



Product Overview

Mini-Circuits' ZTVX-8-75-N is a flexible, 75Ω, bi-directional 2 by 12 switch matrix developed in a 4U height, 19-inch rack-mountable chassis with all 14 RF connections (75Ω N-Type) mounted on the front panel. The matrix can be programmed to connect the 2 “A” ports to any 2 of the 12 “n” ports. It may be used together with a 2-port VNA in a wide range of multi-port or multi-device test scenarios, including:

- Parallel testing of up to 6 separate 2 port devices (eg: filter and amplifier production testing)
- Production testing of multi-port devices
- Testing of multi-channel MIMO systems

The system 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 |
|---|--|
| 75Ω switch matrix | Designed for signal routing in 75Ω environments, minimising reflections in CATV / DOCSIS and sat-com test and switching applications. |
| 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. |
| USB & Ethernet control | USB HID and Ethernet (HTTP / Telnet) interfaces provide easy compatibility with a wide range of software setups and programming environments |
| Full software support | User friendly Windows GUI (graphical user interface) allows manual control straight out of the box, while the comprehensive API (application programming interface) with examples and instructions allows easy automation in most programming environments |

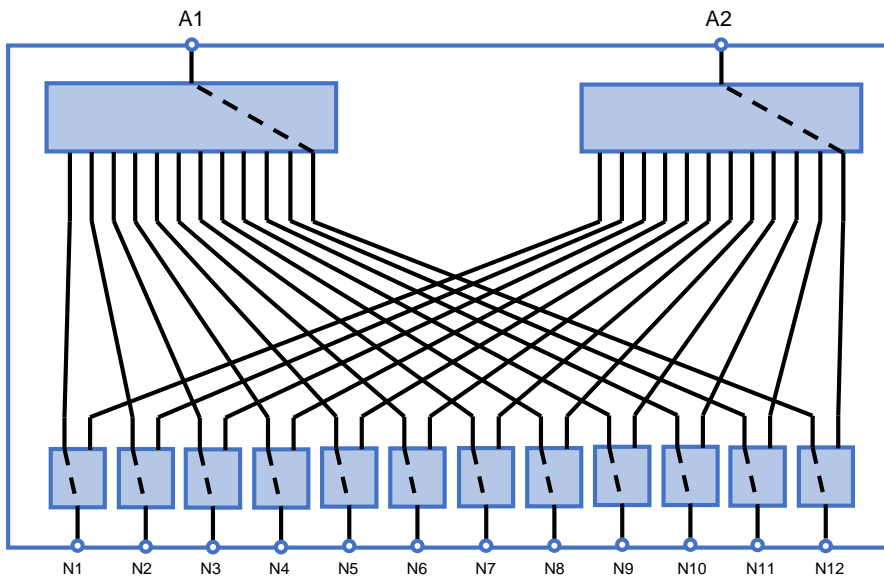
| Rev | Date | Description |
|-----|-----------|-----------------|
| X2 | 15-Aug-16 | Test data added |
| X3 | 15-Feb-18 | Format updated |
| | | |

Electrical Specifications at 25°C

| Parameter | Value | Comments |
|----------------|-------------|-----------------|
| Frequency | 5-2500 MHz | |
| Input Power | +25 dBm max | Per port |
| Insertion Loss | 7.5 dB typ | @ 5-1800 MHz |
| | 8.5 dB typ | @ 1800-2500 MHz |
| Impedance | 75Ω | |
| Return Loss | 17 dB typ | Ports A1 and A2 |
| | 22 dB typ | Ports N1 to N8 |
| Isolation | 80 dB typ | |

Note: RF ports must be held at 0V DC or external DC blocks must be used

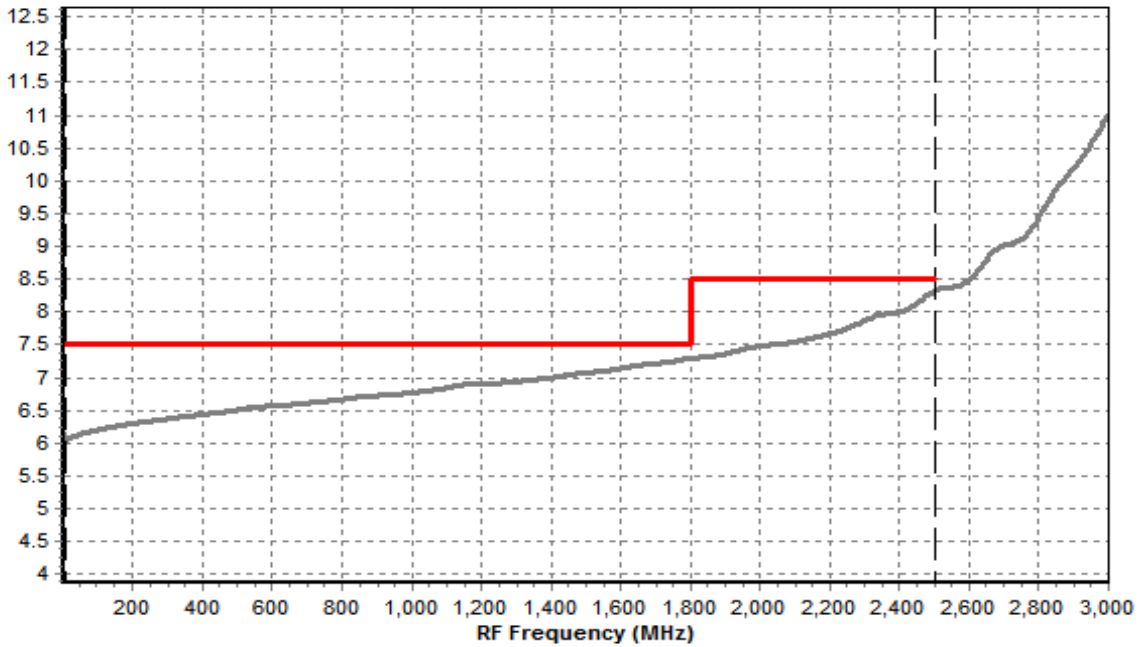
Functional Block Diagram



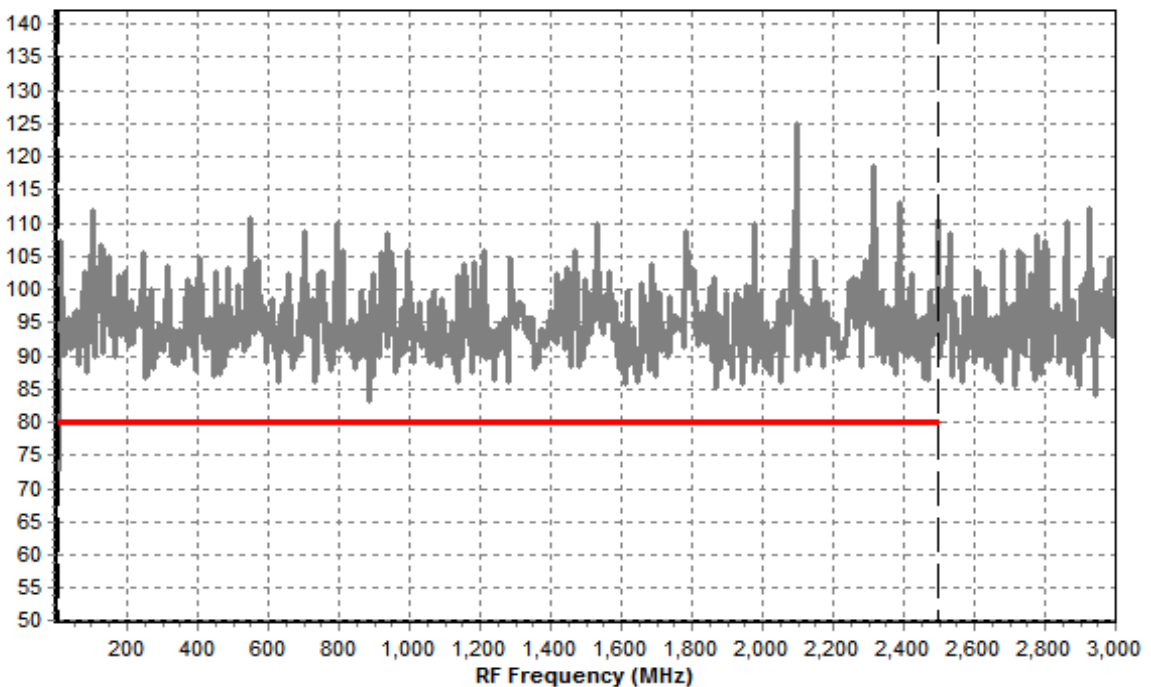
Note: the functional schematic is indicative of the switch matrix operation. Detailed wiring diagram can be found in the user manual

Typical Performance Data

Insertion Loss

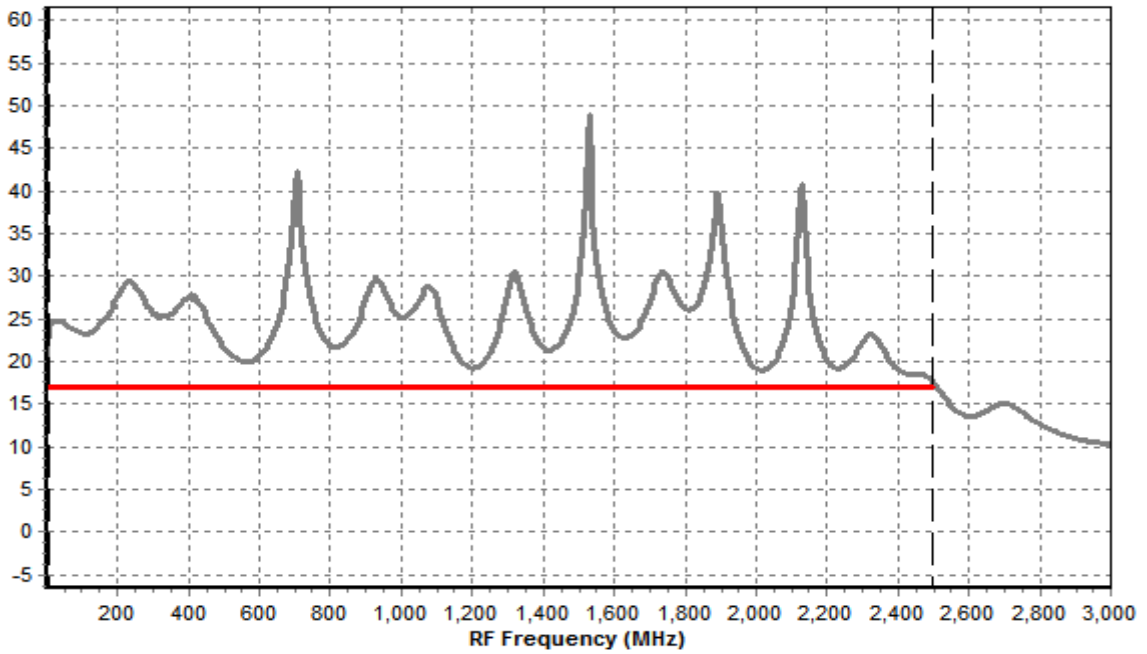


Isolation

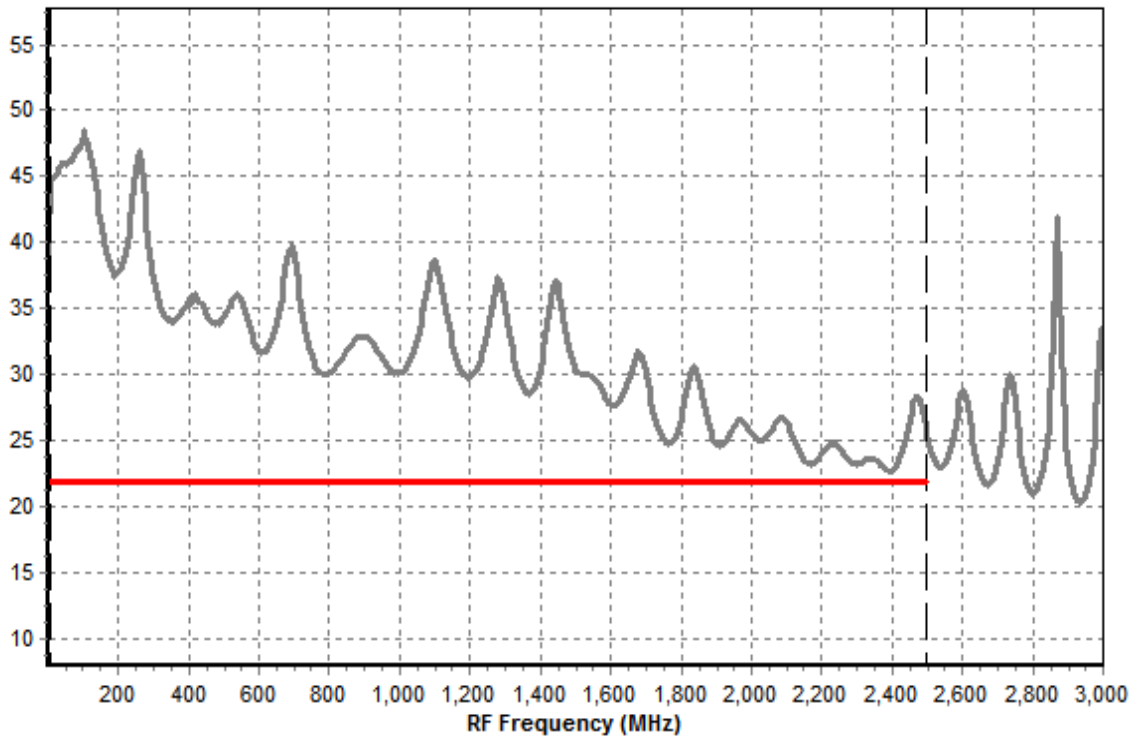


Typical Performance Data

Input Return Loss



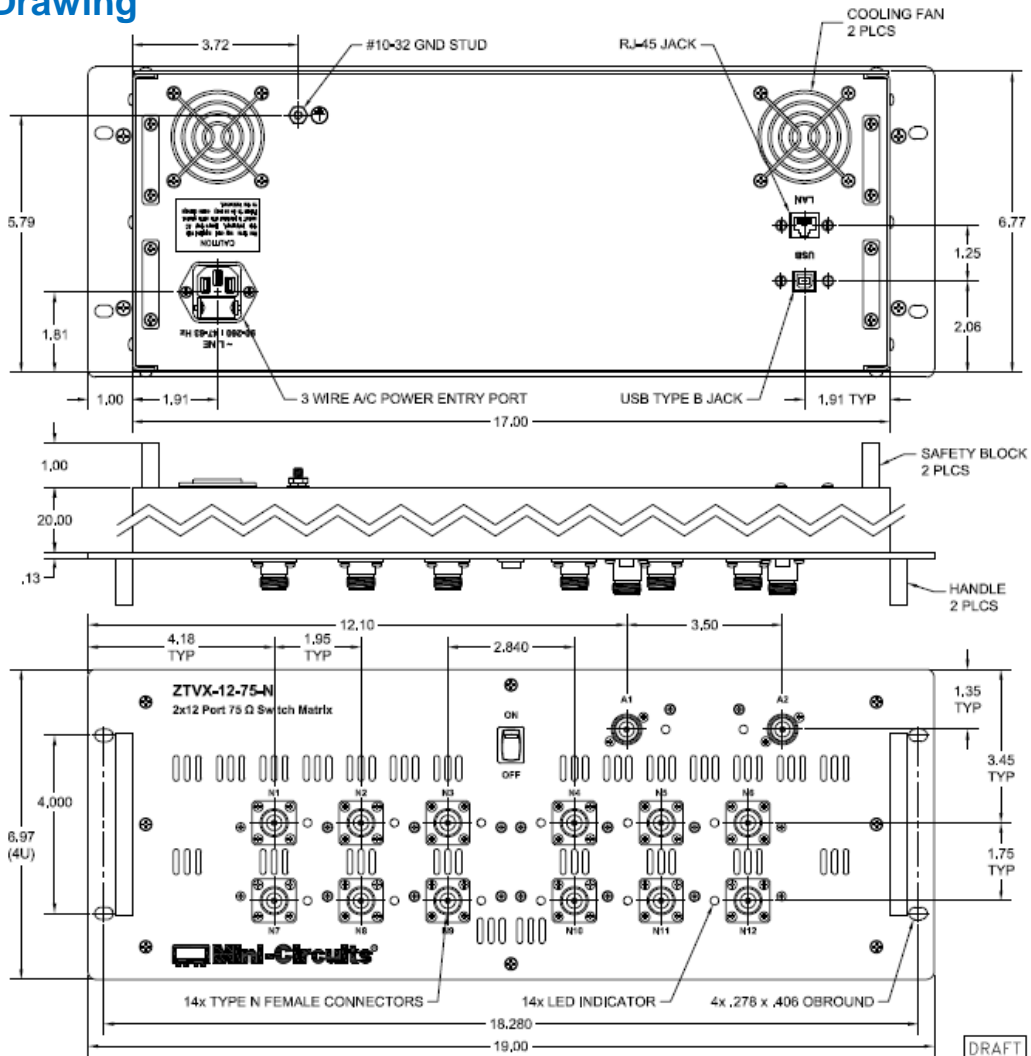
Output Return Loss



Mechanical Specifications

| | |
|----------------------------|---|
| Dimensions | 19" (W) x 4U (H) x 20" (D) |
| Case Material | Aluminum (with protective coatings to prevent corrosion) |
| Case Drawing | 99-01-2277 |
| Feet | Removable |
| RF Connectors | N-type female |
| Front Panel Marking | Line 1: Mini-Circuits part number Line 2: 2 x 12 Port 75Ω Switch Matrix |
| Front panel | a) 14 x RF ports (N-type female) b) ON/OFF switch with indicator light c) Carry handles |
| Rear panel | a) AC mains power supply input b) USB & RJ45 control connections c) Cooling fan vents d) Label with date code/serial number/MCL part# for traceability |
| Control Interface | USB and Ethernet TCP/IP supporting HTTP and TELNET protocols |
| Power supply | AC mains power supply (90-260 V, 47-63 Hz) |
| Operating temp | 0° to +50° C |

Case Drawing



Software Specifications

Software & Documentation Download:

- Mini-Circuits' full software and support package including user guide, Windows GUI, DLL files, programming manual and examples are available on request
- Available for download from <https://www.minicircuits.com/softwaredownload/ztvx.html>

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 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.

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 paths
- Configure Ethernet settings
- Upgrade firmware
- Send SCPI commands
- View temperature & fan status

