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YTEC CORP.

BULLETIN
VX-5

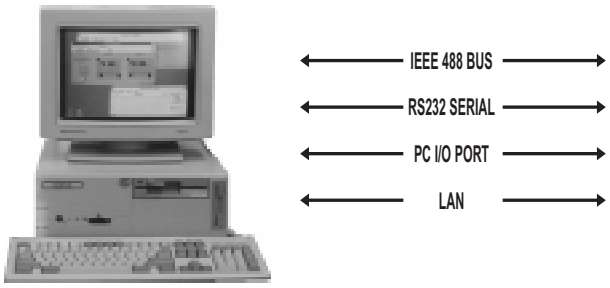
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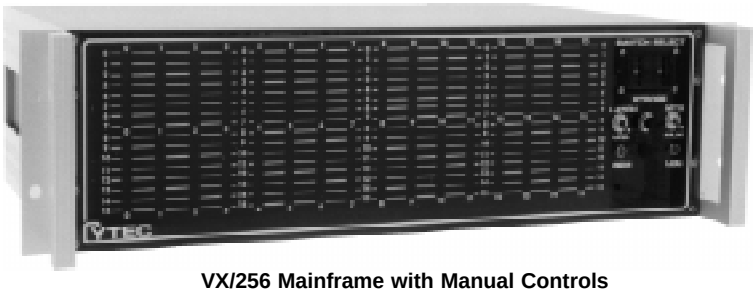
# VX SERIES

## SWITCHING SYSTEMS

### FOR AUTOMATIC TEST, INSTRUMENTATION AND COMMUNICATIONS

**The VX Series of low-cost, versatile Switching Systems use a modular concept of Switch Modules, Display Modules and Control Modules which can be assembled into VX/256 Mainframes as Matrices, Multiplexers or Individual Relays.**
**All units have front panel LED displays and Status feedback of selected relays.**
**Control Modules are available for IEEE488 Bus, RS232 Serial, 10Base-T Ethernet LAN, and optional Front Panel Manual Controls.**



VX/256 Mainframe with Manual Controls

## VX/256 MAINFRAMES

The Mainframes are 19" rack mounting units 5.25" high and 12" deep with power supplies and motherboards to accept up to 16 VX Switch Modules, Display Modules and a Control Module. These modules plug into the mainframes so that signal inputs are accessible on the back panel and the LED displays are visible through the translucent front panel.
The Mainframes accept any of the VX Switch Modules.

## VX/256-E EXPANSION CHASSIS

These units have the same prewired motherboards as the mainframes but do not have power supplies or control modules. They are powered and controlled from the MESA Control Unit as detailed in the **MESA Bulletin.**

## VX/256-W WIRED UNITS

All mainframes and expansion chassis can be supplied in 16" deep chassis with modules wired out to user specified connectors in any required configuration.

## CL16 DISPLAY MODULES

One Display Module is required for each Switch Module. It has the controls for selecting and Latching or Unlatching the 16 relays in the Switch Module. Sixteen LEDs in series with the relays give an absolute indication that the relays are energized. The LEDs are visible through the front panel and are a valuable aid in checking the matrix status.
The CL16 also includes Status Feedback to the computer to verify that selected relays are energized by checking the relay drive output.

## SWITCH MODULES

Each Switch Module has sixteen relays and each relay can be individually latched or unlatched and the Status displayed by the CL16 Display Module.
The following Switch Modules are available:

### VX/4(1X4) MODULE

This versatile module has four 1x4 two pole matrices which can be configured as two 1x8 Matrices or one 1x16 module.

### VX/G MODULES

These modules have 16 relays with inputs on header connectors and outputs bussed on the motherboard.
**VX16/G2** has 16 two pole relays.
**VX16/G3** has 16 three pole relays.
**VX16/GC** has 16 single pole **Form C** relays.

### VX/K MODULES

These modules have 16 individual relays and are not bussed to the motherboard.
**VX/KA** has 16 single pole **Form A** relays.
**VX/KC** has 16 single pole **Form C** relays.

### VXC MODULES

These modules are high frequency coaxial matrices with **SMA** connectors.
**VXC/4x4** has 16 single pole coaxial relays arranged in a 4x4 configuration.
**VXC/8x2** has 16 single pole coaxial relays arranged in an 8x2 configuration.



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# VX/256 CHASSIS

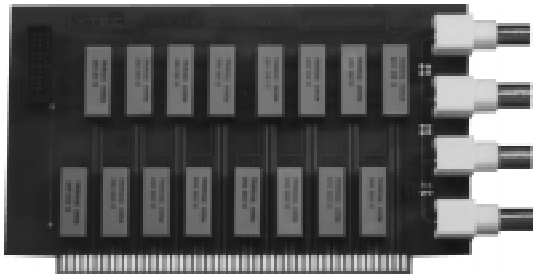
**The VX/256 Chassis consist of Mainframes and Expansion Chassis with pre-wired motherboards which accept 16 of the VX Switch Modules and Display Modules.**
**The motherboards are assembled so that the Switch Module signal connectors are accessible from the chassis back panel and the LEDs are visible through the front panel.**
**The VX/256 Mainframes have power supplies and are pre-wired for a Control Module.**
**The VX/256-E Expansion Chassis are powered and controlled from the MESA Control Unit detailed in MESA Bulletin.**

## VX MATRIX SWITCH MODULE

**These modules have 16 two pole relays arranged as four 1x4 matrices as shown in Fig. 1. One side of each matrix is wired to signal connectors and the other side is wired to card edge connectors which plug into the VX/256 Signal Motherboard. The signal connectors available include BNC, 3 pin Header or Screw Terminals.**
**The modules are available with Type S, M or LT reed relays.**

### SWITCH MODULE CONFIGURATIONS

**The basic Switch Module shown in Fig. 1 includes bus points A, B and C which allows the module to be configured as either a VX/4(1x4), VX/2(1x8) or VX/1x16 Module.**
**VX/4(1x4) Module** has no bussing and configures as **four 1x4** matrices. Allows formation of 4x4 through 64x4 Matrices.
**VX/2(1x8) Module** is bussed at points A & C to form **two 1x8** matrices**.** Allows formation of 2x8 through 32x8 Matrices.
**VX/1x16 Module** is bussed at bus points A, B & C to form **one 1x16** matrix. Allows formation of 1x16 through 16x16 Matrices.



## MATRIX CONFIGURATIONS

**Several different Matrix configurations can be assembled in the VX/256 Chassis using the three different VX Matrix Switch Modules and by bussing on the Signal Motherboard.**
**Bandpass is DC to 10 MHz and Isolation is better than -60dB at 1 MHz.**

### VX/4(1x4) CONFIGURATIONS

**Four 16x4 Matrices** can be configured without any bussing as shown in **Fig. 2**.
**Two 32x4 Matrices** can be configured by bussing between Matrices 1 & 2 and between Matrices 3 & 4 in **Fig. 2**.
**One 64x4 Matrix** can be configured by bussing between Matrices 1, 2, 3 & 4 in **Fig.2**.

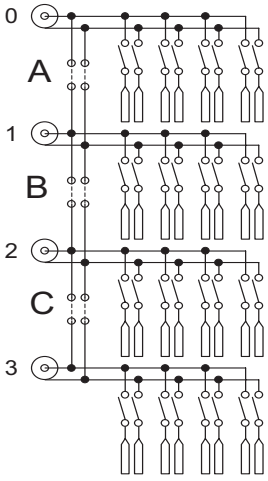



Fig. 1

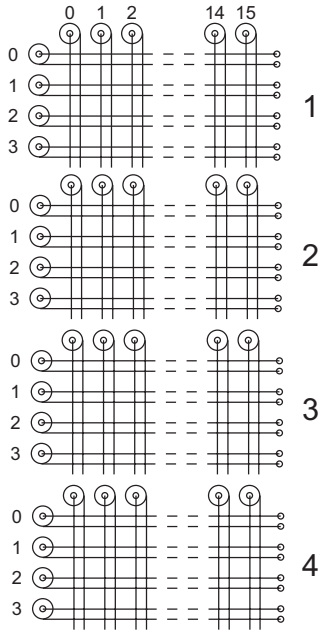



Fig. 2

### VX/2(1x8) CONFIGURATIONS

**Two 16x8 Matrices**s can be configured as shown in **Fig. 3** without bussing the Motherboard.
**One 32x8 Matrix** can be configured by bussing between Matrices 1 & 2 in **Fig. 3**.

### VX/1x16 CONFIGURATIONS

**One 16x16 Matrix** can be configured as shown in **Fig. 4** without bussing the motherboard.

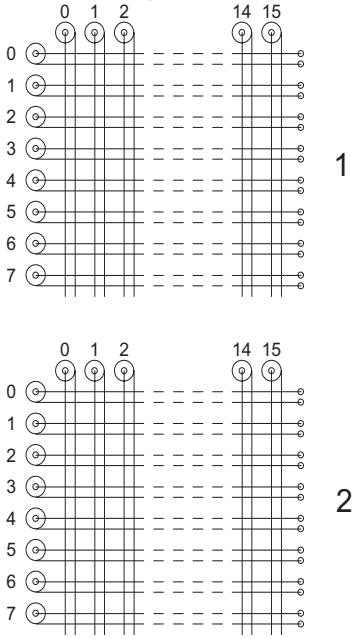



Fig. 3

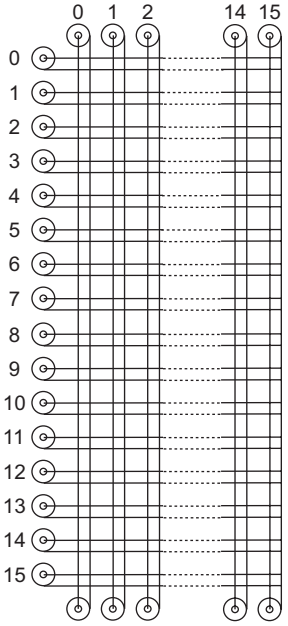



Fig. 4



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# VX GENERAL PURPOSE MODULES

## VX/G SWITCH MODULES

These modules have the inputs of 16 relays wired to header connectors on the rear edge of the module and the outputs wired to the motherboard as shown in **Figs. 5 & 6**.
Plugged into the bussed motherboard, the modules can be wired in configurations of **16x16, 32x8, 64x4, 128x2 or 256x1**.
The following types of modules are available:
**VX16/G1** has 16 single pole relays wired to two 20 pin headers as shown in **Fig. 5** and is available with **Type S** or **M** reed relays.
**VX16/G2** has 16 two pole relays wired to two 20 pin headers as shown in **Fig. 5** and is available with **Type S, M** or **LT** reed relays.

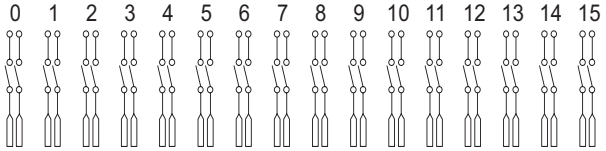



**Fig. 5**

**VX16/G3** has 16 three pole relays wired out to a 50 pin header and is available with **Type S, M**, or **LT** reed switches.

**VX16/GC** has 16 single pole, **Form C** relays wired out to two 20 pin header connectors as shown in **Fig. 6**.
These modules are available with **Type CS** relays.

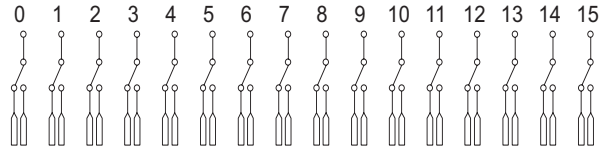



**Fig. 6**

## VXC/4X4 COAXIAL SWITCH MODULE

This module has 16 single pole coaxial relays interconnected by 50 ohm characteristic impedance striplines in a 4x4 matrix configuration as shown in **Fig. 9**. The inputs and outputs are wired out to coaxial connectors on the rear of the module which can be **SMA, SMB** or **Coaxicon**. There are no connections to the motherboard.
**Bandpass** is DC to 400 MHz (-3dB).
**Crosstalk and Isolation** are better than 60 dB at 10 MHz.

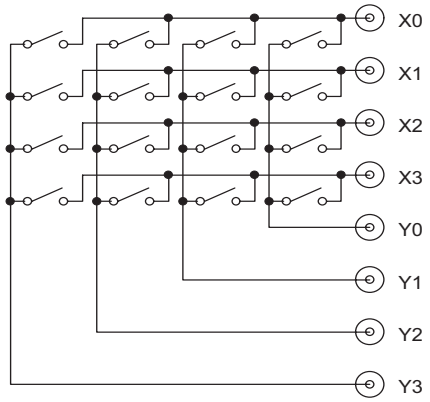



**Fig.9**

## VX/K SWITCH MODULES

These modules have 16 individual relays with both inputs and outputs brought out to header connectors on the rear of the module. There are no connections to the motherboard, and these modules can be used in any combination with other VX modules.
There are two types of modules:
**VX/KA** has 16 **Form A** relays wired out to two 20 pin header connectors as shown in **Fig. 7**. It is available with both **Type S** or **M** reed switches.
**VX/KC** has 16 **Form C** relays wired out to a 50 pin header connector as shown in **Fig. 8**. It is available with both T**ype CS** or **CM** reed switches.

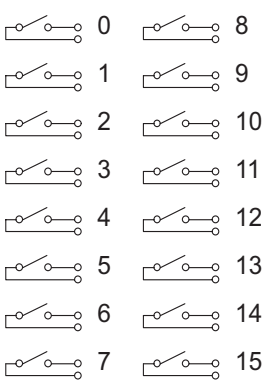



**Fig. 7**

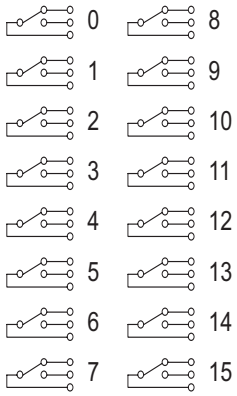



**Fig. 8**

## VXC/8X2 COAXIAL SWITCH MODULE

This module has 16 single pole coaxial relays interconnected by 50 ohm characteristic impedance striplines in an 8x2 matrix configuration as shown in **Fig. 10**.
The inputs are wired out to **SMA** connectors on the rear of the module.
The outputs are switched through isolation relays to two **SMA** connectors on the back panel and to the card edge connector which plugs into a coaxial motherboard.
**Bandpass** is DC to 200 MHz (-3dB).
**Crosstalk and Isolation** are better than 60 dB at 10 MHz.
When plugged into the coaxial motherboard, the bandpass is dependent on matrix size due to the stub length, and in a 128x2 matrix, the bandpass is 50 MHz.

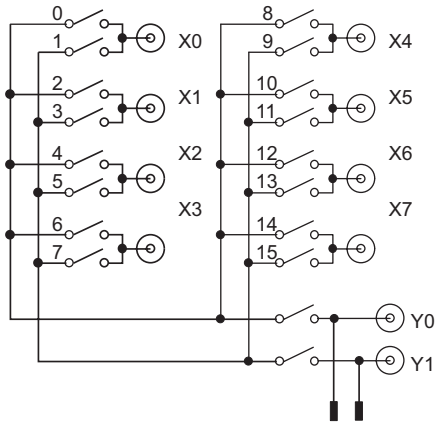



**Fig. 10**



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## GX GROUP SWITCH

**VX16/G2 & VX16/G3 Switch Modules can be used in the GX/16 Group Switch Chassis to switch signals in groups of up to 48 wires in up to a 16x1 Multiplexer configuration. For more information see GX Bulletin.**

## VX SERIES RELAY SPECIFICATIONS

The relays use high reliability reed switches with a guaranteed life of 100 million operations when used within the following specifications:

**Type S and CS** Standard switches are for general purpose instrumentation level signals.

**Type M and CM** Mercury switches are for higher power switching.

**Type LT** Low Thermal switches have offset of less than one microvolt for very low signal level measurements.

| SPECIFICATIONS | S | M | LT | CS | CM |
|---|---|---|---|---|---|
| Contact Rating VA | 10 | 50 | 10 | 3 | 30 |
| Switching Voltage DC | 200 | 500 | 100 | 200 | 350 |
| Switching Current DC | .5A | 1.0A | .25A | .25A | 1.0A |
| Carrying Current DC | 1.0A | 2.0A | 1.0A | 1.0A | 2.0A |
| Breakdown Voltage DC | 400 | 1000 | 400 | 200 | 1000 |
| Operate Time MSec | 1 | 2 | 1 | 1.5 | 3 |

## GENERAL SPECIFICATIONS

**DIMENSIONS -** 19" Rack Mounting, 5.25" high and 12" deep.
**WEIGHT -** With full complement of Modules - 25 lbs.
**POWER -** 100-130 Volts AC or 200-240 Volts AC 50-60 Hz, 100 VA.
**ENVIRONMENT -** Operating at $0^0$ C to $50^0$ C.
Storage at $-25^0$ C to $65^0$ C.

## ACCESSORIES

**MATING CONNECTORS**

**J3** - Three pin crimp type header connector.
**J3ST** - Three screw terminal type header connector.
**J20-R** - Twenty pin ribbon type header connector.
**J20-C** - Twenty pin crimp header connector.
**J50-R** - Fifty pin ribbon cable type header connector.
**J50-C** - Fifty pin crimp type header connector.

**CABLES**

**CBL-0.5** IEEE488 Cable .5 meters long.
**CBL-1** IEEE488 Cable 1 meter long.
**CBL-2** IEEE488 Cable 2 meters long.
**RS-1** RS232 Cable 2 meters long.

Cables and wired chassis can be built to customers specific requirements. Please contact our Sales Staff for more information.

**CHASSIS SLIDES**

**CHS-1** Pairs of 19" rack mounting chassis slides with 15" travel.

**CABINETS**

Portable cabinets with handles for 19" rack mounted units with 10.5" panel spaces and 21" depth.

## CONTROL MODULES

**The VX Mainframes can be computer controlled via the modules listed below. Each Control Module selects any switchpoint and Latches, Unlatches and returns Status of that point.**

### IF-1 PARALLEL PORT

This module requires 14 individual TTL level binary lines from the controlling computer. These select Switch and Mode, Strobe the selected command and return switch point Status.

### IF-5 IEEE488/RS232

This module combines both the IEEE488 Talk/Listen and the RS232 features detailed in the AP-5 Bulletin.

### IF-6 LAN INTERFACE

This module allows control via a 10Base-T Ethernet LAN using TCP/IP protocol detailed in the AP-5 Bulletin.

## MANUAL CONTROLS

### M/256 MANUAL CONTROL

This manual control consists of thumbwheels and toggle switches on the front panel for switchpoint and mode selection. A Strobe pushbutton enters the data.
These controls can be "locked out" by the computer.

### VMCS VIRTUAL MANUAL CONTROL SOFTWARE

This Software displays a full Graphical User Interface (GUI) on the controlling computer. The operator controls the Mainframe with simple mouse point-and-click operations. The software can also be used to control the unit over a LAN.
Windows based software is free with any purchase.
A demo version is available on our web site at:
**http://www.cytec-ate.com/soft.htm**

## SOFTWARE

Drivers and Sample Programs are available for the most common programming languages. These check the entire system by cycling through all switches, sequentially latching and unlatching each switch while checking Status.

## CUSTOM SYSTEMS

CYTEC Corp. can build Group Switches using a variety of Switch Modules, Connectors or mixtures of signal types. If you do not see what you need for your application, please contact us and give us the opportunity to recommend a solution.

## WARRANTY

CYTEC Corp. warrants that all products are free from defects in Material and Workmanship for a period of 5 years and that all switches are guaranteed for their Rated Operations.

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