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Find the *Astronics / EADS / Racal PXIe-1803* at our website: ***Click HERE***



Astronics Test Systems PXIe-1803

130/180 MS/s Dual Channel PXI Express Digitizer

The Astronics Test Systems PXIe-1803 is a 2-channel Digitizer. Occupying just one PXI Express periphal slot or hybrid slot, this digitizer offers the best combination of speed and dynamic range available for PXI Express. The built-in reference insures high-accuracy over a long calibration cycle.

Key Features

- **Dual 14/16-bit Digitizer configurable as separate or fully synchronized channels**
- **Waveform bandwidths of 65-175 MHz (typical)**
- **64M words of waveform memory per channel**
- **External clock input for synchronization up to 180 MHz**
- **250 µV Measurement Accuracy Noise Floor and Relative Accuracy as Precise as 0.006%**

Product Information

Signal Integrity

One of the most important requirements in today's test and measurement applications is high signal quality. With exceptionally good SFDR of < 83dB at a 1 MHz carrier, the Astronics Test Systems PXIe-1803 digitizes signals with the highest fidelity in its classification. DC absolute and relative accuracy exceeds that of competing models by a wide margin. Signal inputs are provided either as single-ended or true differential.

Channel Synchronization

Both digitizer channels may be operated independently or in synchronization. Waveform acquisition can be triggered by an analog level on channel 1 or 2, by an external trigger, by a PXI trigger, or by a software trigger.

High Density & Modularity

The small size and high performance of the dual channel PXIe-1803 make it ideal for use in high channel-count applications. The module can be synchronized with additional modules in a PXI chassis with hybrid slots. This reduces the size and cost of the system while improving system granularity and maintainability.

Powerful Soft Front Panel

The PXIe-1803 comes with a Soft Front Panel (SFP) which gives you manual control of the front end signal conditioning, clock, and signal capture. The SFP allows you to view digitized waveforms in the preview window, providing information about the captured signal parameters in the time domain. The Preview Panel also calculates the DFT or FFT of your signal for display, or to be saved to a file. In this case, the resulting signal parameters are displayed in the frequency domain, including SINAD, THD, harmonics and more.

Multiple Environments for Code Development

The PXIe-1803 comes with a complete set of drivers, allowing you to write your application in various environments such as: Labview, LabWindows/CVI or Visual Studio.

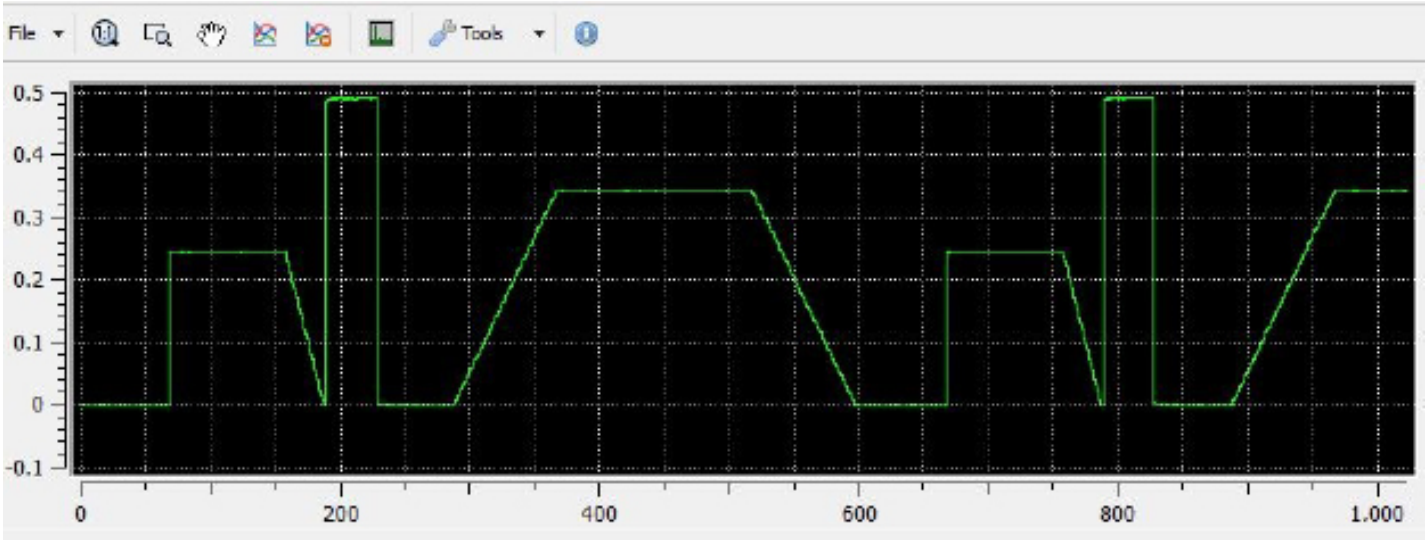
Simple to Calibrate

The PXIe-1803 has an accurate internal reference which it can self-calibrate to. This extends the external calibration period to several years. When external calibration is required, the internal reference is verified, an operation which can be done with a 6.5 digit DMM as is found in most labs. This makes it unnecessary to ever send the PXIe-1803 to a calibration lab for most users.

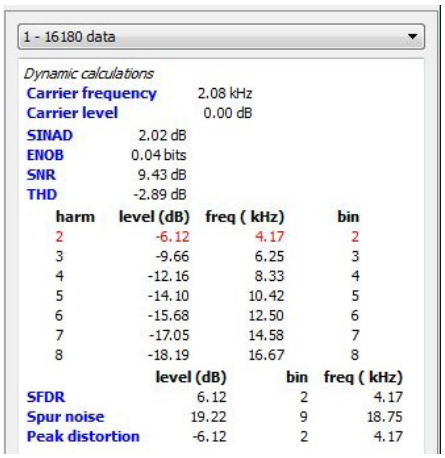
ASTRONICS TEST SYSTEMS

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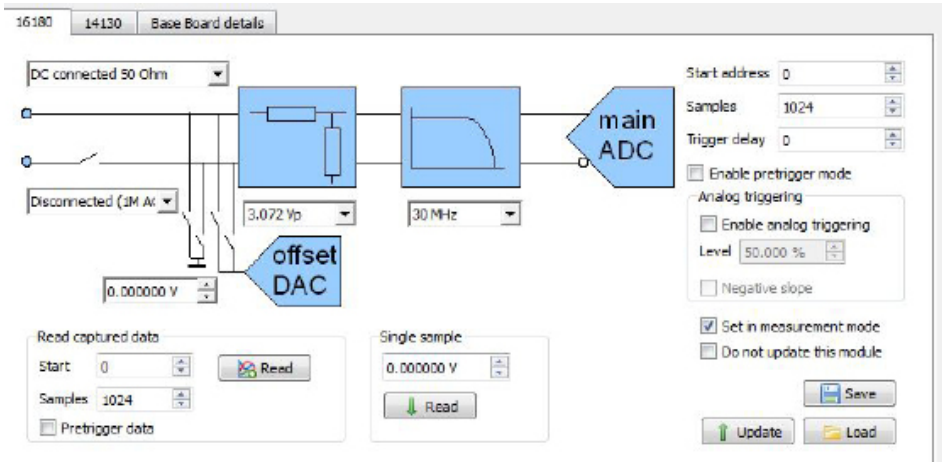
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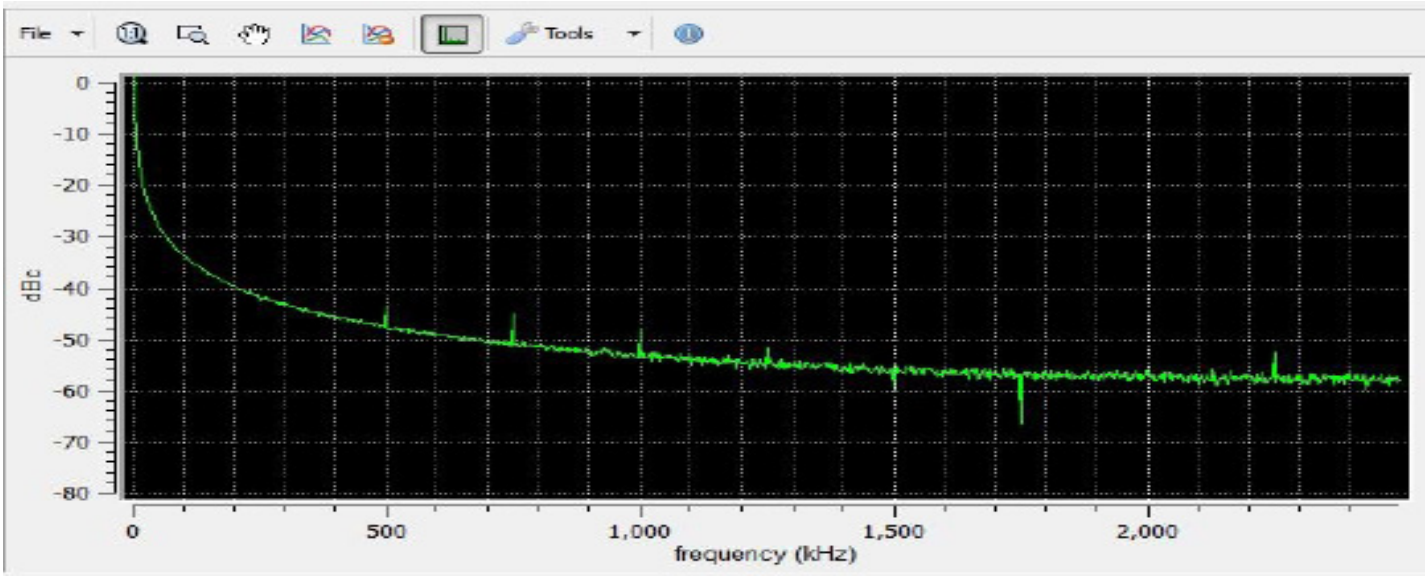
Zoomed Time Domain plot of a captured waveform shown in the Analyzer Window



Dynamic parameters displayed in the Preview



Main interactive configuration window for one of the digitizers



Spectrum plot of a captured waveform shown in the Analyzer Window

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Specifications

Note: The Astronics Test Systems policy is one of continuous development and improvement. Consequently, the equipment may vary in detail from the description and specifications in this publication.

Amplitude Characteristics

Amplitude (Volts Peak to Peak)

- 14130
  - 50 Ω DC Coupled full scale ranges of 675mV, 900 mV, 1.35 V, 1.8 V, 2.7 V, 3.6V, 5.4 V and 7.2 V_{pp}
- 16180
  - 50 Ω DC Coupled full scale ranges of 512 mV, 768 mV, 1.024 V, 1.536 V, 2.048 V, 3.072 V, 4.096V and 6.144 V_{pp}
  - 1M Ω DC Coupled full scale ranges 512 mV, 768 mV, 1.024 V, 1.536 V, 2.048 V, 3.072 V, 5.120 V, 7.680 V, 10.240 V, 15.360 V, 20.480 V and 30.720 V_{pp}

Resolution

- 14180: 14-bits
- 16400: 16-bits

Accuracy (at 1 kHz)

- Absolute
  - 14130: ±(250 µV + 0.05% of range + 0.1% of value)
  - 16180: ±(250 µV + 0.1% of range + 0.2% of value)
- Relative Accuracy
  - 14130: ±0.025%
  - 16180: ±0.006%

DC Offset

- Range
  - 14130: 0 to ±3.6 V
  - 16180: 100% of input range
- Resolution: 16 bits

Input Impedance

- 14130: 50 Ω or 10 kΩ, selectable
- 16180: 50 Ω or 1 MΩ, selectable

Low-Pass Filter (selectable)

- 14130: 15 MHz, 30 MHz, bypass
- 16180: 30 MHz, 60 MHz, bypass

Standby (Output disconnected)

- Output On or Off

Measurement Characteristics

Pattern Depth

- 64 Meg samples per channel

Input Bandwidth (typical)

- 14130: 65 MHz
- 16180: 95 to 175 MHz, depending on range

Signal-Noise Ratio (50 Ω)

- 14130 (130 MS/s, 3.2V_{pk} diff.)
  - 66dB @ f_{in} =1MHz (BW: 0-60MHz)
  - 64dB @ f_{in} =10MHz (BW: 0-60MHz)
- 16180 (180 MS/s, 5V_{pp} diff.)
  - 69dB @ f_{in} = 1MHz (BW: 0-80MHz)
  - 67dB @ f_{in} = 10MHz (BW: 0-80 MHz)

Total Harmonic Distortion (50 Ω)

- 14130 (130 MS/s, 3.2 V_{pp} diff.)
  - 78dB @ f_{out} = 1MHz
  - 74dB @ f_{out} = 10MHz
- 16180 (180 MS/s, 4 V_{pp} diff.)
  - 85dB @ f_{in} = 1MHz
  - 81dB @ f_{in} = 10MHz

Spurious Free Dynamic Range

- 14180 (130 MS/s, 3.2 V_{pp} diff.): 80dB @ f_{in} = 1 MHz
- 16180 (180 MS/s, 4 V_{pp} diff.): 83dB @ f_{in} = 1 MHz

Sampling Clock

(One Per Channel)

Frequency Resolution

- ~ 4 digits

Jitter

- <0.5 ps peak, typical

SCLK Source Range

- Internal: 2 kHz to 945 MHz
- External: 0 Hz to 500 MHz

External Source Characteristics

- Connector: Front Panel SMB
- Range: -0.5V to +5.5V
- Threshold: 1.02 Volt +/- 5%
- Impedance: 50 Ω
- Function: Sample Clock or 10 MHz PLL Reference, selectable

Reference Clock

Internal Reference

- 10 MHz ± 15 ppm

External Reference

- Connector: Front Panel SMB
- Range: -0.5V to +5.5V
- Threshold: 1.02 Volt +/- 5%
- Impedance: 50 Ω
- Function: Sample Clock or 10 MHz PLL Reference, selectable

Triggering Characteristics

(Per Channel)

Sources

- Internal: Software trigger
- Backplane: PXISTAR, PXITRIG0-6
- External, Connector: Front Panel SMB
  - Range: -0.5V to +5.5V
  - Threshold: 1.02 Volt +/- 5%
  - Impedance: 1 kΩ

Trigger Modes

- Triggered or Burst (1 to 128k cycles)

Trigger Delay

- 0 to 64k points (multiple of 2)

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Specifications
continued

Interface

PXI Backplane Signal Support
- PXITRG0-6, PXISTAR: Trigger Input
- PXI CLK10: Time Base

Cooling (10° C Rise)
- Min. Airflow: 0.8 l/s

Peak Current & Power Consumption
- Total Power: 9 Watts

	I_{Pm} (A)	I_{Dm} (A)
+12	0.1	0.08
+3.3	2.3	0.45

Front Panel I/O

Digitizer Inputs
- Trigger: SMB, 1 kΩ, 0.5 to 5.5V, DC coupled
- Clock: SMB, 50 Ω, 0.5 to 5.5V, DC coupled
- CH1, CH1/: SMB, 50 Ω
- CH2, CH2/: SMB, 50 Ω

Environmental
(All Environmental Conditions Tested to MIL-PRF-28800F, Class 3)

Temperature
- Operating: 0° C to 50° C
- Storage: -40° C to 71° C

Relative Humidity
- 5% to 95% RH non-condensing ≤30° C
- 5% to 75% RH above 30° C
- 5% to 45% RH above 40° C

Altitude
- Operating: 15,000 ft
- Non-Operating: 15,000 ft

Shock
- 30 g peak, half sine, 11 ms pulse

Vibration
- Random: 5 to 500 Hz

Ordering Information

408636-066 : Astronics Test Systems PXIe-1803-66, 130 MS/s 14-bit Digitizer, Dual Channel

Dual Channel, 130 MS/s, PXI Express, 14-bit Digitizer

408636-055 : Astronics Test Systems PXIe-1803-55, 180 MS/s 16-bit Digitizer, Dual Channel

Dual Channel, 180 MS/s, PXI Express, 16-bit Digitizer

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