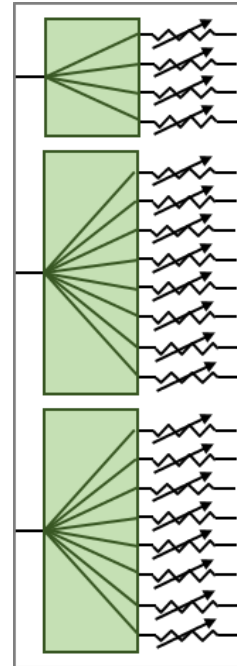
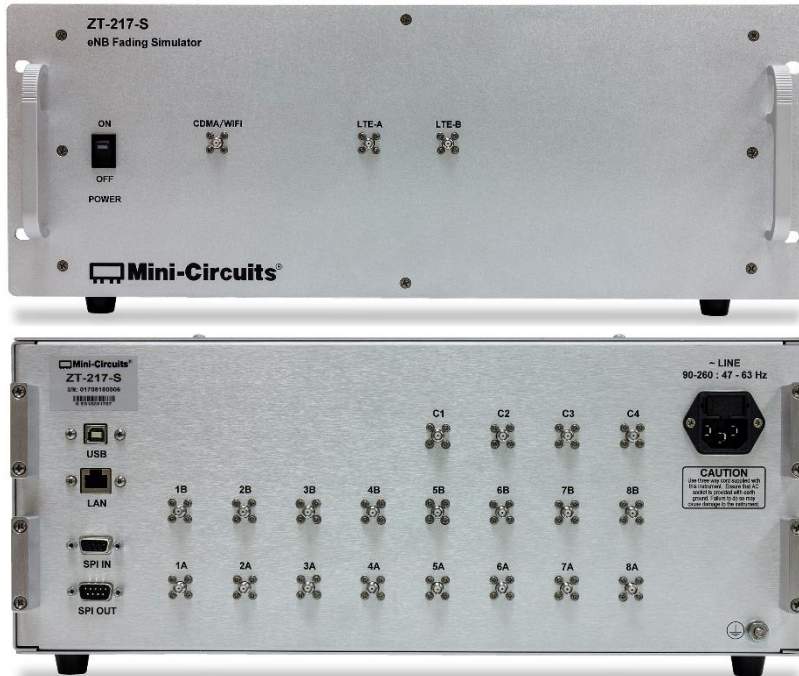


Rack-Mounted | USB & Ethernet Control
Handover / Fading Simulator

ZT-217

50Ω 600-6000 MHz 3 in / 20 out



Product Overview

ZT-217 is an integrated splitter / combiner system housing 1 x 4-way and 2 x 8-way devices with programmable attenuation on each path. The system is bi-directional and can be operated as a series of power splitters with variable path loss on each output, or as a series of power combiners with variable path loss on each input. The attenuation on each path can be independently controlled from 0 to 95 dB in 0.25 dB steps.

This configuration allows simulation of “real-world” conditions for wireless handsets, radio-heads, antenna systems, base-stations and nodes. Typical applications include:

- Varying path loss between a wireless device and node during transmission
- Hand-over from one node to another as a wireless device moves out of range
- Verification of device performance in the presence of multiple radio signals & interferers

The system is housed in a 4U height, 19-inch rack chassis and is available with SMA or N-type RF connectors on the front and rear panels. The system can be controlled via USB or Ethernet (supporting SSH, HTTP & Telnet network protocols). Full software support is provided, including our user-friendly GUI application for Windows and a full API with programming instructions for Windows and Linux environments (both 32-bit and 64-bit systems).

Key Features

Feature	Advantages
Splitter / attenuator matrix	Split or combine signals from multiple sources at precisely controlled signal levels
Rack chassis	Compact rack-mountable chassis for easy integration into automated test environments
Ethernet Control	Remote control from any computer or device with a network connection (SSH, HTTP or Telnet protocols).

Mechanical Specifications

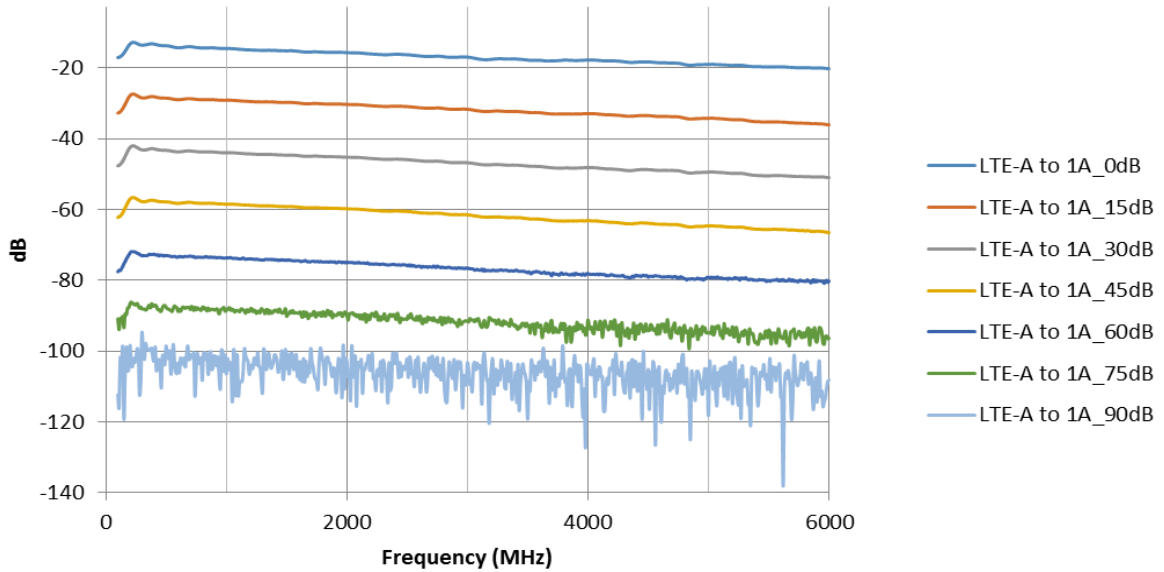
Dimensions	19" (W) x 4U (H) x 13" (D)			
Case Drawing	99-01-2281			
Case Material	• Aluminum (with protective coating to prevent corrosion)			
RF Connectors	Panel	Connector	Quantity	Port Descriptions
	Front	SMA female or N-type	3	Splitter sum ports
	Rear		20	Splitter output ports
Panel Items	Front Panel		Rear Panel	
Panel Marking	• Model Name		<ul style="list-style-type: none"> • CE • EAC • Serial number / date code / model name 	
Other Connectors			<ul style="list-style-type: none"> • AC mains power input (IEC C14 inlet) • USB type B socket • RJ45 (LAN) socket • Serial In (D-Sub 9-pin) • Serial Out (D-Sub 9-pin) 	
Other	<ul style="list-style-type: none"> • Power on / off switch with LED • Carry handles 			
Power Supply	AC mains power input (90-260 V, 47-63 Hz)			
Fuse	2A, 250V rating			
Temperature	Operating: 0 to +50 °C			

Electrical Specifications at 25°C

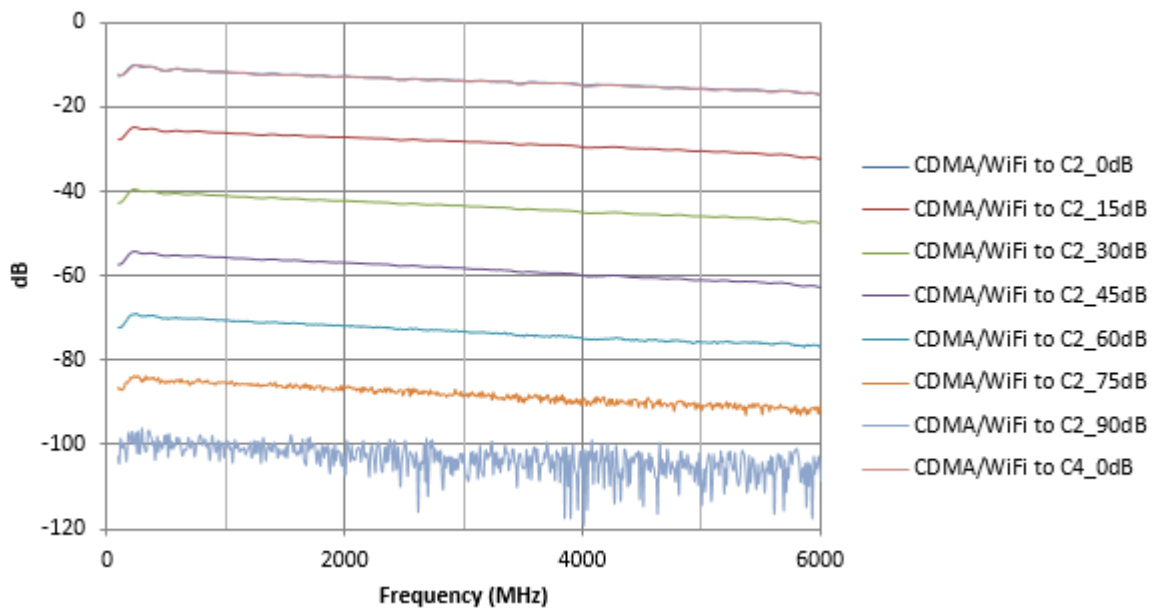
Parameter	Conditions	Min	Typ	Max	Units
Frequency		600	-	6000	MHz
Path Loss	4-way splitter @ 0 dB	-	17	-	dB
	8-way splitters @ 0 dB	-	20	-	
Return Loss		-	12	-	dB
Attenuation Range	Per path, 0.25 dB steps	0	-	95	dB
Isolation	Between 4-way outputs	-	30	-	dB
	Between 8-way outputs	-	35	-	
	Between attenuator channels	-	100	-	
Input Power		-	-	+20	dBm

Typical Performance Data

Insertion Loss & Attenuation (8-Way Splitter Paths)

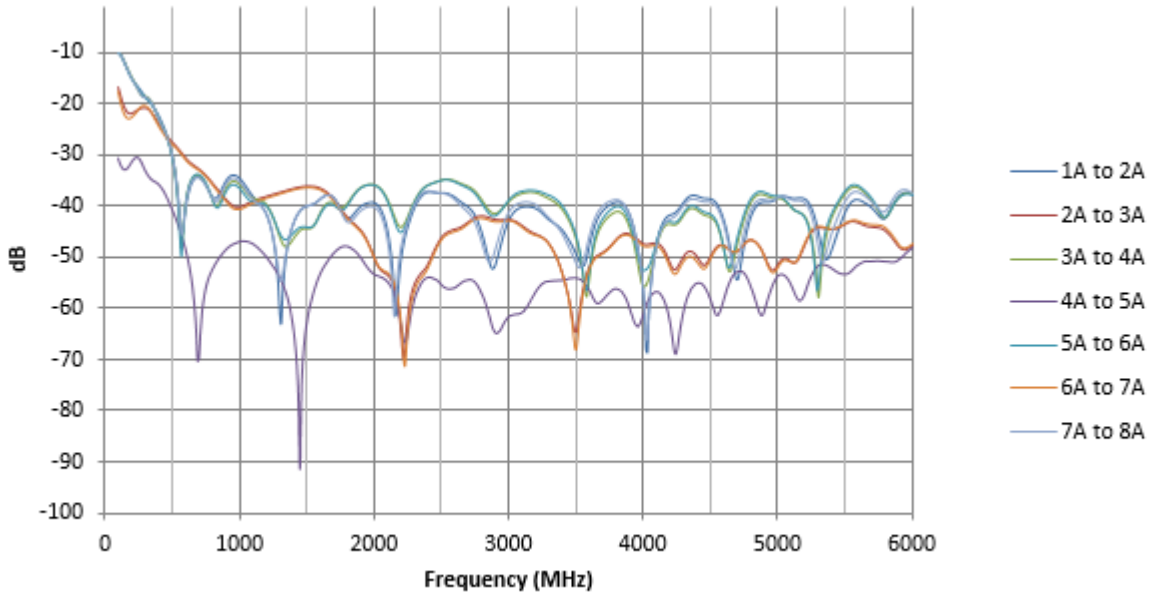


Insertion Loss & Attenuation (4-Way Splitter Paths)

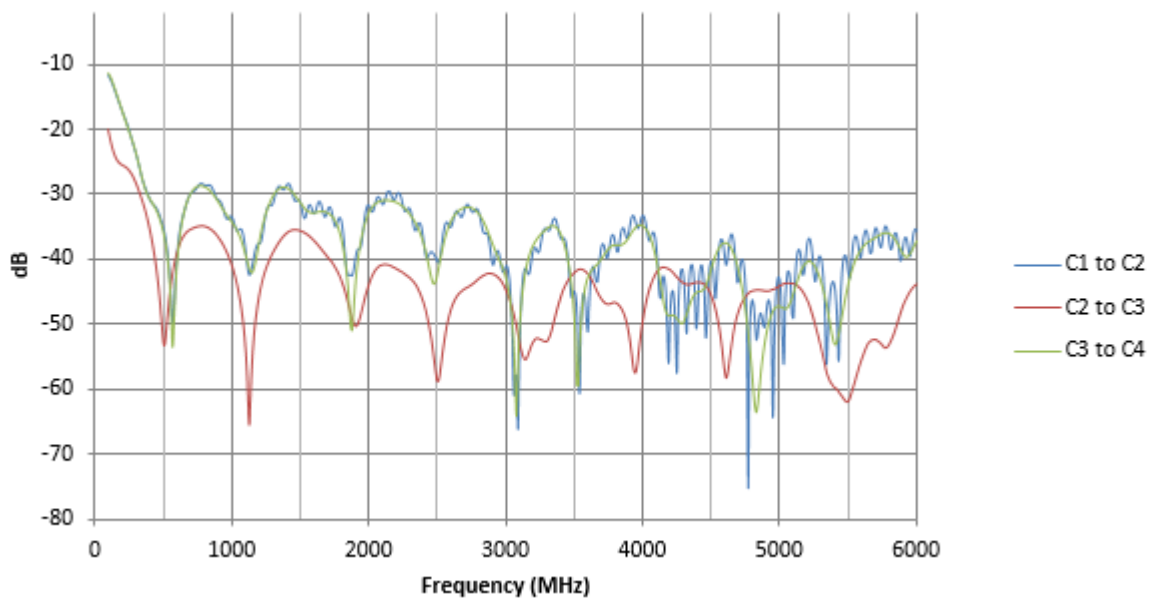


Typical Performance Data

Isolation (Between 8-Way Splitter Outputs)

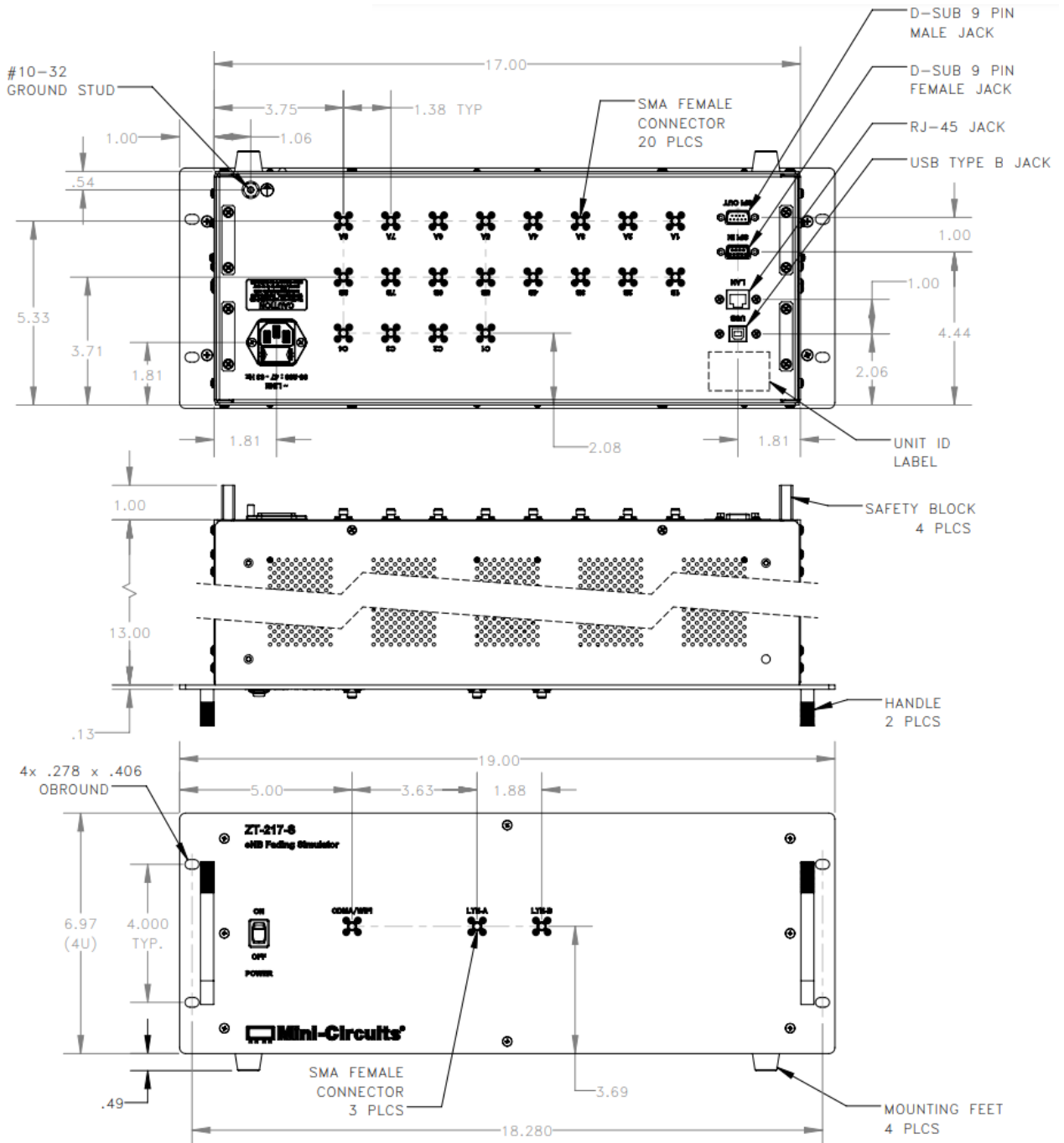


Isolation (Between 4-Way Splitter Outputs)



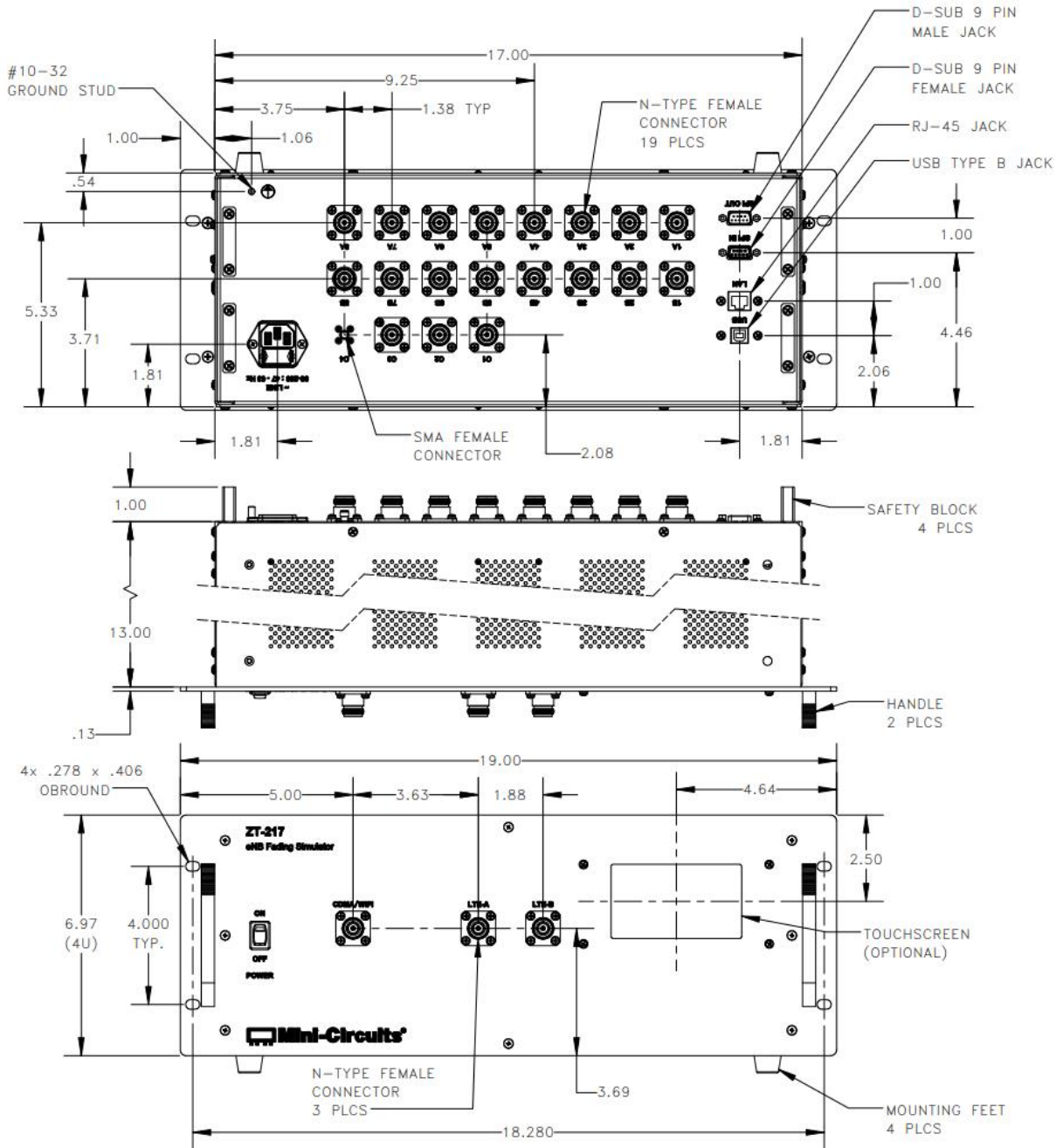
Outline Drawing

ZT-217-S (SMA)



Outline Drawing

ZT-217 (N-type)



Software Specifications

- Please contact testsolutions@minicircuits.com for support

Ethernet Control	Supported Protocols	TCP / IP, SSH, HTTP, Telnet, DHCP, UDP
	Max Data Rate	100 Mbps (100Base-T Full Duplex)
USB Control	Supported Protocols	HID - High Speed
	Min Communication Time	400 μ s typ
Software Support	<ul style="list-style-type: none"> • 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 	
Downloads	Software & Documentation	https://www.minicircuits.com/softwaredownload/multiatt.html

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
: [address] :CHAN: [channels] :SETATT: [Att]	Set attenuation: [address] <ul style="list-style-type: none"> • Address of the 4-channel attenuator module • SL can be used to refer to all 4-channel modules [channels] <ul style="list-style-type: none"> • Channel number (1 to 4) within the 4-channel module • Multiple channels can be listed, separated by ":" [Att] <ul style="list-style-type: none"> • Attenuation value (0-95) Examples: :01:CHAN:1:SETATT:10.25 Sets channel 1 of RS4DAT 01 to 10.25dB :01:CHAN:1:2:3:SETATT:10.25 Sets channels 1, 2, & 3 of RS4DAT 01 to 10.25dB :SL:CHAN:1:2:3:4:SETATT:10.25 Sets channels 1, 2, 3, & 4 of all RS4DATs to 0.25dB
: [address] :CHAN: [channels] :ATT?	Returns the attenuation of a single channel <ul style="list-style-type: none"> • [address] : Address of the RS4DAT (01, 02, ..., SL) • [channels] : Channel of the RS4DAT (1, 2, 3, 4) Examples: :01:CHAN:1:ATT? Returns the attenuation of channel 1 of RS4DAT 1

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 attenuator states
- Configure Ethernet settings
- Upgrade firmware

The screenshot shows the Mini-Circuits Multi-Channel Programmable Attenuator GUI (Ver. B0X2). The interface is divided into several sections:

- Left Sidebar:** Contains system information such as Model Name (ZTDAT-20-6G95), Serial Number (123456789), System Name (Attenuator System), Channels (20), User Name (Admin), and Connection details (Telnet (Demo) IP: 10.10.10.10, Port: 23). It also features a vertical stack of buttons for Connection Options, Automation Mode, Configuration Settings, Ethernet Settings, Firmware, User Access Control, Multi Sequence, and Show Log.
- Top Control Panel:** Includes a 'Set Attenuation' section with radio buttons for 'Single Channel' (checked) and 'Multi Channels', and a 'Group' dropdown. A 'Set Attenuation (0-95 dB)' input field is set to 67.00, with an 'Apply' button. An 'Auto Apply' checkbox is also present. On the right, the 'Current Attenuation' section shows 'Channel: 01A: Path A1<>B1' and 'Attenuation: 67.00 dB'.
- Main Table:** A table titled 'Channels' with columns for ZTDAT-20-6G95, A, B, C, and D. It lists 5 channels with their respective paths and attenuation values. Channel 01 is highlighted in yellow.

ZTDAT-20-6G95	A	B	C	D
01	Path A1<>B1 67.00	Path A2<>B2 50.75	Path A3<>B3 55.00	Path A4<>B4 27.50
02	Path A5<>B5 28.75	Path A6<>B6 73.50	Path A7<>B7 1.25	Path A8<>B8 72.25
03	Path A9<>B9 77.50	Path A10<>B10 67.25	Path A11<>B11 4.25	Path A12<>B12 39.25
04	Path A13<>B13 82.00	Path A14<>B14 75.00	Path A15<>B15 35.50	Path A16<>B16 91.50
05	Path A17<>B17 82.75	Path A18<>B18 5.25	Path A19<>B19 90.25	Path A20<>B20 34.50

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)

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