

HDX SERIES VERY HIGH DENSITY SWITCHING MATRICES

CYTEC's HDX Series are economical, high density, passive, bidirectional switch matrices. Each chassis holds up to 2048 two pole Type A relays, and a modular design allows great flexibility in creating different switching topologies. For example, the following single chassis configurations are all possible: 960x4 single wire matrix, 64x32 two wire matrix, or 32x8 eight pole matrix. See the possibilities listed below. Several independent matrices, such as a four separate 32x16 two pole matrices, can be provided in one chassis as well. Ethernet LAN, RS232 & IEEE488 controls are standard, while USB and front panel Manual Controls are optionally available. Modular design allows you to easily expand system.

Possible configurations:

Single pole configurations:

64x4 to 960x4
32x8 to 480x8
16x16 to 224x16
8x32 to 112x32

Two Pole Configurations:

32x4 to 512x4
16x8 to 256x8
8x16 to 128x16
4x32 to 64x32

Multi-wire configurations:

8x8 to 128x8 four wire matrix
4x16 to 64x16 four wire matrix
4x32 to 32x32 four wire matrix
4x8 to 64x8 eight wire matrix
2x16 to 32x16 eight wire matrix
2x8 to 32x8 sixteen wire matrix

Two stage matrix configuration examples:

896x4x16 single wire matrix
448x8x16 single wire matrix
256x4x256 two wire matrix
128x8x128 two wire matrix
64x16x64 two wire matrix

The possibilities are endless.
Don't see it? Just ask!



HDX Series Matrix w/ Keypad Manual Control

CONTROL MODULES

IF-11 LAN / GPIB / RS232 Control

Cytec's newest control module has the three most popular control interface protocols built into one module and is backwards compatible with all previous Cytec control modules.

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 CONTROL MC-2 WITH LCD DISPLAY

This local control supplies a front panel Keypad and LCD Display that lets the operator control any switch and verify switch status.

Software Support

Cytec has everything from basic drivers for National Instruments LabView and LabWindows and C code examples, to full GUI open source software. We support all codes and operating systems.

**CONTACT 1-585-381-4740 or e-mail : sales@cytec-ate.com
OR CYTEC-ATE.COM FOR TECHNICAL ASSISTANCE**

HDX SERIES MAINFRAME

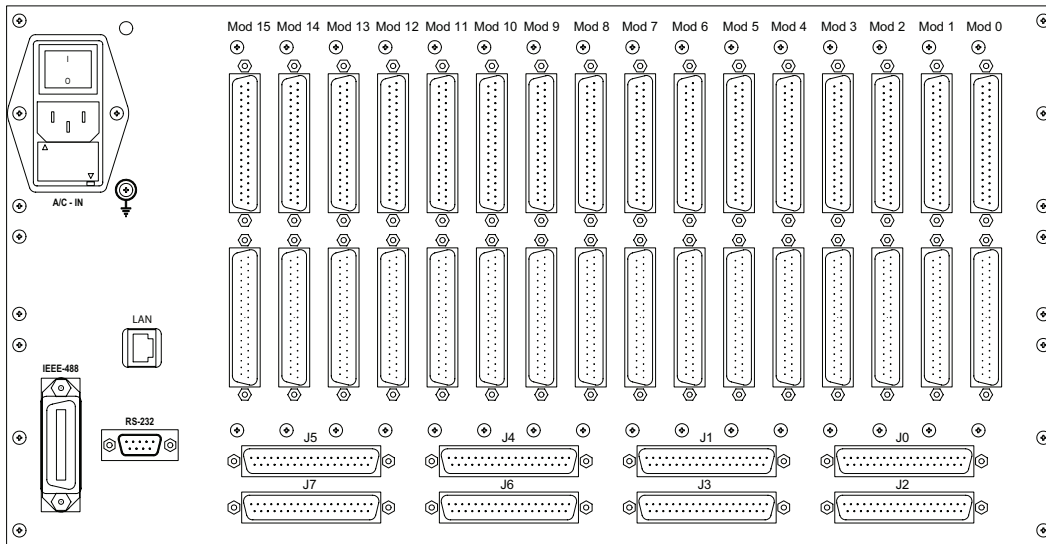


Fig. 1 HDX Mainframe Rear View

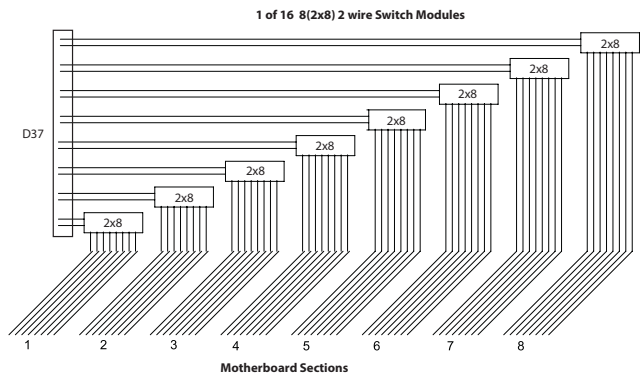
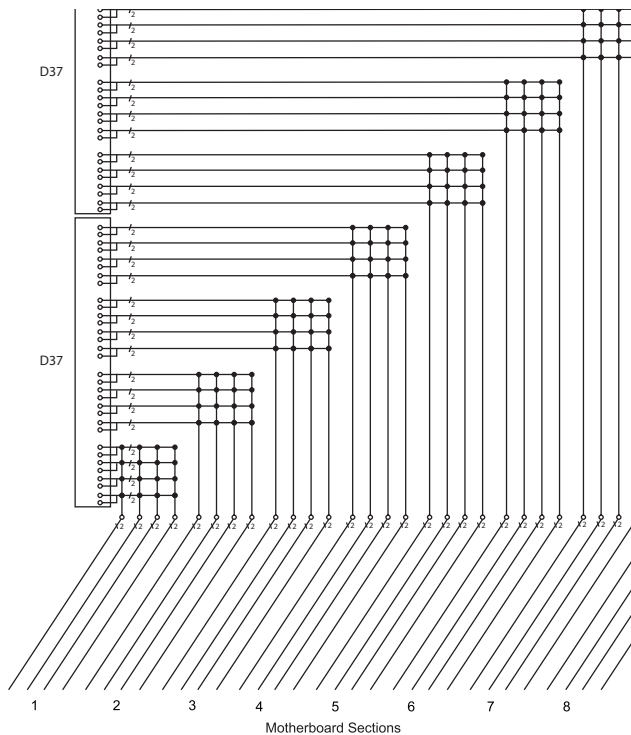
HDX SERIES SWITCH MODULES

HDX/8(4x4)-2A SWITCH MODULES

Each Switch Module is eight separate 2 wire 4x4 configurations which can be jumpered or left separated to build a large variety of configurations. Each module has two D37 female connectors and can be configured as a 32x4, dual 16x4, four 8x4's or left as eight 4x4's. When 16 modules are installed in a chassis this allows configurations of 512x4 two wire matrix or two 256x4 or four 128x4 or eight 64x4. Many other configurations are possible using single pole sub-mux modules or by combining motherboard sections. Contact Cytec for assistance with configuration specific possibilities.

HDX/8(2x8)-2A SWITCH MODULES

Each Switch Module is eight separate 2 wire 2x8 configurations which can be jumpered or left separated to build a large variety of configurations. Each module has a single D37 female connector and can be configured as a 16x8, dual 8x8, four 4x8's or left as eight 2x8's. When 16 modules are installed in a chassis this allows configurations of 256x8 two wire matrix or two 128x8 or four 64x8 or eight 32x8. Jumpering the motherboard in combination with jumpering the switch modules allows x16 and x32 configurations as high as 128x16 or 64x32.



Many other configurations are possible using single pole sub-mux modules or by combining motherboard sections. Contact Cytec for assistance with configuration specific possibilities. Some examples of how to configure more complicated single pole and two stage matrix configurations are on the last page of this bulletin.

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GENERAL SPECIFICATIONS

Dimensions:	19" rack mounting, 8.75" high (5 RU) and 21" deep
Weight:	less than 50 lbs. (22.75 Kg) fully loaded with 16 switch modules
Power:	115 VAC or 230 VAC, 47-400 Hz, selectable
Power Consumption:	50 to 150 Watts typical (dependent on # of channels closed)
Operating Temperature:	0 to 50 deg. C.
Storage Temperatures:	-25 to 65 deg. C.

Matrix Type	Non-blocking, any input to any output, will allow multiple inputs to multiple outputs.
Connection	Physical layer, electro mechanical, acts like a piece of cable.
Impedance	100 ohm between wires in each pair.
Bandpass	DC to 20 MHz for 32x64 two pole matrix (-3 dB point but configuration dependent)
Bit Rate	Up to 40 Mbps NRZ with rise times greater than 25 ns.
Isolation	> 50 dB @ 10 MHz between pairs. > 40 dB @ 10 MHz between wires on pairs for single ended use.

TYPE A RELAY SPECIFICATIONS

Contact Rating	30 VA
Switching Voltage	110 VDC
Switching Current	1.0 A
Carrying Current	2.0 A
Breakdown Voltage	750 VDC
Operate Time	3 ms
Lifetime (mechanical)	100 million cycles
Lifetime (electrical)	10 million cycles @ 10 VA
EMF	< 3 uV

Custom systems options:
Patch Panels to any connector type.
Custom configurations with low to no NRE.
Dont see it? Just ask!

Standard 5 year warranty.
10 year warranty with spare parts purchase.
call 585.381.4740
e-mail: sales@cytec-ate.com

CONTROL MODULES

IF-11 LAN / GPIB / RS232 Control

Cytec's newest control module has the three most popular control interface protocols built into one module and is backwards compatible with all previous Cytec control modules.

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

The interface uses a static IP easily reset by the end user. There are three ports available and all may be used at the same time. Two ports can be set by the end user and one is the default Telnet which may be disabled. The LAN interface accepts ascii text strings as Raw TCP/IP or Telnet to the interface on any of the three ports.

GPIB - IEEE488.2 compliant control module.

Commonly used with automated test applications. Works with all GPIB control cards and software including National Instruments, Matlab and Keysight. Drivers available upon request.

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

SOFTWARE

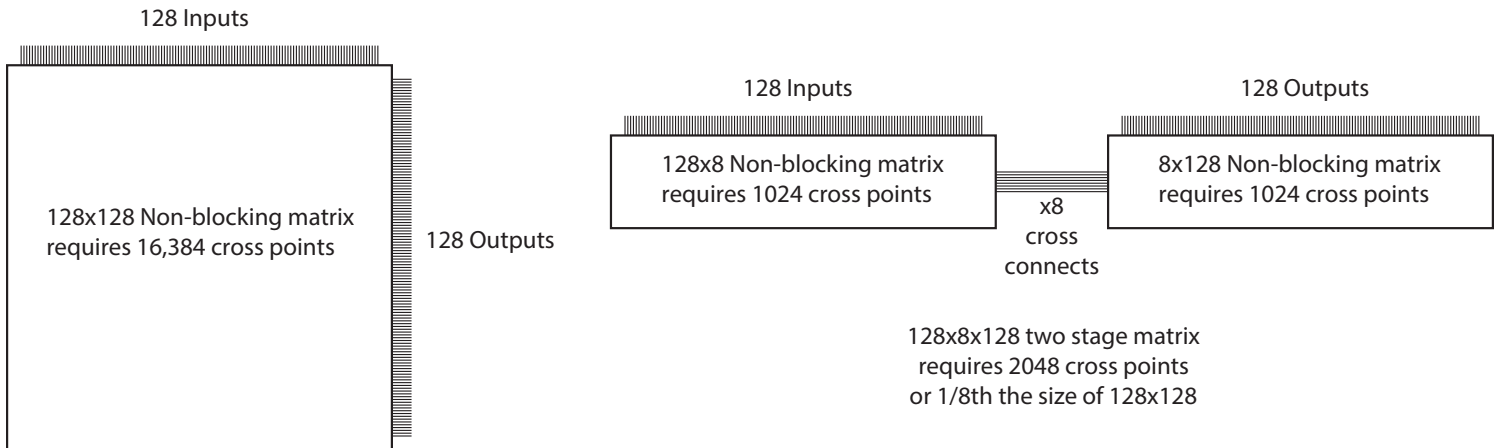
Cytec offers a variety of example code, drivers, fully functional GUI software and whatever support you need for the following platforms and all code is open source and available upon request:

- Example code in C, Basic, VB.net, Java, Python, TCL, Matlab, Keysight Vee and others.
- Drivers for National Instruments LabView and LabWindows.
- Relay cycling code and system test software for National Instruments LabWindows (C based).

Tips and tricks for maximizing matrix cross points

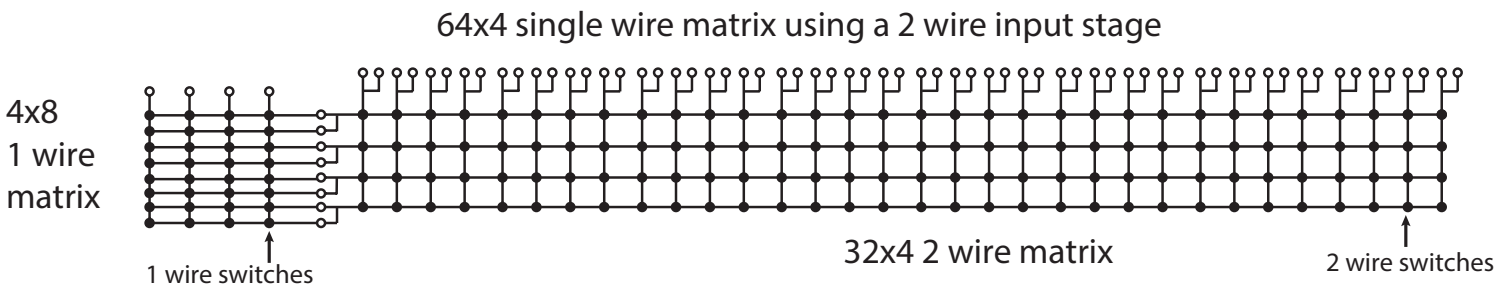
The two stage matrix

You can often come up with a more cost effective matrix solution by taking advantage of how many interconnects you actually need at the same time. In the example below the user needs to connect any of 128 test points to any of 128 devices. A non-blocking matrix of this size is enormous and expensive due to the requirement for 16,384 cross points. But the user is never going to have more than 8 things connected at any one time, making most of the cross points redundant. By configuring a two stage matrix as a 128x8x128 you are able to reduce the number of cross points to a total of 2048 and still have the same functionality you need at 1/8th the size and cost. The rule for 2 stage matrices is that the cross connect number must be less than 1/2 of lowest number of inputs or outputs. For example a 128x64x128 is no cheaper than a 128x128 since it requires the same number of switch points.



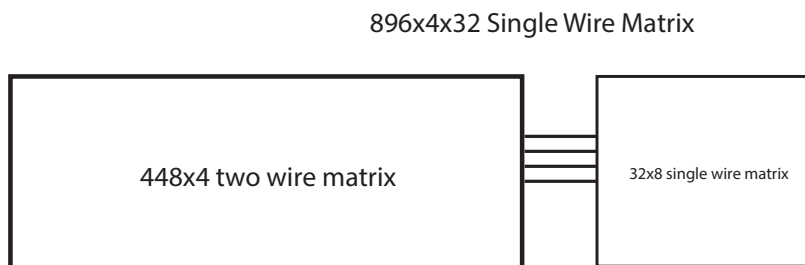
Sub-multiplexing a 2 wire matrix into a single wire matrix

Sometimes you can take advantage of two wire relays to double the size of your single wire matrix by sub-multiplexing the two wire relays. In the example below, a 32x4 two wire matrix is sub-multiplexed into a 64x4 single wire matrix. This technique can almost double the size of a matrix within the same size switch chassis.



Two Stage with sub-multiplexing

You can combine these techniques to form large, single wire two stage matrix configurations in a single chassis.



Don't see it? Want recommendations? Just contact us with your requirement, we'll do the rest.

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