This document provides additional assistance with wiring your Extron IP Link Pro Control Processor to your device. Different components may require a different wiring scheme than those listed below.

For complete operating instructions, refer to the user's manual for the specific IP Link Pro Control Processor or the documentation supplied by the manufacturer of the controlled device.

For more information on using Global Scripter Modules, refer to the "Guide to Using Scripter Modules" document.

Device Specifications

Device Type:	TV Tuner
Manufacturer:	Contemporary Research
Firmware Version:	N/A
Model(s):	232-ATSC+, 232-ATSC+1, 232-ATSC, 232-ATSC+SDI, 232-ATSC 4, 232-ATSC 4K

Tested on the Following Software and Firmware Versions

IP Link Pro Control Processor Firmware	Global Scripter Version
3.04.0001-b002	2.3.1

Version History

Module Version	Date	Notes
1_2_2_0	9/12/2019	Added model 232-ATSC 4K.
1_2_1_2	5/1/2019	Update module to current standards.
1_2_1_1	10/21/2016	Fixed ChannelDiscrete command.
1_2_1_0	9/23/2016	Initial Version

Module Notes

- Unidirectional variable must be set to 'True' if status is not required. Default value is 'False'.
  `Example: InterfaceName.Unidirectional = 'True'`

- connectionCounter variable must be set to the number of queries that will be sent to the device before displaying 'Disconnected' if no response is received. Default value is 15.
  `Example: InterfaceName.connectionCounter = 5`

- DeviceID variable must be set accordingly. Default value is '1'. DeviceID ranges from 0 to 9.
  `Example: InterfaceName.DeviceID = '1'`

- The ChannelDiscrete command requires a channel string to be pass on the value parameter. Leading zeroes are optional when creating the channel string. The following formats are accepted:
  - ###-### (major channel – minor channel)
  - ###:### (major channel – minor channel)
  - #### (up to 4 characters for analog or single-unit digital channel)

- Examples of channel strings:
  - 28:1 Selects channel 28-1
  - 28-2 Selects channel 28-2
  - 28.3 Selects channel 28.3
  - 32 Selects 32-1, 32-0 if no digital
  - 32-0 Selects analog channel

Supported Classes and Examples

SerialClass
`InterfaceName = ModuleName.SerialClass(ProcessorName, 'COM1', Model='232-ATSC+')`
SerialOverEthernetClass
`InterfaceName = ModuleName.SerialOverEthernetClass('192.168.254.254', 2001, Model='232-ATSC+')`
EthernetClass
`InterfaceName = ModuleName.EthernetClass('192.168.254.254', 23, Model='232-ATSC+')`

Control Commands

Format with Qualifier:

```
InterfaceName.Set(Command, Value, {'Qualifier Key': 'Qualifier Value'})
```

Format with Qualifier:

```
InterfaceName.Set(Command, Value)
```

Command	Value	Value	Value
AspectRatio	'None'		
`# AspectRatio example` `InterfaceName.Set('AspectRatio', None)`			
AudioMute	'On'	'Off'	
`# AudioMute example` `InterfaceName.Set('AudioMute', 'On')`			
ChannelDiscrete	'String'		
`# ChannelDiscrete example` `InterfaceName.Set('ChannelDiscrete', 'String')`			
ChannelStep	'Up'	'Down'	
`# ChannelStep example` `InterfaceName.Set('ChannelStep', 'Up')`			
ClosedCaption	'On'	'Off'	
`# ClosedCaption example` `InterfaceName.Set('ClosedCaption', 'On')`			
ClosedCaptionChannel	'CC1' 'CC4' 'TEXT3'	'CC2' 'TEXT1' 'TEXT4'	'CC3' 'TEXT2'
`# ClosedCaptionChannel example` `InterfaceName.Set('ClosedCaptionChannel', 'CC1')`			
ExecutiveMode	'All' 'Ch+Vol+Menu' 'Menu' 'Off'	'Ch+Menu' 'Power' 'Setup+Menu'	'Vol+Menu' 'Setup' 'Pwr+Setup+Menu'
`# ExecutiveMode example` `InterfaceName.Set('ExecutiveMode', 'All')`			
MenuCall	'List'	'Menu'	
`# MenuCall example` `InterfaceName.Set('MenuCall', 'List')`			
MenuNavigation	'Left' 'Down'	'Right' 'Enter'	'Up' 'Exit'
`# MenuNavigation example` `InterfaceName.Set('MenuNavigation', 'Left')`			
Output	'YPbPr'	'RGB' [1]	
`# Output example` `InterfaceName.Set('Output', 'YPbPr')`			

Command	Value	Value
Power	'On'	'Off'
`# Power example` `InterfaceName.Set('Power', 'On')`		
Command	**Value**	
PreviousChannel	'None'	
`# PreviousChannel example` `InterfaceName.Set('PreviousChannel', None)`		
Command	**Value**	**Value**
TunerMode	'Air'	'Cable'
`# TunerMode example` `InterfaceName.Set('TunerMode', 'Air')`		
Command	**Value**	
Volume [2]	0 to 100 in steps of 1	
`# Volume example` `InterfaceName.Set('Volume', 100)`		

[1] not supported by 232-ATSC+SDI model

[2] Device was found to perform repeated commands optimally at repeat rates of 0.5 seconds or slower

Status Available

For all commands, call Update to receive the latest status. ConnectionStatus, ChannelStatus, and TunerMode do not support the Update function. ConnectionStatus is triggered by the device providing a successful response to other Update function calls.

Format with Qualifier:

```
InterfaceName.Update(Command, {'Qualifier Key': 'Qualifier Value'})
Value = InterfaceName.ReadStatus(Command, {'Qualifier Key': 'Qualifier Value'})
InterfaceName.SubscribeStatus(Command, {'Qualifier Key': 'Qualifier Value'},
FeedbackHandler)
FeedbackHandler will be called only when the specified qualifier gets a new status.
```

Format without Qualifier:

```
InterfaceName.Update(Command)
Value = InterfaceName.ReadStatus(Command)
InterfaceName.SubscribeStatus(Command, None, FeedbackHandler)
FeedbackHandler will be called when any qualifier gets a new status.
```

Command	Value	Value	
AudioMute	'On'	'Off'	

`# AudioMute example`
`InterfaceName.Update('AudioMute')`
`Value = InterfaceName.ReadStatus('AudioMute')`
`InterfaceName.SubscribeStatus('AudioMute', None, FeedbackHandler)`			

Command	Value		
ChannelStatus [2]	'String'		
`Value = InterfaceName.ReadStatus('ChannelStatus')` `InterfaceName.SubscribeStatus('ChannelStatus', None, FeedbackHandler)`			
Command	Value	Value	
ClosedCaption	'On'	'Off'	

`# ClosedCaption example`
`InterfaceName.Update('ClosedCaption')`
`Value = InterfaceName.ReadStatus('ClosedCaption')`
`InterfaceName.SubscribeStatus('ClosedCaption', None, FeedbackHandler)`			

Command	Value	Value	Value
ClosedCaptionChannel	'CC1'	'CC2'	'CC3'
	'CC4'	'TEXT1'	'TEXT2'
	'TEXT3'	'TEXT4'	

`# ClosedCaptionChannel example`
`InterfaceName.Update('ClosedCaptionChannel')`
`Value = InterfaceName.ReadStatus('ClosedCaptionChannel')`
`InterfaceName.SubscribeStatus('ClosedCaptionChannel', None, FeedbackHandler)`			

Command	Value	Value	
ConnectionStatus	'Connected'	'Disconnected'	
`Value = InterfaceName.ReadStatus('ConnectionStatus')` `InterfaceName.SubscribeStatus('ConnectionStatus', None, FeedbackHandler)`			
Command	Value	Value	Value
ExecutiveMode [3]	'All'	'Ch+Menu'	'Vol+Menu'
	'Ch+Vol+Menu'	'Power'	'Setup'
	'Menu'	'Setup+Menu'	'Pwr+Setup+Menu'
	'Off'		

`# ExecutiveMode example`
`InterfaceName.Update('ExecutiveMode')`
`Value = InterfaceName.ReadStatus('ExecutiveMode')`
`InterfaceName.SubscribeStatus('ExecutiveMode', None, FeedbackHandler)`			

Command	Value	Value
Output	'YPbPr'	'RGB' [1]

```
# Output example
InterfaceName.Update('Output')
Value = InterfaceName.ReadStatus('Output')
InterfaceName.SubscribeStatus('Output', None, FeedbackHandler)
```

Command	Value	Value
Power [2]	'On'	'Off'

```
# Power example
InterfaceName.Update('Power')
Value = InterfaceName.ReadStatus('Power')
InterfaceName.SubscribeStatus('Power', None, FeedbackHandler)
```

Command	Value	Value
TunerMode [2]	'Air'	'Cable'

```
Value = InterfaceName.ReadStatus('TunerMode')
InterfaceName.SubscribeStatus('TunerMode', None, FeedbackHandler)
```

Command	Value
Volume	0 to 100 in steps of 1

```
# Volume example
InterfaceName.Update('Volume')
Value = InterfaceName.ReadStatus('Volume')
InterfaceName.SubscribeStatus('Volume', None, FeedbackHandler)
```

[1] not supported by 232-ATSC+SDI model

[2] Update for any of these commands provides status for all the other commands

[3] Update for any of these commands provides status for all the other commands

Cable and Adapter Requirements

Captive Screw to Female DB9 Serial Cable

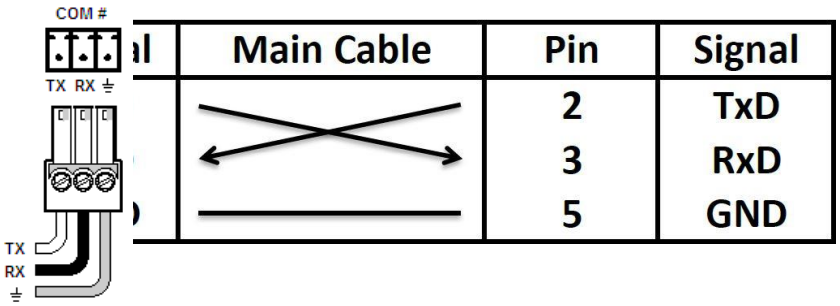
Notes for the Device

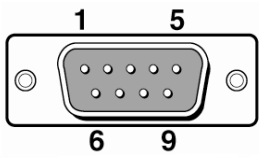
- RS232 wiring should only use pins 2, 3 and 5. Cables with all pins wired can lock out front-panel programming and data communication.

Serial communication

Port Type:	RS-232	**Parity:**	None
Baud Rate:	9600	**Stop Bits:**	One
Data Bits:	8	**Flow Control:**	None

Pin Assignments Diagram





RS232 DB9 Male
TV Tuner

Network communication

When configuring the Ethernet module, be sure device settings match those of the Global Scripter ethernet interface.

Port Type:	Ethernet
Default Port:	23
Logon Credentials Supported:	No
Multi-Connection Capabilities:	Yes
Port Changeability:	Yes

Ethernet Module Configuration Description

Please refer to user manual for settings and changes to the network communication

Notes for the Device

Appendix A. Set Commands

DeviceID '0' is used all command string examples.

Aspect Ratio None	>0KK=82\x0D
Audio Mute Off	>0VX\x0D
Audio Mute On	>0VM\x0D
Channel (Discrete) testString	>0TC=testString\x0D
Channel (Step) Down	>0TD\x0D
Channel (Step) Up	>0TU\x0D
Closed Caption Channel CC1	>0Q1=1\x0D
Closed Caption Channel CC2	>0Q1=2\x0D
Closed Caption Channel CC3	>0Q1=3\x0D
Closed Caption Channel CC4	>0Q1=4\x0D
Closed Caption Channel TEXT1	>0Q1=5\x0D
Closed Caption Channel TEXT2	>0Q1=6\x0D
Closed Caption Channel TEXT3	>0Q1=7\x0D
Closed Caption Channel TEXT4	>0Q1=8\x0D
Closed Caption Off	>0Q0=0\x0D
Closed Caption On	>0Q0=1\x0D
Executive Mode All	>0S4=7\x0D
Executive Mode Ch+Menu	>0S4=1\x0D
Executive Mode Ch+Vol+Menu	>0S4=3\x0D
Executive Mode Menu	>0S4=6\x0D
Executive Mode Off	>0S4=0\x0D
Executive Mode Power	>0S4=4\x0D
Executive Mode Pwr+Setup+Menu	>0S4=9\x0D
Executive Mode Setup	>0S4=5\x0D
Executive Mode Setup+Menu	>0S4=8\x0D
Executive Mode Vol+Menu	>0S4=2\x0D
Menu Call List	>0KK=95\x0D
Menu Call Menu	>0KK=105\x0D
Menu Navigation Down	>0KK=109\x0D
Menu Navigation Enter	>0KK=110\x0D
Menu Navigation Exit	>0KK=111\x0D
Menu Navigation Left	>0KK=107\x0D
Menu Navigation Right	>0KK=106\x0D
Menu Navigation Up	>0KK=108\x0D
Output RGB	>0KK=149\x0D
Output YPbPr	>0KK=151\x0D
Power Off	>0P0\x0D
Power On	>0P1\x0D
Previous Channel None	>0TP\x0D
Tuner Mode Air	>0KK=153\x0D
Tuner Mode Cable	>0KK=154\x0D
Volume 0	>0VH0\x0D

Volume 100	>0VH100\x0D

Appendix B. Update Commands

Closed Caption	>0SQ\x0D
Output	>0SS\x0D
Power	>0ST\x0D
Volume	>0SV\x0D