PTZOptics

PT-BRDCSTR

Broadcast Camera Controller

*camera not included

User Manual

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Contents

1   Introduction

Thank you for using the PT-BRDCSTR Broadcast Camera Controller.

This manual introduces the installation, functions and operation of the PTZOptics PT-BRDCSTR-L (-E or –P) Broadcast Camera Controller. Prior to installation and usage, please read this manual thoroughly.

Precautions

This product may only be used under specified conditions to avoid damage to the camera and the PT-BRDCSTR.

- To prevent the risk of electric shock, never open the product housing. This is only to be performed by a qualified technician.

- Do not exceed the specified limits for temperature, humidity or power.

- Use only recommended accessories, otherwise malfunction or product damage may occur.

- Always permanently mount the PT-BRDCSTR to a stable surface (e.g. wall, ceiling or Heavy Duty Tripod) before mounting the camera on the PT-BRDCSTR to avoid damage to equipment.

- Be sure to protect the power cord during installation and while in use.

- Maximum specified combined camera/lens weights must not be exceeded on the camera mounting arm (side load: 11 lbs, top load: 6 lbs).

- Do not manually operate the pan or tilt of the PT-BRDCSTR or it may cause permanent damage or malfunction.

- When shutting down for short periods, the camera alone may be powered down. For long periods without disconnect power from the PT-BRDCSTR.

- Do not expose the PT-BRDCSTR to rain or moisture.

- If necessary to clean the PT-BRDCSTR: be sure to disconnect the power first, do not use spray cleaners, do not use with abrasive cleaning agents, use soft cloth (only dampened – not dripping) and a mild detergent only.

- Please contact PTZOptics prior to using the PT-BRDCSTR if any of the following should occur:

  o Power, control line is damaged.

  o Mains power is wrong type, voltage or frequency.

  o Unit is dropped or has loose parts (internal or external).

  o Device appears to be functioning abnormally.

2   Notes

- Electric Safety - Installation and operation must be done in compliance with any and all applicable local, regional or universal safety standards and ordinances.

- Transport - Avoid stress, vibration and contact with fluids during transport, storage and installation.

- Power Supply – Use only the power supply provided with the PT-BRDCSTR. (for ref only: 19VDC / 4.75A).

- Installation - Make 100% sure that the camera connection interface and the PTZ-BRDCSTR connection interface match properly before completing the installation and powering the system on.

- Installation - Please ensure there are no obstructions within the range of PTZ rotation (including any lens extension). Damages caused by collision are not covered under warranty.

- Any dismantling of the PTZ-BRDCSTR will violate the warranty on this product.

- Owner assumes all responsibility for any damage to a camera caused by mounting camera on or using camera with the PT-BRDCSTR.

- It is possible but not likely that the electromagnetic field may affect the image of the camera.

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3 Features

- High accuracy position sensor allows pinpointing the camera zoom position with no accumulated error.

- Quiet motor.

- Supports Sony, Panasonic, Canon and other broadcast handheld cameras (compatibility of –L, –E or –P is model dependent).

- Smart PTZ speed calculation allows for stable motion with no stuttering.

- Provides a range of available DC remote power supply settings to remotely power the camera (camera model dependent).

- Provides up to 255 pan/tilt precision presets.

- 0.1°/s Variable speed control for P/T head and lens with PTZ speed as low as 0.1 °/s.

- Built-in voltage regulator circuit, provides effective protection of the camera. Detection of overvoltage, undervoltage or overcurrent will not allow the PT-BRDCSTR to remote power the camera.

- Supports control of different brands of cameras and different models of PT-BRDCSTR within the same control network.

    o Supports 1:1, 1:Many, Many:1 and Many:Many (i.e. Joysticks/KBs:Cameras).

- Pairs ideally with the PTZOptics model PT-BRDCST-JOY joystick/keyboard.

- Supports VISCA and Pelco-D control protocols.

- Supports software adjustable damping (providing variable head acceleration settings for improved image stability – see Appendix 1).

- Supports wall, ceiling and tripod mounting.

- Cameras can top load or side load.

- The PT-BRDCSTR has it all: small size, big load capacity, low operation noise.

4   Product Specification

Model	PT-BRDCSTR-L (or -E or –P)
Name	Broadcast portable camera remote PTZ head
Operational Specifications	
Compatible Cameras	**'-L' model:** Sony PXW-X160, Sony PXW-Z100, Sony PXW-X180, Sony X180, Sony HXR-NX3, Sony HXR-NX5C, Sony HXR-NX70C, Sony HXR-MC2500, Sony HXR-MC1500C, Sony NEX-FS700RH, Sony PXW-FS7, JVC GY-HM850E, JVC GY-HM890E, JCV GY-HM600EC, JCV GY-HM600KX, JVC GY-HM650EC, JVC GY-HM750E (Requires DIN 6 to 2.5mm LANC jack converter), JVC GY-HM790E (Requires DIN 6 to 2.5mm LANC jack converter), Canon XF305, Canon XF300, Canon XF205, Canon XF200, Canon XF105, Canon XF100, Blackmagic Design Studio Camera HD, Most models with the remote lens control jack (2.5mm LANC) **'-P' model:** Panasonic AG-HPX173MC, Panasonic AG-HPX260MC, Panasonic AG-HPX265MC, Panasonic AJ-PX285MC, Panasonic AJ-PX298MC, Panasonic AG-HVX200MC, Panasonic AG-HMC153MC, Panasonic AG-HVX203AMC Panasonic AG-AF103A, Panasonic AG-AC130A Panasonic AG-AC160A, Panasonic AG-AC90AMC Most models with the remote lens control jack (2.5mm zoom) (3.5mm focus iris) **'-E' model:** Sony PXW-X20, Sony PXW-EX280, Sony PXW-EX260, Sony PMW-EX1(R), Most models with remote control lens jack (8-pin mini)

Compatible Joystick/Keyboards	PTZOptics: PT-BRDCST-JOY Sony: RM-BR300, AWS-G500 etc. Panasonic: AW-RP555, AW-RP50 etc. VHD: VHD-KB11 (switcher: VHD-SW0805) VISCA Protocol controller (via RS232, RS485, RS422) Pelco-D Protocol controller (via RS232, RS485, RS422) Computer (via RS232, RS485, RS422)
Rotation Ranges	Pan (Horizontal) = 280° total (-80° to +200°)* Tilt (Vertical) = 90° total (±45° or 90 to 0° or 0 to -90 or -45 to -135)* *Note: Smaller horizontal and vertical range limits are available via control commands.
Rotation Speed	Horizontal: 0.1 to 25°/s (24 increments)* Vertical: 0.1 to 20°/s (20 increments)* *Note: System also includes a hardware set Fast/Slow rotation speed setting that modifies the control command settings.
Presets	255
Remote Camera Power	Supported
Camera Power Protection	Over-voltage, under-voltage, over-current protection
External Camera Power Supply	Supported
Controller Distance	3900 ft. (1200m) maximum

Maximum Addressable Systems	7 (VISCA)
	254 (Pelco-D)
	*Expandable
Communication Protocols	VISCA, Pelco-D
Max Camera Load	Side load：11 lbs. (5kg)
	Top load：6.6 lbs. (3kg)
Control Ports	RS-485, RS-422, RS232
Physical & Electrical Specifications	
Input Voltage	100-240 VAC @ 50/60Hz / 19VDC
Input Current (Max)	1.6AAC / 4.75ADC
Operating Temperature	32°F to 104°F (0°C to 40°C)
Storage Temperature	-4°F to 140°F (-20°C to 60°C)
Size	W x D x H: 5.32"/8.88 w/ arm x 6.44" x 9.94"
	(135mm/226 w/ arm x 164mm × 150mm × 253mm)
Weight	9.7 lbs (4.1Kg) without camera

Specific Feature Limitations by Model

Exact features of each model will vary and may also be limited by the specific lens in use with the camera. Some functionality requires custom programing from the factory:

Function	E Model	P Model	L Model
Pan Control	supported	Supported	Supported
Tilt Control	Supported	Supported	Supported
Variable Speed Zoom	Supported	Supported	Supported
Focus Sensor	Supported	Supported	--
Focus Switch	--	Supported	--
Focus Control	--	Supported	--
Iris Switch	--	Supported	--
Iris Control	--	Supported	--
Start and Stop Recording	supported	Supported	Supported
Playback Detection	Supported	Supported	Supported
Menu	--	--	Supported
PTZ DC Power	Supported	Supported	Supported
Command Switch	Supported	Supported	Supported

5 Parts and Functions
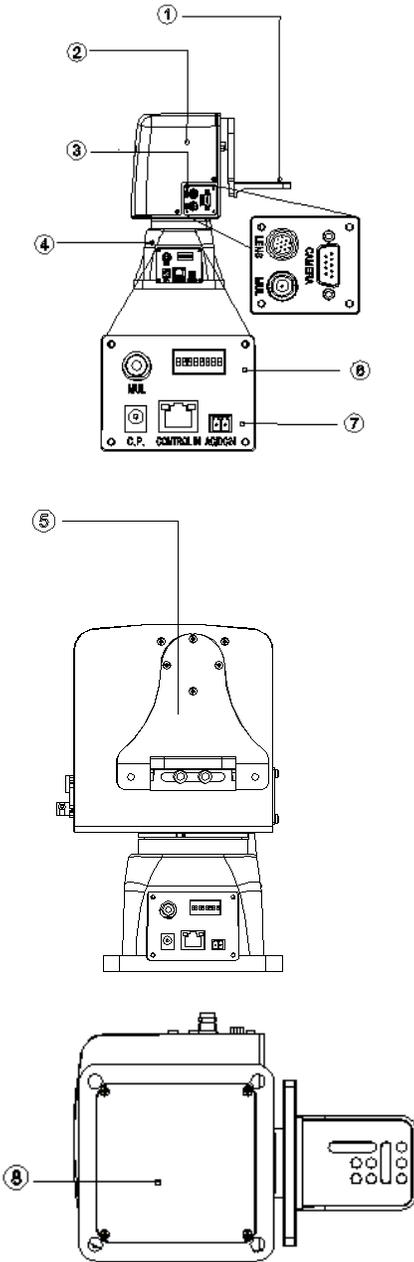
1. Camera Mounting Tray

2. PTZ Head

3. PTZ Head interface board
    MUL: Camera Video Connector (3G-SDI, HD-SDI, CVBS)
    LENS: Camera Lens Interface Connector
    CAMERA: Camera Remote DC power Connector
       (DB9 Connector – Pin-4: 5V, Pin-7: +13V, Pin-8: GND)

    CAUTION! If PT-BRDCSTR is supplying remote DC power to the camera, be <u>absolutely</u> sure of the connector and polarity prior to connecting the PT-BRDCSTR power to the mains. Damage to the camera from improper power connection is not covered by PT-BRDCSTR warranty under any circumstance.

4. PTZ base

5. PTZ side arm

6. PTZ base video interface
    MUL: Video System Video Connector (HD-SDI, CVBS)

7. PTZ base power and communication interfaces
    Dip Switches: Camera ID (1-3), PT Speed (4), PT Direction (5, 6), Serial Control Protocol (7), Remote Camera Power (8)
    Unit Power: PT-BRDCSTR power interface (19VDC power supply provided.)
    CONTROL IN: RS485/RS422/RS232 interface (8p8c aka RJ45)
   C.P.: Camera External DC Power interface.
    When remote camera power is being used, this port may be connected to a dedicated camera power supply. Through this port the external camera power supply will be fed to the camera interface board "CAMERA" port, as described in 3 above. (see Installation section in this manual - bullets 5-7 for external power configuration).

8. Base cover plate

6 Supplied Equipment & Accessories

The following equipment is supplied with the unit:
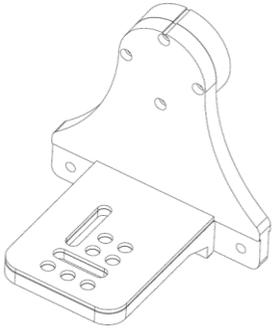
Qty 1   PTZ side arm

Qty 1   Camera mounting screw

Qty 1   19VDC power supply with N.A. type 'A' power cord

Qty 1   Lens control cable (exact cable varies by model)

Qty 3   Socket head wrench (three sizes)

Qty 4   Socket head cap screw (for mounting PTZ Head)

Qty 6   M3x8 Philips head screws (for spare head cover plate screws and for mounting sensor wheel – used on E & -P only)

Qty 1   User manual

Qty 1   Tripod Adapter (use Heavy Duty Tripods only!)
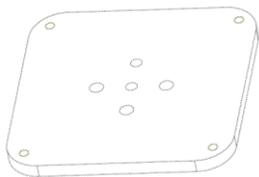
Qty 1   Focus sensor (included with –P and –E models)
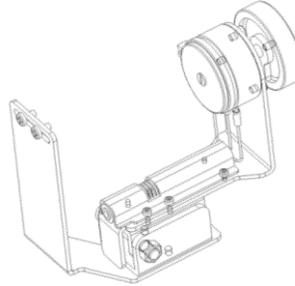
To ensure a complete and successful installation, you may also need to purchase the following accessories:

- **Wall Mounting Bracket: PT-BRDCST-WM**
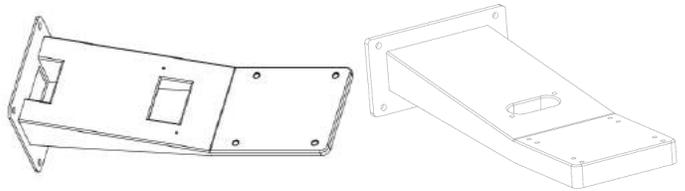
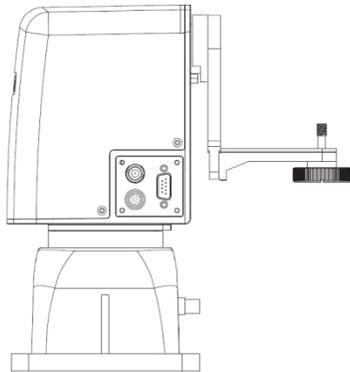- **Multi-function controller: PT-BRDCST-JOY**

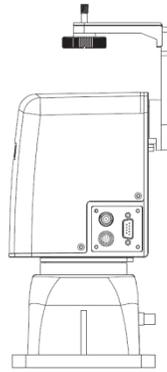- **Multi-function switcher: TBD** (For manual auto tracking, switching and multi PTZ devices control)

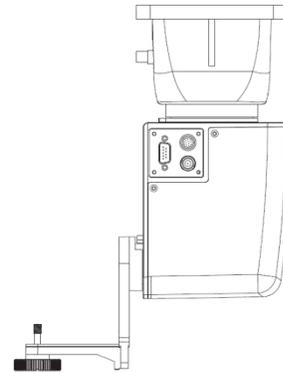# 7 Installation (Use a qualified and knowledgeable AV contractor to install)

Step 1: Assembly

The PTZ side arm and camera tray allow for three different orientations for the camera to be mounted on the head, as show below:

|		
Standard Side Load	**Standard Top Load**	**Inverted Side Load**

Installation Note Regarding Effective Tilt Range:

The head allows for a total relative tilt range of 90° but is adjustable for a number of effective absolute tilt ranges (±45° or 90 to 0° or 0 to -90° or -45 to – 135°). Therefore, when mounting the side arm using the 4 socket head cap screws, be sure to mount the side arm in the correct position to achieve your desired absolute tilt range:
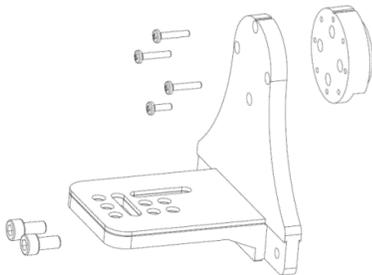
CAUTION: Make sure that these 4 screws are tightened properly before mounting the camera on the tray. Never attempt to remove or adjust the side arm while a camera is mounted to the tray.

Step 2: PTZ settings

There eight Dip Switches in the base interface of the PT-BRDCSTR.   They are defined as follows:
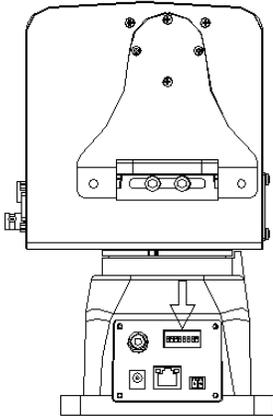
1.   Set PTZ Head address (Dip Sw 1-3)

The default system maximum quantity = 7 (If needed, this may be expanded to an unlimited quantity).

The PTZ address can be set using Dip switches 1 through 3, as follows (ON is 1, OFF is 0, i.e. binary):

Dip Switch Position 321 (note binary positioning)	PTZ Address Setting
000	0
001 (*Default)*	1
……	……
110	6
111	7

Note: When PTZ Address is set to 0, it will listen to commands sent to all addresses between 0 and 7 (useful for debugging)

2.   Set PT Speed (Dip Sw 4)

The PT Speed setting allows for faster or slower overall head movement. It affects all controller Pan/Tilt speed commands, slowing all speed settings by about 40%. The PT Speed setting can be set using Dip switch #4 (ON is Slow - *Default*, OFF is Fast)

3. PTZ Direction (Dip Sw 5-6)

Dip Switch 5 is used to set the pan control direction

Dip Switch 6 is used to set the tilt control direction

SW5		SW6	
ON	OFF *(Default)*	ON	OFF *(Default)*
Reverse	Normal	Reverse	Normal

4. Serial Control Protocol (Dip Sw 7)

The PT-BRDCSTR supports two control protocols. The user can select the control protocol required by setting SW7.

SW7	
OFF *(Default)*	ON
VISCA	Pelco-D

5. External Camera Power Supply Mode (Dip SW 8 - also see Note 6, regarding internal power switch and Note 7)

| SW8	
OFF	ON *(Default)*
Camera is not powered through PT-BRDCSTR	Remote Power from Head's built-n power supply or C.P. port

Note: When operating in "Remote Power from Head" mode (i.e. SW8 = ON), cycle through the remote commands, during which time the PT- BRDCSTR will determine whether the camera voltage is within the standard range of the PT- BRDCSTR's remote power system. If the camera is not within the standard voltage range, PT-BRDCSTR will not turn on remote power to the camera. In this case, you will need to use the "Camera is not powered through PT-BRDCSTR" option (i.e. SW8 = OFF). In either case, the PT-BRDCSTR does not necessarily include your specific camera's correct DC power connector.   A custom DB-9 to camera power cable may need to be sourced or constructed.

6. Camera Remote Power Internal/External selection (also see Note 5, regarding external power switch and Note 7)

The PT-BRDCSTR's remote-camera-power module's output voltage has a range of 10.8VDC – 13.2VDC and an available amperage of 2A,

intended to meet the power requirements of most cameras on the market. To provide compatibility with cameras outside of this range (voltage mismatch, higher amps), the PT-BRDCSTR provides the option of using an external power adapter to power the camera through the PT-BRDCSTR.   This must be configured using the internal Dip switch "Internal-SW1"

The Internal Dip switch location is shown below:
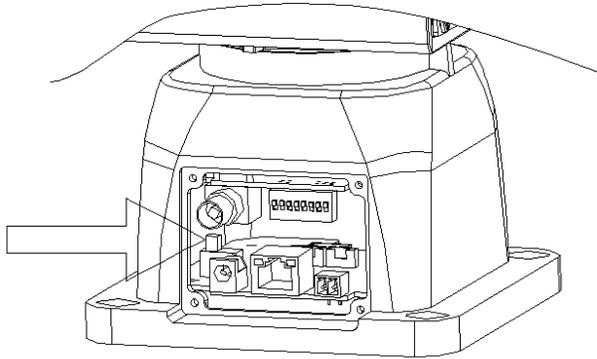
Internal Dip Switch - Right (remote camera power): Camera will use the internal DC power supply of the PT-BRDCSTR. The available camera maximum operating current is 2A.

Internal Dip Switch – Left (external camera power): Camera will be powered by an external DC power supply through the base of the PT-BRDCSTR's "C.P." port. The maximum current allowable is 2A.   The allowable voltage range is 6VDC - 20VDC.

CAUTION! When Dip switch is set to left (i.e. external camera power), you must be sure to maintain the proper polarity at the "C.P." input terminal: (pin is positive, shield is negative).

7.   You may also ignore both power configurations in Notes 5 and 6 and simply power the camera directly, using its own power supply. In this configuration, power commands sent via a controller will not be heard by the camera.

Step 3: Installing PTZ Head

Before the PTZ Head is installed, make sure to follow the instructions below:

1.   Whether it is a wall or ceiling mount, make sure that the wall or ceiling and bracket mounting hardware are able to withstand a minimum of five times the weight of the head plus camera and any other mounted other accessories.

2.   If using a tripod head, use only a tripod that is rated for the purpose and the total weight involved. Use an adapter that properly and securely mounts the head to the tripod.

3.   After the PTZ camera is installed, carefully test the pan and tilt limits to ensure that the head, camera and cables are free to move to each limit without obstruction or cable stress.

4.   Select and use only the proper mounting hardware that is rated for the intended purpose and for the total weight involved.

Install as follows:
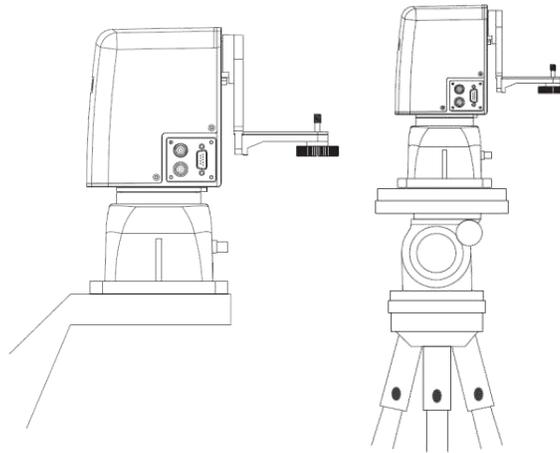
Side Load Wall Mount   Side Load Tripod
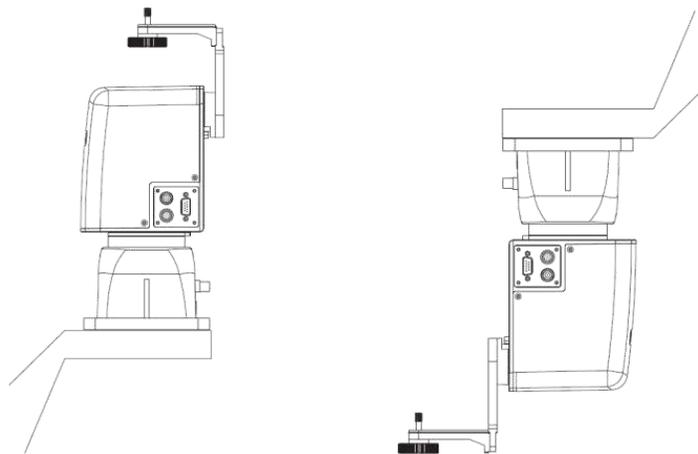
Top Load Wall Mount   Inverted Side Load

CAUTION! When installing PT-BRDCSTR, avoid <u>any</u> manual rotation of the side arm, as it may lead to device failure!

Step 4: Installing the Camera

Put the camera on a table and on top of a rolling pencil or similar object that it can pivot on, in order to estimate the camera's center of gravity. Adjust the position of the camera tray, so that the center of the camera's load lines up with the pivot point of the side arm as much as possible. Tighten the camera tray hardware so that it cannot move.   Mount the camera to the tray using the hardware provided and ensure that the camera is securely fixed to the tray and is not able to slide, move or shake.
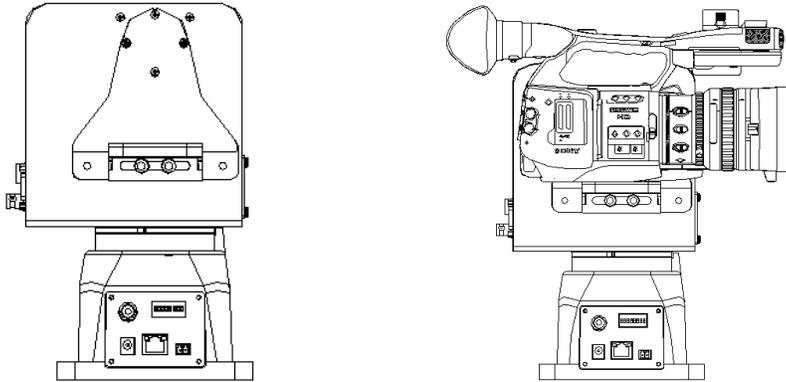
Step 5: Connection

Cable connections
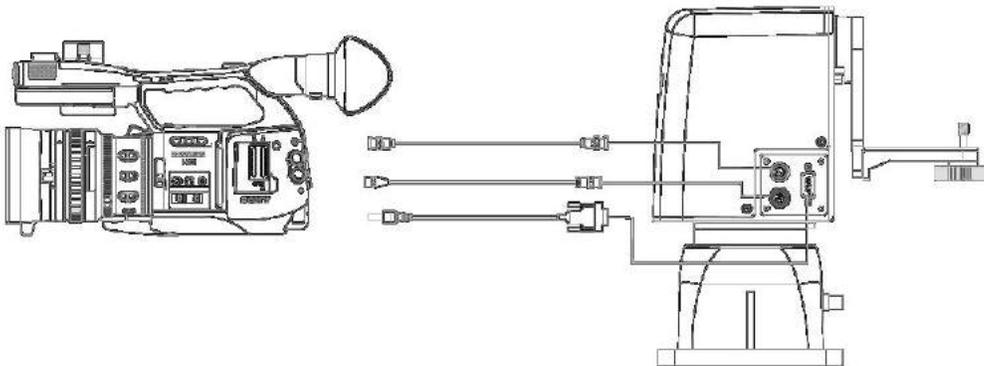
The PT-BRDCSTR and the camera require 3 interface cables:

1. camera power

2. lens control (3 types – model dependent)

3. video signal

Camera power supply cable		DB9--JEITA, 700mm (all models)
Lens control cable (model		Aviation plug - 8 pin round plug, 700mm (for –E)

dependent: -L, -E or -P)		Aviation plug - 2.5mm + 3.5mm plug, 700mm (for –P)
		Aviation plug - 2.5mm plug, 700mm (for -L)
Video cable		SDI cable (all models)

Notes:

Power cable: If the JEITA connector on the included power supply cable does not match the DC power port on the camera, please cut off the default JEITA power connector and solder the correct connector on to the power supply cable.

CAUTION: You must be sure that the cable is not attached to the PT-BRDCSTR or any other power source when you cut it!
You must also be sure to maintain the proper polarity of the conductors when soldering on the new connector.

DB9 Pinout Details: Pin-4: 5V, Pin-7: +13V, Pin-8: GND.

After soldering and testing the new cable (it is strongly suggested to use a multi-meter, rather than the camera itself for testing the cable), use electrical heat shrink or electrical tape to protect and support the soldered area.

Lens cable: Please pay close attention to the lens control port of the camera. Different models use different lens control ports. There are three styles of control port supported by the PT-BRDCSTR. You must order the correct PT-BRDCSTR model (-L, -E or –P) to match your camera.
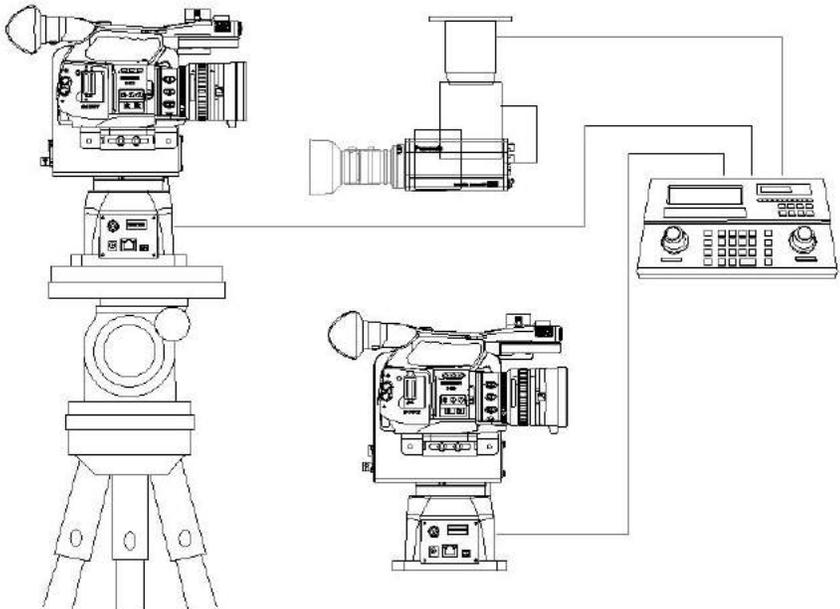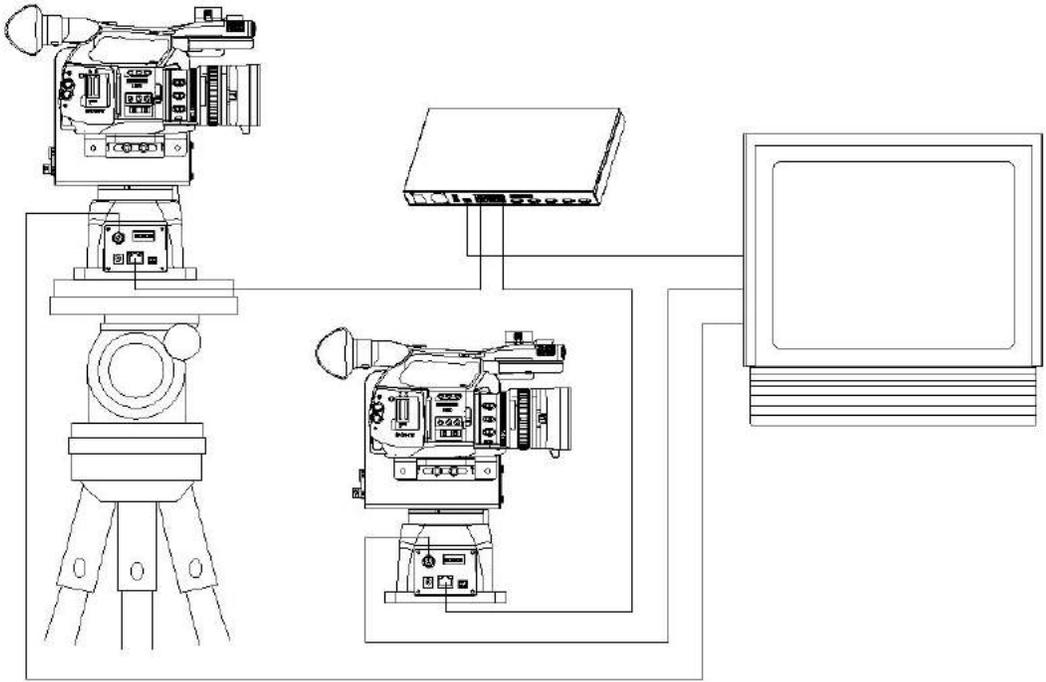
- 8 pin round port (LENS REMOTE)

- 2.5mm port (LANC/REMOTE)

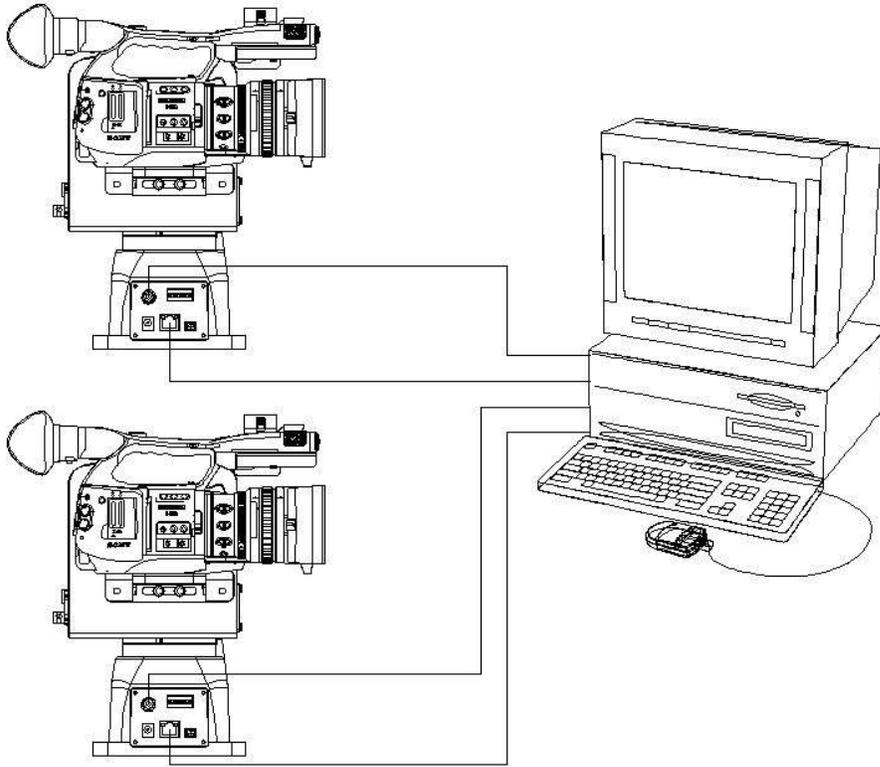- 2.5mm + 3.5mm - 'Y' cable ports (ZOOM, FOCUS/IRIS)

Video cable: The BNC connectors and SDI cable will carry CVBS, SDI, HD-SDI or 3G-SDI video signals equally well depending upon the output signal of your camera.

8 System Connections

Examples of PT-BRDCSTR connections with other external devices:

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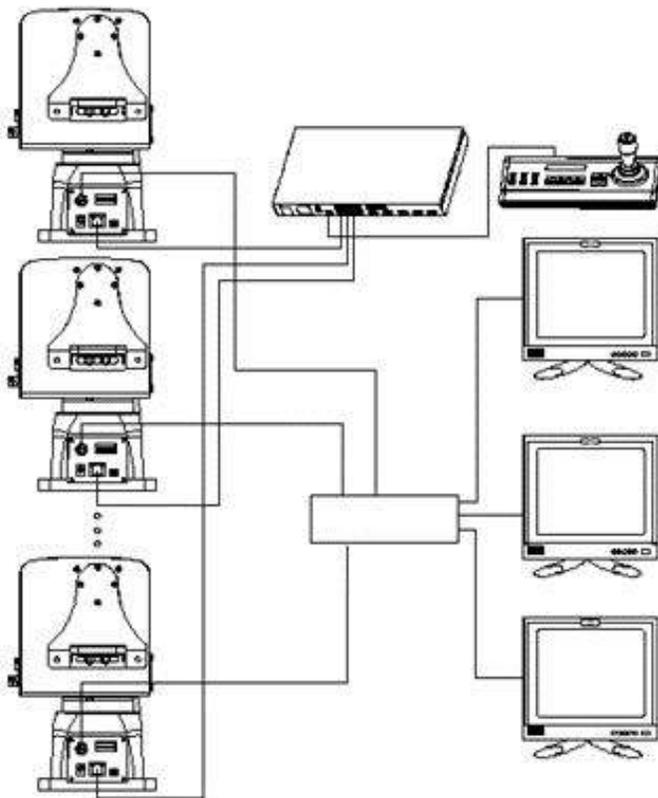
9 Limits

Whenever powered on, the PT-BRDCSTR will go through an initial start-up cycle. The PT-BRDCSTR will first move to its top right pan-tilt position limit, and the Zoom lens will go to the farthest position, with auto focus turned on, and with the default lens aperture setting. After this, if the PT-BRDCSTR has its preset 0 set, then it will move to preset 0, otherwise the PT-BRDCSTR will move to its HOME position. Once the startup cycle is complete, the user may execute serial commands to begin controlling the PT-BRDCSTR.

Additionally, normal working limits for Pan and Tilt may be set via control commands (see Appendix 1).
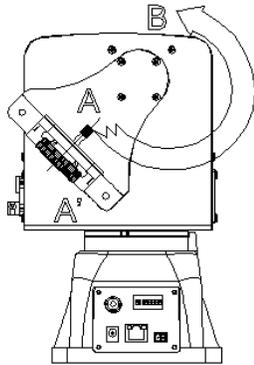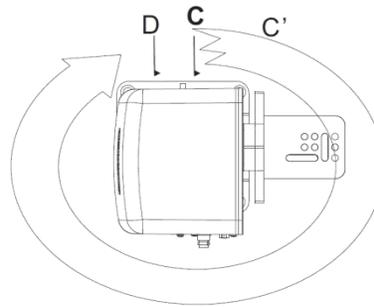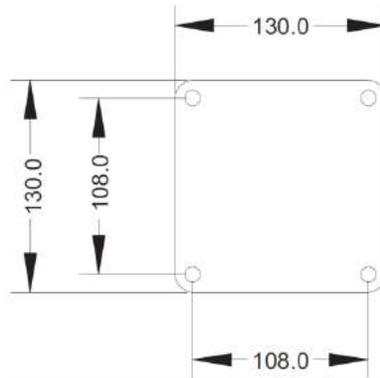

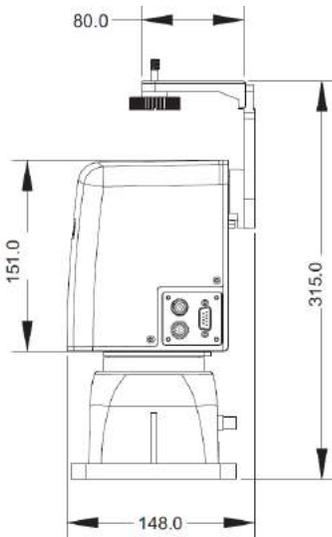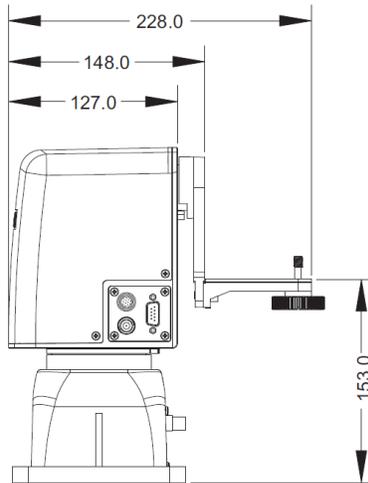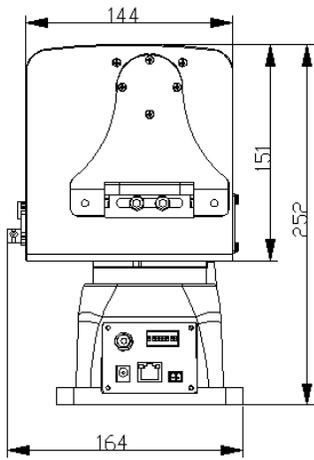Tilt Limit   Pan limit

CAUTION: The "set" limits are enforced via software and so could potentially fail. Therefore - no matter what - <u>always</u> ensure that the system is clear of obstructions, collisions or cable tension throughout its full operating range (i.e. beyond any limits set via software).

10 Physical Dimensions

Units: mm

11 Serial Control

In its default working mode, the PT-BRDCSTR is able to be controlled via an RS422, RS232, or RS485 serial interface using either the VISCA or Pelco-D protocol. The communication settings are shown below:

Baud rate: 9600 bps

Start bits: 1 bit

Data bits: 8 bits

Stop bits: 1bit

Parity bits: none

Whenever powered on, the PT-BRDCSTR will go through an initial start-up cycle. The PT-BRDCSTR will first move to its top right pan-tilt position limit, and the Zoom lens will go to the farthest position, with auto focus turned on, and with the default lens aperture setting. After this, if the PT-BRDCSTR has its preset 0 set, then it will move to preset 0, otherwise the PT-BRDCSTR will move to its HOME position. Once the startup cycle is complete, the user may execute serial commands to begin controlling the PT-BRDCSTR.

RJ45 Pinout:

RJ45 Pin Number	PT-BRDCSTR Signal	Conductor color (uses T-568B std)	Controller Signal	Remark
1	TX (RS232/RS485)	White/Orange	RX (RS232/RS485)	Please consult the controller manufacturer and documentation for connections at the controller end.
2	RX (RS232/RS485)	Orange	TX (RS232/RS485)	
3	T+ (RS422)	White/Green	R+ (RS422)	
4	R+ (RS422)	Blue	T+ (RS422)	
5	R- (RS422)	White/Blue	T- (RS422)	
6	T- (RS422)	Green	R- (RS422)	
7	N/A	N/C	N/A	
8	GND (All)	Brown	GND (All)	

12 Maintenance and Troubleshooting

Maintenance

- If the PT-BRDCSTR will not be used for a long time, please turn off the power switch and disconnect the AC power from the outlet.

- Please only use an appropriate soft dry cloth or lens cleaner to clean any camera lens.

- If the PT-BRDCSTR is very dirty, clean it only with a diluted mild detergent on a dampened (not dripping) soft cloth. NEVER use any type of solvents, which may irreparably damage the system.

Troubleshooting

- Serial control is not working for Pan, Tilt or Zoom:

  o Confirm that the serial configuration of the PT-BRDCSTR matches that of the controller for baud rate, etc… and that the address of the PT-BRDCSTR is set the same as the address being controlled by the controller.

  o Check that the serial control cable is connected correctly between the PT-BRDCSTR and the controller

- The camera focus control is not working

  o Confirm the PT-BRDCSTR is the right model for the camera

  o Check that the Lens control cable is connected correctly

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13 Appendix 1 – Basic VISCA™ Command List

Note: See individual camera documentation for a full list of VISCA camera commands

Command Set	Command	Packet (where "x" = address 1-7)	Comments
CAM_Zoom (Commands and parameters may be camera dependent)	Stop	8x 01 04 07 00 FF	
	Tele (Standard)	8x 01 04 07 02 FF	
	Wide (Standard)	8x 01 04 07 03 FF	
	Tele (Variable)	8x 01 04 07 2Z FF	Z: Speed Parameter, 1 (Low) to 7 (High)
	Wide (Variable)	8x 01 04 07 3Z FF	
	Direct	8x 01 04 47 0Z 0Z 0Z 0Z FF	ZZZZ: Zoom Data, 0000 (Wide) to 03FF (Tele)
CAM_Focus (Commands and parameters may be camera dependent)	Stop	8x 01 04 08 00 FF	Focus control. When adjusting the focus manually, first change the Focus mode to "Manual" then issue Far, Near or Direct commands.
	Far	8x 01 04 08 02 FF	
	Near	8x 01 04 08 03 FF	
	Auto focus on	8x 01 04 38 02 FF	
	Manual focus on	8x 01 04 38 03 FF	
	Auto/Manual	8x 01 04 38 10 FF	
	Direct	8x 01 04 48 0Z 0Z 0Z 0Z FF	ZZZZ: Focus Data. Infinity = 1000, close = 9FFF
Pan-tiltDrive	Up	8x 01 06 01 VV WW 03 01 FF	Continuous motion until "Stop" command is sent or limit is reached (set speed and direction) VV: pan speed 01 to 18 (24 values 01-09…0A-0F…10-18) WW: tilt speed 01 to 14 (20 values 01-09…0A-0F…10-14)
	Down	8x 01 06 01 VV WW 03 02 FF	
	Left	8x 01 06 01 VV WW 01 03 FF	
	Right	8x 01 06 01 VV WW 02 03 FF	
	UpLeft	8x 01 06 01 VV WW 01 01 FF	
	UpRight	8x 01 06 01 VV WW 02 01 FF	
	DownLeft	8x 01 06 01 VV WW 01 02 FF	
	DownRight	8x 01 06 01 VV WW 02 02 FF	
	Stop	8x 01 06 01 VV WW 03 03 FF	
	Absolute position	8x 01 06 02 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	Absolute Position Drive - YYYY: pan position: Left range (8000 positions) = E0C0-FFFF; Right range (20000 positions) = 0-4E20; Home = FFFF or 0000 ZZZZ: tilt position: Tilt down range (4799 positions) = ED41-FFFF; Tilt up range (4200 positions) = 0-1068; Home = FFFF or 00000
	Relative position	8x 01 06 03 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	Relative Position Drive. Set the relative

			movement between current position and the target position within limits for YYYY and ZZZZ as shown above and using speeds VV and WW as shown above.
	Home	8x 01 06 04 FF	Return to Home position
	Reset	8x 01 06 05 FF	Pan/Tilt Initialize command
Pan-tiltLimitSet	Limit set	8x 01 06 07 00 0W 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	Pan/Tilt limit set: W=0 for DownLeft limit W =1 for UpRight limit See value ranges for YYYY and ZZZZ above
	Limit clear	8x 01 06 07 01 0W 07 0F 0F 0F 07 0F 0F 0F FF	
Pan-tiltAccelerationSet* (aka "Software Adjustable Damping")	Acceleration Set	8x 0A 02 18 0p FF	p = (0, 1 or 2) 0 = quickest acceleration, least image stability 2 = slowest acceleration, best image stability

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*Not a standard VISCA command (unique to PT-BRDCSTR)