ETC Configuration Guide

Paradigm Serial Access Protocol

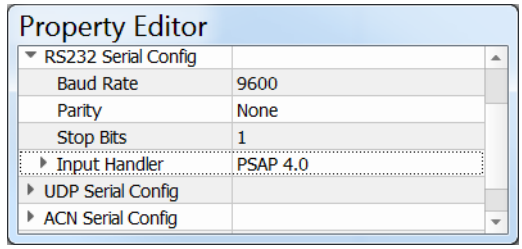
Overview

The Paradigm Architectural Control Processor can be controlled through its local RS232 serial port and Ethernet interface using a default command structure referred to as the Paradigm Serial Access Protocol (PSAP). All aspects of serial communication are configured in LightDesigner configuration software, including RS232 serial port baud rate and UDP packet settings.

The content in this document reflects the features implemented in Paradigm Serial Access Protocol software version 4.0 and later.

LightDesigner Setup

LightDesigner offers three types of serial options and three groupings of properties to configure them including "RS232 Serial Config", "UDP Serial Config" and "ACN Serial Config". To view and set these properties, select a Processor from the Browser. The properties of the selected Processor will display in the Property Editor.



Expand the "RS232 Serial Config" property to view the port setup. Default settings are *Baud Rate* of 9600, *Parity* None, 1 *Stop Bit* (8 data bits is mandatory).

Expand the "UDP Serial Config" property to view the port setup. *Input UDP Port* defaults to "0" and the *Input Handler* defaults to [None]. ETC recommends setting the *Input UDP Port* property in the range of 4703-4727. This port will be used by the sender for messages to the Paradigm Architectural Control Processor (P-ACP). The P-ACP will automatically send any response to the sending device's output UDP port. If needed, contact ETC Technical Support for additional support with UDP serial setup.

Expand the "ACN Serial Config" property to view the port setup. ACN Serial Config allows for reliable communication between devices that support this method over ACN using simple setup. Devices with matching "ACN Name" property value will connect and communicate.

- For example, a processor's ACN Serial PSAP Input Handler will by default, listen to any device configured to send using an ACN Name of "ETC P-ACP". The same processor will also respond to any queries using the same ACN Name, so any other devices configured to receive from that ACN Name will get all responses. It is possible to specify multiple ACN Names using comma separation in the property, but note that the PSAP input handler will respond to all devices with a matching ACN Name.

Note: *Devices with matching "ACN Name" property are considered part of a broadcast domain, and will hear anything sent in that session.*

Note: *ETC recommends that serial communications using Ethernet contain no more than 512 bytes per packet.*

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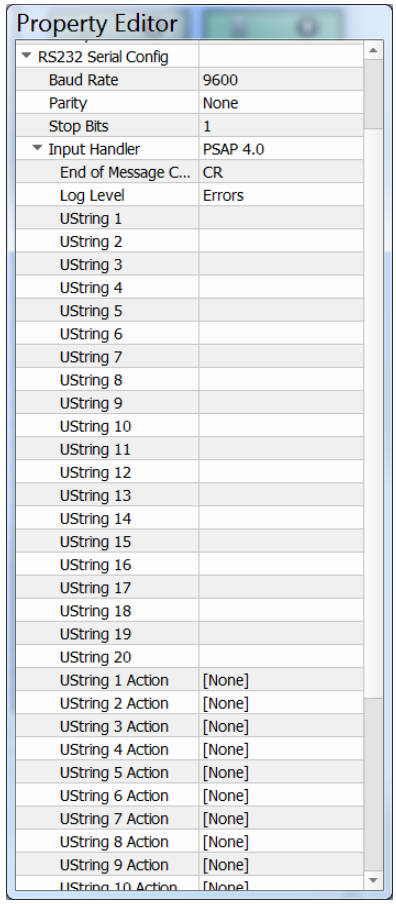
Input Handler Options



Expand the "Input Handler" node that is nested beneath the selected serial option node. Depending on the LightDesigner user access level, several configuration options are displayed when the Input Handler is set to "PSAP 4.0".

- **End of Message Char** - By default the end of message is a single byte carriage return (shown as "CR"), which is equal to 13 decimal and 0D hexadecimal. Other options for this property are carriage return plus line feed (CR+LF) and just a line feed character (LF).
- **Log Level** - an "Advanced" level user access feature. Can be set to log various levels of detailed data to understand system interactions. ETC recommends leaving this as the default "Errors" unless otherwise discussed with ETC Technical Services.
- **UString** - 20 user definable strings and actions that, when received, will execute the corresponding *UString Action*.
- **UString Action** - 20 user definable actions that are executed when the corresponding *UString* data is received.

For example, configuring the following:

- UString 1 = hello
  UString 1 Action = Sequence Start for Sequence 1

Results in the following:

- When "hello" is received, followed by the terminating string, Sequence 1 will start.

Note: *Received commands are only considered complete once the terminating character (selected with the End of Message Char property) has been received by Paradigm.*

Data sent from the Paradigm Architectural Control Processor (P-ACP) will also end with the same string. Contact ETC Professional Services if support for another terminating character is required.

ETC Configuration Guide

Paradigm Serial Access Protocol (PSAP)

Standard PSAP Commands

The following section lists the supported serial commands for the Paradigm Serial Access Protocol (PSAP).

Conventions of Use

- Generic names such as "**channame**" must be replaced with the actual object names used within the LightDesigner configuration.

Note: *All names are case sensitive and must match the names to LightDesigner exactly. Additionally, to allow for proper operation avoid the use of commas "," and colons ":" in configuration object names since these characters are instrumental in the string parsing logic.*

- Values such as "**level**" and "**amount**" must be replaced with either a value of 0-255 or 0-100%. Both formats are supported; use of the percent **"%"** symbol indicates when the value should be treated as a percentage.
- If assigned, priority values must be replaced with a 1-200 control priority coordinated with the installing technician. Supplying a priority value for preset or sequence activation automatically enables the action to persist beneath higher priority actions.
- Items listed inside of braces "**[ ]**"are optional parameters that use the first character as a delimiter.
- White space must separate individual command parameters. White spaces are allowed in object names as well.
- By default, an ASCII carriage return character (which is encoded as 13 decimal and 0D Hex) is used to terminate or signal the end of any command, received or sent. An ASCII line-feed character is also optionally available. Contact ETC Professional Services if support for another terminating character is required.
- PSAP will return a list of available commands by issuing either **?** or **help** followed by the terminating character (by default this is a carriage return).

Control Channel Commands

Received Data	Resulting Action
chan int:level channame[, spacename][, fadetime]	Sets intensity to level
chan ras:amount channame[, spacename][, fadetime]	Raises intensity by amount
chan low:amount channame[, spacename][, fadetime]	Lowers intensity by amount
chan tog channame[, spacename][, fadetime]	Toggles intensity
chan min:level channame[, spacename]	Sets minimum level for a channel
chan max:level channame[, spacename]	Sets maximum level for a channel
chan int:128 Zone 1	Sets Zone 1 to 50% intensity
chan int:75% Dimmer 2, Primary Space 1	Sets Dimmer 2 in Primary Space 1 to 75%

Note: *Remember, received commands are only considered complete once the terminating character has been received by Paradigm. Data sent from the P-ACP will also end with the terminating character.*

ETC Configuration Guide

Paradigm Serial Access Protocol (PSAP)

Group Commands

Fade time format is x.y seconds, with support for tenths of seconds. To use fadetime parameter in your group command, you must specify a space name.

Received Data	Resulting Action
grp int:level grpname[, spacename][, fadetime]	Sets intensity to level value
grp ras:amount grpname[, spacename][, fadetime]	Raises intensity by amount
grp low:amount grpname[, spacename][, fadetime]	Lowers intensity by amount
grp tog grpname[, spacename][, fadetime]	Toggles Group intensity
grp int:128 Group 1, 3	Sets Group 1 intensity to 50% using a three second fade

Preset Commands

Fade time format is x.y seconds, with support for tenths of seconds. To use fadetime parameter in your preset command, you must specify a space name.

Received Data	Resulting Action
pst act[:priority] presetname[, spacename][, fadetime]	Activate (using LTP playback)
pst dact presetname[, spacename][, fadetime]	Deactivate (from LTP playback)
pst tog[:priority] presetname[, spacename][, fadetime]	Inverts Preset state (using LTP playback)
pst acth[:priority] presetname[, spacename][, fadetime]	Activate (using HTP playback)
pst dacth presetname[, spacename][, fadetime]	Deactivate (from HTP playback)
pst togh[:priority] presetname[, spacename][, fadetime]	Inverts Preset state (using HTP playback)
pst rec presetname[, spacename]	Records a Preset
pst act Preset 1, Primary Space 1, 5	Activates Preset 1 LTP in Primary Space 1 using a five second fade

Sequence Commands

Received Data	Resulting Action
seq start[:priority] sequencename[, spacename]	Start playback
seq stop sequencename[, spacename]	Stops playback
seq pause sequencename	Pause playback
seq resume sequencename	Resume playback
seq ras:amount sequencename	Raises by amount (requires active Sequence)
seq low:amount sequencename	Lowers by amount (requires active Sequence)
seq rate:faderate sequencename	Adjusts Sequence playback speed (1 = default timing)
seq start Sequence 1	Starts Sequence 1

Space Commands

Received Data	Resulting Action
spc off spacename[, fadetime]	Activates Off within the Space
spc ras:amount spacename[, fadetime]	Raises all intensities by amount
spc low:amount spacename[, fadetime]	Lowers all intensities by amount
spc master:level spacename[, fadetime]	Sets Master level for the Space to level
spc off Primary Space 1	Activates the "Off" preset in Primary Space 1

Wall Commands

Received Data	Resulting Action
wall open wallname[, spacename]	Opens a wall
wall close wallname[, spacename]	Closes a wall
wall tog wallname[, spacename]	Toggles wall state
wall open Wall 1	Opens Wall 1

Note: *Spacename must be used to specify the parent space containing the wall, not the spaces combined through the wall.*

Macro Commands

Received Data	Resulting Action
macro on macroname	Executes On steps of a macro
macro off macroname	Executes Off steps of a macro
macro tog macroname	Toggles macro state
macro cancel macroname	Cancels execution
macro on Macro 1	Executes on steps of Macro 1

Override Commands

Received Data	Resulting Action
ovr enab overridename	Enables override
ovr disab overridename	Disables override
ovr tog overridename	Toggles override state
ovr enab Override 1	Enables Override 1

PSAP Status Commands

The following commands will return information on current status. The strings returned follow the same basic format as the standard commands received by Paradigm with following noted exceptions:

- the spacename is optional within the command but it will always be included in the returned string
- levels will always be returned as a value of 0-255

Note: *Remember, commands sent to the P-ACP must possess the terminating character, and returned data will contain the same terminating character (the default is carriage return).*

Channel Status

Received Data	Returned Data
chan get channame[, spacename]	chan int:level channame, spacename

Preset Status

Received Data	Returned Data	Comment
pst get presetname[, spacename]	pst act presetname, spacename	indicates preset activated
	pst dact presetname, spacename	indicates preset deactivated
	pst alt presetname, spacename	indicates preset altered
pst get presetname[, spacename]	pst act presetname, spacename	indicates preset activated HTP
	pst dact presetname, spacename	indicates preset deactivated HTP
	pst alt presetname, spacename	indicates preset altered HTP

Group Status

Received Data	Returned Data
grp get groupname[, spacename]	grp int:level grpname, spacename

Macro Status

Received Data	Returned Data
macro get macroname	macro on macroname macro off macroname macro running macroname

Wall Status

Received Data	Returned Data
wall get wallname[, spacename]	wall open wallname, spacename wall close wallname, spacename

Sequence Status

Received Data	Returned Data	Comment
	seq start sequencename, spacename	indicates sequence running
seq get sequencename[, spacename]	seq stop sequencename, spacename	indicates sequence stopped
	seq pause sequencename, spacename	indicates sequence paused

Override Status

Received Data	Returned Data
ovr get overridename	ovr enab overridename ovr disab overridename

PSAP Trigger Support

In addition to using "get" commands to poll for status, Paradigm can be configured to send PSAP formatted updates for specified objects as updates occur. These "Triggers" are a helpful alternative to polling for object status as they provide real time updates to objects.

PSAP triggers also simplify setup by quickly allowing configuration of a PSAP formatted serial output as an alternative to having to reconfigure multiple "when" conditions with differing "send serial" actions.

- Trigger configuration is only available while LightDesigner user access is set to "Advanced" or higher.
- All objects that support the "get" command are supported with PSAP triggers using the exact same returned string format.
- Trigger functions with "PSAP" listed within the trigger function name will automatically send serial updates anytime the specified changes occur to the specified object.
- Each object requires an individual trigger to be created.