CYTEC

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**BULLETIN
JX-6-2015**

JX SERIES MATRIX/MULTIPLEXERS
for DATA ACQUISITION and AUTOMATIC TEST

This compact and economically priced Series can be used as 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, low thermal, armature 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.

- **JX/256-E Expansion Chassis -** These chassis obtain their 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.

- **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 IEEE488, RS232 Serial Port, 10/100BaseT Ethernet LAN or 16 BIT TTL Port.
- **Switch Modules** with 1 or 2 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.

**FOR TECHNICAL ASSISTANCE, PLEASE CONTACT CYTEC AT
800-346-3117 or 585-381-4740 or e-mail: sales@cytec-ate.com
or visit our website at: cytec-ate.com**

JX SWITCH MODULES

The JX16 Switch Modules plug into the JX/256 Mainframe and Expansion Chassis. The Modules are available with high reliability reed or armature relays that have a guaranteed life of up to 100 million operations. There are three basic types of Modules: JX16/L for 1xN Mux configurations, JX16/K for discrete relays, and JX16/AB for 2xN Matrix configurations.

JX/L SWITCH MODULES for Multiplexer Configurations

These modules allow you to configure 1xN mux configurations from four separate 1x4 single wire muxes, up to 64 separate 1x8 two pole muxes. Modules can be jumpered to form single mux configurations from 1x16 to 1x512. The combination of jumpers, backplane connections and external connectors makes complicated configurations easy, and the modular switch topology makes it simple to reconfigure as your needs change.

JX16/L1 or L2 SWITCH MODULES

Each switch modules has 16 single or two pole reed relays that can be configured as two 1x8 or jumpered as a single 1x16 mux. Backplane jumpers and external connectors allow modules to be interconnected for any configuration needed up to a 1x256.
• Bandpass from 150 MHz as a 1x8, to 20 MHz as a 1x256.
• Isolation better than 60dB at 1 MHz as a 256x1 Mux.
• Single versions type S or type M relays.
• Two pole versions type S, type M, type HV or type LT relays.
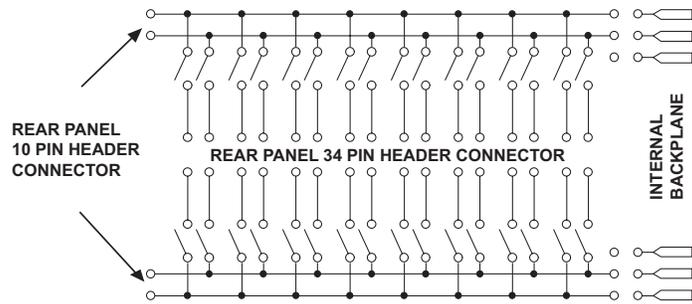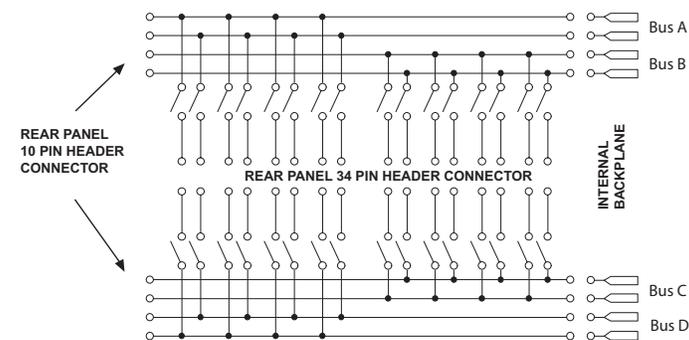

JX16/L2 Switch Module

JX16/L2-A SWITCH MODULES

This is the same module shown above but uses a low cost type A armature relay as an alternative for the type M and type LT relays. See relay specs.

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

This module has 16 single or two pole relays arranged as four 4x1 multiplexers. The muxes may be jumpered to form larger configurations or driven in parallel to form large 1x4 or 1x8 group switches.
It is available with single pole type S or type M relays.
It is available with two pole type S, M or LT relays.

JX16/4(4x1)-2 Switch Module

JX32/4(8x1)-2A SWITCH MODULE

Each switch module has 32 two pole type A relays that can be configured as four 1x8's or jumpered as two 1x16's or a single 1x32 mux. Backplane jumpers and external connectors allow modules to be interconnected for any configuration needed up to a 1x512.
• Bandpass from 100 MHz as a 1x8, to 10 MHz as a 1x512.
• Isolation better than 60dB at 1 MHz as a 512x1 Mux.
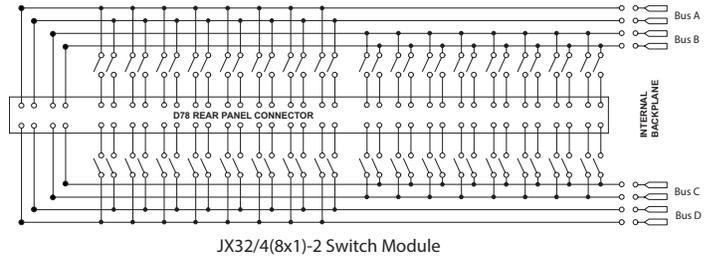
JX32/4(8x1)-2 Switch Module

This module can be sub muxed as a single pole to make a 1x1020 single pole mux in one 3 RU chassis.

JX32/L1-S or -M SWITCH MODULE

Each switch module is a 32x1 single pole mux with a D37 connector. It uses either type S or type M single pole reed relays.
• Bandpass from 50 MHz as a 1x32, to 10 MHz as a 1x512.
• Isolation better than 60dB at 1 MHz as a 512x1 Mux.
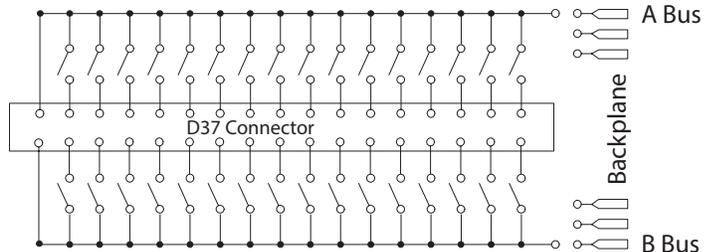
	RELAY TYPE			
	S&LT	M	A	HV
Contact Rating	10VA	50VA	30VA	50 VA
Switching Voltage	200V	500V	110V	1000 V
Switching Current	0.5A	1.0A	1.0A	0.5A
Carrying Current	1A	2A	2A	1.0 A
Breakdown Voltage	300V	1000V	750V	1200 V
Operate Time	1ms	2ms	3ms	1 ms

JX16/AB SWITCH MODULES

These Modules have 16 or 32 relays configured as an 8x2 or 16x2 Matrix so that any of the 8 or 16 ports can be switched to either of 2 ports. Bandpass is better than 20 MHz (-3dB).
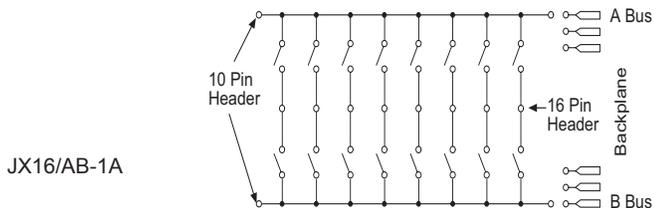
JX16/AB-1S or -1M SWITCH MODULE

This Module has sixteen single pole reed relays arranged in an 8x2 configuration so that any of the eight inputs can be switched to either output A or B as shown below. The eight ports are wired to a 16 pin header connector with two pins wired to each port for convenience in daisy chaining modules. The A and B ports are available on a 10 pin header connector, or they can be bussed to the backplane as shown below. The module is available with **Type S** or **Type M** reed relays.
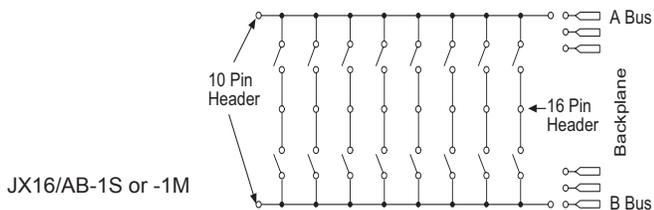
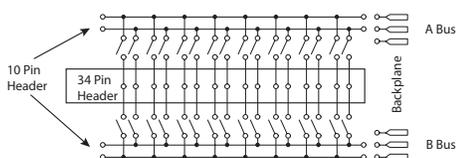JX16/AB-1S or -1M

JX16/AB-1A SWITCH MODULE

This Module has sixteen armature relays arranged in an 8x2 single wire configuration so that any of the eight ports can be switched to either port A or B as shown below. This is basically the same module as shown above but the Type A relay option allows you to switch higher power levels without the cost of Type M relays. The A and B outputs are available on a 10 pin header connector, or they can be bussed to the backplane as shown beolw. **Type A** relays only.

JX16/AB-1A

JX16/AB-2S or -2M SWITCH MODULE

This Module has sixteen two pole reed relays arranged in an 8x2 configuration so that any of the eight inputs can be switched to either output A or B as shown below. The eight ports are wired to a 32 pin header connector with two pins wired to each port for convenience in daisy chaining modules. The A and B ports are available on a 10 pin header connector, or they can be bussed to the backplane as shown below. The module is available with **Type S** or **Type M** reed relays.


JX16/AB-2S or -2M

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.

JX32/AB-1 SWITCH MODULE

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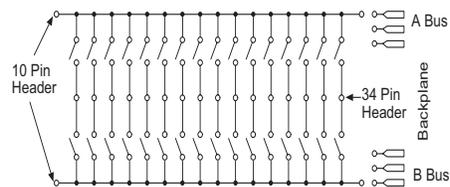
SWITCH SPECIFICATIONS

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 A are two pole armature relays

All reed relays have a rated life greater of 100 million operations when used within the following specifications:
Type A relays have a rated life of 10 million operations at max power and 100 million mechanical.

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

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JX/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-S or -M or - HV SWITCH MODULE

This module has 16 single pole relays as shown below with both sides of all relays brought out to a 34 pin Header connector. The module is available with **Type S, M or HV relays**.
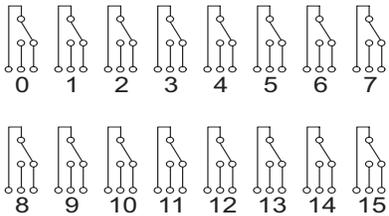
JX16/KP SWITCH MODULE

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

JX16/K1 Module
Type S and M = 34 pin header.
Type P = D37
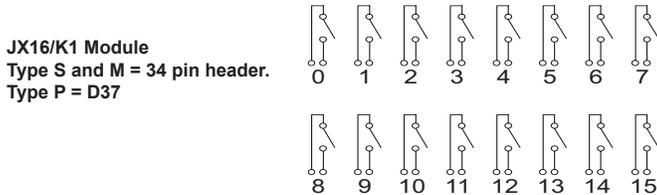
JX16/KC SWITCH MODULE

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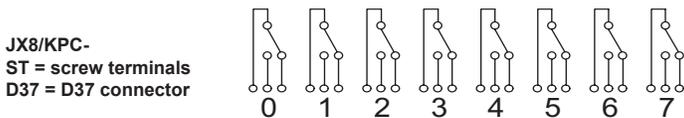

JX8/KPC-ST SWITCH MODULE

This module has 8 single pole, double throw discrete Form C **Type P** power relays shown below with all contacts brought out to screw terminal connectors.
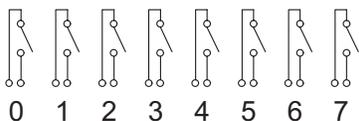
JX8/KPC-D37 SWITCH MODULE

This module has 8 single pole, double throw discrete Form C **Type P** power relays shown below with all contacts brought out to a D37 connector.

JX8/KPC-
**ST = screw terminals**
D37 = D37 connector

JX8/K-HP-ST SWITCH MODULE

This module has 8 single pole, single throw discrete Form A **Type HP** power relays shown below with all contacts brought out to screw terminal connectors. The module takes 2 slots.

JX4/KC-HP-ST SWITCH MODULE

This module has 4 single pole, double throw discrete Form C **Type HP** power relays shown below with all contacts brought out to screw terminal connectors. The module takes 2 slots.
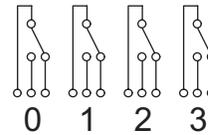

JX16/PROTO-I/O MODULE

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.
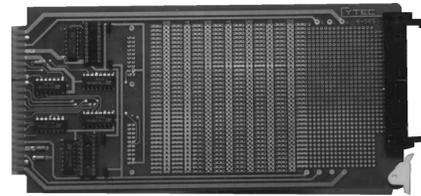
SWITCH SPECIFICATIONS

The following types of reed relays are available:

Type S are dry reed switches for Instrumentation Level Signals.

Type M has mercury wetted contacts for higher power capability.

Type CS are form C versions of Type S

The following types of armature relays are available:

Type A are two pole armature Form C

Type P and PC are Form A or Form C power relays

Type HP or HPC are High Power relays.

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

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

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

Relay Type	P/PC	HP/HPC
AC Rating	2000VA	7200 / 5000 VA
DC Rating	150 W	560 / 280 W
Maximum Switch Voltage	380 VAC	240 VAC
Breakdown Voltage	1000V peak	1500 V peak
Maximum Switch Current	8Amp	30A / 20A
Operate Time	10msec	15 ms

CONTROL MODULES

Plug in modules can control the JX/256 Mainframe from either TTL Port or Combined IEEE488 BUS / RS232 Serial BUS.

A fixed module can control from Combined 10/100Base-T Ethernet LAN, IEEE488 & RS232.

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 - PLUG IN

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

IF-J5 IEEE488/RS232 MODULE - PLUG IN

This Module has both IEEE488 BUS Control with Talk/Listen features and RS232 Serial Control. The Control Functions are detailed in Applications Bulletin AP-6.

IF-11 LAN/IEEE488/RS232 INTERFACE - FIXED

Cytec's newest control module has the three most popular control interface protocols built into one module.

LAN - 10/100BaseT Ethernet with an RJ45 Connector.

GPIB - IEEE488.2 compliant control module.

RS232 - Standard D9 serial port which can be used from computer com ports or USB to COM port cables

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**.
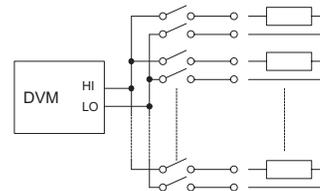

Fig. 11

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**.
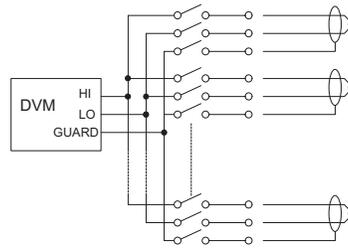

Fig. 12

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.
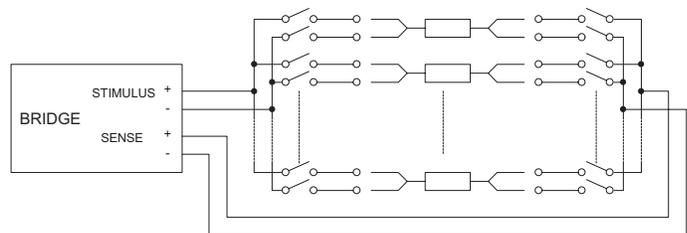

Fig. 13

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.

CONTACT 1-800-346-3117 or CYTEC-ATE.COM FOR TECHNICAL ASSISTANCE