TECHNICAL DATA SHEET

VXI Instruments
the test solutions provider

PX773x
PXI Source Measurement Unit Family



PXI

Features

- 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 (±20 V / ±0.5 A to ±60 V / ±0.2 A) one PX773x device covers a wide range of different loads.

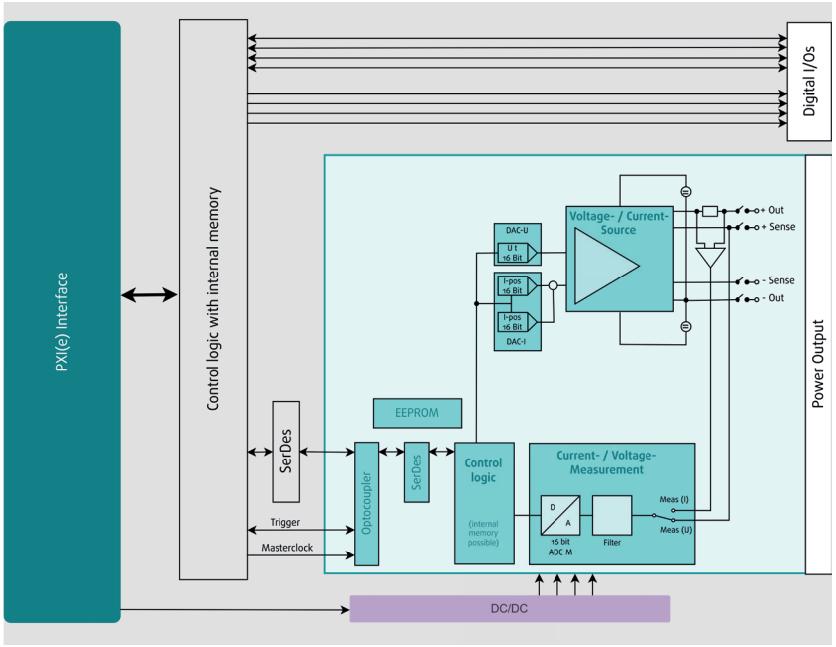
Autosensing protects devices under test
An autosensing feature is integrated as a security to protect devices under test.

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.

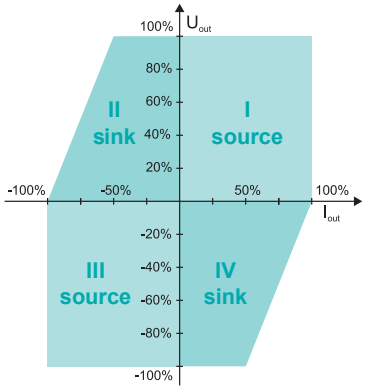
No external power supply required
The PX773x does not require an external DC source. The output power is drawn from the PXI backplane. All internal voltages are generated with extremely low noise DC/DC converters.

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

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



Full four-quadrant source + sink capability



General Specification

General	Specification	Comment
Module Size	2 slot, 3 U	
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	60 V CAT I, Pollution Degree 2	

Device Specifications

Device Specifications	PX7731	PX7732	PX7733
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	-1.0 A_{DC} ... 1.0 A_{DC}	-0.5 A_{DC} ... 0.5 A_{DC}	-0.4 A_{DC} ... 0.4 A_{DC}
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
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)	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
Output ratings		
Output voltage[1]	-40 V_{DC} ... 40 V_{DC}	-60 V_{DC} ... 60 V_{DC}
Output current	-0.25 A_{DC} ... 0.25 A_{DC}	-0.2 A_{DC} ... 0.2 A_{DC}
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
Measurement Unit		
Voltage range	-40 V_{DC} ... 40 V_{DC}	-60 V_{DC} ... 60 V_{DC}
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

[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 Voltage Source

Voltage Source, Generator	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])
Temperature drift	50 ppm/°C	
Ripple/noise (20 Hz ... 20 MHz)		
Voltage (highest I-range)	<12 mV_{RMS}, <60 mV_{pp}	RMS Normal Mode
Voltage (all other I-ranges)	<10 mV_{RMS}, <40 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

Generator Current Source

Current Source, Generator	Specification	Comment
Number of outputs	1	
Output relays	Yes	On/off via software or trigger
Resolution	16 Bit	
Current Accuracy		
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)
Temperature drift	150 ppm/°C	
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

[1] Programmed voltage change at maximum current.
[2] Full range means the highest possible output voltage of the used PX773x device.

Voltage and Current Measurement Unit

Voltage Measurement Unit	Specification	Comment
Resolution	16 Bit	
Filter frequencies	100 Hz, 1 kHz, 10 kHz, 100 kHz	
Voltage accuracy		
Accuracy[1] (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 Measurement Unit	Specification	Comment
Resolution	16 Bit	
Filter frequencies	100 Hz, 1 kHz, 10 kHz, 100 kHz	
Current accuracy		
Accuracy in highest range[1,3]	0.1 % + 0.1 %	±(of reading + of full range)
Accuracy all other ranges[1,3]	0.05 % + 0.05 %	±(of reading + of full range)
Accuracy with option LSM	0.1 % + 0.1 %	For signals <10% of selected range

Interfacing

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)
Filter frequencies	100 Hz, 1 kHz, 10 kHz, 100 kHz	Software selectable
Waveform memory	16 kB, 8 kS	

1 For readings >10 % of range.
2 Full range means the highest possible output voltage of the used PX773x device.
3 Current measurement range is equal to the selected current range of the generator.

Arbitrary Waveform	Specification	Comment
Resolution	16 Bit	
Sample rate	100 S/s ... 50 kS/s	
DC accuracy	0.1 % + 0.1 %	± (of reading + of full range)
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

Ordering Information

Ordering option	Comment
PX7731	Device PX7731 with ±10 V / ±1.00 A
PX7732	Device PX7732 with ±20 V / ±0.50 A
PX7733	Device PX7733 with ±30 V / ±0.40 A
PX7734	Device PX7734 with ±40 V / ±0.25 A
PX7736	Device PX7736 with ±60 V / ±0.20 A
Option DG	Digitizing option
Option ARB	Arbitrary waveform generator option
Option PR-20 [1]	Second power range: ±20 V / ±0.50 A
Option PR-30 [1]	Second power range: ±30 V / ±0.40 A
Option PR-40 [1]	Second power range: ±40 V / ±0.25 A
Option PR-60 [1]	Second power range: ±60 V / ±0.20 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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