USB & Ethernet Controlled
Mechanical Switch System (4 x SP8T)   ZTM-4SP8T-12

50Ω   DC to 12 GHz

Configuration

Row	Slot	Model Name	Frequency	Connectors	Description
Top	1	MSP8TA-12+	DC to 12 GHz	SMA (f)	SP8T Switch (Absorptive)
Top	4	MSP8TA-12+	DC to 12 GHz	SMA (f)	SP8T Switch (Absorptive)
Top	7	MSP8TA-12+	DC to 12 GHz	SMA (f)	SP8T Switch (Absorptive)
Top	10	MSP8TA-12+	DC to 12 GHz	SMA (f)	SP8T Switch (Absorptive)

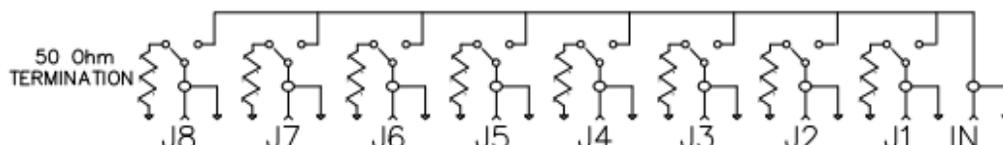## Electrical Specifications @ 25ºC (per Switch)

Parameter	Conditions	Min	Typ	Max	Units
Frequency Range		DC		12	GHz
Insertion Loss	DC – 4 GHz		0.15	0.25	dB
	4 – 8 GHz		0.20	0.45	
	8 – 12 GHz		0.40	0.80	
Isolation	DC – 4 GHz	95	100		dB
	4 – 8 GHz	85	100		
	8 – 12 GHz	75	90		
VSWR	DC – 4 GHz		1.10		:1
	4 – 8 GHz		1.30		
	8 – 12 GHz		1.35		
Switching Time			25		ms
RF Input Power (Cold Switching)[1]	DC – 12 GHz			20	W
Switch Lifetime (per Switch)	100 mW hot switching [2]	5			million cycles
	1W hot switching		1		

Notes:
1. Maximum power for any connected through path as stated; maximum power into any internal termination is 1W per port
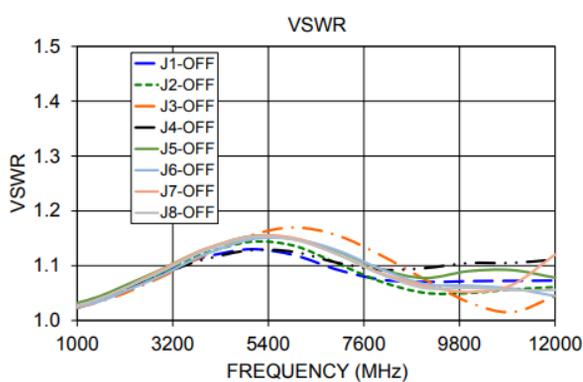2. Hot switching powers above this level will degrade the switch lifetime
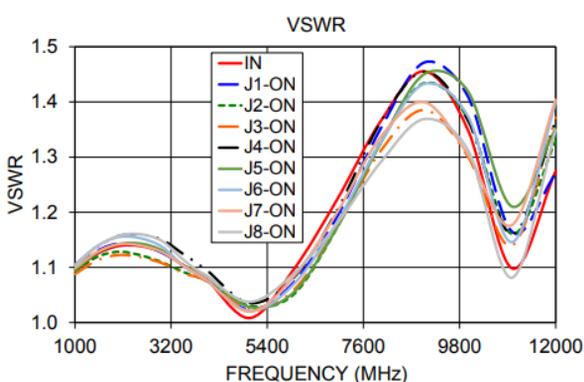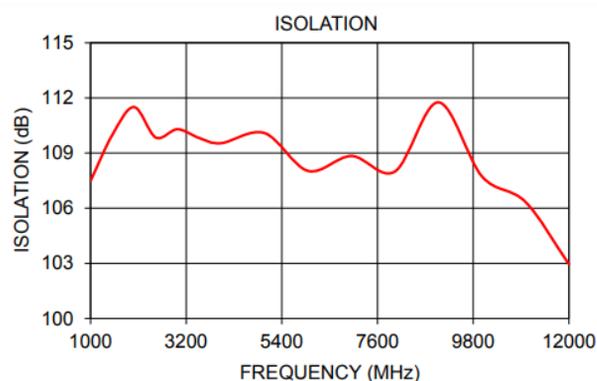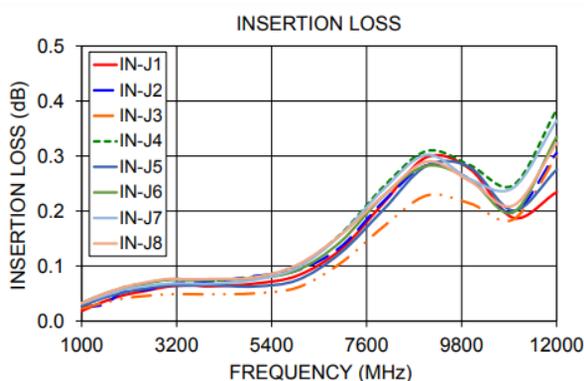
Switch Configuration:

- Normally open (all ports disconnected)
- Absorptive (internal terminations on ports J1-J8)

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USB & Ethernet Controlled
Mechanical Switch System (4 x SP8T)   ZTM-4SP8T-12
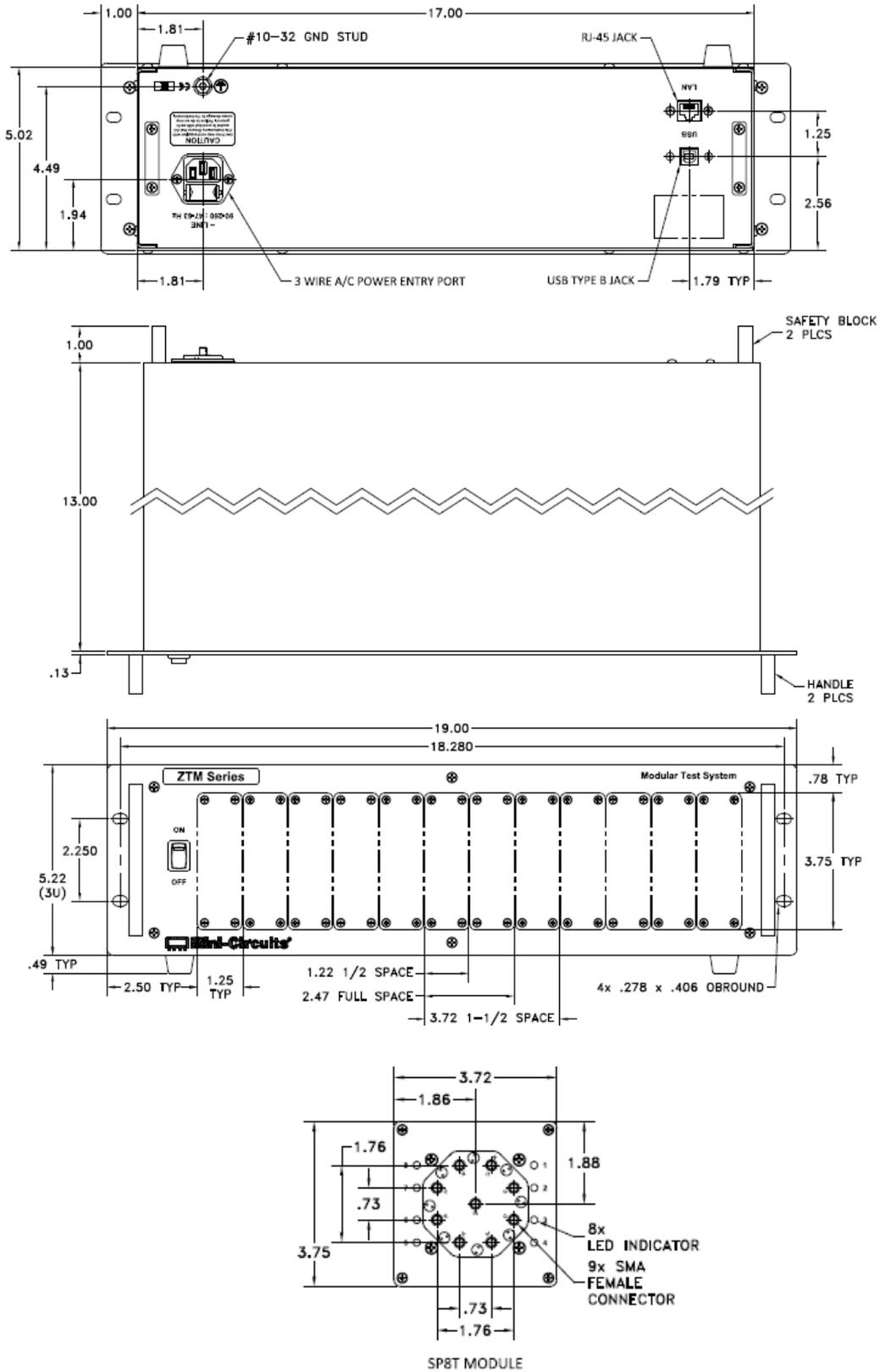
Mechanical / Environmental Specifications

Dimensions	19" (w) x 3U (h) x 13" (d); mounting feet add 0.5" height
Case Material	Aluminum (with protective coatings to prevent corrosion)
Case Drawing	99-01-2861
RF Connectors	SMA female
Front Panel	a) Power ON/OFF switch with indicator light b) All RF ports c) LED switch position indicators
Rear Panel	a) AC mains power input (IEC C14 inlet) b) USB & RJ45 control connections
Control Interface	USB and Ethernet TCP/IP supporting HTTP and TELNET protocols
Power Supply	AC mains power input (90-260 V, 47-63 Hz) with 2A, 250V fuse rating
Operating Temperature	0° to +50° C

Typical Performance (per Switch)

USB & Ethernet Controlled
Mechanical Switch System (4 x SP8T)

ZTM-4SP8T-12

Case Drawings

SP8T MODULE

USB & Ethernet Controlled
Mechanical Switch System (4 x SP8T)　　ZTM-4SP8T-12

Software Specifications

Software & Documentation Download:

- Mini-Circuits' full software and support package including user guide, Windows GUI, DLL files, programming manual and examples can be downloaded free of charge from https://www.minicircuits.com/softwaredownload/ztm_rcm.html
- Please contact testsolutions@minicircuits.com for support

Minimum System Requirements:

Parameter	Requirements	
Interface	USB HID & Ethernet (HTTP & Telnet)	
System Requirements	GUI	Windows 98 or later
	USB API DLL	Windows 98 or later and programming environment with ActiveX or .NET support
	USB Direct Programming	Linux; Windows 98 or later
	Ethernet	Windows, Linux or Mac computer with a network port and Ethernet TCP / IP support
Hardware	Pentium II or later with 256 MB RAM	

Application Programming Interface (API)

Ethernet Support:
- Simple ASCII / SCPI command set for switch & attenuator control
- Communication via HTTP or Telnet
- Supported by most common programming environments

USB Support (Windows):
- ActiveX COM DLL file for creation of 32-bit programs
- .NET library DLL file for creation of 32 / 64-bit programs
- Supported by most common programming environments (refer to application note AN-49-001 for summary of supported environments)

USB Support (Linux):
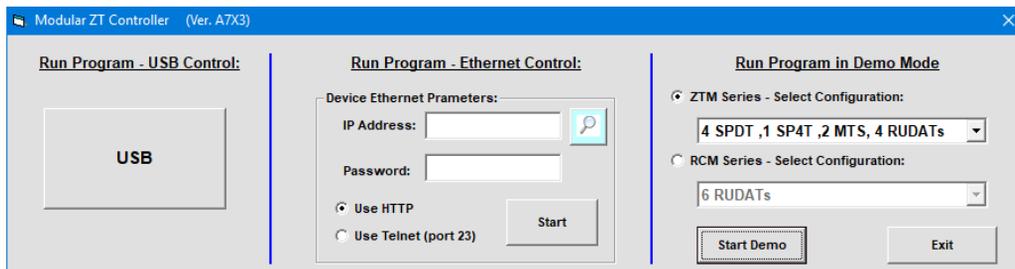- Direct USB programming using a series of USB interrupt codes

Full programming instructions and examples available for a wide range of programming environments / languages.

USB & Ethernet Controlled
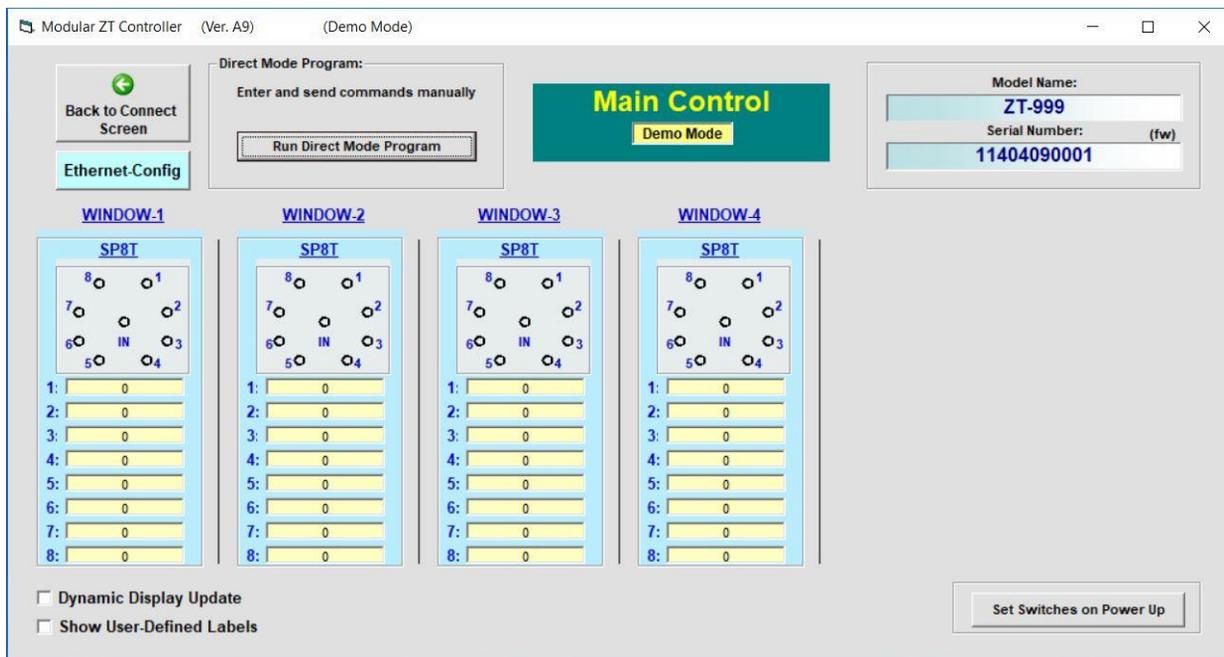# Mechanical Switch System (4 x SP8T)   ZTM-4SP8T-12

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 switch / attenuator states at the click of a button
- Configure and run timed sequences
- Set start-up states
- View switch position counters
- Configure Ethernet IP settings

USB & Ethernet Controlled
Mechanical Switch System (4 x SP8T)

ZTM-4SP8T-12

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)
B13-67-11+	2	Rear safety block
B18-DD-125+	4	Pan-head screw

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

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

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