

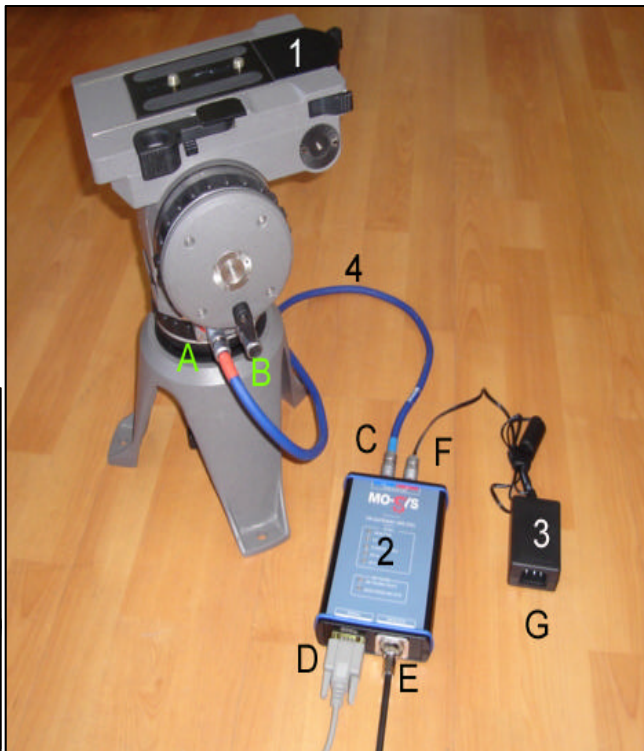
Mo-Sys E-Sensor Tracking System User Manual

System Components:

- 1) E-Sensor Head
- 2) Gateway
- 3) Power Supply Unit
- 4) Mo-Sys Cable
- 5) Lens Encoder Kit
- 6) B: Terminator



Lens Encoder Kit Mounted



Pict.2 Kit Components

2. System Setup

Plug the red end of the Mo-Sys bus cable into the e-Sensor head (A) and the blue end into the gateway (C). Plug the terminator into the e-Sensor head's blue socket (B) and the power supply into the red socket on the Gateway (F). On the other end of the gateway you'll find the serial connection to link to the Virtual Studio System (D), and the BNC Genlock Connector (E) for synchronisation.

3. Power Up

Connect an IEC AC mains power lead to the power supply and the system will turn on. The power supply supplied is of the universal type and will work on all mains voltages and frequencies. When the system is working correctly, the status LED on the e-Sensor head (above the Mo-Sys Bus connectors) will flash green and the "Data from Mo-Sys" LED will light on the gateway. The protocol will now stream out of the gateway serial port to the host computer. If there is a networking problem the "Network Fault" LED will light. Should this happen check the blue bus cable and check the terminator plug is correctly inserted.

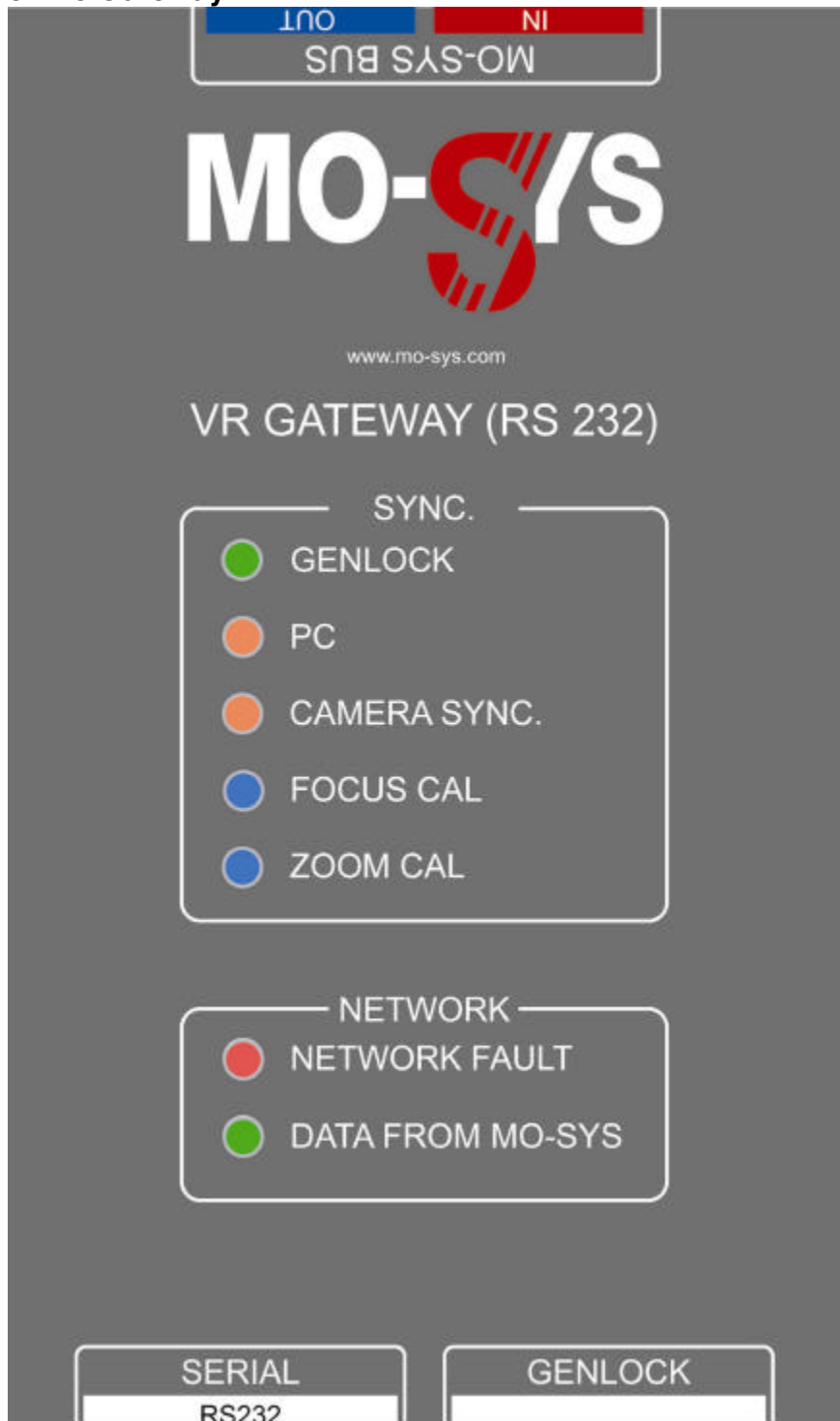
4. Absolute Position

The e-Sensor features absolute encoders so on every power up it knows the current pan and tilt absolute position.
No zero referencing is required at startup.

The zero position of the pan and tilt axis can be reset at any time by pushing and holding the “Zero Head” button for a few seconds. The new absolute position is stored in flash memory and so will not be lost when the system is powered down.

The resolution of the pan and tilt encoders is 500,000 positions per revolution.

5.The Gateway



Gateway Serial Protocol

The Mo-Sys gateway is available with one of two Serial streaming Protocols:

- a) Mo-Sys protocol: 38400 Baud, 8 Bit, Odd Parity, 1 Stop bit
- b) Radamec protocol (special order): 38400 Baud, 8 Bit, Odd Parity, 1 Stop bit. A2 Extended packet with Pan, Tilt, Elevation on Free D Extension

Gateway Connectors:

Serial Data Connection

The gateway is available with RS232 or RS422 output.

The RS232 connection is a standard 3 wire DCE configuration:

Pin 2 : TX (from gateway)

Pin 3: RX (to gateway)

Pin 5: GND

The RS422 connection is a standard SMPTE Slave configuration:

Pin 1: GND

Pin 2: TX- (from gateway)

Pin 3: RX+ (to gateway)

Pin 7: TX+

Pin 8: RX-

Genlock Connector

The gateway features a BNC connector for connecting a genlock signal. This is 75ohm terminated internally. If a genlock signal is connected the "Genlock" LED will light. If no genlock signal is detected, the gateway will default to its inbuilt timebase of 50 hz and the genlock light will be extinguished.

5. e-Sensor Connectors



The e-Sensor side panel features a number of sockets for lens encoding:

Incremental Lens Encoder Sockets

The two blue coloured sockets are for connecting optional incremental encoders for focus and zoom. Encoders are available in standard resolution (1,200 counts per revolution) and in high resolution (40,000 counts per revolution). The standard encoders are usually supplied but for more demanding applications and lenses with longer travel, the hi-res encoders are recommended.

A special cable is available for connecting the Canon box lenses type XJ22x and XJ23x encoder outputs directly to the e-Sensor.

Digital Lens Encoder Socket

The orange connector is for the newer digital lenses from Canon and Fujinon. Special cables are available for either and the e-Sensor will auto-sense which is connected. These lenses offer convenience in not having to mount external encoders- instead the positions of their internal encoders are output in a serial data stream direct to the e-Sensor and output to the virtual set via the gateway. Resolution of these lenses varies from model to model and should be checked with their manufacturer.

I/O Socket

The I/O socket is not normally used in virtual set applications. In motion control applications an external reposition switch can be fitted to the I/O port.

Buttons

Lens Cal:

when held in for 3 seconds this resets the lens encoders ready for re-calibration.

Zero Head:

In the Virtual set environment this button is held in for 3 seconds to set the pan and tilt absolute positions to zero. This is used to index the heads absolute output to the virtual surroundings and the physical set.

When the e-sensor head is used as an input device in the motion control system the zero head button allows the e-sensor to be repositioned without moving the head (it temporarily disconnects the two)

The only other time the zero head button is used is for re-calibration of the e-Sensor encoders. This should not normally be required. If it is deemed necessary (please consult technical support first), please follow the instructions in the separate e-Sensor calibration document that you will be sent.

5. Lens Encoders: Mounting and Calibration

First choose the correct gear type for the lens (Canon or Fujinon) and mount them on the encoders, tightening up the small grub screws in the gears. The lens encoder kit should be mounted on the lens as shown in the following pictures.

The bracket should be screwed onto the lens barrel with the central screw (either M3 or special M4 supplied) and the two grub screws at either end adjusted to take up any looseness caused by differing lens barrel diameters. **Be careful not to tighten up too much** or you may distort or damage the lens!

You may have to turn an encoder around to avoid its body fouling the focus ring of certain lenses. The gears can also be mounted either way round to reach the lens gears correctly.

Finally adjust the aluminium clamp collars on their shaft so that a light spring pressure is maintained to keep the gears in mesh.



Check the focus and zoom movement and make sure there is no jump or backlash.

Lens Calibration

Connect the encoder connectors to the e-Sensor making sure that the correct encoder is connected to the appropriate connector (focus or zoom). Switch on the system and make a full rotation of each axis from limit-to-limit. The blue lights on the gateway indicate that each lens encoder is calibrating. Once the lens rings have been moved their full range they are calibrated and their range rescaled in the serial data output. The lens calibration data is volatile so every time the system is powered on a full revolution limit-to-limit is required to re-calibrate the lens axes properly.

The lens calibration can be reset any time by pressing the lens cal button or by rebooting the system.



Lens encoders mounted to a Canon lens

e-Sensor Specifications

- Max counterbalanced camera weight: 30Kg
- Head weight: 6.5Kg
- Pan Range: 360 °
- Tilt Range: +/-90 °
- Output resolution pan & tilt: 500,000 counts per revolution
- Bowl Diameter 100mm
- Power Supply: 8-30VDC
- Mains Supply for AC-DC PSU: 100-240VAC, 50/60Hz
- Power Consumption (Head and Gateway): 500mA Max.