Phase Matrix, Inc.®
A National Instruments Company

PXI MICROWAVE
PRESELECTOR MODULE

Model PXI-1410

The PXI-1410 Preselector Module is a PXI 3U, 3-slot module that provides the necessary input signal conditioning and routing to form a complete RF PXI downconverter. When integrated with complementary modules, it enables down conversion over the 100 kHz to 26.5 GHz frequency range. The PXI-1410 employs a 70 dB (10 dB/step) input step attenuator that enables a dynamic range of approximately +30 dBm to -160 dBm. The module uses broadband switches to distribute the incoming RF signal to other PXI modules for further processing with minimal signal degradation. In addition, the module contains an electronically tuneable, 4-stage, YIG-tuned filter (YTF) based RF-input pre-selector, allowing for greater than 80 dB input image rejection and greater than 40 MHz of instantaneous input bandwidth. These attributes provide enough performance to satisfy even the most demanding spectrum analysis applications. For additional bandwidth (up to 350 MHz), the PXI-1410 offers a bypass path that automatically routes signals around the band limited preselector.

The PXI-1410 Preselector Module is primarily intended to function as an analog front end in applications such as synthetic instrumentation, microwave receivers, signal intelligence, and anywhere a microwave signal needs to be down converted to a baseband frequency for data capture, analysis, and measurement. The PXI-1410 works in combination with Phase Matrix's family of PXI downconverter modules. The PXI-1410 can also operate alone in PXI signal conditioning applications to implement RF microwave attenuation or band-pass filtering in support of applications other than frequency down conversion.

PXI Systems Alliance

Phase Matrix, Inc. ❍ 4600 Patrick Henry Drive, Santa Clara CA 95054 ❍ Tel: 408-610-6810 ❍ www.phasematrix.com

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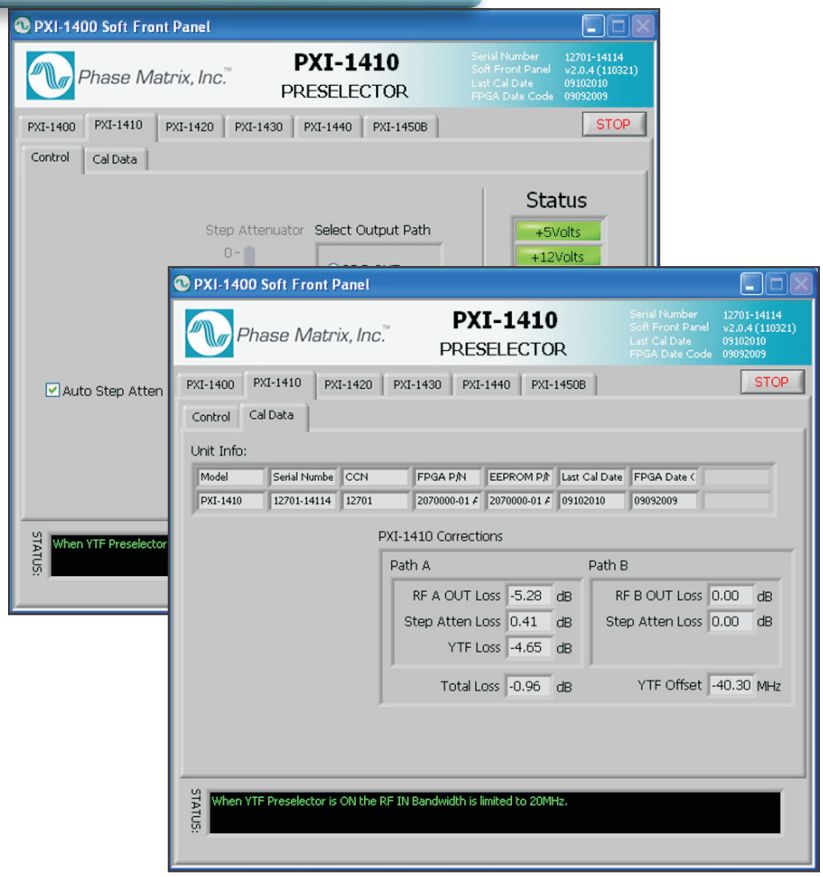
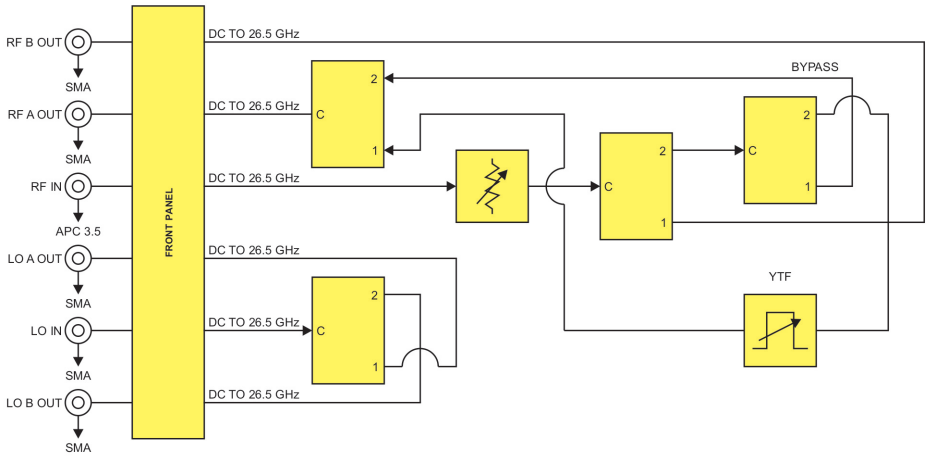
Front Panel

Software-user Interface



Simplified Block Diagram



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Specifications and ordering information subject to change without notice.

Specifications

RF INPUT

DESCRIPTION	SPECIFICATION
RF IN to RF A OUT or RF B OUT (*bypass path*)	DC to 26.5 GHz
RF IN to RF A OUT (*YTF path*)	2.75 to 26.5 GHz
LO IN to LO A OUT or LO B OUT	DC to 26.5 GHz
RF IN Level	+30 dBm max.
LO IN Level	+20 dBm max.

RF & LO OUTPUT INSERTION LOSS

DESCRIPTION	SPECIFICATION
RF IN to RF A OUT (*min. attenuator setting/bypass*)	7 dB max.
RF IN to RF A OUT (*min. attenuator setting/YTF path*)	12 dB max.
RF IN to RF B OUT (*min. attenuator setting*)	2 dB max. to 2.9 GHz/6 dB to 26.5 GHz
LO IN to LO A OUT or LO B OUT	2 dB max.

SWITCHING TIMES

DESCRIPTION	SPECIFICATION
Step Attenuator	20 ms. max.
Switches	20 ms. max.
Rated Switch/Attenuator Life	5 million cycles min.

CONTROLS

DESCRIPTION	SPECIFICATION
Attenuator	0 to 70 dB in 10 dB steps
Switches	SP2T mechanical type

PRESELECTOR YTF

DESCRIPTION	SPECIFICATION
YIG Preselector Frequency Range	2.75 to 26.5 GHz
3dB BW	40 MHz min., 120 MHz max.

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Specifications (continued)

PRESELECTOR YTF (CONTINUED)

DESCRIPTION	SPECIFICATION
Tuning Speed	< 5 ms @ 50 MHz step
Tuning Accuracy	± 35 MHz nom. (*with corrections applied*)
Topology	4 pole, nominal 24dB/oct

INPUT RETURN LOSS

DESCRIPTION	SPECIFICATION
RF IN (*DC TO 26.5 GHz*)	-10 dB max. (*output terminated into 50 Ω, attenuator set to 10 dB*)
LO IN (*DC TO 26.5 GHz*)	-12 dB max. (*output terminated into 50 Ω*)

GENERAL SPECIFICATIONS

DESCRIPTION	SPECIFICATION
Temperature Range	
Operating	0˚ to +55˚ C
Non-Operating	-40˚ to +70˚ C
Relative Humidity	10% TO 90% (*non-condensing*)
Certifications and Compliances	
CE Mark Compliance	Low Voltage Directive 2006/95/EC
Safety	EN/IEC 61010-1:2001
EMC	EN 55011:2007, IEC 61326-1:2006
Weight	3.5 lb./1.6 kg
Connectors	
RF IN	APC 3.5 (*Precision type*)
RF A OUT / RF B OUT	SMA (f) (*27 GHz type*)
LO IN / LO A OUT / LO B OUT	SMA (f)
Warranty	1 Year

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Specifications (continued)

PXIbus SPECIFICATIONS

DESCRIPTION	SPECIFICATION				
Module Type	3U/3-Slot				
Warm-up Time	15 minutes max.				
DC Power Dissipation	+3.3 V	+5 V	+12 V	-12 V	Total Power (*3 slots*)
	0.1 A	0.6 A	1.3 A	0.5 A	25 W max.

ORDERING INFORMATION

Model	PXI-1410
Options	None
Accessories ❶	
MPXI-14XX-ACC01	Cable set
Related Products	PXI Modules PXI-1420, PXI-1430B, PXI-1440B, PXI-1450B

Notes:

❶ Software, manuals, and quick-start guides are available online www.phasematrix.com

2 "Typ." means approximately 2/3 of all units meet these characteristics at room temperature. Characteristics identified by typ. and nom. are by design and are not normally verified on every unit during production.

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Phase Matrix, Inc. designs and manufactures RF and microwave test-and-measurement (T&M) instruments, subsystems, and components and is a wholly owned subsidiary of National Instruments. Our array of instruments includes traditional benchtop frequency counters, modular (VXI) pulsed-frequency counters, modular (VXI and PXI) synthetic instruments, including downconverters, upconverters/synthesizers and local oscillators that are designed for both commercial and military applications. In addition, we produce instrument-grade, fast-switching synthesizer modules that can be used in various instruments or subsystems. We also manufacture a line of narrowband and broadband microwave components, ranging from VCOs to complex custom-built assemblies for military instrumentation and telecommunications applications.

Data sheet PN: DS_1410 Rev. C Sept. 2013

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