Chapter 4

Pass-Through Protocol

Pass-Through Protocol Command Summary

Note

All messages may have parameters added to them in the future. For any software parsing, these messages should be able to ignore the additional parameters.

The Pass-Through protocol is a simple protocol suited to automated/ programmed control of a Leitch router system. If you want a simple way to make a switch from a dumb ASCII terminal with no computer or automated control/status required, the terminal protocol is probably a better choice. For debugging and any computer or automated control and/or monitoring, the Pass-Through protocol is a much better solution.

Zero-Based Hexadecimal

The Pass-Through protocol is a zero-based hexadecimal system. The first source or destination in a zero-based hexadecimal system is zero. The numbering continues in base 16, not base 10. See Appendix A (page 94) for a reference table.

Source and Destination Parameters

Source and destination parameters are level inputs, which may correspond to different physical crosspoints due to logical mapping of the router 1. This means that the referred to source or destination could be mapped to any source or destination within the bounds of the physical hardware. So, if you are controlling a level input, it can be one or more physical sources.

*X*PRESS and VIA routers treat level inputs as inputs being mapped 1-to-1 with the physical sources, and treat level outputs as outputs being mapped 1-to-1 with the physical destinations. The X^{plus} does not necessarily always map sources and destinations 1-to1, as there are many DIP switch settings that offer hard-coded matrix partitioning choices. The default setting on an Integrator also handles level inputs and level output in a 1-to-1 mapping. If an Integrator has been partitioned, the level input can be one or more physical sources, and the level output can be one or more physical destinations.

Protocol Requirements

- All commands must be sent one at a time.
- You must wait for the system prompt (“>”) before sending the next command.
- The Integrator allows multiple sources to be mapped to a single level input and multiple destinations to be mapped to a single level output.

Table 4-1. Pass-Through Protocol Commands

Command Syntax	Command Name	Result	Used With
Communication Initialization Commands (see page 43)			
@ !	**Disable Reporting** (see page 45)	Disables serial port’s reporting	Integrator SPT VIA32 XPlus XPRESS
@ ?[< time-out>]	**Enable Reporting** (see page 47)	Enables serial port’s reporting of all X-Y messages (including router status)	Integrator SPT VIA32 XPlus XPRESS
@ Z:<Lvls>	**Reset Levels** (see page 49)	Resets specified levels (on specified levels all destinations return to first source and all locks and protects are removed)	Integrator SPT VIA32 XPlus XPRESS
Crosspoint Control Commands (see page 50)			
@ X:<Lvls>/<Dest>,<Src>[:I<ID>]	**Direct Crosspoint Take** (see page 51)	Takes specified crosspoint (specifies source, destination, and level) without buffer execute command	Integrator SPT VIA32 XPlus XPRESS
@ P:<Lvl>/<Dest>,<Src>[:I<ID>]	**Preset Crosspoint** (see page 53)	Presets or preloads crosspoint requests for execution at a later time	Integrator SPT VIA32 XPlus XPRESS
Crosspoint Status Commands (see page 55)			
@ S?<Lvls>	**Request Crosspoint Status of an Entire Level** (see page 57)	Requests crosspoint status of all destinations on a specified level	Integrator SPT VIA32 XPlus XPRESS

Table 4-1. Pass-Through Protocol Commands *(Continued)*

Command Syntax	Command Name	Result	Used With
@ X?<Lvl><Dest>	**Request Crosspoint Status of a Single Destination** (see page 59)	Requests crosspoint status of a specific destination on a specific level	Integrator SPT VIA32 XPlus XPRESS
@ p?<Lvl><Dest>	**Request Preset Crosspoint Status** (see page 61)	Verifies source that has been preset to a given destination on a specific level	Integrator SPT VIA32 XPlus XPRESS
@ V?<Lvl>	**Request Preset Crosspoint Status On Level** (see page 63)	Verifies source that has been preset to any destination on a given level	Integrator SPT VIA32 XPlus XPRESS
Information Commands (see page 65)			
@ Q?/	**Alarms Status Request** (see page 67)	Requests status of all alarms in system	Integrator VIA32
@ F?<Lvl>	**Frame Size Request** (see page 69)	Requests router size on a specific level	Integrator SPT VIA32 XPlus XPRESS
@ I?A	**Information Request Device Description** (see page 71)	Device information description	Integrator SPT XPRESS
@ I?T	**Information Request for Device Type** (see page 75)	Device type information	Integrator SPT XPRESS
@ I?V	**Information Request Device Version** (see page 77)	Device version information	Integrator XPlus XPRESS
Access / Control Commands (see page 79)			
@ W:<Lvl>/<Dest>,<ID>,1	**Lock** (see page 81)	Locks specified destination	Integrator VIA32 XPlus
@ W:<Lvl>/<Dest>,<ID>,2	**Protect** (see page 81)	Protects specified destination	Integrator VIA32 XPlus
@ W:<Lvl>/<Dest>,<Id>,0	**Unlock** (see page 81)	Unlocks specified destination	Integrator VIA32 XPlus

Table 4-1. Pass-Through Protocol Commands *(Continued)*

Command Syntax	Command Name	Result	Used With
@ W:<Lvl>/<Dest>,<Id>,0	**Unprotect** (see page 81)	Unprotects specified destination	Integrator VIA32 XPlus
Salvo Operations (see page 83)			
@ B:C	**Clear Presets** (see page 85)	Clears all presets	Integrator SPT VIA32 XPlus XPRESS
@ B:E	**Execute Preset Buffer** (see page 87)	Executes all presets	Integrator SPT VIA32 XPlus XPRESS
@ B:R	**Reset Preset Buffer** (see page 89)	Resets or clears all presets (replaced in most products with **@ B:C Clear Presets**)	Integrator SPT VIA32 XPlus XPRESS

Communication Initialization Commands

Communication Initialization commands are used to initialize, halt, or reset communications between the terminal and the routing system. They include the following commands:

- Disable Reporting (page 45)
- Enable Reporting (page 47)
- Reset Levels (page 49)

Disable Reporting @ !

Definition

This command disables the serial port's reporting. When disabled, the serial port will still execute all commands issued to it, but it will not send messages it sees on the X-Y bus through to the serial port.

Syntax

@ !

Header	**@**	@ followed by a space ( ) indicates pass-through commands
Command	**!**	**Disable Status Reporting** command
Parameters		None
Closing		Carriage return

Expected Response

None

Example

Table 4-2 shows a typical **Disable Reporting** command and describes the action that takes place.

Table 4-2. Typical Disable Reporting Command

Command Sent	Action
@ !	Disables serial port's status reporting.

Enable Reporting @ ?[…<timeout>]

Definition

This command enables the serial port's reporting of all X-Y messages (including router status). When enabled the serial port will send a copy of all messages sent over the X-Y bus to the serial port. Messages will be sent whether or not the message is a result of an action requested by the serial port. Since a power cycle or **Reset** command causes the reporting to be disabled again, we recommend this message be sent periodically to guarantee the router is in this state.

Syntax

@ ?[…<timeout>]

Header	**@**	@ followed by a space ( ) indicates pass-through commands
Command	**?**	**Enable Reporting** command
Parameters	**…<time-out>**	An optional time-out duration may be added to the command by adding a space and a number from 0 – 99 to represent the amount of time to stay in the Reporting mode. Reporting will be automatically disabled after the requested period of time. The time-out period is determined by multiplying the number passed by 10 seconds (time reporting is active = <time-out> x 10 seconds). If the optional parameter is not included or is set to 0 then reporting will continue until the device/ router with the serial port being communicated with is powered off (or until a **Disable Reporting** command is sent).
Closing		Carriage return

Expected Response

None

Examples

Table 4-3 shows typical **Enable Reporting** commands and describes the action that takes place as a result of sending the particular command.

Table 4-3. Typical Enable Reporting Commands

Command Sent	Action
@ ?	Enables serial port's reporting for an indefinite period of time. A power cycle or **Reset** command will revert to the default state with the serial port's reporting disabled again. Leitch recommends that you periodically reset this state.
@ ? 0	Enables serial port's reporting for an indefinite period of time.
@ ? 5	Enables serial port's reporting for about 50 seconds. At the end of 50 seconds, the serial port will automatically disable reporting unless any other message is received.

Reset Levels @ Z:[<Lvls>]

Definition

This command resets the specified levels. **Reset Levels** will cause all crosspoints on specified levels to be cleared (all destinations return to first source) and all locks and protects to be removed.

Syntax

@ Z:[<Lvls>]

Header	**@**	@ followed by a space ( ) indicates pass-through commands
Command	**Z:**	**Reset Levels** command
Parameters	**<Lvls>**	Optional specification of levels to be reset. If not included will reset all levels. If included: list of single digit level numbers (0–9). Multiple levels may be specified by including multiple level numbers (e.g., **0124** specifies levels 0, 1, 2, and 4).
Closing		Carriage return

Expected Response

None

Examples

Table 4-4 shows typical **Reset Levels** commands and describes the actions that take place.

Table 4-4. Typical Reset Levels Commands

Command Sent	Action
@ Z:	Resets all levels
@ Z:0	Resets level 0 only
@ Z:0123456789ABCDEF	Resets all levels
@ Z:012	Resets levels 0, 1, and 2

Crosspoint Control Commands

Crosspoint Control commands provide crosspoint operations to be either preset or a direct crosspoint take. They include the following commands:

- Direct Crosspoint Take (page 51)
- Preset Crosspoint (page 53)

Direct Crosspoint Take @ X:<Lvls>/<Dest>,<Src>[/<Dest>,<Src>...][:I<ID>

Definition

This command directly takes the specified crosspoint. The **Direct Crosspoint Take**[1] command specifies which inputs to connect to which Destinations and on what Levels. Several crosspoint takes can be specified on a single command line. In such cases all specified crosspoints are taken simultaneously.[2]

Syntax

@ X:<Lvls>/<Dest>,<Src>[/<Dest>,<Src>...][:I<ID>

Note

The terminal may see the prompt ">" character before or during the time when status messages are being received.

Header	**@**	@ followed by a space ( ) indicates pass-through commands
Command	**x:**	**Direct Crosspoint Take** command
Parameters	**<Lvls>/**	A list of one or more single digit level numbers (in hex; valid level numbers= 0–9, A–F). Multiple levels can be specified by concatenating multiple level numbers before ending the list of levels with the "/" character (e.g., **0124/** specifies levels 0, 1, 2, and 4)
	<Dest>,	Hexadecimal number representing the destination number to be preset (valid destination numbers = 0 – FFF0) (The last 15 source and destination numbers are reserved.)
	<Src>	Hexadecimal number specifying the source to be preset. (Valid source numbers = 0 – FFF0, and the letter X; "X" is used when the specified destination on the requested level(s) is to be disconnected).
	[:I<ID>]	Optional parameter used to specify the ID/ address of the device/panel requesting the switch (valid IDs = 0 – FFFF). If the destination specified is protected this information will be used in determining whether or not the issuing user may execute the switch requested. If this parameter is left off and the requested destination is protected OR if the ID is different than the ID of the device that requested the destination be protected, the crosspoint will not be switched.
Closing		Carriage return

[1] The format of the **@ X: DIRECT CROSSPOINT TAKE** command is similar to that for the **@ P: PRESET CROSSPOINT** command with the exception of the "**X**" instead of the "**P**."

[2] SPT-LXYTOXPRS and SPT-LXYTOMODEM converts all **DIRECT CROSSPOINT TAKE** commands into a **PRESET CROSSPOINT** and **EXECUTE PRESET** combination.

Expected Response

This command can result in a number of crosspoint status messages as each crosspoint that has been requested to switch will result in a status being sent. The exact number will depend on how many crosspoints are switched. Resulting status messages will only be sent by the serial port if Reporting has been enabled for the serial port. See "Enable Reporting" on page 45 for details.

Response Syntax

S:<Lvl><Dest>,<Src>

Header		None
Command	**S:**	**Crosspoint Status** command
Parameters	**<Lvls>/**	A single digit level number (in hex; valid level numbers = 0–9, A–F) representing the level being statused.
	<Dest>,	Hexadecimal number representing the destination number being statused (valid destination numbers = 0–FFF0)
	<Src>	Hexadecimal number specifying the source currently switched to the destination (valid source numbers = 0– FFF, and the letter X [used when the specified destination is disconnected])

Examples

Table 4-5 shows typical **Direct Crosspoint Take** commands and describes the resulting actions and responses that take place.

Table 4-5. Direct Crosspoint Take Commands

Command Sent	Action
@ X:014/4,1F:IA	Switches the following crosspoints:
	Levels 0, 1, and 4
	Destination 4
	Source 31 (hex. 1F)
	Device ID 10 (hex A)

Response	Description
S:04,1F	Status Message = Level 0, Destination 4, Source 31
S:14,1F	Status Message = Level 1, Destination 4, Source 31
S:44,1F	Status Message = Level 4, Destination 4, Source 31

Preset Crosspoint @ P:<Lvls>/<Dest>,<Src>[/<Dest>,<Src>...][:I<ID>]

Definition

This command is used to preset crosspoint requests for execution at a later time. Each **Preset Crosspoint**[1] specification includes one or more levels, a destination, and a source. Multiple levels may be preset in a single **Preset Crosspoint** command.[2]

Syntax

@ P:<Lvls>/<Dest>,<Src>[/<Dest>,<Src>...][:I<ID>]

Header	**@**	@ followed by a space ( ) indicates pass-through commands
Command	**P:**	**Preset Crosspoints** command
Parameters	**<Lvls>/**	A list of one or more single digit level numbers (in hex; valid level numbers= 0–9, A–F). Multiple levels can be specified by concatenating multiple level numbers before ending the list of levels with the "/" character (e.g., **0124/** specifies levels 0, 1, 2, and 4)
	<Dest>,	Hexadecimal number representing the destination number to be preset (valid destination numbers = 0 – FFF0) (The last 15 source and destination numbers are reserved.)
	<Src>	Hexadecimal number specifying the source to be preset. (valid source numbers = 0 – FFF0, and the letter X [used when the specified destination on the requested level(s) is to be disconnected]).
	[:I<ID>]	Optional parameter used to specify the ID/ address of the device/panel requesting the **Preset Crosspoint** (valid id = 0 – FFF0). If the destination specified is protected this information will be used in determining whether or not the issuing user may execute the preset crosspoint. If this parameter is left off and the requested destination is protected or if the ID is different than the ID of the device that requested the destination be protected, the preset crosspoint will not be executed.
Closing		Carriage return

Expected Response

None

[1] The format of the **@ P: Preset Crosspoints** command is similar to that for the **@ X: Direct Crosspoint Take** command with the exception of the "**P**" instead of the "**X**."

[2] In some earlier versions of the pass-through and VIA series routers, a **Preset** would be discarded if the optional [**I:<ID>**] field of this command was left off and the requested destination is protected , OR if the ID is different than the ID of the device that requested the switch and the destination affected was protected. In later versions, the **Preset** is accepted regardless of the setting at the time it is preset but may be rejected when the **Preset** is executed.

Examples

Table 4-6 shows typical **Preset Crosspoint** commands and describes the resulting actions that take place.

Table 4-6. Preset Crosspoint Commands

Command Sent	Action
@ P:014/4,1F:IA	Presets the following crosspoints: • Levels 0, 1, and 4 • Destination 4 • Source 31 (hex. 1F) Device ID 10 (hex A)
@ P:012/7,10:IA	Presets the following crosspoints: • Levels 0, 1, and 2 • Destination 7 • Source 16 (hex. 10) Device ID 10 (hex A)
@ B:E	Executes all presets. See "Execute Preset Buffer" for more details.

Crosspoint Status Commands

Crosspoint Status commands are used to determine system status. They include the following commands:

- Request Crosspoint Status of an Entire Level (page 57)
- Request Crosspoint Status of a Single Destination (page 59)
- Request Preset Crosspoint Status (page 61)
- Request Preset Crosspoint Status On Level (page 63)

Request Crosspoint Status of an Entire Level @ S?<Lvl>

Definition

This command is used to requests the crosspoint status of all destinations on a specified level.

Syntax

@ S?<Lvl>

Header	**@**	@ followed by a space ( ) indicates pass-through commands
Command	**S?**	**Request Crosspoint Status of an Entire Level** command
Parameters	**<Lvl>**	A single digit level number (0–9)
Closing		Carriage return

Expected Response

System will respond to a **Crosspoint Status** message for every destination in the router.

Response Syntax

S:<Lvl><Dest>,<Src>

Header		None
Command	**S:**	**Source** command
Parameters	**<Lvl>**	Level number (0–9, A–F)
	<Dest>,	Destination number (0 – FFF0)
	<Src>	Source preset (0 – FFF0 or X [which indicates a disconnect request])

Examples

Table 4-7 shows a typical **Request Crosspoint Status of an Entire Level** command and describes the resulting action and response that takes place.

Table 4-7. Typical Request Crosspoint Status — Entire Level Command

Command Sent	Action
@ X?0	Request the status of all destinations on Level 0

Response	Description
S:00,16	Source 22 is connected to Destination 0 on Level 0
S:01,16	Source 22 is connected to Destination 1 on Level 0
S:02,16	Source 22 is connected to Destination 2 on Level 0

Request Crosspoint Status of a Single Destination @ X?<Lvl><Dest>

Definition

This command requests the crosspoint status of a specific destination on a specific level.

Syntax

@ X?<Lvl><Dest>

Header	**@**	@ followed by a space ( ) indicates pass-through commands
Command	**X?**	**Request Crosspoint Status of a Single Destination** command
Parameters	**<Lvl>** **<Dest>**	Level number (0–9, A–F) Destination number (0 – FFF0)
Closing		Carriage return

Expected Response

System will respond with a single **Crosspoint Status** message.

Response Syntax

S:<Lvl><Dest>,<Src>

Header		None
Command	**S**	**Source** command
Parameters	**<Lvl>** **<Dest>,** **<Src>**	Level number (0–9, A–F) Destination number (0 – FFF0) Source preset (0 – FFF0 or X [which indicates a disconnect request])

Examples

Table 4-8 shows a typical **Request Crosspoint Status of a Single Destination** command and describes the resulting action and response that takes place.

Table 4-8. Typical Request Crosspoint Status — Single Destination Command

Command Sent	Action
@ X?014	Request the status of Destination 20 (in one-based this is destination 21) on Level 0

Response	Description
S:014,12	Source 18 is connected to Destination 20 on Level 0

Request Preset Crosspoint Status @ P?<Lvl><Dest>

Definition

This command is used to verify which source has been preset to a given destination on a specified level. The response to this message reflects the source that is preset to that destination. The source specified in the response, will be switched to the specified destination when a **Buffer Execute** command is issued. It does not represent the current status of the requested destination on the router.[1]

Syntax

@ P?<Lvl><Dest>

Header	**@**	@ followed by a space ( ) indicates pass-through commands
Command	**P?**	**Request Preset Crosspoint Status** command
Parameters	**<Lvl>** **<Dest>**	A single digit level number (in hex; valid level numbers = 0–9, A–F) Hexadecimal number representing the destination number to be determine the preset status (valid destination numbers = 0 – FFF0)
Closing		Carriage return

Expected Response

The system will only respond if there is a preset crosspoint affecting the requested destination on the specified level. If there is, one or more **Preset Crosspoint Status** messages will be issued for every router configured to control the requested destination. Normally, there will only be one device responding. If more than one router frame is configured as the same level and set of destinations, however, each will respond individually.

Response Syntax

V:<Lvl><Dest>,<Src>

Header	**@...**	None
Command	**V:**	**Verify** command
Parameters	**<Lvls>** **<Dest>,** **<Src>**	The level number (0–9, A–F) The destination number (0 – FFF0) The source preset (0 – FFF0 or X which indicates a disconnect request)

[1] SPT-LXYTOXPRS and SPT-LXYTOMODEM do not support this command. The only way to use this command with an XPRESS is over a direct link between the serial port from the terminal.

Examples

Table 4-9 shows a typical **Preset Crosspoint Status** command and describes the resulting action and response that takes place.

Table 4-9. Typical Preset Crosspoint Status Command

Command Sent	Action
@ P?04	Request presets for Destination 4 on Level 0

Response	Description
V:04,2	Source 2 is preset to Destination 4 on Level 0

Request Preset Crosspoint Status On Level @ V?<Lvl>

Definition

Note

SPT-LXYTOXPRS and SPT-LXYTOMODEM do not support this command. The only way to use this command with an XPRESS is over a direct link between the serial port from the terminal.

This command is used to verify which source has been preset to any destination on a given level. The responses to this message reflect the source that is preset to each destination that has been preset. The source specified in each response, will be switched to the specified destination when a **Buffer Execute** command is issued. It does not represent the current status of the specified destination on the router.

Syntax

@ V?<Lvl>

Header	**@**	@ followed by a space ( ) indicates pass-through commands
Command	**V?**	**Request Preset Crosspoint Status On Level** command
Parameters	**<Lvl>**	A single digit level number (valid level numbers= 0–9, A–F)
Closing		Carriage return

Expected Response

The system will only respond if one of the destinations on the requested level has been preset. If there is, one or more **Preset Crosspoint Status** messages will be issued for every router configured to control the destination. If more than one destination on the level has been preset, a response will be issued for each.

Response Syntax

V:<Lvl><Dest>,<Src>

Header		None
Command	**V:**	**Verify** command
Parameters	**<Lvl>**	The level number (0–9, A–F)
	<Dest>,	The destination number (0 – FFF0)
	<Src>	The source preset (0 – FFF0 or X [which indicates a disconnect request])

Examples

Table 4-10 shows a typical **Request Preset Crosspoint Status On Level** command and describes the resulting action and response that takes place.

Table 4-10. Typical Request Preset Crosspoint Status on Level Command

Command Sent	Action
@ V:2	Requests all presets for any destination on level 2

Response	Description
V:24,2	Source 2 is preset to Destination 4 on level 2
V:27,B	Source 11 is preset to Destination 7 on level 2

Information Commands

Information commands are used to find information about system hardware. They include the following commands:

- Alarms Status Request (page 67)
- Frame Size Request (page 69)
- Information Request Device Description (page 71)
- Information Request for Device Type (page 75)
- Information Request Device Version (page 77)

Alarms Status Request @ Q?

Definition

Note

This command is not currently supported by XPlus™, XPRESS™, or SPT.

The **Alarms Status Request** command is a broadcast over the entire system rather than any specific level that queries the system for the status of all alarms on all frames in the system that have Alarms capacity.[1]

Syntax

@ Q?

Header	**@**	@ followed by a space ( ) indicates pass-through commands
Command	**Q?**	**Alarms Status Request** command
Closing		Carriage return

Expected Response

The condition or status of all alarms on frames with alarms capacity.

Response Syntax

Q:<Lvl><Dest>,<Src>/A##,N##,R##[:I<ID>]

The format of the response is the frame identifier first, with a delimiter followed by the alarm conditions.

Header		None
Command	**Q**	**Alarms Status** command

[1] The alarms on the Integrator vary with version releases. Versions before 2.82 report only over the GPI. Version 2.82 reports only if there is a failure. Versions 2.84 and above report alarm status over the serial port.

Parameters	**<Lvl>**	Level number (0–9, A–F)
	<Dest>,	Destination number (0 – FFF0)
	<Src>	The first source number assigned to the frame that is responding. (An alarm is a frame function rather than a level-specific function.)
	/	Separator (forward slash)
	A##,N##,R##	Alarm conditions*
	[:I<ID>]	Optional parameter used to specify the ID/ address of the device/panel requesting the **Preset Crosspoint** (valid ID = 0 — FFF0). If the destination specified is protected, this information will be used to determine whether or not the issuing user may execute the **Preset Crosspoint**. If this parameter is left off and the requested destination is protected, or if the ID is different than the ID of the device that requested that the destination be protected, the **Preset Crosspoint** will not be executed.

* Each condition consists of a condition identifier (A, N, or R) followed by a hexadecimal number representing a bit-field for the alarm condition, with the three conditions separated by commas. The number showing the condition is currently a two-digit value (only six alarms exist), with Alarm 1 in the least significant bit of the second digit (Bit 0 of the effective eight-bit field). If more than eight alarms are installed at some later date, the additional alarm conditions will be added as an additional leading hexadecimal digit (the original alarms will always be in the effective least significant bits). An active alarm condition is indicated by a "1," the corresponding bit position.

About Alarms

The "**A**," or active, condition lists the currently active alarms.

The "**N**," or new, condition lists alarms that have become active since the last status transmission. Any alarm in the "**N**" field will also appear in the "**A**" field.

The "**R**," or released, condition lists alarms that have become inactive since the last status transmission. An alarm listed in the "**R**" field will not appear in the "**A**" field.

The alarm status update is pre-emptive in that whenever an alarm condition is noted by the frame processor, the **Alarm Status** command is flagged for transmission at the next available slot (a query is not required to see a new alarm condition). If the alarm conditions persist, the **Alarm Status** command is repeated at approximately 16 second intervals. Since the alarm conditions are debounced to prevent continual transmissions on the X-Y bus (e.g., in the event of a noisy or runaway condition on the alarm lines), it is possible to have an existing alarm condition show up as a new alarm. The alarm momentarily released will be reasserted within the debounce time. An alarm condition that does not remain asserted for the debounce time is not reported as either new or released; it is assumed to be a nuisance trip.

Frame Size Request @ F?<Lvl>

Definition

This command requests the size of the routing switcher on a specific level. The system responds with a message identifying the level, along with the number of destinations and sources on that level.

Syntax

@ F?<Lvl>

Header	**@**	@ followed by a space ( ) indicates pass-through commands
Command	**S?**	**Frame Size Request** command
Parameters	**<Lvl>**	A single digit level number (0–9)
Closing		Carriage return

Expected Response

The system will respond with a **Frame Status** message for each router on the level requested. If multiple frames are on the same level, each frame will respond. If the frames have different sizes, their responses will be different.

Syntax

F:<Lvl><LLD>,<LLS>/<LPD>,<LPS>[,I<ID>]

Header		None
Command	**F**	**Frame Size Response** command
Parameters	**<Lvl>**	Level number (0–9, A–F) where the size is being reported
	<LLD>,	Last logical destination (LLD = destination offset + the number of the highest destination)
	<LLS>	Last logical source (LLS = Source offset + the number of the highest source)
	/	Response separator
	<LPD>,	Last physical destination
	<LPS>	Last physical source
	[,I<ID>]	Optional parameter used to specify the ID/ address of the device/panel requesting the **Preset Crosspoint** (valid ID = 0 — FFF0). If the destination specified is protected, this information will be used to determine whether or not the issuing user may execute the **Preset Crosspoint**. If this parameter is left off and the requested destination is protected, or if the ID is different than the ID of the device that requested the destination be protected, the **Preset Crosspoint** will not be executed.

Examples

Table 4-11 shows a typical **Frame Size Request** command and describes the resulting action and response that takes place.

Table 4-11. Typical Frame Size Request Command

Command Sent	Action
@ F?7	Request the frame size of Level 7

Response	Description
F:727,1F/1F,1F,IA	Level 07 has a matrix size of 31x31 (32x32 in one-based system) with a starting destination = 8 (or an offset of 8; 39-31=8) and starting source = 0; the highest destination number is 31, the highest source is 31 (1F hex = 31 in a zero-based system), device ID = 10 (A hex = 10 in a zero-based system)

Information Request Device Description
@ I?A[,B:<Dev.ID>][,E:<Dev.ID>][,T:<Dev.Type>]

Note

This command is not currently supported by VIA32 or XPlus™.

Definition

This command requests a description of the routing switchers and other equipment connected to the X-Y bus. Each router in the system that interprets the request responds with a message identifying its device ID, device type, the number of the characters in the following string, and a character string describing the routing switcher or other piece of equipment. The request can also be specifically addressed to the particular device by the ID number and/or by its device type.

Syntax

@ I?A[,B:<Dev.ID>][,E:<Dev.ID>][,T:<Dev.Type>]

Header	**@**	@ followed by a space ( ) indicates pass-through commands
Command	**I?A**	**Information Request Device Description** command
Parameters	**[,B:<Dev.ID>]**	Optional; used to specify the information from a **beginning** device ID range. No device with an ID less than this should respond to this message.
	[,E:<Dev.ID>]	Optional; used to specify the information from an **ending** device ID range. No device with an ID greater than this should respond to this message. (If **B:<Dev.ID> = E:<Dev.ID>**, then only that particular device will respond.)
	[,B:<Dev.Type>]	Optional; used to specify the information from a beginning device ID range. No device with an ID less than this should respond to this message.
Closing		Carriage return

Expected Response

The routers or other devices in the system will respond with a **Device Version Response** command.

Response Syntax

I!A,<Dev.ID>,<Dev.Type>,<#-of-chars>,<Char String>

Header		None
Command	**I!A**	**Device Description Response** command
Parameters	**<Dev.ID>**	Device ID
	<Dev.Type>,	Device type
	<#-of-chars>,	Number of characters in the following string.
	<Char String>,	Character string describing the responding device. The character string is sent either as the ASCII representation of the character string or as standard text describing the device.

Examples

Table 4-12 shows a typical **Information Request Device Description** command and describes the resulting action and response that takes place.

Table 4-12. Typical Information Request Device Description Command

Command Sent	Action
@ I?A	Information request for the descriptions of the devices in the system.

Response	Description
I!A,1,16,A,496E7465677261746F72	The Integrator reports an ID of 1, device type 16, A=10 characters in the following string, and the string which converts from hexidecimal pairs to spell “Integrator.”
I!A,1,41,8,5350542D31303030	The SPT connected to the X-Y bus for the *X*PRESS respond with ID of 1, device type 41, 8 characters in the following string, and the string which converts from hexidecimal pairs to spell “SPT-1000.”
I!A,0,105,B,XPRESS 12X1*	The *X*PRESS connected to the X-Y bus for the *X*PRESS respond with ID of 1, device type 41, B=11 characters in the following string, and the string which spells out “*X*PRESS 12X1.”

* The *X*PRESS reports its description in plain text; other devices are coded in hexidecimal.

Devices

Table 4-13 shows a list of devices with their corresponding categories and types.

Table 4-13. Devices, Device Catetgories, and Device Types

Device Category	Device Type	Devices
1 = Router Frames	01	Hedco HD 16X
	02	Xplus
	03	VIA
	04	MIXBOX
	05	XPRESS Routing Switchers
	06	Integrator Routing Switchers
2=Router Control Panels	01	RCP32p
	02	GPI64p
	03	16X1SBAp
	04	NXY
	05	ANXY
	06	ABAp
3=LogoMotion devices	01	1302CP
	02	NTSC Playback
	03	PAL Playback
	04	Video Capture
	05	Keyer
4=Bus Repeaters/ Translators	01	SPT-1000-SXY
5=Application Software	01	RouterWORKS Single-Bus Panel
	02	RouterWORKS Multi-Bus Panel
	03	RouterWORKS Matrix Panel
	04	EventWORKS Scheduler
	05	EventWORKS Sequencer
6=Norpack	01	Norpack

Information Request for Device Type
@ I?T[,B:<Dev.ID>][,E:<Dev.ID>][,T:<Dev.Type>]

Note

This command is not currently supported by VIA32 or XPlus™.

Definition

This command requests the device type of the routing switchers and other equipment connected to the X-Y bus. Each router in the system that interprets the request responds with a message identifying its device ID and device type. The request can also be specifically addressed to the particular device by the ID number and/or by its device type.

Syntax

@ I?T[,B:<Dev.ID>][,E:<Dev.ID>][,T:<Dev.Type>]

Header	**@**	@ followed by a space ( ) indicates pass-through commands
Command	**I?T**	**Information Request for Device Type** command
Parameters	**[,B:<Dev.ID>]**	Optional; used to specify the information from a beginning device ID range. No device with an ID less than this will respond to this message.
	[,E:<Dev.ID>]	Optional; used to specify the information from an ending device ID range. No device with an ID greater than this should respond to this message. (If **B:<Dev.ID>** = **E:<Dev.ID>**, then only that particular device will respond.)
	[,T:<Dev.Type>]	Optional; used to specify the information from a specific device type.
Closing		Carriage return

Expected Response

Routers or other devices in the system will respond with a **Device Type** response.

Response Syntax

I!T,<Dev.ID>,<Dev.Type>

Header		None
Command	**I!T**	**Device Type Response** Command
Parameters	**<Dev.ID>**	Device ID
	<Dev.Type>,	Device type

Examples

Table 4-14 shows a typical Information Request for Device Type command and describes the resulting action and response that takes place.

Table 4-14. Typical Information Request for Device Type Command

Command Sent	Action
@ I?T	Information request for all device types in the system

Response	Description
I!T,1,16 I!T,1,41	The Integrator and the SPT connected to the X-Y bus for the XPRESS respond with IDs of 1 and device types 16 and 41

Information Request Device Version
@ I?V[,B:<Dev.ID>][,E:<Dev.ID>][,T:<Dev.Type>]

Note

This command is not currently supported by VIA32 or XPlus™.

Definition

This command requests the version of the routing switcher and other equipment connected to the X-Y bus. Each router in the system that interprets the request responds with a message identifying its device ID, device type, hardware type, hardware version, software type, and software version. The request can also be specifically addressed to the particular device by the ID number and/or by its device type.

Syntax

@ I?V[,B:<Dev.ID>][,E:<Dev.ID>][,T:<Dev.Type>]

Header	**@**	@ followed by a space ( ) indicates pass-through commands
Command	**I?V**	**Information Request Device Version** command
Parameters	**[,B:<Dev.ID>]**	Optional; used to specify the information from a **beginning** device ID range. No device with an ID less than this should respond to this message.
	[,E:<Dev.ID>]	Optional; used to specify the information from an **ending** device ID range. No device with an ID greater than this should respond to this message. (If **B:<Dev.ID>** = **E:<Dev.ID>**, then only that particular device will respond.
	[,T:<Dev.Type>]	Optional; used to specify the information from a **beginning** device ID range. No device with an ID less than this should respond to this message.
Closing		Carriage return

Expected Response

The routers or other devices in the system that can interpret the request will respond with a **Device Version Response** command.

Response Syntax

I!V,<Dev.ID>,<Dev.Type>,<HW Type>,<HW Vers>,<SW Type>,<SW Vers>

Header		None
Command	**I!V**	**Device Version Response** command
Parameters	**<Dev.ID>**	Device ID
	<Dev.Type>,	Device type
	<HW Type>,	Hardware type
	<HW Vers>,	Hardware version. The version numbers are sent as the ASCII representation of a 16-bit hexadecimal number where the 8 most significant bits represent the major version and the 8 least significant bits are used to represent the minor version. (Ex. V1.10 = 010A or 10A, the leading zero is not required.)
	<SW Type>,	Software type
	<SW Vers>,	Software version. The version numbers are sent as the ASCII representation of a 16-bit hexadecimal number where the 8 most significant bits represent the major version and the 8 least significant bits are used to represent the minor version. (Ex. V4.89 = 0459 or 459, the leading '0' is not required.).

Examples

Table 4-15 shows a typical **Information Request Device Version** command and describes the resulting action and response that takes place.

Table 4-15. Typical Information Request Device Version Command

Command Sent	Action
@ I?V	Information request for the versions in the system.

Response	Description
I!V,1,16,1,1,1,1	The Integrator reports an ID of 1, device type 16, hardware type 1, hardware version 1, software type 1, and software version 0.1.
I!V,1,41,1,100,12,15E	The SPT connected to the X-Y bus for the XPRESS responds with ID of 1, device type 41, hardware type 1, hardware version 100, software type 12 and software version 15E.

Access / Control Commands

Access / Control commands are used to allow access to or control system hardware. They include the following commands:

- Lock/Unlock (page 81)
- Protect/Unprotect (page 81)

Lock, Protect; Unlock, Unprotect @ W:<Lvls>/<Dest>,<ID>,<#>

Definition

Note

This command is not currently supported by XPRESS™ or SPT.

A **Lock** is a property applied to a destination that makes that destination unavailable to all users, including the one that locked it.

A **Protect** is a property applied to a destination that makes that destination unavailable to all other users, except for the one that protected it.

An **Unlock** or **Unprotect** is only effective if it is sent from the device that set the lock or the protect.

Syntax

@ W:<Lvls>/<Dest>,<ID>,<#>

Header	**@**	@ followed by a space ( ) indicates pass-through commands
Command	**W**	**Lock/Protect** command
Parameters	**<Lvls>**	Level number(s) (0–9, A–F) to be affected
	/	Separator
	<Dest>,	Destination number (0 – FFF0) you wish to lock.
	<ID>	Device ID for the requesting device's ID (valid ID numbers are in hex = 0–9, A–F).
	<#>	1 = Applies the **Lock** property
		2 = Applies the **Protect** property
		0 = Applies the **Unlock/Unprotect** property, and is only effective if it is sent by the device that set the lock or the protect.
Closing		Carriage return

Expected Response

A statement defining the locked destination.

Response Syntax

W!<Lvl><Dest>,<ID>,1

Header		None
Command	**W!**	**Lock/Protect Response** command
Parameters	**<Lvl>**	Level number (0–9, A–F)
	<Dest>,	Destination number (0 – FFF0)
	<ID>	Device ID for the requesting device's ID (valid ID numbers are in hex = 0–9, A– F)
	1	Reports the **Lock** established

Examples

Table 4-16 shows a typical **Lock** command and describes the resulting action and response that takes place.

Table 4-16. Typical Lock Command

Command Sent	Action
@ W:7/A,1B,1	Level 7, Destination 10 (1A hex) is locked by Device ID 27 (1B hex)
@ W:7/A,1B,2	Level 7, Destination 10 (1A hex) is protected by Device ID 27 (1B hex)
@ W:7/A,1B,0	Level 7, Destination 10 (1A hex) is unlocked by Device ID 27 (1B hex)

Response	Description
w!1A,1B,1	Destination 10 on Level 7 is locked by device ID 27

Salvo Operations

The term “salvo” refers to the changing of more than one crosspoint connection simultaneously and storing the commands to do it for later use. Salvo Operations include the following commands:

- Clear Presets (page 85)
- Execute Preset Buffer (page 87)
- Reset Preset Buffer (page 89)

Clear Presets @ B:C

Definition

This command clears all previously entered but not yet executed presets. The pending preset crosspoints would have been previously loaded using the **Preset Crosspoint** command.

Syntax

@ B:**C**

Header	**@**	@ followed by a space ( ) indicates pass-through commands
Command	**B:C**	**Clear Presets** command
Parameters		None
Closing		Carriage return

Expected Response

None

Examples

Table 4-17 shows a typical **Clear Presets**[1] command and describes the resulting action that takes place.

Table 4-17. Typical Clear Presets Command

Command Sent	Action
@ B:C	Clears all presets

[1] In some versions of SCE-101 and RSCE-101s, the **Clear Preset** command was implemented as a **Preset Buffer Reset = @ B:R** rather than a **Preset Buffer Clear = @ B:C** as is used in most products today. If you wish to interface with the SCE-101 or RSCE-101 products from Hedco, you may wish to send both the **@ B:C** and the **@ B:R** commands.

Execute Preset Buffer @ B:E

Definition

This command executes all presets. The presets containing pending crosspoint commands are loaded using the **Preset Crosspoint**.

Syntax

@ B:E

Header	**@**	@ followed by a space ( ) indicates pass-through commands
Command	**B:E**	**Buffer Execute** command
Parameters		None
Closing		Carriage return

Expected Response

This command can result in a number of crosspoint status messages as each crosspoint that has been preset and that is now executed will result in a status message. The exact number will depend on how many crosspoints are preset when the **Execute Preset Buffer** command is issued. Resulting status messages will only be sent by the serial port if Reporting has been enabled for the serial port. See "Enable Reporting" for details.

Response Syntax

S:<Lvl><Dest>,<Src>

Header		None
Command	**S**	**Crosspoint Status** command
Parameters	**<Lvl>**	A single digit level number (in hex, valid level numbers = 0–9, A–F) representing the level of switching the destination being statused is on.
	<Dest>,	Hexadecimal number representing the destination number being statused (valid destination numbers = 0–FFF0)
	<Src>	Hexadecimal number specifying source currently switched to destination (valid source numbers = 0–FFF0, and the letter X [used when the specified destination is disconnected])

Examples

Table 4-18 shows typical **Execute Preset Buffer** commands and describes the resulting actions and responses that take place.

Table 4-18. Typical Execute Preset Buffer Commands

Command Sent	Action
@ P:014/4,1F:1A	Presets the following crosspoints: • Levels 0, 1, and 4 • Destination 4 • Source 31 (hex. 1F), Device ID 10 (hex 1A).
@ P:012/7,10:IA	Presets the following crosspoints: • Levels, 0, 1, and 2 • Destination 7 • Source 16 (hex. 10) Device ID 10 (hex A)
@ B:E	Executes all presets (see "Execute Preset Buffer" for more details)

Response	Description
S:04,1F	Status Message=Level 0, Destination 4, Source 31
S:14,1F	Status Message=Level 1, Destination 4, Source 31
S:44,1F	Status Message=Level 4, Destination 4, Source 31
S:07,10	Status Message=Level 0, Destination 7, Source 16
S:17,10	Status Message=Level 1, Destination 7, Source 16
S:27,10	Status Message=Level 2, Destination 7, Source 16

Reset Preset Buffer @ B:R

Definition

This command is documented for historical reasons and for support of the SCE-101 and RSCE-101 products developed by Hedco. This command resets or clears all presets. This command has been replaced in most products by the **@ B:C** command. **Preset Crosspoint** commands are used to load a preset.

In most products sold by Leitch, **Preset Buffer Clear = @ B:C** is preferred. If you wish to interface with the SCE-101 or RSCE-101 products from Hedco, you may wish to send both the **@ B:C** and the **@ B:R** commands.

Syntax

@ B:R

Header	@	@ followed by a space ( ) indicates pass-through commands
Command	B	**Reset Preset Buffer** command
Parameters	R	Reset buffer
Closing		Carriage return

Expected Response

None

Examples

Table 4-19 shows a typical **Reset Preset Buffer** command and describes the resulting action that takes place.

Table 4-19. Typical Reset Preset Buffer Command

Command Sent	Action
@ B:R	Resets all presets