



# PTX Universal PanTilt Head Model 1L



## Quick Setup Guide

**\* in the PTX box \***

IEC power cable. The power supply accepts AC110-240V 50/60Hz; Fuse T3 15A/250V; power consumption 60W.



*Note: IEC cables are **NOT** included in International shipments.*

All these cables may or may not be included in the box, depending on the camera model you've specified.

- 1) LANC & 12VDC for Blackmagic Micro Studio 4K)
- 2) RS 422/485
- 3) RS 232
- 4) LANC
- 5) ATEM CONTROL
- 6) SONY ALPHA/RX



Cable bundle clamp and screw (if used with Blackmagic Micro Studio 4K camera).



5mm Allen wrench for removing and reseating the two Allen screws on the bottom of the fixture. Select either the Truss Mount bracket or the Tripod/Stand Bracket.



Small double-ended screwdriver, often called a "tweaker", for adjusting voltage provided from the PTX chassis to the camera you're using.



U-bracket for **truss mounting** of the fixture.



$\frac{1}{4}$  x 20 x  $\frac{1}{2}$  thumb screw with washer for attaching camera to tilt plate through the horizontal adjustment slot. It ships connected to the top of the tilt plate.

The PTX **Connections & Specifications** sheet and **QUICK SETUP Guides** are available on the PTX web page.

[www.RUSHWORKS.tv/ptx.htm](http://www.RUSHWORKS.tv/ptx.htm)

## Mounting the U-Bracket to the PTX Base

On the bottom of the Model 1L are two 5mm Allen screws.



Use the included 5mm Allen wrench to loosen and remove the two screws.



**FOR TRUSS MOUNTING:** Secure the U-Bracket to the bottom of the PTX using the two 5mm screws previously removed, and tighten with the 5mm hex wrench.



**FOR TRIPOD/STAND MOUNTING:** Remove the two 5mm Allen screws, then use the  $\frac{1}{4}$  x 20 thread in the bottom of the Model 1 base for connecting to a standard tripod or utility stand.



## Connecting your Camera to the Tilt Plate

Most cameras have a ¼ x 20 thread for mounting on tripods and stands. Use the included ¼ x 20 x ½ thumbscrew (with plastic washer) to mount your camera of choice to the tilt plate.

Shown here is the bottom of the Blackmagic Micro Studio Camera 4K ...



and the bottom of the Canon XA model with a single threaded hole.



Some cameras, like the AJA RovoCam and Marshall CV models, have threaded mounts on both the bottom and the top ... so you can mount them “upside down” on the tilt plate then mount the PTX in an inverted position on truss or other structure if desired.



These pictures show the single thread on the TOP of the Micro Studio Camera 4K ...



and the thread on both the top and bottom of the Marshall CV-350.

Remove the camera mounting thumbscrew from the front of the tilt plate, and with the PTX powered OFF, tilt the plate forward and place the thumbscrew into one of the five slots that best allows center positioning of the camera on the tilt plate.



**Note:** The FRONT of the PTX has the PTX logo sticker on the arm. The REAR does not have the sticker.



*front*



Tighten the thumbscrew to secure the camera, but only tight enough that the camera can slide forward and backward along the slot.



Move the tilt plate to the horizontal position and slide the camera forward and back while gently tilting the plate in both directions. You want to find the best center of gravity for the camera and lens ... then tighten the thumbscrew, applying as much pressure with your fingers as possible to assure a solid and secure mount.



## The PTX Model 1L Internal Wiring

To minimize torsional stress on wires and connectors in a housing that can spin 360°, the wires run through the core of the PTX chassis up into the vertical tilt plate arm.

Pictured here are the connections on the arm.

- CAM CTRL
- SDI IN (from ATEM or GENLOCK to camera)
- SDI OUT (from camera)
- DC to CAM
- HDMI



The SDI Out from the camera is then available on the BNC connector on the PTX chassis. If the camera provides an HDMI output, it's available on this chassis mount.



**Note:** If your camera requires a GENLOCK source, use the SDI IN on the chassis for that signal, for connection with the Genlock In on your camera.

If you are using a Blackmagic Micro Studio 4K camera, connect the included HD15 breakout cable to the side of the camera, then use the cable bundle clamp and screw to secure the cables to the top (or bottom) of the camera.



Then connect the LANC TO CAM and 12VDC TO CAM cables to the two cables/connectors from the HD15.

**DMX Control:** If you're using more than one PTX head, connect the DMX OUT to the DMX IN of each fixture (daisy-chain) for control.



**VISCA Control:** Daisy-chain up to SEVEN PTX heads by connecting the RS422 OUT from the first to the RS422 IN of additional fixtures. **THE DMX ID MUST BE SET TO CHANNEL 1 ON ALL SEVEN FIXTURES!** The DMX/VISCA ID (DIP switch) must be set to 1 - 7 on the respective fixtures.



The PTX PanTilt heads are designed to integrate seamlessly into any DMX hardware or software-controlled system.

Set the DMX ID for each fixture as you would with any other DMX lighting fixture. When you turn on the power switch, the system will initialize, displaying .rSt on the LED display.



In a few seconds, it will then show the currently selected DMX ID. The default is Channel 1, which displays as A001.



To change the DMX ID, click the ENTER button beneath the LED display and you'll see red dots separating the ID segments.



Use the UP or DOWN buttons to select the desired ID, then click the ENTER button again to Save the ID.



Use the supplied “tweaker” (a tiny flat-blade screwdriver) to adjust the voltage output from the PTX that will supply DC power to the camera you’ll be using with the PTX.

Check the camera manufacturer’s information regarding the DC voltage required to power the camera.

**CAUTION:** The output can be set from **3V to 28V**, so be SURE you know what your camera is ‘expecting’ and set the voltage accordingly before you connect the PTX power connector to the camera’s DC power input.



Use the built-in voltage display meter to confirm your settings during output adjustment.

Improper voltage output can result in (a) the camera not powering on, or (b) potential damage to the camera if the voltage is set higher than the manufacturer’s specifications.

**Note:** Be sure to set the **MODE** and **DMX/VISCA ID** DIP switches on the base of the PTX at the same time you set the DMX ID using the LED display above them on the fixture. Following is a chart showing the corresponding camera numbers, DMX Values and DMX/VISCA ID DIP settings.



It’s good practice to set the corresponding DIP switches at the same time you set the DMX ID for each fixture. The **MODE** switch settings are discussed on the next page.

PTX Number	DMX Value	DMX/VISCA ID DIP POSITION	PTX Number	DMX Value	DMX/VISCA ID DIP POSITION
1	1	ON: 1; OFF: 2-9	7	85	ON: 1, 3, 5, 7; OFF: 2, 4, 6, 8, 9
2	15	ON: 1, 2, 3, 4; OFF: 5-9	8	99	ON: 1, 2, 6, 7; OFF: 3, 4, 5, 8, 9
3	29	ON: 1, 3, 4, 5; OFF: 2, 6-9	9	113	ON: 1, 5, 6, 7; OFF: 2, 3, 4, 8, 9
4	43	ON: 1, 2, 4, 6; OFF: 3, 5, 7, 8, 9	10	127	ON: 1, 2, 3, 4, 5, 6, 7; OFF: 8, 9
5	57	ON: 1, 4, 6, 7; OFF: 2, 3, 5, 8, 9	11	141	ON: 1, 3, 4, 8; OFF: 2, 5, 6, 7, 9
6	71	ON: 1, 2, 3, 7; OFF: 4, 5, 6, 8, 9	12	155	ON: 1, 2, 4, 5, 8; OFF: 3, 6, 7, 9

To configure additional PTX heads, select and enter the **DMX/VISCA ID** for each head. Increment each head based on the number of channels in the profile. For 14 channels the second fixture would be DMX ID 15, the third 29, etc. as indicated in the graphic.

## SETTING THE MODE DIP SWITCH

There are currently TWO methods of controlling the PTX Universal PanTilt Heads: DMX control from a console or software; and VISCA control, using a number of controllers that support VISCA serial control output.

It's important to understand the distinction between **CONTROLLER** and **CAMERA**. The Controller is the device that connects to either the DMX IN (XLR), or the green 9-pin Phoenix connector that supports two-way RS-422 serial communications with the controller.



The Camera is a camera or camcorder connected to the tilt plate on the PTX fixture. Cameras are controlled using the internal protocols supported by the PTX. These include LANC, Panasonic Remote and VISCA connections.

**LANC** is a single-wire, one-way digital protocol used by Sony, Canon, JVC and Blackmagic on many of their cameras.

**SONY Multi-Terminal** is a five-wire, digital protocol for Alpha and RX series Sony Cameras.

Both of these are limited because they provide no feedback to the controller regarding the position of the zoom, or the current focus or iris settings.

**VISCA** is a bi-directional serial protocol that uses three types of physical connections depending on the controlled device: RS232, RS422 and RS485.

So you use the **MODE** switch to select both the CONTROLLER and the CAMERA. This label is affixed to the base of the PTX so you can set the DIP switches to the appropriate positions.



<b>SW1</b>	<b>CONTROLLER</b>	ON for VISCA Control OFF for DMX Control from a console or computer/software
<b>SW2</b>	<b>CAMERA</b>	ON for VISCA (only active if SW1 is ON) OFF for LANC (L) and SONY (P) remote controlled cameras
<b>SW3</b>	<b>CAMERA</b>	ON for 38400 Baud rate (only active if SW 1 and 2 are ON) OFF for 9600 Baud rate (only active if SW 1 and 2 are ON)
<b>SW4</b>	<b>CAMERA</b>	ON for RS422 or RS485 serial connection (if SW1 and SW2 ON) OFF for RS232 (if SW1 and SW2 ON)

**SW5 CAMERA**

ON for RS422 (if SW1, SW2 and SW4 ON)  
OFF for RS485 (if SW1, SW2 and SW4 ON)

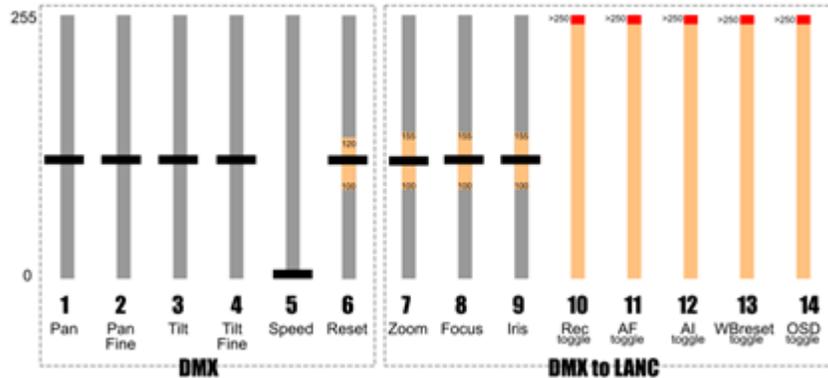
**SW6 OP MODE**

ON for NORMAL operation  
OFF for firmware (FW) updates

**DMX Control:** There are two profiles you can load into your DMX console and/or DMX software control system. If you've specified that you'll be using DMX control, the box will include a USB card with the following files: (**DMX-LANC Profile.ssl2**, and **DMX-VISCA Profile.ssl2**).

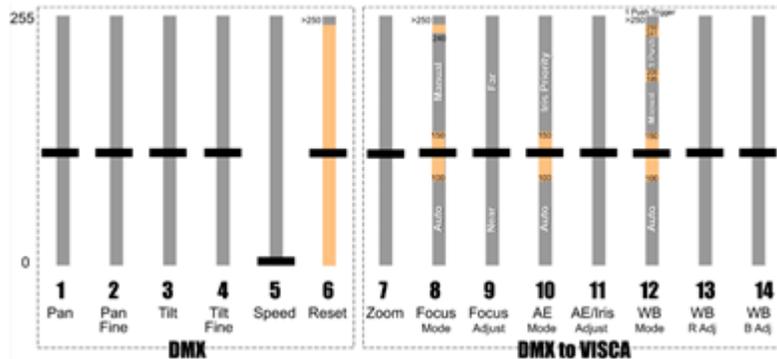
**DMX-LANC profile 14 channel map:**

- 1 Pan
- 2 Pan Fine
- 3 Tilt
- 4 Tilt Fine
- 5 Speed
- 6 Reset
- 7 Zoom
- 8 Focus
- 9 Iris
- 10 Record Toggle
- 11 Auto Focus Toggle
- 12 Auto Iris Toggle
- 13 White Balance Reset
- 14 OSD (On Screen Display) Toggle



**DMX-VISCA profile 14 channel map:**

- 1 Pan
- 2 Pan Fine
- 3 Tilt
- 4 Tilt Fine
- 5 Speed
- 6 Reset
- 7 Zoom
- 8 Focus
- 9 Iris
- 10 AE Mode (Auto/Iris Priority)
- 11 AE/Iris Adjust (based on 10 setting)
- 12 White Balance Mode (Auto/Manual/1Push/1Push Trigger)
- 13 White Balance (Red Adjust – based on 12 setting)
- 14 White Balance (Blue Adjust – based on 12 setting)



**VISCA Control:** The heads can be controlled via RS422 connections using VISCA control protocol. RUSHWORKS offers its **Ctrl+R** Camera Control Utility, which includes a four-port USB-to-RJ45 MUX that provides serial and 12VDC on CAT5 cables to each camera and/or PTX fixture. Additionally, the **VDESK** Integrated PTZ/PTX Production Systems include the same camera control, along with multi-input mixing, transitions, effects, program and ISO recording, and much more. The RUSHWORKS RW/JOYCON oystick controller is also a good candidate.

RUSHWORKS software applications run on Windows (32 or 64 bit) devices. However, you can also use the Boot Camp utility built into Mac OSX and install Windows on that computer.

Blackmagic Design has incorporated the PTX pan and tilt commands into its ATEM switcher User Interface, so you can use the ATEM software for comprehensive camera setup and motion control, and with the 1 M/E or 2 M/E panel you can use the joystick to control the PTX heads.

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