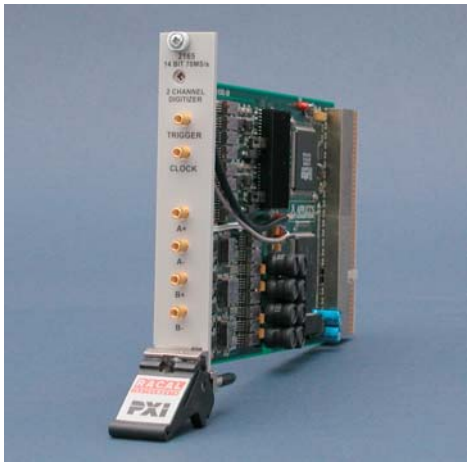
Racal Instruments
http://www.racalinstruments.com

PRODUCT INFORMATION

2 Channel, 14-Bit, 70 MS/s, PXI Digitizer Model 2165



- **Two Independent Analog Input Channels, Single-Ended or Differential**
- **14-bit Resolution per Channel**
- **Pre-Installed LabView™ and LabWindows™ libraries**
- **External or Internal Triggering**
- **Easy-to-Use Soft Front Panels**
- **Fully Supported VISA and Kernel drivers**

Complete Signal Acquisition
Model 2165 is a high-performance, single-slot, two-channel, PXI-based digitizer. It has true dual channel performance, including separate user-selectable triggering and clock frequency for each channel.

Maximum Independence and Control
To provide maximum control while maintaining the unit's dual channel flexibility, the 2165 allows for signal acquisition either with or without triggering. Triggering can be either software-initiated or front-panel controlled, allowing each channel to start from different sources. For trigger inputs, Model 2165 accepts PXI back-plane sources, including PXI Trigger 1 to 5 or PXI STAR Trigger, as well as normal TTL signals from the front-panel connector, with positive or negative polarity, and edge or level triggering.

Complementing the unit's flexible triggering is the capability of selecting either an external clock source or utilizing the available 70 MHz or 50 MHz internal clock.

With easy-to-use soft front panels, reliable signal acquisition, non-triggered signal capture, and accurate signal analysis in time and frequency domains, Model 2165 is the natural choice.

Model 2165 comes with pre-installed LabView™ and LabWindows™ libraries, and supports VISA and Kernel drivers.

To ensure continued, uninterrupted, and reliable performance, Model 2165 can be user-calibrated with the supplied software.

Soft Front Panel Control
Soft front panels control the unit's settings for signal acquisition and for analyzing the acquired signal. Multiple graphs display in a single window, and one can zoom in or out of the viewed area. All results can be either selected or deselected with the active cursor.

Wealth of Features
The unit has a wealth of features for signal acquisition, including selection of the number of samples to be read and analyzed, trigger source and mode, continual signal capture mode (loop mode), input offset voltage, clock source and frequency, and filtering type. All settings can be stored and recalled from the memory.

Model 2165 displays the acquired signal and the results of time domain and frequency domain analysis. In the time domain, one can display samples or a time axis. Frequency domain analysis offers windowing such as Hanning, Hamming, Flat-Top, Blackman-Harris, and others. Windowing is most beneficial when analyzing signals having a non-integer number of periods or when analyzing just part of the signal. Also, in the frequency domain, a summary of the harmonics is available. One can set the frequency domain settings as needed to ensure complete and accurate analysis and display, including Y-scale (auto, min, max, fixed), Reference (carrier, full scale of device, custom), and Spectrum (only the displayed content is taken into account for the parameter calculations). Lastly, the parameters SINAD, ENOB, THD, SNR, and Peak distortion are calculated and displayed.

2165 SPECIFICATIONS

PERFORMANCE

ADC Resolution
14-bits each channel

Sample Rate
Internal Clock:
500 kHz to 70 MHz

Absolute Accuracy (INL)
±(500 μV + 0.1% of range)
With attenuator on:
±(2.5 mV + 0.2% of range)

Relative Accuracy
± 0.025% of range

DC Offset Voltage
-5 V to +5 V
With attenuator on:
-25 V to +25 V

Clock Sources
Internal: 70 MHz or 50 MHz
External: Front panel connector

External Clock Input
Logic Thresholds: V_{LOW} < 0.6 V
V_{HIGH} > 4.5 V
Impedence: 50 Ω
Maximum Input: 100 MHz

External Clock Output
Clock Levels: V_{LOW} < 0.6 V
V_{HIGH} > 4.5 V
Impedence: 50 Ω

Clock Division Rate
User-selectable from 1 to 256
Independent clock source selection per channel

Clock Accuracy
100 ppm

Memory Depth
512 k-words per channel

Frequency Response
(Referenced at 500 kHz)
0 to 20 MHz (±0.5 dB)
20 MHz to 50 MHz (±2.0 dB)

TRIGGERING

External Sources
Impedence: 10 kΩ DC
Levels: V_{LOW} < 0.6 V
V_{HIGH}> 2.4 V

Internal Sources
PXI STAR
PXI TRIG 0 to 5
Software Trigger, Analog
(Independent trigger source selection per channel)

Polarity
Positive
Negative

Response
Edge
Level, Continuous

INPUTS

DC Offset Range
Normal:-5 V to +5 V
With attenuator on: -25 V to +25 V

Ranges
Normal:
1 V (p-p)
2 V (p-p)
4 V (p-p)
With attenuator on:
5 V (p-p)
10 V (p-p)
20 V (p-p)

Filters
None
30 MHz
15 MHz
6 MHz
(3-pole Butterworth)

SFDR (fs = 50 MHz/V_{IN} =2 V(p-p))
80 dB @ f_{IN} = 1 MHz
72 dB @ f_{IN} = 10 MHz

SINAD (fs = 50 MHz/V_{IN} = 2 V(p-p))
68 dB @ f_{IN} = 1 MHz
64 dB @ f_{IN} = 10 MHz

Channel Crosstalk
<70 dB @ 1 MHz

MAXIMUM CURRENT CONSUMPTION

+3.3 VDC	300 mA
+5 VDC	650 mA
-12 VDC	40 mA
+12 VDC	40 mA

FRONT PANEL INPUTS

Bandwidth (-3dB, filter off)
70 MHz

Coupling
DC
AC
Connector
SMB

Impedance (Selectable)
50 Ω AC-coupled
50 Ω DC-coupled
10 K Ω DC-coupled
Input Configuration
Single ended
Differential

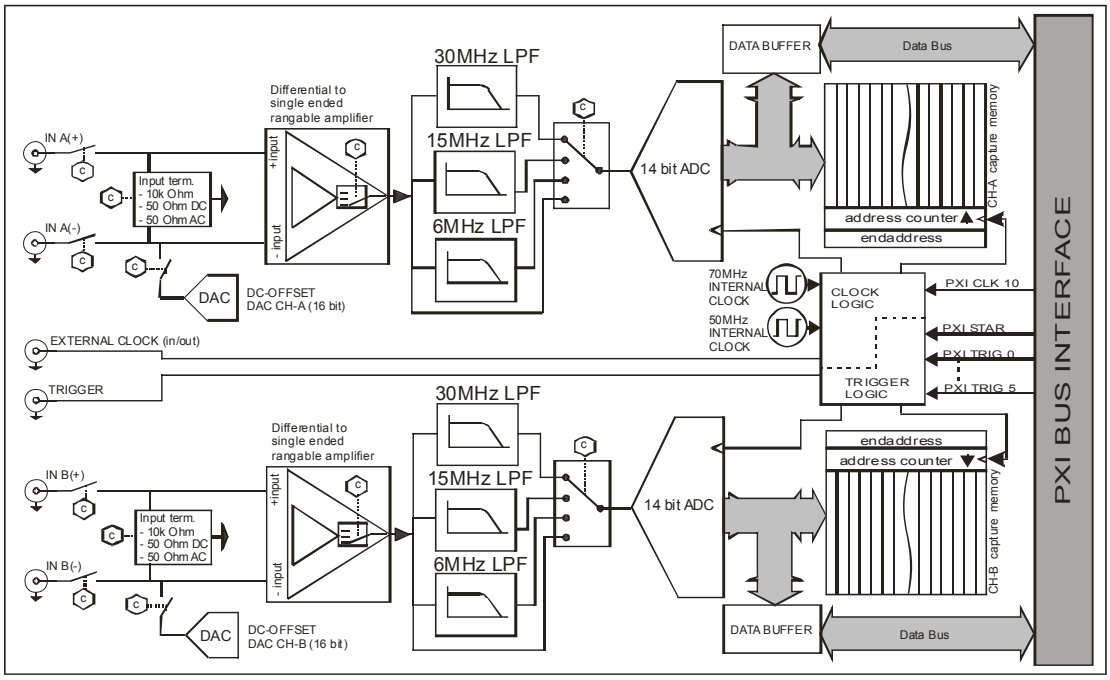
ENVIRONMENTAL

Temperature
Operating: 0° C to 50° C
Storage: 0° C to 70° C

Relative Humidity
10% to 80%, non-condensing

Weight
7.4 oz. (210 grams)

Module Dimensions
3 U high, Single width



2165 FUNCTIONAL BLOCK DIAGRAM

ORDERING INFORMATION		
Model	**Description**	Part Number
2165	70 MS/s, 14-bit, 2-channel Digitizer	407946

CE The CE Mark indicates that the product has completed and passed rigorous testing in the area of RF Emissions, Immunity to Electromagnetic Disturbances and complies with European electrical safety standards.

Racal Instruments Inc., 4 Goodyear St., Irvine, CA 92618-2002. Tel: (800) 722 2528, (949) 859 8999; FAX: (949) 859 7139
Racal Instruments Group Ltd., 29-31 Cobham Road, Wimborne, Dorset, BH21 7PF, United Kingdom. Tel: +44 (0) 1202872800; FAX: +44 (0)
Racal Instruments France , 18 Avenue Dutarte, 78150 LeChesnay, France. Tel: +33 (1) 3923 2222; FAX: +33 (1) 3923 2225
Racal Instruments Srl, Via Milazzo 25, 20092 Cinisello Balsamo, Milan, Italy. Tel 00-3902-612 3901, Fax 00-3902-612 93606
Racal Instruments GmbH, Technologiepark Bergisch Gladbach, Friedrich-Ebert-Strasse, D-51429 Bergisch Gladbach, Germany. Tel: +49 2204 8442 00, FAX: +49 2204 8442 19

RACAL INSTRUMENTS
An EADS North America Defense Company

2.0-12/04