

EAGLE[™]

PT-100 Series Pan Tilt Head



Installation and Operations Manual

Revision 6

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(includes PT-PS-x power supply manual)

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1. PRECAUTIONARY STATEMENT

Improper settings and connections may cause damage to the PT-100 pan tilt, the camera, and the lens being used. Please read all of the following documentation before attempting the installation and configuration of these systems. If any of the instructions are unclear to you, call your servicing dealer or Hitachi before proceeding for clarification. Failure to correctly configure and install these systems may cause damage to the equipment, and will void the warranties. Please make sure before connecting or disconnecting any cables that the power supplies are turned OFF.

2. WARRANTY

Hitachi Denshi America, Ltd. warrants to the original customer that each unit shall be free from malfunction due to defective workmanship or component failure for a period of ONE YEAR from the original date of delivery to the customer. For service under the warranty period, return authorization must be obtained before returning the product. This warranty does not apply to finish or appearance items, to malfunction due to abuse or operation in violation of published operating specifications, or to failures caused by improper connections, modifications, alterations, or other unauthorized repairs. This warranty does not cover labor costs for removal and/or reinstallation of equipment under warranty, nor does it include shipping costs. Under no circumstances shall Hitachi Denshi America, Ltd. or Display Devices, Inc., their owners or employees be liable to you for any special damages, including any lost profits, lost savings, or other incidental or consequential damages, or for any claim by any other party.

3. HARDWARE INSTALLATION

Before starting installation, make certain that all power supplies to equipment are turned OFF.

Attach PT-100 to wall arm or ceiling mount. Make sure that wall or ceiling mount is capable of securely handling weights of 50 pounds (23kg). Ensure that the mount is level in both directions.

Attach camera mounting cradle to PT-100 head using supplied 10-32 x 3/8" button head hex screw fasteners.

Assemble camera/lens combination. Estimate the rough balance position of the assembly from front to rear.

Place camera/lens system into mounting cradle using supplied fasteners. Do not completely tighten the fasteners until after the next step.

Move the camera/lens assembly to the front or rear of the cradle until its' approximate balance point lines up with the center of the tilt pivot point. Now securely tighten the camera/lens mounting fasteners. Centering the weight of the camera/lens assembly on the mounting platform is important to insure the accuracy and smooth performance of the pan-tilt system.

Attach connecting cables from controllers and power supply to the camera and the pan-tilt head. Use cable ties and mounts to insure that cables are not restricted, yet will not obstruct operation.

If using separate camera and pan-tilt power supplies, turn on power supply for camera first, then turn on power supply for the pan-tilt head. Damage may result from the pan-tilt being powered up before the camera.

DO NOT ATTEMPT TO PAN OR TILT THE UNIT BY HAND!! Gear reductions on the motors make this impossible to do, and damage will result if this is attempted. Always use the Hitachi PT-C controller or the Windows® compatible software to control the movement of the pan tilt systems.

Follow detailed instructions in PT-C controller manual for usage of the pan-tilt head.

4. ADDITIONAL SETUP IF USING PT-PCS SOFTWARE CONTROL

If using EAGLE® software to control the pan-tilt head via computer, follow these instructions.

NOTE: Software is for use with Windows 95®, Windows 98®, Windows NT® and Windows 2000® compatible computer systems only

Insert PT-100 software disc 1 into your computers' floppy drive

Click on Start on the Windows menu bar, and choose Run. Type in a:setup

Press ENTER key and follow the instructions that appear on the screen.

Connect communication cable from PT-100 pan-tilt head to PT-RSA RS-485 adapter (optional). Plug PT-RSA adapter into PT-AAM modem (optional), or to serial port of the computer.

5. FUNCTION DEFINITIONS FOR CONTROL OF PT-100

NOTE: when using the keypad, you must use the number key for the specific function you wish to access; for example, to use FUNCTION 16, hit the FUNCTION button, then the 16 key. Do not use the separate 1 and 6 keys--this will not work!

CAMERA

Selects the camera / head combination to be moved. Select the CAMERA button followed by the number of the camera you wish to control. For example, to control camera 1, press "CAMERA", then the 1 key. The display will show "CAMERA 1". Select the CAMERA then ALL button if you wish to move ALL camera heads.

STATUS

This button will display the status of the current head selection on the status bar at the top of the program window. It is useful when trying to track a communications problem in the initial setup of the system. If the communications are working correctly, the display should return an "OK" when the STATUS button is pushed. Note that this will only report the status

of a single station; it will not work if CAMERA / ALL is selected. If an unprogrammed camera is selected, no report will be returned; for example, if the status is asked for on camera #5 in a four camera system, etc.

SAVE PRESET

Move the left joystick up, down, left, or right for positioning the head, manually aiming the shot the way you desire. Select FUNCTION 1 to begin the lens position mode (Fujinon / Canon lenses only). Use the zoom and focus in/out buttons to select the field of view as desired. **YOU MUST ZOOM AND FOCUS TO SET UP YOUR SHOT AFTER ENTERING THE POSITION MODE !!** If you set up your zoom and focus before entering the POSITION mode, the lens will not report where it is in its' zoom and focus range to the software. Click the SAVE PRESET button followed by the number of the preset you wish to call it. Up to 16 presets may be saved for each individual pan tilt head.

RECALL PRESET

Push this button followed by the number of the preset you wish to recall.

DELETE PRESET

Push this button followed by the number of the preset you wish to delete.

CHAIN

Presets may be linked together with this function. It will automatically recall presets at intervals of your choosing. First, recall the preset number you wish to start from; even if you are at this preset currently, you must recall it in order to use the CHAIN function. Press CHAIN and the number of the next preset; Press TIME and enter the wait time at this preset in seconds from 1 to 16. Repeat this process for as many presets as desired to be linked. Recall the first preset and the CHAIN will start.

WIPER

This button controls the window wiper of the optional PT-EE-L environmental housing. This button is only functional with the PTE-200 or PTE-300 outdoor heads.

6. FUNCTION MODES

Select the FUNCTION button then the following numbers to run the desired function;

#1 Lens "position" mode.

Enter this mode to set lens zoom and focus presets. See section "SAVE PRESET" above for details on the operation of this function. The LCD display will read POSITION MODE.

#2 Lens "speed" mode

This is the normal lens operating mode. The LCD will read SPEED MODE momentarily.

#3 Preset speed change mode.

In conjunction with function 7 below, this function allows changing preset speeds to differ-

ent values than were originally chosen. For example, travel to preset 3 was originally set to speed 1 (high speed). If you now want to change travel speed to this preset to 2 (normal), recall preset 3, then enter FUNCTION, 3; the LCD will read PRESET SPEED. Then press 2 for normal speed. The LCD display will clear itself after 3 to 4 seconds.

#4 Scene recall / Preset location functions.

Dependent upon the camera being used, i.e., if using the HV-D3, HV-D15, or Z-2010A cameras, SCENE files can be stored on the camera controller and recalled in conjunction with a specific location preset. This could be useful if the scene has multiple shots to be setup, under different lighting conditions. First, the scene files must be set up AND STORED using the PT-CC camera controller. Next, decide which position preset you want to link to which scene file. For our example, let's use position preset 3, and link it to scene file 1. RECALL position preset 3 (as described in section 5.4), then hit FUNCTION, 4; the LCD display will show CAMERA SCENE. Next, press number 1, specifying the recall of scene file 1. This will now link the position preset 3 and the scene file 1 together. In order to make any changes after saving this information, you must either resave the SCENE file, or resave or delete the position preset 1. The LCD display will clear itself after 3 to 4 seconds.

#5 Focus lock/unlock

This is a toggling function that will lock and unlock the FOCUS axis of the joystick. This is convenient if you have a shot setup that the focus will not need to be changed, but you wish to zoom in and out to change the shot. This will prevent any accidental changes in focus while zooming. Press FUNCTION, then 5, then 1 to LOCK and 2 to UNLOCK. The LCD display will read FOCUS LOCKED and FOCUS UNLOCKED.

#6 Zoom lock/unlock

This is a toggling function that will lock and unlock the ZOOM axis of the joystick. This is convenient if you have a shot setup that the zoom setting will not need to be changed, but you wish to focus near or far to make the shot. This can also be used to prevent any unwanted or unauthorized changes. Press FUNCTION, then 6, then 1 to LOCK and 2 to UNLOCK. The LCD display will read ZOOM LOCKED and ZOOM UNLOCKED.

#7 Pan tilt movement speed control mode.

This allows the overall speed of the pan and tilt motion to be changed. Press the FUNCTION, 7; the display will read HEAD SPEED. Then press 1 for HIGH speed, 2 for NORMAL, and 3 for SLOW. Any pan and tilt presets will also store the speed originally chosen here. For example, you can set a preset position using two different speeds, and recall them at different times depending on the effect desired. NOTE: lens zoom and focus pre-

sets are always recalled at full speed, this is not changeable. The LCD will clear itself after 3 to 4 seconds.

#8 Camera controller feedback.

If using the PT-C standalone pan tilt controller with the PT-CC camera controller, this will let the PT-C know it has a camera controller installed to talk to. Press FUNCTION, 8--The display will toggle between CC ON and CC OFF.

#9 Inverted movement operation mode

(up/down, left/right reversed). This function is used when the pan/tilt is to be ceiling mounted instead of tripod mounted, and it reverses the movement directions of the pan tilt head. This can be set individually on a head by head basis so that if a mix of upright and inverted heads are being used in the same system, they can be configured such that they all move the same direction. Please note that with the current level of software, no LCD feedback is presented.

#10 Clear all movement limits.

This function will eliminate all position limits that may have been set to prevent excess travel. This clearing is temporary only; when power is reset, the previous limits will return unless you set new limits. Hit FUNCTION, then the 10 key; the LCD display will prompt you to press 1 to clear limits, 2 to cancel. Please note that this function only works with a single addressed head for safety reasons. If CAMERA, ALL is selected, you cannot clear movement limits. This is to prevent the accidental clearing of limits from other heads on the same RS 485 line.

#11 Address of pan tilt head.

This is set by the factory to 1 when shipped. If a change is required, simply enter FUNCTION, the 11 button; the LCD display will read ADDRESS. Then click the number you wish to set the head to. Note that this will set the number for all heads on the RS-485 comm line; you must disconnect the power or communication for all the heads except the one you wish to address, otherwise all the powered heads will be set to the same address.

#12 Set lens type.

This is set by the factory when ordered for your specified lens type; 1 is for Rainbow and other CCTV type lenses, 2 is for Fujinon telecon and Canon telecon lenses set to Fujinon mode. The LCD display will read LENS TYPE.

#13 Set left pan limit.

Limits are preset at the factory to 50 degrees each up and down, and about 160 degrees each left and right. Change the limit settings if you want to change these amounts; this is useful to set up cameras such that they can not get shots of the wall behind the camera, the ceiling above the camera, the floor directly below the camera, etc. Also, limits may need to be set differently for your particular application; e.g., if a ceiling mount adapter is used, you may need to set a limit for tilting upwards to prevent lens contact with the ceiling, etc. The LCD display will read SET LEFT LIMIT.

Please note that dependent on the setting of FUNCTION 9, the INVERT command, that in some circumstances LEFT LIMIT will actually be RIGHT LIMIT; UP LIMIT will be DOWN LIMIT. If you accidentally set a limit incorrectly, simply clear it by hitting FUNCTION, 10, 1 (CLEAR ALL LIMITS). Limits may not be cleared individually, but only all at once.

#14 Set right pan limit.

See above Function 13

#15 Set up tilt limit.

See above Function 13

#16 Set down tilt limit.

See above Function 13

7. POWER REQUIREMENTS AND PIN CONFIGURATIONS

The PT-100 series of pan tilt heads require 24 volts DC power. Maximum draw is approximately 3 amps; average current draw in operation is 1.5 amps. In operation with the PT-PS-1 power supply, the head will provide power for camera / lens combinations drawing up to 1.5 amps (with the included PT-PS-INT5 supply); if the camera / lens draws more than this, a larger main power supply is required. To help reduce power drop, it is common practice to run 4 conductors for power and tie two conductors together at the end, thus doubling the effective current carrying capability. Here is a chart with recommended AWG for different distances:

Distance in feet	AWG
20	28
50	26
100	22
200	18
500	16
1000	12

The two BNC connectors on the head and on the base are provided to loop the video and genlock signals from your camera through the base without worrying about coaxial cables tangling. They are merely looping circuits; the left connector on the head loops to the left connector on the base; the right connector on the head loops to the right connector on the base.

8. RS-485 COMMUNICATIONS SETUP

Communications for the PT-100 series is transmitted via the RS-485 standard, a common multidrop network configuration. Three wires are required for RS-485 communications, two for signal and one for ground. Using 24 AWG shielded twisted pair cable, maximum communication length without a repeater is 4,000 feet.

To connect multiple units to the same communication line, connect the three wires in parallel from unit to unit. On each of the pan tilt heads and on the PT-C controller is a 120 ohm terminating resistor. The two units at the ends of the communication line should have the terminating resistor in place; all other units on the line must have the resistor disconnected. The resistor is connected in series to a switch for easy configuration; this switch for termination is located on the front of the unit next to a COMM status LED; with the switch towards the LED, the head is terminated; with the switch away from the LED, the head is unterminated. Heads are shipped with the termination turned ON. The LED provides visual feedback to the status of the head; if the head has been called up on a controller, the LED is on solid; if the head is merely on the RS-485 line and listening for a command, it will flicker. If using a controller other than the Hitachi PT-C pan tilt controller, such as an AMX or Crestron control system, termination should be provided at the controller end. "New" base connector wiring table as of September, 2000

5 pin connector on base of PT head	MAIN PAN TILT CONTROL INTERFACE
PIN 1	RS-485 GROUND
PIN 2	RS-485 LINE 1
PIN 3	RS-485 LINE 2
PIN 4	+24VDC FROM MAIN POWER SUPPLY PIN 1 OR 2
PIN 5	GROUND TO 24VDC MAIN POWER SUPPLY PIN 3 OR 4

9. FUNCTION QUICK LIST

1. LENS POSITION MODE
2. LENS SPEED (NORMAL) MODE
3. PRESET SPEED CHANGE MODE
4. SCENE RECALL
5. FOCUS AXIS LOCK / UNLOCK
6. ZOOM AXIS LOCK / UNLOCK
7. PAN TILT SPEED CHANGE
8. CAMERA CONTROLLER ON / OFF
9. INVERTED OPERATION TOGGLE
10. CLEAR TRAVEL LIMITS
11. SET PAN TILT ADDRESS
12. SET LENS TYPE
13. SET LEFT PAN LIMIT
14. SET RIGHT PAN LIMIT
15. SET UP TILT LIMIT
16. SET DOWN TILT LIMIT

10. TROUBLESHOOTING TIPS

If your observed problem is:

Pan tilt head only pans or tilts in one direction upon power up

SOLUTION: Travel limits are not set. Clear any preset limits by entering FUNCTION and 10. Reset travel limits for left, right, up, and down. Once these are chosen they are set in the non-volatile memory of the head, so that if system power is lost and restored, the limits will still be present. If this does not fix the problem please call for tech support.

Head turns more than 360° in pan or tilt.

SOLUTION: Discontinue usage immediately; position feedback potentiometer is slipping or has failed. Wiring harness can be damaged or destroyed. Call for tech support.

Lens control is sluggish, jumps, or non-responsive

SOLUTION: Make sure lens is in correct operating mode. See section on FUNCTION 12—Setting lens type. It could be that a user has changed lens types from a CCTV lens to a teleconferencing lens or vice versa.

or

SOLUTION: Make sure that the lens is in SPEED mode and not in POSITION mode if manual operation is desired. Refer to section on FUNCTIONS 1 and 2.

or

SOLUTION: Make sure that lens cables are plugged in securely to the camera and pan tilt head.

No camera control of attached Hitachi camera

SOLUTION: Make sure that you have enabled the PT-CC camera controller on the PT-C control panel by pressing FUNCTION, 8. The display will toggle CC ON or CC OFF. It should be CC ON for camera control usage.

or

SOLUTION: Make sure that the head you are using has the accessory PT-CCB board installed. It will be shown on the serial number tag on the bottom of the unit.

or

SOLUTION: Make sure that the camera has its' communications rate set to 9600; the factory default is usually faster than 9600.

EAGLE[™] PT-PS Series

Pan Tilt Head—Power Supplies

Installation and Operations Manual

PRECAUTIONARY STATEMENT



1.1 Improper settings and connections may cause damage to the PT-100 pan tilt, the camera, and the lens being used. Please read all of the following documentation before attempting the installation and configuration of these systems. If any of the instructions are unclear to you, call your servicing dealer or Hitachi before proceeding for clarification. Failure to correctly configure and install these systems may cause damage to the equipment, and will void the warranties. Please make sure before connecting or disconnecting any cables that the power supplies are turned **OFF**.

2. WARRANTY

2.1 Hitachi Denshi America, Ltd. warrants to the original customer that each unit shall be free from malfunction due to defective workmanship or component failure for a period of ONE YEAR from the original date of delivery to the customer. For service under the warranty period, return authorization must be obtained before returning the product. This warranty does not apply to finish or appearance items, to malfunction due to abuse or operation in violation of published operating specifications, or to failures caused by improper connections, modifications, alterations, or other unauthorized repairs. This warranty does not cover labor costs for removal and/or reinstallation of equipment under warranty, nor does it include shipping costs. Under no circumstances shall Hitachi Denshi America, Ltd. or Display Devices, Inc., their owners or employees be liable to you for any special damages, including any lost profits, lost savings, or other incidental or consequential damages, or for any claim by any other party.

3. HARDWARE INSTALLATION

3.1 Before starting installation, make certain that all power supplies to equipment are turned **OFF**.

4. POWER REQUIREMENTS AND PIN CONFIGURATIONS

4.1 The PT-PS power supplies are designed to provide reliable power to the Eagle pan tilt heads. The PT-PS-1 will provide power for one PT-100 head and camera assembly; the PT-PS-2 will provide enough power for up to four PT-100 head and camera combinations and the PT-PS-3 provides 6.5 amps, for use with PT-200/300 heads and larger cameras. The PT-100 / 200 series of pan tilt heads require 24 volts DC power. Maximum draw is approximately 2.5 amps; average current draw in operation is 1.5 amps. The camera power supply built into every PT head will provide power for camera / lens combinations drawing up to 5 amps at 12 VDC; if the camera / lens draws more than this, a separate external camera power supply is required. To help reduce power drop, it is common practice to run 4 conductors for power and tie two conductors together at the end entering the pantilt head, thus doubling the effective current carrying capability. Here is a chart with recommended AWG for different distances (at 77°F)

Distance in feet	AWG
20	28
50	26
100	22
200	18
500	16
1000	12

4.2 Here is the listing of pin configurations for the connector on the power supply output:

AMP 4 pin CPC connector	MAIN POWER OUTPUT
PIN 1	+24 VDC CAMERA POWER SUPPLY TO HEAD
PIN 2	+24 VDC CAMERA POWER SUPPLY TO HEAD
PIN 3	CAMERA POWER SUPPLY GROUND TO HEAD
PIN 4	CAMERA POWER SUPPLY GROUND TO HEAD

4.3 Here are listing of pin configurations for the connector on the pan tilt head BASE as of September, 2000:

5 pin connector on base of PT head	MAIN PAN TILT CONTROL INTERFACE
PIN 1	RS-485 GROUND
PIN 2	RS-485 LINE 1
PIN 3	RS-485 LINE 2
PIN 4	+24VDC FROM MAIN POWER SUPPLY PIN 1 OR 2
PIN 5	GROUND TO 24VDC MAIN POWER SUPPLY PIN 3 OR 4



IMPORTANT NOTE: THE PT-PS-1, 2, AND 4 MODEL POWER SUPPLIES ARE AUTOSWITCHING FOR INPUT VOLTAGE RANGES BETWEEN 100 AND 240 VAC, 50 OR 60 HERTZ. THE PT-PS-3 POWER SUPPLY REQUIRES MANUAL CHANGING BETWEEN 90-130 VAC AND 180-260 VAC RANGES. A RANGE CHANGING SWITCH CAN BE FOUND ON THE OUTSIDE OF THE INNER POWER SUPPLY BOX; IT CAN BE CHANGED FROM THE OUTSIDE OF THE CASE USING A SMALL SCREWDRIVER. MAKE CERTAIN THAT THE VOLTAGE RANGE IS SET CORRECTLY BEFORE TURNING ON THE SUPPLY OR DAMAGE MAY RESULT!!