Receiver Driver Unit (RDU)
Installation Manual

IMPORTANT SAFEGUARDS

1. Read Instructions - All the safety and operating instructions should be read before the unit is operated.
2. Retain Instructions - The safety and operating instructions should be retained for future reference.
3. Heed Warnings - All warnings on the unit and in the operating instructions should be adhered to.
4. Follow Instructions - All operating and use instructions should be followed.
5. Cleaning - Unplug the unit from the outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
6. Attachments - Do not use attachments not recommended by the product manufacturer as they may cause hazards.
7. Accessories - Do not place this unit on an unstable stand, tripod, bracket, or mount. The unit may fall, causing serious injury to a person and serious damage to the unit. Use only with a stand, tripod, bracket, or mount recommended by the manufacturer or sold with the product. Any mounting of the unit should follow the manufacturer's instructions and should use a mounting accessory recommended by the manufacturer. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.
8. Ventilation - Openings in the enclosure, if any, are provided for ventilation, to ensure reliable operation of the unit, and to protect it from overheating. These openings must not be blocked or covered. This unit should not be placed in a built-in installation unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
9. Power Sources - This unit should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply you plan to use, consult your appliance dealer or local power company. For units intended to operate from battery power or other sources, refer to the operating instructions.
10. Grounding or Polarization - This unit may be equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug. Alternatively, this unit may be equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.
11. Power Cord Protection - Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords and plugs, convenience receptacles, and the point where they exit from the appliance.
12. Power Lines - An outdoor system should not be located in the vicinity of overhead power lines or other electric light or power circuits or where it can fall into such power lines or circuits. When installing an outdoor system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal. U.S.A. models only - refer to the National Electrical Code Article 820 regarding installation of CATV systems.
13. Overloading - Do not overload outlets and extension cords as this can result in a fire or electric shock.
14. Object and Liquid Entry - Never push objects of any kind into this unit through openings, as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the unit.
15. Servicing - Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
16. Damage Requiring Service - Unplug the unit from the outlet and refer servicing to qualified service personnel under the following conditions:
    a. When the power supply cord or plug is damaged.
    b. If liquid has been spilled or objects have fallen into the unit.
    c. If the unit has been exposed to rain or water.
    d. If the unit does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions, as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the unit to its normal operation.
    e. If the unit has been dropped or the cabinet has been damaged.
    f. When the unit exhibits a distinct change in performance--this indicates a need for service.
17. Replacement Parts - When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.
18. Safety Check - Upon completion of any service or repairs to this unit, ask the service technician to perform safety checks to determine that the unit is in proper operating condition.
19. Coax Grounding - If an outside cable system is connected to the unit, be sure the cable system is grounded. U.S.A. models only--Section 810 of the National Electrical Code, ANSI/NFPA No.70-1981, provides information with respect to proper grounding of the mount and supporting structure, grounding of the coax to a discharge unit, size of grounding conductors, location of discharge unit,connection to grounding electrodes, and requirements for the grounding electrode.
20. Lightning - For added protection of this unit during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the cable system. This will prevent damage to the unit due to lightning and power line surges.

FCC NOTICE

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
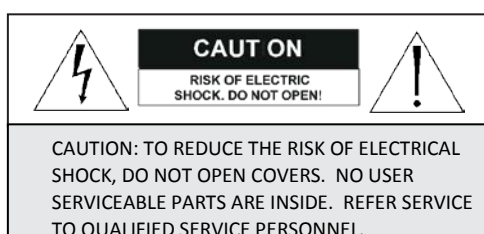
    Relocate the monitor away from the TV/radio receiver.
    Plug the monitor into a different wall outlet so that the console is on a different branch circuit.
    Re-orient the TV/radio antenna.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions.

NOTE: Changes or modifications to the unit may void FCC compliance.

CAUTION

RISK OF ELECTRIC
SHOCK. DO NOT OPEN!

CAUTION: TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT OPEN COVERS. NO USER SERVICEABLE PARTS ARE INSIDE. REFER SERVICE TO QUALIFIED SERVICE PERSONNEL.

SAFETY PRECAUTIONS

This label may appear on the bottom of the unit due to space limitations.

The lightning flash with an arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous the product's enclosure that may be of sufficient magnitude to constitute a risk of voltage" within electric shock to persons.

1. Unpacking

Unpack carefully. This is sensitive electronic equipment and should be handled with care. Check for the following items:

- RDxPTx-P Series Receiver/Driver Unit (RDU)
- Plastic Outdoor-Rated Enclosure
- Installation Manual
- Hardware Kit
    - 2 x 1/2" liquid-tight fittings
    - 2 x 3/8" liquid-tight fittings
    - 1 x RS232 wire harness
    - 1 x Roll of Teflon tape
- Mounting Kit
    - 4 x mounting feet and screws

If an item appears to have been damaged in shipment, replace it properly in its carton and notify the shipper. If any items are missing, notify Aigis Mechtronics, now part of Linear LLC.

2. Service

If the unit ever needs repair service, the customer should contact Aigis Mechtronics, now part of Linear LLC for return authorization and shipping instructions.

3. Description

The RDxPTx-P Series Receiver/Drivers decode Pelco D based control data and drive the motors of the following Aigis Mechtronics series of pan/tilt mounts:

- ❑ Medium Duty PT9418 Series and PT9420 Series
- ❑ Heavy Duty PT9440 Series and PT9441 Series

4. Technical Specifications

	RDU Input Voltage	Input Voltage Range	Pan/Tilt Voltage	Power System Frequency	P/T Motor Avail. Pwr (Per motor)	24VAC Aux Max Pwr Available
RD2PT2-P	24VAC	21.6 ~ 26.4	24VAC	50/60 Hz	11 W	No Limit
RD5PT2-P	220VAC	207 ~ 253	24VAC	50 Hz	11 W	74 W
RD5PT5-P	220VAC	207 ~ 253	220VAC	50 Hz	11 W	24 W
RD6PT2-P	24VAC	104 ~ 127	24VAC	60 Hz	11 W	74 W
RD6PT6-P	110VAC	104 ~ 127	110VAC	60 Hz	11 W	24 W

Lens Output for Zoom, Focus, and Motorized Iris:
- – Four lens speed settings based on pulse width adjustment
- – 50% and 100% Limits, 12VDC and 125 mA max

Pan/Tilt Drive   – 4 function pan/tilt solid state drive with zero crossing turn-on
                          – 1 Amp fuse protection per function, 2 Amp overall fuse protection.

4.   Technical Specifications (cont'd)

Auxiliary Output

Aux 1   – Utilized by Auto-pan function

Aux 2, 3, 4   – Relay contacts rated at 8A at 30 VDC or 8A at 250 VAC

               – Common, Normally Open and Normally Closed inputs for each auxiliary circuit

5. Installation

CAUTION: This installation should be performed by qualified service personnel only in accordance with the National Electrical Code or applicable local codes.

5.1. Preparing the enclosure

5.1.1. Remove the internal components from the enclosure before cutting any cable-entry holes. Unscrew the two Phillips captive screws (see Item 1, Figure 1) to remove the metal bracket assembly from the enclosure.
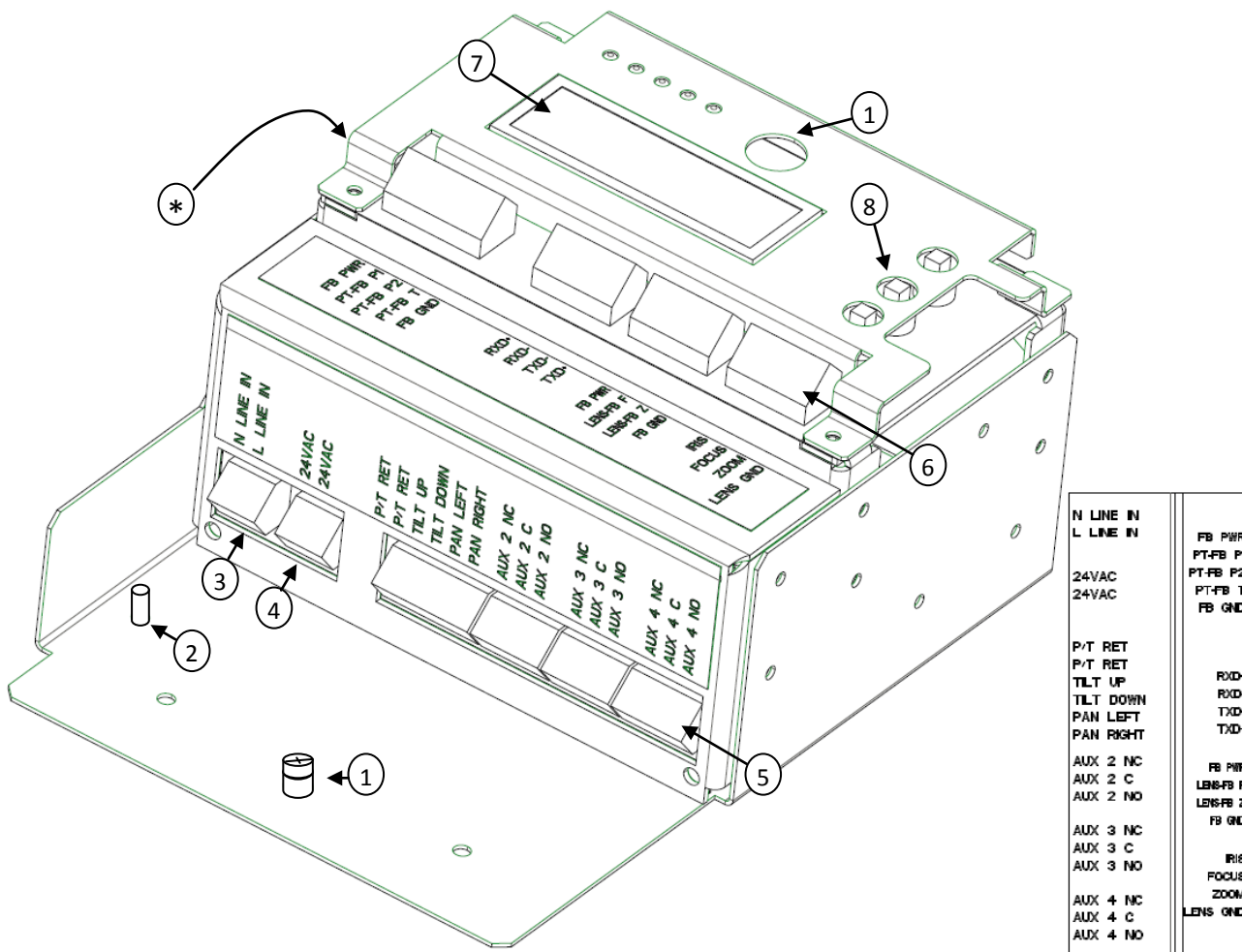
Figure 1 – RDU Chassis (removed from enclosure)

Item #	Description	Item #	Description
1	Captive screws	5	Pan/Tilt and Aux 2-4 connectors
2	Grounding stud	6	Feedback, Data, Camera, Lens connectors
3	Input power connector	7	LCD screen
4	24VAC Auxiliary power connector	8	Menu pushbuttons

    ∗   RS232 Port, see Initial Setup Procedure

4

5.1.2. Make cable-entry holes using a hole saw or punch, keeping in mind the installation environment for this unit. The cable-entry holes can be made in the bottom of the junction box or the lower part of the side walls. Refer to Figure 2 to determine
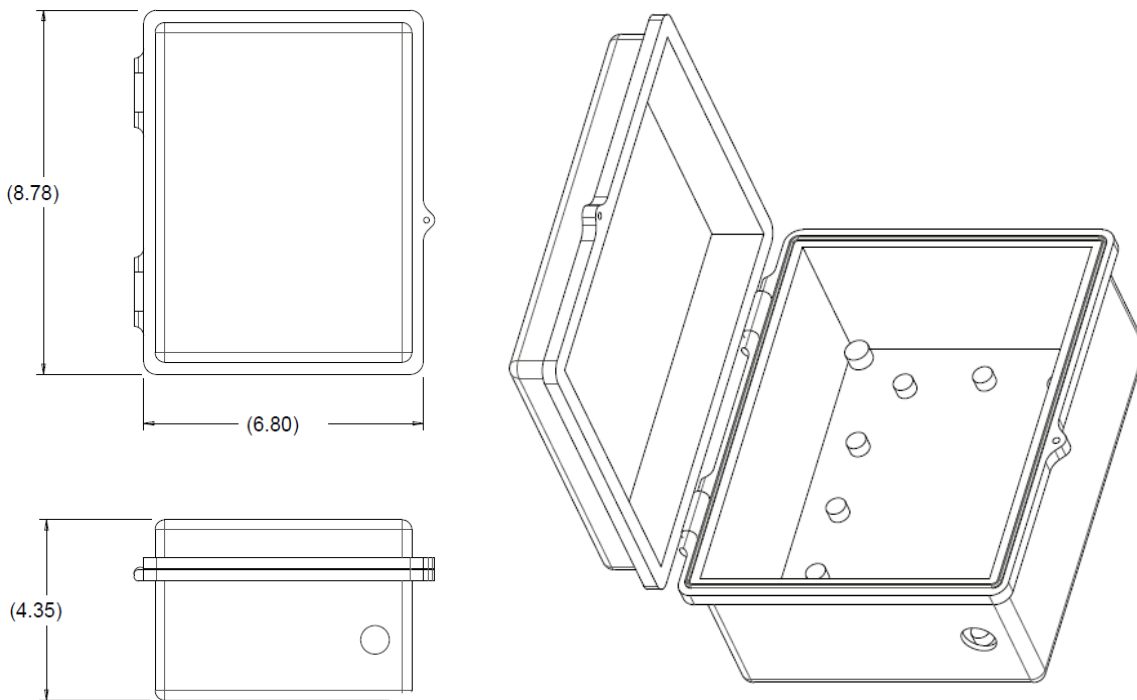
(8.78)

(6.80)

(4.35)

Figure 2 - RDU Enclosure

5.1.3. Install appropriate waterproof glands (included) or conduit fittings through the holes. If installing the unit outdoors, wrap the threads of the fittings with at least two layers of Teflon tape (included).

ATTENTION: Holes for the lens and signal connections should be located along the upper half of the enclosure base (i.e. shallower in the junction box, closer to the lid). Holes for the power, pan/tilt and auxiliary connections should be made in the bottom half of the enclosure base (i.e. lower down in the junction box). This will ensure the high power pan/tilt and auxiliary cables will be separate from the low power lens and signal cables.

5.1.4. Reinstall the metal bracket assembly into the enclosure and tighten the two Phillips captive screws.

5.1.5. Four metal feet and screws are included with the enclosure. Secure the feet to the pre-tapped holes in the enclosure using the screws. Align the feet as desired and use the enclosure as a template to mark where the holes will be drilled.

5.1.6. Drill holes in the wall and secure the enclosure to the wall using bolts that will provide a minimum pull-out strength of 200 lbs (90.7kg).

5.2. Hook up output wires to pan/tilt & auxiliaries:

    5.2.1. Pin assignments for Aigis Pan/Tilts is provided in Appendix 1

    5.2.2. Numbers listed below Pan/Tilt models are the pin assignments for the referenced wire.

    5.2.3. Below is the list of wire connections inside the Receiver Driver and the corresponding description.

The terminals accept wire gauges from 28 – 14 AWG.

Label Text	Function Description
N LINE IN	Field Voltage - Neutral
L LINE IN	Field Voltage - Line
24VAC	24VAC Auxiliary Power
24VAC	24VAC Auxiliary Power
P/T RET	Pan/Tilt Return (Neutral)
P/T RET	Pan/Tilt Return (Neutral)
TILT UP	Tilt Up (Line)
TILT DOWN	Tilt Down (Line)
PAN LEFT	Pan Left (Line)
PAN RIGHT	Pan Right (Line)
AUX 2 NC	Auxiliary Relay 2 – Normally Closed
AUX 2 C	Auxiliary Relay 2 – Common
AUX 2 NO	Auxiliary Relay 2 – Normally Open
AUX 3 NC	Auxiliary Relay 3 – Normally Closed
AUX 3 C	Auxiliary Relay 3 – Common
AUX 3 NO	Auxiliary Relay 3 – Normally Open
AUX 4 NC	Auxiliary Relay 4 – Normally Closed
AUX 4 C	Auxiliary Relay 4 – Common
AUX 4 NO	Auxiliary Relay 4 – Normally Open
FB PWR	Preposition Pan/Tilt Feedback – Power (+5V)
PT-FB P1	Preposition Pan/Tilt Feedback – Pan Potentiometer 1
PT-FB P2	Preposition Pan/Tilt Feedback – Pan Potentiometer 2
PT-FB T	Preposition Pan/Tilt Feedback –Tilt Potentiometer
FB GND	Preposition Pan/Tilt Feedback –Ground (-5V)
RXD +	RS485 Receive Data (+)
RXD -	RS485 Receive Data (-)
TXD -	RS485 Transmit Data (-)
TXD +	RS485 Transmit Data (+)
FB PWR	Preposition Lens Feedback – Power (+5V)
LENS-FB F	Preposition Lens Feedback – Focus
LENS-FB Z	Preposition Lens Feedback – Zoom
FB GND	Preposition Lens Feedback – Ground (-5V)
IRIS	Iris Drive (Open/Close Iris)
FOCUS	Focus Drive (Focus Near/Far)
ZOOM	Zoom Drive (Zoom In/Out)
LENS GND	Lens Ground / Common

6. Initial Setup Procedure

   6.1.1. Connect the code input wires.

   6.1.1.1. If using a RS485 controller, connect the "+" and "−" wires to the corresponding terminals on the RDU (labeled "RXD+" and "RXD−"). If hooked up properly, the RX LED will light up every time the RDU receives a properly formatted code command.

   6.1.1.2. If using a RS232 controller, locate the wire harness in the hardware kit. The harness consists of three wires and a small 4-pin connector. Plug this connector into the RS232 port shown in Figure 1. Connect the "Tx" wire from the controller to the Blue wire of the harness. Connect the "Rx" wire from the controller to the Yellow wire of the harness. Connect the Ground wire from the controller to the Red wire of the harness.

   6.1.2. Supply power to the RDU. Be sure the unit is properly grounded. Use the ground stud provided to connect the RDU chassis to Earth Ground.

   6.1.3. Adjust LCD screen contrast if needed. Press the "up" and "down" buttons simultaneously. Hold the "up" or "down" buttons to increase or decrease the contrast to the desired level. Press "SEL" to set the level. Press "up" and "SEL" simultaneously to step back in the menu.

   6.1.4. Set Unit Number
   o Navigate to Settings → Camera ID
   o Enter a camera number and press SEL to save
   o The pan/tilt unit will be activated when this number is entered on the control device

   6.1.5. Select Terminate
   o Navigate to Settings → Termination
      ▪ Select "On" if this is a standalone unit or the last unit in a Daisy Chain.
      ▪ Select "Off" if this unit is in a Daisy Chain, but is not the last unit.

   6.1.6. Set the code protocol and baud rate of the RDU to match the settings of the controller. See Appendix 3 to locate these items in the menu tree.

   6.1.7. Determine if hardware stops on pan/tilt need to be adjusted.
   o The hardware stops are removable screws that can be adjusted if needed. Refer to the installation manual provided with the pan/tilt for additional information.

   6.1.8. If using the Auto Home feature, set the desired dwell time. See the Auto Home feature description in Section 7 for further information.

   6.1.9. Run the Calibrate command from the main menu (see Appendix 3).

   6.1.10. The remaining menu items listed in the LDC panel can be adjusted remotely by the control device.

7. LCD Panel Menu Structure

All of the commands sent by the Pelco-D based control unit can also be initialized directly from the LCD menu and push buttons on the Receiver Driver Unit. Local executions can be used to test functionality when installing a pan/tilt unit, or can aid in troubleshooting if the unit is not operating as expected. The following is a list of functions and options accessible through the LCD display.

Menu navigation:
↑, ↓ Scroll   **SEL** Select   ↑ + **SEL** Up one level   ↓ + **SEL** Top level   ↑+↓   Set contrast

Version Info
- ❑ Displays Version Number of Receiver Driver software

Command Monitor
- ❑ Monitors active commands and pan/tilt position sensors
- ❑ The data will be in the following form: 0000 P-0000 T-00
  First 4 digits = Command, P-0000 = Pan Speed, T-00 = Tilt Speed

Settings

Comm Port	Select between RS232 and RS485 control input.
Baud Rate	Select the baud rate (data transfer speed) of the control device. 2400 bps, 4800 bps, 9600 bps, 19200 bps
Protocol	Select the protocol of the control device (Pelco-D).
Termination	If this unit is the only RDU hooked up to the control device, OR if this RDU is the LAST unit in a daisy chain setup, highlight YES in the Termination menu and hit SEL. Otherwise select NO.
Camera ID #	Set the Camera ID Number. This will be the number entered in the control device to access this RDU and Pan/Tilt.
Auxiliary Mode	Select between momentary and latching signals when activating an auxiliary.
Lens Speed	Select the speed at which the zoom and focus functions adjust. Slow, Normal, Fast or Turbo
Auto Speed	Rate of zoom or focus will steadily increase the longer the SEL button is held.
Lens Polarity	Reverses the direction of zoom or focus command (i.e. zoom in → zoom out)
Iris Mode	Let the iris adjust automatically or select Override to control the iris manually.
Auto Pan Mode	Enable or disable the Autopan function which causes the camera to pan between two predetermined points. Left and right limits must be set to function properly.
Left Limit	Sets current Pan/Tilt position as the left-most limit for Auto Pan purposes.
Right Limit	Sets current Pan/Tilt position as the right-most limit for Auto Pan purposes.
360 Degree P/T	If Pan/Tilt is a 360° type device, select "Yes". Otherwise select "No".
Display Contrast	Lighten or darken the LCD screen
Auto Home	Enabling the Auto Home features causes the camera to point back to a Home Position after a certain period of inactivity, or "dwell time". The Auto Home feature must be enabled locally (cannot be achieved remotely). In the RDU's menu shown on the unit's LCD screen (see Appendix 3), navigate to the Auto Home feature. Setting a value of "0" (zero) disables the Auto Home feature. Setting a value of "1" through "255" seconds enables the Auto Home feature. When enabled, the RDU keeps track of how long it has been since it received any commands (dwell time). If the Auto Home feature is set to "30", the RDU will cause the camera to return to its Home Position after 30 seconds of inactivity.

Local Execution

Note: Pan/Tilt and Lens functions operate as follows: Push SEL once to start the action. To stop, press SEL again or navigate to the STOP command and push SEL. Holding SEL when starting the action will cause the action to "step through" its range of movement at very small intervals. Press SEL again to stop at the desired position.

- Pan   Adjust the Pan/Tilt left (counterclockwise), Right (clockwise), Off (stop)
- Tilt   Adjust the Pan/Tilt vertically. Options are tilt up, tilt down, stop.
- Zoom   Zoom in, zoom out, stop (if equipped)
- Focus   Focus near, focus far, stop (if equipped)
- Iris   Open iris, close iris, stop
- Auxiliary 1   Reserved for Autopan
- Auxiliary 2   Enable Aux. 2, disable Aux. 2
- Auxiliary 3   Enable Aux. 3, disable Aux. 3
- Auxiliary 4   Enable Aux. 4, disable Aux. 4
- PP Show   The Preposition Show function will cause the Pan/Tilt to rotate through its prepositions, stopping at each one for a programmable dwell time.
- PP Set   Sets the current Pan/Tilt orientation as a preposition.

8. **Troubleshooting/FAQ**

Q: I can't read the LCD screen. It is blank (or black).

A: If the LCD screen is blank, the RDU may not be getting proper power. Ensure the unit is receiving the proper input voltage. Also attempt to adjust the Contrast setting of the RDU. See Initial Setup Procedure, section 6.1.3.

Q: The RDU is properly powered but the joystick commands do nothing.

A: Set the RDU to match the joystick settings (code protocol, baud rate). Also check the Camera ID # from the RDU menu and ensure the joystick is set to that camera number. If all settings are properly configured, check to ensure the "+" wire from the joystick is connected to the "RXD+" terminal of the RDU. Each time the joystick sends a command the RX LED on the RDU faceplate should light up. If this LED does not light up, there is a configuration mismatch between the joystick and the RDU.

Q: The preposition function is not working properly. I can control the Pan/Tilt but nothing happens when I send a command to go to a preposition location.

A: Run the Calibrate command from the local execution menu (must be executed from the Local Execution menu at the RDU installation site, cannot be executed remotely).

Q: Our facility lost power and I can no longer control the Pan/Tilt.

A: If the Pan/Tilt or RDU was struck by lightning, the equipment cannot be repaired. Always install outdoor equipment with surge protection and grounding devices (i.e. lightning rod) in place to protect the equipment. If the RDU lost power for an extended period of time, the settings may have been lost. Re-execute the Initial Setup Procedure to regain control.

Wiring Guide

The numbers listed below the different Aigis Pan/Tilt models are the pin assignments for wires coming from the Receiver Driver Unit into the Pan/Tilt unit. Please refer to the Pan/Tilt Installation Manual for additional information.

Function	Terminal Label (Inside RDU)	PT9418-2	PT9418-2P	PT9418-6	PT9418-6P	PT9420-2	PT9420-2P	PT9420-2SL	PT9420-2PSL	PT9420-6	PT9420-6P	PT9440-2	PT9440-2P	PT9440-6	PT9440-6P	PT9441-2	PT9441-2P	PT9441-2SL	PT9441-2PSL	PT9441-6	PT9441-6P
Tilt Up	TILT UP	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Tilt Down	TILT DOWN	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
Pan Left (CCW)	PAN LEFT	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
Pan Right (CW)	PAN RIGHT	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Return/Common	P/T RET	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
Return/Common	P/T RET																				
Auxiliary Power 24VAC Line	24VAC					23	23	23	23	23	23					23	23	23	23	23	23
Auxiliary Power 24VAC Neutral	24VAC					24	24	24	24	24	24					24	24	24	24	24	24
Pan/Tilt Feedback Power	FB PWR		1		1		1		1		1		1		1		1		1		1
Pan/Tilt Feedback Pan Potentiometer 1	PT-FB P1		2		2		2		2		2		2		2		2		2		2
Pan/Tilt Feedback Pan Potentiometer 2	PT-FB P1																				
Pan/Tilt Feedback Tilt	PT-FB T		4		4		4		4		4		4		4		4		4		4
Feedback Ground	FB GND		3		3		3		3		3		3		3		3		3		3
Lens Feedback Power	FB PWR																				
Lens Feedback Focus	LENS-FB F						9		9		9						9		9		9
Lens Feedback Zoom	LENS-FB Z						8		8		8						8		8		8
Feedback Ground	FB GND																				
Iris	IRIS																				
Focus	FOCUS					7	7	7	7	7	7					7	7	7	7	7	7
Zoom	ZOOM					6	6	6	6	6	6					6	6	6	6	6	6
Lens Common/Ground	LENS GND					5	5	5	5	5	5					5	5	5	5	5	5

Appendix 2

Compatibility Chart

The table to the left lists the RDU models (listed across the top) that are compatible with the Pan/Tilt units listed on the left side of the chart. An "x" indicated that model Pan/Tilt is compatible with the Receiver Driver unit listed above the "x".

	RD2PT2-P	RD5PT2-P	RD5PT5-P	RD6PT2-P	RD6PT6-P
PT9418-2	X	X		X	
PT9418-2P	X	X		X	
PT9418-6					X
PT9418-6P					X
PT9420-2	X	X		X	
PT9420-2P	X	X		X	
PT9420-2SL	X	X		X	
PT9420-2PSL	X	X		X	
PT9420-6					X
PT9420-6P					X
PT9440-2	X	X		X	
PT9440-2P	X	X		X	
PT9440-6					X
PT9440-6P					X
PT9441-2	X	X		X	
PT9441-2P	X	X		X	
PT9441-2SL	X	X		X	
PT9441-2PSL	X	X		X	
PT9441-6					X
PT9441-6P					X

RDU Menu Structure

The RDU settings are viewed and adjusted via the pushbuttons and the LCD screen. The chart depicts the menu structure. Navigation instructions and function definitions are provided in Section 7.

Main Menu
Version Info
CMD Monitor

Settings	RS232	Baud Rate	2400, 4800, 9600, 19200
		Parity	No, Odd, Even
		Stop Bits	1, 2
	RS485	Baud Rate	2400, 4800, 9600, 19200
		Parity	No, Odd, Even
		Stop Bits	1, 2
	SIO	Not ready	
	LIN	Not ready	
Protocol	Pelco-D, Bosch, Aigis		
Termination	On, Off		
Camera ID#	0 - 255		
Auxiliary Mode	Momentary, Latch		
Lens Voltage	1-12V (DC)		
Max Lens Speed	0-100		
Lens SPD Ramp	On, Off		
Lens Polarity	Forward, Reverse		
Iris Mode	Normal, Override		
AutoScan	Hardware, software		
Autoscan Limit	Left	0-360 (Default = 90)	
	Right	0-360 (Default = 270)	
360 Pan	No, yes		
Contrast	0-100 (Default = 50)		
Local Exec	Right, Left, Up, Down, In, Out, Near, Far, Open, Close, Aux 1, Aux 2, Aux 3, Aux 4		
Pre-Pos Set	1-99		
Pre-Pos Clr	Yes, cancel		
Calibrate	Yes, cancel		
Auto Home	0-255		