

2 by 16 Switch Matrix

ZTVX-16-18

50Ω



Product Overview

Mini-Circuits' ZTVX-16-18 is a flexible, 2 by 16 switch matrix developed in a compact, 2U height, 19-inch rack-mountable chassis with all 18 RF connections (SMA) mounted on the front panel. This switch matrix is ideal as a VNA extender, opening up a standard 2 port VNA to a wide range of multi-port or multi-device test scenarios, including:

- Parallel testing of up to 8 separate 2 port devices (eg: filter and amplifier production testing)
- Production testing of splitter/combiner or switch components with higher port counts (eg: 15-way splitter/combiner)
- Testing of 8 by 8 MIMO systems

The system supports come with USB and Ethernet-TCP/IP (HTTP and Telnet protocols) control interfaces, allowing setup flexibility and easy remote test management. Software support is provided through our easy-to-install, easy-to-use GUI application and API objects for Windows environments, with complete programming instructions for both 32 and 64 bit Windows® and Linux® operating systems.

Key Features

Feature	Advantages
High port count	Bi-directional operation from 2 to 16 or 16 to 2 ports facilitates a wide range of possible applications for the switch matrix
Tightly controlled switch configuration	Carefully optimised switch topology and precision Engineering from design to production ensures repeatable switch performance, best correlation between insertion loss and return loss, and competitive cost.
Ethernet-TCP/IP-HTTP and Telnet Protocols (Supports DHCP and Static IP)	Remote control from any Windows®, Mac®, or Linux® computer, or even a mobile device with a network connection and Ethernet-TCP/IP (HTTP or Telnet protocols) support. Using a VPN would allow remote control from anywhere in the world.
USB HID (Human Interface Device)	Local control via USB connection. Plug-and-Play, no driver required. Compatible with Windows® or Linux® operating systems using 32 and 64 bit architecture.
AC Mains Power Supply	Compatible with worldwide 110/240V AC power supplies, allowing easy, convenient setup.
GUI Software CD, programming instructions, USB & Ethernet cables, and 24VDC power adaptor included	ZT-180 is supplied ready to use out of the box with all software, accessories, and instructions needed for immediate use.

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50 Ω DC to 18 GHz

Features

- Bi-directional operation between 2 and 16 ports
- Non-blocking configuration
- Optimal combination of insertion loss and return loss
- USB and Ethernet-TCP/IP (HTTP and Telnet protocols)
- User friendly GUI and DLLs included
- Qualified to 100 million switch cycles
- Easy maintenance



Applications

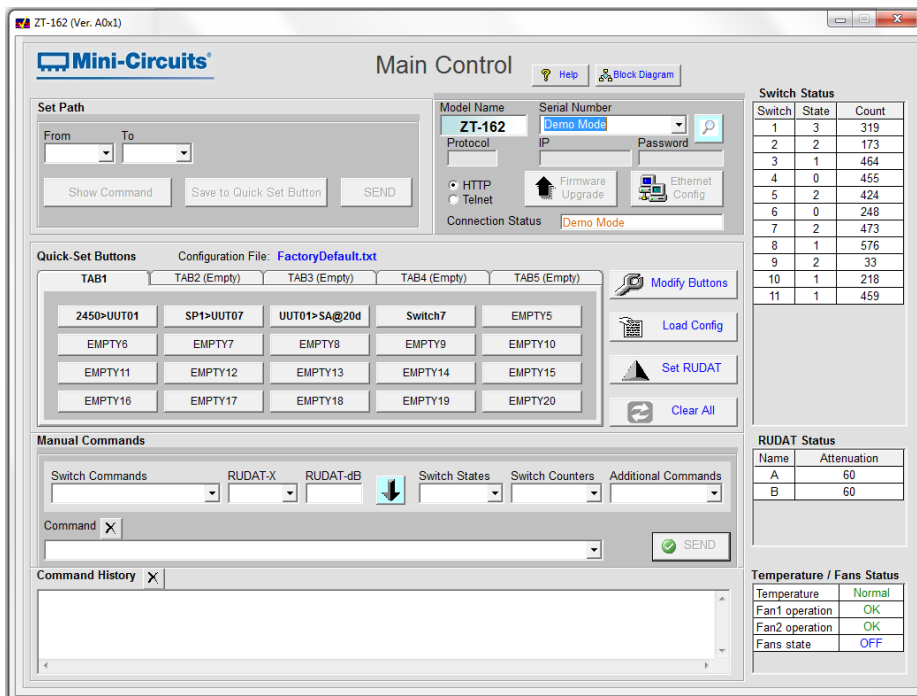
- Parallel testing of 2 port devices
- Production testing of multi-port devices
- Testing of 8 by 8 MIMO systems

Included Accessories

CBL-3W-US/EU	Black 3-prong AC cord	1
USB-CBL-AB-7+	USB cable (6.8 ft.)	1
CBL-RJ45-MM-5+	RJ45 cable (5 ft.)	1
HT-4-SMA	SMA cable connector wrench	1

RoHS Compliant
See our web site for RoHS Compliance methodologies and qualifications

Mini-Circuits ZTVX-16-18 GUI (Graphical User Interface) for USB/Ethernet Control



- For Demo mode of any Switch Matrix model select the model name from the drop box and click 'Start Demo' (See [user guide](#) for details)
- For programming instructions of the switch matrix see [programming guide](#) and [AN-49-001](#) on Mini-Circuits' website

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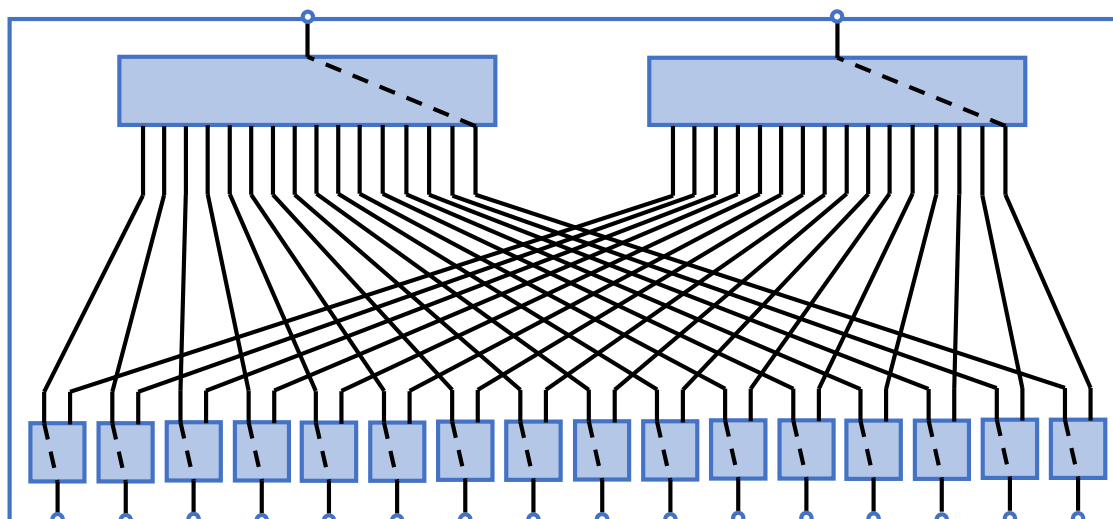
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Typical Electrical Performance (at 0°C to 40°C)*

Parameter	Value	Comments
Operating Frequency	DC to 18 GHz	
Insertion Loss	1.0 dB typ	@ 3 GHz
	1.5 dB typ	@ 8 GHz
	2.5 dB typ	@ 18 GHz
Return Loss	20 dB typ	@ 3 GHz
	12 dB typ	@ 18 GHz
Isolation	90 dB typ	
Input Power	30 dBm max	

Functional Schematic*

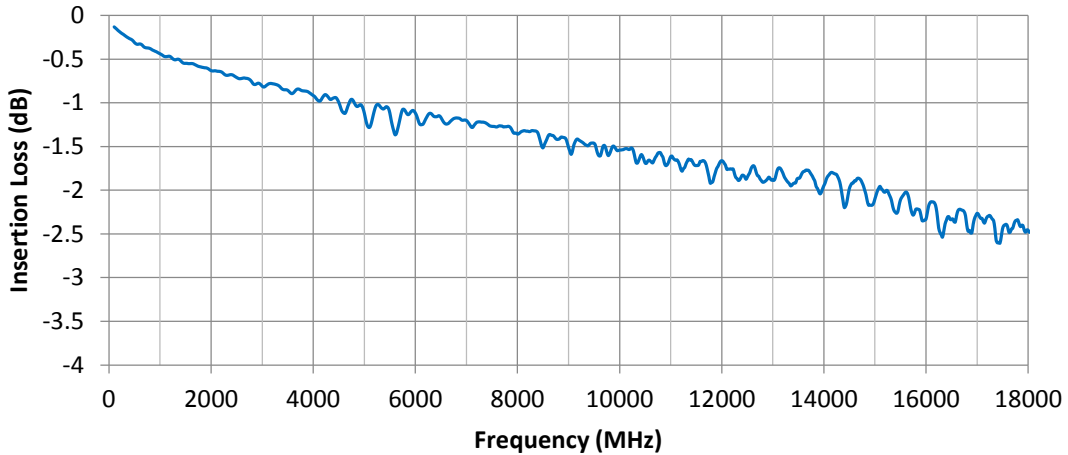


*Note: the functional schematic is indicative of the switch matrix operation but is not a wiring diagram; the exact topology used may differ

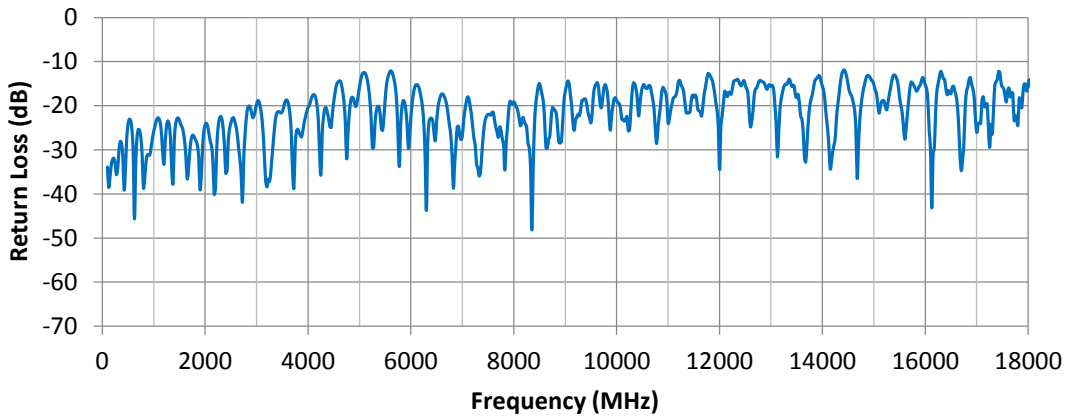
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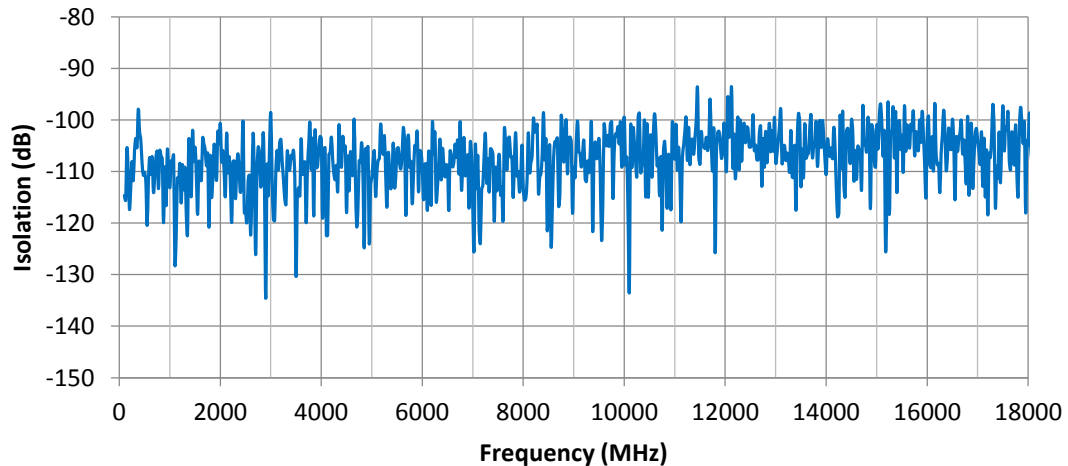
Insertion Loss



Return Loss



Isolation



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Mechanical Specifications

Dimensions	2u height. 19" (w) x 3.5" (h) x 20" (d), excluding feet
Case Material	Aluminum to be protected from corrosion/rust
External	a) 2 handles on the front panel and rear safety block b) Non-slip feet
Labelling	Mini-Circuits ZTVX-16-18 VNA Expansion Module
Top Panel	Reinforced cover to support VNA mounted on top of switch matrix
Front Panel	a) SMA female for all RF connections b) LED position indicators c) Power ON/OFF switch with indicator light
Rear Panel	a) 110/240V 50/60 Hz AC inlet b) USB type B connector for local control c) RJ45 LAN jack for Ethernet control d) Cooling fan(s)
Operating Temperature	0 to +40 deg C
Control Interface	USB or Ethernet TCP/IP supporting HTTP and TELNET protocols
Software Support	a) Windows GUI b) Windows API DLL for USB control (ActiveX and .NET) c) SCPI command set for Ethernet control d) USB interrupt codes for Linux operating systems

Software Specifications

Minimum System Requirements

Interface	USB HID or HTTP Get/Post or Telnet protocols
Host operating system - USB Control	Windows 32/64 Bit operating system: Windows 98®, Windows XP®, Windows Vista®, Windows 7®, Windows 8® Linux® support: 32/64 Bit operating system
Host operating system - Ethernet Control	Any Windows®, Mac®, or Linux® computer with a network port and Ethernet-TCP/IP (HTTP or Telnet protocols) support
Hardware	Pentium® II or better ⁶

⁶ Pentium® is a registered trademark of Intel Corporation

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Outline Drawing

