

OPERATIONS MANUAL

for a

DPT 130 / DPT 130E

Pan/Tilt Head

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Due to design changes and device availability, the information and data presented in this manual are subject to possible change without prior notice.

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1. INTRODUCTION

This document describes the operations of the DPT 130 Digital Pan and Tilt head which is designed for remote, long distance control requirements. This unit also provides presets for applications needing camera and lens pre-programmed pan, tilt, zoom, and focus settings. Applications such as teleconferencing, distance learning, tele-medicine and theater instrumentation are all ideally suited for a DPT 130 installation. The DPT 130 is a medium weight pan & tilt head designed to carry a variety of load configurations. The DPT 130E is functionally identical to the DPT 130, the "E" indicates extended. The extended version is taller by two inches for larger cameras. The digital design of the DPT 130 allows flexibility in lens selection and the adaptability necessary for special requirements. Teleconferencing and CCTV lenses may all be easily interfaced to the versatile DPT 130. Presets are available on the DPT 130 for pan, tilt, zoom and focus. The resolution of the presets is 17 1/2 bits giving an angular resolution of 0.002 degree. Setup switches located at the base of the unit make special functions and configuration changes easily implemented. A family of digital controllers which may control from 1 to 5 DPT 130 Pan & Tilt Heads is available. The Model 80, Model 88 and Model 180 family of digital controllers was specifically designed to get the most from a DPT 130.

2. PAN & TILT HEAD SPECIFICATIONS:

CHARACTERISTICS:

Operating Environment	Indoor
Temperature.....	32 to 158 degrees F. (0 to 70 degrees C.)
Pan Rotation	+/- 115 degrees with adjustable limit switches
Tilt Angle	+/- 65 degrees with adjustable limit switches
Pan Speed	Continuously variable to 15 degrees/second
Tilt Speed	Continuously variable to 15 degrees/second
Load Mounting.....	Side loading with alignment of image plane and center of rotation
Capacity	15 pounds

PAN/TILT CONTROL:

Pan/Tilt	0 to +24 VDC (DC coreless motor)
Presets	Yes, Max 2000
Max. distance between controller & p/t head.....	2,000 feet (Contact ESI for longer distances)
Interface to Controller	RS-422 differential over 4 wire cable
Computer Control (contact factory for RS232)	Optional RS-232 Interface for computer control
Special Functions	Externally accessible DIP switches

LENS CONTROL:

Focus	Teleconferencing and CCTV lenses
Zoom	Teleconferencing and CCTV lenses
Iris	Teleconferencing and CCTV lenses
Multi-Lens Control	Different lens configurations selected from Internal Jumper settings
Lens Interface Cable	Remote lens interfaces directly to DPT 130
Presets	Zoom & focus

PHYSICAL CHARACTERISTICS:

Size	6.0 (W) X 10.5 (H) X 4.0 (D) inches
Size	6.0 (W) X 13.0 (H) X 4.0 (D) inches (E version)
Weight	9.3 Pounds
Mounting	4 mounting holes (2 3/8" x 6 1/8")

POWER INPUT REQUIREMENTS:

Voltage	+24 VDC regulated
Current	0.8 Amperes
Power ON Switch	Located on Pan & Tilt base
Power ON Indicator	Located on Pan & Tilt base
Power Adapter.....	Supplied with Pan & Tilt head

CONNECTORS:

RS-422 Serial Interface	4 conductor RJ-11 6P4C Style
RCU IN CCU Interface	4 conductor RJ-11 6P4C Style
RS-232 Serial Interface	9 pin D connector
Power	Switchcraft 722, DC Jack
Video Out	BNC
Video	BNC
Lens I/F	12 Pin Hirose, Male
Camera Power	2 Pin Conxall, Female

3. OPERATION

This section describes the operation of the DPT 130 and related system components. The DPT 130 receives serial data commands from one of two sources in all applications, a hardware controller or a computer system. The pan and tilt unit will accept RS-422 or optional RS-232 signal levels. Functions of the pan and tilt include manual camera positioning, manual zoom, focus and iris control, and presets. Presets are stored pan, tilt, zoom, and focus positions that the DPT 130 will return to automatically when recalled. The preset data is stored within the pan and tilt head. This data is stored and recalled from the controller or computer system.

3.1 CONTROLLER

A controller is a device designed exclusively to provide ASCII serial commands to the pan and tilt. These units generally have a joystick for up, down, left, and right direction commands. There will also be some form of seesaw or switch controls for zoom and focus. Switches will also be provided for iris and preset control. The controller will transmit commands in RS-422 formats. A computer program is available from the manufacturer that will allow a user to operate the pan and tilt via a Model 180 Controller which can be interfaced to the serial port of their personal computer. To obtain a copy of this program call the manufacturer at the technical support center.

3.1.1 RS-422

RS-422 format is a balanced four wire interface. The signals are transmit plus, transmit minus, receive plus, and receive minus. This interface is typically 26 AWG wire with a distance limitation of 2000 feet.

3.1.2 RS-232

RS-232 format is a three wire single ended interface. The signals are transmit receive, and ground. This interface is typically 20-24 AWG wire with a distance limitation of 100-200 feet.

3.2 COMPUTER

Optionally, a computer can be used to provide ASCII serial commands to the pan and tilt. Software may be written to output the serial command over the serial port to remotely control the pan and tilt. A computer program is available from the manufacturer that will allow a user to operate the pan and tilt via the serial port of their personal computer. To obtain a copy of this program call the manufacturer at the technical support center.

3.3 SYSTEM TEST

3.3.1 Power “ON” Test

Apply power to the pan and tilt electronics by activating the slide switch on the base of the pan and tilt. The power green power LED should illuminate indicating the unit has DC power. The red LED will flash once during power up.

3.3.2 Pan & Tilt Limit Adjustment

The pan & tilt head has separate adjustments for limiting pan-left, pan-right, tilt-up and tilt-down. The adjustment of these limits is described below.

NOTE: These adjustments are to be made after the controller has been interfaced to the DPT 130. The controller will allow one to move the pan & tilt head and check the pan & tilt limits.

Tools Required, 7/64-inch Allen wrench or ball driver and a small flashlight.

3.3.3 Adjustment Locations

The adjustment locations are on the body or the large “L” shaped main housing of the pan and tilt. There are four (4) adjustment locations. The adjustment screws are located behind small black hole plugs. These plugs must be removed to adjust limits, replace plugs following adjustment procedure. There are two (2) adjustment locations for pan, right and left and two (2) adjustment locations for tilt, up and down. The adjustments on the rear or connector side of the trunnion are for the right and down limits. The adjustments on the front side of the trunnion are for the left and up limits.

3.3.4 Default Limit Settings

The equipment is shipped with the pan limits set at +90 and –90 from forward, the tilt limits set at +20 and –20 degrees from level.

3.3.5 Adjustment Procedure

Remove plug from limit to be set. Position pan and tilt such that the location of the axis you are going to set is not near the position of the limit. The limit adjustment screw should feel easy to turn; if it becomes tight, the end of its travel has been reached. Do not force screw, as permanent damage to the unit will occur. The limits are adjusted by inserting the Allen wrench into the adjusting screw and turning it. Turning in the clockwise direction reduces the amount of travel and turning clockwise increases the travel.

3.3.6 Pan Limit Adjustment

The right pan limits are set at the factory to +90 degrees. The left pan limits are set at the factory to -90 degrees. These angles are referenced from the forward straight ahead position where the

connectors on the trunnion and the base are at the rear of the unit.

3.3.7 Tilt Limit Adjustment

The up tilt limits are set at the factory to +20 degrees. The down tilt limits are set at the factory to -20 degrees. These angles are referenced from the level position.

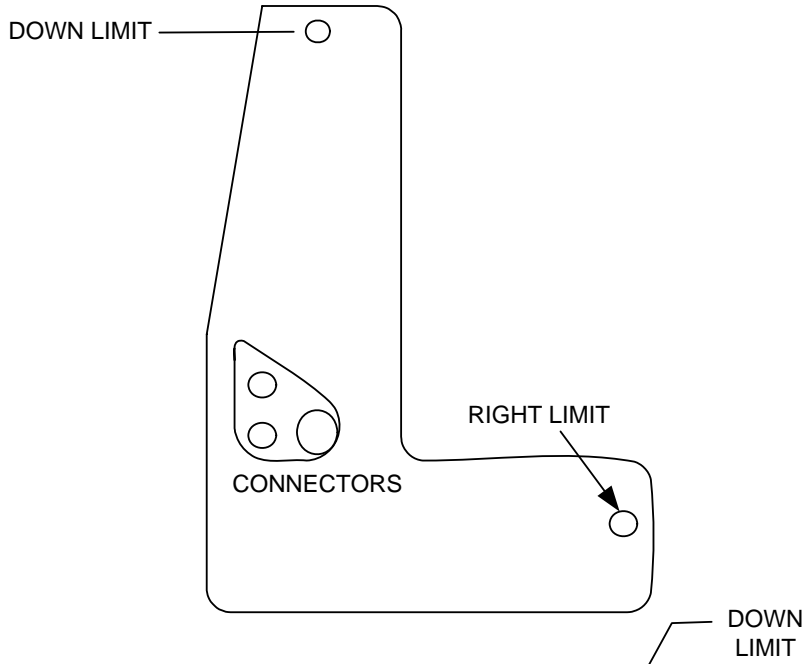


FIGURE 1 REAR VIEW

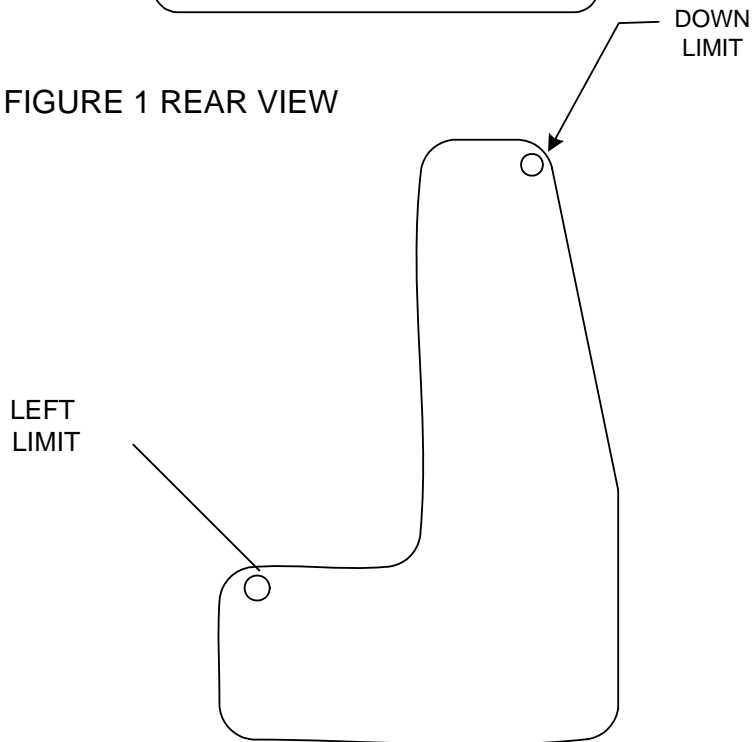


FIGURE 2 FRONT VIEW

3.3.8 Model 55 RCU

The Model 55 is designed to enhance the operation of the RM-LP25U, RM-LP55U or RM-LP57U remote control units (RCU) when used on JVC professional video cameras. This device operates with any JVC camera with the RM-LP55 RCU interface; these cameras include the KY-F560, GY-HD200, and the GY-HD250. The Model 55 uses a simple four-wire bi-directional RS-422 interface to extend the operating distance from 15 feet to up to 2000 feet between a RCU and the remote camera. The Model 55 allows one to concurrently perform RCU functions on up to four (4) cameras at a time. On pan and tilt systems, the pan and tilt controller controls the lens functions on the camera and the RCU performs the balance of the camera settings. Operation of the RCU does not interfere with commands from the pan and tilt system.

On GY-HD200/250 cameras in a pan and tilt system the Model 55 also uses the “Base” chassis at the control room side of a camera system. The cable interface between the base chassis and the camera module is a single four conductor twenty-six gauge, non-shielded cable to each camera station. The base chassis is provided with an A/C power adapter. The base chassis is provided with mounting feet and can be placed on any flat surface. The Model 55 can be configured for between one and four cameras.

In applications with pan and tilt systems, the cabling to the Model 55 “Cam” at each remote camera may also be configured using a single eight conductor cable between the remote cameras and the Model 180 control station. This eight conductor cable provides pan, tilt and lens commands over four of the eight wires. The eight conductor cable resembles the CAT 5 cable used in computer network applications; the ESI part number for this cable is 2060046-xxx; where xxx is the length in feet. The commands between the RCU and the camera are sent over the remaining four conductors in the eight conductor cable. In order to split the two groups of signals out at each end of the eight conductor cable an additional cable is required (one for each end). The cable that splits out the eight conductor cable into two four conductor cables at the control room side is the ESI part number 2060047. The cable splits out the eight conductor cable into two four conductor cables at the camera side is the ESI part number 2060048.

4. SWITCH PANEL, CONTROLS AND INDICATORS

4.1 CONTROLS

4.1.1 Power Switch

A main power switch is provided at the switch panel of the pan and tilt head. When closed this small slide switch provides DC voltage from the pan and tilt power supply to the electronics located within the base of the head. The “POWER” LED will illuminate indicating that power is applied to the pan and tilt head control electronics. The power switch is “ON” when it is in the down position.

4.1.2 Setup Switch Pack

The eight “SETUP” switches are located adjacent to the power indicator on the pan and

tilt switch panel. These switches are labeled one through eight, These switches are not currently used.

4.2 INDICATORS

4.2.1 Power Indicator-Green LED

The Power LED is located adjacent to the power switch on the pan and tilt switch panel. When the green “POWER” LED is illuminated, the power switch is closed and power is applied to the pan and tilt head control electronics.

4.2.2 Data Indicator-Red LED

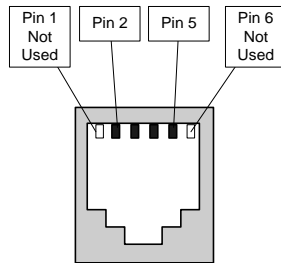
The red “Data: LED is located adjacent to the power switch on top of the power LED on the pan and tilt switch panel. When the “DATA” LED is illuminated, data is being sent to pan and tilt, or pan/tilt is in the process of going to a preset.

5. CONNECTOR INFORMATION

5.1 CONNECTOR PANEL

5.1.1 RCU IN Connector:

The connector labeled “RCU IN” on the connector plate is an RJ-11 type connector. It is an identical connector to the RS-422 connector but is used exclusively for routing camera control signals to a JVC GY-HD 100/110/200/250 camera. In this mode a Model 55 (See Model 55 data sheet on ESI web site) sends the camera control commands to the head in RS-422 format on the four wire cable. The commands are received in RS-422 and converted to TTL levels by electronics in the head. These commands are then sent out the RS-232 connector via the pan and tilt LDCC cable (P/N ACA96052200) to the camera.



The pin assignment for this connector follows:

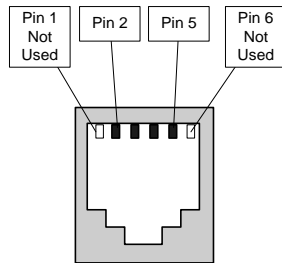
Pin #	Description
2	LDCC Data Out -
3	LDCC Data Out +
4	LDCC Data In -
5	LDCC Data In

5.1.2 Communications Interface

Control of the pan and tilt is accomplished by sending packets of ASCII characters to the head. The standard communications protocol is 9600 baud, eight data bits, one stop bit, and no parity. These commands tell the head and lens which direction and at what rate to move. Preset related commands are also passed over the communication link between the head and the controller. In most cases the communications link is either RS-422 or RS-232.

5.1.3 RS-422 Connector

The connector labeled “RS-422” on the connector plate is a six position, four contact modular jack. This connector provides differential 0 to +5 VDC voltage signals to and from the digital pan and tilt head, this is the most common interface from the controller to the heads. Shown below is the pin-out for the RS-422 connector. The pin assignment for this connector follows:



The pin assignment for this connector follows:

Pin #	Description
2	P/T Data Out -
3	P/T Data Out +
4	P/T Data In -
5	P/T Data In +

5.1.4 RS-232/LDCC Connector

The connector labeled “RS232/LDCC” on the connector plate is a nine pin sub-miniature female (socket) “D” type. This connector provides data for either the Model 55 option or a RS-232 computer interface to the digital pan and tilt head (contact factory for RS-232 interface option). The pin numbers for the RS-232 connector are clearly labeled on the connector. The pin assignment for this connector when used as LDCC option interface follows:

Pin #	Description, LDCC Application
1.	SID1 (TTL Data to Camera)
2.	N/A
3.	N/A
4.	Operate
5.	Ground
6.	N/A
7.	N/A
8.	N/A
9.	SID2 (TTL Data from Camera)

The pin assignment for this connector when used as RS-232 interface follows:

Pin #	Description, RS-232 Application
1.	N/A
2.	RS-232 Transmit Data Out of Pan & Tilt
3.	RS-232 Receive Data into Pan & Tilt
4.	N/A
5.	Ground
6.	N/A
7.	N/A
8.	N/A
9.	N/A

5.1.5 +24 VDC Power Jack

This connector provides the DC power required to operate the pan and tilt head. The connector type is a Switchcraft 722 series. The outer conductor is for 24 VDC, the center conductor is ground from the power source. The pan and tilt head requires a power supply capable of a minimum of .8 amps at 24 DC. The power connection to the pan and tilt head is made via a 5.5 mm X 2.10 mm female DC plug located on the power supply. Caution: the center pin of this jack is ground. The DC voltage is applied via the outer ring of the DC plug.

5.1.6 Video Out

The BNC type video connector provides a convenient means to connect the user's equipment to the pan and tilt head base. The video source originates at the camera's video connector ("VIDEO OUT"). This video is routed to the trunnion (rotating section of head) of the pan and tilt via a 18 inch seventy five ohm video connector. The video is routed to the base of the head using the pan and tilt's cable wrap technique, which is internal to the rotating mechanism of the pan and tilt.

5.2 PAN & TILT TRUNNION CONNECTORS

5.2.1 Video

This BNC type video connector located on the trunnion provides a means to connect the user's camera to the pan and tilt head. Note that this connector is not labeled. The video source originates at the camera's video connector ("VIDEO OUT"). This video is routed to the trunnion of the pan and tilt via a short 18 inch video cable and this connector. The video is routed to the base of the head using the pan and tilt's cable wrap technique which is internal to the rotating mechanism of the pan and tilt.

5.2.2 Camera Power

A 2 pin camera power connector is provided for optionally powering the camera from the pan & tilt head. This optional feature delivers 25 watts of 12VDC power for the camera. Contact the factory for information on this option.

5.2.3 Hirose 12 pin Circular

This connector which is located on the trunnion below the video BNC connector provides a means to connect the lens control signals from the pan and tilt head to the lens. The output pin assignments for this connector are jumper selectable from within the pan and tilt base. The figure below illustrates the pin lay out for the twelve pin Hirose teleconferencing configuration. Note that this connector is not labeled.

The pin assignments schemes for teleconferencing lenses with preset capabilities are shown in the table below:

12 Pin Hirose Connector	Teleconferencing *
8	Focus
9	Zoom
4	Auto/Manual Iris
5	Iris
2	Zoom Select
1	Focus Select
3	Ground

5.3 DPT JUMPER INSTALLATION.

It will be necessary to disassemble pan and tilt mechanism from base of DPT unit to gain access to the configuration jumpers. The top board will be accessible as soon as the pan and tilt mechanism is removed. The following steps describe reconfiguring the jumpers. The equipment necessary for this procedure are a No. 2 Phillips screw driver a small pair of needle nose pliers and a 2" x 8" x 8" block of some type. Verify the DC jack providing power to the unit has been removed prior to proceeding.

- ✓ Do not proceed without explicit instructions from ESI.
- ✓ Position the pan and tilt at the parked or normal position. This position is defined as the camera mounting plate being horizontal to the work surface and the two video BNC connectors on the pan and tilt being on the same side facing the individual working on the unit.
- ✓ Remove the four Phillips head screws fastening the pan and tilt mechanism to the base.
- ✓ Position the block directly behind the pan and tilt unit.
- ✓ Remove pan and tilt mechanism by lifting slightly and rotating away from you, this step will leave the pan and tilt mechanism lying on the side away from the BNC connector behind the base.
- ✓ The three position jumper posts will now be accessible.
- ✓ Place the pan and tilt mechanism back on the base.
- ✓ Replace the four Phillips head screws fastening the pan and tilt mechanism to the base.

6. INSTALLATION

6.1 TOOLS AND EQUIPMENT NEEDED

- Screwdriver and Mounting Screws: The only tool needed to install the DPT 130 is a screwdriver for securing the pan & tilt base to its mount.
- #2 Phillips Screwdriver: To be used if access into the Electronics module is required.
- Customer furnished video cable from pan & tilt head to the user monitor.

6.2 STANDARD INSTALLATION

To get optimum performance from any pan and tilt it is important to have the weight of the camera and lens balanced. This balance assures the pan and tilt will go in the up and down directions at the same speed. Returning to presets accurately is also achieved when the load on the pan and tilt is balanced.

6.2.1 Balance the Camera and Lens

To balance the load, determine the balance point of the camera and lens assembly. Mark this point on the camera/lens with a small piece of tape. Position the camera and lens on the pan and tilt mounting plate as shown with the center point of the load positioned over the center point of the center point of the tilt axis.

Place the camera/lens/adaptor plate on a flat surface. Place a pencil or other small round cylindrical item under the teleconferencing lens adaptor plate as shown.

Move the camera/lens/adaptor plate laterally, both left and right to determine the balance point of the assembly. This the point at which the assembly would rock easily on the pencil resembling a seesaw for children.

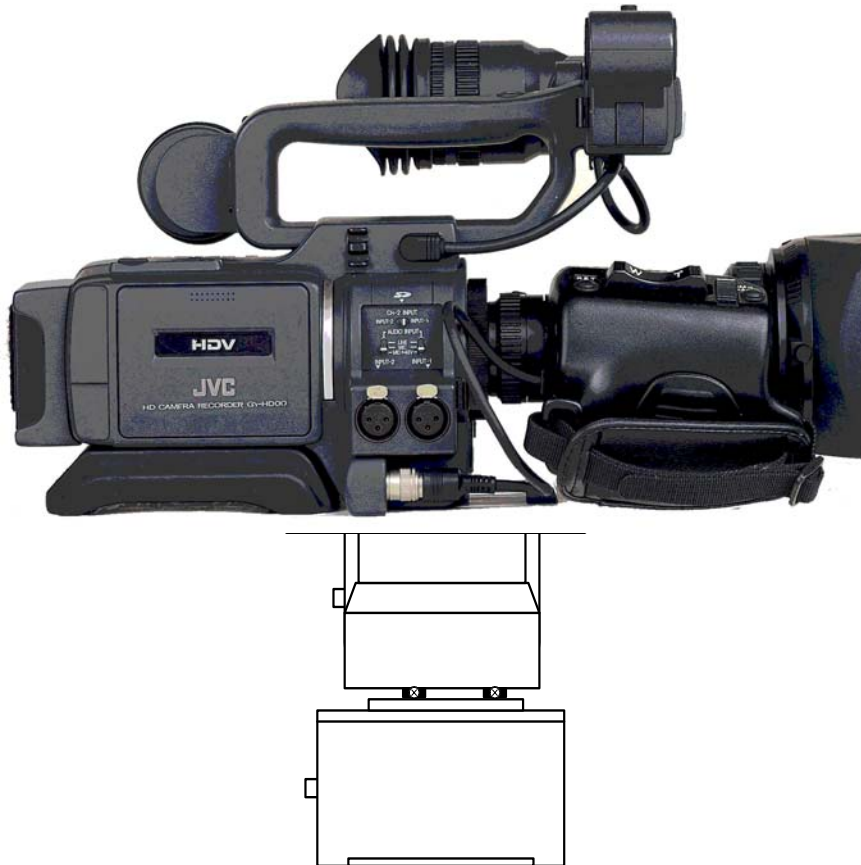
Using a small piece of masking tape or “post it note” mark the balance or pivot point on the lens.

Remove the pencil or pivot item.

Place the camera/lens/adaptor plate on the pan and tilt as shown below. Position camera/lens/adaptor plate assembly such that balance point is located directly over center point of the tilt axis of the pan and tilt head. Install mounting screw and washers at this time, **Do not** tighten.

Move the camera/lens/adaptor plate assembly to the right (forward) approximately 1/8 inch. The mounting screw should be tightened at this point. Remove the tape marking the pivot point at this time.

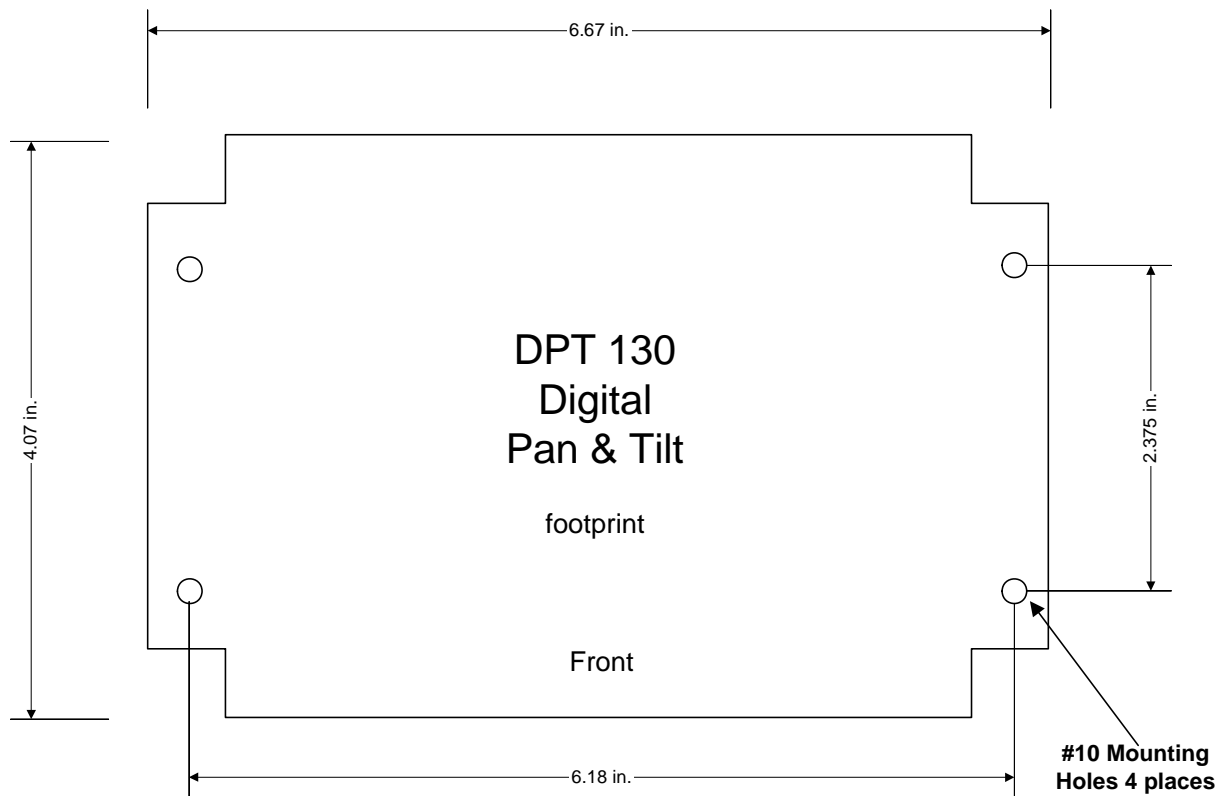
BALANCE POINT
OF CAMERA & LENS
OVER CENTER OF P/T



6.3 DPT 130 FOOTPRINT DRAWING

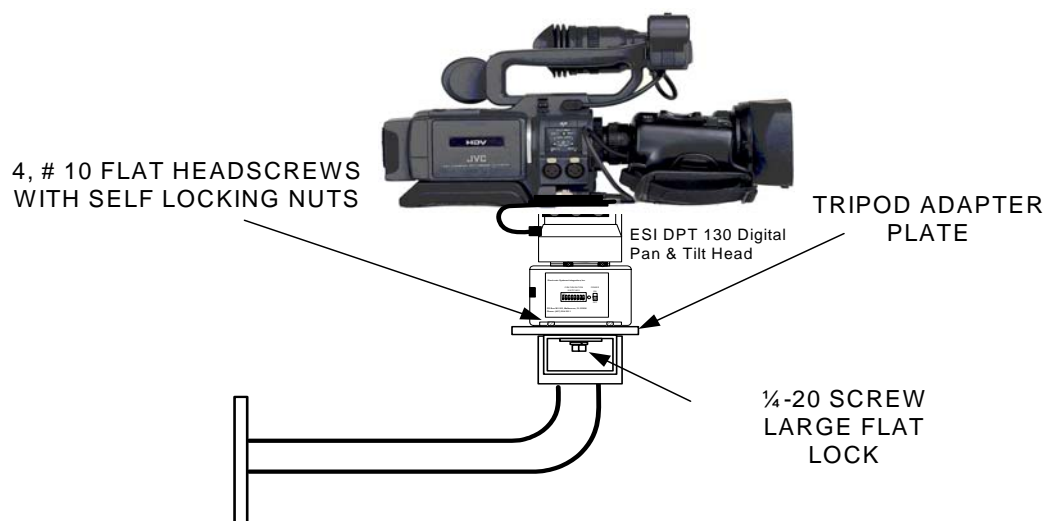
The required hole pattern for securing the pan & tilt head to a mounting surface is a symmetrical 2.375 inch by 6.18 inch pattern. Four (4) mounting screws are needed to mount the pan & tilt head. Care is to be taken to mount the pan & tilt in the proper orientation. Note the location of the connector plate on the base of the pan & tilt head. This surface is the rear of the pan & tilt assembly. The rear of the trunnion portion of the pan & tilt is the surface with the twelve pin Hirose circular connector and the upper of the two BNC (Video) connectors. The pan & tilt head is to be secured to it's mounting location using No. 8 or No. 10 screws consistent with the mounting material. The mounting screws and mounting surface are to be provided by the installer.

Shown below is the physical mounting dimensions for the pan and tilt head. The unit can be fastened to any flat surface using #8 or #10 wood or machine screws.



Make mounting holes without threads and large enough for a #10 screw

6.4 WALL MOUNT INSTALLATION



6.5 TRIPOD INSTALLATION

The P/N for the tripod mounting plate for the DPT 130 is: 2050259



6.6 CABLING

6.6.1 Attach Video Cable, User Equipment

Attach the user's video cable to BNC on the pan and tilt base. This cable provides the video interface to the customer equipment from the pan and tilt/camera/lens assembly. This user provided cable is to be connected between the "VIDEO IN" connector on the customers equipment and the BNC "VIDEO" connector on the base of the pan and tilt head.

6.6.2 Attach 18 Inch Coax Video Cable

Attach the Video Cable (18 inch coax video cable) between the camera and the pan and tilt trunnion connectors. The trunnion connector on the rotating section of the pan and tilt head.



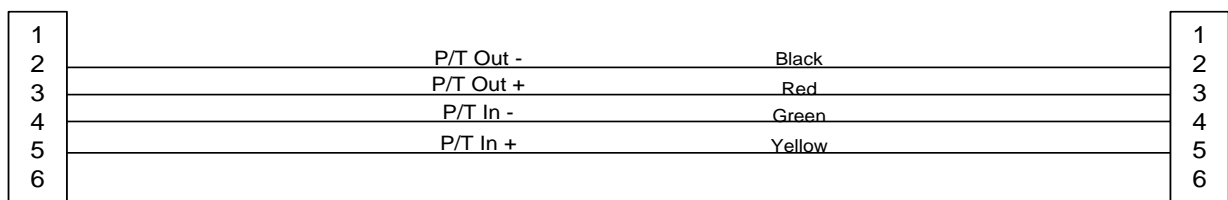
The 18 inch video cable (P/N ACA095018700) illustrated above provides the video interface from the camera to the pan and tilt trunnion assembly. This provided short video cable is to be connected between the "VIDEO OUT" connector on the rear of the camera and the BNC connector on the trunnion (upper portion) of the pan and tilt head.

6.6.3 Attach Interface Cable to Pan and Tilt.

The interface between the controller or computer and the pan and tilt head is accomplished using a RS-422 interface cable. The pan and tilt head will automatically be configured for either voltage interface based on which connector and cable that it is receiving data from.

6.6.4 RS-422 Cable Installation.

This interface is the normal connection to the digital controllers. The figure below illustrates a typical RS-422 interface cable. Each camera station in the system must be connected to the controller via a RS-422 cable. Connect one end of RS-422 to the connector on the rear of the controller or computer interface. Connect the other end of the cable to the connector on the pan and tilt head labeled "RS422". Note: pins 1 and 6 are not used.



6.6.5 RS-232/LDCC Cable Installation.

This connector is used in different configurations, either as a RS-232 serial control for the pan and tilt or as the port for camera control functions when used in the RCU or LDCC mode.

The RS-232 cable provides the control interface between the DPT 130 pan and tilt head and the controller if an RS-232 interface is desired. Figure 8.3 illustrates a typical RS-232 cable.

Connect the plug (male) end of RS-232 to the nine pin “D” connector on the pan and tilt head. Connect the other end of the cable to the connector on the RS-232 controller or computer.

For the camera control application connect the DPT LDCC/RCU cable (ACA096952200) between the 9 pin D connector on the base of the DPT 130 labeled “RS-232/LDCC” and the GY-HD250 camera connector labeled “REMOTE”. Inspect the rubber boot on the 6 pin mini DIN connector that connects to the camera “REMOTE” connector to insure the rubber boot did not slide down the barrel of the connector preventing a good connection.

6.6.6 Power Cable Installation

Attach the power cord plug on the power supply provided with the pan and tilt head to the DC jack on the connector panel labeled “+24 VDC POWER”.

6.6.7 RCU IN Connector (Used with Model 55 Option Only)

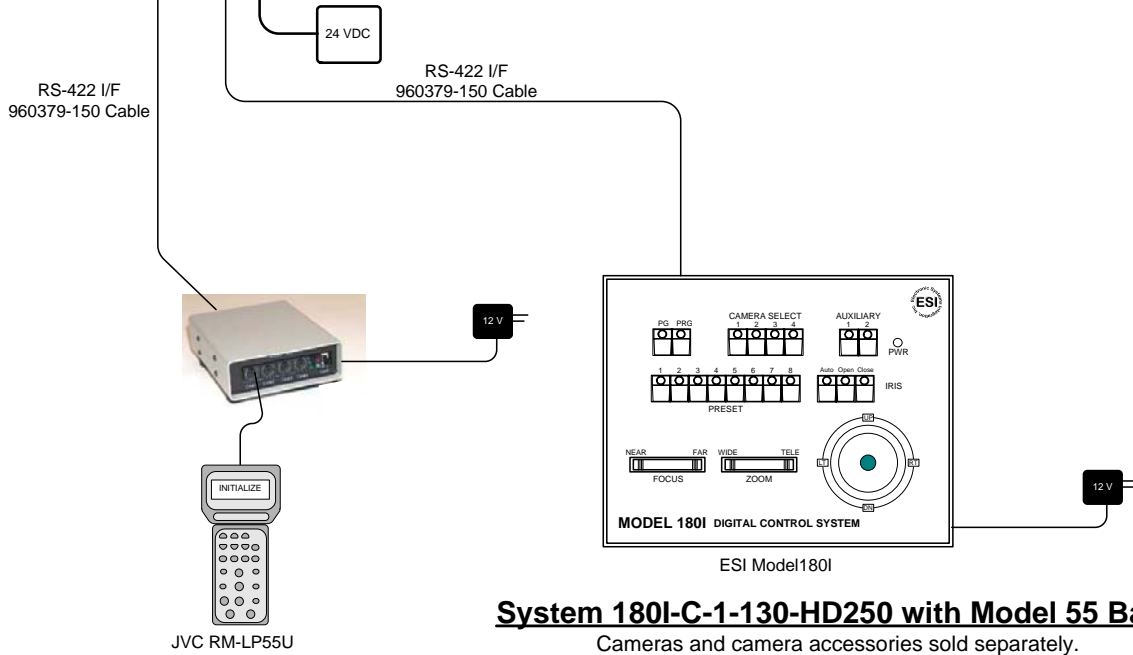
This connector is not used unless a Model 55 Base has been designed into the system. No connections should be made to this connector during normal setup. In the event this connector is to be used, a cable from the Model 55 base is connected to the “RCU IN” connector on the DPT 130 connector panel.

RCU commands are then transferred between the camera and the remote control unit via the Model 55 and its associated cables.

JVC GY-HD250U and
Fujinon Th17x5BMD



ESI DPT 130 Digital
Pan & Tilt Head



System 180I-C-1-130-HD250 with Model 55 Base
Cameras and camera accessories sold separately.

6.6.8 Lens Control Cable Installation

6.6.8.1 Standard Teleconferencing Lens

Attach the 12 pin female Hirose connector of the lens to the 12 pin male Hirose on the trunnion of the pan and tilt.

At this time there will be one cable on the teleconferencing lens not connected. Plug this 12 pin male Hirose connector into the female “LENS” connector on the rear of the camera.

6.6.8.2 LANC Lens Configuration

TBD

6.6.9 DPT 130 LDCC Cable Installation (Used with Model 55 Option Only)

Attach the 9-pin D-Sub male connector of the DPT 130 LDCC cable (ACA096052200) to the “RS232/LDCC” connector on the base of the pan and tilt. Connect other end, 6-pin male mini-DIN to “REMOTE” connector on rear or side of the camera.

7. TROUBLE SHOOTING

7.1 PAN & TILT

Problem: No pan/tilt or lens functions.

Verify proper power is supplied to head.

Verify data is being sent to head.

7.2 LENS CONTROL

Problem: No zoom or focus.

Verify lens control cable is plugged in pan and tilt head.

Verify lens control cable is plugged into correct Hirose cable on lens. Verify the gender of the connectors. It is possible to mix these up.

7.3 MODEL 55 OPTION

Problem: No RCU functions.

Verify the Model 55 Base interface cable is plugged into the “RCU IN” connector

Verify RM-LP55 is plugged into the proper channel of the Model 55 Base.

Verify the Model 55 Base power switch is on and the RM-LP55 power switch is on.

Verify Model 55 cable (P/N: ACA096052200) is attached to “REMOTE” connector on the camera.

Inspect the rubber boot on the six-pin mini-DIN connector; insure that boot did not slide down barrel of connector preventing a good connection. Verify cable end with 9 pin D-Sub is connected to RS232/LDCC connector on base of pan and tilt.

There are several set up items on the controller which will also provide these symptoms. These are listed in the controller operation manual.

7.4 PRESETS

Problem: Camera does not return to preset locations consistently.

Verify camera and lens are balanced properly.

Verify cable assemblies do not restrict camera and lens movement.

Problem: Red LED does not extinguish when going to a preset.

Verify camera and lens are balanced properly.

7.5 TECHNICAL SUPPORT

For technical assistance call (321) 956-0095 or go to web site at esi-inc.com. Have serial number of unit and description of camera and lens on pan and tilt head.

7.6 RMA PROCEDURE

Prior to returning equipment for service, please call (321) 956-0095 for an RMA number, acquire serial number from equipment prior to calling ESI. Please note the RMA number on the shipping label and enclose the following:

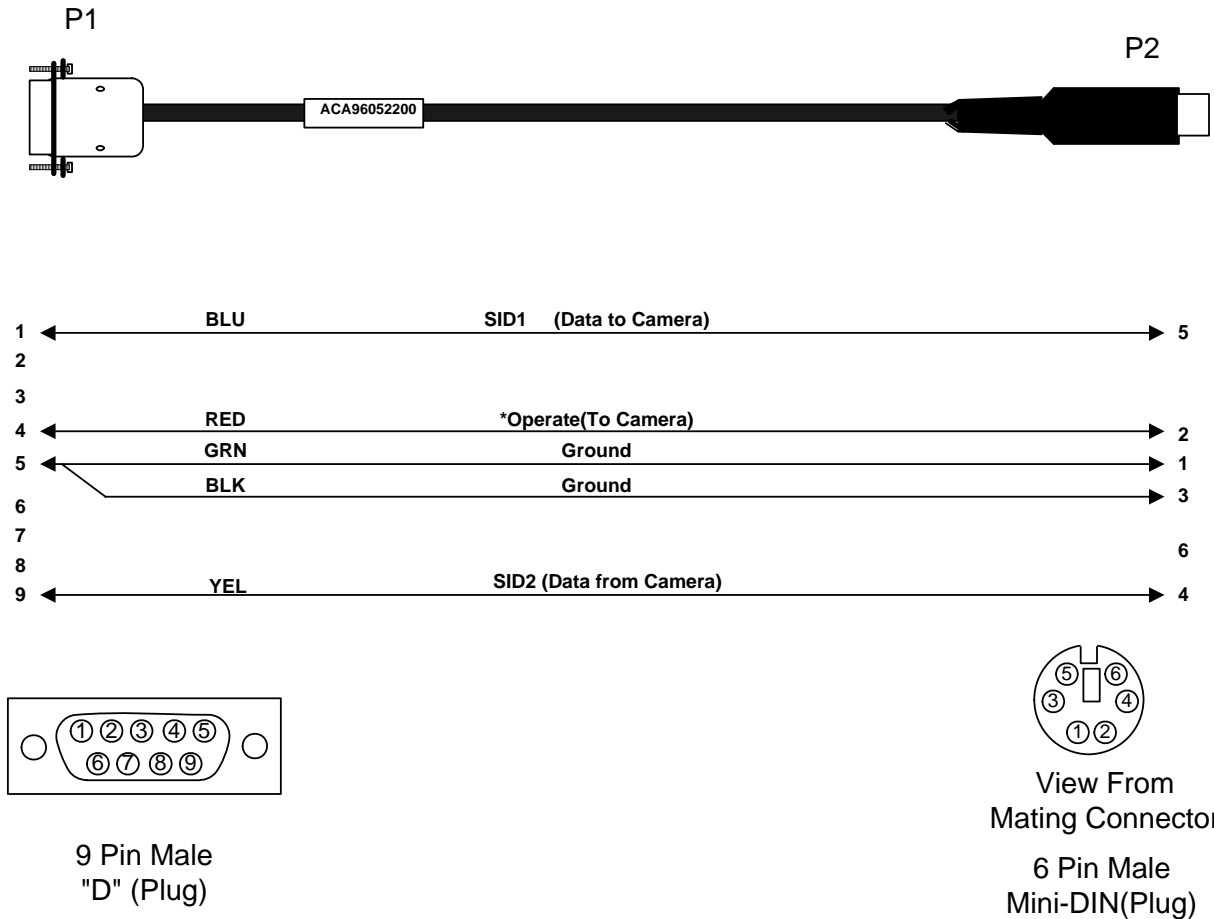
- Document describing the problem
- Return address and point of contact address and phone number information

Ship to:

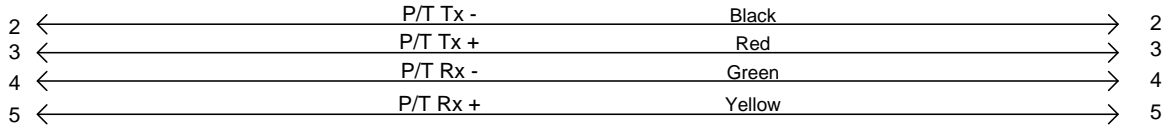
Electronic Systems Integration, Inc.
1055 South John Rodes Blvd.
West Melbourne, FL 32904
Attention: Service Dept

8. CABLE DRAWINGS

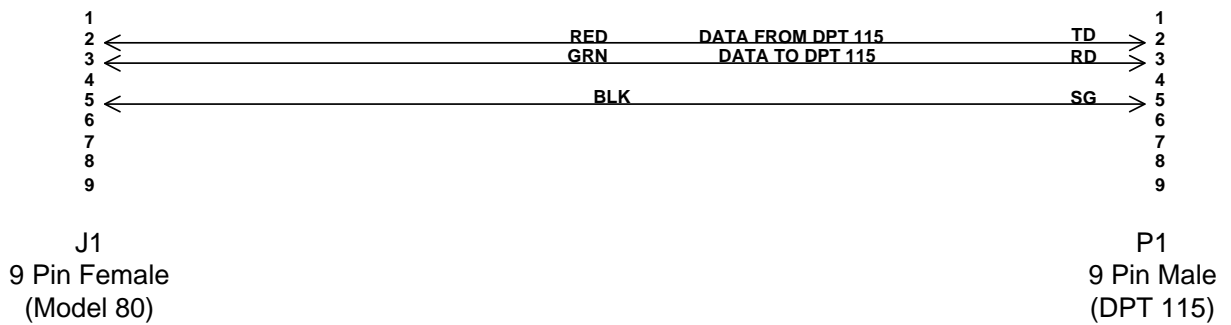
8.1 PAN & TILT LDCC CABLE DRAWING, P/N: 960522



8.2 RS-422 CABLE DRAWING



8.3 RS-232 CABLE DRAWING



9. SERIAL COMMAND LIST

Commands or Actions used to control the DPT 130 Digital Pan & Tilt Head.

Command	Letter	Hex
Joystick		
Up	U	55
Down	D	44
Left	L	4C
Right	R	52
Focus		
Near	N	4E
Far	F	46
Zoom		
Wide (Speed)	W	57
Wide (Position)	w	77
Telephoto (Speed)	T	54
Telephoto (Position)	t	74
Iris		
Open	O	4F
Close	C	43
Auto	A	41
Auxiliary		
Rotate Right	S	53
Rotate Left	K	4B
Preset		
Preset	P	50
Communication		
Carriage Return	CR	0D
Inquiry	ENQ3	B3

10. GLOSSARY

- Base: Bottom portion of the pan & tilt head which contains the control electronics, the base does not move.
- BNC: A coax connector type used to interface video sources
- CCTV Lens: A lens in which the zoom and focus motors are driven directly from the DPT 130 lens control electronics.
- Controller: The ESI Model 180 Pan & Tilt and Camera/Lens Controller.
- LED: Light Emitting Diode.
- Limit Switch: Switches which disengage the electronic drive when the pan & tilt head reaches an adjustable travel limit position, there are two for pan and two for tilt. These limits are set when the pan and tilt head is installed.
- Teleconferencing Lens: A lens in which the zoom focus, and iris control electronics are located within the lens. The DPT 130 supplies a single wire interface to each of the zoom focus, and iris electronic inputs.
- Trunnion: Rotating top portion of the pan & tilt head.