



TELEDYNE SP DEVICES
Everywhereyoulook™

DOWNLOAD
ONLINE



PCI Express



PXI Express



Micro-TCA.4



USB3.0



10GbE

PRODUCT OVERVIEW

INTRODUCTION

At Teledyne SP Devices we design and produce high-performance modular data acquisition and signal generation instruments. Our performance advantage is enabled by patented calibration logic, the latest data converters, and state-of-the-art FPGA technology resulting in an unrivalled combination of high sampling rate and resolution.

Our team of experts provide novel digital signal processing (DSP) solutions for a wide range of applications, and the products are equipped with a generous set of application-specific features and real-time DSP. The powerful on-board field-programmable gate arrays (FPGAs) are open to the user and we also provide design services in order to help shorten design time.

SP Devices operate under the Instrumentation segment of Teledyne Technologies which contributed 35% of the total sales of approximately 3.1 billion USD in 2020.



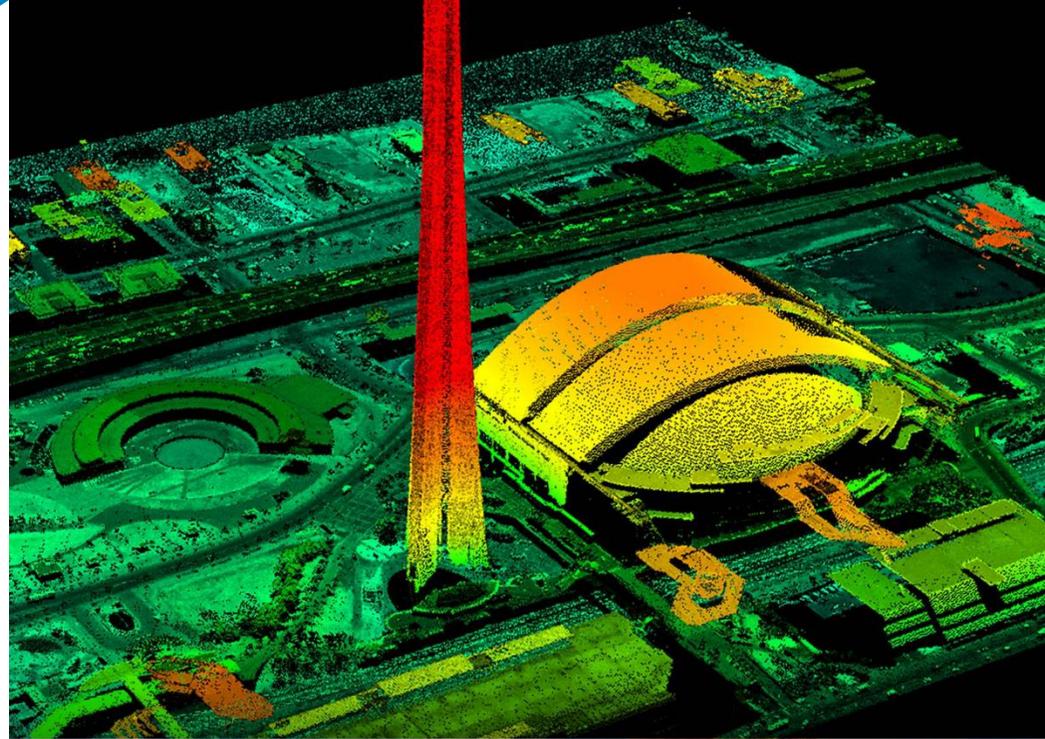
APPLICATIONS

Our products provide performance benefits to a wide variety of applications including LIDAR, time-of-flight mass spectrometry, swept-source OCT, distributed fiber sensing, automated test equipment (ATE), big physics, and more.

Customers can develop custom application-specific real-time DSP by using the optional firmware development kit and/or utilize the stand-alone firmware packages for pulse detection, waveform averaging, software defined radio, and ultra-high-speed data transfer.

The software suite include support for multiple programming languages and operating systems as well as drivers and tools for commonly used environments such as LabVIEW™, MATLAB™, and EPICS.

System-level integration is simplified by the availability of many different form factors, and the products offer highly accurate synchronization and trigger capabilities which makes them ideal for multi-channel applications.



OEM CAPABILITIES

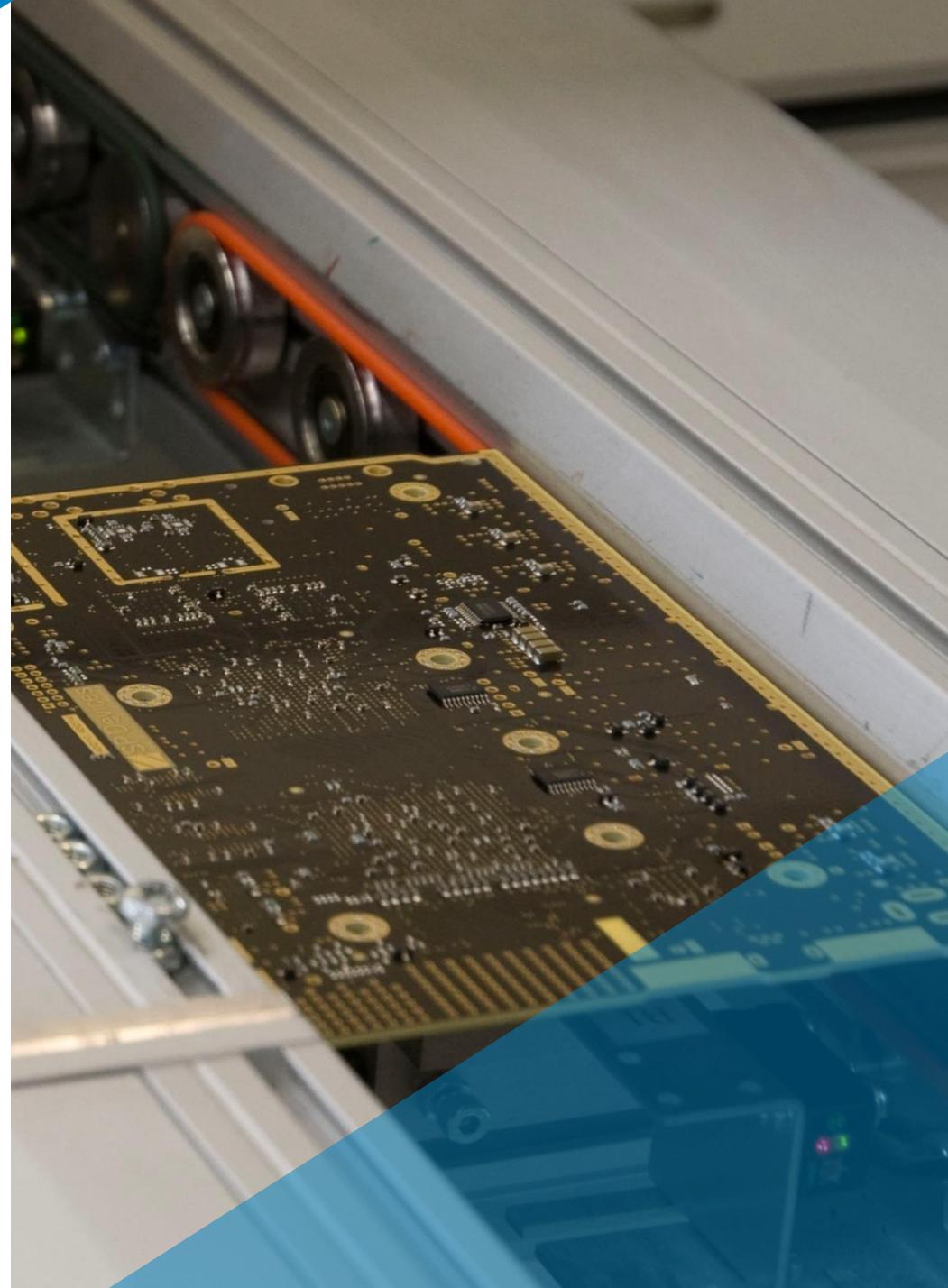
At Teledyne SP Devices we understand that the needs of original equipment manufacturers (OEMs) goes beyond high-performance products.

Throughout the years we have built the infrastructure and business models required to support all aspects of OEM business, and we are proud to serve many such customers already today.

Together with world-leading partners we provide cost-efficient high-quality products that are assembled locally in Sweden, and our current production capability supports thousands of boards per month.

Our OEM services include everything from algorithm development and implementation to custom software, firmware, and hardware. We work closely with our customers during all stages of the development cycle to help ensure high-quality results and timely delivery.

Automated and extensive production testing is done in-house to ensure that we fulfill the standards of our quality commitment towards the customer.



PRODUCT OVERVIEW

14-bit Digitizers

Product	ADC Res.	Num Ch.	Max. Sample Rate	Analog BW	Coupling	Impedance	Memory [Mbyte]	FPGA Type	Interface				
									USB	PXIe	PCIe	MTCA	10GbE
ADQ214	14-bit	2	400 MS/s	850 MHz	AC & DC	50Ω	256	2 x V5 ¹⁾	✓	✓			
ADQ214-DCLN	14-bit	2	400 MS/s	100 MHz	DC	50Ω	256	2 x V5 ¹⁾	✓	✓			
ADQ14AC-2A	14-bit	2	500 MS/s	1.2 GHz	AC	50Ω	2048	K7 ²⁾	✓	✓	✓		✓
ADQ14DC-2A	14-bit	2	500 MS/s	250 MHz	DC	50Ω	2048	K7 ²⁾	✓	✓	✓		✓
ADQ14DC-2A-VG ³⁾	14-bit	2	500 MS/s	250 MHz	DC	50Ω	2048	K7 ²⁾	✓	✓	✓		✓
ADQ14AC-4A	14-bit	4	500 MS/s	1.2 GHz	AC	50Ω	2048	K7 ²⁾	✓	✓	✓		✓
ADQ14DC-4A	14-bit	4	500 MS/s	250 MHz	DC	50Ω	2048	K7 ²⁾	✓	✓	✓		✓
ADQ14DC-4A-VG ³⁾	14-bit	4	500 MS/s	250 MHz	DC	50Ω	2048	K7 ²⁾	✓	✓	✓		✓
ADQ114	14-bit	1	800 MS/s	720 MHz	AC	50Ω	256	2 x V5 ¹⁾	✓	✓			

¹⁾ Xilinx Virtex 5 SX50T

²⁾ Xilinx Kintex 7 K325T

³⁾ Models "VG" offers variable gain

PRODUCT OVERVIEW

14-bit Digitizers (continued)

Product	ADC Res.	Num Ch.	Max. Sample Rate	Analog BW	Coupling	Impedance	Memory [Mbyte]	FPGA Type	Interface				
									USB	PXIe	PCIe	MTCA	10GbE
ADQ14AC-2C	14-bit	2	1 GS/s	1.2 GHz	AC	50Ω	2048	K7 ¹⁾	✓	✓	✓		✓
ADQ14DC-2C	14-bit	2	1 GS/s	700 MHz	DC	50Ω	2048	K7 ¹⁾	✓	✓	✓		✓
ADQ14DC-2C-VG ²⁾	14-bit	2	1 GS/s	500 MHz ³⁾	DC	50Ω	2048	K7 ¹⁾	✓	✓	✓		✓
ADQ14AC-4C	14-bit	4	1 GS/s	1.2 GHz	AC	50Ω	2048	K7 ¹⁾	✓	✓	✓		✓
ADQ14DC-4C	14-bit	4	1 GS/s	700 MHz	DC	50Ω	2048	K7 ¹⁾	✓	✓	✓	✓	✓
ADQ14DC-4C-VG ²⁾	14-bit	4	1 GS/s	500 MHz ³⁾	DC	50Ω	2048	K7 ¹⁾	✓	✓	✓		✓
ADQ1600RF	14-bit	1	1.6 GS/s	750 MHz	AC	50Ω	1024	V6 ⁵⁾	✓	✓	✓	✓	
ADQ1600TD	14-bit	1	1.6 GS/s	680 MHz	AC	50Ω	1024	V6 ⁵⁾	✓	✓	✓	✓	

¹⁾ Xilinx Kintex 7 K325T

²⁾ Models “VG” offers variable gain

³⁾ Analog bandwidth depending on selected input range/gain setting, see datasheet for details

⁴⁾ Supports variable K-clock (sample) rate

⁵⁾ Xilinx Virtex 6 LX240T

PRODUCT OVERVIEW

14-bit Digitizers (continued)

Product	ADC Res.	Num Ch.	Max. Sample Rate	Analog BW	Coupling	Impedance	Memory [Mbyte]	FPGA Type	Interface				
									USB	PXIe	PCIe	MTCA	10GbE
ADQ14AC-1X	14-bit	1	2 GS/s	1 GHz	AC	50Ω	2048	K7 ¹⁾	✓	✓	✓		✓
ADQ14DC-1X	14-bit	1	2 GS/s	1.2 GHz	DC	50Ω	2048	K7 ¹⁾	✓	✓	✓		✓
ADQ14DC-1X-VG ²⁾	14-bit	1	2 GS/s	900 MHz ³⁾	DC	50Ω	2048	K7 ¹⁾	✓	✓	✓		✓
ADQ14AC-2X	14-bit	2	2 GS/s	1 GHz	AC	50Ω	2048	K7 ¹⁾	✓	✓	✓		✓
ADQ14DC-2X	14-bit	2	2 GS/s	1.2 GHz	DC	50Ω	2048	K7 ¹⁾	✓	✓	✓	✓	✓
ADQ14DC-2X-VG ²⁾	14-bit	2	2 GS/s	900 MHz ³⁾	DC	50Ω	2048	K7 ¹⁾	✓	✓	✓		✓
ADQ7DC	14-bit	2 1	5 GS/s 10 GS/s	2.5 GHz	DC	50Ω	4096	KU085 ⁴⁾	✓	✓	✓	✓	✓

¹⁾ Xilinx Kintex 7 K325T

²⁾ Models “VG” offers variable gain

³⁾ Analog bandwidth depending on selected input range/gain setting, see datasheet for details

⁴⁾ Xilinx Kintex Ultrascale KU085

PRODUCT OVERVIEW

12-bit Digitizers

Product	ADC Res.	Num. Ch.	Max. Sample Rate	Analog BW	Coupling	Impedance	Memory [Mbyte]	FPGA Type	Interface			
									USB	PXIe	PCIe	MTCA
ADQ412	12-bit	4 2	1 GS/s 2 GS/s	2 GHz 1.3 GHz	AC	50Ω	1024	V6 ²⁾	✓	✓	✓	✓
ADQ412-3G	12-bit	4 2	1.8 GS/s 3.6 GS/s	2 GHz 1.3 GHz	AC	50Ω	1024	V6 ²⁾	✓	✓	✓	✓
ADQ412-4G	12-bit	4 2	2 GS/s 4 GS/s	2 GHz 1.3 GHz	AC	50Ω	1024	V6 ²⁾	✓	✓	✓	✓
ADQ412DC	12-bit	4 2	1 GS/s 2 GS/s	925 MHz 775 MHz	DC	50Ω	1024	V6 ²⁾		✓	✓	
ADQ412DC-3G	12-bit	4 2	1.8 GS/s 3.6 GS/s	925 MHz 775 MHz	DC	50Ω	1024	V6 ²⁾		✓	✓	
ADQ412DC-4G	12-bit	4 2	2 GS/s 4 GS/s	925 MHz 775 MHz	DC	50Ω	1024	V6 ²⁾		✓	✓	
ADQ32	12-bit	2 1	2.5 GS/s 5 GS/s	1 GHz	DC	50Ω	8192	KU040 ³⁾			✓	
ADQ32-PDRX ^{*)}	12-bit	1	2.5 GS/s	1 GHz	DC	50Ω	8192	KU040 ³⁾			✓	
ADQ33	12-bit	2	1 GS/s	1 GHz	DC	50Ω	8192	KU040 ³⁾			✓	

¹⁾ Xilinx Virtex 5 SX50T

²⁾ Xilinx Virtex 6 LX240T

³⁾ Xilinx Kintex Ultrascale KU040

⁴⁾ Xilinx Kintex Ultrascale KU0115

⁵⁾ Xilinx Kintex Ultrascale KU085

^{*)} PDRX utilize a dual-gain configuration in order to achieve a dynamic range equivalent to 12 ENOB.

PRODUCT OVERVIEW

12-bit Digitizers

Product	ADC Res.	Num. Ch.	Max. Sample Rate	Analog BW	Coupling	Impedance	Memory [Mbyte]	FPGA Type	Interface			
									USB	PXIe	PCIe	MTCA
ADQ36	12-bit	4 2	2.5 GS/s 5 GS/s	2.5 GHz	DC	50Ω	8192	KU0115 ¹⁾		✓		
ADQ7WB	12-bit	2	5 GS/s	6.5 GHz	AC	50Ω	4096	KU085 ²⁾		✓	✓	

¹⁾ Xilinx Kintex Ultrascale KU0115

²⁾ Xilinx Kintex Ultrascale KU085

^{*)} PDRX utilize a dual-gain configuration in order to achieve a dynamic range equivalent to 12 ENOB.

PRODUCT OVERVIEW

10-bit Digitizers

Product	ADC Res.	Num. Ch.	Max. Sample Rate	Analog BW	Coupling	Impedance	Memory [Mbyte]	FPGA Type	Interface			
									USB	PXie	PCIe	MTCA
ADQ8-8C	10-bit	8	1 GS/s	500 MHz	DC	50Ω 1MΩ	1024	K7 ¹⁾		✓		✓
ADQ8-4X	10-bit	4 2	2 GS/s 4 GS/s	1 GHz	DC	50Ω	1024	K7 ¹⁾		✓		

¹⁾ Xilinx Kintex 7 K325T

PRODUCT OVERVIEW

Arbitrary Waveform Generators

Product	DAC Res.	Num. Ch.	Max. Sample Rate	Analog BW	Coupling	Impedance	Memory [Mbyte]	FPGA Type	Interface			
									USB	PXIe	PCIe	MTCA
SDR14TX	14-bit	2	2 GS/s	1.8 GHz	DC	50Ω ¹⁾ 100Ω ²⁾	1024	V6 ¹⁾		✓	✓	

Extension Modules

Product	Description	Parameters	Interface			
			USB	PXIe	PCIe	MTCA
ADQ10GBE	10 Gigabit Ethernet card	2 Ethernet ports		✓		
ADQDSU-8T	SSD disk storage unit for high-speed data recording	8 TB total storage and 6.8 GB/s write speed		✓		
ADQDSU-32T	SSD disk storage unit for high-speed data recording	32 TB total storage and 6.8 GB/s write speed		✓		

¹⁾ Xilinx Virtex 6 LX240T



TELEDYNE SP DEVICES
Everywhere you look™



Asia Pacific Sales Offices

Beijing , China
+86 135 607 038 86

Tokyo, Japan
+81 80 4675 7959

Seoul, Korea
+82 2 3452 0400

New Taipei City, Taiwan
+886 282 286100

US Sales Offices

Milpitas, CA 95035
+1 415-533-1341

Chestnut Ridge, NY 10977
+1 415-533-1341

HQ & Sales Office

Teknikringen 8D
SE-583 30 Linköping
Sweden
+46 13 465 06 00

European Sales Offices

Ostrava, Czech Republic
+420 775 070 537

Geneva, Switzerland
+41 78 845 5657

Düsseldorf, Germany
+49 1514 435 7150