

R Series Intelligent DAQ – Data Acquisition and Control with Onboard Processing

Timebases

Timebase reference sources	
NI PCI-781xR/783xR	Onboard clock only
NI PXI-78xxR	Onboard clock, phase-locked to PXI 10 MHz clock
LabVIEW FPGA derived clocks	Up to 200 MHz
Timebase accuracy, onboard clock	±100 ppm, 250 ps peak-to-peak jitter
Phase-locked to PXI 10 MHz clock (NI PXI-78xxR only)	
Additional frequency-dependent peak-to-peak jitter	Adds 350 ps peak-to-peak jitter
NI 781xR/783xR	
40 MHz	None
80 MHz	400 ps
120 MHz	720 ps
160 MHz	710 ps
200 MHz	700 ps
NI 784xR/785xR	
40 MHz	None
80 MHz	460 ps
120 MHz	172 ps

Calibration (NI 783xR/784xR/785xR Only)

Recommended warm-up time	15 minutes
Calibration interval	1 year
Onboard calibration reference	
DC level	5,000 V (±3.5 mV) (actual value stored in flash memory)
Temperature coefficient	±5 ppm/°C max
Long-term stability	±20 ppm/1,000 h

Note: Refer to Calibration Certificates at ni.com/calibration to generate a calibration certificate for the NI 783xR.

Bus Interface

PXI (NI PXI-78xxR only)	Master, slave
PCI (NI PCI-781xR/783xR only)	Master, slave

Physical

Dimensions (not including connectors)	
NI PCI-781xR/783xR	17 by 11 cm (6.7 by 4.3 in.)
NI PXI-78xxR	16 by 10 cm (6.3 by 3.9 in.)
Weight	
NI PCI-781xR/783xR	112 g
NI PXI-78xxR	152 g
I/O connectors	
NI 781xR	Four 68-pin female high-density VHDCI type
NI 783xR/784xR/785xR	Three 68-pin female high-density VHDCI type

Maximum Working Voltage

Maximum working voltage refers to the signal voltage plus the common-mode voltage.

Channel-to-earth	±12 V, Measurement Category I
Channel-to-channel	±24 V, Measurement Category I

Caution: Do not use the NI 783xR/784xR/785xR for connection to signals in Measurement Category II, III, or IV.

Power Requirement

+5 VDC (±5%) ¹	
NI 781xR	9 mA (typ), 50 mA (max)
NI 7830R/7831R	330 mA (typ), 355 mA (max)
NI 7833R	364 mA (typ), 586 mA (max)
NI 7841R/7851R	125 mA (typ), 252 mA (max)
NI 7842R/7852R	136 mA (typ), 291 mA (max)
NI 7853R	460 mA typ
NI 7854R	484 mA typ
+3.3 VDC (±5%) ²	
NI 7811R	650 mA (typ), 1,000 mA (max)
NI 7813R	850 mA (typ), 1,350 mA (max)
NI 7830R/7831R	462 mA (typ), 660 mA (max)
NI 7833R	727 mA (typ), 1,148 mA (max)
NI 7841R/7851R	525 mA (typ), 1,244 mA (max)
NI 7842R/7852R	604 mA (typ), 1,484 mA (max)
NI 7853R	640 mA typ
NI 7854R	843 mA typ
+12 V	
NI 784xR/785xR	0.5 A
-12 V	
NI 784xR/785xR	0.25 A
+5 V terminal	
Connector 0	0.5 A max
Connector 1	0.5 A max
Connector 2	0.5 A max
All connectors	1.5 A max ³

To calculate the total current sourced by the digital outputs, use the following equation:

$$\sum_{i=1}^N \text{current sourced on channel } i$$

Power available at I/O connectors	4.50 to 5.25 VDC at 1 A total, 250 mA per I/O connector pin
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¹ Does not include current drawn from the +5 V line on the I/O connectors.

² Does not include current sourced by the digital outputs.

³ The NI 784xR/785xR devices have a user-replaceable socketed fuse that opens when current exceeds the current specification. Refer to the R Series Intelligent DAQ User Manual, available at ni.com/manuals, for information about fuse replacement.