



EAGLE

PAN TILT SYSTEMS

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PT-C Pan Tilt Controller



Installation and Operations Manual

Revision 9

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The Eagle PT-C control system allows the control of all of the pan-tilt heads from Eagle. It is available in a standard desktop configuration. It provides attitude control of the pan tilt head as well as, zoom, focus and iris control of camera lenses; control of an optional environmental housing, and has special function keys that can be utilized for other needs. In conjunction with the PT-CC camera control it will allow remote control of the Hitachi HVC, HVD, and Z series of cameras.

1. PRECAUTIONARY STATEMENT



Improper settings and connections of the PT-C may cause damage to the pan tilt head, 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 or shipping costs for removal and/or reinstallation of equipment under warranty. 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. CONTROL PANEL USAGE

The PT-C control panel has a 24 character by 2 line LCD display for status feedback of the current operation. Most of the individual functions for setup of the pan-tilt system have feedback that is shown by the LCD display.

Note that the graphic overlay on the control panel has information in both black text below the buttons, and in red text above the buttons. This is to help signify that the red text is the action of the FUNCTION key (outlined in red at the top right of the button panel) and the chosen button. For example, to enter LENS POSITION mode, touch FUNCTION, then the 1 button.

If desired, you can leave the FUNCTION mode by hitting the FUNCTION key twice. Example; if you have already touched the FUNCTION key with the intention of creating a new preset, then change your mind, hit the FUNCTION key again. The display will clear.

Individual control joysticks allow adjustment of the pan tilt head and lens' zoom and focus control. The pan tilt head is vector solving, i.e., it will move diagonally instead of just moving horizontally and vertically. It is also speed sensitive; deflect the joystick a small amount and the head moves slowly; deflect the joystick a large amount and the head moves quickly. The same speed sensitive control applies to the lens' zoom and focus features in the manual, "speed" mode only.

4. FUNCTION DEFINITIONS FOR CONTROL PANEL

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. Please note that for safety reasons when CAMERA, ALL is selected, you may not clear travel limits (FUNCTION 10).

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.

BANK

The BANK button is to be used for switching between two "banks" of up to 16 cameras each. This allows the PT-C to control up to 32 different pan tilt heads. Press the BANK button once; the LCD display will readout "BANK 2". Now enter the camera number in the second bank that you wish to control, keeping in mind that the number you enter is added to 16. For example, enter BANK, then 1. The display will read CAMERA 17. If you enter BANK, 10, the display will read CAMERA 26.

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 telecon lenses only). Use the zoom and focus in/out joystick 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, and the lens preset will not be stored. Press 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.

5. SPECIAL FUNCTIONS

The following is list of special functions that are used in combination with optional accessories of the Eagle Pan Tilt system.

WIPER / WASHER

This button controls the window wiper of the optional PT-EE-L environmental housing. This button is only functional with the PTE300 outdoor head. When pressed once, the wiper will activate for about three seconds. To activate the washer, press FUNCTION, WIPER. The pump of the optional PT-WW-1 will squirt a stream of liquid onto the window of the housing. It may be necessary to hit FUNCTION, WIPER several times before liquid squirts onto the window; this is to prime the pump and liquid line.

LENS EXTENDER CONTROL

OPTION A

Pressing only the OPT A button toggles a lens' 2x extender on or off; this is an option of some special Canon and Fujinon lenses, and does not work with any lens.

PT-MFA CONTROL

OPTION B

Pressing only the OPT B button will work with the optional PT-MFA multifunction adapter to configure the relays on the PT-MFA; see the detailed manual included with the PT-MFA for exact operation.

SHOT BOX CONTROL

OPTION C

Pressing only the OPT C button will control various features of the PT-SB "shot box", motion control recorder. See the detailed manual included with the PT-SB for exact operation.

MODEM CONTROL

FUNCTION, OPTION A, B, C

Pressing FUNCTION, then OPTION A, B, or C are three commands used for dialing control of the optional PT-AAM modem control system. FUNCTION, OPTION A dials a preprogrammed number from memory. FUNCTION, OPTION B hangs up a modem dialed call, and FUNCTION, OPTION C is used to enter and save the phone numbers to be dialed. Please see the detailed operating instructions included with the PT-AAM system.

MULTIPLEXER CONTROL

FUNCTION, CAMERA

Pressing FUNCTION, CAMERA will bring up a menu on the LCD for setting and releasing exclusive control of pan-tilt heads attached to the PT-MP-1 multiplexer unit. Press 1 to RESERVE HEAD, press 2 to RELEASE HEAD. When you press either 1 or 2, the display will change to RESERVE PT or RELEASE PT. It is now waiting for you to input the address of the pan tilt head you want to control. Enter this address number, and the display will change again, asking which controller port on the PT-MP-1 you are plugged into. Ports on the multiplexer are labeled 1 through 6; enter the number of the port you are connected to. Once this is done, the LCD display will clear itself after 3 to 4 seconds.

6. FUNCTION MODES

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

#1 Lens “position” mode.

FOR TELECONFERENCING SERVO DRIVE LENSES ONLY

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.

FOR TELECONFERENCING SERVO DRIVE LENSES ONLY

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 different 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 capable Hitachi 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), then hit FUNCTION, 4, and the LCD display will show CAMERA SCENE. Then 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 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 or 2 to UNLOCK. The LCD display will read FOCUS LOCKED or 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 or 2 to UNLOCK. The LCD display will read ZOOM LOCKED or 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 presets 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 room, they can be configured such that they all move the same direction.

#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 press the number you wish to set the head to. NOTE: 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!!



Note that the readdressing procedure will only work if you know the number the head is currently set to; if you don't know the number, first select CAMERA, ALL. This will allow you to talk to any head that is correctly wired up.

#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 as a whole.

#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. PAN-TILT OPERATIONS



Be sure to follow all of the installation instructions included with the Eagle pan tilt head before starting to use this controller !!

First, select the address of the head you wish to control. Since up to 31 heads may be on a single RS-485 line, you must choose the correct one to control. Select CAMERA, then the number of the head to be controlled. Head addresses can be changed as described in the previous section for Function 11.

If this is the first time use of the system, the limits of pan tilt movement must be set now. Begin by entering FUNCTION 10, Clear all movement limits. This function will eliminate all position limits that have been set at the factory to prevent excess travel. This clearing is temporary only; when power is removed and then restored, the previous limits will return unless you have set new limits. This will erase any limits previously set by the factory during testing.

Next, set the limits of travel as desired. Use the FUNCTIONS 13 through 16, for left, right, up, and down limit setting. Remember, that depending on the model, the pan tilt head has a range of pan of 360° (left or right 180°), and a tilt range of 360° (up or down 180°); it cannot turn more than a full circle. There are end travel stops programmed into the head to prevent traveling more than these amounts.



Make sure when cabling the system that enough cable slack is included to prevent damage to the pan-tilt connectors and camera and lens connectors. The motors in the head are very strong, and will easily rip a connector out of its' socket. Once the travel limits are set, normal usage of the pan tilt system may begin.

Start by entering the location number you wish to control. Use the keypad and push CAMERA, then select the number from 1 to 16. NOTE: Pan tilt head address numbers have been initialized at the factory to number 1; if you need to change them in the field, see FUNCTION 11, Setting pan tilt head address.

8. POWER REQUIREMENTS / PIN CONFIGURATION

All Eagle pan tilt heads require 24 volts DC power. Maximum draw varies by model; average current draw in operation is 1.5 amps. The head will provide power for camera / lens combinations drawing up to 5 amps @ 12 VDC depending upon the model of head. 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 (at 77°F):

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

Here are tables of pin configurations for the two D-sub connectors on the controller rear:

AT EDGE OF PT-C	IN CENTER OF PT-C
DB-9 female connector (interconnect to PT-CC)	DB-9 male connector RS-485 network
PIN 1 TO PT-CC PIN 1	PIN 1--NO CONTACT
PIN 2 TO PT-CC PIN 2	PIN 2--RS 485 LINE 1
PIN 3 TO PT-CC PIN 3	PIN 3--RS 485 LINE 2
PIN 4 TO PT-CC PIN 4	PIN 4--NO CONTACT
PIN 5 TO PT-CC PIN 5	PIN 5--RS 485 GROUND
PIN 6 TO PT-CC PIN 6	PINS 6-9--NOT USED



Power for the controller is 9VDC, 500 mA, supplied by the included wall transformer with attached connector. DO NOT USE ANY OTHER POWER TRANSFORMER FOR THIS CONTROLLER AS SEVERE DAMAGE MAY RESULT!

FREQUENTLY ASKED QUESTIONS / SETUP PROBLEMS

My pan tilt head was working, but now has stopped responding. I still have a picture from the camera, but have no control. What happened?

A: You are either trying to control the wrong head number, or the head has accidentally been readdressed to an unknown number, or the serial communications have failed. If you are certain that you are trying to control the correct head, follow this procedure to regain control.

1. On the PT-C controller, select CAMERA, ALL. This will talk to any head on the line. Try to move the head up, down, left, or right. If it responds, then you have good communications. Follow the procedure on page 8 to readdress the head to the number you want it to be.

2) If it doesn't respond, then check the serial wiring path from the controller to the head(s). If you have multiple heads, and the other heads work correctly, then your wiring path is most likely correct, but should still be tested. Try moving the non-working head to a known working location and retesting.

3) The red LED on the front panel of the head is for troubleshooting and status. If a head is correctly wired and addressed, when you move the joystick, the LED will glow solid, with some modulation seen as you move the joystick. If the LED comes on solid upon power up, then the RS-485 ground and one of the comm lines are reversed. Check your wiring again. If the LED never comes on solid, but only flickers, then either the head is hearing traffic for another head, or the RS-485 A & B comm lines are reversed. If you are certain the head is addressed properly, then swap the A&B comm lines and test again.

If it still doesn't work at a known good location, you have swapped the comm lines, and tried readdressing, then the head may be faulty. Contact Eagle tech support at (303) 412-0399 or www.eaglepantilt.com.

My lens control isn't working correctly; the lens goes to one end of its' range and wont move.

The lens type has been set incorrectly. The Eagle pan tilt system is capable of using either servo drive teleconferencing lenses, or DC drive C-mount lenses. If set to the wrong type, this symptom will result. Verify the type of lens you are using and check the lens type as shown on page 8.

I have the accessory PT-CC camera controller. I used to be able to change the camera settings remotely, but now it has stopped working. Why?

Verify that the interconnect cable between the PT-C and PT-CC controllers is secure. Next, check to make sure the PT-CC is enabled for use by the PT-C. Touch FUNCTION, 8. The LCD display will read CC ON, meaning it is enabled, or CC OFF meaning it is disabled. If it first said CC ON, that means that it was in the off state, and you just turned it on. Check for camera control features now. If you still don't have camera control, make sure that the camera control cable from the rear of the pan tilt head to the rear of the camera is plugged in. If it is, then camera control may be faulty; contact Eagle tech support.

I am trying to set up a preset shot, but the head isn't returning to the correct position or zoom/focus setting.

This could be caused by a number of things. First, if using a teleconferencing lens, make sure you are going into POSITION mode (FUNCTION,1) before trying to set the preset. If you are not in POSITION mode, the lens' zoom and focus settings cannot be memorized. Also, the pan and tilt joystick must be moved for the head's position settings to be recorded.

If the zoom and focus settings are retrieved correctly, but the head is landing high or low when recalling, then the weight balance of the camera/lens assembly is probably off from front to rear. The assembly must be centered from front to rear to provide accurate recall; if it is balanced too far front, then it will probably be low in recalling presets above horizontal. If balanced too far rear, it will be high in recalling presets above horizontal. Remove the camera/lens assembly as needed in order to check the balance, and replace it in the correct position.

IF YOU ARE EXPERIENCING A PROBLEM NOT COVERED HERE, OR YOU HAVE TROUBLE UNDERSTANDING THESE SOLUTIONS, PLEASE CONTACT EAGLE TECH SUPPORT AT (303) 412-0399, M-F 8AM TO 5PM.