecasted demand. The demand estimate is subjective and requires the Company to consider significant assumptions such as economic conditions, technological advances, historical usage, and consumer trends, which are subject to significant uncertainty and therefore require significant auditor judgement.

Our audit procedures related to the net realizable value of inventory included the following, among others:

- To test the adequacy of the Company's allowance for excess and obsolete inventories, we performed substantive audit procedures that included, among others, testing the completeness and accuracy of the underlying data used in the estimation calculations, specifically those related to inventory movements and aging. We evaluated the reasonableness of significant assumptions including the estimated reserve percentage and other significant assumptions through inquiry of management and personnel outside of finance team, analytic procedures and lookback analysis.

/s/ GRANT THORNTON LLP
We have served as the Company's auditor since 2001.

Bellevue, Washington
Date: March 29, 2023

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

	December 31, 2022	December 31, 2021
ASSETS		
CURRENT ASSETS:		
Cash and cash equivalents	$11,510	$14,190
Trade accounts receivable, net of allowance for doubtful accounts of $147 and $89, respectively	4,992	3,995
Inventories	6,751	6,351
Other current assets	645	737
TOTAL CURRENT ASSETS	23,898	25,273
Property, plant and equipment – net	1,072	946
Other assets	2,195	2,838
TOTAL ASSETS	$27,165	$29,057
LIABILITIES AND STOCKHOLDERS' EQUITY		
CURRENT LIABILITIES:		
Accounts payable	$1,366	$1,373
Accrued compensation	1,670	2,496
Deferred revenue	1,575	1,507
Other accrued liabilities	1,596	1,413
Income taxes payable	112	-
TOTAL CURRENT LIABILITIES	6,319	6,789
Operating lease liabilities	1,500	2,277
Long-term other payables	237	138
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, 8,816,381 shares as of December 31, 2022 and 8,621,007 shares as of December 31, 2021	21,897	20,886
Accumulated earnings (deficit)	(3,131)	(2,011)
Accumulated other comprehensive income	343	978
TOTAL STOCKHOLDERS' EQUITY	19,109	19,853
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	$27,165	$29,057

See notes to consolidated financial statements

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

	For the Years Ended December 31, 2022	2021
Net sales	$24,217	$25,835
Cost of goods sold	11,007	11,115
Gross margin	13,210	14,720
Operating expenses:		
Research and development	6,083	6,635
Selling, general and administrative	7,876	8,358
Total operating expenses	13,959	14,993
Operating income (loss)	(749)	(273)
Non-operating income (loss):		
Interest income	34	11
Gain on sale of assets	57	21
Foreign currency transaction gain (loss)	221	(202)
Total non-operating income (loss)	312	(170)
Income (loss) before income taxes	(437)	(443)
Income tax (expense) benefit	(683)	(112)
Net income (loss)	($1,120)	($555)
Basic earnings (loss) per share	($0.13)	($0.06)
Diluted earnings (loss) per share	($0.13)	($0.06)
Weighted-average basic shares	8,741	8,545
Weighted-average diluted shares	8,741	8,545

See notes to consolidated financial statements

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

	For the Years Ended December 31,	
	2022	**2021**
Net Income (loss)	($1,120)	($555)
Other comprehensive income:		
Foreign currency translation gain (loss)	(635)	(46)
Comprehensive income (loss)	($1,755)	($601)

See notes to consolidated financial statements

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

	Common Stock		Accumulated Earnings (Deficit)	Accumulated and Other Comprehensive Income (Loss)	Total Stockholders' Equity
	Shares	Amount			
Balance at December 31, 2020	8,416,335	$20,071	($1,456)	$1,024	$19,639
Stock options exercised	12,500	-			-
Repurchased shares	(10,056)	(6)	-	-	(6)
Stock awards issued, net of tax withholding	197,744	(441)	-	-	(441)
Issuance of stock through:					
Employee Stock Purchase Plan	4,484	24	-	-	24
Share-based compensation	-	1,238	-	-	1,238
Net income (loss)	-	-	(555)	-	(555)
Other comprehensive income gain (loss)	-	-	-	(46)	(46)
Balance at December 31, 2021	8,621,007	$20,886	($2,011)	$978	$19,853
Stock options exercised	-	-			-
Repurchased shares	-	-	-	-	-
Stock awards issued, net of tax withholding	192,086	(178)	-	-	(178)
Issuance of stock through:					
Employee Stock Purchase Plan	3,288	13	-	-	13
Share-based compensation	-	1,176	-	-	1,176
Net income (loss)	-	-	(1,120)	-	(1,120)
Other comprehensive income gain (loss)	-	-	-	(635)	(635)
Balance at December 31, 2022	8,816,381	21,897	(3,131)	$343	$19,109

See notes to consolidated financial statements

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

	For the Twelve Months Ended December 31,	
	2022	**2021**
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net income (loss)	($1,120)	($555)
Adjustments to reconcile net income (loss)		
to net cash provided by (used in) operating activities:		
Depreciation and amortization	560	667
Equipment transferred to cost of goods sold	394	220
Share-based compensation	1,176	1,238
Net change in:		
Trade accounts receivable	(1,100)	(1,565)
Inventories	(588)	(750)
Other current assets	61	598
Accounts payable and accrued liabilities	(428)	94
Deferred revenue	199	539
Other long-term liabilities	(890)	251
Deposits and other long-term assets	684	673
Net cash provided by (used in) operating activities	(1,052)	1,410
CASH FLOWS FROM INVESTING ACTIVITIES:		
Purchases of property, plant and equipment	(1,080)	(623)
Cash provided by (used in) investing activities	(1,080)	(623)
CASH FLOWS FROM FINANCING ACTIVITIES:		
Net proceeds from issuance of common stock, less payments for shares withheld to cover tax	(165)	(423)
Cash provided by (used in) financing activities	(165)	(423)
Increase (decrease) in cash and cash equivalents	(2,297)	364
Effects of exchange rate changes on cash	(383)	(341)
Cash and cash equivalents at beginning of period	14,190	14,167
Cash and cash equivalents at end of period	$11,510	$14,190
Supplemental disclosure of cash flow information:		
Cash paid during the period for:		
Income taxes	$556	$415

See 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, typically in local currency, in China and Germany, totaled (in millions) $4.0 and $6.8 at December 31, 2022 and 2021, respectively. This cash held in subsidiaries have restrictions and costs associated with repatriations, currency conversions, and complying with government policies, regulations and controls, especially in China.

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.

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 property, plant and 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 these evaluations, for the years ended December 31, 2022 and 2021, no impairment was noted or recorded for property, plant and equipment.

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 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

Accounting Standards Codification (ASC) Topic 606, Revenue from Contracts with Customers (ASC 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.

We 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 2022 and 2021, the impact of capitalization of incremental costs for obtaining contracts was immaterial. We 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 analysis 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. 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 of $1.8 million at December 31, 2022 includes service, support and maintenance contracts and represents the undelivered performance obligation of agreements that are typically for one year or less.

When we sell software separately, we recognize revenue upon the transfer of control of the software, which is generally upon delivery, provided that only immaterial items in the context of the contract with the customer 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 30-60 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	2022	2021
(in thousands)		
Equipment Sales	$13,803	$14,989
Adapter Sales	7,336	7,818
Software and Maintenance Sales *	3,078	3,028
Total	$24,217	$25,835

* includes an insignificant amount of service and part sales

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, 2022, 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 non-cancelable 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 $116,000 and $121,000 in 2022 and 2021, 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 109,000 and 186,000 for the years ended December 31, 2022 and 2021, respectively. Options to purchase 12,500 shares of common stock were outstanding as of both periods December 31, 2022 and 2021, but were excluded from the computation of diluted earnings per share for the periods 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. Our consolidated accounts receivable balance as of December 31, 2022 and 2021 includes foreign accounts receivable in the functional currency of our foreign subsidiaries amounting to $2,400,000 and $1,813,000, 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.

The following represented greater than 10% of our consolidated accounts receivable for the applicable year:

Percentage of Consolidated Accounts Receivable	**2022**	**2021**
Number of customers	**3**	**3**
Approximate percentage of consolidated accounts receivable balance	**39%**	**36%**
Percentage of each	**15%**	**13%**
Percentage of each	**13%**	**12%**
Percentage of each	**11%**	**11%**

Diversification of net sales

The following represented greater than 10% of net sales for the applicable year:

Percentage of Net Sales	**2022**	**2021**
Number of customers	**1**	**1**
Approximate percentage of net sales	**23%**	**14%**

COVID-19

During 2022, we continued to react to and manage our business relative to the COVID-19 pandemic. During 2020 and throughout 2021, COVID-19 impacted all aspects of our business, from customer demand, to supply chain integrity, employee safety, business processes, and financial management. During 2022, as a result of vaccinations and the reduced impact of COVID-19, our business started to return to more normal in parts of the world. As a global company, we had to manage these aspects of our business while working within the guidelines of local and national policy in the U.S., China and Germany. During parts of the first and second quarters, our Shanghai facility and operations were shut down for two and a half months as required by China's requirements pursuant to their COVID Zero policy. This shutdown impacted our supply chains, shipping times, travel, trade shows, and forced remote work. We were largely able to resume operations and begin recovery late in the second quarter and throughout the third quarter. For most of 2022, waves of COVID-19 infection and variants have kept or re-imposed revised travel restrictions. Customers continued to restrict in-person sales and other visits. We have continued to do business by converting these interactions to remote and virtual means as we have implemented new processes and technology. Our resilient supply chain model was able to support our customers by having alternate facilities that were open and responded to the critical impacts of the shutdown. Later in the year China's COVID Zero policy was effectively cancelled. In December most of our employees in Shanghai China were out briefly with COVID and then we resumed normal operations.

New Accounting Pronouncements - Standards issued and not yet implemented

In June 2016, the Financial Accounting Standards Board issued ASU 2016-13, Financial Instruments - Credit Losses (Topic 326). Topic 326 is effective (Smaller Reporting Company) for reporting periods beginning after December 15, 2022. Topic 326 replaces the incurred loss impairment methodology under current Generally Accepted Accounting Principles ("GAAP") with a methodology that reflects expected credit losses and requires the use of a forward-looking expected credit loss model for accounts receivables, loans, and other financial instruments. The standard requires a modified retrospective approach through a cumulative-effect adjustment to retained earnings as of the beginning of the first reporting period in which the guidance is effective. We plan to adopt the new credit loss standard effective January 1, 2023. We do not expect the new credit loss standard to have a material impact on our financial condition, results of operations and cash flows, or financial statement disclosures.

NOTE 2 – ACCOUNTS RECEIVABLE, NET

(in thousands)	December 31, 2022	December 31, 2021
Trade accounts receivable	$5,139	$4,084
Less allowance for doubtful receivables	147	89
Trade accounts receivable, net	$4,992	$3,995

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

(in thousands)	December 31, 2022	December 31, 2021
Beginning balance	$89	$66
Bad debt expense (reversal)	58	23
Accounts written-off	-	-
Recoveries	-	-
Ending balance	$147	$89

NOTE 3 – INVENTORIES

(in thousands)	December 31, 2022	December 31, 2021
Raw material	$3,850	$3,771
Work-in-process	1,911	1,602
Finished goods	990	978
Inventories	$6,751	$6,351

NOTE 4 – PROPERTY, PLANT AND EQUIPMENT, NET

(in thousands)	December 31, 2022	December 31, 2021
Leasehold improvements	$404	$430
Equipment	4,683	5,218
Sales demonstration equipment	1,066	754
	6,153	6,402
Less accumulated depreciation	5,081	5,456
Property and equipment, net	$1,072	$946

Total depreciation expense recorded for 2022 and 2021 was $560,000 and $667,000, respectively.

NOTE 5 – OTHER ACCRUED LIABILITIES

Other accrued liabilities consisted of the following components:

(in thousands)	December 31, 2022	December 31, 2021
Lease liability - short term	$799	$601
Product warranty	425	432
Sales return reserve	71	71
Other taxes	163	180
Other	138	129
Other accrued liabilities	$1,596	$1,413

The changes in our product warranty liability for the year ending December 31, 2022 are follows:

(in thousands)	December 31, 2022
Liability, beginning balance	$432
Net expenses	774
Warranty claims	(774)
Accrual revisions	(7)
Liability, ending balance	$425

NOTE 6 – 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 for the years ending December 31 are as follows:

(in thousands)	Operating Lease Commitments
2023	$886
2024	813
2025	589
2026	131
2027	47
Thereafter	-
Total	$2,466
Less imputed interest	(167)
Total operating lease liabilities	$2,299

Cash paid for operating lease liabilities for the twelve months ended December 31, 2022 and 2021, respectively, was $779,560 and $815,000. There were two new or modified leases during the twelve months ended December 31, 2022 that are accounted for in the amounts disclosed above.

The following table presents supplemental balance sheet information related to leases as of December 31, 2022:

	Year Ended December 31,	
(in thousands)	2022	2021
Right-of-use assets (Long-term other assets)	$2,129	$2,793
Lease liability-short term (Other accrued liabilities)	$799	$601
Lease liability-long term (Operating lease liabilities)	$1,500	$2,277

At December 31, 2022, the weighted average remaining lease term is 3.0 years and the weighted average discount rate used is 5%.

The components of our lease expense for the twelve months ended December 31, 2022 and 2021, respectively, include operating lease costs of $899,000 and $751,000, which includes short-term lease costs of $45,000 and $31,000. Variable payments were not material, and were treated as non-lease components and were recognized in the period for which the costs occur.

Our real estate facility leases are described below:

During the fourth quarter of 2021, we amended our lease agreement for the Redmond, Washington headquarters facility, extending the lease to January 31, 2026. The lease is for approximately 20,460 square feet. The lease base annual rental payments during 2022 and 2021 were approximately $331,000 and $361,000, 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.

In April 2021, we signed a lease extension for our facility located in Shanghai, China, effective November 1, 2021, that extends the lease through October 31, 2024. This lease is for approximately 19,400 square feet. The lease base annual rental payments during 2022 and 2021 were approximately $314,000 and $317,000, respectively.

In March of 2022, we entered into a lease extension through 2027 for our facility located near Munich, Germany. This lease is for approximately 4,895 square feet. The lease base annual rental payments during 2022 and 2021 were approximately $62,000 and $58,000, respectively.

NOTE 7 – 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, 2022, the purchase commitments and other obligations totaled $2.5 million, of which all but $401,000 are expected to be paid over the next twelve months.

NOTE 8 – CONTINGENCIES

As of December 31, 2022, 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 9 – STOCK AND RETIREMENT PLANS

Stock Option Plans

At December 31, 2022, there were 280,177 shares available for future grant under Data I/O Corporation 2000 Stock Compensation Incentive Plan ("2000 Plan"). At December 31, 2022, there were shares of Common Stock reserved for issuance consisting of 12,500 inducement reserve shares and 665,200 shares under the 2000 Plan. The inducement reserve shares were granted in 2019 consisting of 25,000 options (3,125 unvested and 12,500 unissued) and 50,000 RSU, which were not from the 2000 Plan, but were made under the terms of the 2000 Plan. During 2022, 12,500 shares were issued from the inducement reserve. Pursuant to the 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 and one year for nonemployee Directors.

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 2022 and 2021, a total of 3,288 and 4,484 shares, respectively, were purchased under the plan at average prices of $4.06 and $5.38 per share, respectively. At December 31, 2022 and 2021, 25,477 and 29,098 shares were reserved for future issuance respectively.

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, 2022 and 2021, 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 in 2022 and 2021. At December 31, 2022 and 2021, 130,763 shares remain available in the plan. Subsequent to December 31, 2022, the Director Fee Plan was cancelled by the Board of Directors and the plan reserved shares were unreserved.

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 2021, we contributed one dollar for each dollar contributed by a participant, with a maximum contribution of four percent of a participant's eligible earnings. In fiscal year 2022, we contributed one dollar for each dollar contributed by a participant on the first two percent and $.50 for each dollar contributed by participant on the next four percent of a participant's eligible earnings, and as a result this requires a minimum six percent contribution to receive a four percent matching contribution. Our matching contribution expense for the savings plan, net of forfeitures, was approximately $210,000 and $186,000 in 2022 and 2021, respectively. Employer matching contributions owed to the plan were $229,000 and $224,000 at December 31, 2022 and 2021, respectively.

NOTE 10 – 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, 2022 and 2021 was as follows:

	Year Ended December 31,	
	2022	2021
(in thousands)		
Cost of goods sold	$76	$57
Research and development	228	303
Selling, general and administrative	872	878
Total share-based compensation	$1,176	$1,238

An immaterial amount of share-based compensation was capitalized into inventory as overhead for the years ended December 31, 2022 and 2021, respectively.

The following table summarizes stock option activity under our stock option plans for the twelve months ended December 31, 2022:

	2022			2021		
	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	12,500	$4.98		25,000	$4.98	
Granted	-	-		-	-	
Exercised	-	-		(12,500)	4.98	
Cancelled, Expired or Forfeited	-	-		-	-	
Outstanding at end of year	12,500	$4.98	2.33	12,500	$4.98	3.33
Vested or expected to vest at the end of the period	12,466	$4.98	2.33	12,166	$4.98	3.33
Exercisable at end of year	9,375	$4.98	2.33	3,125	$4.98	3.33

The aggregate intrinsic value of outstanding options is $0. There were no stock option awards exercised in 2022.

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

	2022		2021	
	Awards	Weighted - Average Grant Date Fair Value	Awards	Weighted - Average Grant Date Fair Value
Outstanding at beginning of year	623,777	$4.73	643,228	$4.16
Granted	330,215	3.26	262,001	5.95
Vested	(249,292)	4.95	(272,952)	4.56
Cancelled	(39,500)	4.33	(8,500)	4.15
Outstanding at end of year	665,200	$3.94	623,777	$4.73

During the years ended December 31, 2022 and 2021, 57,206 and 85,264 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, 2022	December 31, 2021
Unamortized future compensation expense	$2,029,457	$2,300,286
Remaining weighted average amortization period in years	2.47	2.57

NOTE 11 – SHARE REPURCHASE PROGRAMS

Data I/O did not have a share repurchase program in 2022.

NOTE 12 – INCOME TAXES

Components of income (loss) before taxes:

(in thousands)	Year Ended December 31, 2022	2021
U.S. operations	($1,622)	($2,086)
Foreign operations	1,185	1,643
Total income (loss) before taxes	($437)	($443)

Income tax expense (benefit) consists of:

(in thousands)	Year Ended December 31, 2022	2021
Current tax expense (benefit)		
U.S. federal	$0	$0
State	19	(2)
Foreign	664	114
	683	112
Deferred tax expense (benefit) – U.S. federal	-	-
Total income tax expense (benefit)	$683	$112

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

(in thousands)	Year Ended December 31, 2022	2021
Statutory tax	($92)	($93)
State and foreign income tax, net of federal income tax benefit	(189)	(254)
Valuation allowance for deferred tax assets	370	454
Foreign sourced deemed dividend income	738	341
Stock based compensation	(154)	(325)
Other	10	(11)
Total income tax expense (benefit)	$683	$112

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, 2022	2021
Deferred income tax assets:		
Allowance for doubtful accounts	$22	$13
Inventory and product return reserves	477	484
Compensation accruals	2,511	2,421
Accrued liabilities	151	202
Book-over-tax depreciation and amortization	25	23
Foreign net operating loss carryforwards	149	22
U.S. net operating loss carryforwards	4,399	3,301
U.S. credit carryforwards	1,560	1,440
	9,294	7,906
Valuation Allowance	(9,294)	(7,906)
Total Deferred Income Tax Assets	$ -	$ -

The valuation allowance for deferred tax assets increased $1,388,000 and decreased $1,057,000 during the years ended December 31, 2022 and 2021, 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 $20.9 million at December 31, 2021 with expiration years from 2023 to 2034. 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. We have not had a Section 382 ownership change, but if we did the usage of these tax assets would have an income usage limitation based on the value of the Company at the time of the change times the federal long-term tax-exempt rate.

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

(in thousands)	Year Ended December 31, 2022	2021
Unrecognized tax benefits, opening balance	$392	$365
Prior period tax position increases	-	-
Additions based on tax positions related to current year	30	27
Unrecognized tax benefits, ending balance	$422	$392

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 2019, 2020, 2021 and 2022 in the United States of America. In addition, various tax years from 2002 to 2014 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 13 – 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 by 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, 2022	2021
Net sales:		
U.S.	$1,774	$2,607
Europe	7,402	9,387
Rest of World	15,041	13,841
	$24,217	$25,835
Included in Europe and Rest of World are the following Net Sales significant balances:		
Germany	$2,881	$3,783
China	$5,476	$4,203
Operating income:		
U.S.	$5	$257
Europe	(1,331)	(1,037)
Rest of World	577	507
	($749)	($273)
Identifiable assets:		
U.S.	$15,234	$15,840
Europe	4,886	5,638
Rest of World	7,045	7,579
	$27,165	$29,057

NOTE 14 – SUBSEQUENT EVENTS

In preparing the financial statements, the Company has reviewed all known events which have occurred after December 31, 2022 through the date on which the financial statements are available for issuance, for potential recognition or disclosure in the consolidated financial statements and footnotes.

There were no other subsequent events which would require additional disclosures to the financial statements other than 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, 2022. 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, 2022, 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.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

Not applicable.

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, 2023 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, 2023 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, 2023 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, 2022. See Notes 9 and 10 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)	1,695	$4.00	436,417
Equity compensation plans not approved by the security holders (3)	12,500	$4.98	-
Total	14,195	$4.86	436,417

(1) Represents shares of our Common Stock issuable pursuant to the Data I/O Corporation 2000 Stock Compensation Incentive Plan, 1982 Employee Stock Purchase Plan and 1996 Director Fee Plan. Table excludes unvested restricted stock awards of 677,700 from the 2000 Plan. The Director Fee Plan was canceled by the Board in February 2023 and unreserved the remaining 130,763 shares.

(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.

(3) Inducement grant to Michael Tidwell of 25,000 non-qualified stock options with 12,500 remaining unexercised. Table excludes 12,500 unvested remaining 2019 restricted stock inducement grant to Michael Tidwell.

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 2023 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, 2023. 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 Empower Retirement (formerly known as Great West Financial (formerly known as Orchard Trust Company). See Exhibits 10.11, 10.12, 10.13, 10.23, 10.34 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 10.20, and 10.32

(6) 1996 Director Fee Plan. See Exhibit 10.4.

(7) Data I/O Corporation 2000 Stock Compensation Incentive Plan. See Exhibit 10.6, 10.10, 10.16, 10.19 and 10.29.

(8) Form of Option Agreement. See Exhibit 10.7.

(9) Form of Indemnification Agreement. See Exhibit 10.14.

(10) Letter Agreement with Anthony Ambrose. See Exhibit 10.15.

(11) Letter Agreement with Rajeev Gulati. See Exhibit 10.17.

(12) Letter Agreement with Joel S. Hatlen. See Exhibit 10.21.

(13) Form of Executive Agreement. See Exhibit 10.20 and 10.32.

(14) Form of Restricted Stock Unit Award Agreement. See Exhibit 10.18.

(15) Letter Agreement with Michael Tidwell. See Exhibit 10.28.

(a) **List of Documents Filed as a Part of This Report:** Page

(1) Index to Financial Statements:

(2) Index to Financial Statement Schedules:

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) Index to Exhibits:

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 1 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 Description of Data I/O Corporation's Common Stock (Incorporated by reference to Data I/O's 2022 Annual Report on Form 10-K (File No. 0-10394)). 59

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)). (Plan cancelled February 22, 2023.)

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 Lease, Redmond East Business Campus between Data I/O Corporation and Carr Redmond PLLC dated February 28, 2006 (Incorporated by reference to Data I/O's 2005 Annual Report on Form 10K (File No. 0-10394)).

10.9 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)).

10.10 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).

10.11 Empower Retirement (formerly known as Great West Financial (formerly known as 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)).

10.12 Empower Retirement (formerly known as Great West Financial (formerly known as 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)).

10.13 Empower Retirement (formerly known as Great West Financial (formerly known as 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)).

10.14 Form of Indemnification Agreement. (Incorporated by reference to Data I/O's 2010 Annual Report on Form 10-K (File No. 0-10394)).

10.15 Letter Agreement with Anthony Ambrose (Incorporated by reference to Data I/O's Current Report on Form 8-K filed on October 29, 2012).

10.16 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).

10.17 Letter Agreement with Rajeev Gulati (Incorporated by reference to Data I/O's Current Report on Form 8-K filed on July 31, 2013).

10.18 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)).

10.19 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)).

10.20 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)).

10.21 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)).

10.22 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)).

10.23 Empower Retirement (formerly known as Great West Financial) 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)).

10.24	Empower Retirement (formerly known as Great West Financial) 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)).	
10.25	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.).	
10.26	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)).	
10.27	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.).	
10.28	Letter Agreement with Michael Tidwell (Incorporated by reference to Form 8-K filed on May 1, 2019).	
10.29	Amended and Restated Data I/O Corporation 2000 Stock Compensation Incentive Plan approved May 20, 2021 (Incorporated by reference to Data I/O's 2021 Proxy Statement dated April 5, 2021).	
10.30	Sixth Amendment to Lease, between Data I/O Corporation and Alco Redmond East, LLC, made as of October 4, 2021 (Incorporated by reference to Data I/O's 2021 Annual Report on Form 10-K (File No. 0-10394)).	
10.31	Empower Retirement (formerly known as Great West Financial) Financial Adoption Agreement #001 Non-standardized 401(k) Plan (Incorporated by reference to Data I/O's 2021 Annual Report on Form 10-K (File No. 0-10394)).	
10.32	Form of Executive Agreement (Incorporated by reference to Form 8-K filed on February 6, 2023).	
21.1	Subsidiaries of the Registrant	60
23.1	Consent of Independent Registered Public Accounting Firm	61

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 29, 2023

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.

NAME & DATE		TITLE
By: /s/Anthony Ambrose Anthony Ambrose	March 29, 2023	President and Chief Executive Officer (Principal Executive Officer), Director
By: /s/Joel S. Hatlen Joel S. Hatlen	March 29, 2023	Chief Operating and Financial Officer Vice President Secretary, Treasurer (Principal Financial and Accounting Officer)
By: /s/Douglas W. Brown Douglas W. Brown	March 29, 2023	Director
By: /s/Sally A. Washlow Sally A. Washlow	March 29, 2023	Director
By: /s/Cheemin Bo-Linn Cheemin Bo-Linn	March 29, 2023	Director
By: /s/Edward J. Smith Edward J. Smith	March 29, 2023	Director

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

(in thousands)	Balance at Beginning of Period	Charged/ (Credited) to Costs and Expenses	Deductions-Describe	Balance at End of Period
Year Ended December 31, 2021:				
Allowance for bad debts	$66	$23	$ - [1]	$89
Year Ended December 31, 2022:				
Allowance for bad debts	$89	$58	$ - [1]	$147

[1] Uncollectable accounts written off, net of recoveries

EXHIBIT 4.2

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 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 29, 2023, with respect to the consolidated financial statements included in the Annual Report of Data I/O Corporation on Form 10-K for the year ended December 31, 2022. We consent to the incorporation by reference of said report in the Registration Statements of Data I/O Corporation on Forms S-3 (333-121566) and on Forms 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).

/s/ GRANT THORNTON LLP

Bellevue, Washington

March 29, 2023

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 29, 2023

/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 29, 2023

/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, 2022 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 29, 2023

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, 2022 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 29, 2023