# Focuser/GPS: Technical Information.

## Command Numbers:

* 1. Halt 0xff reset the focuser and halt all movement
  2. Home 0x10 move the focuser to its home position
  3. Move 0x20 move the specified number of steps at the specified resolution.
  4. Move to 0x25 move the focuser to the specified position
  5. Display On 0x30 switch the position and status display on
  6. Display Off 0x35 switch the position and status display off

## Focuser Resolution:

* 1. The focuser is set at 128 pulses per step

## Focuser Direction

* 1. If the direction is set to OUTWARD (0) the focuser will move outwards, away from the home, towards the away (48500) position
  2. If the direction is set to INWARDS (1) the focuser will move inwards, towards the home (0) position.

## Baud Rates

* 1. Focuser Controller
     1. HUB to/from Focuser Controller Serial1 38400
     2. GPS to Focuser Controller Serial3 9600

## Status

* 1. Focuser to HUB
     1. All OK 0
     2. Temperature or Humidity not valid 0x01
     3. Date or Time not valid 0x02
     4. Longitude or Latitude not valid 0x04
     5. Altitude not valid 0x08
     6. Position not home 0x10

## Protocols:

* 1. HUB to Focuser
     1. Header STX 0x02 unsigned char [0]
     2. Command\_number unsigned char [1]
     3. Focuser\_target unsigned int [2 – 3]
     4. Focuser direction unsigned int [4 – 5], 0 = outwards
     5. Footer ETX 0x03 unsigned char [6]
  2. Focuser to HUB
     1. Header STX 0x02 unsigned char [0]
     2. Command number unsigned char [1]
     3. Focuser status unsigned char [2]
     4. Focuser position unsigned int [3 – 4]
     5. Temperature float [5 – 8]
     6. Humidity float [9 – 12]
     7. Year unsigned char [13]
     8. Month unsigned char [14]
     9. Day unsigned char [15]
     10. Hour unsigned char [16]
     11. Minute unsigned char [17]
     12. Second unsigned char [18]
     13. Latitude float [19 – 22]
     14. Longitude float [23 – 26]
     15. Altitude float [27 – 30]
     16. Footer ETX 0x03 unsigned char [31]

## Hardware Pin Out

* 1. Focuser Arduino Mega
     1. Display\_CS\_pin 10 // MAX7219 CS/LOAD pin D10 blue

## Display\_DIN\_pin 11 // MAX7219 DATA pin D11 green

## Display\_CLK\_pin 12 // MAX7219 CLK pin D12 yellow

## amisPORPin 34

## amisERRPin 35

## amisCLRPin 36

## amisCSPin 37

## amisDIR\_Pin 38

## amisSTEP\_pin 39

## reset\_switch\_pin 40

## homeswitch\_pin 41 // home position switch is on D42

## out\_switch\_pin 42

## in\_switch\_pin 43

## dht22\_pin 44

## buzzer\_pin 45 // 45 = (buzzer)

## OUT\_LED\_pin 46 // 46 = Red

## IN\_LED\_pin 47 // 48 = Blue

## com\_LED\_pin 48 // 49 = Green

## amisSLA\_pin A0

## motorvoltage\_pin A1