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JX SERIES MATRIX/MULTIPLEXERS FOR DATA ACQUISITION AND AUTOMATIC TEST

This compact and economically priced Series can be used as either Multiplexers, Matrices or Individual Switches. As Multiplexers, they can be used as a single multiplexer to switch a large number of inputs or outputs to one common port, or as a dual multiplexer to switch between either of two common ports. As Matrices, any number of switches can be selected and wired out in the required configuration. Individual Relays are available as SPST or SPDT with standard, mercury wetted or power relays.

Typical applications include:

- Data Acquisition
- Component Testing
- Bed of Nails Testers
- Cable Testers



JX/256 Multiplexer with Keypad Manual Control and Display

MAINFRAMES AND EXPANSION CHASSIS

- **Size** - Standard 19" rack mounting chassis, 5.25" high and 16" deep.
- **Prewired Backplane** accepts 16 Switch Modules and one Control Module. The Backplane includes signal bussing so that the Switch Modules can be interconnected up to a 512x1 Multiplexer or 256x2 Matrix.
- **JX/256 Mainframe** - This is a stand alone unit with its own Power Supplies controlled from any one of the Control Modules. It can also be supplied with an optional Manual Control and Front Panel LCD Display.
- **Optional Dual Supplies** - Standard power supplies allow up to 150 relays to be closed simultaneously. Dual supplies can be provided for applications requiring over 150 relays being closed at one time.
- **JX/256-E Expansion Chassis** - These chassis obtain their power and control from the MESA Series Control Units as detailed in the **MESA Bulletin** and any number of Expansion Chassis can be interconnected to make up large multiplexers.
- **JX/256-E-PS Expansion Chassis w/Power Supply** - These Expansion Chassis can be provided with Power Supplies for applications which require closing over 150 relays within the same chassis simultaneously. Call and discuss your application to determine if you need this option.
- **-W Option** - The Mainframes or Expansion Chassis can be supplied with all signals wired out to special, user specified connectors on the rear panel. Consult Factory for pricing.

FEATURES

- **Five Year Warranty**
- **Modular Construction** with expandability by adding Expansion Chassis and Switch Modules.
- **Control Modules** are available for Control from Combined IEEE488 BUS/RS232 Serial Port, 10BaseT Ethernet LAN or 16 BIT TTL Port.
- **Switch Modules** with 1, 2, 3 or 4 pole relays.
 - Low voltage switching to 1 microvolt.
 - Low current switching to 1 picoamp.
 - High current switching to 8 amp.
 - Breakdown voltage to 1000 volt.
- **Digital I/O Modules** having 16 TTL or Power Drivers.
- **Multiplex Mode** - The Unit can be operated as a single or dual multiplexer.
- **Matrix Mode** - Any number of Switches can be selected at the same time.
- **Manual Controls** - Switches can be selected by optional front panel keypad with LCD display.
- **Status** - Status feedback to the controller verifies the position of the relays.

SERIES JX16 SWITCH MODULES

The JX16 Switch Modules plug into the JX/256 Mainframe and Expansion Chassis and typically are built with 16 relays and their associated solid state controls, including Status feedback.

The Modules are available with high reliability reed relays that have a guaranteed life of 100 million operations and with the option of either Type S - Standard Dry Reed, Type M - Mercury Wetted Reed or Type LT - Low Thermal Reed. They are also available with Armature type Power Relays for switching up to 2000 VA power or 8 amps current.

There are three basic types of Modules: JX16/L for Multiplexing configurations, JX16/K for discrete relays, and JX16/AB for x2 Matrix configurations.

JX16/L SWITCH MODULES

This Series of Switch Modules has 16 relays configured as Multiplexers as shown in Figs. 1 & 2. These modules can be used as separate muxes or bussed together on the backplane to form one multiplexer as large as 256x1.

Bandpass is 20 MHz (-3dB) and Isolation is less than 60dB at 1 MHz when used in a 256x1 Mux.

JX16/L1 AND /L2 SWITCH MODULES

This module has 16 single or two pole relays as shown in Fig. 1 with signal inputs wired to a 34 pin header connector. The two 8x1 muxes may be jumpered together to form a 16x1. The outputs are available on a 10 pin header connector or can be jumpered to the card edge connector which plugs into the backplane. It is available with Type S, M or LT relays.

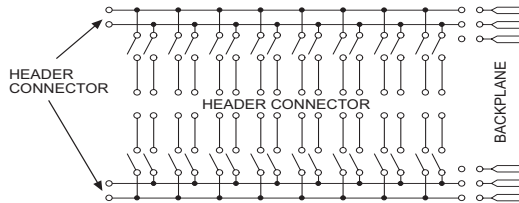


Fig. 1

JX 32/L2 SWITCH MODULE

This module has 32 two pole relays as shown in Fig. 2 with signal inputs wired to two 34 pin header connectors. The two 16x1 muxes can be jumpered together to form one 32x1 mux. The outputs are available on a 10 pin header connector or can be jumpered to the card edge connector which plugs into the backplane. It is available with Type A relays only.

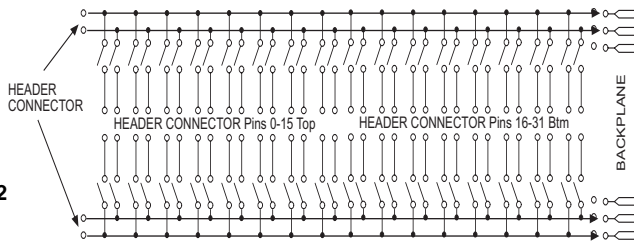


Fig. 2

JX16/4(4x1)-1 and -2 SWITCH MODULES

This module has 16 single or two pole relays arranged as four 4x1 multiplexers as shown in Fig. 3. The muxes may be jumpered to the backplane to form up to a 256x1 mux or two 128x1 muxes. It is available with Type S, M or LT relays.

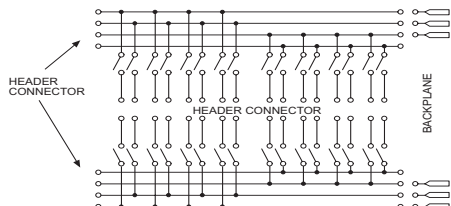


Fig. 3

JX16/K SWITCH MODULES

This Series of Switch Modules has 16 discrete relays with all contacts brought out to connectors accessible from the the chassis rear. Each relay has a Bandpass exceeding 20 MHz (-3dB) and Crosstalk less than 56dB at 1 MHz.

JX16/K1 SWITCH MODULE

This module has 16 single pole relays as shown in Fig. 4 with both sides of all relays brought out to a 34 pin Header connector. The module is available with Type S or Type M relays.

JX16/KP SWITCH MODULE

This module has 16 single pole, Type P power relays as shown in Fig. 4 with both sides brought out to a 37 pin D type connector.

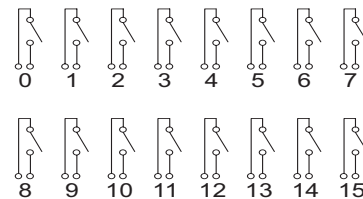


Fig. 4

JX16/KC SWITCH MODULE

This module has 16 single pole, double throw relays as shown in Fig. 5 with all contacts brought out to a 50 pin Header connector. The module is available with either Type CS or Type CM relays.

JX16/KCA SWITCH MODULE

This module has 16 single pole, double throw relays as shown in Fig. 5 with all contacts brought out to a 50 pin Header connector. The module is available with Type A relays only.

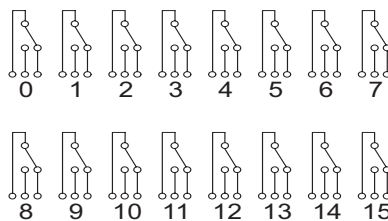


Fig. 5

JX16/KPC SWITCH MODULE

This module has 8 single pole, double throw discrete Form C Type P power relays shown in Fig. 6 with all contacts brought out to screw terminal connectors.

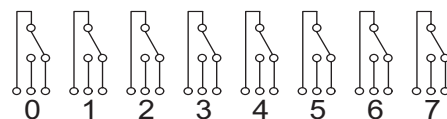


Fig. 6

JX16/AB SWITCH MODULES

These Modules typically have 16 relays configured as an 8x2 Matrix so that any of 8 inputs can be switched to either of 2 outputs. Bandpass is better than 20 MHz (-3dB) and Isolation is less than 40 dB at 100 kHz when used in a JX/256 chassis.

JX16/AB-1 SWITCH MODULE

This Module has sixteen single pole relays arranged in an 8x2 configuration so that any of the eight inputs can be switched to either output A or B as shown in Fig. 7. The eight inputs are wired to a 16 pin header connector with two pins wired to each input for convenience in daisy chaining modules. The A and B outputs are available on a 10 pin header connector, or they can be bussed to the backplane as shown in Fig. 7. The module is available with **Type S** or **Type M** reed relays.

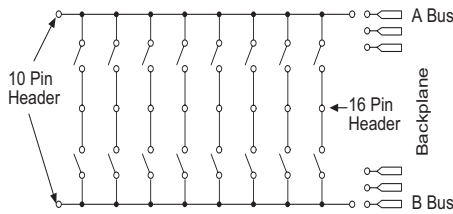


Fig. 7

JX32/AB-1 SWITCH MODULE

This Module has thirty-two single pole relays arranged in a 16x2 configuration so that any of the sixteen inputs can be switched to either output A or B as shown in Fig. 8. The sixteen inputs are wired to a 34 pin header connector with two pins assigned to each input for convenience in daisy chaining modules, and two pins are grounds. The A and B outputs are available on a 10 pin header connector, or they can be bussed to the backplane as shown in Fig. 8. The module is available with **Type S** or **Type M** reed relays.

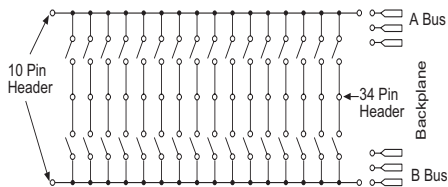


Fig. 8

JX16/AB-4 FOUR POLE MODULE

This Module has 16 four pole relays with signal inputs wired to a 37 pin D type connector as shown in Fig. 9. The outputs A and B are wired to the edge connector which plugs into the bussed motherboard. The module is available with **Type S** or **Type M** relays.

Note: This is the only module without Status Feedback.

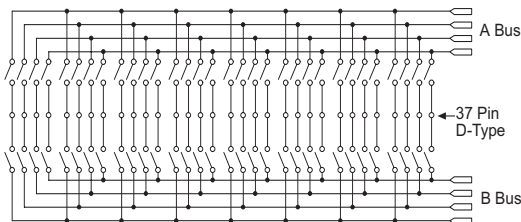


Fig. 9

A/B TYPE MODULE APPLICATIONS

For Cable, Backplane or Bareboard testing, the requirement is to select any two points and check for continuity. It is also necessary to check between one point and all others.

JX16/PROTO-I/O MODULE

This module, shown in Fig. 10, plugs into the JX Series backplane and has logic to control 16 TTL Outputs or Relay Driver Outputs and 16 TTL compatible inputs.

TTL Outputs are three state, Non Inverting Buffer/Line Drivers with output capability of 16 LSTTL loads.

Relay Driver Outputs are High Voltage, High Current, Open Collector Drives with diode suppression for energizing Inductive loads.

Data Inputs are Data Selector/Multiplexers with TTL compatible Inputs and three state output to the JX/256 Mainframe. This can be used to interrogate the status of the TTL or Relay Driver Outputs.

Connections may be wired to the 50 pin header supplied on the module or wired directly to the board.

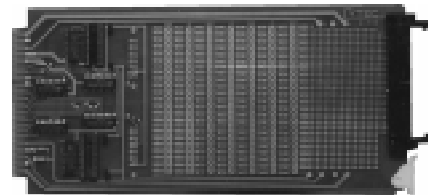


Fig. 10

SWITCH SPECIFICATIONS

The following types of relays are available:

Type S are dry reed switches for Instrumentation Level Signals.

Type LT has a thermal offset of less than 1 microvolt for very low voltage applications.

Type M has mercury wetted contacts with higher power capability.

Type CS and CM are form C versions of Type S & Type M.

Type A are two pole armature

All reed switches have a rated life greater than 100 million operations when used within the following specifications:

	RELAY TYPE				
	S<	M	CS	CM	A
Contact Rating	10VA	50VA	3VA	25VA	30VA
Switching Voltage	200V	500V	200V	200V	110V
Switching Current	0.5A	1.0A	0.25A	1.0A	1.0A
Carrying Current	1A	2A	1A	2A	1A
Breakdown Voltage	300V	1000V	200V	1000V	750V
Operate Time	1ms	2ms	1ms	2ms	3ms

Type P and PC Relays are armature relays for high power switching with the following specifications:

AC Rating	2000VA
DC Rating	150 W
Maximum Switch Voltage	380Volt RMS
Breakdown Voltage	1000Volt RMS
Maximum Switch Current	8Amp
Operate Time	10msec

CONTROL MODULES

Plug in modules can control the JX/256 Mainframe from either TTL Port, Combined IEEE488 BUS / RS232 Serial BUS or 10Base-T Ethernet LAN.

The Control Module selects any switch in the Mainframe and Latches or Unlatches the switch in either the Matrix or Multiplexer Mode and can also request the Status of selected switches.

In the Matrix Mode, any number of relays can be selected and Latched or Unlatched.

In the Multiplex Mode, only one relay is selected and Latched. All others are automatically Unlatched.

IF-J1 16 BIT TTL PORT

This Module has 16 TTL compatible lines for Relay Select, Mode Select, Status Switch and Strobe.

IF-J5 COMBINED IEEE488/RS232 MODULE

This Module has both IEEE488 BUS Control with Talk/Listen features and RS232 Serial Control. The Control Functions are detailed in Applications Bulletin AP-5.

IF-6 LAN/RS232 INTERFACE

This module interfaces between the Local Area Network and the RS232 Control Modules using TCP/IP commands as described in Applications Bulletin AP-5.

MANUAL CONTROLS

MC-2 MANUAL CONTROL WITH DISPLAY

This Manual Control Option has a Keypad and LCD Display on the front panel. The operator can select any switch and verify the switch Status via the display.

VMCS

This Virtual Manual Control Software enables a remote operator to view the Status of the Matrix and to Control Switch Selection using a full Graphical User Interface.

SOFTWARE

Visit our website for free software, drivers for common platforms and program examples.

MATING CONNECTORS

J4C	4 pin connector using individual crimp pins
J8C	8 pin connector using individual crimp pins
J10R	10 pin IDC type ribbon cable connector
J10C	10 pin connector using individual crimp pins
J16R	16 pin IDC type ribbon cable connector
J16C	16 pin connector using individual crimp pins
J20R	20 pin IDC type ribbon cable connector
J20C	20 pin connector using individual crimp pins
J34R	34 pin IDC type ribbon cable connector
J34C	34 pin connector using individual crimp pins
J37R	37 pin D type ribbon cable connector
J37C	37 pin D type crimp pin connector
J50R	50 pin IDC type ribbon cable connector
J50C	50 pin connector using individual crimp pins

APPLICATIONS

SCANNER/MULTIPLEXERS

In this application, the Scanner is required to sequentially select any one of a number of inputs and switch it to a measuring instrument such as a DVM.

For low level signals, or in noisy environments requiring high common mode rejection, it is advisable to use two pole relays switching both the Hi and Lo input of the DVM as shown in Fig. 11.

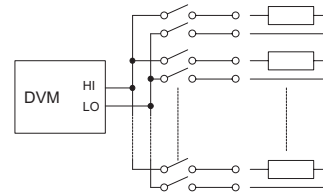


Fig. 11

For extremely low level signals such as thermocouples, the LT type relays with less than 1 microvolt of thermal offset should be used. For additional noise prevention, the shields from the pairs of wires can be switched to the Instrument Guard as shown in Fig. 12.

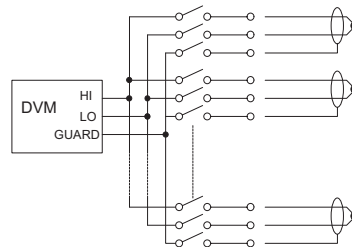


Fig. 12

KELVIN BRIDGE MEASUREMENTS

For very low impedance measurements using a four wire bridge, it is necessary to switch both Stimuli and Sense lines to each side of the device under test as shown in Fig. 12. This requires a total of 4 poles switching with two pole relays as shown in Fig. 13. Any two points can be selected, and the impedance between these points measured.

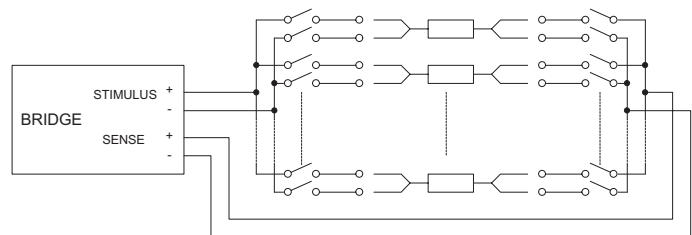


Fig. 13

WARRANTY

CYTEC Corp. warrants that all products are free from defects in workmanship and materials for a period of 5 years. Reed relays are guaranteed for 100 million operations when used within their published specifications.

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