DEVICE SPECIFICATIONS

NI PXIe-5186

12.5 GS/s, 8-Bit Digitizer

This document lists the specifications for the NI PXIe-5186 (NI 5186) 5 GHz digitizer.

Contents

NI PXIe-5186 Specifications

The NI 5186 digitizer was developed jointly between Tektronix and NI. The device uses Tektronix Enabling Technology™ to deliver wide analog bandwidth and high-speed sampling on the NI Synchronization and Memory Core (SMC) technology with TClk synchronization.

Unless otherwise noted, the following conditions were used for each specification:

- For 50 Ω input channel, vertical range ($V_{pk\text{-}pk}$) set to 0.11, 0.2, 0.5, or 1
- For 1 MΩ input channel, vertical range ($V_{pk\text{-}pk}$) set to 0.11, 0.2, 0.5, 1, 2, 5, or 10
- 1 MΩ input channel disconnected for 50 Ω input channel specifications, and 50 Ω input channel disconnected for 1 MΩ input channel specifications
- Sample clock set to 6.25 GS/s or 12.5 GS/s

NATIONAL INSTRUMENTS™

- Onboard Sample clock locked to PXIe_CLK100 Reference clock
- 0 °C to 50 °C ambient temperature

Note Early versions of the NI 5186 only support 50 Ω input impedance. Later versions support both 50 Ω and 1 MΩ input impedance. To verify input impedances supported by your device, compare your device front panel with the diagrams at the end of this document. You can also check the device part number:

- NI 5186 module part numbers 193537*x*-0*z*L (where *x* is any letter and *z* is any number) only support 50 Ω input impedance.
- NI 5186 module part numbers 152961*x*-0*z*L (where *x* is any letter and *z* is any number) support both 50 Ω and 1 MΩ input impedance.

Warranted (*maximum* and *minimum*) specifications are warranted not to exceed these values within certain operating conditions and include the effects of temperature and uncertainty unless otherwise noted. Specifications are warranted under the following conditions:

- The NI 5186 module is warmed up for 25 minutes at ambient temperature
- Self-calibration is completed after warm-up period or when switching from an external Sample and/or Reference clock to the Onboard clock
- Calibration cycle is maintained
- The PXI Express chassis fan speed is set to HIGH, the fan filters are clean if present, and the empty slots contain PXI chassis slot blockers and filler panels. For more information about cooling, refer to the *Maintain Forced-Air Cooling Note to Users* document available at *ni.com/manuals*.
- NI-SCOPE 3.9.6 or later instrument driver is used
- External calibration is performed at 23 °C ± 3 °C

Characteristic specifications are unwarranted values that are representative of an average unit operating at room temperature.

Typical specifications are unwarranted values that are representative of a majority (90%) of units within certain operating conditions and include the effects of temperature and uncertainty unless otherwise noted.

Nominal specifications describe additional information about the product that may be useful, including expected performance that is not covered under *Warranted*,*Characteristic*, or *Typical* specifications. Nominal values are not covered by warranty.

Specifications are subject to change without notice. For the most recent NI 5186 specifications, visit *ni.com/manuals*.

To access the NI 5186 documentation, including the *NI High-Speed Digitizers Getting Started Guide*, go to **Start»All Programs»National Instruments»NI-SCOPE»Documentation**.

Hot Surface If the NI 5186 has been in use, it may exceed safe handling temperatures and cause burns. Allow the NI 5186 to cool before removing it from

the chassis. Refer to the *Environment* section for operating temperatures of this device.

Caution To ensure the specified EMC performance, operate this product only with double-shielded cables (for example, RG-223/U) and accessories.

Caution The protection provided by the NI 5186 can be impaired if it is used in a manner not described in this document.

Vertical

Analog Input (Channel 0 and Channel 1)

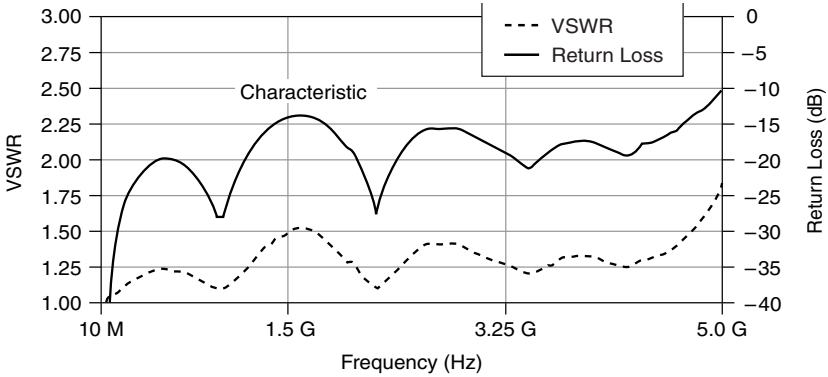
Number of channels	Two (simultaneously sampled)
Input type	Reference single-ended
Connectors	
CH 0, 50 Ω	SMA
CH 1, 50 Ω	SMA
CH 0, 1 MΩ	BNC
CH 1, 1 MΩ	BNC

Impedance and Coupling

Input impedance, typical	
50 Ω	50 Ω ± 1.5%
1 MΩ	1 MΩ ± 1.0% in parallel with a characteristic capacitance of 10 pF
Input coupling	
50 Ω	DC
1 MΩ	AC, DC; software-selectable
Voltage standing wave ratio (VSWR), characteristic[1]	
≥DC to ≤1 GHz	1.25:1
>1 GHz to ≤5 GHz	1.8:1

[1] 50 Ω input only.

Figure 1. 50 Ω Input VSWR and Input Return Loss



Voltage Levels

Table 1. Full Scale (FS) Input Range and Programmable Vertical Offset

Input	Input range (V_{pk-pk})	Vertical offset range (V)
50 Ω and 1 MΩ inputs	0.11 to 1 in >0.3 mV steps	±0.25
1 MΩ input only	>1 to 10 in >3 mV steps	±2.5

Maximum input overload, characteristic[2]	
50 Ω	|Peaks| ≤ 1 V
1 MΩ	|Peaks| ≤ 42 V

Accuracy

Resolution	8 bits
DC accuracy (programmable vertical offset = 0 Volts), warranted[3]	
50 Ω	±(2% of input + 0.35% of FS + 0.7 mV)
1 MΩ	±(2% of input + 0.9% of FS + 1.3 mV)
Programmable vertical offset accuracy, warranted[3]	±1.2% of offset setting

[2] Signals exceeding the maximum input overload may cause damage to the device.
[3] Within ±3 °C of self-calibration temperature.

DC drift, characteristic[4]	
50 Ω	±(0.23% of input + 0.03% of FS) per °C
1 MΩ	±(0.23% of input + 0.1% FS + 0.2 mV) per °C
Programmable vertical offset drift, characteristic[4]	±0.02% of offset setting per ºC
AC amplitude accuracy, warranted[3]	
50 Ω	±0.35 dB at 50 kHz
1 MΩ	±0.5 dB at 50 kHz
AC amplitude drift, characteristic[4]	±0.014 dB per ºC at 50 kHz
Crosstalk (CH 0 to/from CH 1), characteristic[5]	
50 Ω	
≥DC to ≤1 GHz	–68 dB
>1 GHz to ≤2.5 GHz	–60 dB
>2.5 GHz to ≤5 GHz	–47 dB
1 MΩ: ≥DC to ≤300 MHz	–62 dB

Bandwidth and Transient Response

Bandwidth (-3 dB)[6]	
50 Ω, warranted	5 GHz, warranted
1 MΩ[7]	500 MHz, characteristic; 425 MHz, warranted
Rise/fall time, typical[8]	
50 Ω	105 ps
1 MΩ	750 ps
AC-coupling cutoff (-3 dB), typical[9]	10 Hz

[4] Used to calculate errors when temperature changes more than ±3 °C since the last self-calibration.
[5] Measured on one channel with test signal applied to other channel. Same range settings used on both channels.
[6] Normalized to 50 kHz.
[7] 1 MΩ input tested using a 50 Ω source and a 50 Ω feed through terminator connected at the input.
[8] 50% FS input pulse, 23°C ± 10°C.
[9] AC coupling available on 1 MΩ only.

Figure 2. NI 5186 Step Response, 50 Ω, -0.25 V Programmable Offset, 85 ps Rising Edge, Characteristic

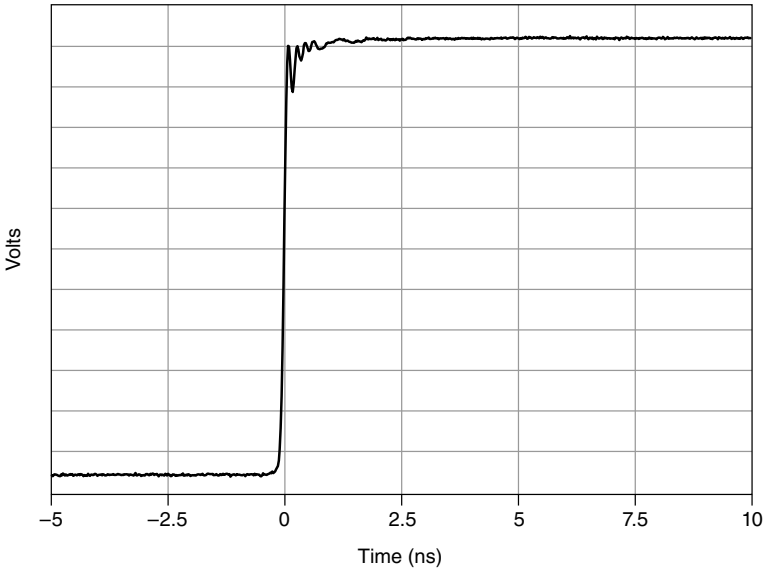


Figure 3. NI 5186 Step Response, 1 MΩ, -0.25 V Programmable Offset, 500 ps Rising Edge, Characteristic

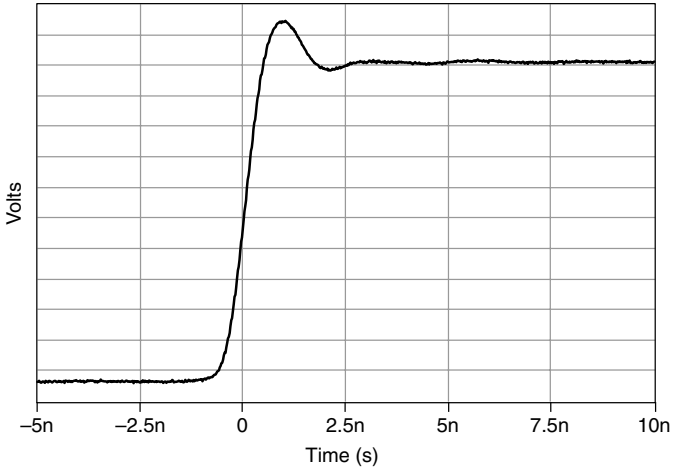


Figure 4. NI 5186 50Ω Frequency Response, Characteristic

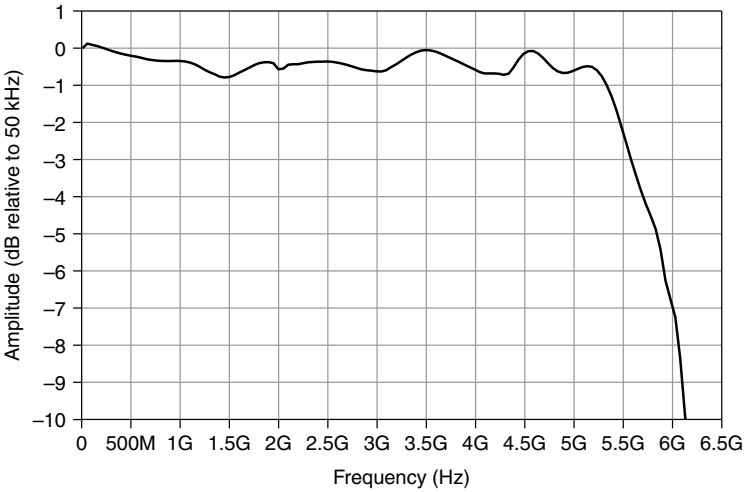
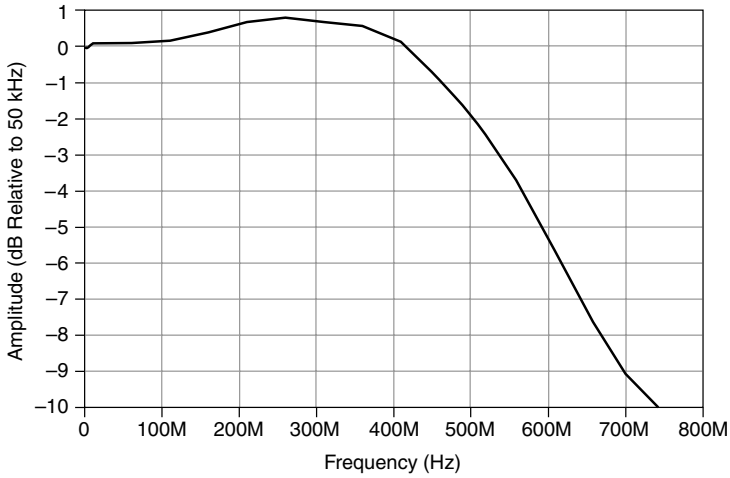


Figure 5. NI 5186 1 MΩ Frequency Response, Characteristic



Spectral Characteristics

NI 5186 50 Ω Spectral Characteristics

Spurious-Free Dynamic Range (SFDR), characteristic	
0.11 V_{pk-pk}, 0.2 V_{pk-pk}, or 0.5 V_{pk-pk} range	
≤10 MHz	51 dBc
>10 MHz to ≤1 GHz	50 dBc
>1 GHz to ≤2.5 GHz	46 dBc
>2.5 GHz to ≤5 GHz	40 dBc
1 V_{pk-pk} range	
≤10 MHz	50 dBc
>10 MHz to ≤1 GHz	47 dBc
>1 GHz to ≤2.5 GHz	42 dBc
>2.5 GHz to ≤5 GHz	40 dBc
Total Harmonic Distortion (THD), characteristic[11]	
0.11 V_{pk-pk}, 0.2 V_{pk-pk}, or 0.5 V_{pk-pk} range	
≤10 MHz	-54 dBc
>10 MHz to ≤1 GHz	-49 dBc
>1 GHz to ≤2.5 GHz	-47 dBc
>2.5 GHz to ≤5 GHz	-43 dBc
1 V_{pk-pk} range	
≤10 MHz	-50 dBc
>10 MHz to ≤1 GHz	-46 dBc
>1 GHz to ≤2.5 GHz	-41 dBc
>2.5 GHz to ≤5 GHz	-43 dBc
Effective Number of Bits (ENOB), characteristic[12]	
10 MHz	6.5
1 GHz	6.3
2.5 GHz	6.0
5 GHz	5.5

[10] -1 dBFS input signal. Includes the 2nd through the 5th harmonics.
[11] -1 dBFS input signal. Includes the 2nd through the 5th harmonics.
[12] -1 dBFS input signal corrected to FS. Includes the 2nd through the 5th harmonics. 18 kHz resolution bandwidth (RBW).

Signal to Noise and Distortion (SINAD), characteristic[13]	
10 MHz	40.9 dB
1 GHz	39.7 dB
2.5 GHz	37.9 dB
5 GHz	34.9 dB

NI 5186 1 MΩ Spectral Characteristics

SFDR, characteristic[14]	
0.11 V_{pk-pk}, 0.2 V_{pk-pk}, or 0.5 V_{pk-pk} range	
≤10 MHz	51 dBc
>10 MHz to ≤300 MHz	45 dBc
1 V_{pk-pk}, 2 V_{pk-pk}, 5 V_{pk-pk}, or 10 V_{pk-pk} range	
≤10 MHz	50 dBc
>10 MHz to ≤300 MHz	41 dBc
Total Harmonic Distortion (THD), characteristic[14]	
0.11 V_{pk-pk}, 0.2 V_{pk-pk}, or 0.5 V_{pk-pk} range	
≤10 MHz	-54 dBc
>10 MHz to ≤300 MHz	-44 dBc
1 V_{pk-pk}, 2 V_{pk-pk}, 5 V_{pk-pk}, or 10 V_{pk-pk} range	
≤10 MHz	-50 dBc
>10 MHz to ≤300 MHz	-40 dBc
ENOB, characteristic[15]	
0.11 V_{pk-pk} range	
10 MHz	5.9
300 MHz	5.9
0.2 V_{pk-pk}, 0.5 V_{pk-pk}, 1 V_{pk-pk}, 2 V_{pk-pk}, 5 V_{pk-pk}, or 10 V_{pk-pk} range	
10 MHz	6.3
300 MHz	6.3

[13] -1 dBFS input signal corrected to FS. Includes the 2nd through the 5th harmonics. 18 kHz resolution bandwidth (RBW).

[14] For ≤100 MHz, -1 dBFS input signal corrected to FS. For >100 MHz, -2 dBFS input signal corrected to FS.

[15] For 10 MHz, -1 dBFS input signal corrected to FS. For 300 MHz, -2 dBFS input signal corrected to FS. Includes the 2nd through the 5th harmonics. 18 kHz resolution bandwidth (RBW).

SINAD, characteristic[16]	
0.11 V_{pk-pk} range	
10 MHz	37.3 dB
300 MHz	37.3 dB
0.2 V_{pk-pk}, 0.5 V_{pk-pk}, 1 V_{pk-pk}, 2 V_{pk-pk}, 5 V_{pk-pk}, or 10 V_{pk-pk} range	
10 MHz	39.7 dB
300 MHz	39.7 dB

Noise

RMS noise, typical[17]	
50 Ω	0.35% of FS
1 MΩ	0.5% of FS
Average noise density, typical[18]	
50 Ω	-137 dBFS/Hz
1 MΩ	-134 dBFS/Hz

Skew

Channel-to-channel skew, characteristic	
50 Ω to 50 Ω	< 10 ps
1 MΩ to 1 MΩ	< 45 ps
50 Ω to 1 MΩ	< 1.5 ns

Horizontal

Sample Clock

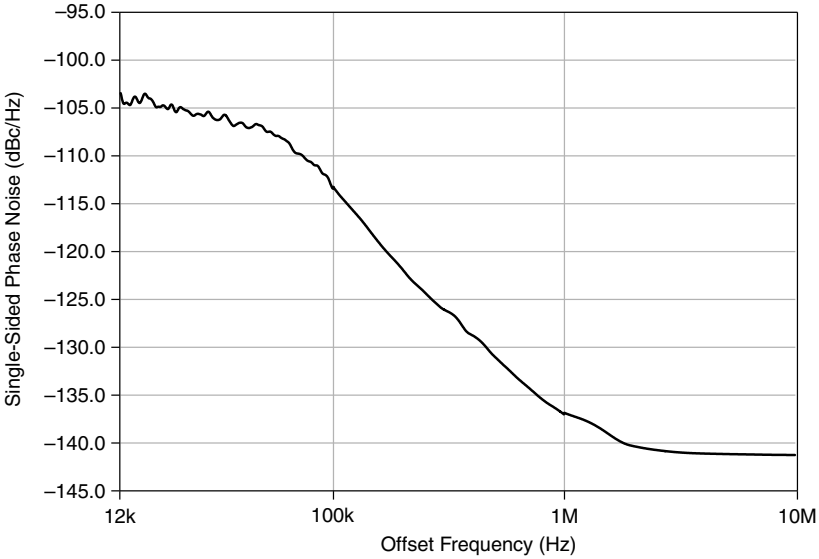
Sources	
Internal	Onboard clock (internal VCO)[19]
External	Front panel SMA connector

[16] For 10 MHz, -1 dBFS input signal corrected to FS. For 300 MHz, -2 dBFS input signal corrected to FS. Includes the 2nd through the 5th harmonics. 18 kHz resolution bandwidth (RBW).
[17] 50 Ω terminator connected to input. 23°C ± 10°C.
[18] 50 Ω terminator connected to input. 23°C ± 10°C.
[19] Internal Sample clock is locked to the PXIe_CLK100 Reference clock.

Onboard Clock (Internal VCO)

Real-time sample rate range	
One channel enabled	190.740 kS/s to 12.5 GS/s[20]
Two channels enabled	190.740 kS/s to 6.25 GS/s[20]
Random Interleaved Sampling (RIS) range	Up to 250 GS/s[21]

Figure 6. NI 5186 Phase Noise (Plotted without Spurs) at 1 GHz, 3 dBm Input Signal, Locked to 100 MHz PXI Express Backplane (Characteristic)



Sample clock jitter, characteristic[22]	500 fs rms (12 kHz to 10 MHz)
Timebase frequency	3.125 GHz
Timebase accuracy[23]	Accuracy equal to the backplane or user-provided Reference clock

[20] Divide by n decimation from 6.25 GS/s used for all rates less than maximum sample rate. For more information about Sample clock and decimation, refer to the *NI High-Speed Digitizers Help*.

[21] With one channel enabled, stepped in multiples of 12.5 GS/s. With two channels enabled, stepped in multiples of 6.25 GS/s.

[22] Includes the effects of the converter aperture uncertainty and the clock circuitry jitter. Excludes trigger jitter.

[23] Phase-locked to Reference clock. The chassis clock or external Reference clock must be accurate to 25 parts per million (ppm), or (1×10^{-6}).

External Sample Clock

Sources	CLK IN (front panel SMA connector)
Frequency[24]	1.6 GHz to 3.125 GHz
Duty cycle tolerance, typical	45% to 55%

Phase-Locked Loop (PLL) Reference Clock

Sources	
Internal	PXIe_CLK100 (backplane connector)
External	REF CLK (front panel SMB connector)
Frequency[25]	10 MHz or 100 MHz
Duty cycle tolerance, characteristic	45% to 55%

CLK IN (Sample Clock Input, Front Panel Connector)

Input voltage range, characteristic	Sine wave: 0.45 V_{pk-pk} to 1.78 V_{pk-pk} (–3 dBm to 9 dBm)
Maximum input overload, characteristic	3 V_{rms}, |Peaks| ≤ 4.25 V
Impedance, nominal	50 Ω
Coupling	AC

REF CLK (Reference Clock In, Front Panel Connector)

Input voltage range, characteristic	Sine wave: -2 dBm to 16 dBm
Maximum input overload, typical	1.6 V_{rms}, |Peaks| ≤ 10 V (1 ms peak)
Impedance, nominal	50 Ω
Coupling	AC
Frequency[26]	10 MHz or 100 MHz

Trigger

Supported trigger	Reference (stop) trigger
Trigger types	Edge, Digital, Immediate, and Software

[24] Divide by *n* decimation available where $1 \leq n \leq 65535$. For more information about Sample clock and decimation, refer to the *NI High-Speed Digitizers Help.* The effective sample rate can be 1 × Input Frequency or 2 × Input Frequency when acquiring on two channels, or 1 × Input Frequency, 2 × Input Frequency or 4 × Input Frequency when acquiring on one channel; use the **Sample Clock Timebase Multiplier** property or the `NISCOPE_ATTR_SAMP_CLK_TIMEBASE_MULT` attribute to specify.

[25] The PLL Reference clock frequency must be accurate to ±25 ppm.

[26] The PLL Reference clock frequency must be accurate to ±25 ppm.

Trigger sources	CH 0, CH 1, TRIG, PXI_Trig <0..6>, and Software
Time resolution	
Onboard Clock	
TDC (Time to Digital Conversion Circuit) on	3 ps
TDC off	2.56 ns
External clock, TDC off	External clock period × 8
Rearm time[27]	
TDC on	10 µs
TDC off	2 µs
Holdoff	Rearm time to 10.99 s
Trigger delay	From 0 to 1,450,000 seconds (15 days)

Analog Trigger (Edge Trigger Type)

Sources	CH 0, CH 1, or TRIG
Trigger level range	
CH 0, CH 1	100% of FS
TRIG (external trigger)	±5 V
Voltage resolution	
CH 0, CH 1	8 bits (1 in 256)
TRIG (external trigger), characteristic	10 bits (1 in 1,024)
Edge trigger sensitivity	
CH 0, CH 1, typical	3% of FS at ≤1 GHz
TRIG (external trigger), characteristic	2% of FS at ≤100 MHz
Trigger level accuracy	
CH 0, CH 1, typical	±5% of FS at ≤100 MHz[28]
TRIG (external trigger), characteristic	±5% at ≤100 MHz[29]

[27] Holdoff set to 0.

[28] Within ±5 °C of self-calibration temperature.

[29] When same impedance settings used on both input channels. For more information about functionality when using mixed impedances between the input channels, visit *ni.com/kb* and enter `5W8CFE8P`.

Trigger jitter	
CH 0, CH 1, typical	≤16 ps rms
TRIG (external trigger), characteristic	≤16 ps rms

Digital Trigger (Digital Trigger Type)

Sources	PXIe_TRIG <0..6> (backplane connector)

TRIG (External Trigger, Front Panel Connector)

Connector	SMA
Impedance, nominal	50 Ω
Coupling	DC
Input voltage range, nominal	±5 V
Maximum input overload, characteristic	|Peaks| ≤ 6 V

TClk Specifications

You can use the National Instruments TClk synchronization method and the NI-TClk driver to align the Sample clocks on any number of SMC-based modules in a chassis. Specifications are valid for any number of NI 5185 or NI 5186 modules installed in one PXI Express chassis, with all parameters set to identical values for each SMC-based module. For more information about TClk synchronization, refer to the *NI-TClk Synchronization Help*, which is located within the *NI High-Speed Digitizers Help*. For other configurations, including multichassis systems, contact NI Technical Support at *ni.com/support*.

Note You can only use NI-TClk to synchronize NI 5185 or NI 5186 devices to other NI 5185 or NI 5186 devices. These specifications apply only to synchronizing identical modules without using an external Sample clock.

Intermodule SMC synchronization using NI-TClk for identical modules, characteristic	
Skew[30]	500 ps
Skew after manual adjustment	160 ps
Sample clock delay/adjustment resolution	80 ps
Triggers that can be TClk synchronized[31]	Reference trigger

[30] Caused by clock and analog path delay differences. No manual adjustment performed.
[31] Synchronized triggers are synchronized to ±1 Sample clock timebase.

Waveform Specifications

Onboard memory sizes[32]	32 MB or 1 GB
Minimum record length, characteristic	1 sample
Number of pretrigger samples, characteristic[33]	Zero up to full record length
Number of posttrigger samples, characteristic[33]	Zero up to full record length
Maximum number of records in onboard memory, characteristic	
16 MB per channel	4,096[34]
512 MB per channel	100,000[34]
Allocated onboard memory per record, characteristic	[(Record length × 1 byte/sample) + 1,500], rounded up to: 4 KB, 8 KB, 16 KB, 32 KB, 64 KB, or an integer multiple of 128 KB

Memory Sanitization

For information about memory sanitization, refer to the *NI PXIe-5185/5186 Letter of Volatility*, which is available for download from *ni.com/manuals*.

Calibration

Power-up calibration	Automatically performed by the device at power-on to calibrate the gain, offset, and phase of the ADCs on the device. Typically takes 5 to 10 minutes to complete.
Self-calibration	Self-calibration is done on software command. The calibration corrects for gain, offset, triggering, and timing errors for all input ranges, excluding the External Trigger input channel (TRIG). Refer to the *NI High-Speed Digitizers Help* for information about when to self-calibrate the device.
External calibration	The external calibration calibrates the onboard references used in self-calibration, the input overload levels, and the external trigger levels. All calibration constants are stored in nonvolatile memory.

[32] Onboard memory is shared between all enabled channels.
[33] Single-record and multirecord acquisitions.
[34] You can exceed these numbers if you fetch records while acquiring data. For more information, refer to the *NI High-Speed Digitizers Help*.

Interval for external calibration	1 year
Warm-up time	25 minutes

Power

+3.3 VDC	5.1 A
+12 VDC	6.1 A
+5 V_{aux}	12 mA
Total power	90 W

Software

Driver Software

This device is supported in NI-SCOPE 3.9.6 or later. NI-SCOPE is an IVI-compliant driver that allows you to configure, control, and calibrate the NI 5186. NI-SCOPE provides application programming interfaces for many development environments.

Application Software

NI-SCOPE provides programming interfaces, documentation, and examples for the following application development environments:

- LabVIEW
- LabWindows™/CVI™
- Measurement Studio
- Microsoft Visual C/C++
- Microsoft Visual Basic

Interactive Soft Front Panel and Configuration

The NI-SCOPE Soft Front Panel version 3.9.6 or later supports interactive control of the NI 5186. The NI-SCOPE Soft Front Panel is included on the NI-SCOPE DVD.

National Instruments Measurement & Automation Explorer (MAX) also provides interactive configuration and test tools for the NI 5186. MAX is included on the NI-SCOPE DVD.

Physical

Dimensions and Weight

Dimensions	3U, 3 slot, PXI Express Module, 21.6 × 6.2 × 13.0 cm (8.5 × 2.4 × 5.1 in.)

Weight	
50 Ω	1,208 g (42.61 oz.)
1 MΩ	1,222 g (43.10 oz.)

Environment

Maximum altitude	2,000 m (at 25 °C ambient temperature)
Pollution Degree	2

Indoor use only.

Operating Environment

Ambient temperature range	0 °C to 50 °C (Tested in accordance with IEC 60068-2-1 and IEC 60068-2-2. Meets MIL-PRF-28800F Class 3 low temperature limit and MIL-PRF-28800F Class 2 high temperature limit.)
Relative humidity range	10% to 90%, noncondensing (Tested in accordance with IEC 60068-2-56.)

Storage Environment

Ambient temperature range	-40 °C to 71 °C (Tested in accordance with IEC 60068-2-1 and IEC 60068-2-2. Meets MIL-PRF-28800F Class 3 limits.)
Relative humidity range	5% to 95%, noncondensing (Tested in accordance with IEC 60068-2-56.)

Shock and Vibration

Operating shock	30 g peak, half-sine, 11 ms pulse (Tested in accordance with IEC 60068-2-27. Meets MIL-PRF-28800F Class 2 limits.)
Random vibration	
Operating	5 Hz to 500 Hz, 0.3 g_{rms}
Nonoperating	5 Hz to 500 Hz, 2.4 g_{rms} (Tested in accordance with IEC 60068-2-64. Nonoperating test profile exceeds the requirements of MIL-PRF-28800F, Class 3.)

Compliance and Certifications

Safety

This product is designed to meet the requirements of the following electrical equipment safety standards for measurement, control, and laboratory use:

- IEC 61010-1, EN 61010-1
- UL 61010-1, CSA 61010-1

Note For UL and other safety certifications, refer to the product label or the *Online Product Certification* section.

Electromagnetic Compatibility

This product meets the requirements of the following EMC standards for electrical equipment for measurement, control, and laboratory use:

- EN 61326-1 (IEC 61326-1): Class A emissions; Basic immunity
- EN 55011 (CISPR 11): Group 1, Class A emissions
- AS/NZS CISPR 11: Group 1, Class A emissions
- FCC 47 CFR Part 15B: Class A emissions
- ICES-001: Class A emissions

Note In the United States (per FCC 47 CFR), Class A equipment is intended for use in commercial, light-industrial, and heavy-industrial locations. In Europe, Canada, Australia, and New Zealand (per CISPR 11), Class A equipment is intended for use only in heavy-industrial locations.

Note Group 1 equipment (per CISPR 11) is any industrial, scientific, or medical equipment that does not intentionally generate radio frequency energy for the treatment of material or inspection/analysis purposes.

Note For EMC declarations and certifications, refer to the *Online Product Certification* section.

CE Compliance CE

This product meets the essential requirements of applicable European Directives, as follows:

- 2014/35/EU; Low-Voltage Directive (safety)
- 2014/30/EU; Electromagnetic Compatibility Directive (EMC)

Online Product Certification

Refer to the product Declaration of Conformity (DoC) for additional regulatory compliance information. To obtain product certifications and the DoC for this product, visit *ni.com/certification*, search by model number or product line, and click the appropriate link in the Certification column.

Environmental Management

NI is committed to designing and manufacturing products in an environmentally responsible manner. NI recognizes that eliminating certain hazardous substances from our products is beneficial to the environment and to NI customers.

For additional environmental information, refer to the *Minimize Our Environmental Impact* web page at *ni.com/environment*. This page contains the environmental regulations and directives with which NI complies, as well as other environmental information not included in this document.

Waste Electrical and Electronic Equipment (WEEE)

EU Customers At the end of the product life cycle, all NI products must be disposed of according to local laws and regulations. For more information about how to recycle NI products in your region, visit *ni.com/environment/weee*.

电子信息产品污染控制管理办法（中国 RoHS）

中国客户 National Instruments 符合中国电子信息产品中限制使用某些有害物质指令(RoHS)。关于 National Instruments 中国 RoHS 合规性信息，请登录 `ni.com/environment/rohs_china`。(For information about China RoHS compliance, go to `ni.com/environment/rohs_china`.)

Front Panel

Figure 7. NI 5186 (50 Ω)

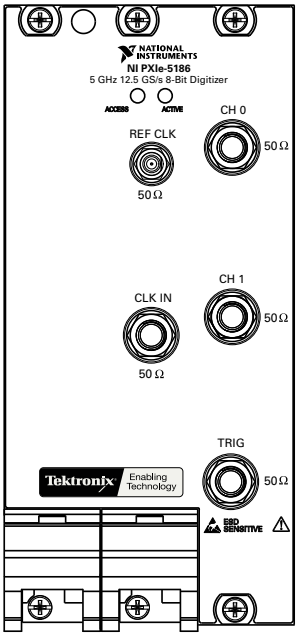


Figure 8. NI 5186 (1 MΩ)

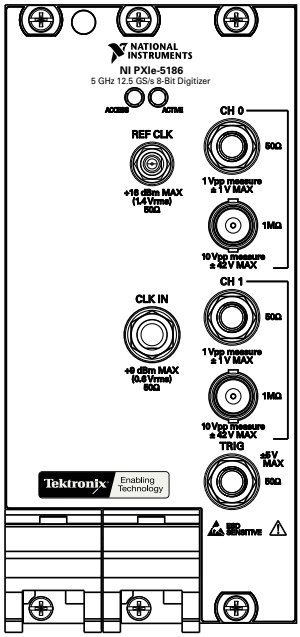


Table 2. Front Panel Connectors

Label	Function	Connector Type
CH 0, 50 Ω	Analog input	SMA female
CH 0, 1 MΩ	Analog input	BNC female
CH 1, 50 Ω	Analog input	SMA female
CH 1, 1 MΩ	Analog input	BNC female
TRIG	External analog trigger	SMA female
REF CLK	Imports an external Reference clock to the digitizer	SMB jack
CLK IN	Imports an external Sample clock to the digitizer	SMA female

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