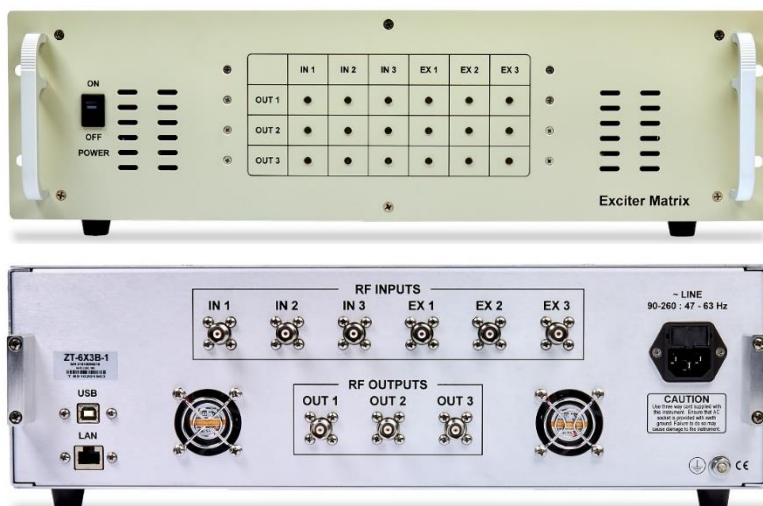Rack-Mounted | USB & Ethernet Control
6x3 Blocking Switch Matrix   ZT-6X3B-12

50Ω   DC to 12 GHz

Model Name	Connector Type
ZT-6X3B-12S	SMA female
ZT-6X3B-12N	N-type female
ZT-6X3B-12T	TNC female

Product Overview

Mini-Circuits' ZT-6X3B-12 is a high performance, 6 by 3 blocking switch matrix, operating over a wide bandwidth from DC to 12 GHz. The system is housed in a compact, 3U height, 19-inch rack-mountable chassis with the 6 RF "input" ports and 3 RF "output" ports on the rear panel. The front panel includes LED indicators representing the active switch paths.

This bi-directional, blocking configuration allows the 6 "input" ports to be connected to any combination of the 3 "output" ports in a one to one arrangement. Additionally, all 6 input ports can be internally terminated within the matrix

The system includes both USB and Ethernet control interfaces, providing a range of flexible control options. Software support is provided through our easy-to-use GUI application for remote control over a network, or local control through USB. ActiveX and .NET API objects (for Windows environments) and HTTP / Telnet support ensure compatibility with most common programming environments.

Key Features

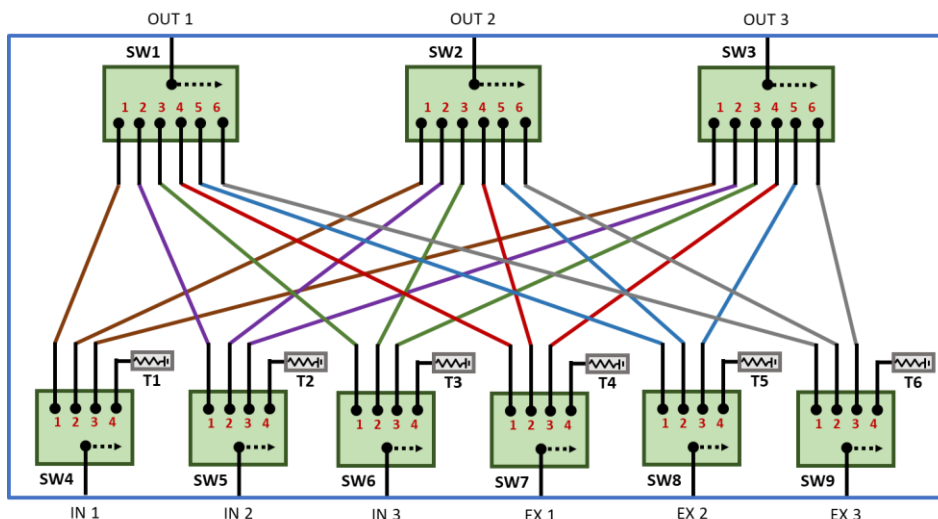| Feature	Advantages
6 x 3 matrix	3 active paths at any time between any combination of input and output ports, supports flexible automated test systems.
Rack-mount chassis	Compact, 3U height 19" rack-chassis with all connections on the rear, suits integration in automated production test environments
USB & Ethernet control	USB HID and Ethernet (HTTP / Telnet / SSH) interfaces provide easy compatibility with a wide range of software setups and programming environments

6x3 Blocking Switch Matrix

ZT-6X3B-12

Mechanical Specifications

Dimensions	19" (W) x 3U (H) x 16" (D)			
Case Drawing	99-01-2812			
Case Material	• Aluminum (with protective coating to prevent corrosion)			
RF Connectors	**Panel**	**Connector**	**Quantity**	**Port Labels**
	Rear	SMA \ N-type \ TNC female	9	IN1-6; OUT1-3
Panel Items	**Front Panel**		**Rear Panel**	
Panel Marking	• Model name • 6 x 3 Blocking Switch Matrix • DC-12 GHz		• CE • EAC • Serial number / date code / model name	
Panel Items	• Power on / off switch with LED • LED switch path indicators • Carry handles		• AC mains power input (IEC C14 inlet) • USB type B socket • RJ45 (LAN) socket • Cooling fans	
Power Supply	AC mains power input (90-260 V, 47-63 Hz)			
Fuse	2A, 250V rating			
Temperature	Operating: 0 to +50 ºC			

Electrical Specifications at 25°C

Parameter	Conditions	Min	Typ	Max	Units
Frequency		DC		12	GHz
Insertion Loss	DC - 6 GHz		0.8		dB
	6-12 GHz		1.5		
	6-12 GHz		2.5		
Return Loss	In Ports		15		dB
	Out Ports		17		
Isolation			80		dB
Input Power	Per port, hot switching			+20	dBm

Functional Block Diagram

Mini-Circuits®

www.minicircuits.com | PO Box 35166, Brooklyn, NY 11235-0003, USA | (+1) 718-934-4500 | sales@minicircuits.com

Typical Performance Data

INSERTION LOSS (Input-Output)
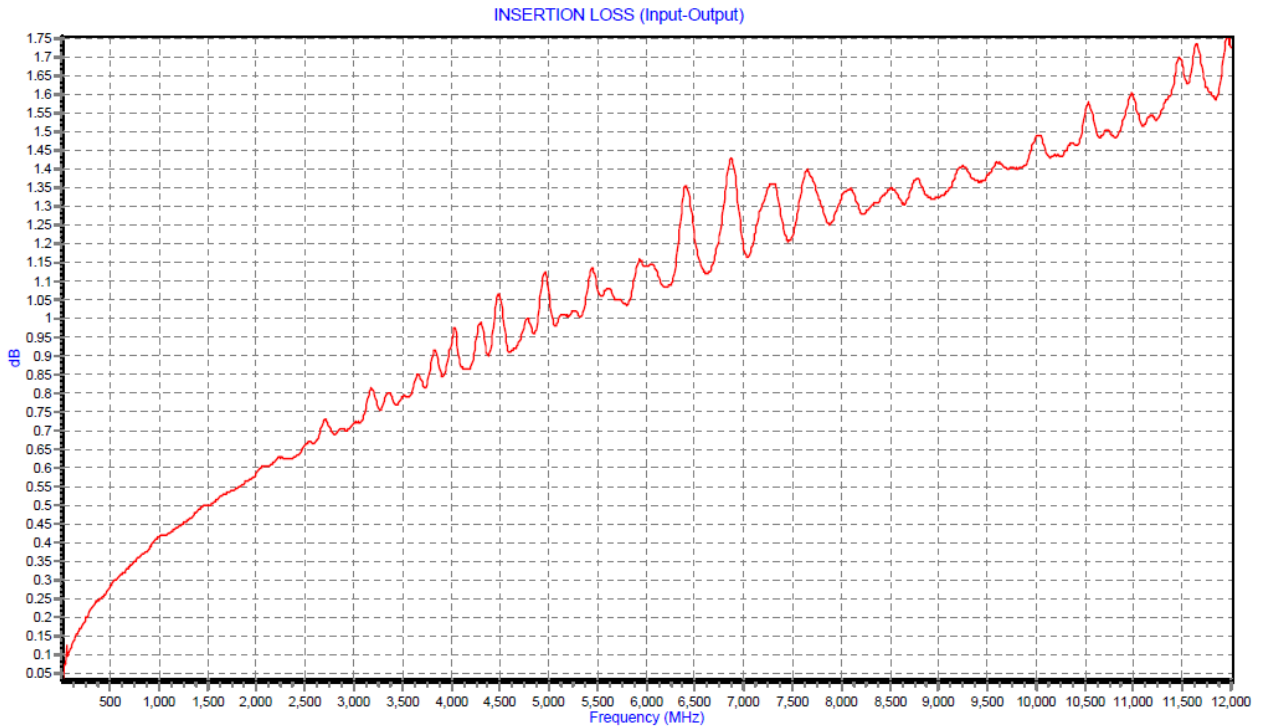
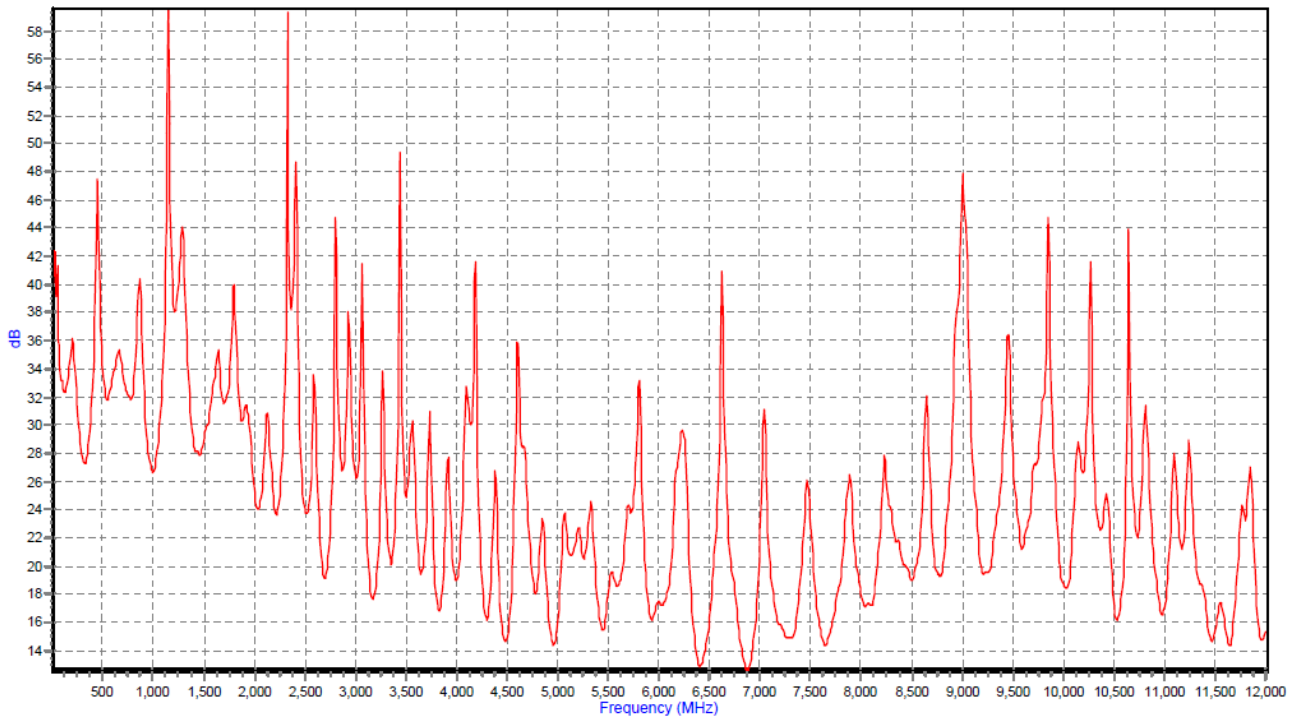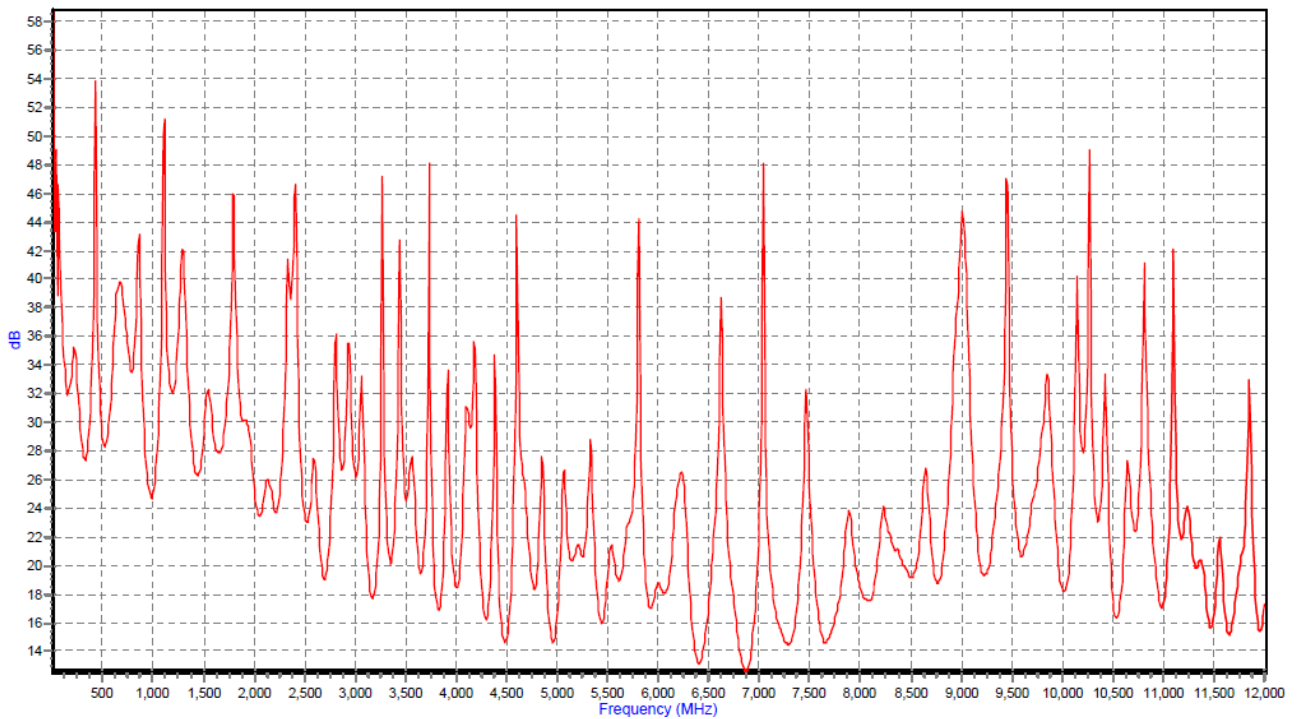## Typical Performance Data

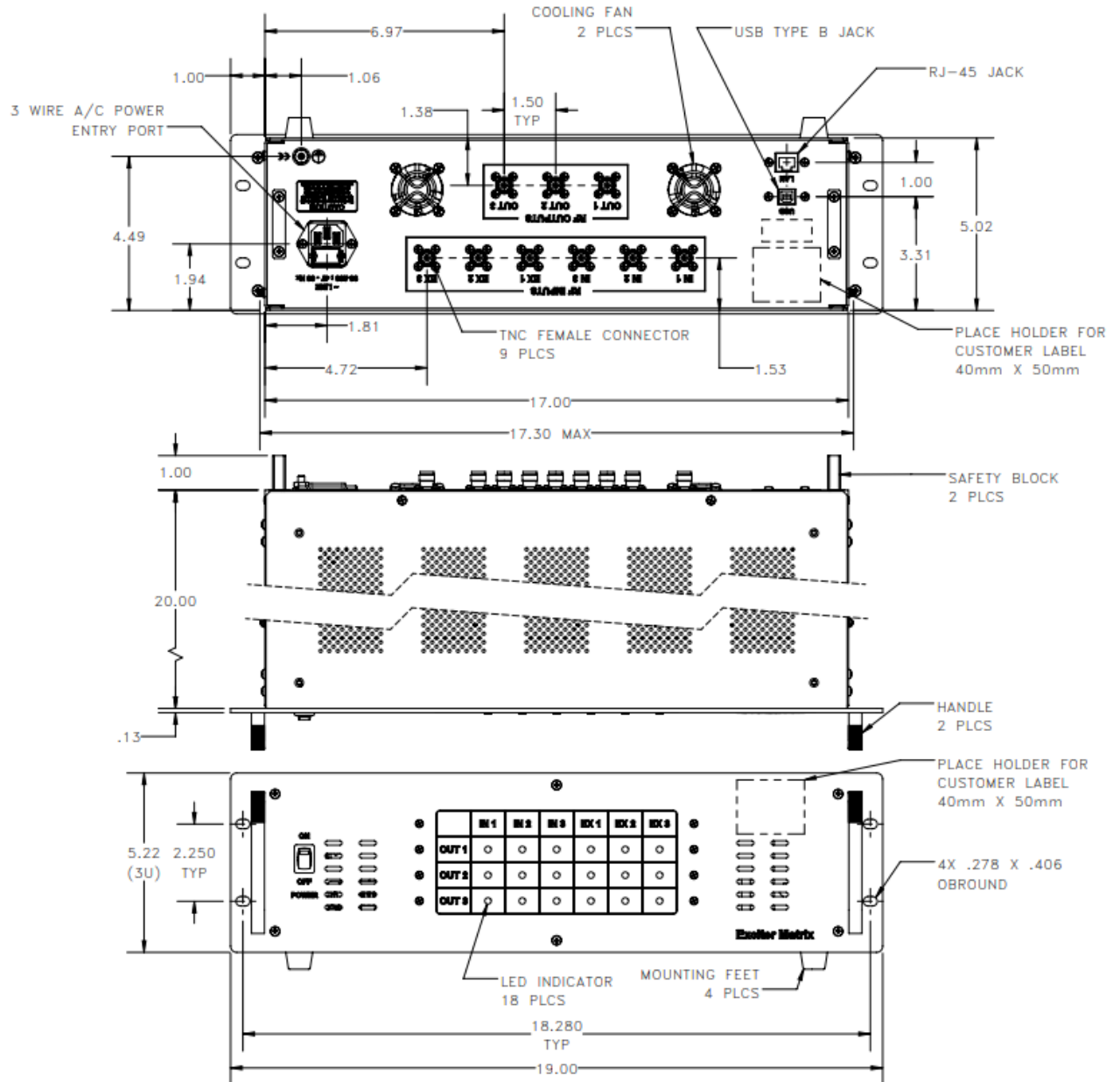

RETURN LOSS (IN(ON))

RETURN LOSS (OUT(ON))

Outline Drawing

Software Specifications

- Please contact testsolutions@minicircuits.com for support

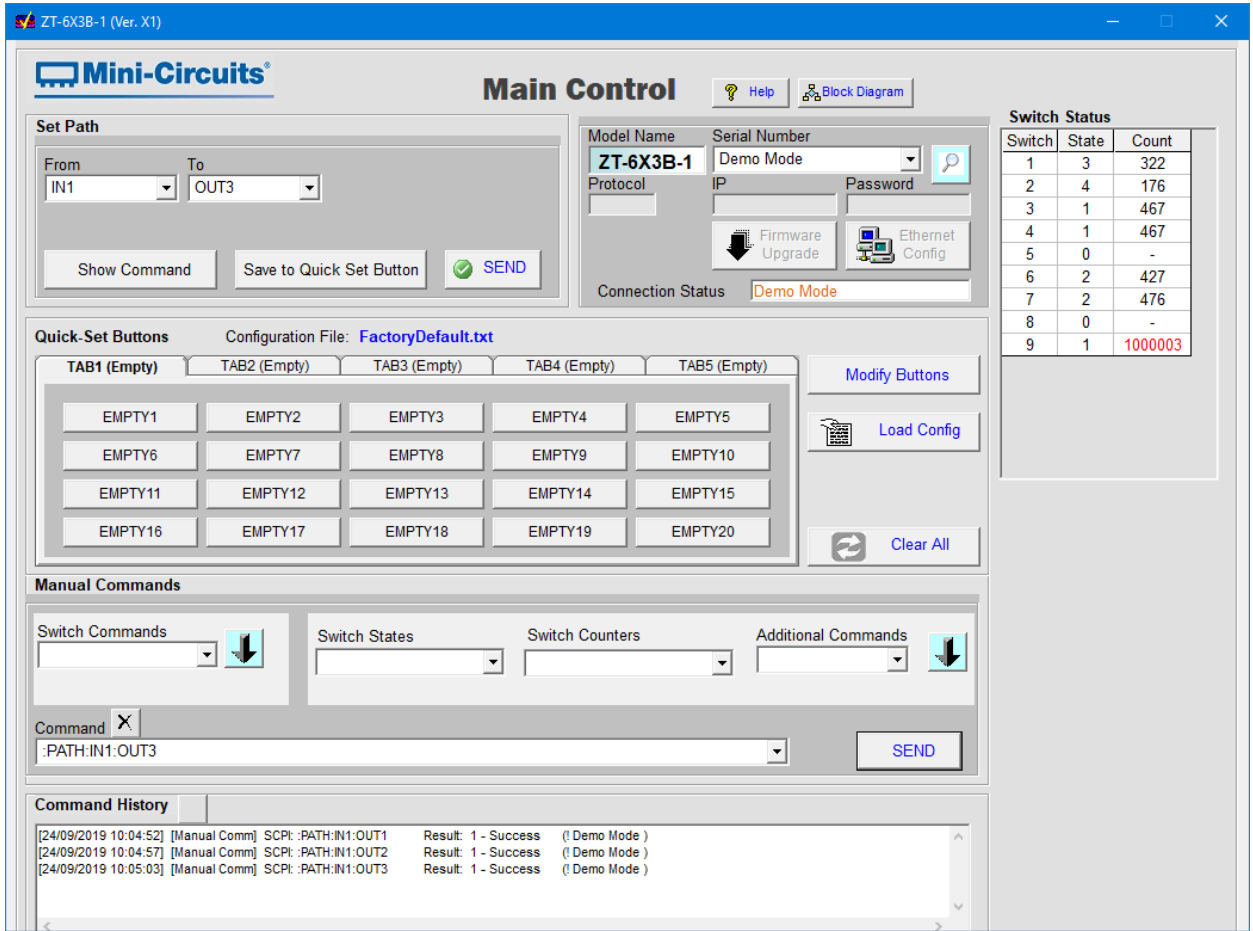| Ethernet Control	Supported Protocols	TCP / IP, HTTP, Telnet, DHCP, UDP
	Max Data Rate	10 Mbps (10Base-T Half Duplex)
USB Control	Supported Protocols	HID - Full Speed
	Min Communication Time	3 ms typ
Software Support	• Mini-Circuits' Universal GUI for USB & LAN control (Windows only) • ASCII / SCPI command syntax for LAN programming (all OS) • ActiveX / .Net DLL APIs for USB programming (Windows only) • Interrupt codes for direct USB programming (all OS) • Full programming instructions and examples for a wide range of languages	

Programming Commands

- The key ASCII / SCPI commands for control of the system are summarized below
- These can be sent via the USB or Ethernet API
- Please refer to the programming manual for full details

Command / Query	Description
:MN?	Read model name
:SN?	Read serial number
:FIRMWARE?	Read firmware version
:sw_type:sw_number:STATE:port	Set a single switch state: • sw_type = MTS or SPDT or SP4T or SP6T or SP8T • sw_number = 1 to n (refer to block diagram) • port = the switch state to set • Example: :SPDT:1:STATE:2 (set SPDT switch 1 to state 2)
:Csw_number=port	Short-hand to set a single switch state: • sw_number = 1 to n (refer to block diagram) • port = the switch state to set • Example: C1=2 (set switch 1 to state 2)
:sw_type:sw_number:STATE?	Get the state of a single switch: • sw_type = MTS or SPDT or SP4T or SP6T or SP8T • sw_number = 1 to n (refer to block diagram) • Example: :SPDT:1:STATE? (get the state of SPDT switch 1)
:PATH:input?	Check which output is connected to the specified input port
:PATH:A1:B1	Set a specific switch path between 2 ports

Graphical User Interface (GUI) for Windows - Key Features

- Connect via USB or Ethernet
- Run GUI in "demo mode" to evaluate software without a hardware connection
- View and set all switch states
- Configure Ethernet settings
- Upgrade firmware
- Send SCPI commands
- View temperature & fan status

ZT-6X3B-1 (Ver. X1)

Mini-Circuits

Main Control

Help   Block Diagram

Set Path

From   To
IN1   OUT3

Show Command   Save to Quick Set Button   SEND

Model Name: **ZT-6X3B-1**
Serial Number: Demo Mode
Protocol   IP   Password

Firmware Upgrade   Ethernet Config

Connection Status: Demo Mode

Switch Status

Switch	State	Count
1	3	322
2	4	176
3	1	467
4	1	467
5	0	-
6	2	427
7	2	476
8	0	-
9	1	1000003

Quick-Set Buttons   Configuration File: FactoryDefault.txt

TAB1 (Empty)	TAB2 (Empty)	TAB3 (Empty)	TAB4 (Empty)	TAB5 (Empty)

EMPTY1	EMPTY2	EMPTY3	EMPTY4	EMPTY5
EMPTY6	EMPTY7	EMPTY8	EMPTY9	EMPTY10
EMPTY11	EMPTY12	EMPTY13	EMPTY14	EMPTY15
EMPTY16	EMPTY17	EMPTY18	EMPTY19	EMPTY20

Modify Buttons

Load Config

Clear All

Manual Commands

Switch Commands   Switch States   Switch Counters   Additional Commands

Command X
:PATH:IN1:OUT3   SEND

Command History

[24/09/2019 10:04:52] [Manual Comm] SCPI: :PATH:IN1:OUT1   Result: 1 - Success   (! Demo Mode)
[24/09/2019 10:04:57] [Manual Comm] SCPI: :PATH:IN1:OUT2   Result: 1 - Success   (! Demo Mode)
[24/09/2019 10:05:03] [Manual Comm] SCPI: :PATH:IN1:OUT3   Result: 1 - Success   (! Demo Mode)

Ordering Information

Please contact Mini-Circuits' Test Solutions department for price and availability:
testsolutions@minicircuits.com

Included Accessories

Model Name	Quantity	Description
CBL-3W-xx*	1	AC power cord (IEC C13 connector to local plug)
USB-CBL-AB-7+	1	USB cable (6.8 ft)
CBL-RJ45-MM-5+	1	Ethernet cable (5 ft)
HT-4-SMA	1	SMA Cable Wrench (4 in)

*Please specify one option on the purchase order, at no charge

Cable Model	Region
CBL-3W-US	USA
CBL-3W-EU	Europe
CBL-3W-IL	Israel
CBL-3W-UK	UK
CBL-3W-AU	Australia / China

Additional Notes

A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.

B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.

C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp