

GX1034

STANDARDS MODULE FOR TEST SYSTEMS PXI CARD

- 3U, single slot, precision standards module for PXI systems
- Voltage, frequency, and resistance standards
- On-board EEPROM ensures standards traceability and accuracy
- Built in current source and DC measurement resources for system self-test support
- Built-in self test
- Compatible with PXI Express hybrid slots



DESCRIPTION

The GX1034 offers PXI system designers the capability to develop a system re-certification strategy that employs only internal system resources. By incorporating the GX1034 as part of a system configuration, it is possible to develop a system accuracy verification strategy that can recertify a system's source and measure baseband instrumentation – resulting in simplified support / maintenance logistics and improved system availability.

The GX1034's standards exhibit excellent long term stability with absolute accuracy achieved by employing an on-board EEPROM, which contains NIST traceable calibration values for source and resistor standards. The module also includes source and measure resources which can be used to support system self-test functions including continuity verification and verification of instrument functionality.

For more information about how the GX1034 can be used as part of a system re-certification strategy, refer to the white paper: [KB Q200153](#) - Instrument Certification as part of a Modular Test platform Architecture.

FEATURES

The GX1034 provides a DC voltage source reference, an AC voltage source reference, 8 low drift resistor references, and a precision 10 MHz frequency reference. The DC and AC sources supply up to ± 9 V and include a 3 decade resistive divider network for attenuation of the output level. The resistor references include four-wire 1, 10 and 100 Ω resistors and two-wire 1 K, 10 K, 100 K, 1 M and 10 M Ω resistor values. The 10 MHz frequency reference employs a high stability, oven controlled crystal oscillator which can also provide lower frequencies via a 24-bit divider.

Both the 10 MHz output and the divider output can drive 50 Ω loads. In addition, when the module is installed in slot 2 of a PXI chassis, it can be the PXI 10 MHz backplane clock source.

Additional features include a 0 - 20 mA current source; a 16-bit A to D for measuring voltages up to ± 10 V, and on-board monitoring of the card's ambient operating temperature. The card also includes a signal multiplexer which provides the ability to connect two and four wire resources to the card's output connector. All voltage resources, resistor standards, clock divider outputs, and A to D inputs are isolated and floating from the PXI bus, ensuring a low noise environment and minimizing the possibility of ground loops which can affect overall accuracy and performance.

PROGRAMMING AND SOFTWARE

The board is supplied with a 32-bit DLL driver. Various interface files provide access to the DLL from programming tools and languages such as ATEasy, LabVIEW, C/C++, Microsoft Visual Basic®, Delphi, and more. The available virtual panel can be used to interactively adjust and control the instrument from a window that displays the current instrument settings and measurements. An On-Line help file and PDF User's Guide provides documentation that includes instructions for installing, using and programming the board.

APPLICATIONS

- In-system instrument recertification
- System accuracy verification procedures
- System self-test procedures

GX1034

SPECIFICATIONS

GENERAL	
Source / Measure Channels	Meas Hi, Meas Lo, Sense Hi, Sense Lo
Source / Measure Connector	9 position, D-sub
10 MHz Reference Connector	BNC & PXI backplane connector
Format	PXI, 3U single slot, compatible with PXI Express hybrid slots
DC SOURCE STANDARD	
Output Voltage	± 9.0 , ± 0.9 , ± 0.09 , ± 0.009 V, nominal
Initial Accuracy	0.002% (with EEPROM calibration value), each output level and polarity calibrated with NIST traceability
Temperature Coefficient	0.6 ppm / °C
Long Term Drift	6 ppm for 1000 hours
Output Divider	Resistive, series network: 10 k Ω , 1 k Ω , 100 Ω , 10 Ω
AC SOURCE STANDARD	
Output Voltage	3.5, 0.35, 0.035, 0.0035 V _{RMS} , nominal
Waveform	Sine
Frequencies	50 Hz, 60 Hz, 100 Hz, 400 Hz, 1 kHz, 10 kHz, 100 kHz Initial accuracy: ± 0.1 ppm, 7.5 digits
Initial Output Voltage Accuracy	50 Hz, 60 Hz, 100 Hz, 400 Hz, $\pm 0.08\%$ 1 kHz, 10 kHz, $\pm 0.05\%$ 100 kHz, $\pm 0.4\%$ (with EEPROM calibration value) Each level and frequency calibrated with NIST traceability.
Temperature Coefficient	3 ppm / °C (voltage reference)
Long Term Drift	6 ppm for 1000 operating hours
Output Divider	Resistive, series network: 10 k Ω , 1 k Ω , 100 Ω , 10 Ω

RESISTOR STANDARDS

1 Ohm	$\pm 0.005\%$, 3 ppm / °C, 4 - terminal
10 Ohms	$\pm 0.005\%$, 0.2 ppm / °C, 4 - terminal
100 Ohms	$\pm 0.005\%$, 0.2 ppm / °C, 4 - terminal
1 kOhm	$\pm 0.002\%$, 0.2 ppm / °C, 2 - terminal
10 kOhms	$\pm 0.002\%$, 0.2 ppm / °C, 2 - terminal
100 kOhms	$\pm 0.004\%$, 5 ppm / °C, 2 - terminal
1 MOhm	$\pm 0.008\%$, 3 ppm / °C, 2 - terminal
10 MOhms	$\pm 0.03\%$, 2 ppm / °C, 2 - terminal

10 MHZ STANDARD AND FREQUENCY DIVIDER

Output Frequency	10 MHz, initial accuracy: ± 0.1 ppm Drift: 100 ppb / °C (max)
Output	Front panel BNC: TTL compatible, 50 Ω load DB-9 connector: Isolated, TTL compatible, 50 Ω load PXI connector: PXI 10 MHz clock
Divider	24 bit, accessible via the DB-9 connector TTL compatible, 50 Ω load

DC CURRENT SOURCE

Output Current	0 - 19.9 mA, 16-bit programmable output, 0 - 12.5 V compliance range
Accuracy	$\pm 0.05\%$ of programmed value

DC MEASURE

Input Range	± 10 V, FS
Input Configuration	Differential, input impedance 20 k Ω nominal
Resolution	16 bit
Accuracy	$\pm 1\%$ of reading

GENERAL

Current Consumption (Maximum)	+5 V @ 1 A +12 V @ 500 mA +3.3 V @ 500 mA
Weight	Approx. 210 g
Size	3U, single slot
Operating Temperature	0 °C to +50 °C
Storage Temperature	0 °C to +70 °C
Humidity (Non-Condensing)	10% to 80%
Safety	EN61010-1:2001
CE Labeled	Yes EN61000-6-1:2001, EN55011:1998

Note: Specifications are subject to change without notice

GX1034

ORDERING INFORMATION

GX1034	Precision Reference Card
ACCESSORY	
GT94102	Mating connector for GT1034 with 1' harness
GT94103	Mating connector for GT1034 with 3' harness
GT94101	Mating connector for GT1034 (9 pin male)

GX1034

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