# Setting Up SightTrackers with Analog PTZ Cameras

SightSensors support for select analog and IP domes. This document describes setting up the SightTracker with supported analog cameras.

SightTrackers enable PTZ cameras to automatically aim at a target's GPS position when an alarm occurs, enabling security personnel to get an immediate, close-up view of the event triggering the alarm.

The SightTracker is a separate unit that receives target GPS information from one or more associated SightSensors and then converts the information to pan/tilt settings to control the PTZ camera. The SightTracker also digitizes video from a PTZ camera for transmission over the network.

The field of view of each PTZ camera attached to a SightTracker is represented within the site map by cones that dynamically update as the camera zooms or pans, either in response to an alarm or when controlled by the site's VMS.

SightTracker icon
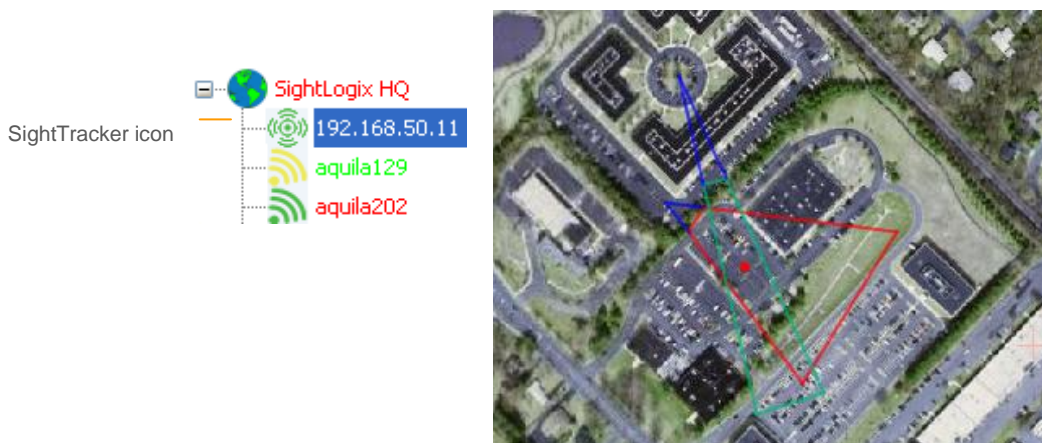
PTZ cameras will continue to track an object as long as it remains in view of an associated SightSensor or until one of the following occurs:

> Another target becomes higher priority. In case of multiple targets, the default is to assign

the highest priority to the newest target. However, you can specify a different priority (see page 8).

> The VMS operator takes control of the camera. Joystick control from the VMS is always able to immediately take control of the camera.

> The SightTracker is frozen.

Main Set Up Steps

1. Installing SightTrackers
2. Add SightTracker to Camera List in SightLogix CS software
3. Turning off Line Sync Settings in camera
4. Calibrating PTZ Camera with SightTracker in SightLogix CS software
5. Associating PTZ Camera with SightSensor in SightLogix CS software
6. Performing Pair Wise Calibration in SightLogix CS software
7. Testing Camera Tracking in SightLogix CS software
8. (Optional) Changing Track Priority in SightLogix CS software

SightTracker Wiring Terminations

Adding SightTrackers to the Camera List

To add a SightTracker to a site's camera list, use the discovery procedure (refer to the SightSensor Installation Guide) as you would with SightSensors.

To individually add a SightTracker, right click the site icon and select Add Camera; enter the IP address when prompted. The IP address is the only required information.

However, it is recommended to open the SightTracker's Network dialog (right-click on the icon and select Configure→Network) to enter a descriptive camera name and verify that the serial number shown is the one expected. Click Save if you change the name or make any other change.
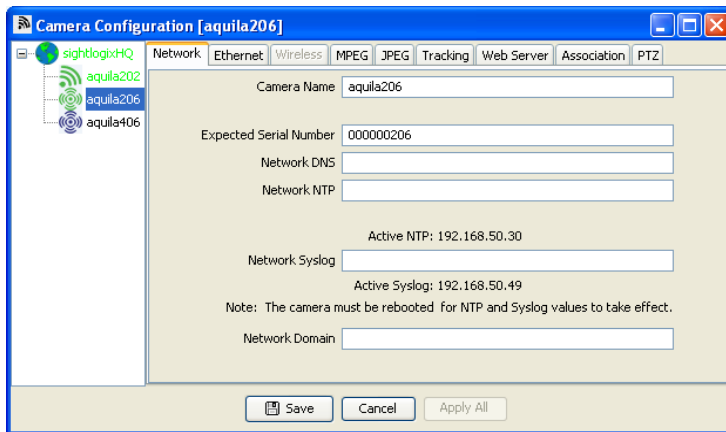
Changing time zone and line sync settings

The PTZ camera's line sync setting must be turned off from the SightTracker's PTZ dialog:

1. Open the PTZ tab.

Navigation controls for accessing the dome camera's internal menu.

Range of values for camera's field of view (in degrees) and the maximum speed allowed for panning and tilting (in degrees per second).

This information is entered automatically for some camera types (for field of view, changes must be within the supported range). If values are not entered, refer to your camera manual and enter the information here.

Enter an offset if a perfectly horizontal camera is reporting a tilt (this may occur due to some factory adjustments). When a camera is looking at the horizon, the tilt offset reported in the camera tab of the site map should be 0. Enter a value equal to the offset. This will be subtracted from the offset commands sent to the camera (e.g., if the tilt offset reported for the horizon is +1.4, insert +1.4 as the offset).

Disables re-homing, which is performed once every 24-hours and takes up to 1 minute to perform; during this time, the camera cannot detect targets or respond to commands.

2. Click Open Menu to open the camera menu within the VMS.

3. Use the dialog's navigation buttons to move through the camera's menu until you get to the line sync setting. Menu systems differ according to the camera, but look for a Camera or Settings menu.


4. Turn off line sync. Then use the Exit option on the VMS menu.

5. From the PTZ tab, click Close Menu.

6. Set the time zone by choosing the appropriate zone from the dropdown menu.

7. If your PTZ camera supports day/night mode and you want to turn this feature on, select Day/Night from the Relay Out Mode dropdown menu.

8. Click OK.

Calibrating PTZ Cameras

This procedure describes how to use the SightTracker to calibrate the PTZ camera image with GPS coordinates. The procedure is similar to calibrating a SightSensor, except that only a single calibration point is needed (not two).

If you haven't yet added the PTZ camera to your VMS, do it now. For more information, see the *SightLogix VMS Integration Guide*).

To calibrate a PTZ camera, view the PTZ camera's video from the VMS. Then in the SightMonitor, open the Calibrate dialog for the SightTracker (right-click its icon, select Configure→Calibrate) and do the following:
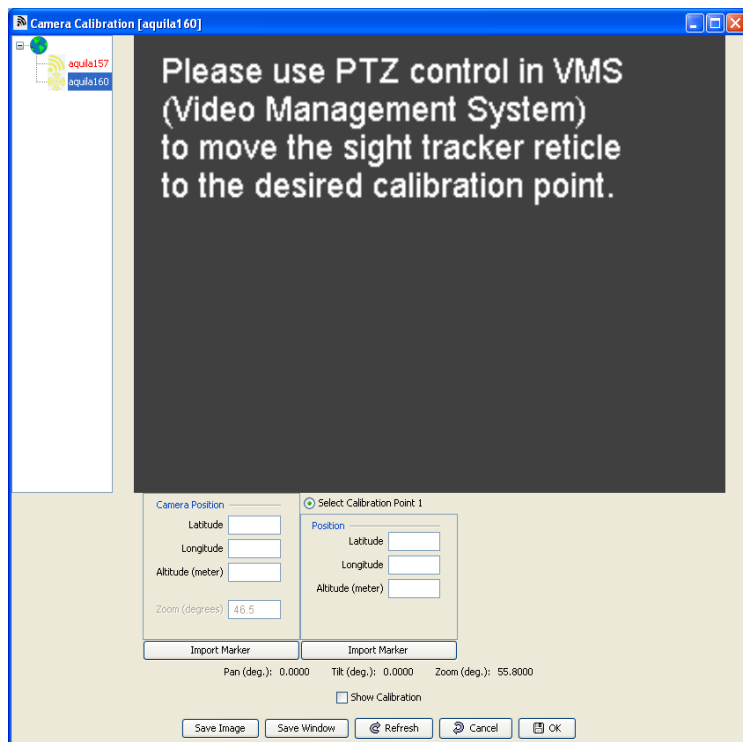
1. Enter the SightTracker's position as follows: Double-click in the site map at the location of the camera to place the marker. Enter the height of the camera. Then click Import Marker under Camera Position in the Calibrate dialog.

2. Select a landmark to use for calibration. Then in the site map, double-click at the location of the landmark.

   As with SightSensors, choose a point at ground level next to a landmark or other permanent object and always select a point that can be easily identified in both the site map and the camera view.

3. Using the VMS, orient the camera so the selected landmark is at the center of the image, which is denoted by the cross overlay.

4. In the Calibrate window under Calibration Point 1, click Import Marker to transfer the GPS location information and populate the pan, tilt, and zoom settings.

   Important: Do not import the calibration point information unless the camera (SightTracker) position information is already entered.

5. Click OK.

Associating a SightTracker with a device

Associating a SightTracker with a SightSensor enables GPS target data to be relayed to the SightTracker so it can properly aim the PTZ camera. Each SightTracker can be associated with up to 20 SightSensors, allowing PTZ cameras to provide close-up views of targets detected by all neighboring devices. SightSensors can provide target data for up to 20 SightTrackers, allowing multiple PTZs to provide coverage of an area.

You associate a SightTracker with a SightSensor as follows:

1. Open the Association dialog. (Right-click SightTracker icon → Configure → Association.)
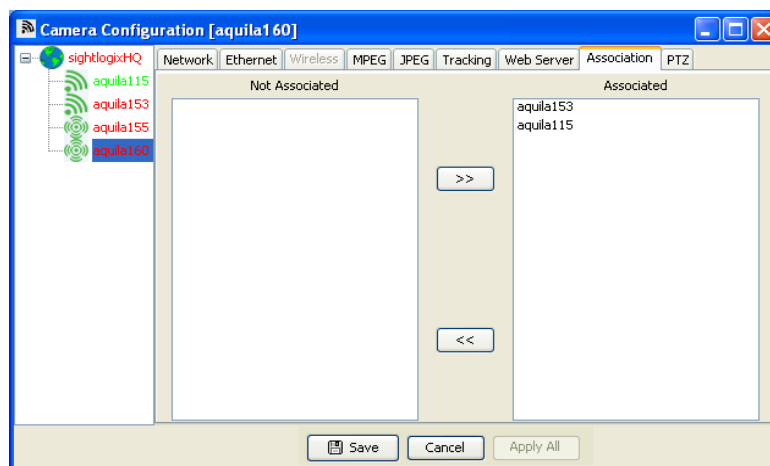
2. Move a SightSensors from the Not Associated to the Associated. Up to 20 SightSensors can be associated with each SightTracker.

3. Click OK.

Performing a Pairwise Calibration

The pairwise calibration more precisely aligns the GPS coordinates within the view of a dome camera with the GPS coordinates used to calibrate an associated SightSensor. This is an optional procedure but it is highly recommended since it improves tracking accuracy.

1. Right-click the SightTracker icon and select Pairwise Calibration.

2. In the dialog, select a SightTracker and an associated SightSensor. You'll see video from the selected device.
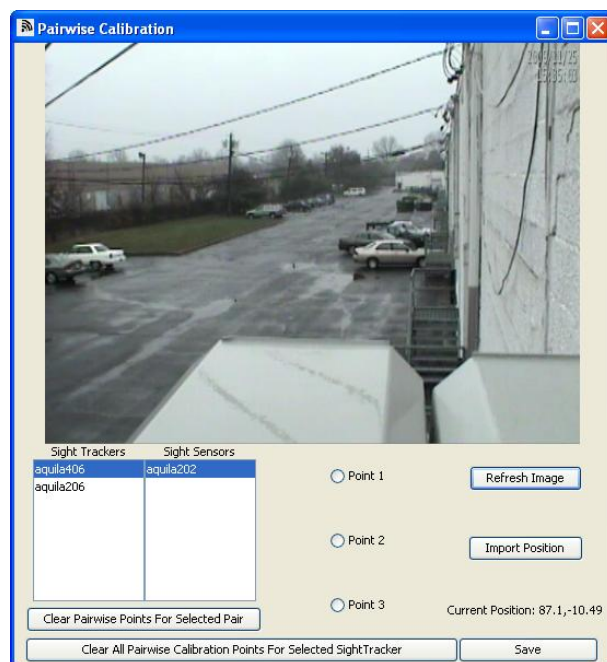
All pairwise calibrations are stored until you click Clear All Pairwise Calibration even if the association no longer exists.

Thus if you change a SightTracker's associations to different SightLogix devices, the calibrations will be saved in case you change the associations back to the original devices.

3. In the video image, double-click a reference point. This should be a point easily identified in both camera's views—that of the PTZ and that of the associated SightSensor

4. In the PTZ camera video image in the VMS, use the PTZ controller to align the cross overlay to the same reference point selected in the camera's image

5. Click Import Position.

6. Repeat for two additional points, selecting the appropriate radio button. Pairwise calibration works best when using reference points represent the entire field of view.

7. Click Save. Then repeat the procedure for each of the SightTracker's associations.

Testing that PTZ cameras track

The Follow Test option on the Calibrate dialog (right-click a SightSensor icon→Calibrate) enables you to test whether a PTZ camera will track a target.
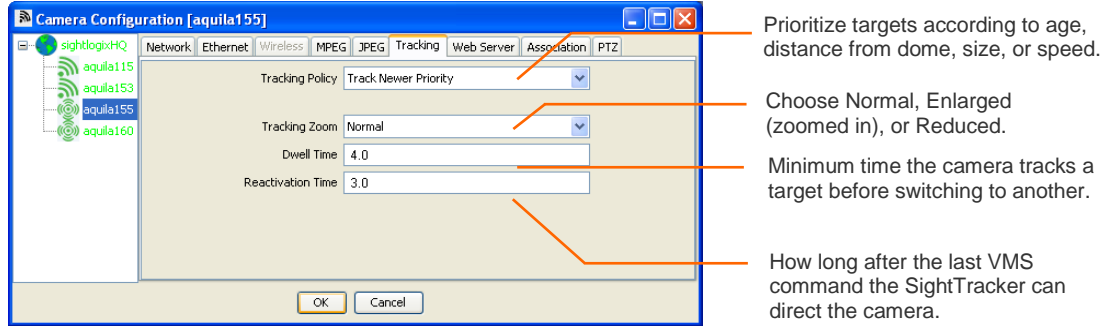
When you select the Follow Test checkbox and then double-anywhere within the video image, verify from the VMS that the PTZ camera aims at the location selected.

Prioritizing targets to track

In case of multiple targets, a SightTracker will track the newest one by default. Thus if it's currently tracking a target and a new target appears, the PTZ camera will aim at the new target. Note that if two SightTrackers are associated with the same SightSensor and are set to the same priority, they will track the same target even in the case of multiple targets.

Set the priority from the SightTracker's Tracking tab (right-click icon→ Configure→Tracking):

> Change the default priority of targets to be one of the following: Track Newer Priority (default), Track Closer Priority (closer to the PTZ camera), Track Faster Priority, Track Bigger Priority, Track Older Priority, Track Farther Priority, Track Slower Priority, Track Smaller Priority.

> Specify the minimum time the PTZ camera tracks (or dwells on) the target currently being tracked before switching to a higher priority target if one exists. The default is 2 seconds. Use a longer time if you want to follow a target for more time before tracking a higher priority target.

> Select a zoom setting: Normal, to view a 12-meter scene around the target (default), Enlarged (8-meter scene), and Reduced (20-meter scene).

> Specify how long after the last VMS command, the Coordination System must wait before taking control of the camera to track a target (Reactivation Time). The default is 2 seconds.

Prioritize targets according to age, distance from dome, size, or speed.

Choose Normal, Enlarged (zoomed in), or Reduced.

Minimum time the camera tracks a target before switching to another.

How long after the last VMS command the SightTracker can direct the camera.

Freezing SightTrackers

To stop SightTrackers from automatically directing PTZ cameras to aim at targets, right-click the site icon and click Freeze SightTrackers. Note that this suspends the functionality of *all* SightTrackers. The status bar updates to indicate that SightTrackers are frozen.

To re-activate SightTrackers, right-click the site icon and select Unfreeze SightTrackers.

Installing SightTrackers with Certified PTZs

SightTrackers work with IP-based and analog PTZ cameras which have been certified by SightLogix. Instructions for each type are provided in the sections that follow.

Refer to the SightLogix Support Portal for the most up-to-date list of supported IP cameras: http://portal.sightlogix.com/help/sighttracker-third-party-ptz-support.

Installing SightTrackers with Supported Analog PTZs

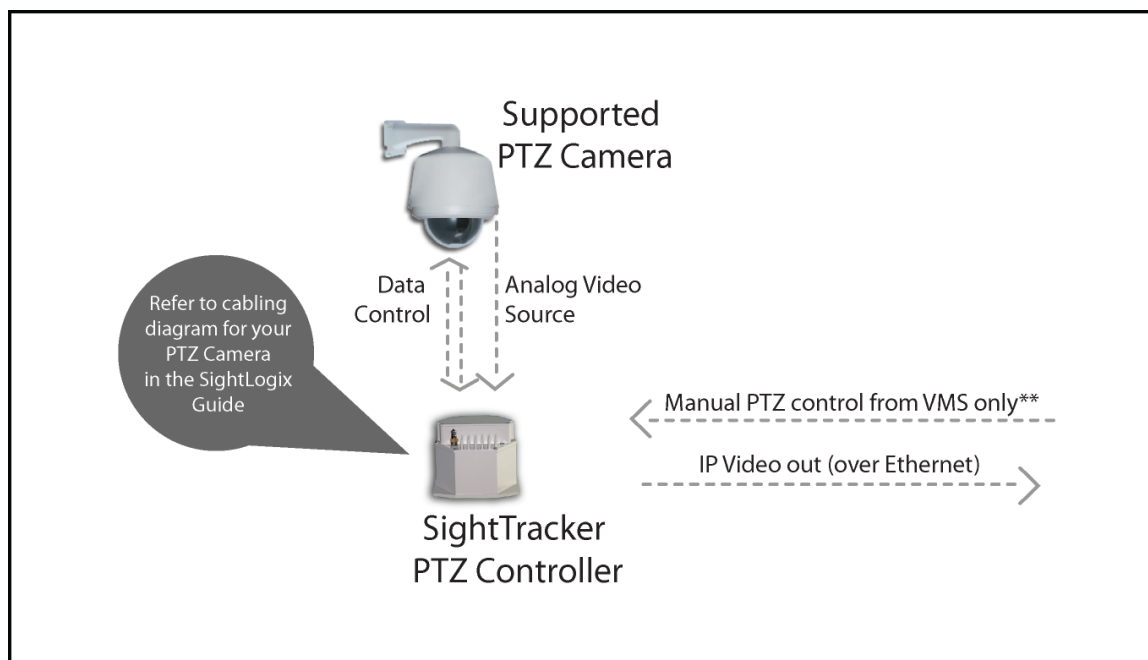This section provides specific installation instructions for certified analog PTZ cameras.

General Information

One SightTracker is required for each PTZ camera, and each SightTracker has up to four required functional external connections on the terminal block:

> 24V power or PoE

> Ethernet

> RS422/RS232

> Analog Video In

The following is a complete list of what's required to attach a SightTracker to an analog PTZ camera:

> SightTracker unit

> NTP server available on the network (Required to allow auto-tracking function and configured in SightLogix CS)

> Compatible third-party PTZ camera

> Serial Data - RS232 (3 wire) or RS-422 (4 wire)

> Ethernet network (RJ45)

> Single analog video connection cable (supplied)

> Power source for camera and SightTracker unit

Supported PTZ Camera

Refer to cabling diagram for your PTZ Camera in the SightLogix Guide

Data Control

Analog Video Source

Manual PTZ control from VMS only**

IP Video out (over Ethernet)

SightTracker PTZ Controller

**Note - Manual control of the PTZ over Ethernet is possible via your VMS joystick and/or keybord.
Do not connect a keyboard directly to the SightTracker to manually control a PTZ.

SightTracker may encode various mode messages at center bottom of the video sent to the VMS. Messages may include "User Mode" indicating a user is manually controlling the PTZ which is the highest priority PTZ control. "Auto Tracking" indicates an alarmed target has been detected in an associated Sight Sensor and the target is being automatically tracked by the PTZ via Sight Tracker.

If there is an overlay message in the center of the screen displaying "PTZ not detected" This indicates the PTZ is not communicating with the Sight Tracker as expected and may indicate no power at PTZ, serial communication lines are not connected properly to the PTZ or improper baud rate or protocol is selected in configuration.

Configuring Pelco D protocol cameras (Spectra® III, IV and Esprit®)

This section assumes the SightTracker has already been added to your VMS. If not, refer to the documentation that came with your VMS for adding an Axis 213 Dome Camera or a SightTracker unit.

Note: SightTracker units emulate the Axis 213 PTZ camera protocols which allow integration to many VMS systems.

Also, refer to the SightLogix VMS Integration Guide for additional detail on adding SightTrackers to specific VMS systems.

Integrating Pelco PTZ cameras with SightTrackers consists of the following steps:

> Physically install SightTracker and Pelco PTZ camera.

> Connect RS-422 (4 wire) serial data between SightTracker and camera

> Connect Ethernet to the SightTracker

> Connect power to the SightTracker

> Install analog video cable from camera to SightTracker.

> Connect power to the camera

Notes:

> When using a Spectra IV PTZ running firmware 2.2 or later, set the baud rate to 4800 8 N 1.

> To maintain accuracy of Spectra PTZ cameras, the SightTracker includes a feature to perform a daily re-homing routine. When enabled from the PTZ dialog (or from the Camera tab of the template), re-homing is performed once every 24 hours and causes each PTZ camera to make one complete revolution (taking up to a minute). During this time, the camera cannot track targets or respond to commands.
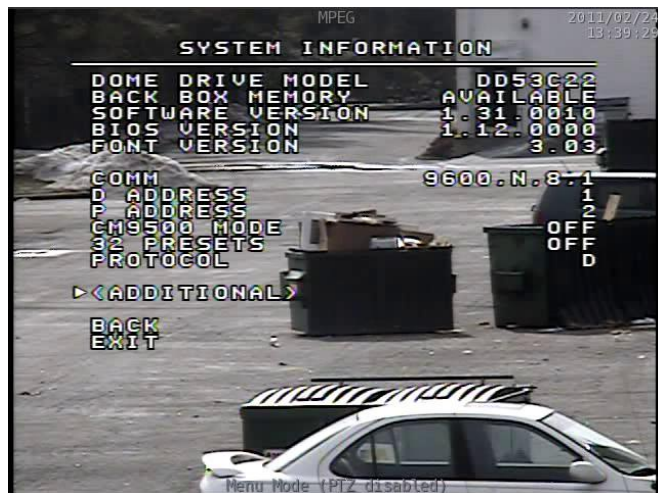
> The re-homing routine will not occur when the camera is busy and will not begin until two minutes have passed since a target was last tracked. When SightTracker is restarted, the 24 hour re-homing counter is reset.

> Re-homing can maintain peak accuracy of Spectra cameras, but is not needed for newer models of Spectra cameras.

> The Pelco System Information settings should be set as shown.

Constructing the RS-422 cable

In order for the SightTracker to control the pan, tilt, and zoom camera moves, you'll need to connect a cable using twisted pairs according to the pin assignments of the connector on the back of the SightTracker.

Pelco D Spectra III Installation

Refer to the following diagram for Pelco D Spectra III installation details.
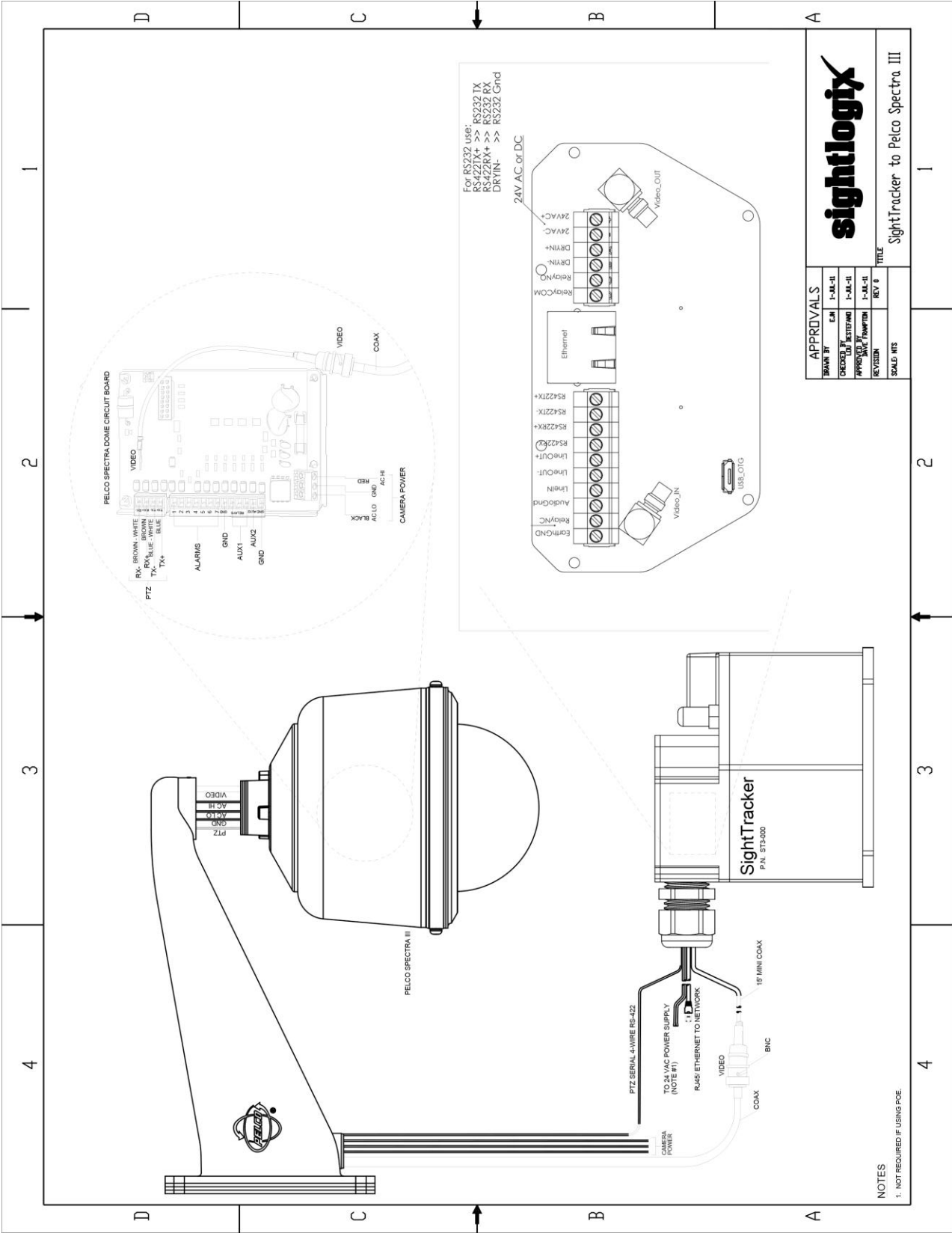
sightlogix

PELCO SPECTRA DOME CIRCUIT BOARD

VIDEO
COAX
VIDEO

PTZ
RX- BROWN / WHITE
RX+ BROWN
TX- BLUE / WHITE
TX+ BLUE

ALARMS
1 2 3 4 5 6
GND
AUX1
AUX2
GND
RELAY 1

RED IN-HI
AC HI
GND
AC LO
BLACK IN-LO

CAMERA POWER

For RS232 use:
RS422TX+ >> RS232 TX
RS422RX+ >> RS232 RX
DRYIN- >> RS232 Gnd

24V AC or DC

24VAC+
24VAC-
DRYIN+
DRYIN-
RelayNO
RelayCOM

Video_OUT

Ethernet

RS422TX+
RS422TX-
RS422RX+
RS422RX-
LineOUT+
LineOUT-
LineIn
AudioGnd
RelayNC
EarthGND

Video_IN

USB_OTG

PELCO SPECTRA III

VIDEO
AC HI
AC LO
GND
PTZ

SightTracker
P.N. ST3-000

PTZ SERIAL 4-WIRE RS-422
TO 24 VAC POWER SUPPLY
(NOTE #1)
RJ45/ ETHERNET TO NETWORK

15' MINI COAX

VIDEO
BNC
COAX

CAMERA
POWER

NOTES
1. NOT REQUIRED IF USING POE.

Pelco D Spectra IV Installation

SightTracker3 to Pelco Spectra IV
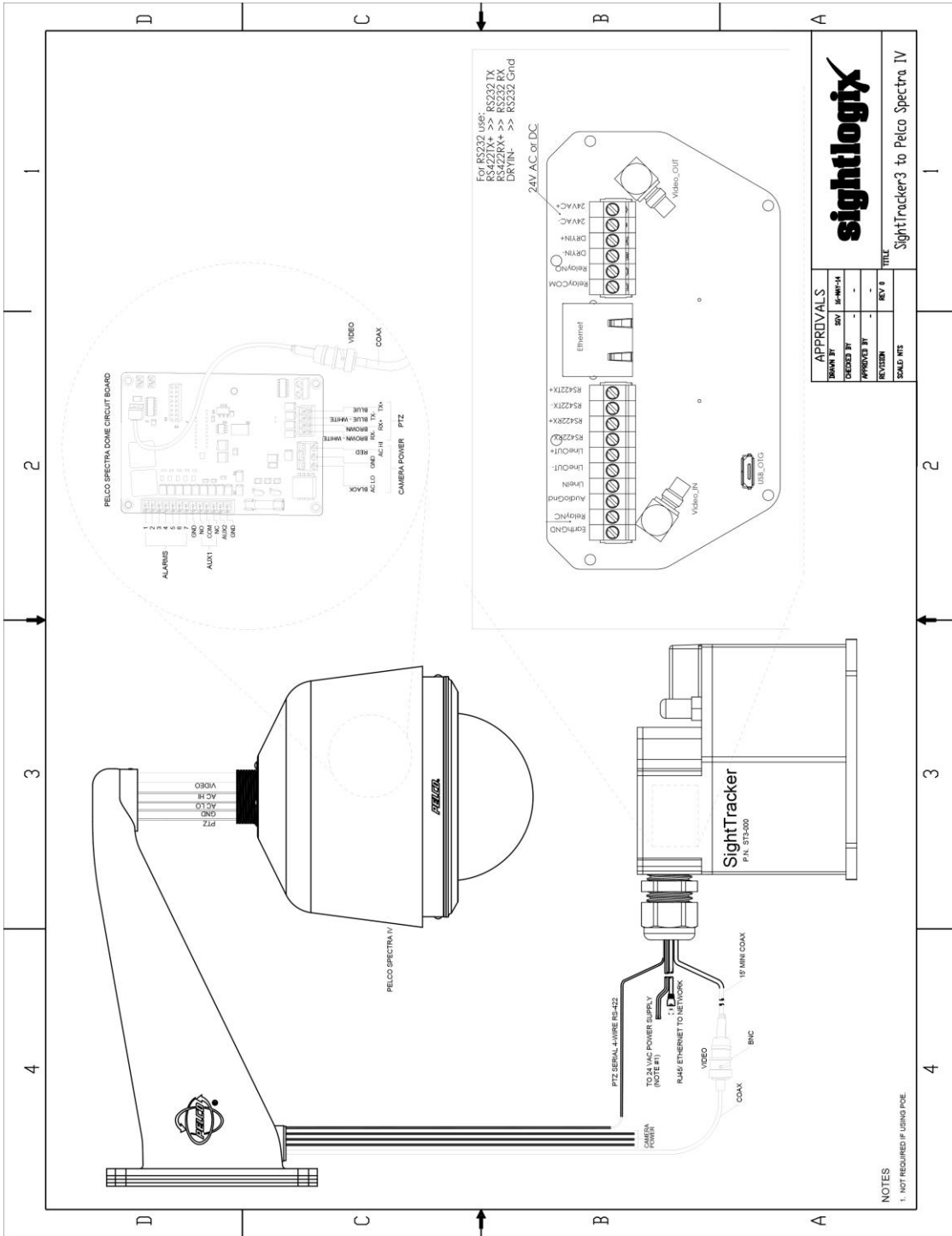
Pelco D Esprit Installation
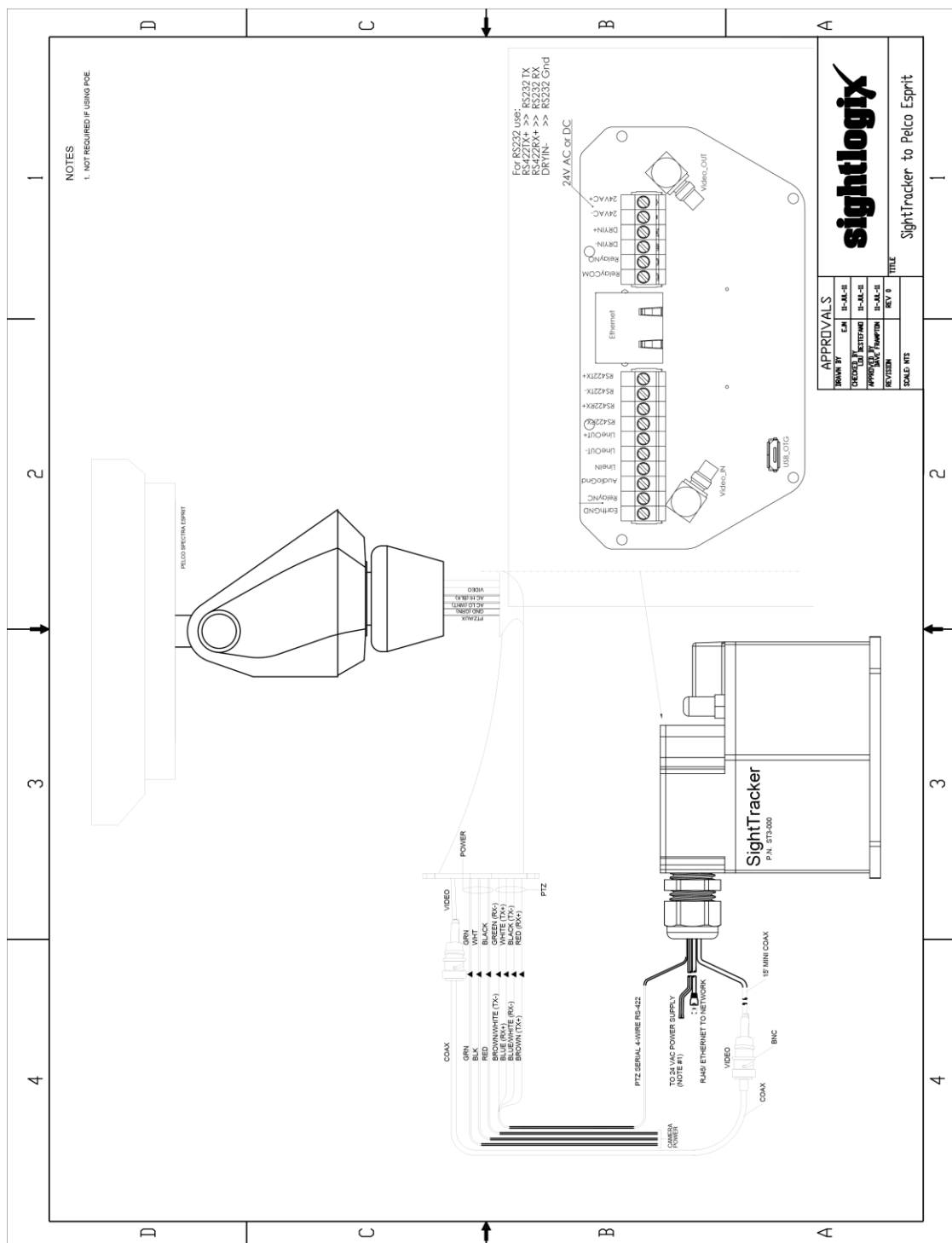
Configuring Bosch VG Series AutoDome

This section assumes the SightTracker has already been added to your VMS. If not, refer to the documentation that came with your VMS for adding an Axis 213 Dome Camera or a SightTracker unit.

Note: SightTracker units emulate the Axis 213 PTZ camera protocols which allow integration with many VMS systems.

Also, refer to the SightLogix VMS Integration Guide for additional detail on adding SightTrackers to specific VMS systems.

Integrating dome cameras with SightTrackers consists of the following steps:

> Physically install the SightTracker and Bosch PTZ camera.

> Connect RS-232 (3 wire) serial data connection to SightTracker unit

> Connect Ethernet to the SightTracker

> Connect power to the SightTracker

> Install analog video cable from camera to SightTracker Analog In connector.

> ** See diagram and wiring chart below for proper pin / cable conductor assignments for connection to PTZ camera.

Notes:

> Do not assign a "fast address" to the Bosch Dome. This will prevent communications to the SightTracker.

> Confirm a 100 Ohm resistor is installed across the Bosch bi-phase control lines.

> Ensure that the RS-232/RS-485 selector switch is positioned to RS-232 (inward away from the LED lights). This switch is located on the bottom of the AutoDome CPU board, under the camera head and next to the LED lights. See the following diagram showing RS-232 switch location:

CAMERA CABLE CONNECTIONS TO POWER SUPPLY BACK BOX

PENDANT ARM
CABLE HARNESS

GROUND CABLE
(BLACK)

POWER
(RED)

VIDEO
(BLACK)

CONTROL (GREEN)

POWER SUPPLY BACK BOX

For RS232 use:
RS422TX+ >> RS232 TX
RS422RX+ >> RS232 RX
DRYIN-   >> RS232 Gnd

24V AC or DC

Video_OUT

24VAC+
24VAC-
DRYIN+
DRYIN-
RelayNO
RelayCOM

Ethernet

RS422TX+
RS422TX-
RS422RX+
RS422RX-
LineOUT+
LineOUT-
LineIN
AudioGnd
RelayBNC
EarthGND

USB_OTG

Video_IN

BOSCH AUTODOME SERIES 200, 300 & 400

BOSCH

PLUG	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6
P1	AC L+	N/C	N/C	N/A	N/A	N/A
P1 26	N/C	N/C	N/C	BLU Tan	BRN Tan	BLU/WHT GND

POWER SUPPLY BACKBOX PLUG CONNECTIONS TO SIGHTTRACKER CABLE

SightTracker
P.N. ST7-000

1/2 MINI COAX

PTZ SERIAL 3-WIRE RS-232

TO 24 V AC/DC POWER SUPPLY
(NOTE #1)

RJ45 ETHERNET TO NETWORK

VIDEO
BNC
COAX

CAMERA
POWER

POWER SUPPLY BACK BOX (REAR VIEW)

24VAC

PB5

PB6

NOTES:
1. NOT REQUIRED IF USING POE.

The Bosch Communications Setup menu options should be configured as shown.
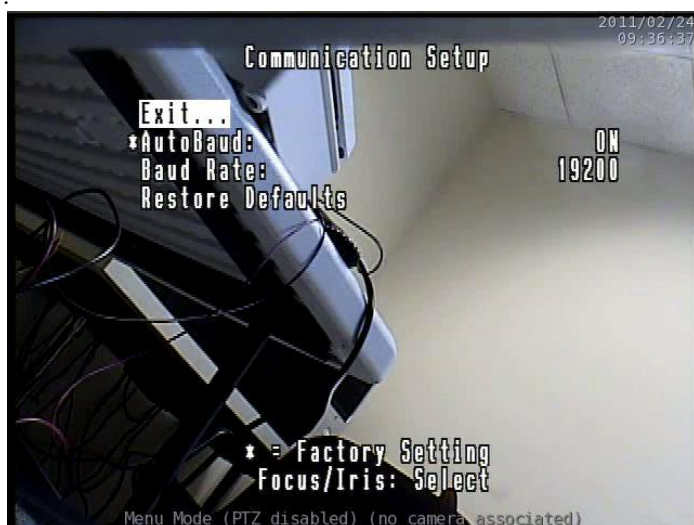
The Bosch PTZ Setup menu options should be configured as shown.
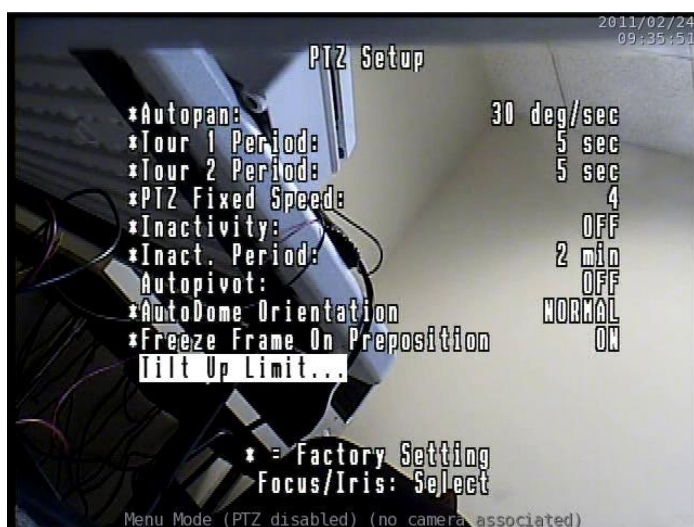
Configuring FLIR PTZ Cameras

This section assumes the PTZ camera has already been added to your VMS. If not, refer to the documentation that came with your VMS.

Requirements: FLIR Software Version 2.5.1.16 and Web Configuration version 2.8.3.

Integrating PTZ cameras with SightTrackers consists of the following steps:

> Constructing the RS-422 cable using the correct RS-422 pin assignments.
> Physically installing the SightTracker and attaching the cabling.

To maintain the accuracy of FLIR PTZ cameras, the SightTracker includes a feature to perform a daily re-homing routine. When enabled from the PTZ dialog (or from the Camera tab of the template), re-homing is performed once every 24 hours and causes each PTZ camera to make one complete revolution (taking up to a minute). During this time, the camera cannot track targets or respond to commands.

The re-homing routine will not occur when the camera is busy and will not begin until two minutes have passed since a target was last tracked. When SightTracker is restarted, the 24 hour re-homing counter is reset.

Re-homing can maintain peak accuracy of FLIR cameras.

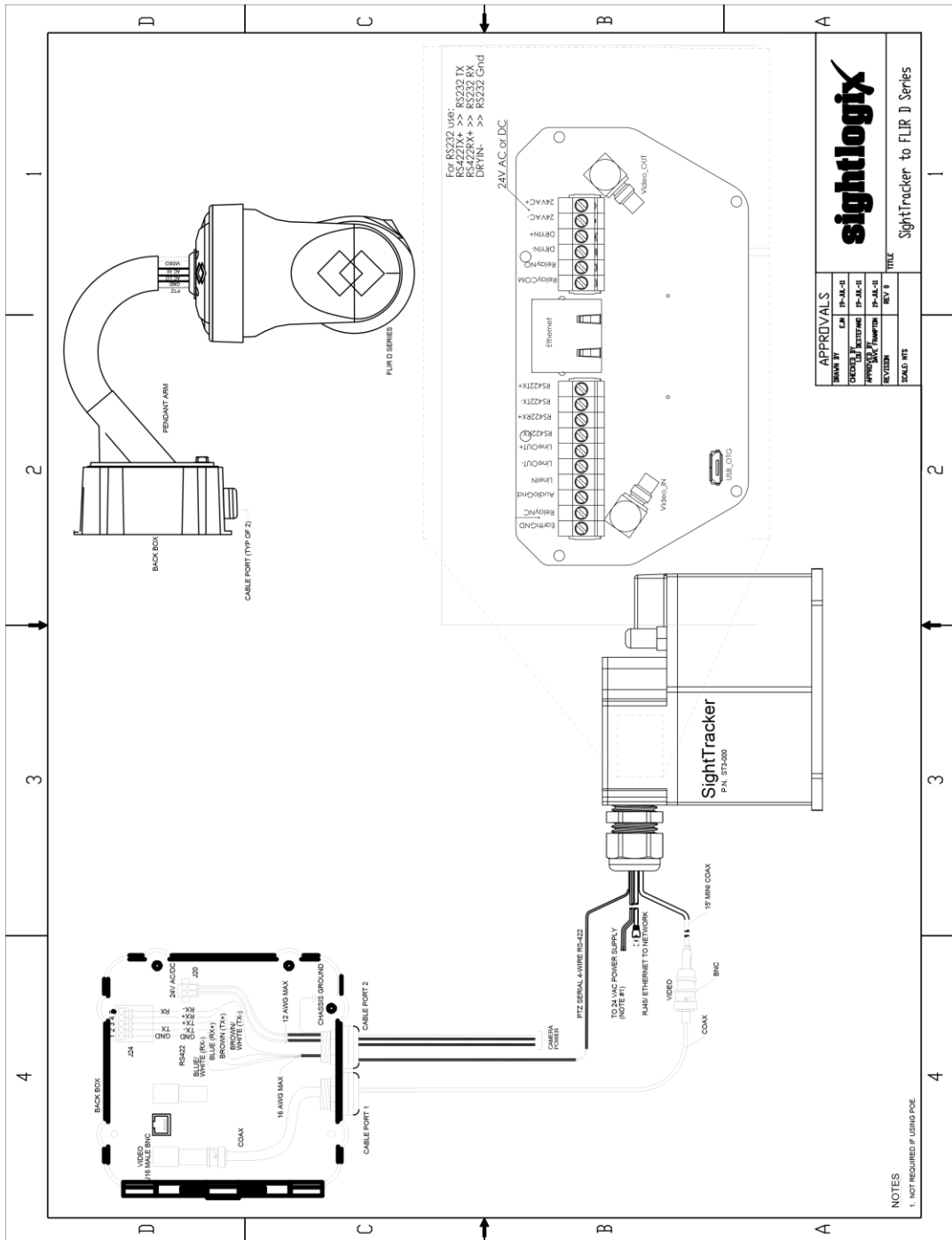## Constructing the RS-422 cable

In order for the SightTracker to control the pan, tilt, and zoom camera moves, you'll need to connect a cable using twisted pairs according to the pin assignments of the connector on the back of the SightTracker.

FLIR PTZ Installation

Refer to the following diagram for FLIR PTZ installation details.

NOTES

1. NOT REQUIRED IF USING POE.

For RS232 use:
RS422TX+ >> RS232 TX
RS422RX+ >> RS232 RX
DRY IN- >> RS232 Gnd

24V AC or DC

VIDEO

COAX

BNC AUXILIARY

RCA

BNC MAIN

ETHERNET

RX+
RX-

TX-
TX+

PTZ

BROWN/WHITE (TX-)
BROWN (TX+)
BLUE/WHITE (RX-)
BLUE (RX+)

RED (AC HI)
GREEN (GROUND)
BLACK (AC LO)

CAMERA POWER

Video_OUT
24VAC+
24VAC-
DRYIN+
DRYIN-
RelayCOM

Ethernet

RS422TX+
RS422TX-
RS422RX+
RS422RX-
LineOUT+
LineOUT-
LineIn
AudioGnd
RelayNC
EarthGND

Video_IN

USB_OTG

FLIR PT SERIES

CABLE GLAND "B"

CABLE GLAND "A"

CAMERA POWER

SightTracker
P.N. ST3-000

PTZ SERIAL 4-WIRE RS-422

TO 24 VAC POWER SUPPLY
(NOTE #1)

RJ45 ETHERNET TO NETWORK

15' MINI COAX

VIDEO

COAX

BNC

sightlogix

TITLE
SightTracker to FLIR PT

APPROVALS
DRAWN BY   CJM   19-JUL-11
CHECKED BY   CLU RESTEFANO 19-JUL-11
APPROVED BY DAVE FRAMPTON 19-JUL-11
REVISION   REV 0
SCALED NTS

FLIR D Installation

Refer to the following diagram for FLIR D installation details.

You must enter the following parameter in SightMonitor because the FLIR unit currently responds to our query as a generic Pelco D device.
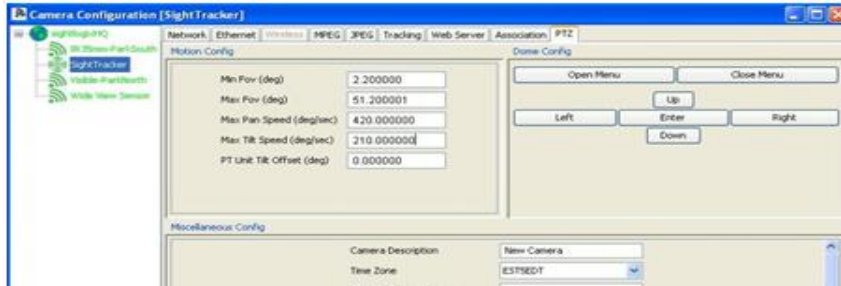
> Min Fov (deg) 2.200000

> Max Fov (deg) 51.200001

> Max Pan Speed (deg/sec) 420.000000

> Max Tilt Speed (deg/sec) 210.000000

> PT Unit Tilt Offset (deg) 0.000000

Configuring FLIR Ranger™ Illuminator

In order for the SightTracker to control the pan, tilt, and zoom camera moves, you'll need to connect a cable using twisted pairs according to the pin assignments of the connector on the back of the SightTracker. **Note:** Ensure that the Illuminiator is configured for Pelco D control protocol. Refer to the Illuminator documentation for these and other settings.