A device’s control requirements are often dictated by the device manufacturer. AV devices originate from a variety of different manufacturers and access to control functions can vary widely.

There are some devices, like laptops, that were never meant to be automated as part of an AV control system, yet they appear regularly as sources within a system. These devices always require some type of local control to make them function. Then there are those components that may only be controlled by the manufacturer who made them. Typically, these devices require a combination of manufacturer specific hardware, software, and infrastructure to make them function appropriately.

Choosing the Best Methods for Control

Sometimes, AV device control can be difficult because a device that you want to control does not respond to commands or requires special treatment to work as expected. Thankfully, there are AV devices that fall into the control-friendly category, where well-documented control protocols, procedures, and commands make it easier to assemble a fully functioning system. In many cases, a device has only one primary method of control. Yet, when there are multiple ways a device can be controlled, how do you, the designer, decide which method to use?

Make a Determination

1. The first step is to determine what you need that device to do within the scope of the AV system.

2. The second step is to determine what functions are available for each available method of control.

3. And the last step is to determine which method is going to provide you with the simplest, most reliable way to achieve those goals.

Consider a video conferencing codec. Modern codecs may be controlled via an IR remote, RS-232 control port, or an Ethernet connection. Let’s assume that each method of control is equally accessible to install.

If the user only desires to emulate the functions available on the IR remote, the simplest solution may be to control the codec via IR.

If the user wants to see an “Incoming Call” notification on the touchpanel, then IR would be eliminated and RS-232 or Ethernet would be required.

If the IT department wanted to place the control system on a separate IP network than the codec, then RS-232 would be the most direct and reliable method to control the codec.

Where We Find AV Control

RS-232/422: Video Projectors, Commercial Flat Panel Displays, Pro DVD, VTC Codec, Cameras, Matrix Switchers, DSPs, Lighting Controllers

IR/Serial: DVD, VCR, VTC Codec, Switchers, Cameras, Flat Panel Displays, Video Projectors

Ethernet: Video Projectors, VTC Codec, Matrix Switchers, DSPs, Control Processors, Controllers

Relays: Screens, Projector Lifts, Switchers, Power Controllers, Lighting Controllers

Digital Inputs/Outputs: Temperature Sensors, DSPs, Motion Sensors

Analog Inputs: Limit Switches, Door Sensors, DSPs

Need More Power?

The IPCP 505 is Extron’s most advanced control processor. It has eight serial data ports, eight IR/unidirectional serial ports, eight low voltage relay ports, four Flex I/O ports, four switched 12V power ports, and a 10/100 Ethernet port. The IPCP 505 works with Global Configurator Professional to help you with your most advanced control applications.
WHERE WE FIND AV CONTROL

**RS-232/422**
Wired bidirectional serial data interface. Commands are formatted and sent between the controller and the device. RS-232 has a maximum distance of 50 ft. (15 m). RS-422 has a maximum distance of 4000 ft. (1200 m).

**PROS:** Simple, familiar control  
**CONS:** Limited distance; can have complex command structure

**IR/Serial**
Wireless one-way interface. Typically uses an IR emitter wired to the controller and affixed to the front of the device. Emitters can typically be run 30 ft. (10 m). Requires an IR driver or the “capture” of the IR remote’s codes as a custom driver.

**PROS:** Simple, familiar control  
**CONS:** One-way - no feedback; can suffer from interference from fluorescent lights; may have limited functionality based upon remote

**Ethernet**
Bidirectional serial data interface over an Ethernet network. Commands are formatted and sent between the controller and the device. The devices can be located anywhere as long as they are accessible over the network. Communications relies on the setup, configuration, and infrastructure of the network.

**PROS:** Cost-effective way to expand the control system, bidirectional control, fast  
**CONS:** Relies on the network for communications; can have complex command structure; can be difficult to diagnose communications problems

**Relays**
Relays interface with devices that provide contact closure interfaces. Relays are simple controls and do not provide any direct feedback. Relays typically control low voltage motor controls like screens, drapes, shades, lifts, and AV devices with contact closure interfaces like AV switches and lighting controls.

**PROS:** Simple, reliable control  
**CONS:** One-way, may not have fault logic - for instance, triggering up and down at the same time may burn out a motor

**Digital Inputs/Outputs**
Digital Outputs are very similar in function to Relays. Can complete a circuit for control like a Relay. Can provide a small voltage to drive LED feedback in the control environment, i.e. Mute Feedback LEDs.

**PROS:** May be used in place of relays to expand system functionality.  
**CONS:** One-way, may not have fault logic

**Analog Inputs**
Analog inputs provide feedback to the control system from third party devices. Analog Inputs are driven by a contact closure from a motion sensor, limit switch, or wall sensor for room partitions. Digital Inputs are driven by a change in a voltage from devices such as temperature sensors.

**PROS:** Simple, reliable control; provide feedback for relay-controlled devices  
**CONS:** Added expense to the control system