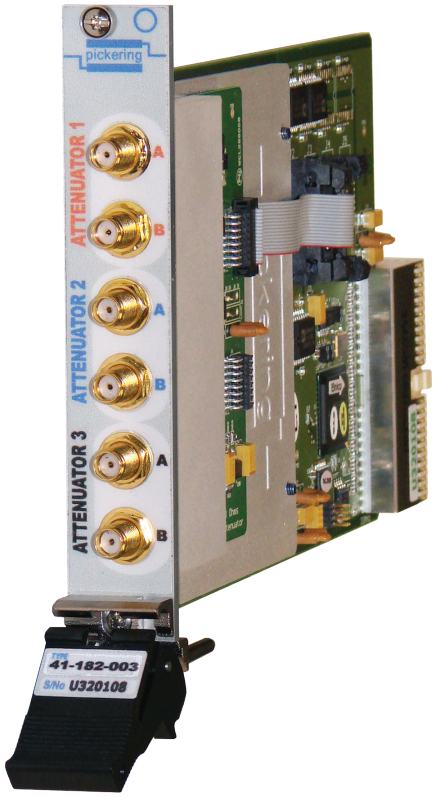
41-182
6GHz Triple Solid State Attenuator

- 10MHz To 6GHz Programmable Attenuator
- 0 to 31.75dB in 0.25dB Steps For Fine Level Control
- Three or Six Channels Per Module
- Solid State Switching For Long Service Life
- Robust SMA Connectors
- VISA, IVI & Kernel Drivers Supplied for Windows XP/Vista/7/8
- Supported in PXI or LXI Chassis
- 3 Year Warranty



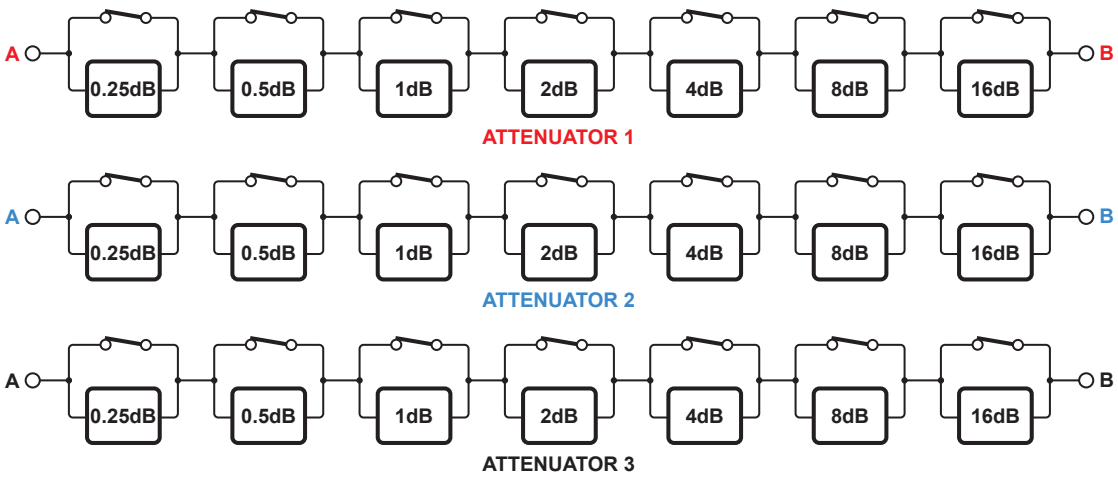
The 41-182 is a programmable RF attenuator module that supports 3 (one slot) or 6 (two slots) attenuators each capable of inserting an additional loss of 0 to 31.75dB in 0.25dB steps. Each attenuator uses solid state switches for a long service life and fast operation with minimum settling time and no signal bounce. The inclusion of DC blocking reduces the risk of damage to the switches by the accidental application of DC sources from amplifiers or other bias devices.

The 41-182 is ideal for conditioning signal levels in RF test systems to ensure equipment is used in its optimal signal level range. Fast attenuator operating speed ensures minimal system delays in setting up the required attenuation and a service life which is independent of the number of operations allows the sequence of RF tests to be arranged to optimise the life of other switching components in the system.

The attenuators can be connected in series to increase the attenuation range available and the high isolation minimizes signal leakage.

The attenuators can be used for the back to back testing of devices, providing the ability to condition the signal level between the two devices. It is also ideal for the conditioning of special to type signal sources which lack fine level control.

SMA connectors ensure that the attenuators can be used with standard cabling and the input and output ports are fully interchangeable.



40-182 Triple 6GHz Solid State Attenuator Functional Diagram
(Default Condition Shown - All Channels Set To 0dB Attenuation)

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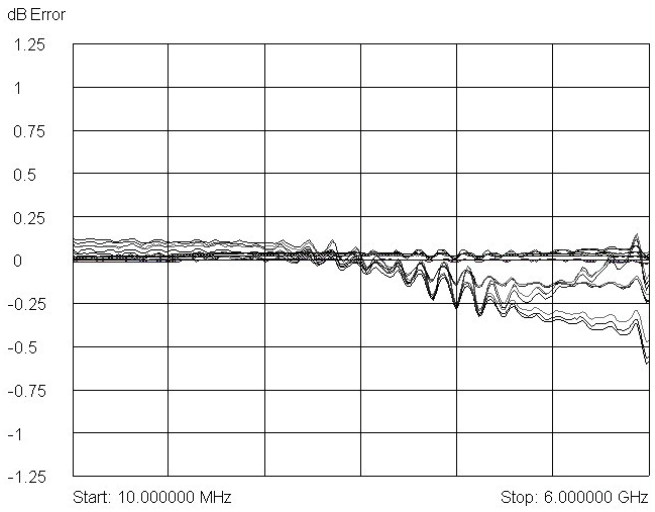
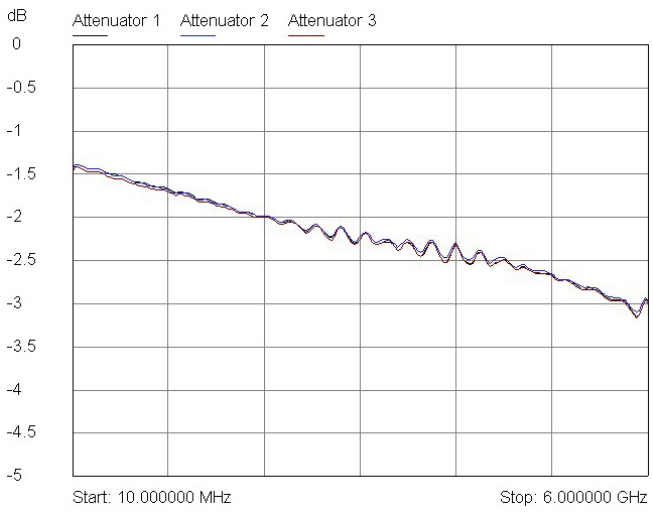
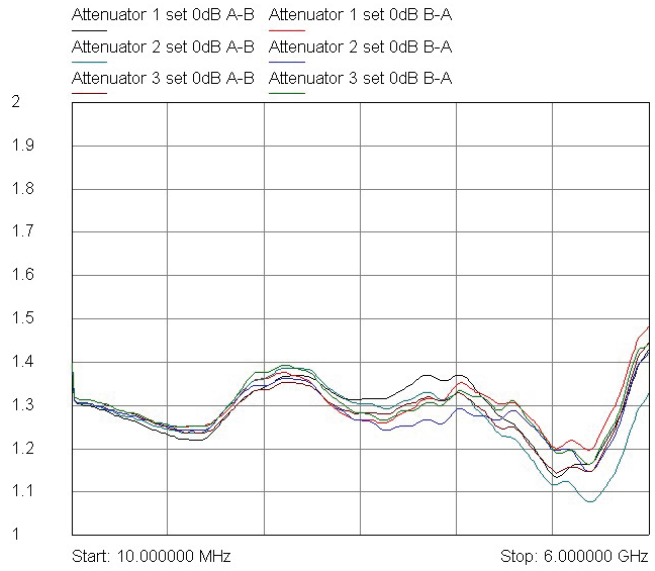


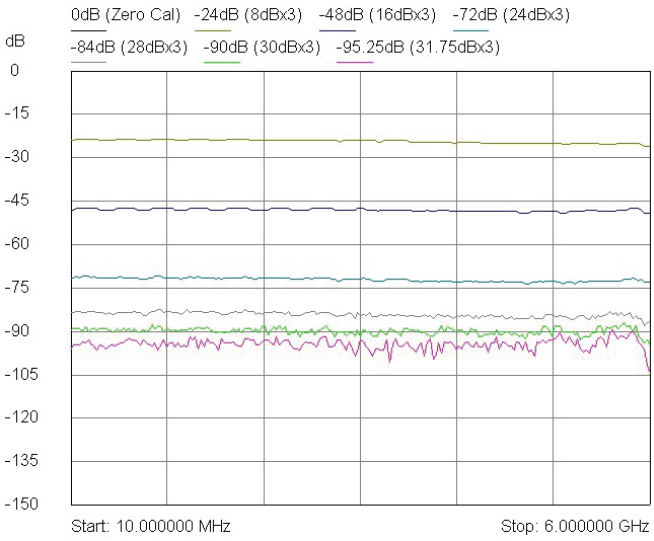
Insertion loss for every discrete attenuator setting for all channels of 41-182-003 (normalised to 0dB)



Insertion loss for 41-182-003 with each attenuator channel set to 0dB



VSWR for 41-182-003 with all attenuator channels set to 0dB



Attenuation values for 41-182-003 with three attenuator channels in series (set to major step values)

Specification

General Characteristics

Frequency Range:	10MHz to 6GHz
Maximum input power:	+23dBm
Input Impedance:	50Ω, AC coupled
VSWR:	<1.4 to 5GHz, <1.5 5GHz to 6GHz
RF Connectors:	SMA
Number of Attenuation Channels:	3 or 6
Switch Lifetime:	Indefinite when used within ratings
Operating Time:	50µs

Attenuation Characteristics

Each attenuator is made up 0.25dB, 0.5dB, 1dB, 2dB, 4dB, 8dB and 16dB pads controlled by solid state switches to give an attenuation range of 0 to 31.75dB relative to the straight thru path.

Insertion Loss (0dB set):	<1.5dB @ 10MHz, <2.5dB @ 3GHz, <3.5dB @ 6GHz
Monotonicity:	0.25dB monotonic to 4GHz, 0.5dB monotonic to 5GHz, 1dB monotonic to 6GHz
Usable attenuation range (3 in series):	95.25dB to 5GHz, 84dB to 6GHz
Attenuator Change Characteristics:	Rise/fall time <10us, bounce and positive transient free.

Linearity

Two Tone Intermodulation:	+59dBm, 20MHz tone separation, third order intercept point.
1dB Compression:	Typically +32dBm (pulsed operation type test, not a usable user power).

Power Requirements from PXI Power Supply

+3.3V	+5V	+12V	-12V
30mA	100mA	0	0

Mechanical Characteristics

3 channel attenuator is one slot 3U PXI module, six channel attenuator is a 2 slot 3U PXI module.
3D models for all versions in a variety of popular file formats are available on request.

Product Order Codes

6GHz Solid State Attenuator, Triple	**41-182-003**
6GHz Solid State Attenuator, Hex	**41-182-006**

Mating Connectors & Cabling

For connection accessories for the 41-182 module please refer to the **90-011D** RF Cable Assemblies data sheet where a complete list and documentation can be found for accessories, or refer to the Connection Solutions catalog.

Programming

Pickering provide kernel, IVI and VISA (NI and Agilent) drivers which are compatible with 32/64-bit versions of Windows including XP, Vista, 7 and 8 operating systems. The VISA driver is also compatible with Real-Time Operating Systems such as LabVIEW RT. For other RTOS support contact Pickering.

These drivers may be used with a variety of programming environments and applications including:

- **National Instruments** products (LabVIEW, LabWindows/CVI, Switch Executive, MAX, TestStand, etc.)
- **Microsoft Visual Studio** products (Visual Basic, Visual C+)
- **Agilent** VEE
- **Mathworks** Matlab
- **Geotest** ATE Easy
- **MTQ Testsolutions** Tecap

Drivers for popular Linux distributions are available, other environments are also supported, please contact Pickering with specific enquiries.

Operating/Storage Conditions

Operating Conditions

Operating Temperature:	0°C to +55°C
Humidity:	Up to 90% non-condensing
Altitude:	5000m

Storage and Transport Conditions

Storage Temperature:	-20°C to +75°C
Humidity:	Up to 90% non-condensing
Altitude:	15000m

PXI & CompactPCI Compliance

The module is compliant with the PXI Specification 2.2. Local Bus, Trigger Bus and Star Trigger are not implemented.

Uses 33MHz 32-bit backplane interface.

Safety & CE Compliance

All modules are fully CE compliant and meet applicable EU directives: Low-voltage safety EN61010-1:2001, EMC Immunity EN61000-6-1:2001, Emissions EN55011:1998.

PXI & LXI Chassis Compatibility

Compatible with all chassis conforming to the 3U PXI and 3U cPCI specification. Compatible with Legacy and Hybrid peripheral slots in a 3U PXI Express chassis.

Compatible with Pickering Interfaces LXI Modular Switching chassis. For information on driving your switching solution in an LXI environment refer to the LXI Product Guide.

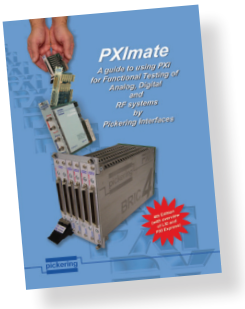
Latest Details

Please refer to our Web Site for Latest Product Details.

www.pickeringtest.com

Please refer to the Pickering Interfaces "**Connection Solutions**" catalog for the full list of connector/cabling options, including drawings, photos and specifications. This is available in either print or as a download. Alternatively our web site has dynamically linked connector/cabling options, including pricing, for all Pickering PXI modules.

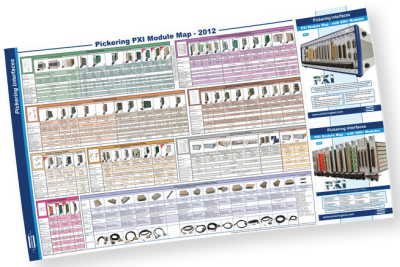
"**The Big PXI Catalog**" gives full details of Pickering's entire range of PXI switch modules, instrument modules and support products.
At over 500 pages, the Big PXI Catalog is available on request or can be downloaded from the Pickering website.



Ever wondered what PXI is all about?

Pickering Interfaces' "**PXImate**" explains the basics of PXI and provides useful data for engineers working on switch based test systems.

The PXImate is available free on request from the Pickering website.



The "**PXI Module Map**" - a simple fold-out selection guide to all Pickering's 600+ PXI Modules.