MARK ROBERTS MOTION CONTROL

TRH (TRACK ROBOTIC HEAD)

QUICK START GUIDE

QSG Product code: MRMC-2237-00
Product Covered: MRMC-2162-00, MRMC-2163-00

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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.

Keep the brakes on caster wheels on when using the TRH lift column.

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

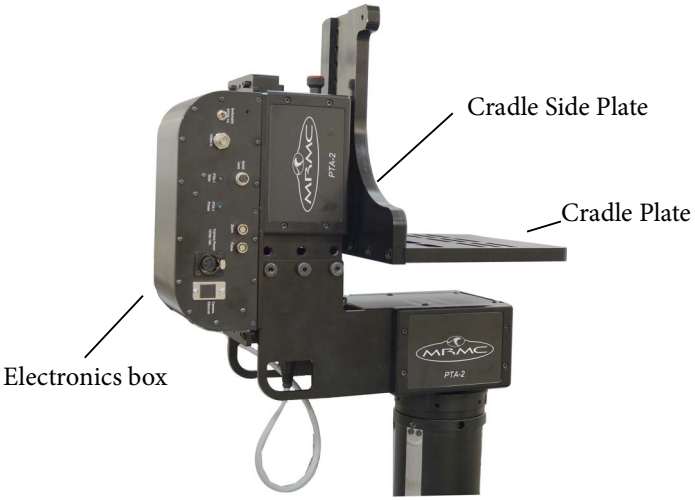
Thank you for using the TRH lift column from Mark Roberts Motion Control (MRMC). The TRH (Track Robotic Head) is a low noise, broadcast specific Track system comprising a trolley on rails fitted with an SLH (-1 or -2) lift column to give movement in two axes. It is designed to carry Pan Tilt camera platforms with payloads of up to 45kg, potentially up to the size of a PTA-2 plus camera and lens. It can be Integrated with MRMC Polymotion Chat for full automation with natural motion. It is controlled via Ethernet connection to connect directly to a PC running Multi-Head Controller (MHC) or RTL software.

TRH-2 Fixed Two Stage Lift Column

Setting up the hardware

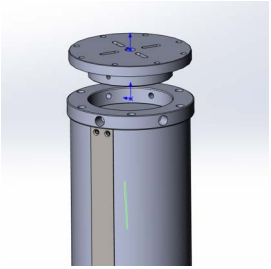
Mounting PTA-2 on SLH/TRH Lift Column

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



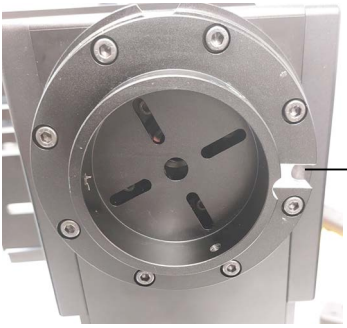
1. Power up the lift column and use the rocker switch on the side of the control box to move the lift column up and down. Network connection is not required yet. Lower the product before working on the load. The parent control system will have to reset the robot after using the switch.

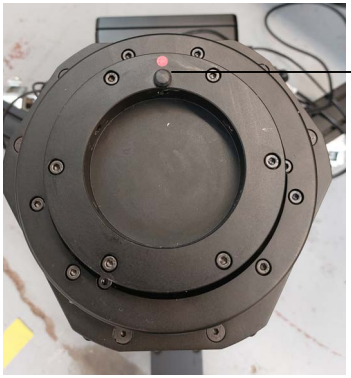
2. The Top of the TRH comes with a mounting disc which drops into a cup in the column. This disc will accept many MRMC products, including the PTA-2.

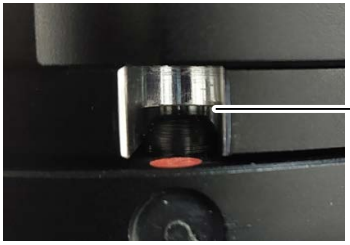


3. Fit the column disc to the PTA-2 taking notice of the key slot location. Ensure that the key slot lines up with the red mark and button as the head is lowered

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.



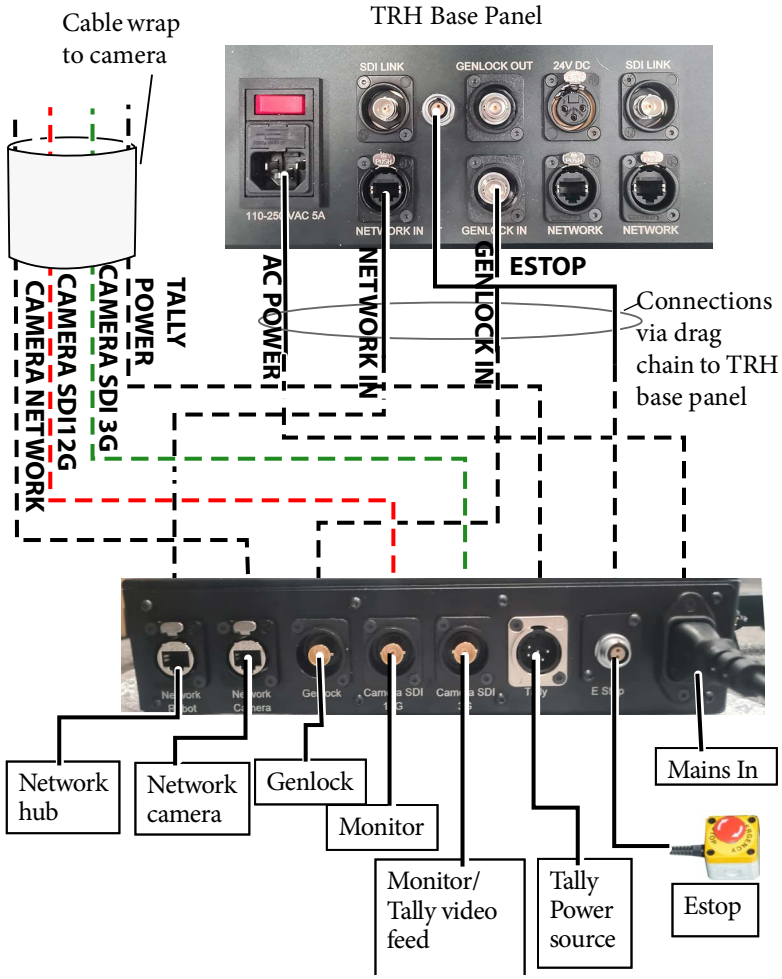




For further instructions on how to mount the camera and teleprompter on PTA-2, see *PTA-2 Quick Start Guide*.

Connecting the cables

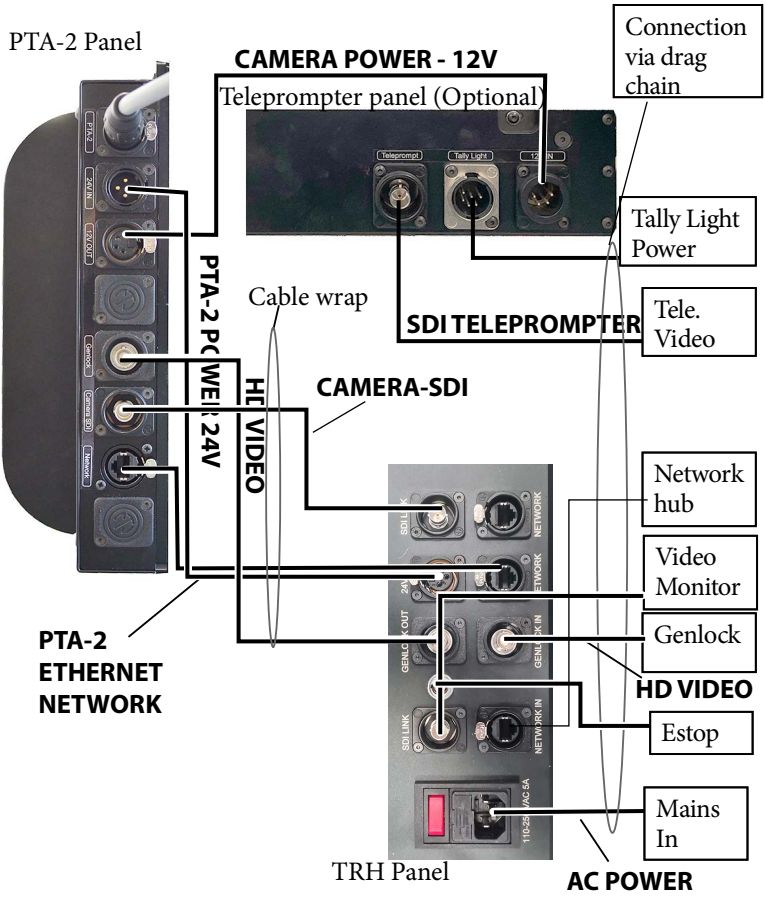
TRH-Track Panel and Base Panel Connections



Note

While Tally Light, 10G camera network, Camera SDI 3G and Camera SDI 12G cable connections are directly connected to the track panel via the drag chain, other connections to the head and the column are routed via the base panel of the TRH.

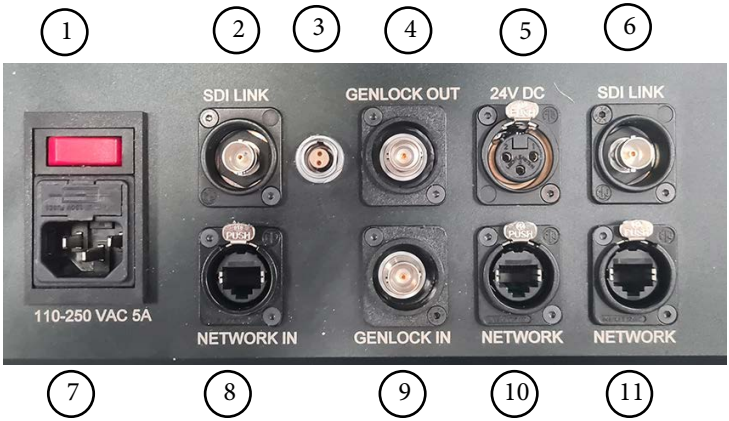
TRH-Example head (PTA-2) Connections



Notes

Appendix 1 **TRH connectors**

TRH Connector panel summary



1. **MAINS SWITCH**. You should only power on TRH when all mechanical parts are securely mounted in place and all cables are connected.

2, 6 **SDI** connectors are a pass through, umbilical goes in one, the cable from base to head on the other. If required, camera video feed can be run directly. For connector pin-out, refer to *SDI Connector* on page 13.

3. **ESTOP** connector can be used as an input for E-Stop. To enable the motors, Pins of this connector needs to be shorted, else all drivers are disabled and enable signal from Flair is ignored. It can be connected to the external E-Stop box, but if no external E-Stop is needed, a bypass jumper may be used.

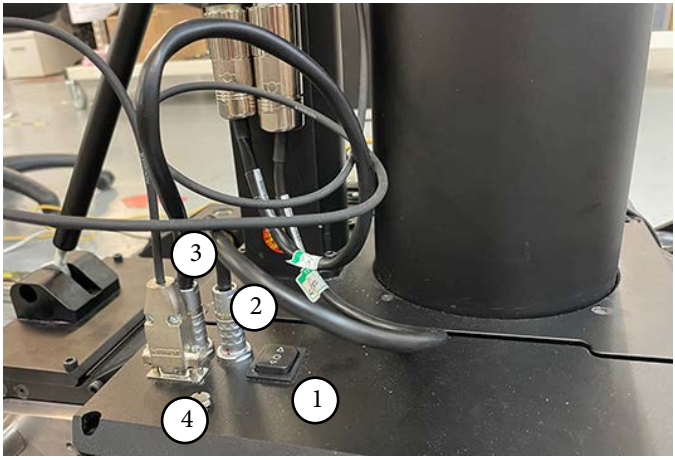
4, 9 **GENLOCK** connector for sync/genlock signal from studio source. For connector pin-out, refer to *Sync connector* on page 12.

5 **24V OUT** output connector for power to the PTA-2 head. For connector pin-out, refer to *24V OUT connector* on page 12.

7. **110-250VAC 5A** power input connector for the TRH, head, and camera. For connector pin-out, refer to *Mains In connector* on page 13.

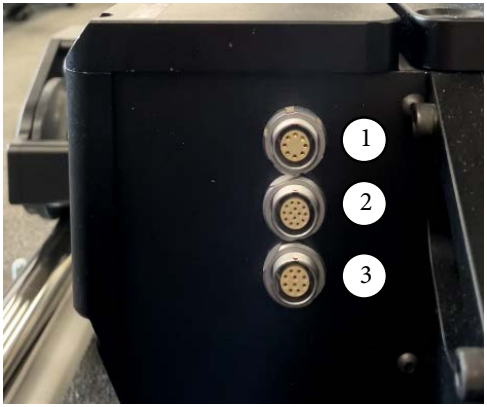
8, 10, 11.**NETWORK** connectors are the RJ45 connectors for communications between multiple Ethernet devices in the TRH and PTA-2 system. These two connectors share a common Ethernet hub within the TRH panel. You normally connect one of these to the **NETWORK** connector PTA-2 connector panel and the other to the network hub in the rest of the network.

TRH Motor Connector Panel summary



1. **Rocker switch** to move the TRH lift column up or down.
2. **MOTOR POWER** connector for power to the TRH column motor. .
3. **MOTOR ENCODER** connector is used to communicate with the motor drive.
4. **BISS ENCODER** is used to communicate with BISS motor drive.

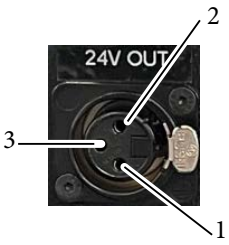
TRH Track Motor Connector Panel summary



1. **MOTOR POWER** connector for power to the TRH track motor.
2. **MOTOR ENCODER** connector is used to communicate with the track motor drive.
3. **ABSOLUTE ENCODER** is used to communicate with BISS motor drive.

Connector pin-outs

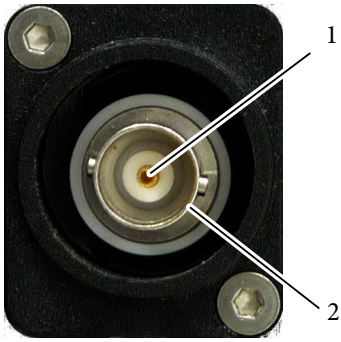
24V OUT connector



General purpose 24VDC OUT 3-way XLR (female) connector. This is the 24V OUT connector on page 9.

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

Sync connector

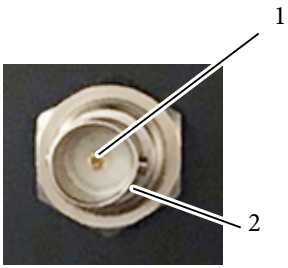


This is a multi-purpose **SYNC** connector and can be used for synchronization or genlock signals between the camera and TRH in either direction. There is no further connection to the circuitry inside the head. Note that although the **SYNC** and **VIDEO** connectors are similar they are **not** interchangeable. 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. This is the GENLOCK connector on page 9

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

SDI Connector

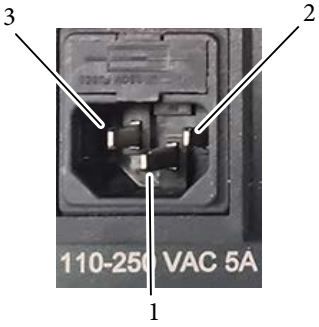
The **SDI** connector is rated at HD SDI Bitrate 1.45Gb/s Max output 720p for the video signal from the head/camera pass through from the other **SDI** connector on the TRH panel. This is the SDI connector on page 9.



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

Mains In connector

Power input connector for TRH and its attachments. 240 Volts AC. It is a 3-Way (Male) C14 IEC connector. This is the 110-250VAC 5A connector on page 9.



1. Earth
2. Live
3. Neutral

Appendix 2 **Specifications**

Specification

Weight	TRH-1: 70kg TRH-2: 70kg
Maximum payload	TRH-1: 60kg / 132lbs (PTA-2 + Teleprompter + Camera) TRH-2: 45kg / 99lbs (PTA-2 + Teleprompter + Camera)
Column Height	TRH-1: Min: 860mm / 33.8in, Max: 1340mm / 52.7in TRH-2: Min: 783mm / 30.8in, Max: 1533mm / 60.3in
Range of Motion	TRH-1: 480mm / 18.8in TRH-2: 750mm / 29.5in
Rail Length	Modular
Temperature range	0-45 °C (32-113 °F)
Humidity tolerance	0% to 85% relative humidity, non-condensing

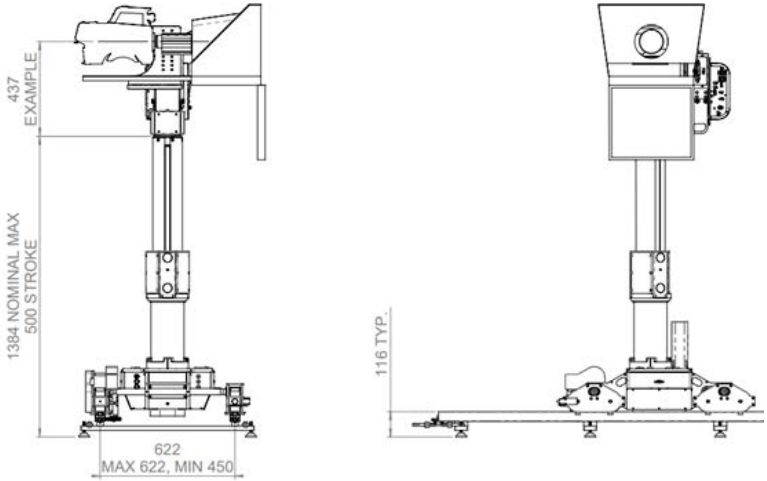
Connections	• RJ45 Ethernet • SDI pass through • Genlock • Mains IN • 24V OUT • Estop • Power: Supplied with 240V 16A Optional 110V 16A and UK/EU/US

Performance

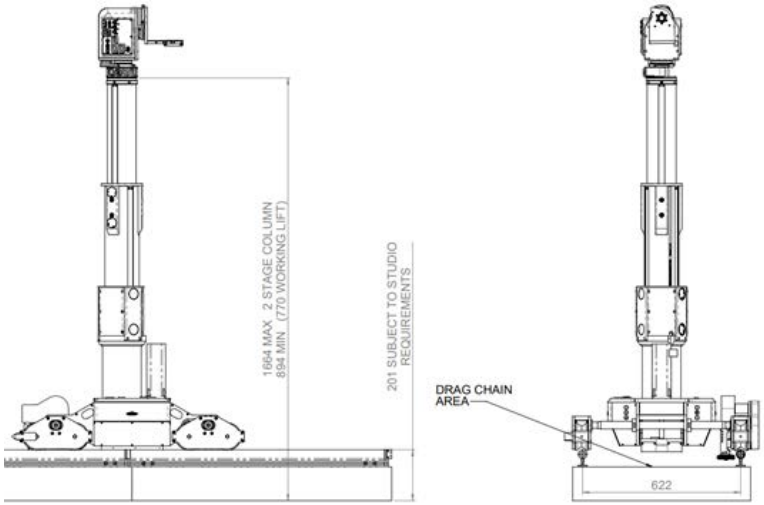
Column Height Adjust Speed	TRH-1: 75mm/s / 2.95in/s TRH-2: 150mm/s / 6.9in/s
Column Height Adjust Acceleration	TRH-1: 50mm/s² / 1.9in/s² TRH-2: 80mm/s² / 3.1in/s²
Track Acceleration	TRH-1: 200mm/s² / 7.9in/s² TRH-2: 200mm/s² / 7.9in/s²
Track Speed	TRH-1: 300mm/s / 11.8in/s TRH-2: 300mm/s / 11.8in/s
Track Gauge Standard	TRH-1: 622mm / 24.5in TRH-2: 622mm / 24.5in
Track Gauge Option	TRH-1: 450mm / 17.8in TRH-2: 450mm / 17.8in

Appendix 3 **Dimensions**

TRH-1 and TRH-2

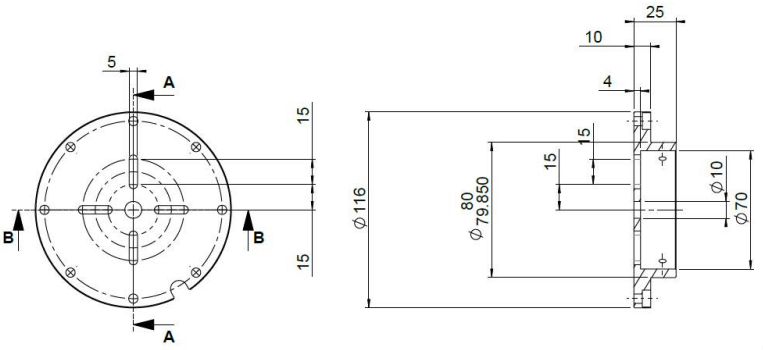


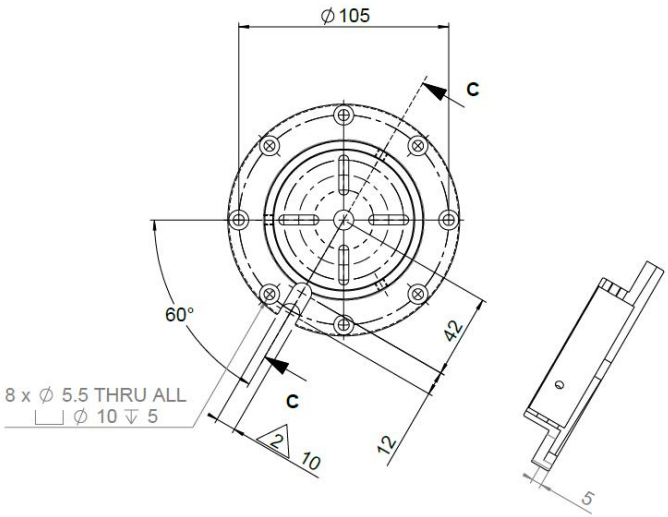
TRH-1

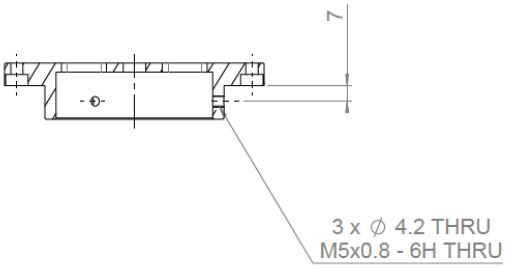


TRH-2

Head Mounting Top Hat






7
3 x ∅ 4.2 THRU
M5x0.8 - 6H THRU

Notes

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