



**TELEDYNE SP DEVICES**  
Everywhere you look™

# COMPANY OVERVIEW



A man with short brown hair and glasses, wearing a blue polo shirt, is shown in profile, looking intently at a piece of equipment in a factory or laboratory. The background is blurred, showing industrial lights and machinery. A semi-transparent blue banner is overlaid across the middle of the image, containing the text 'PROVEN. RELIABLE. ADVANCED.' in white, bold, sans-serif font.

**PROVEN.  
RELIABLE.  
ADVANCED.**

# OUR COMPANY

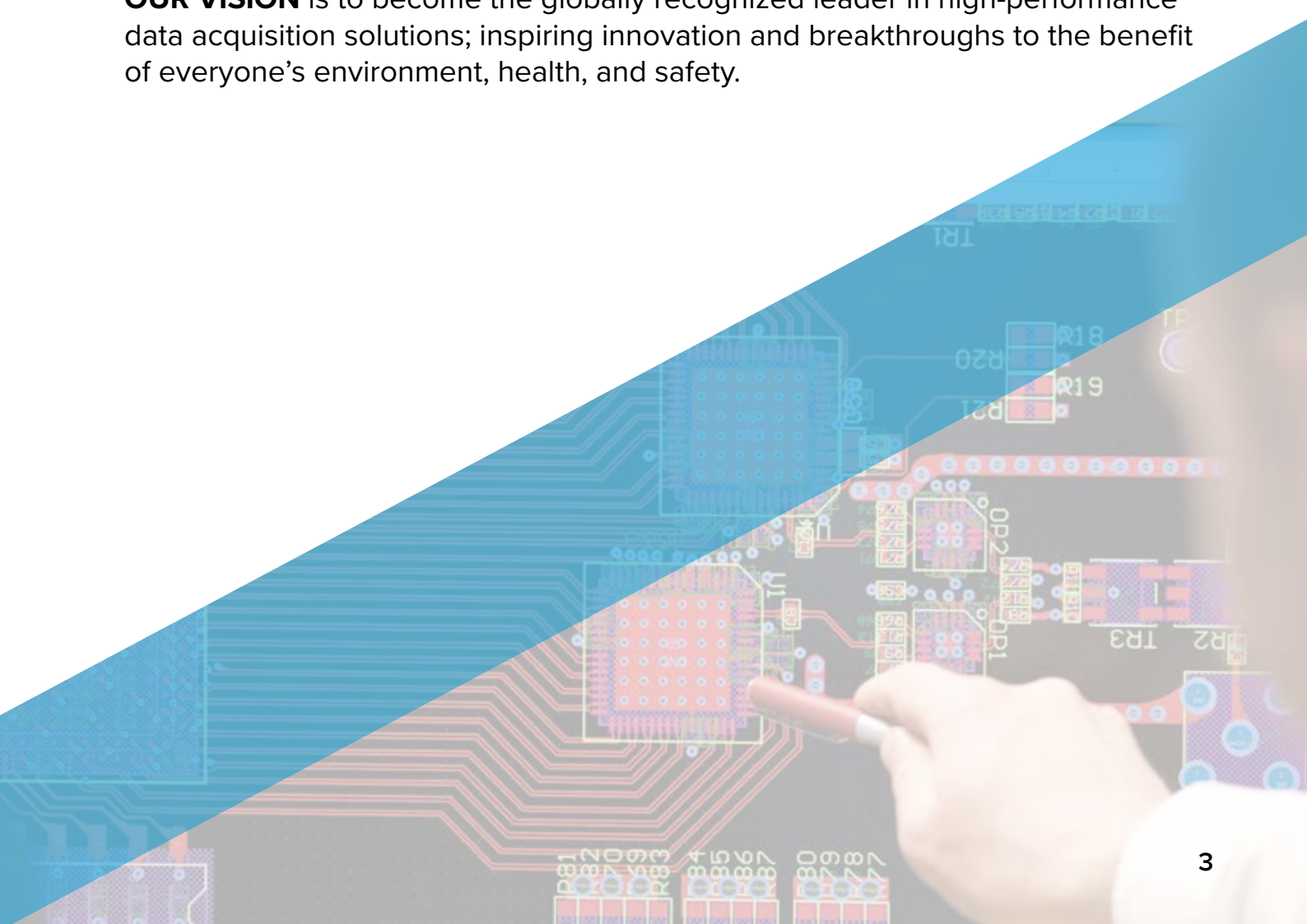
**TELEDYNE SP DEVICES** has provided digitizers to customers and original equipment manufacturers (OEMs) for over 15 years. Our engineers make it their mission to provide leading-edge products constantly and consistently. We remain at the forefront of digitizing performance, by anticipating and adapting to ever-evolving technology, thus enabling our customers to deliver the most advanced and competitive products possible.

**TELEDYNE SP DEVICES** is part of Teledyne Technologies, an international, multi-billion-dollar company. As a part of the Teledyne family, we have access to some of the industry's most knowledgeable experts, research and development capabilities, and manufacturing facilities worldwide.

**TELEDYNE SP DEVICES** is uniquely positioned to collaborate with our customers to deliver short time-to-market, leading technology development, risk mitigation, reduced cost, unparalleled customer service, and flexible architecture.

**OUR MISSION** is to empower engineers and scientists to capture complex data, enabling discovery and differentiated products.

**OUR VISION** is to become the globally recognized leader in high-performance data acquisition solutions; inspiring innovation and breakthroughs to the benefit of everyone's environment, health, and safety.



# WHY TELEDYNE SP DEVICES

When you work with Teledyne SP Devices, you are also working with Teledyne Technologies. Therefore, we can ensure the most current products, technology, and solutions, but also offer the stability of a large supplier and a long-term partnership with our client.

Our product road map defines an offering that generate real and proven value, and our team of signal processing experts, applications team, and support staff work in close collaboration with our customers. We develop local engineering contacts to identify solutions, implement training, and facilitate integration milestones.

- Our extensive product portfolio consists of cost-optimized products that are suitable for integration in cost-sensitive and high-volume applications.
- All products use the same application programming interface (API) thereby offering a high degree of reuse.
- The open architecture provides customer access to the on-board field-programmable gate array (FPGA) for custom real-time signal processing.
- Sensitive FPGA IP is protected from reverse engineering and duplication via advanced encryption mechanisms.
- We offer custom engineering to our original equipment manufacturer (OEM) customers through design and integration services. All parts of the products can be customized, including software, firmware, and hardware. This allows our OEM customers to focus on their value-add.
- The applications team is part of our R&D organization and provide signal processing expertise as well as domain knowledge. They work in close collaboration with the customer during the design-in phase in order to fulfill integration milestones and thereby shorten the time to market.
- Our field application engineering teams help identify solutions, provide on-site support, and implement training in their respective local markets.
- The in-house support group consist of experienced developers that work in close collaboration with our R&D team. They are directly involved in the planning of in-house R&D resources and can therefore escalate prioritized support cases so that they can be resolved in a timely manner. We take pride in providing short response times to our customers.



# OUR PRODUCTS MAKE A DIFFERENCE

Per Löwenborg, Ph.D.  
General Manager

# OUR PRODUCTS

Teledyne SP Devices offer high-performance digitizers using an open FPGA architecture, capable of enabling new applications. Our extensive product portfolio enables cost-optimized system-level solutions that meet the highest quality standards. Here are a few of the benefits:

- Built-in digital signal processing (DSP) technology achieves a world-leading combination of high sampling rate and high resolution.
- Hardware modules offer flexible operation by supporting AC- or DC-coupling, adjustable DC-offset, programmable input voltage range, advanced triggering, multi-channel synchronization, and more.
- All products support custom real-time DSP through an open FPGA architecture – a crucial requirement for many of today’s systems.
- Additional stand-alone firmware packages simplify operation by providing rich sets of application-specific functions without any need for firmware development.
  - The pulse detection firmware (FWPD) is tailored to detect and analyze sparse pulses in time-domain measurement applications.
  - The advanced time-domain option (FWATD) supports extreme dynamic range so that rarely occurring weak signals can be detected and distinguished from noise.
  - The digital down-conversion firmware (FW2DDC) is typically used in radio frequency (RF) receivers and implements digital down-conversion (DDC) and built-in data reduction.
- Data streaming of up to 7 GByte/s is supported, and selected products support peer-to-peer streaming to graphics processing units (GPUs) as well as to disk storage.
- All products use the same software development kit (SDK) shortening development time when upgrading product models.
- Products are available in PCIe, PXIe, MTCA.4, USB 3.0, and 10 GbE form factors.

# SELECTED PRODUCTS

## ADQ7 14-bit, 10 GS/s Digitizer



### Key Features

- 10 GS/s sampling rate with 14 bits resolution
- Open FPGA for custom real-time DSP
- Available in PXIe, PCIe, MTCA.4, USB 3.0, and 10 GbE form factors
- Multi-channel synchronization capabilities
- Peer-to-peer streaming to GPU (PCIe only)
- Application-specific firmware helps shorten design time

### Example Applications

- Particle physics
- Time-of-flight mass spectrometry
- RF sampling

## ADQ14 14-bit, 2 GS/s Digitizer



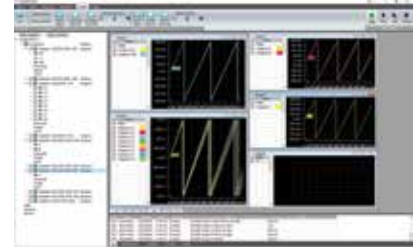
### Key Features

- 0.5, 1, or 2 GS/s sampling rate with 14 bits resolution
- 1, 2, or 4 input channels
- Open FPGA for custom real-time DSP
- Available in PXIe, PCIe, MTCA.4, USB 3.0 and 10 GbE form factors,
- Multi-channel synchronization capabilities
- Peer-to-peer streaming to GPU (PCIe only)
- Application-specific firmware helps shorten design time

### Example Applications

- Swept-source OCT
- Thomson scattering
- LIDAR
- RF sampling

## Digitizer Studio Evaluation Software



### Key Features

- Offers quick access to the complete set of underlying API commands via an easy-to-use graphical user interface (GUI)
- Ideal tool for evaluation and integration
- New generation of software framework which can easily be updated with additional functionality
- Diagram view helps improve understanding of the underlying hardware architecture
- Powerful measurement, math, and graph functions
- Flexible control of a large number of digitizers in multi-channel installations
- Runs both on Windows and Linux



# LEADING TECHNOLOGY TO ENSURE YOUR SUCCESS



# TECHNOLOGY

Teledyne SP Devices uses state-of-the-art components and the most recent design methodologies and tools in our R&D. As a member of the Teledyne family, we also have access to unique in-house developed components and software.

- Patented DSP solutions improve the performance of analog-to-digital converters (ADCs) beyond datasheet specifications:
  - ADX removes ADC time-interleaving errors to achieve unparalleled spurious-free dynamic range (SFDR). This is crucial in frequency-domain applications and provides an industry-leading dynamic range.
  - DBS corrects for baseline drift and pattern noise caused by temperature variations and component aging. It is used in time-domain applications and has contributed to significant advances in applications such as time-of-flight mass spectrometry (TOFMS) and LIDAR.
- Our firmware options span the full range of solutions from standard firmware, application-specific firmware, firmware development kit, and OEM design services.
- Every aspect of each product can be customized, enabling the reuse of existing infrastructure. This permits a cost-effective alternative to in-house development while keeping development cycles short.
- We pursue an active innovation strategy to remain the leading supplier of high-performance digitizers.
- Each product is optimized for cost and performance, offering unrivaled measurement fidelity and extremely high throughput.



# MANUFACTURING & QUALITY FOCUS

As an ISO-certified company, we offer products that meet the highest quality standards. Our manufacturing capabilities and facilities provide complete quality, production, and test control.

- Teledyne SP Devices is ISO 9001-certified and all our development and manufacturing is performed according to well-established documented processes.
- Our primary Electronic Manufacturing Services (EMS) partner is a large well-renowned company that operates globally. They are both ISO 9001- and ISO 14001-certified and can produce thousands of units per month.
- Final assembly and testing are performed in-house to ensure compliance with specifications. Test result reports are created and stored automatically for each product.
- We offer traceable calibration via an accredited partner according to ISO 9001 and ISO/IEC 17025.
- We understand the needs of our customers and provide support in multiple ways:
  - Our supply chain and manufacturing process is optimized to lower the risk of delays. We use standard COTS components and utilize a second source approach with multiple EMS partners and component suppliers.
  - We stock certain products and components in-house and can therefore offer short turn-around time for repairs, modifications, customization, and unforeseen orders that require quick delivery.
  - Our development process involves nightly software builds, strict revision control, automatic tests, and more. This ensures high quality and allows us to keep track of exact revision details for each OEM customer.



FM 65813





**WHEN  
COMPROMISE  
IS NOT AN  
OPTION**

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