

# **Gemini FocusR – universal stepper motor controller for focussers**

## **General features**

Parts Delivered: central interface, temperature sensor with 2m cable, driver for the USB port (download).

Options: hand pad with 2m cable (buttons are provided on the central interface, too)

Parts needed for functioning (not supplied): motor cable, USB cable (type A-B), 12-24VDC 1A power supply

The central interface connects to a PC USB2 port, the motor, the temperature sensor, DC12V power in (1A) and the optional hand pad . It has 3 buttons, 2 to move in/out, the 3rd (central) is used to change the speed continuously between a wide range (press button in or out while keeping the 3rd button pressed) and to change motor direction.

The interface will drive unipolar (5 or 6 leads motors) and bipolar (4 leads) stepper motors. They must be wired to the DB9 connector according to the pinout given in the appendix and the type of motor will be recognised automatically. The motor is driven in microstep mode which gives higher torque compared to standard drivers and less vibration. It is well suited for applications where there is only a small reduction between the motor and the shaft/pinion of the focuser (small backlash) because here the motor has to turn slowly and with a high torque.

The interface is polarity and overload protected.

The interface will remember the IN and OUT limits in off-line mode.

The firmware of the microcontroller is PC upgradeable (using Pulsar Commander downloaded from [www.astronomy.hu/PULSAR.zip](http://www.astronomy.hu/PULSAR.zip)).

The temperature sensor gives an absolute value within 1 degree (C) of the actual ambient temperature but 100 C was added to the value (to keep the reading above zero).

## **Setup**

Install the software used to control the interface (Robofocus for example)!

Connect the interface to the PC with the USB cable!

Apply power to the interface! A beep will indicate the successful startup of the microcontroller.

When Windows asks about the driver, show it the folder that contains the appropriate driver (depending on the actual Operating System)!

The motor may or may not be connected to the interface during this process.

If you are using ASCOM to access the focus control select „RoboFocus Control Program” in the setup window.

## **Using the interface**

To match the IN/OUT direction between the PC program and the focuser, press both direction buttons while you power up the device!

To change focussing speed in visual use, press the IN or OUT button while keeping the central button pressed!

Use the two direction buttons to move the focuser in and out. You must program the IN and OUT limits in the PC software first to have correct operation, otherwise the motor may stop (beep) before the desired position is reached.

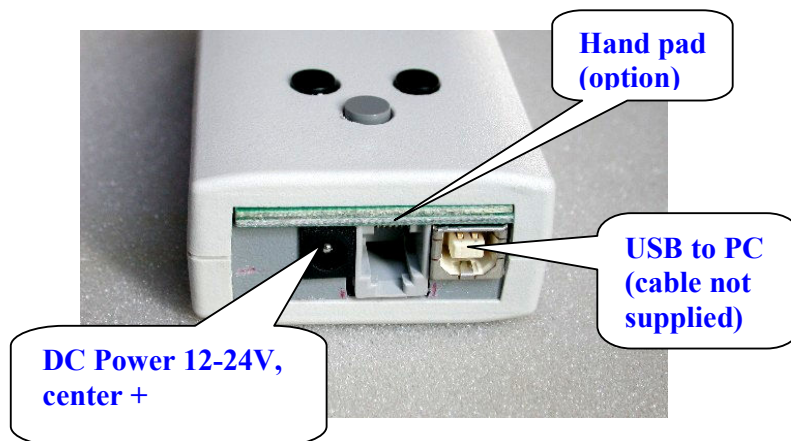
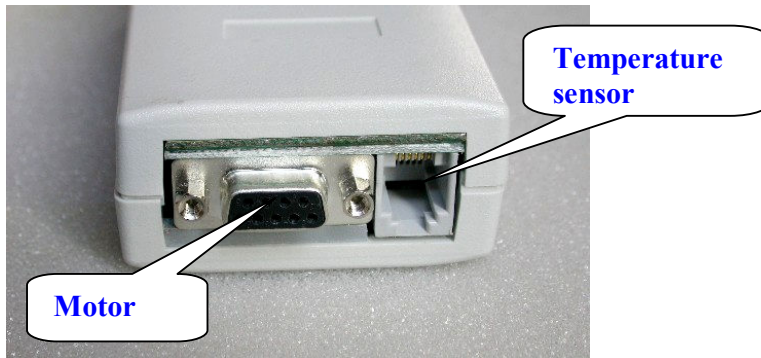
## Appendix

Motor cable pinout at the DB9 connector (male for motor cable)

Bipolar: pins 1,2 = phase/winding1, pins 4,5 = phase/winding2

Unipolar: pins 1,2 = phase/winding1, pins 3,4 = phase/winding2, pin5 = central

Interface connector identification



Optional handpad

