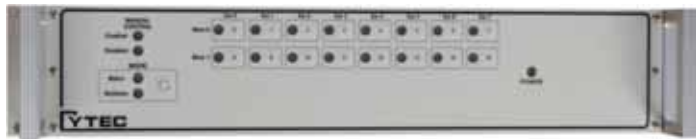


## RS SERIES SWITCHING SYSTEMS FOR AUTOMATIC TEST AND COMMUNICATIONS

The RS Series of computer controlled switching systems are designed to switch multiwire groups of signals of up to 25 wires. These systems are typically used for signals such as parallel TTL, RS232, RS422, WAN or Modems, but they can also be used for any group of analog or digital signals having a bandpass up to 30 MHz or data rate up to 20 Mbps. A modular design concept is used that provides configuration flexibility by allowing display modules, different control modules and switch modules to be assembled in one chassis.

LED displays and switch point Status Feedback are available on most systems. Computer control via IEEE488 (GPIB) and RS232 is standard, while TCP/IP Ethernet LAN, USB and manual controls are optionally available.



RS/16 Mainframe



RSM/8x8 Mainframe

There are three basic Series: (1) RS, (2) RSS and (3) RSM.

The RS Series are passive, bidirectional relay-based Multiplexers, connecting one of up to 16 multiwire signal groups to a single signal common. Nine, fifteen or twenty-five wires are switched simultaneously. The RSS Series are solid state, nonblocking, full fan-out matrices for single wire or differential pair signals. Any input can be connected to one, several or all outputs.

The RSM Series are bidirectional, non blocking relay matrices. A modular design allows the configuration of matrices from 1x8 or 2x4 up to 16x8 or 32x4. Nine, fifteen or twenty-five wires are switched together.

### RS MULTIPLEXERS

These pre-wired chassis hold RS Switch Modules built with D9, D15 or D25 style connectors and switch 9, 15 or 25 wires. **RS/16 Mainframe** accepts up to 16 of the RS Modules as a 16x1 Multiplexer.

**RS/16-E Expansion Chassis** may be used with a MESA controller to build multiple chassis multiplexers up to 256x1, depending on bandpass restrictions.

### RSS MATRIX

This is made up of 16x8 Solid State Modules plugged into pre-wired RSS Chassis. Each chassis holds up to 16 modules. The following Switch Modules are supplied:

**RSS/16x8-A** switches  $\pm 5$  volt analog signals.

**RSS/16x8-422** is used for differential RS422 signals.

**RSS/16x8-TTL** has TTL inputs and outputs.

### RSS EXPANSION CHASSIS

These are built similar to the Mainframes except they are not built with control modules or power supplies. They are controlled and powered from a MESA Chassis as described in the **MESA Bulletin**.

### RSM MATRICES

These are pre-wired chassis in the requested Matrix configurations. They hold up to 16 of the RSM Switch Modules. Switch Modules are available that switch either 9, 15 or 25 wires to D9, D15 or D25 connectors.

#### RSM MAINFRAMES

**RSM/16x8 Mainframe** holds 16 of the RSM/1x8 Switch Modules in a 16x8 Matrix configuration.

**RSM/32x4 Mainframe** holds 16 of the RSM/2(1x4) Switch Modules in a 32x4 Matrix configuration.

**RSM/2(16x4) Mainframe** holds 16 of the RSM/2(1x4) Switch Modules as two separate 16x4 Matrix configurations

#### RSM EXPANSION CHASSIS

These are similar to the Mainframes except they are not built with control modules. They are controlled from a MESA Chassis as described in the **MESA Bulletin**.

#### RSM SWITCH MODULES

These Switch Modules are available in two basic configurations, switching either 9, 15 or 25 wires to D9, D15 or D25 connectors.

**RSM/2(1x4) Module** has two separate 1x4 multiwire matrix configurations.

**RSM/1x8 Module** has one 1x8 multiwire matrix configuration.

## RS MULTIPLEXER

These are passive, relay-based multiplexers switching from 9 to 25 wire signals such as RS232, RS422 or TTL in applications including Modems, Printers or Token Ring.

Their Bandpass is DC to 20 MHz.

## RS/16 MAINFRAME

These are 19" rack mounted units 3.5" high and 15.6" deep with power supplies, LED Displays and pre-wired motherboards which accept the RS Switch Modules. This unit holds up to sixteen RS Switch Modules and has sixteen switchpoint status LEDs on the front panel. It can switch up to 25 wires from sixteen input ports to one output port, or the reverse, as shown in Figure 1.

## EXPANSION CHASSIS

These are built similar to the Mainframes except they are not built with control modules or power supplies. They are powered and controlled from a MESA Chassis as described in the MESA Bulletin.

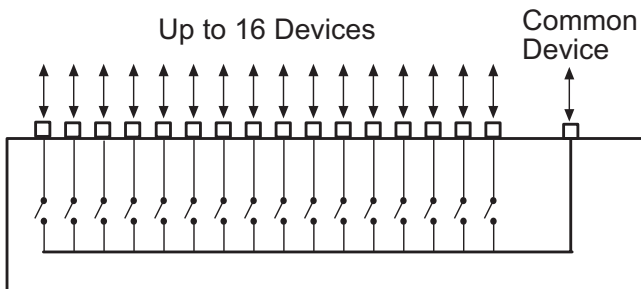


Figure 1

## RS SWITCH MODULES

The RS/9, RS/15 and RS/25 Modules are built with Type A relays, switching 9, 15 and 25 poles. Connector types are subminiature D9, D15 or D25, and either -P pins or -S sockets can be user specified.

### RS/9 SWITCH MODULE

This module is built with a D9 connector and Type A relays and switches nine wires.

### RS/15 SWITCH MODULE

This module has a D15 connector with Type A relays switching all fifteen wires.

### RS/25 SWITCH MODULE

This module utilizes a D25 connector and Type A relays switching all twenty-five wires.

## PLUG or SOCKET D TYPE CONNECTORS

To specify Plug (male) D type connectors, add -P to the Switch Module part number. Adding -S specifies Socket (female) connectors. For example, the RS/15-S is built with a subminiature D15 Socket connector.

## AVAILABLE MATING CONNECTORS

The following mating connectors can be purchased for a small additional charge.

- D9-R - Nine pin ribbon cable connector
- D9-C - Nine pin crimp type connector
- D15-R - Fifteen pin ribbon cable connector
- D15-C - Fifteen pin crimp type connector
- D25-R - Twenty-five pin ribbon cable connector
- D25-C - Twenty-five pin crimp type connector

## RSS MATRIX

These are built up from the RSS/16x8 Solid State Modules, which in turn are plugged into pre-wired RSS chassis. Each module is an individual 16x8 Matrix, and multiple modules can be interconnected to form larger matrix configurations.

## RSS/256 MAINFRAME

This is a 19" rack mounted chassis, 5.25" high and 15.6" deep, pre-wired to accept the RSS Series of Switch Modules. The unit has one slot that holds the required control module, as well as slots for up to sixteen RSS/16x8 Switch Modules. Multiple switch modules can be combined to form larger matrices.

## EXPANSION CHASSIS

Expansion Chassis are built similar to the Mainframes except they are not built with control modules or power supplies. They are powered and controlled from a MESA Chassis as described in the MESA Bulletin.

## RSS/16x8 SOLID STATE MODULES

This is a solid state switch module and it is configured as a 16 by 8 (16x8) matrix. Three separate versions are built to handle either analog, TTL or RS422 signals. The 16 inputs are wired to a 34 pin header, the 8 outputs to a 20 pin header. The module is full fan out so any input can be connected to one, several or all outputs.

### RSS/16x8-A SWITCH MODULE

This module switches +/-5 volt analog signals and has a typical ON resistance of 60 ohms. Bandpass is 50 MHz when terminated into 1K ohms. It can be used as a 16x8 or 8x16 matrix.

### RSS/16x8-422 SWITCH MODULE

Switches sixteen individual, two wire RS422 signal inputs to 8, two-wire RS422 outputs as shown in Fig. 2 at up to 10 Mbps. Any input can be connected to one, several or even all outputs.

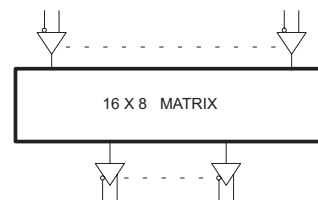


Fig. 2

### RSS/16x8 TTL SWITCH MODULE

This module switches TTL level signals and can be used as either a 16x8 or 8x16 matrix. Any input can be connected to any or all outputs.

## CUSTOM SWITCH MODULES

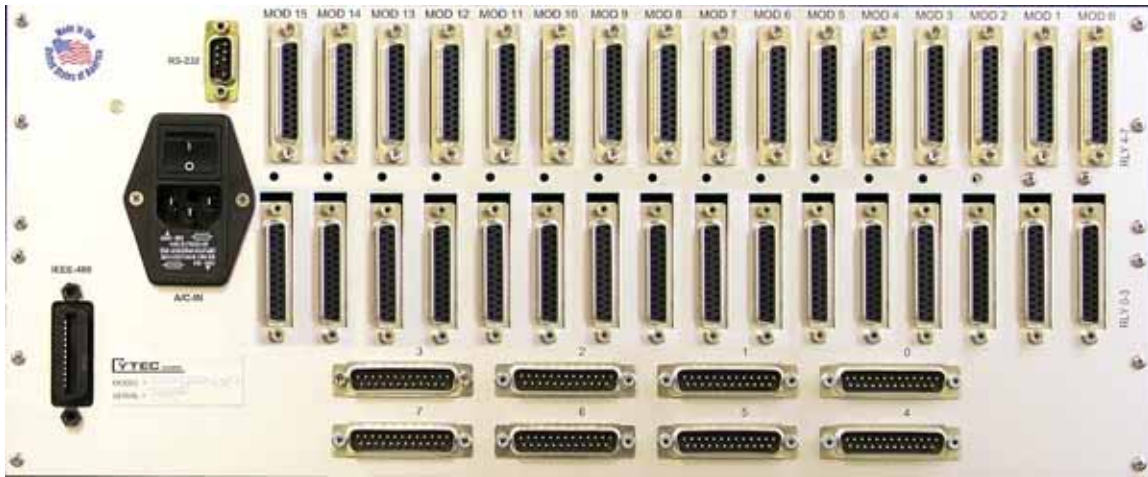
Switch Modules can be supplied that switch different types of input and output signals on the same module. For example, one module might have 16 two wire RS422 inputs switched into eight single wire TTL outputs.

## MATING CONNECTORS

- J20-R - Twenty pin ribbon cable type header connector
- J20-C - Twenty pin crimp type header connector
- J34-R - Thirty-four pin ribbon cable type header connector
- J34-C - Thirty-four pin crimp type header connector

# RSM MATRICES

RSM Matrices are designed to switch multiwire data communications signals such as RS232, RS422 and Token Ring. RSM Systems can switch 9, 15 or 25 wires and are available with D9, D15 or D25 style connectors.



## MAINFRAMES

Mainframes are 19" rack mounted chassis, 7" (4U) high and 21" deep, with power supplies and pre-wired motherboards that hold Switch Modules, LED Display Modules and Control Modules.

### RSM/16x8 SERIES

These Mainframes hold up to 16 of the RSM/1x8 Switch Modules assembled in a 16x8 configuration.

Bandpass is DC to 40 MHz (-3dB).

**RSM/16x8-25** chassis holds the RSM/1x8-25 Modules, switching 25 wires from D25 connectors.

**RSM/16x8-15** chassis accepts the RSM/1x8-15 Modules and switches 15 wires on D15 connectors.

**RSM/16x8-9** chassis holds the RSM/1x8-9 Modules, switching 9 wires to D9 connectors.

### RSM/32x4 SERIES

These Mainframes are built with up to 16 of the RSM/2(1x4) Switch Modules assembled in a 32x4 configuration.

Bandpass is DC to 30 MHz (-3dB).

**RSM/32x4-25** chassis accepts the RSM/2(1x4)-25 Modules, switching up to 25 wires to D25 connectors.

**RSM/32x4-15** chassis holds the RSM/2(1x4)-15 Modules and switches up to 15 wires from D15 connectors.

**RSM/32x4-9** is built with the RSM/2(1x4)-9 Modules, switching up to 9 wires on D9 connectors.

### RSM/2(16x4) SERIES

These Mainframes hold up to 16 of the RSM/2(1x4) Switch Modules assembled as a dual 16x4 configuration.

Bandpass is DC to 40 MHz (-3dB).

**RSM/2(16x4)-25** chassis accepts the RSM/2(1x4)-25 Modules, switching up to 25 wires with D25 connectors.

**RSM/2(16x4)-15** chassis is built the RSM/2(1x4)-15 Modules switching up to 15 wires to D15 connectors.

**RSM/2(16x4)-9** chassis holds the RSM/2(1x4)-9 Modules switching, up to 9 wires to D9 connectors.

## EXPANSION CHASSIS

Expansion Chassis are built similar to the Mainframes except they are not built with control modules. They are controlled from a MESA Chassis as described in the MESA Bulletin.

## SWITCH MODULES

The RSM Switch Modules are built as either a single 1x8 matrix, or as a dual 1x4 matrix configuration. They are bidirectional and switch 9, 15 or 25 wires to D9, D15 or D25 connectors. Switching is done with high reliability, passive Type A Relays.

### RSM/1X8 SWITCH MODULES

These utilize a 1x8 configuration as shown in Fig. 3.

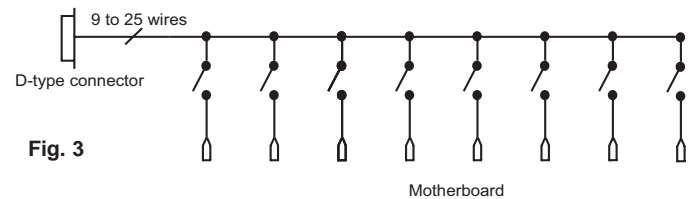


Fig. 3

**RSM/1x8-25** switches 25 wires from D25 connectors and are used with the RSM/16x8-25 Chassis

**RSM/1x8-15** switches 15 wires using D15 connects and are assembled in the RSM/16x8-15 Chassis.

**RSM/1x8-9** switches 9 wires using D9 connectors and plug into the RSM/16x8-9 Chassis.

### RSM/2(1X4) SWITCH MODULES

These modules are built as a dual 1x4 configuration as shown in Fig. 4 :

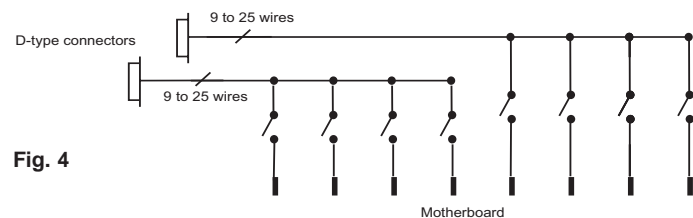


Fig. 4

**RSM/2(1x4)-25** switches 25 wires using D25 connectors in either the RSM/32x4 or RSM/2(16x4) Chassis.

**RSM/2(1x4)-15** switches 15 wires from D15 connectors and are used in the RSM/32x4 or RSM/2(16x4) Chassis.

**RSM/2(1x4)-9** switches 9 wires using D9 connectors in the RSM/32x4 or RSM/2(16x4) Chassis.

# CONTROLS

The RS Series of computer controlled Mainframes are available with the following controls: combined IEEE488/RS232 (standard), or optional Parallel Port TTL, Ethernet LAN or USB. The controls select any switch and can Latch, Unlatch and request Status of the switch using either Matrix or Multiplex Modes. In the Matrix Mode, any number of switches can be Latched as required. In the Multiplex Mode, only one switch can be Latched at any time; any previously latched switches are cleared.

## RS MULTIPLEXER CONTROLS

### IF-1 PARALLEL PORT

TTL compatible inputs select and Switch and Mode, Strobe the selection and also return Status.

### IF-5 IEEE488/RS232 COMBINED CONTROL

This module provides control via both IEEE488 and RS232 and has all the features detailed in Applications Bulletin AP-5.

### IF-6 ETHERNET LAN INTERFACE

This module interfaces between the Local Area Network and the RS232 controls using TCP/IP protocols as detailed in Applications Bulletin AP-5.

### IF-7 EXTERNAL USB/RS232 INTERFACE

This external cable plugs into a USB port on the controlling computer and the Cytec Mainframe's RS232 Port. Permits control via USB at up to 19,200 bps.

### PB/16 MANUAL CONTROLS

Optional pushbutton switches on the front panel can select and control up to 16 switch points when used with the IF-5, IF-6 and IF-7 Controls.

## RSS MATRIX CONTROLS

### IF-J5 IEEE488/RS232 COMBINED

This module controls up to sixteen RSS/16x8 Solid State Switch Modules with both the RS232 and IEEE488 features detailed in Applications Bulletin AP-5 with the exception that Status Return is not available.

### IF-6 EXTERNAL LAN INTERFACE

This module interfaces between the Local Area Network and the RS232 Controls using TCP/IP protocols as detailed in Applications Bulletin AP-5.

### IF-7 EXTERNAL USB/RS232 INTERFACE

This external cable plugs into a USB port on the controlling computer at one end and the Cytec Mainframe's RS232 Port on the other. Allows control via USB at up to 19,200 bps.

### MC-2 MANUAL CONTROL

This manual control provides a front panel keypad and display which selects any switch and confirms the command operation.

## WARRANTY

CYTEC Corp. warrants that all products are free from defects in workmanship and materials for a period of 5 years. Relays are guaranteed for their rated operations when used within their published voltage, current and power specifications.

## CUSTOM OPTIONS

Many CYTEC Switching Systems are available with custom configurations, connectors or controls. Please contact Cytec with your specific needs.

## RSM MATRIX CONTROLS

### CL8 DISPLAY/DRIVER MODULE

One CL8 Module is required for each RSM Switch Module. This module decodes logic and drives the Switch Module relays. A discrete LED, visible through the front panel, is wired to each drive, providing confirmation of all latched switchpoints. The LEDs are an extremely valuable aid in debugging and troubleshooting.

### IF-1 PARALLEL PORT

TTL compatible inputs select any Switch and Mode, Strobe the selection and also return Status.

### IF-5 IEEE488/RS232 COMBINED CONTROL

This module furnishes both the IEEE488 and RS232 control features detailed in Applications Bulletin AP-5.

### IF-6 LAN INTERFACE

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

### IF-7 EXTERNAL USB/RS232 INTERFACE

This external cable plugs into a USB port on the controlling computer and the Cytec Mainframe's RS232 Port. Permits control via USB at up to 19,200 bps.

### MC-2 MANUAL CONTROL

This manual control provides a front panel keypad and display that selects any switch and confirms the command operation.

## SPECIFICATIONS

### GENERAL SPECIFICATIONS

**WEIGHT** - Maximum weight with full complement of Modules in the RSM/16x8 is less than 50 lbs. All other units are less than 25 lbs.

**POWER** - 100 watts at 100-130 Volts AC or 200-260 Volts AC.

**ENVIRONMENT** - Operating 0° to 50 °C  
Storage -25°C to 65°C

### SWITCH SPECIFICATIONS

**Type S Standard** dry reed relays are for general purpose instrumentation level signals. These have a life of 100 million operations when utilized within the specified signal ratings.

**Type A** relays are sensitive, high reliability armature relays and are well suited for multiple wire data signals. They are rated for 10 million operations when used as specified.

SPECIFICATION	TYPE A	TYPE S
Contact Rating VA	30	10
Switching Voltage DC	110V	200V
Switching Current DC	1.0A	.5A
Carrying Current DC	1.0A	1.0A
Breakdown Voltage DC	750V	400V
Operate Time mSec	3	1

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