PXS(e)840x
PXI Source and Measurement Unit Family

VXI instruments
the test solutions provider

TECHNICAL DATA SHEET

PXI
VXI
LAN
cPCI
PXIe
GPIB
USB
RS232 485
external PCIe

Features

- Up to 25 W power output
- Supports current source and sink
- No external power source required
- Readback function for output voltage and output current (measurement functions)
- Six current ranges, two power ranges
- Very fast rise and fall times
- Four included configurable TTL digital I/Os
- Four included open drain outputs up to 60 V
- Sense inputs for superior load regulation
- Autosensing to reliably protect DUTs
- Digitizing and Arbitrary Waveform Generator option for voltage and current

Product Information

High speed source and measurement unit
The PXS(e)840x is a high precision, high speed source and measurement unit, which is designed for automated high throughput testing.

Programmable rise and fall times
The fast low noise linear bipolar power stage provides a full four-quadrant source and sink capability at very fast rise and fall times, even at high capacitive loads. In addition the rise and fall times are programmable.

Two power ranges
With its optional second power range one PXS(e)840x device covers a wide range of different loads.

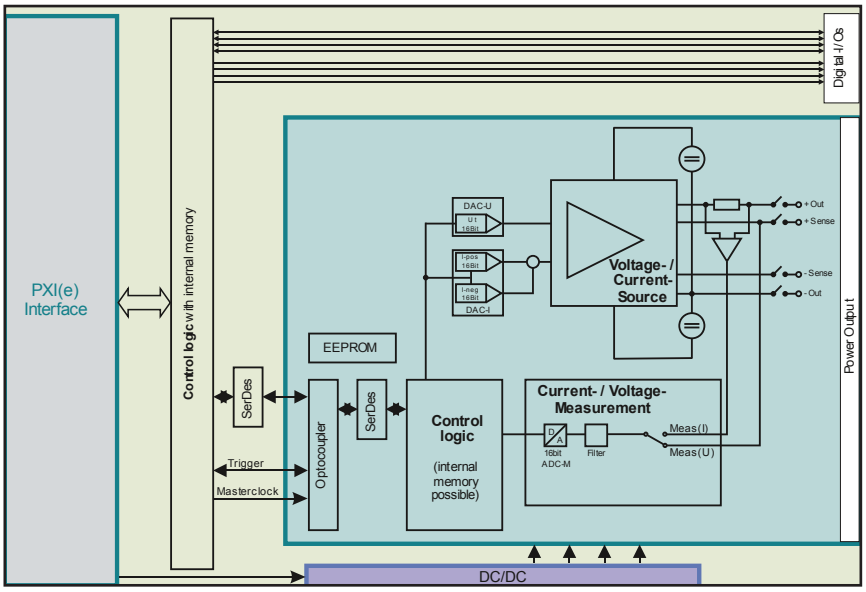
Autosensing protects devices under test
An autosensing feature is integrated as a security to protect devices under test.

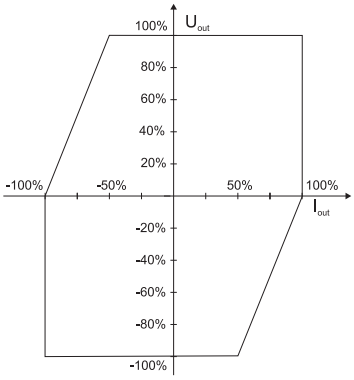
Configurable digital inputs/outputs
The PXS(e)840x has four included free configurable digital TTL I/Os and four open drain outputs e. g. to drive relays or LEDs.

No external power supply required
The PXS(e)840x does not require an external DC source. The output power is drawn from the PXI backplane. All internal voltages are generated with extremely low noise DC/DC converters.

Waveform digitizing option
The integrated measurement unit provides digitizing features with sample rates up to 100 kS/s and a sample depth of up to 8 kS.

Arbitrary waveform generator option
The PXS(e)840x has an integrated waveform memory for up to 8 k waveform datapoints with an output rate up to 50 kS/s.





General	Specification	Comment
Module size	2 slots, 3U	
Module weight	<0.7 kg	
Front connector type	25-pin, D-SUB female	
Operating temperature	0 ... 40°C	
Operating altitude	<2,000 m	
Relative Humidity	Up to 85% at 35°C	
Storage temperature range	-25 ... 70°C	
Electrical safety	According EN61010-1	
Isolation output to PE	60V CAT I, Pollution Degree 2	

Device Specifications	PXS(e)8401	PXS(e)8402	PXS(e)8403
Output ratings			
Output voltage[1]	-10 V_{DC} ... 10 V_{DC}	-20 V_{DC} ... 20 V_{DC}	-30 V_{DC} ... 30 V_{DC}
Output current	-2.5 A_{DC} ... 2.5 A_{DC}	-1.25 A_{DC} ... 1.25 A_{DC}	-0.7 A_{DC} ... 0.7 A_{DC}
Current ranges (DC)	2.5 A, 0.1 A, 10 mA, 1 mA, 100 µA, 10 µA	1.25 A, 0.1 A, 10 mA, 1 mA, 100 µA, 10 µA	0.7 A, 0.1 A, 10 mA, 1 mA, 100 µA, 10 µA
Measurement Unit			
Voltage range	-10 V_{DC} ... 10 V_{DC}	-20 V_{DC} ... 20 V_{DC}	-30 V_{DC} ... 30 V_{DC}
Current ranges (DC)	2.5 A, 0.1 A, 10 mA, 1 mA, 100 µA, 10 µA	1.25 A, 0.1 A, 10 mA, 1 mA, 100 µA, 10 µA	0.7 A, 0.1 A, 10 mA, 1 mA, 100 µA, 10 µA

Device Specifications	PXS(e)8404	PXS(e)8406
Output ratings		
Output voltage[1]	-40 V_{DC} ... 40 V_{DC}	-60 V_{DC} ... 60 V_{DC}
Output current	-0.5 A_{DC} ... 0.5 A_{DC}	-0.3 A_{DC} ... 0.3 A_{DC}
Current ranges (DC)	0.5 A, 0.1 A, 10 mA, 1 mA, 100 µA, 10 µA	0.3 A, 0.1 A, 10 mA, 1 mA, 100 µA, 10 µA
Measurement Unit		
Voltage range	-40 V_{DC} ... 40 V_{DC}	-60 V_{DC} ... 60 V_{DC}
Current ranges (DC)	0.5 A, 0.1 A, 10 mA, 1 mA, 100 µA, 10 µA	0.3 A, 0.1 A, 10 mA, 1 mA, 100 µA, 10 µA

[1] The sum of common mode and output voltage may not exceed 60 V.

Notes: All product data are specified for 1 year at an ambient temperature of 23°C ±5°C (after 1 hour warm-up time).
Product specification and description in this document are subject to change without notice.

Generator Specification	Specification	Comment
Number of outputs	1	
Output relays	Yes	On/off via software or trigger
Resolution	16 Bit	
Voltage accuracy	0.05% + 0.05%	±(of programmed value + of full range[2])
Current accuracy	0.1% + 0.1%	±(of programmed value + of full range)
Temperature drift		
Voltage	50 ppm/°C	
Current	150 ppm/°C	
Ripple/noise (20Hz...20MHz)		
Voltage	<12 mV_{RMS}, <60 mV_{pp}	RMS Normal Mode
Output settling time[1]		
Rise time	<250 µs	10% to 90% of full scale output setting
Fall time	<250 µs	90% to 10% of full scale output setting
Slew rate	1 ... 500 V/ms	Programmable range

Measurement Specification	Specification	Comment
Resolution	16 Bit	
Filters	100 Hz, 1 kHz, 10 kHz, 100 kHz	
Voltage accuracy		
Accuracy[3] (standard)	0.05% + 0.05%	±(of reading + of full range[2])
Accuracy with option LSM	<±10 mV even for very low signals	For signals <10% of full range[2]
Current accuracy		
Accuracy[2,3]	0.1% + 0.1%	±(of reading + of full range)
Accuracy with option LSM	0.1% + 0.1%	For signals <10% of selected range

1 Programmed voltage change at maximum current.
2 Full range means the highest possible output voltage of the used PXS(e)840x device.
3 For readings >10% of range.

Digitizer Acquisition	Specification	Comment
Maximum sample rate	100 kS/s	
Bandwidth	100 kHz	
Resolution	16 Bit	
Sampling times	10 µs, 20 µs, 50 µs, 100 µs, 200 µs, 500 µs, 1 ms, 2 ms, 5 ms, 10 ms, 20 ms, 50 ms, 100 ms, 200 ms, 500 ms, 1 s, 2 s, 5 s, 10 s	Software selectable
Time base		
Accuracy	50 ppm	In operating temperature range
Aging per year	5 ppm	
Coupling	DC	
DC accuracy[1,2,3]	0.1% + 0.1%	±(of reading + of full range)
Filters	100 Hz, 1 kHz, 10 kHz, 100 kHz	Software selectable
Waveform memory	16 kB, 8 kS	

Arbitrary Waveform	Specification	Comment
Resolution	16 Bit	
Maximum sample rate	50 kS/s	
DC accuracy		
DC offset	<0.1% of full scale	
DC gain	<0.1% of value	
AC accuracy		
f < 1 kHz	<0.5% of full scale	Sine wave into Hi-Z
f < 10 kHz	<1.0% of full scale	
Waveform memory	16 kB, 8 kS	

Trigger System	Specification	Comment
Input from		
Software		Via software command
Front trigger		Trigger input on device front connector
PXI trigger		Trigger 0 ... 7 and star trigger at the PXI backplane
Output to		
PXI trigger		Trigger 0 ... 7 at the PXI backplane
Level resolution	16 Bit	
Level accuracy	0.6% + 0.3%	±(of programmed value + of full range)
Trigger slope	Positive or negative	
Trigger hysteresis	0 ... 100% of signal range	Programmable via software
Pre-trigger	0 ... 100% of full record length	Trigger is armed after all pre-samples are captured. After trigger event, number of samples are captured defined by post-trigger
Post-trigger	0 ... 100% of full record length	Number of samples captured after trigger event

1 For readings >10% of range.
2 Full range means the highest possible output voltage of the used PXS(e)840x device.
3 Current measurement range is equal to the selected current range of the voltage source.

Ordering Information	Comment
PXS(e)8401	Device PXS(e)8401 with ±10 V / ±2.5 A
PXS(e)8402	Device PXS(e)8402 with ±20 V / ±1.25 A
PXS(e)8403	Device PXS(e)8403 with ±30 V / ±0.7 A
PXS(e)8404	Device PXS(e)8404 with ±40 V / ±0.5 A
PXS(e)8406	Device PXS(e)8406 with ±60 V / ±0.3 A
Option DG	Digitizing option
Option ARB	Arbitrary waveform generator option
Option PR-20[1]	Second power range: ±20 V / ±1.25 A
Option PR-30[1]	Second power range: ±30 V / ±0.7 A
Option PR-40[1]	Second power range: ±40 V / ±0.5 A
Option PR-60[1]	Second power range: ±60 V / ±0.3 A
Option LSM[2]	Measurement for signals less than 10% of selected range with same precision

[1] The second power range output voltage has always to be higher than the basic device voltage.
[2] An x10 post-amplifier increases the precision of the measurement signal.

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