

# PX773x PXI Source Measurement Unit Family



## TECHNICAL DATA SHEET

PXI

### Features

VXI

LAN

cPCI

PXIe

GPIB

USB

RS232  
485

external  
PCIe

- Supports current source and sink (four-quadrant operation)
- No external power source required
- Isolated design
- Readback function for output voltage and 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 control
- Autosensing to protect DUT reliably
- Digitizing and arbitrary waveform generator option for voltage and current

## Product Information

### High speed source and measurement unit

The PX773x is a high precision, high speed source and measurement unit, which is designed for automated high throughput testing.

### Programmable rise and fall time

The fast low noise linear bipolar power stage provides a full four-quadrant source and sink capability with very fast and programmable rise and fall time, even at high capacitive loads.

### Two power ranges

With its optional second power range ( $\pm 20\text{V}/\pm 0.5\text{A}$  to  $\pm 60\text{V}/\pm 0.2\text{A}$ ) one PX773x 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 PX773x has 4 free configurable TTL digital I/Os and 4 open drain outputs e. g. to drive relays or LEDs.

### No external power supply required

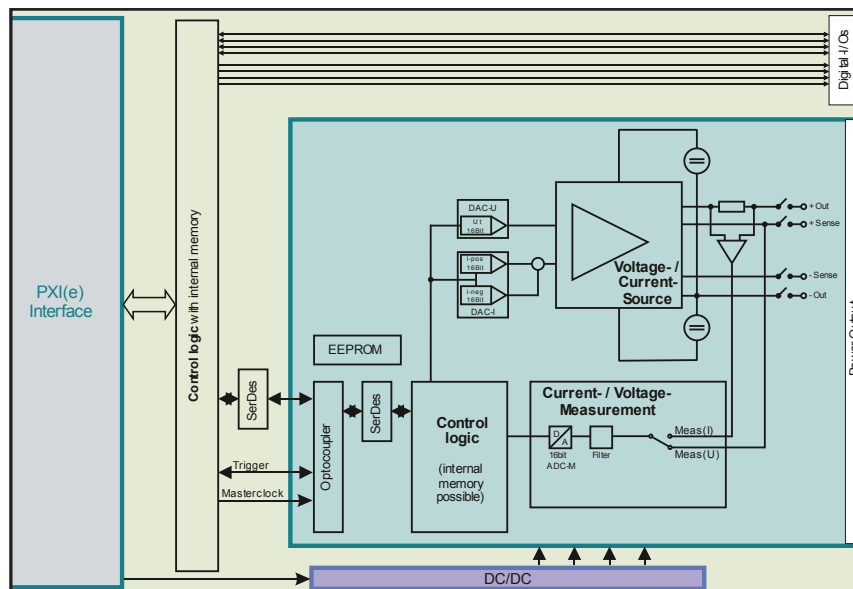
The PX773x does not require an external DC source. The output power is drawn from the PXI backplane. All internal voltages are generated with extremely low noise DC/DC converters.

### Waveform digitizing option

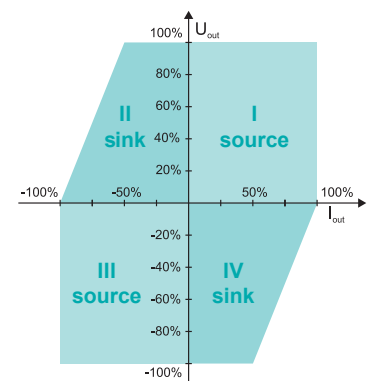
The integrated measurement unit provides digitizing features with sample rates up to 100kS/s and a sample depth of up to 8kS.

### Arbitrary waveform generator option

The PX773x has an integrated waveform memory for up to 8k waveform datapoints with an output rate up to 50kS/s.



### Full four-quadrant source + sink capability



General	Specification	Comment
Module size	2 slot, 3U	
Module weight	<0.6 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	PX7731	PX7732	PX7733
<b>Output ratings</b>			
Output voltage <sup>1</sup>	-10 V <sub>DC</sub> ... 10 V <sub>DC</sub>	-20 V <sub>DC</sub> ... 20 V <sub>DC</sub>	-30 V <sub>DC</sub> ... 30 V <sub>DC</sub>
Output current	-1.0 A <sub>DC</sub> ... 1.0 A <sub>DC</sub>	-0.5 A <sub>DC</sub> ... 0.5 A <sub>DC</sub>	-0.4 A <sub>DC</sub> ... 0.4 A <sub>DC</sub>
Current ranges (DC)	1.0 A, 0.1 A, 10 mA, 1 mA, 100 µA, 10 µA	0.5 A, 0.1 A, 10 mA, 1 mA, 100 µA, 10 µA	0.4 A, 0.1 A, 10 mA, 1 mA, 100 µA, 10 µA
<b>Measurement Unit</b>			
Voltage range	-10 V <sub>DC</sub> ... 10 V <sub>DC</sub>	-20 V <sub>DC</sub> ... 20 V <sub>DC</sub>	-30 V <sub>DC</sub> ... 30 V <sub>DC</sub>
Current ranges (DC)	1.0 A, 0.1 A, 10 mA, 1 mA, 100 µA, 10 µA	0.5 A, 0.1 A, 10 mA, 1 mA, 100 µA, 10 µA	0.4 A, 0.1 A, 10 mA, 1 mA, 100 µA, 10 µA

Device Specifications	PX7734	PX7736
<b>Output ratings</b>		
Output voltage <sup>1</sup>	-40 V <sub>DC</sub> ... 40 V <sub>DC</sub>	-60 V <sub>DC</sub> ... 60 V <sub>DC</sub>
Output current	-0.25 A <sub>DC</sub> ... 0.25 A <sub>DC</sub>	-0.2 A <sub>DC</sub> ... 0.2 A <sub>DC</sub>
Current ranges (DC)	0.25 A, 0.1 A, 10 mA, 1 mA, 100 µA, 10 µA	0.2 A, 0.1 A, 10 mA, 1 mA, 100 µA, 10 µA
<b>Measurement Unit</b>		
Voltage range	-40 V <sub>DC</sub> ... 40 V <sub>DC</sub>	-60 V <sub>DC</sub> ... 60 V <sub>DC</sub>
Current ranges (DC)	0.25 A, 0.1 A, 10 mA, 1 mA, 100 µA, 10 µA	0.2 A, 0.1 A, 10 mA, 1 mA, 100 µA, 10 µA

<sup>1</sup> The sum of common mode and output voltage may not exceed 60V.

**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
<b>Number of outputs</b>	1	
<b>Output relays</b>	Yes	On/off via software or trigger
<b>Resolution</b>	16 Bit	
<b>Voltage accuracy</b>	0.05% + 0.05%	±(of programmed value + of full range <sup>2</sup> )
<b>Current accuracy</b>		
Accuracy in highest range	0.1% + 0.1%	±(of programmed value + of full range)
Accuracy all other ranges	0.05% + 0.05%	±(of programmed value + of full range)
<b>Temperature drift</b>		
Voltage	50 ppm/°C	
Current	150 ppm/°C	
<b>Ripple/noise</b> (20Hz...20MHz)		
Voltage (highest I-range)	<12 mV <sub>RMS</sub> , <60 mV <sub>pp</sub>	RMS Normal Mode
Voltage (all other I-ranges)	<10 mV <sub>RMS</sub> , <40 mV <sub>pp</sub>	RMS Normal Mode
<b>Output settling time</b> <sup>1</sup>		
Rise time	<250 μs	10% to 90% of full scale output setting
Fall time	<250 μs	90% to 10% of full scale output setting
<b>Slew rate</b>	1 ... 500 V/ms	Programmable range

Measurement Specification	Specification	Comment
<b>Resolution</b>	16 Bit	
<b>Filters</b>	100 Hz, 1 kHz, 10 kHz, 100 kHz	
<b>Voltage accuracy</b>		
Accuracy <sup>3</sup> (standard)	0.05% + 0.05%	±(of reading + of full range <sup>2</sup> )
Accuracy with option LSM	<±10 mV even for very low signals	For signals <10% of full range <sup>2</sup>
<b>Current accuracy</b>		
Accuracy in highest range <sup>3,4</sup>	0.1% + 0.1%	±(of reading + of full range)
Accuracy all other ranges <sup>3,4</sup>	0.05% + 0.05%	±(of reading + of full range)
Accuracy with option LSM	0.1% + 0.1%	For signals <10% of selected range

<sup>1</sup> Programmed voltage change at maximum current.

<sup>2</sup> Full range means the highest possible output voltage of the used PX773x device.

<sup>3</sup> For readings >10% of range.

<sup>4</sup> Current measurement range is equal to the selected current range of the generator.

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

Arbitrary Waveform	Specification	Comment
Resolution	16 Bit	
Sample rate	100 S/s ... 50 kS/s	
<b>DC accuracy</b> DC offset DC gain	$\pm$ 0.1% of full scale $\pm$ 0.1% of value	
<b>AC accuracy</b> f < 1 kHz f < 10 kHz	$\pm$ 0.5% of full scale $\pm$ 1.0% of full scale	Sine wave into Hi-Z
<b>Waveform memory</b>	16 kB, 8 kS	

Trigger System	Specification	Comment
<b>Input from</b> Software Front trigger PXI trigger		Via software command Trigger input on device front connector Trigger 0...7 and star trigger at the PXI backplane
<b>Output to</b> PXI trigger		Trigger 0...7 at the PXI backplane
<b>Level resolution</b>	16 Bit	
<b>Level accuracy</b>	0.6% + 0.3%	$\pm$ (of programmed value + of full range)
<b>Trigger slope</b>	Positive or negative	
<b>Trigger hysteresis</b>	0 ... 100% of signal range	Programmable via software
<b>Pre-trigger</b>	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
<b>Post-trigger</b>	0 ... 100% of full record length	Number of samples captured after trigger event

<sup>1</sup> For readings >10% of range.

<sup>2</sup> Full range means the highest possible output voltage of the used PX773x device.

<sup>3</sup> Current measurement range is equal to the selected current range of the voltage source.

Ordering Information	Comment
<b>PX7731</b>	Device PX7731 with $\pm 10\text{V}/\pm 1.00\text{A}$
<b>PX7732</b>	Device PX7732 with $\pm 20\text{V}/\pm 0.50\text{A}$
<b>PX7733</b>	Device PX7733 with $\pm 30\text{V}/\pm 0.40\text{A}$
<b>PX7734</b>	Device PX7734 with $\pm 40\text{V}/\pm 0.25\text{A}$
<b>PX7736</b>	Device PX7736 with $\pm 60\text{V}/\pm 0.20\text{A}$
<b>Option DG</b>	Digitizing option
<b>Option ARB</b>	Arbitrary waveform generator option
<b>Option PR-20<sup>1</sup></b>	Second power range: $\pm 20\text{V}/\pm 0.50\text{A}$
<b>Option PR-30<sup>1</sup></b>	Second power range: $\pm 30\text{V}/\pm 0.40\text{A}$
<b>Option PR-40<sup>1</sup></b>	Second power range: $\pm 40\text{V}/\pm 0.25\text{A}$
<b>Option PR-60<sup>1</sup></b>	Second power range: $\pm 60\text{V}/\pm 0.20\text{A}$
<b>Option LSM<sup>2</sup></b>	Measurement for signals less than 10% of selected range with same precision

<sup>1</sup> The second power range output voltage has always to be higher than the basic device voltage.

<sup>2</sup> An x10 post-amplifier increases the precision of the measurement signal.