

INTERFACE BULLETIN AP-5

QUICK GUIDE - Call or E-mail for complete manuals.

Mainframe Control Modules

Current Controls as of 3/1/2016

IF-11 -- 100BaseT Ethernet LAN/GPIB/RS232 Combination.

IF-10 -- FPGA Control for high speed solid state systems.

IF-9 -- 100BaseT Ethernet and RS232.

IF-7 -- USB to RS232 adapter. Inexpensive way to update legacy RS232 systems to USB ports.

Legacy Controls prior to 4/1/2015 (supported indefinitely)

IF-5, IF-5C -- IEEE488 / RS232 Combination.

IF-6 -- 10BaseT to RS232 converter used in conjunction with IF-5 controls to give all three possible interfaces or combinations of GPIB and LAN. Can be added externally to existing units.

IF-1 -- TTL Control Module - 13 bits of input and 1 bit of output. Lo true logic with D25 connector.

Mesa Control Modules (Large systems)

Current Controls as of 3/1/2016

CM-11 -- 100BaseT Ethernet LAN/RS232/GPIB Combination.

IF-7 -- USB to RS232 adapter. Inexpensive way to update legacy RS232 systems to USB ports.

Legacy Controls prior to 4/1/2015 (supported indefinitely)

CM-8 -- 100BaseT Ethernet LAN/RS232/GPIB Combination.

CM-5 -- IEEE488 / RS232 Combination.

IF-6 -- 10BaseT to RS232 converter used in conjunction with CM-5 control to give all three possible interfaces or combinations of GPIB and LAN. Can be added externally to existing units.

CM-1 -- TTL Control Module - 13 bits of input and 1 bit of output. Lo true logic with D25 connector.

All Cytec systems and interfaces speak the same language and use the same simplistic command set. There are additional commands for more complicated systems that you may or may not make use of but the basic syntax is the same for every system we have ever made over 32 years. It's just a switch, we try to keep it simple.

All Cytec commands consist of an alpha character or characters followed by two or three integers. The alpha character is the command and the integers are the programmatic address of the relay. If you have a single chassis Mainframe the two integers are the module # followed by the relay or switch #. If you have a matrix configuration such as a 16x8 configuration the integers will typically correspond to an input or output number.

Commands:

L = Latch = Close Relay or turn ON relay.

U = Unlatch = Open Relay or turn OFF relay.

C = Clear = open all relays or turn OFF all relays

S = Status which can be used on individual switch points, modules, or the entire system.

The S command returns a 1 for on (Latched) and a 0 for OFF (Unlatched)

ex:

The command L3 5 translates to Latch Module #3, Relay # 5 or turn on relay #5 on module #3.

The command U7 14 translates to Unlatch Module #7, Relay #14 or turn off relay 14 on mod 7.

The command S4 returns 00100000 Where module 4 has 8 relays.
which translates to "the third relay on Module #4 is ON, all others are OFF.

If the system has multiple chassis you simply add the chassis # as the leading integer, i.e:

L3 10 25 = Latch Chassis #3, Module #10, Relay #25 or Turn on relay 25 on module 10 in chassis 3.

See next page for a guide on which one to chose.

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

A guide to communicating with programmable switches

CYTEC Switching Systems are available with a variety of communication interfaces. Which one is right for your application is dependent on what you are trying to accomplish. This bulletin lists the options and reasons for choosing them. Since switching systems are often used in conjunction with other, more complicated devices your choice may be dictated by those needs and all you need to know is that we support that option. Cytec supports all of the following interface choices:

- **IEEE488** -- Commonly referred to as GPIB (General Purpose Interface Bus). This was the industry standard for test instruments for 40 years and is still widely used and very popular. It is fast, can be daisy chained between devices and is supported by most software. Requires knowledge of BUS language and hardware. Very popular for use with graphical programming languages such as National Instruments LabView. Cytec supports the only two 488.2 (SCPI) commands needed for switching which are *RST (reset) and *IDN (ID).
 - **RS232 Serial** -- The standard COM port on PC's until USB began replacing them in the 90's, it is still used due to entrenched legacy support, inexpensive price and software support. Very inexpensive USB to RS232 converter cables still make it a viable option. Major drawback is speed limitations and one-to-one connection which means you need a separate COM port for every device.
 - **Ethernet LAN** -- Taking over as the predominate interface choice. 100BaseT or Gigabit Interfaces have the needed speed for many applications and allows access from anywhere which opens up opportunities for remote access. Number of devices controlled from one computer is almost unlimited. Drawbacks are dependent on Network Infrastructure and you may need to involve IT department to do everything you want to do.
 - **USB** -- Quick, easy solution for small systems if the device is provided with software or drivers. Becomes increasingly complicated with multiple devices and cables are length limited so demand has been low.
 - **TTL** -- Still the best choice if all you want is fast, uninterrupted control. Dependent on understanding of TTL output device used (there are many and they are all different) so typically more difficult to program.
 - **FPGA** -- Used to automate the programming of high speed solid state switches with critical timing. Allows for fast switching and accurate switch increments.
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Common Questions:

Q What help is available?

A Quite a lot. Cytec provides programming support on a variety of levels for most common languages and compilers. Example code, GUI drivers and freeware programs are available on the support page of our website at cytec-ate.com/support or just call or e-mail. We're always here to help you out.

Q Do you support third party languages like National Instruments LabView or Matlab?

A Yes. See our support page or e-mail us and we'll send you whatever you need.

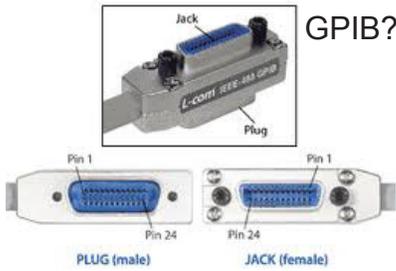
Q Do you support Operating systems other than Windows?

A Yes. Since our devices are simply controlled by sending them ASCII test strings they are basically OS independent. If you have a specific question about MAC, LINUX, or any other OS we can get you the answers you need.

Q What is LXI and do you support it?

A LXI is an industry supported common framework for test instruments connected to a LAN. Cytec's LAN interface is so simplistic that the LXI interface only adds a layer of unneeded complexity. The useful parts of LXI can be set-up on Cytec equipment via Telnet in less time than it would take to explain it. So basically we fully support LAN, but have not joined the LXI consortium or added the extra layer. We like things simple.

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GPIB?



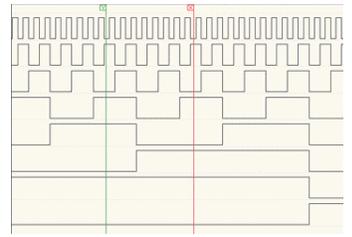
Ethernet?

RS232?



USB?

TTL?



Which should I choose?

We always feel the best choice is to use what you know. If you are set-up for GPIB and already are familiar with the interface it's the logical choice. If you're starting from scratch and haven't written software yet you should base the decision on the requirements. The guide below provides answers to commonly asked questions:

Requirement

Speed

Usually a requirement of automated test apps. GPIB, TTL, FPGA or possibly Ethernet. Keep in mind that mechanical relay based switching systems operate slowly from an electrical point of view. Typically relays take 1 to 10 ms to open or close and even solid state switches with ns switch times may require settling times greater than 10 ms for realistic measurements. Ethernet can be fast on a closed network but can have latencies on a WAN. The absolute fastest interface is TTL followed by GPIB and then typically Ethernet.

Price

Every computer has an RS232, USB or ethernet port built in so any of these options work. Which of these works best for you would be a function of what software you intend to program with and which interface you understand. GPIB and TTL will require additional hardware for your computer if you don't already own them and may require software that typically isn't given away.

Remote access

Ethernet shines here. How remote you can be depends on your network. If you have complete network control you may be able to get to the switch from anywhere in the world. If you do not have control you will need to involve someone in the IT department that can tell you what is possible on your network.

System size and physical layout

If you have a single stand alone chassis and aren't talking to a bunch of different devices then RS232 or a USB to RS232 adaptor works fine. If your going to rack and stack a lot of equipment then lean towards GPIB or Ethernet or for our equipment look at Mesa Controller which allows one control port to drive multiple chassis. If you are going to locate switches a long way apart from each other then ethernet is the obvious choice. If you have a lot of switches but only need to spread them out between multiple racks then a Mesa Controller will allow control of multiple chassis up to 30 feet apart.

Ease of use

Once again this depends on how familiar you are with the standard interfaces and what software you want to use. We offer basic mouse-click software that works with Ethernet, GPIB and RS232 and you can always use Telnet or command line prompts to do simple manual control. If you have a complex project ahead of you then there are software companies that make programs for controlling this kind of equipment. There will be a learning curve involved but they are getting easier every year.

For Tech Support or Software Help: 1-800-346-3117 or 1-585-381-4740

Web: cytec-ate.com

E-mail: sales@cytec-ate.com