



Mark Roberts Motion Control
LEADERS IN CAMERA ROBOTICS

ANIMOKO

PROFESSIONAL TABLE-TOP ANIMATION MOTION CONTROL RIG



QUICK START GUIDE

Product Code: MPMC-1193-02

Part number: MPMC-1495-00

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Chapter 1 Assembling the hardware

Safety

- Due to the size and weight of Animoko components, it is recommended that you use at least **two** people to assemble it.



- Do not use around flammable gas. All electrical equipment can generate sparks that can ignite flammable gas.
- Animoko has powerful motors that can pinch, so take care not to get your hands trapped in the rig or cabling.
- Keep the equipment dry. The system has **not** been made weatherproof. Do not use with wet hands.
- 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 Animoko and the rotating head or camera if possible.
- Use a 240V AC power supply that is properly **earthed** (grounded). This is not only for safety reasons; electrical noise on an unearthed system can make axes controller boards trip out unpredictably, interrupting the shoot and creating intermittent problems that can be difficult to trace.

Overview

Thank you for using the Animoko motion control rig from Mark Roberts Motion Control (MRMC). Animoko is designed for precise stop-motion animation in professional studio environments. Its features include:

- Designed to work over a scene table for animation

- Driven by stepper motors, as a result is slow, noisy, but precise
- Runs on Flair Motion Control software by MRMC – Moves can be programmed in Flair and has a Flair kinematics model allowing for accurate target tracking
- Has track drive – runs on light-weight precision rail
- Eight axes – Track, lift, rotate, pan, tilt, focus, zoom, and extend
- Octo-box – Stepper output 8-axes standard box
- Includes an E-stop system
- Has power supply on-board
- Runs SFH-50 and SFH-30 heads without roll

Animoko is typically part of a complete motion control system that includes:

- **Animoko** itself.
- The **trolley** wheels on which Animoko is mounted. You can use Animoko directly on wheels, or use the trolley wheels to lift Animoko onto a **track** or alternative base. You can leave the trolley wheels on or remove them.
- A **head** such as an Ulti-Head or SFH-50, on which you mount your video camera.
- A Windows PC running **Flair** Motion Control Software.
- An **RT-14** interface box, which handles the connections between the PC and the Animoko rig.
- Additional **controllers** such as a Hand-Held Box (HHB), MSA-20 Handwheels or Pan Bars.

Mounting the Animoko on a track

These instructions describe how to mount a heavy, fully built rig onto the track. If you want, you can mount the base on the track first and then build the rig on the track.

Mounting the Animoko on the track bearings

1. Roll the Animoko to a position just off the end of the track, and rotate the base on its wheels to be the correct way around for the track. The base must be oriented so that when you install the track motor gear later in these instructions, the gear engages with the toothed side of the rack. Use the pictures below to help you orient the base, but do not install the track motor gear yet. If the track motor gear is already installed on the base you can leave it in place.

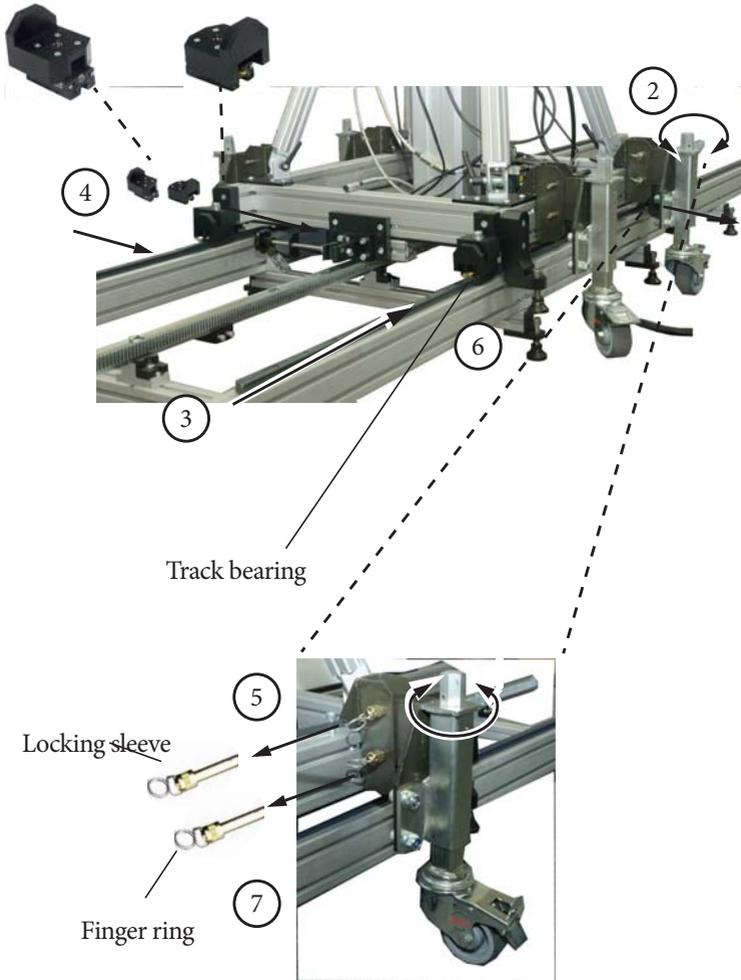
Animoko base with track motor attached

Smooth side

Rack



Rack teeth on this side



2. Rotate the wheel caps to raise the Animoko on its wheels high enough to go over the track with about 7 cm of clearance.
3. Roll the Animoko on its wheels over the track about a metre.

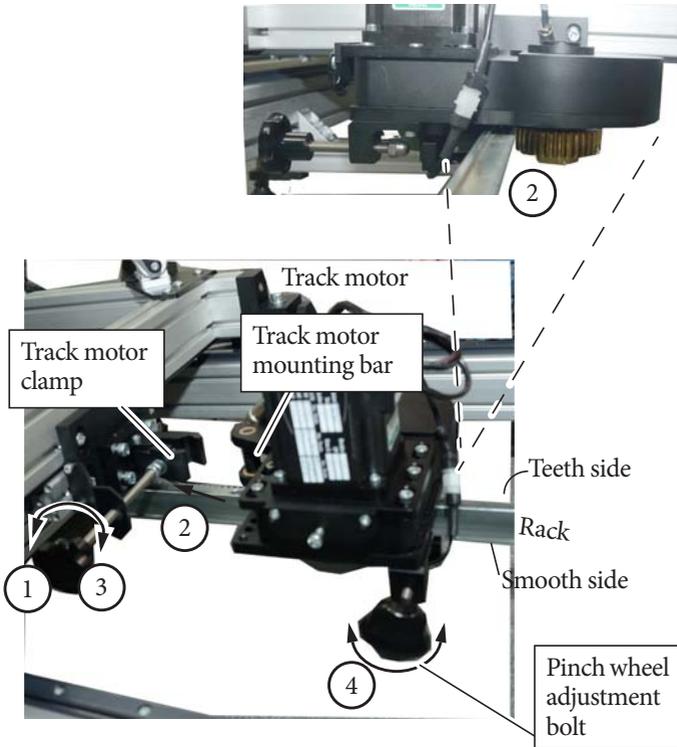
4. Push the four track bearings onto the ends of the bearing rails (two on each rail) and into position under the four corners of the Animoko base.

Hint

Always mount and remove the track bearings with care. Try to keep them squared up and in-line with the bearing rail to avoid damaging them or loosing a bearing.

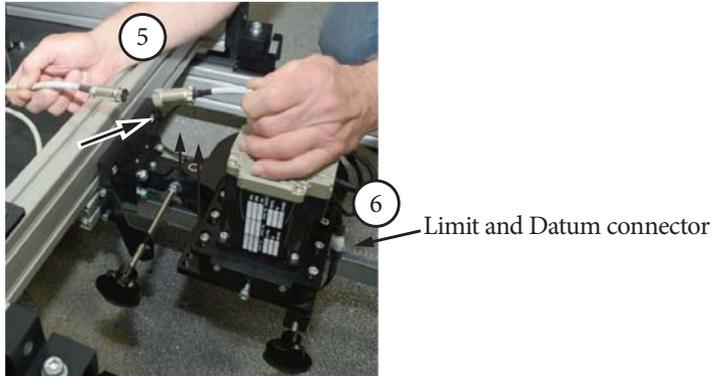
5. Carefully lower the Animoko onto the four track bearings, making sure that all four bearings are aligned with the corners of the Animoko base. If the track motor is already installed, make sure the track motor gear on the underside of the Animoko clears the rack. (The track motor pivots on its mounting clamp so you can move the track motor gear out of the way to clear the rack.)
6. Insert and tighten the four track bearing mounting bolts at the corners. You might have to raise or lower the base slightly so you can nudge the track bearings into perfect alignment and then completely tighten the bolts.
7. Raise the wheels off the ground and remove them by pulling out their retaining pins (two on each wheel). You must remove the wheels so they don't hit any track components when the rig is moving along the track.
8. Insert the pins back into the wheel units for safe keeping away from the rig. (Remove and reinsert the pins by using the finger ring only, not the locking sleeve.) If you are going to store the wheels for weeks or months, release the wheel brakes so they don't leave a dent in the wheel rubber.
9. Attach the track motor gear and pinch wheel, described in the next section.

Mounting the track motor gear and pinch wheel



1. Turn the tightening knob to loosen the track motor clamp.
2. Mount the track motor assembly onto the Animoko base by inserting the track motor mounting bar into the track motor clamp. Ensure that the track motor gear meshes with the teeth side of the rack.
3. Turn the tightening knob to tighten the track motor clamp.
4. Hand-tighten the pinch wheel adjustment bolt so that the rubber pinch wheel presses against the back of the rack but not tightly. This

holds the track motor gear firmly against the toothed side of the rack.



5. Connect the track motor cable. Note that the motor itself might be mounted on the drive unit in an orientation other than that shown in the picture.
6. Ensure that the Limit (L) and Datum (D) connectors are connected.

Mounting the head

You can mount the head under-slung as shown or over-slung.



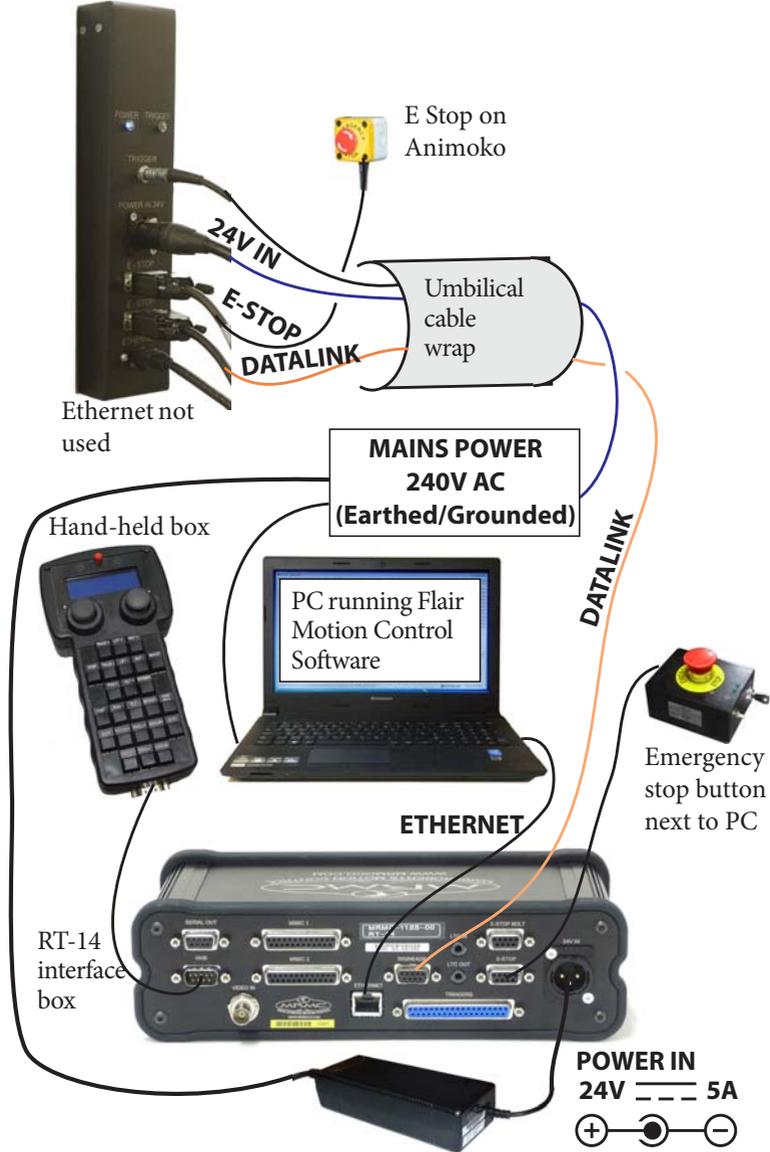
- ◆ Mount the head to the front with 8 bolts.

If a heavy camera is to be used, then counter weights can be added to the rear of the extend.

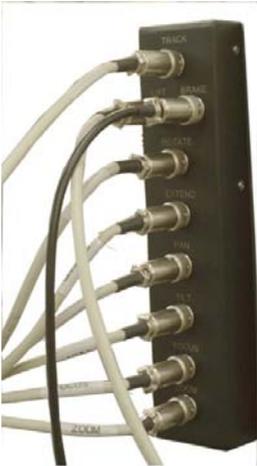
Connecting the cables

PC - RT-14 - umbilical cable - Animoko connections

Octo box on Animoko



Picture of Octo box connections:



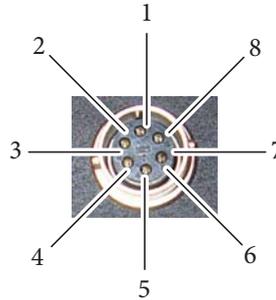
Notes

Notes

Appendix 1 Animoko pinouts

Track, Lift, Rotate, Extend, Pan, Tilt, Focus and Zoom

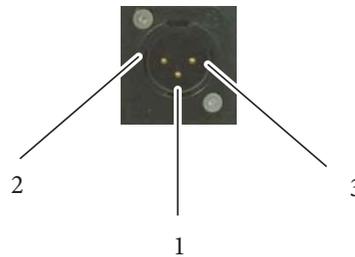
1. GND
2. +24V
3. +5V
4. Limit In
5. Step
6. Direction



Mains In connector

Power input connector for Animoko and its attachments.
240 Volts AC.

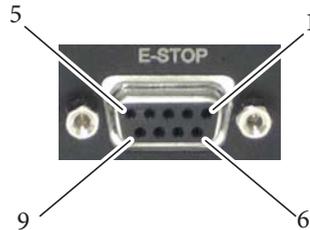
1. Earth
2. Live
3. Neutral



E-Stop connector

E-Stop is a (9-way D-type Female) connector used for connecting the emergency stop to the Animoko. Short Pin1&Pin5 to enable the robot.

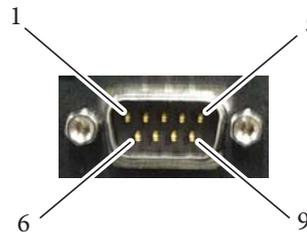
1. Pin1 – Estop1
2. Pin5 – Estop1



Data Link connector

Data Link connector, for controlling the Animoko axes using a DataLink connection, as an alternative to using an Ethernet connection. You connect this to the RIG/HEAD connector on an RT-14, which in turn is connected to a PC running Flair Motion Control software via an Ethernet connection.

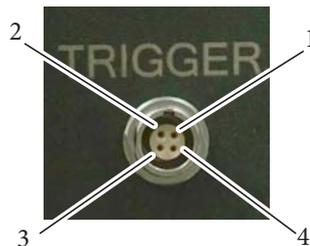
1. Watchdog-
2. In-
3. Out-
4. ESTOP
5. N/C
6. Watchdog+
7. In+
8. Out+
9. ESTOP



Pins 4 and 9 are for the Emergency Stop (E-stop). The polarity doesn't matter. The E-stop loop runs through all units on the DataLink chain. A break at any point will stop the entire rig.

Trigger connector

1. Gnd
2. Trigger 1
3. Trigger 2
4. +5V



Appendix 2 Specifications

Weight: 192 Kg (254 lbs) including trolley wheels without camera

Payload (camera and head): 16Kg

Counter weights: 2 (need not be changed or removed from the rig regardless of the head or camera chosen)

Power requirements: 110-240 Volts AC (earthed/grounded) AC 50-60Hz.

Temperature range: 0-45 °C (32-113 °F)

Humidity tolerance: 0% to 85% relative humidity, non-condensing

Maximum width: 292.9cm

Maximum height: 333.7cm

Axes:

Track (optional): As required

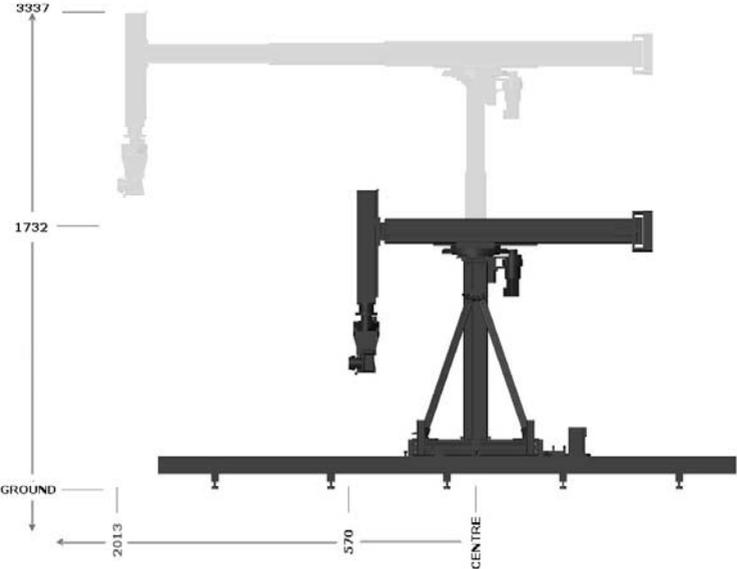
Rotate: 360 degrees

Pan: 360 degrees

Tilt: 360 degrees

Lift: 96.3cm

Extend:91.6cm



All measurements are in mm.

Notes

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