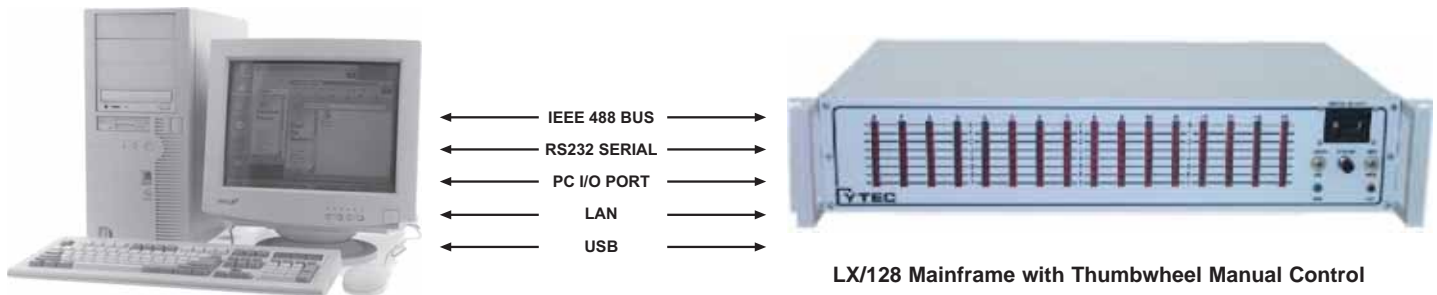


LX SERIES

GENERAL PURPOSE SWITCHING MATRICES FOR AUTOMATIC TEST, INSTRUMENTATION AND CONTROL

The LX Series are high reliability, low cost, versatile Switching Systems. A modular design concept is used. Interchangeable Control Modules, Switch Modules and Display Modules can be assembled into Matrices, Multiplexers or Individual Switch Point configurations. All chassis have full front panel LED displays. Status Feedback from all switches is provided. A variety of switch modules are offered, including those designed to handle the following signals: Coaxial RF, Low Level with a DC offset less than 1 microvolt, High Voltages up to 1500 volts, and High Current up to 8 amps. The Control Modules available are IEEE488 Bus, RS232 Serial, TTL Parallel Port, 10Base-T Ethernet LAN, and Universal Serial Bus. Manual Controls are optionally available.



LX/128 Mainframe with Thumbwheel Manual Control

LX MAINFRAMES

The LX Series Mainframes are 19" rack mounting chassis, 3.5" high and 15.6" deep, with power supplies and motherboards that hold up to 16 Switch and Display Modules and one Control Module. Signal connectors are located at the unit's rear panel and LED display is visible through the front panel.

The following Mainframes are standard:

LXA GENERAL PURPOSE

These are the most versatile units, accepting any of the LX Series Switch Modules and capable of furnishing Multiplexers, Matrices or Individual Switches as needed.

LXB MATRICES

These mainframes hold the LXB Series Switch Modules and furnish several prewired Matrix configurations.

LX EXPANSION CHASSIS

These units have the same motherboards as the mainframes but do not have built-in power supplies or control modules. They are powered and controlled from a single MESA Control Mainframe as described in the **MESA Bulletin**. Larger configurations can be created from up to 16 Expansion Chassis, and different product series can be combined to supply a complete system for switching a variety of signals.

LX-W WIRED UNITS

All Mainframes and Expansion Chassis can be supplied in 15.6" deep chassis with modules wired out to user specified connectors. Please contact our Applications Engineers for more information.

SWITCH MODULES

There are two basic switch module series: The **LX8 Series** and **LXB Series**. All modules have signal connectors accessed at the chassis rear panel.

LX8 SERIES

These modules are used in the LXA Mainframes and include the following:

LX8/G2 Switch Modules are built with 8, two pole relays and have signal inputs and outputs arranged so that they can be wired to supply several matrix configurations.

LX8/G1P Switch Modules are built with 8, single pole Type P Power Relays. These are designed for high power and current applications and have signal connectors that can be wired to provide several matrix configurations.

LX8/K Switch Modules have 8, Normally Open single pole relays with inputs and outputs wired to a signal connector.

LX8/OD Driver Modules have 8, optoisolated Output Drivers and are used to drive external logic or electrical loads.

LX8/ID Input Detection Modules have 8, optoisolated Input Detectors that are capable of sensing DC or AC voltage levels.

LXB SERIES

These Switch Modules are used in the LXB Matrices and include the following:

LXB/2(1x4) Switch Modules have 8, single or double pole relays arranged as two 1x4 matrices.

LXB/4(1x2) Switch Modules have 8, single or double pole relays arranged as four 1x2 matrices.

LXB/(1x8) Switch Modules have 8, single or double pole relays arranged as one 1x8 matrix.

LXA GENERAL PURPOSE SERIES

The LXA Series are 19" rack mounting Mainframes or Expansion Chassis, 3.5" high, with motherboards that hold any of the LX Series of Switch Modules, Latching/Display Modules and a Control Module.

LXA/128 MAINFRAME

This chassis is 15.6" deep. It is built with power supplies and motherboards that hold a Control Module, up to 16 LX8 Switch Modules and 16 CL8 Latching/Display Modules. The Signal Motherboard busses the switch modules together (shown in Fig. 1) to furnish a number of different Matrix configurations.

LXA/128-E EXPANSION CHASSIS

These chassis are 15.6" deep and hold the same motherboards as the Mainframe but without power supplies or a Control Module. Each Expansion Chassis is powered and controlled via a MESA Control Mainframe as shown in the **MESA Bulletin**.

LXA/128-W WIRED CHASSIS

Mainframes and Expansion Units can be supplied in 15.6" deep chassis with signal inputs and outputs wired to user specified connectors on the rear panel.

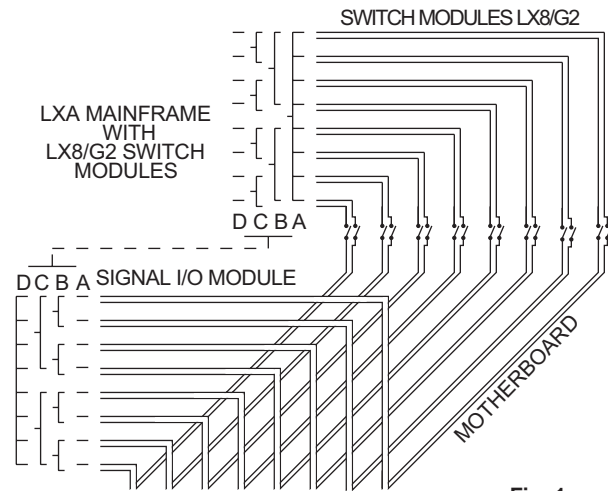


Fig. 1

LXA SWITCH MODULES

These Switch Modules plug into the LXA Motherboard and have signal connectors that are accessed from the chassis rear. The CL8 Latching/Display Modules mate with and drive the relays on the Switch Modules and have LEDs that are visible through the chassis front panel. The following modules can be assembled in any LXA chassis.

LX8/G2 SWITCH MODULES

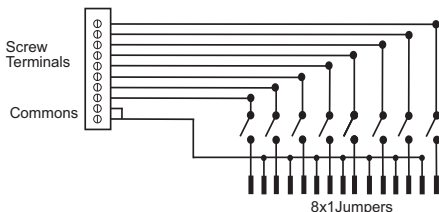
Each module has 8, two pole relays. One side of each relay wires to the module's rear panel connector, and the other side wires to a card edge connector which plugs into the Signal Motherboard. The motherboard busses together the Switch Modules and a Signal I/O Module as shown in Fig. 1. Energizing a relay connects the path between the Switch Module and the Signal I/O. Switch Module and Signal I/O Module connectors can be wired to furnish the following different configurations:

- A** - Each module is a 1x8 and 16 modules create a 16x8 matrix.
- B** - Each module is a 2x4 and 16 modules create a 32x4 matrix.
- C** - Each module is a 4x2 and 16 modules create a 64x2 matrix.
- D** - Each module is an 8x1 and 16 modules create a 128x1 mux.

LX8/G2-R is built with a 20 pin IDC header signal connector with J20R or J20C mates. The switch module is available with Type S Standard, M Mercury or LT Low Thermal reed relays. **LX8/G2-E** has a card edge connector with J20 mates and is recommended for higher voltages when using Type M Mercury or Type HV High Voltage reed relays.

LX8/G1P-ST POWER SWITCH MODULE

This module is built with 8, Type P Power relays and Screw Terminal signal connectors. It differs from the other LX8/G Switch Modules in that single pole, high power switching is provided. This module can also be used as an individual 8x1 multiplexer. Two pole relay versions of this module are available.



LX8/K SWITCH MODULES

These modules have 8 individual Form A (SPST) single pole relays. The two sides of the relays wire out to the signal connector located at the chassis rear as shown in Fig. 2.

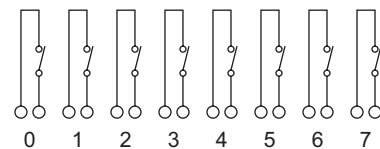


Fig. 2

Three LX8/K Modules are offered:

The **LX8/K-E** is built with a 20 pin card edge connector with J20 mates. It is available with Type S, HV or M reed relays. The **LX8/K-R** has an IDC header connector and is available with Type S, M or A relays.

The **LX8/KP** is built with screw terminal connectors and Type P relays that are capable of switching high power and current. Mating connectors are included in the price of this module.

LX8/OD OUTPUT DRIVER MODULE

These modules have 8 individual optoisolated Solid State Output Drivers with 16 Pin Screw Terminal connectors. Mating connectors are included in the price of these modules.

LX8/OD-TTL Outputs TTL level signals of 100 mA at 5 VDC.

LX8/OD-MP is a medium power driver with up to 1 amp drive at 24 VDC.

LX8/OD-HP is a high power driver outputting 1 amp at 48 VDC.

LX8/ID INPUT DETECTION MODULE

This module is used to detect voltage levels in either DC or AC circuits. The module supplies eight separate, optoisolated two wire inputs and has 20 pin header connectors with J20R or J20C mates. This module does not require a CL8 Display Module as it has its own LEDs that show Input States (e.g. detected signals above threshold level).

LXB MATRIX SERIES

The LXB Series units are two pole switch matrices and are available as either Mainframes or Expansion Chassis. They are well suited for use in two wire data communications applications, including T1 and ISDN, where wiring is minimized and performance is optimized. The following matrix configurations are available: Two separate 16x4's in one chassis, one 16x8, one 32x4 or one 64x2. Signals connectors include BNCs, Screw Terminals or Three Pin Headers. Twin BNCs are available at extra cost.

MAINFRAMES

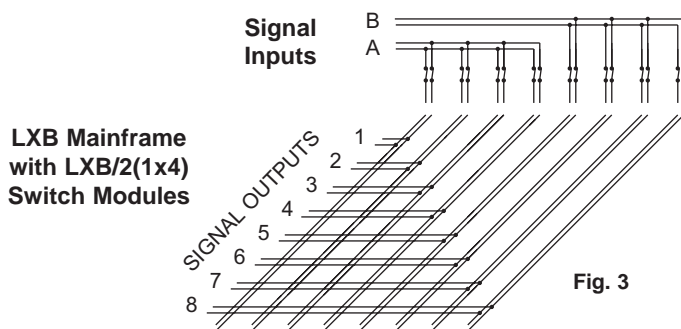
There are two basic Mainframes: The LXB/2(16x4) and the LXB/64x2. Both are 19" rack mounting chassis, 3.5" high and 15.6" deep. Each mainframe is built with power supplies and motherboards that hold up to 16 Switch Modules, 16 Latching/Display Modules and a Control Module. Manual Controls are optional.

LXB/2(16x4) MAINFRAME

This mainframe accepts up to 16 LXB/2(1x4) Switch Modules to form two separate 16x4 Matrices as shown in Fig. 3.

Jumpering Inputs A & B on the Switch Modules forms a 16x8 Matrix. Motherboard jumpers can also be added to bus Outputs 1 & 5, 2 & 6, 3 & 7 and 4 & 8 to connect the two 16x4 Matrices to create a single 32x4 Matrix.

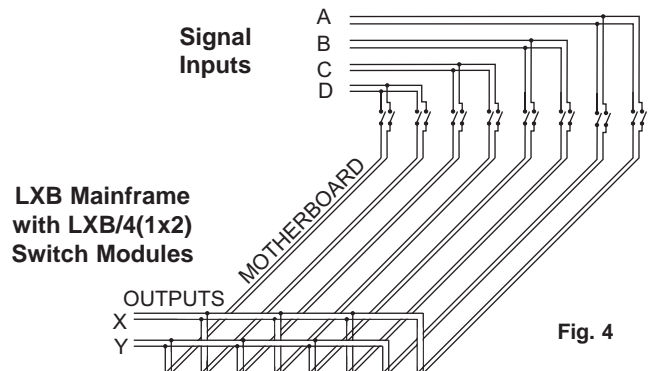
Bandpass is 40 MHz at -3dB and **Crosstalk** is less than -60dB at 10 MHz.



LXB/64x2 MAINFRAME

This mainframe accepts up to 16 LXB/4(1x2) Switch Modules and one Signal I/O Module. The Signal I/O Module interconnects the Signal Motherboard bus traces to form a 64x2 Matrix as shown in Fig. 4.

Bandpass is 15 MHz and **Crosstalk** is less than -60dB at 10 MHz.



LXB/2(16x4)-E EXPANSION CHASSIS

This unit has the same motherboards as the Mainframe without power supplies, and is controlled from a MESA Unit as described in the **MESA Bulletin**.

LXB/64x2-E EXPANSION CHASSIS

This unit has the same motherboards as the Mainframe without power supplies, and is controlled from a MESA Unit as described in the **MESA Bulletin**.

LXB SWITCH MODULES

LXB/2(1x4) SWITCH MODULE

This module has 8, single or double pole relays arranged as two separate 1x4 matrices as shown on Fig. 3. It plugs into the LXB Signal Motherboard. The two matrices, A & B, can be jumpered on the module to create one 1x8 matrix.

This module is available with Type S Standard, Type M Mercury, Type LT Low Thermal and Type HV High Voltage relays. The following connectors are available: Type E - 20 pin card edge, Type N - BNC receptacles, Type H - Three Pin Headers or Type ST - Screw Terminals. Twin BNCs are available at extra cost.

LXB/2(1x4)-2P-ST SWITCH MODULE

This module is similar to the above, except it is built with 8, two pole Type P Power Relays and Screw Terminal connectors. It is used for higher power or current applications where a matrix configuration is required. Mating connectors are included in the price of the module.

LXB/4(1x2) SWITCH MODULE

This module has 8, single or double pole relays arranged as four 1x2 matrices as shown in Fig. 4.

The module is available with Type S, Type M or Type LT relays.

The following connectors are available: Type N - BNCs, Type H - Three Pin Headers or Type ST - Screw Terminals. Twin BNCs are available at extra cost.

LXB/(1x8) SWITCH MODULE

This module has 8, single or double pole relays arranged as one 1x8 matrix.

The module is available with Type S, Type M or Type HV relays and Type E - 20 pin card edge connectors.

CL8 LATCHING/DISPLAY MODULE

The CL8 Latching/Display Modules drive the selected relay and have individual LEDs that show every switchpoint state (open or closed).

GX GROUP SWITCH

LX8/G2 Switch Modules can be used in either the GX/8 or GX/16 Group Switch Chassis to switch signals in groups of 16 wires in up to a 16x1 Multiplexer configuration. For more information see the GX Bulletin.

LX SERIES SWITCH SPECIFICATIONS

These Switch Modules are built with several different relay types, as determined by the switched signals.

Type S Standard reed relay is used for general purpose instrumentation level signals.

Type M Mercury reed relay switches higher power signals.

Type LT Low Thermal reed relay has a thermal offset of less than 1 microvolt and is used for very low level signal applications.

Type HV High Voltage reed relay is rated at 1500 volts breakdown voltage.

Type P High Power armature relay has an AC rating of 2000 VA and can switch up to 8 amps.

Type S, Type M, Type LT, and **Type HV** are all high reliability reed relays with a guaranteed life of 100 million operations when used within the following specifications. **Type P** relays are armature type and have a mechanical life of 10 million cycles.

SPECIFICATIONS	S	M	LT	HV	P
Contact Rating VA	10	50	10	10	150
Switching Voltage	200	500	200	1000	500
Switching Current	.05VA	1.0A	.05A	0.1A	8A
Carrying Current	1.0A	2.0A	1.5A	1.0A	10A
Breakdown Voltage	400	1000	400	1500	1400
Operate Time msec	1	2	1	1	10
Rated Operations	10 ⁸	10 ⁸	10 ⁸	10 ⁸	10 ⁷

OVERALL SPECIFICATIONS

DIMENSIONS - Standard Mainframes are 19 inch Rack Mounting, 3.5 inches high and 15.6 inches deep. Wired Mainframes are 15.6 inches deep.

WEIGHT - Maximum weight, with a full complement of Modules, is less than 25 lbs.

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

ENVIRONMENT - Operating 0° C to 50° C @95% Relative Humidity
Storage -25° C to 65° C @95% Relative Humidity

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.

WARRANTY

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

LX CONTROL MODULES

The LX 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 SwitchPoint 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.

IF-7 COMBINED USB/RS232

This module furnishes computer control via either RS232 or Universal Serial Bus. It allows users to switch to USB control as COM ports are obsoleted on new computers.

MANUAL CONTROLS

MC/128-TW MANUAL CONTROLS

Front panel thumbwheels and push button Manual Controls select and control all Mainframe Switchpoints. This manual control 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. A demo version is available on our web site at:

<http://www.cyttec-ate.com/soft.htm>

PALM PC MANUAL CONTROL

This is currently available for use with the IF-5 IEEE488/RS232 Control Module. Application Programs running on the Palm PC display a virtual keypad manual control.

ACCESSORIES

MATING CONNECTORS

J3	Three Pin Header Connector
J10	Ten Pin Card Edge Connector
J20	Twenty Pin Card Edge Connector
J20R	Twenty Pin Ribbon Connector
J20C	Twenty Crimp Pin 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 1 Meter long
PC-2	PC Interface Cable 2 Meters long

CHASSIS SLIDES

CHS-1	Chassis Slides with 15 inches travel
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CONTACT 1-800-346-3117 OR WWW.CYTEC-ATE.COM FOR TECHNICAL ASSISTANCE