



MARK ROBERTS MOTION CONTROL

# PTA-2



## QUICK START GUIDE

QSG Product code: MPMC-2196-00

Product Covered: MPMC-8055-00

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# Chapter 1 Quick Start



## Important safety instructions

To ensure the best from the product, please read this manual carefully. Keep it in a safe place for future reference.

To reduce the risk of electric shock, do not remove the cover from the unit. No user serviceable parts inside. Refer servicing to qualified personnel.

## Power and connections

- This unit must be connected to a mains socket outlet with a protective earth connection.
- This unit is not disconnected from the AC power source as long as it is connected to the wall outlet.
- When not using the unit for a long period of time, ensure that the AC power cord is disconnected from the wall outlet.
- The AC wall outlet should be installed near to the unit and be easily accessible.
- Do not plug in or attempt to operate an obviously damaged unit.

## General care

- Do not force switches or external connections.
- When moving the unit, disconnect the mains cable and then disconnect the long umbilical cable.
- Do not attempt to clean the unit with chemical solvents or aerosol cleaners, as this may damage the unit. Use a clean dry cloth.
- Do not use around flammable gas. All electrical equipment can generate sparks that can ignite flammable gas.
- Keep away from pets and children. The head has powerful motors that can pinch, so take care not to get your hands trapped in the head or cabling.

- Keep cables tidy. Use cable ties to keep them out of harm's way. If you have a head with slip rings then make use of them; avoid running any cables between the base and the rotating head or camera.

## **Location**

Installation of this unit should be away from sources of excessive heat, vibration, and dust.

## **Intellectual property**

This product includes confidential and/or trade secret property. Therefore, you may not copy, modify, adapt, translate, distribute, reverse engineer, or decompile contents thereof.

## Overview

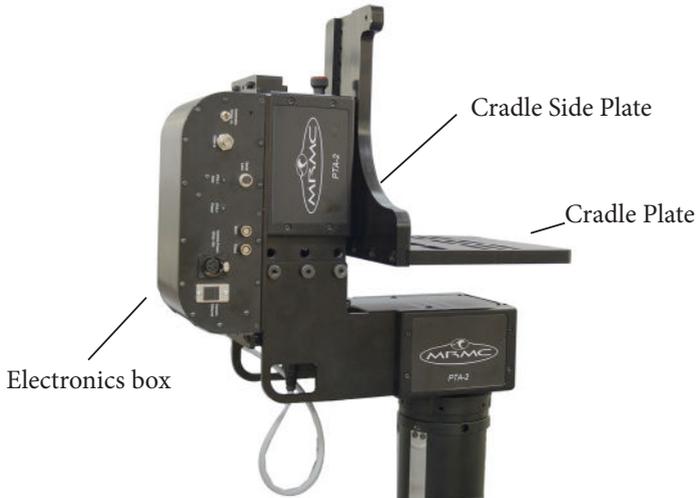
Thank you for using the PTA-2 robotic camera head from Mark Roberts Motion Control (MRMC). The versatility of the PTA-2 to work with any camera and lens combination and fully remotely operable makes it suitable for Studio environments. It has a high payload capacity of 35kg with optional sidearm and 15kg as standard. It can also be used on MRMC robotic columns or rails and can be Integrated with MRMC Polymotion Chat for full automation with natural motion.

You can use the Ethernet connection on the PTA-2 to connect directly to a PC running Multi-Head Controller (MHC) software. PTA-2 can be used with MRMC's TRH or SLH type lift columns. If required a Teleprompter can also be added.

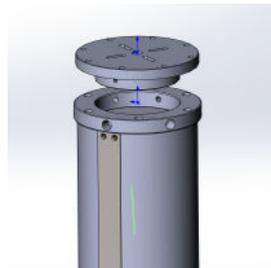
## Setting up the hardware

### Mounting PTA-2 on SLH/TRH Lift Column

PTA can be mounted overslung on a TRH /SLH type lift column.



1. Power up the lift column and use the rocker switch on the side of the control box to move the lift column up and down. Network connection is not required yet. Lower the product before working on the load. The parent control system will have to reset the robot after using the switch.
2. The Top of the SLH-2 comes with a mounting disc which drops into a cup in the column. This disc will accept many MRMC product, including the PTA-2.
3. Fit the column disc to the PTA-2 taking notice of the key slot location. Ensure that the key slot lines up with the red mark and button as the head is lowered



into the cup – rotate the pan axis/head to line up before lowering it in place. The button will then ensure that the fixing bolts line up.

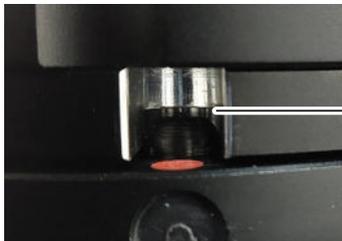


Key slot



Red mark and location button

Line up the slot with the red dot before lowering into the cup

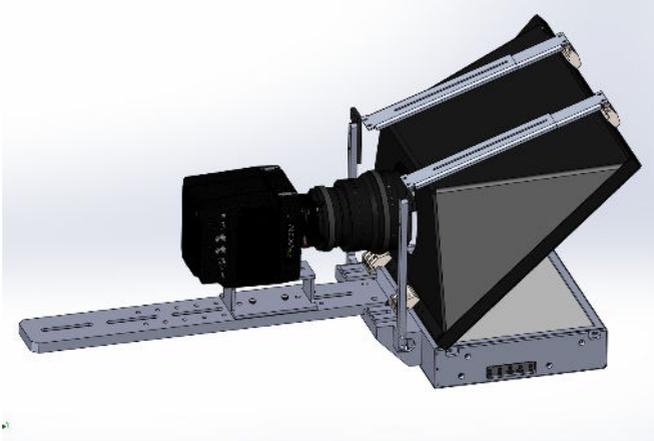


Lined up when fitted

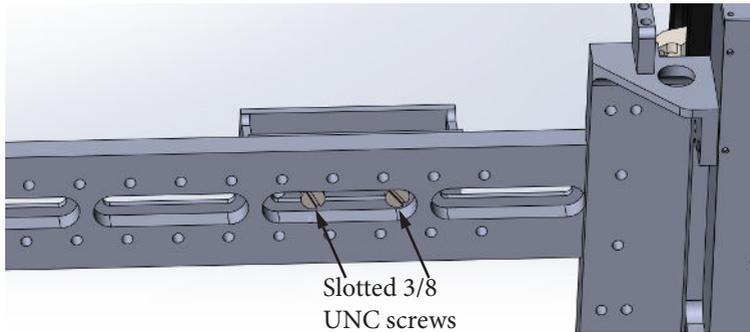
## Fitting the Camera /MRMC Teleprompter

Build the Teleprompter with the lens in the correct location for the prompt off the head.

The riser / camera skid can be fitted and adjusted with huge range of adjustment, when using compact cameras.



Slotted 3/8 UNC screws are shown; it can be preferable to use Socket heads as they can be tightened more reliably.



**Note**

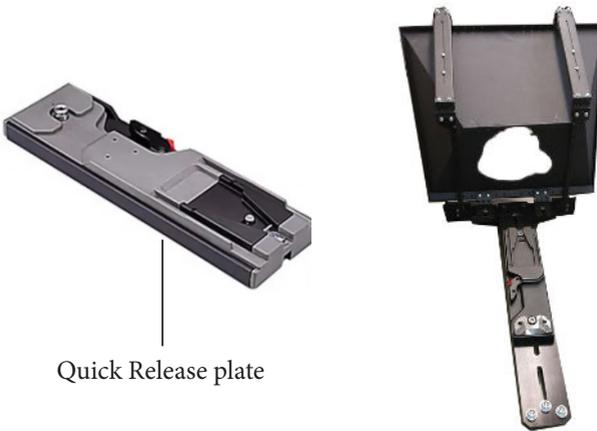
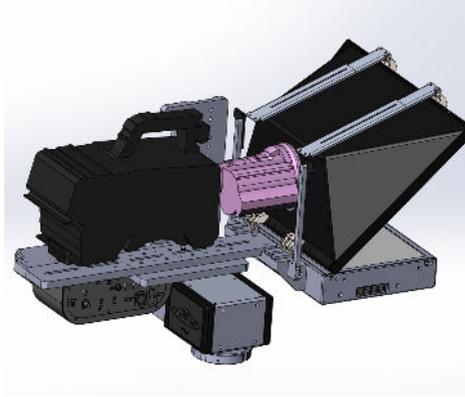
A riser is often required with Servo lenses and Compact cameras to allow access under the lens for the Lemo servo control serial connection.

Example - Shape Paparazzi Riser for compact cameras



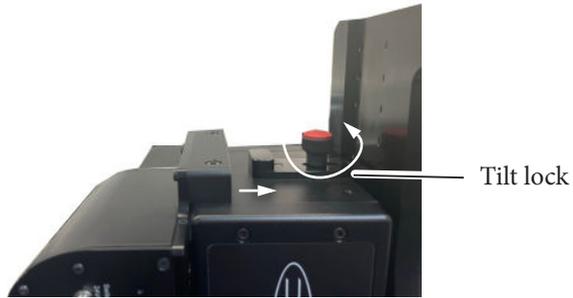
If using an ENG style camera, the trim masses may not be required.

A quick release plate with 3/8 UNC x 1/2 inch long screws is recommended.



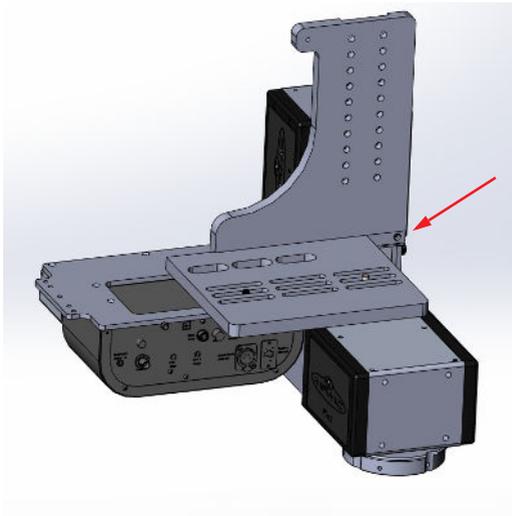
Quick Release plate

Apply the Tilt lock. Fit the cradle and Electronics box. The electronics box will counterweight the mass of the teleprompter and glass.

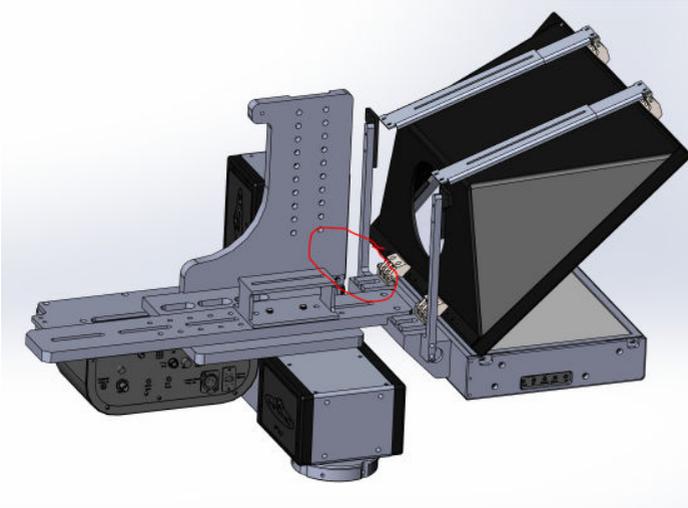


**Note**

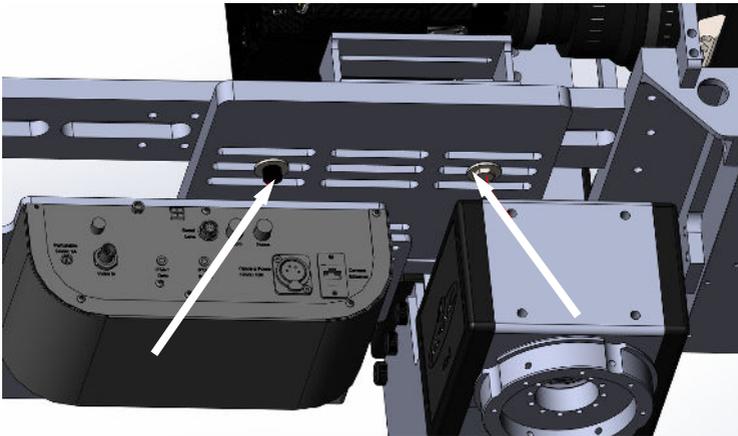
The tilt saddle plate is best placed two holes to the back, as shown, to move the overall assembly to a better place of balance (red arrow).



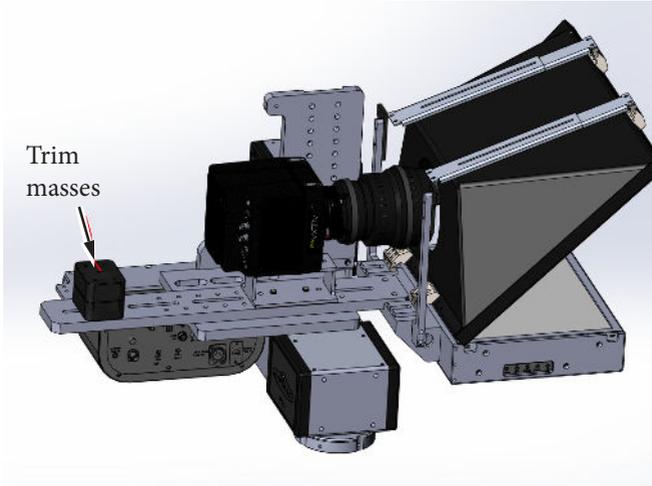
Place the prompt on the rig minimising the gap between the prompt framing and the side of the head, while still allowing the required tilt range. Normally less than  $+10^\circ$ .



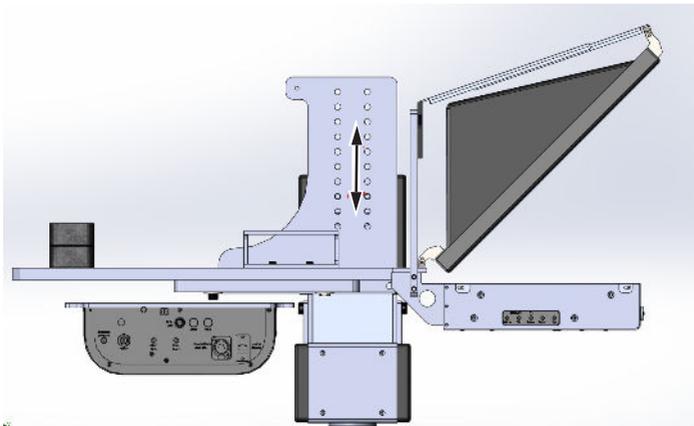
Use M8 bolts with large washers (supplied). Hex spanner heads could be used where crowded by the Pan unit (on the right). For loads placed closer to the tilt plate, the electronics box can be moved away.



Test for balance by carefully releasing the Tilt lock. 1 or 2 trim masses (supplied) may need to be added. It is best to ensure that the prompt is sitting as close to the side of the head as possible, and then adjust the electronics box for balance, then fitting the trim masses, if still required.

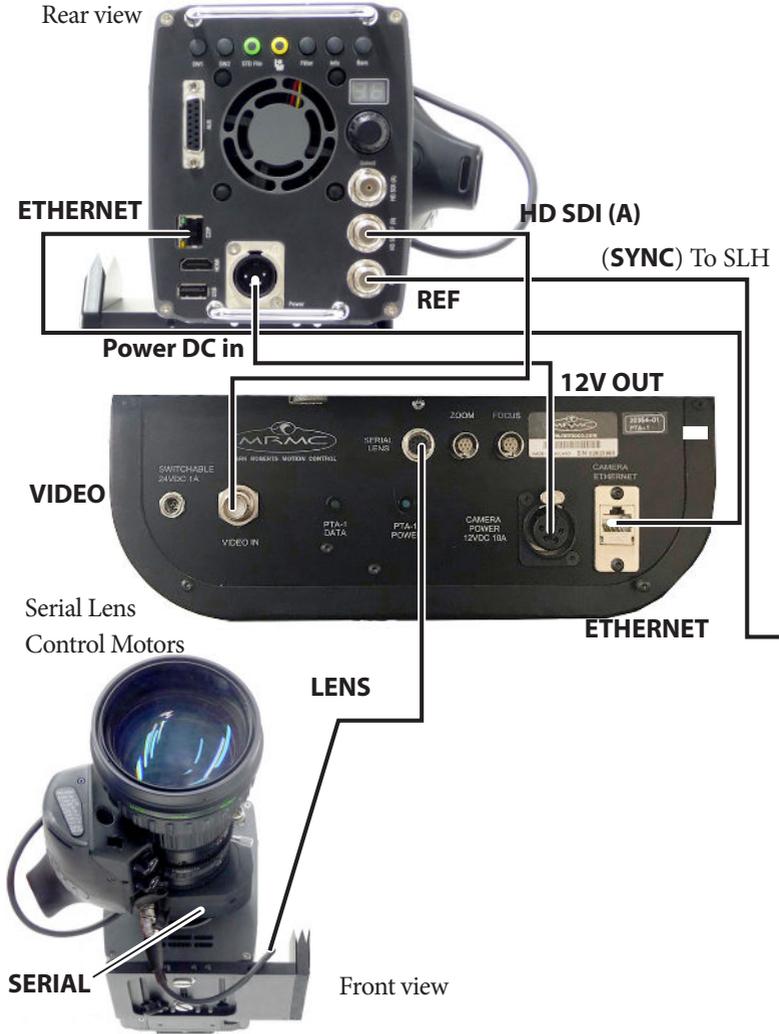


The load should gently fall to centre, meaning that the centre of mass must be slightly below the tilt axis. If the load has a strong inclination to topple forward or back then undo the camera body and lens and drop the cradle plate appropriately on the vertical screw locations. Exact vertical balance is not required.



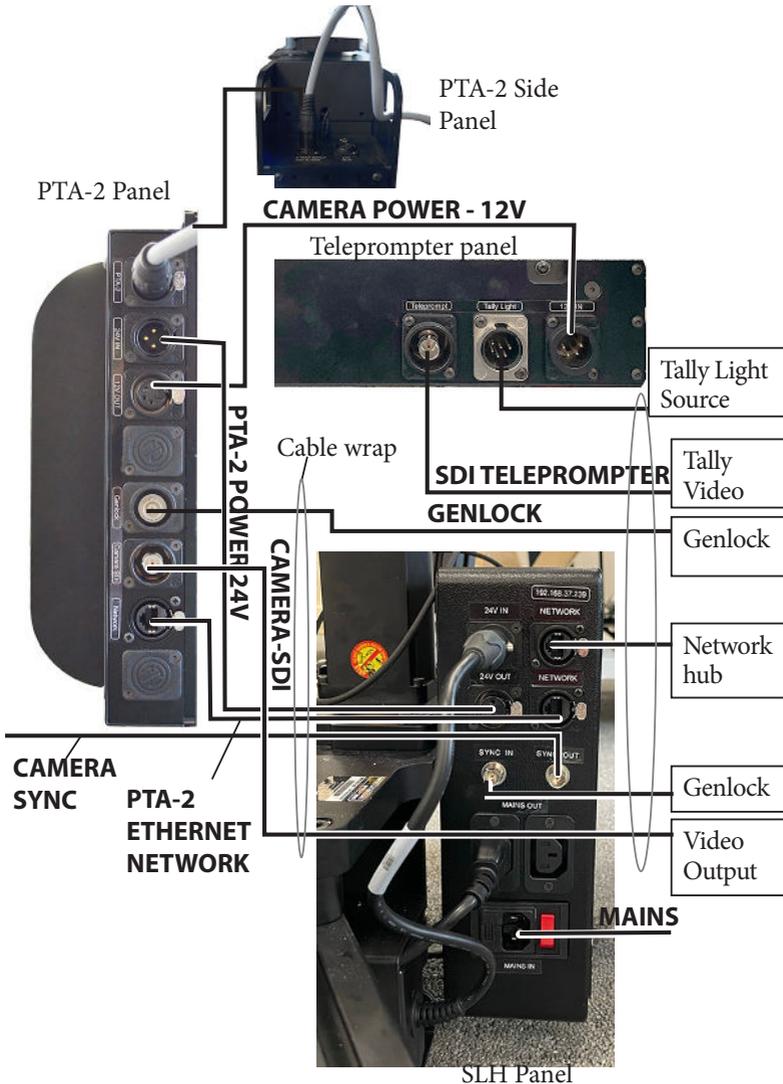
## Connecting the cables

Attach the power cables ensuring each connector is fully secured into the socket and that the cable or connector is not caught in any moving part.



Note: Primary video feed from the camera can be run directly.

## PTA-2 - Teleprompter - SLH-1 Connections



Notes

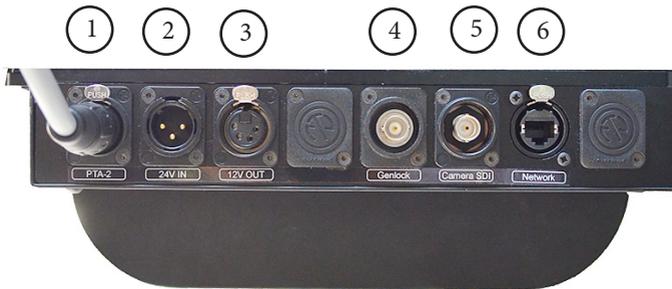
# Appendix 1 PTA-2 connectors

## Camera Connector plate summary



1. **SWITCHABLE 24VDC 1A** connector is the 24V DC outlet for powering a camera or HDMI/SDI signal converter. Centre positive.
2. **VIDEO IN** input connector for the video signal from the camera. This is a SDI pass through connection to the **Camera SDI** connector on connector panel.
3. **SERIAL LENS** connector is for the serial (digital) lens that has internal servo motors for focus, zoom, and iris.
- 4, 5. **FOCUS, ZOOM** connectors for external servo Lens Control Motors (LCMs).
6. **CAMERA POWER 12VDC OUT 10A** connector for powering a camera. The maximum allowable load for the outlet is 10Amps.
7. **CAMERA ETHERNET** connector is the RJ45 Gigabit Connector rated at 1000 mbits/sec for communications between the camera and the head.

## Connector Panel summary



1. **PTA-2** connector is a CAN connector which connects via external **CAN cable** [24449] to the Arm panel **24V OUT** connector and **input CAN and 24V OUT** connector for driving pan and tilt motors.
2. **24V IN** input connector for power to the PTA-2 head. This usually connects to the SLH/TRH or Dual Rail **24V OUT** connector via the umbilical.
3. **12V OUT** 4-way XLR connector for power to the teleprompter.
4. **GENLOCK** connector for Sync/ Genlock signal to PTA-2 from the sync source.
5. **CAMERA SDI** connector is a pass-through connector from **VIDEO IN** from the Camera Connector Plate on PTA-2. If required, camera video feed can be run directly.
6. **NETWORK** connector is the RJ45 Connector the head and rest of the network. It is connected to the **NETWORK** connector on the SLH/TRH or Dual Rail connector panel.

## Arm Panel Summary

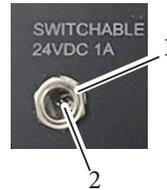
1. **5 WAY INPUT 24V and CAN** connector connects to PTA-2 connector on the connector panel using External 24VDC/CAN cable [24449].
2. **POWER 24V OUT** output connector, 3-pin XLR, 24 Volt DC power supply which can be used to power any device or head that uses 24 Volt DC power.

## Connector pin-outs

### Switchable 24VDC 1A Connector

24V DC outlet for powering a camera or HDMI/SDI signal converter.  
Centre positive.

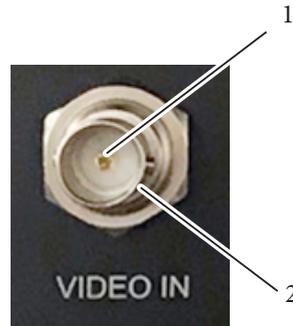
1. GND (collar)
2. 24VDC



### Video In Connector

The **VIDEO** connector is rated at 3 GHz allowing the video signal from the camera to go into the head.

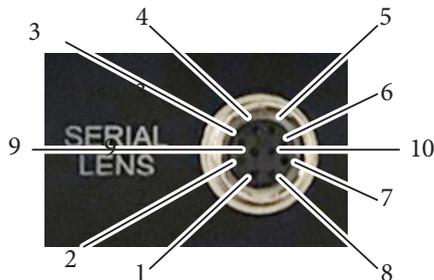
1. Video Out (HD or SD) Centre
2. GND



### Serial Lens connector for internal servo LCMs

Connector for a serial (digital) lens that has internal Lens Control Motors (LCMs) for focus, zoom, and iris.

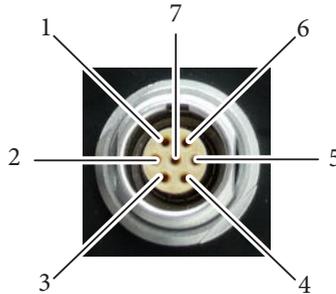
1. Boot Select
2. RS232 Out
3. RS232 In
4. VCC
5. GND
6. RS232 Select
7. RS422 Out -
8. RS422 Out +
9. RS422 In +
10. 1RS422 In -



## Focus, Zoom connectors for external servo LCMs

The **FOCUS** and **ZOOM** connectors are for external servo Lens Control Motors (LCMs).

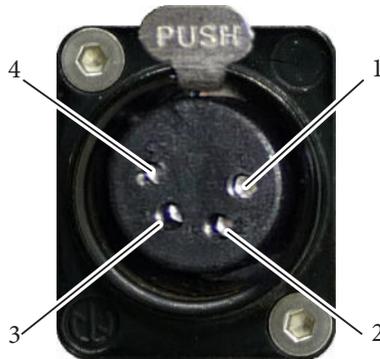
1. Motor +
2. Motor -
3. Encoder A
4. +5V
5. GND
6. Encoder B
7. Motor ID



## CAMERA POWER 12VDC OUT 10A connector (large 4-way XLR)

General purpose 12V DC outlet.

1. GND
2. N/C
3. N/C
4. +12VOUT



## PTA-2

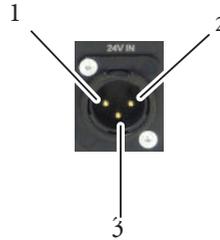
PTA-2 connector is a 5-way XLR socket.

1. CAN HIGH
2. CAN LOW
3. GND
4. GND
5. 24V

## 24V IN connector

Power to supply the head and the power output connector on the arm box. It is a XLR 3-Way (Male) connector. The PTA-2 can run from 12-35 Volts DC.

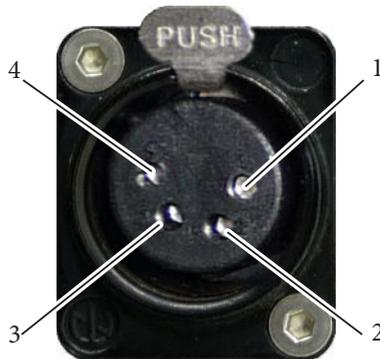
1. GND
2. +24V
3. N/C



## 12V OUT

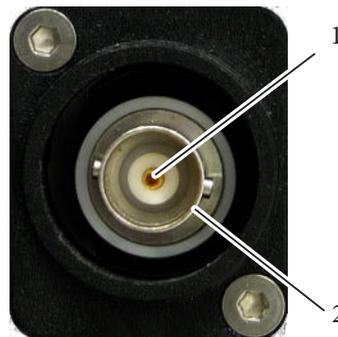
General purpose 12V DC outlet.

1. GND
2. N/C
3. N/C
4. +12VOUT



## Sync connector

This is a multi-purpose **SYNC** connector and can be used for synchronization or genlock signals between the camera and controller in either direction. There is no further connection to the circuitry inside the head. Note that although the **SYNC** and **VIDEO** connectors are similar they are **not** interchangeable. The circuitry for the **VIDEO** connector has a higher



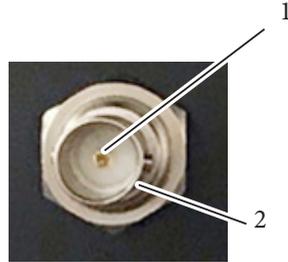
speed rating (3 GHz) than that of the **SYNC** connector which only needs to handle the synchronisation signal, so you should only put the video signal through the **VIDEO** connectors and not the **SYNC** connectors.

1. VIDEO (inner)
2. GND (outer)

### Camera SDI Connector

The **CAMERS SDI** connector is rated at HD SDI Bitrate 1.45Gb/s Max output 720p for the video signal from the camera pass through from the **VIDEO IN** connector on the connector plate,.

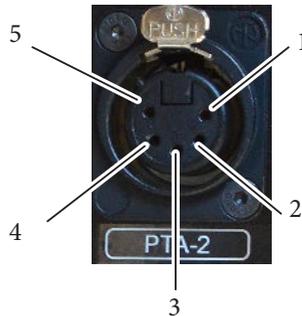
1. Video Out (HD or SD) Centre
2. GND



### Panel mount connector

Panel mount connector is the 5-way XLR (male) connector on the arm body and is connected with the PTA-2 connector on the connector panel using cable [24449].

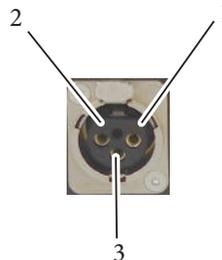
1. CAN HIGH
2. CAN LOW
3. GND
4. GND
5. 24V



### 24V OUT connector

General purpose 24VDC OUT 3-way XLR (female) connector.

1. GND
2. +24VOUT
3. N/C



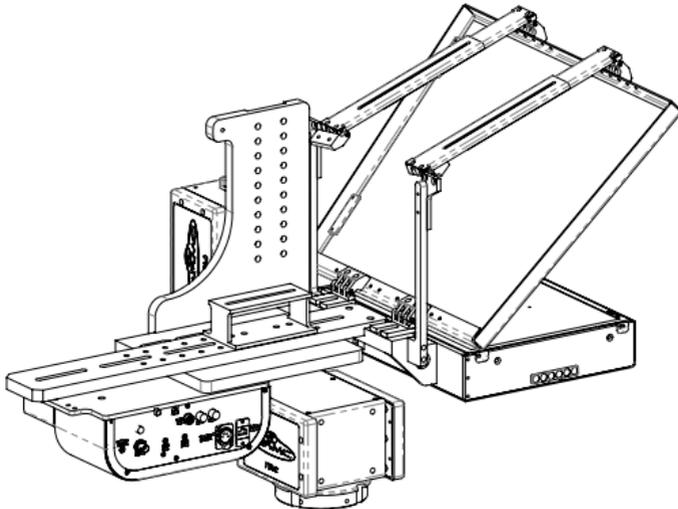
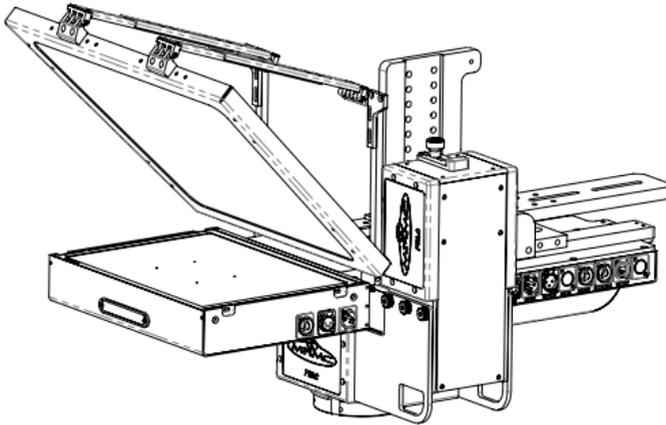
Notes

## Appendix 2 Specifications

Size of operational space	~ 1m <sup>3</sup>
Weight - PTA-2	19kg
Maximum payload	35kg
Maximum payload inertia	2.5Kgm <sup>2</sup>
Power requirements	24 Volts DC 10A Optional 110V 16A and UK/EU/US
Temperature range	0-45 °C (32-113 °F)
Humidity tolerance	0% to 85% relative humidity, non-condensing
IP Rating	IP65 (with connector plate seal modification)

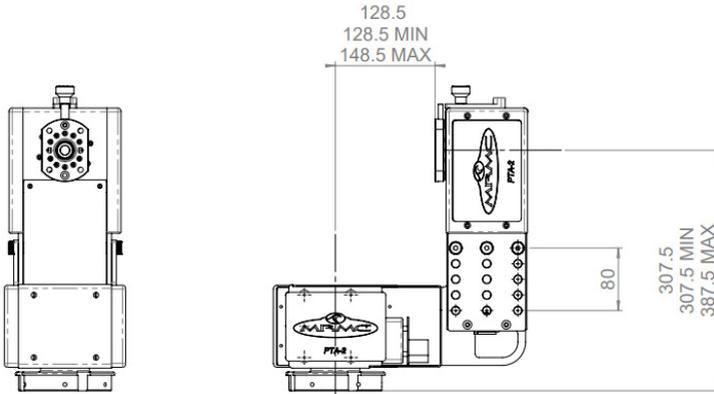
<p>Connections</p>	<p>Camera connections:</p> <ul style="list-style-type: none"> <li>• RJ45 Gigabit Ethernet (1000 BASE-T) (IEEE 802.3ab) for Camera</li> <li>• HD SDI Bitrate 1.45Gb/s Max output 720p</li> <li>• Camera power 12V</li> <li>• Switchable 24VDC 1A</li> <li>• Serial lens connection (10 pin Hirose)</li> <li>• Lens motor lemo connections for Zoom and Focus</li> </ul> <p>External connections:</p> <ul style="list-style-type: none"> <li>• RJ45 Ethernet</li> <li>• SDI pass through</li> <li>• Genlock</li> <li>• Power: Supplied with 240V 16A Optional 110V 16A and UK/EU/US</li> </ul>	
<p>Axes speed</p>	<p>Studio</p>	<p>30°/s</p>
	<p>Sports</p>	<p>Pan: 0.001° – 180° per second Tilt: 0.001° – 180° per second Zoom: 0.001° – 60° per second Focus: 0.001° – 60° per second</p>
<p>Accuracy of playback (angular resolution)</p>	<p>0.3 arc-min</p>	

## Outline Layout with MRMC Telepompter



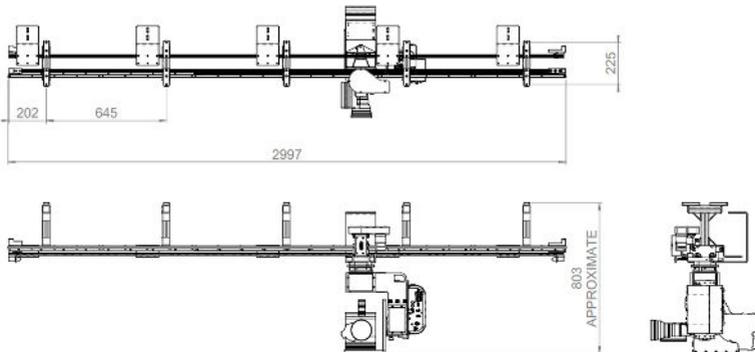
## Outline of PTA-2 Motor Units

Pan and Tilt motor units can be bolted in a range of positions for optimal payload support.



## Outline Layout with Ceiling Rail

Recommended payload camera and lens only.



Notes

Notes



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