

## Instructions



Ver. 20.1.4

The **Micro L Head (μL)** can be controlled by any BR Remote controller. These generate RS485 data which can be connected directly to the **Micro L Head** or sent via an IP network with IP adaptors. The RS485 data can be sent up to 1km on a twisted pair cable.

Power for the **μL** can be up to 35v so very long ranges can be achieved by increasing the voltage to the remote end. Inside the unit is a 12v regulated supply for the camera so it doesn't matter what voltage you send to the **μL**, the camera will always have 12v.

Both power and RS485 control data are input via the 4pin Lemo connector on the base.

Currently, the cameras supported with control protocols are **Marshal** (VISCA) and **Dreamchip**. The control protocols for these cameras are embedded in the **μL** and can be connected to the camera. The camera itself can then be controlled via BR Remote controllers. The Camera CCU output is RS422 and is on the 7pin Lemo connector.

There are various widths of camera plate available; 40mm, 45mm and 60mm. Choose the one that best suits the camera you are using.

As standard the **μL** is weatherproof and can be used outside. This makes a perfect match for the small weatherproof cameras that are readily available.

There are slipping clutches on both pan and tilt which prevent damage to the mechanics if it is moved inadvertently during rigging or if it hits an obstruction during use.

And if you want to hang it upside down – no problem. There are 3x M4 mounting threads as well as a 1/4" camera thread on the base.



## Joystick Control

Like all BR Remote heads, there are 10 'gears'. Some controllers can select any gear but others can only select a smaller number of gears. The movement is fully proportional to the joystick displacement in all gears.

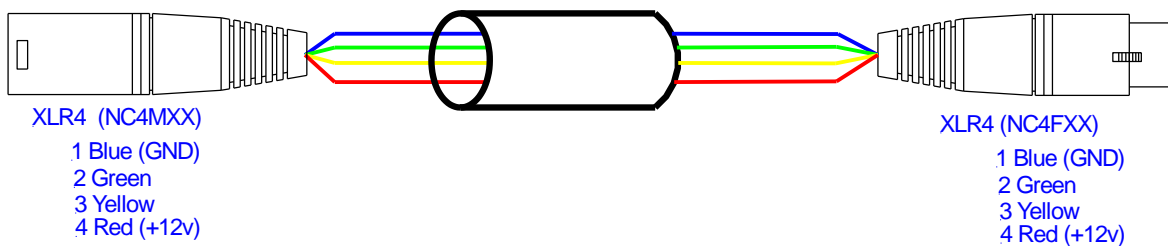
If the 'turbo' button is enabled on the controller this will set the speed to the fastest gear whilst the button is held down.

## Pre-Set Positions

The  $\mu$ L has the capacity to store up to 64 pre-set positions although some controllers can only access 4 positions. When first powering the unit on you will need to manually set a 'Home' position or storing the positions you need. You can set a 'Home' position by using a known picture position from the camera or by driving it to the ends of the pan and tilt travel. Doing this will enable it to re-call previously stored positions.

## Connections

The  $\mu$ L is supplied with a short cable to connect it to a controller. This cable can be simply extended following this diagram;



### 4 Pin Lemo input plug – FGG.0B.304.CLAD52Z

- Pin 1 = GND (Blue)
- Pin 2 = RS485 data A (Green)
- Pin 3 = RS485 data B (Yellow)
- Pin 4 = Power 12 – 35v (Red)

### 7 Pin Lemo plug for camera power & data - FGG.0B.307.CLAD52Z (not supplied)

- Pin 1 = GND (Blue)
- Pin 2 = RS422/485 data A TO camera (Green) Also semi-duplex return data.
- Pin 3 = RS422/485 data B TO camera (Yellow) also semi-duplex return data.
- Pin 4 = Power 12v camera power (Red)
- Pin 5 = future use
- Pin 6 = future use
- Pin 7 = future use

When power is connected the blue LED on the side will flash 3 times whilst the  $\mu$ L is booting up. After this sequence the LED will indicate 3 states;

- |                      |   |
|----------------------|---|
| Permanently ON       | = Power applied, data received but not being addressed. |
| Very Fast Flashing   | = Being addressed and should respond to commands.       |
| Flashing Very Slowly | = Power but no data.                                    |

## Cable Management

On the pan cover, under the camera plate are two M2.5 threaded holes. These can be used to attach cable management clips.

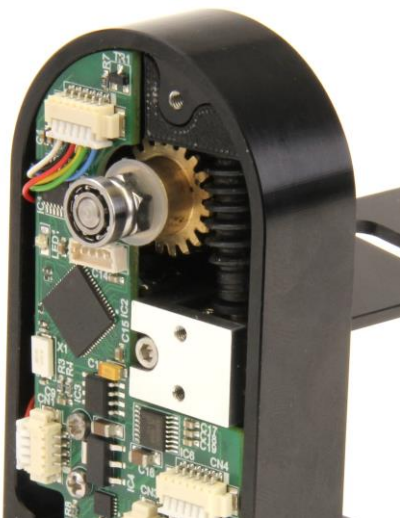
## Pan & Tilt Clutch Adjustment

Both the pan and the tilt clutches can be adjusted if needed.

To adjust the pan clutch, remove the Pan Cover which is secured with a single screw. The cover will need to be prized off as it is sealed with silicone sealant. The Adjustment nut is on the top of the shaft and locked with an M3 grub screw. Use a 1.5mm allen key to loosen the locking screw and tighten the clutch adjustment nut until to achieve the required clutch movement. **It should be set as lightly as possible without slipping.** If it is adjusted too tightly, damage may occur to the pan motor gearbox.



Clean all the sealant from the cover and the body and re-apply a very thin layer of silicone sealant before re-fitting the cover.



The tilt clutch adjuster is accessed by removing the Main Cover. This has 3 screws. Take care not to damage the sealing gasket. The Tilt Shaft Support Bearing may be on the shaft, as in this picture, or may be retained in the main cover. Take care not to lose this bearing.

The tilt adjustment is an M5 Nylock nut under the bearing on the tilt shaft. You will need an 8mm spanner.

When re-fitting the cover ensure the gasket is located correctly and that no wires become trapped between the body and the cover.

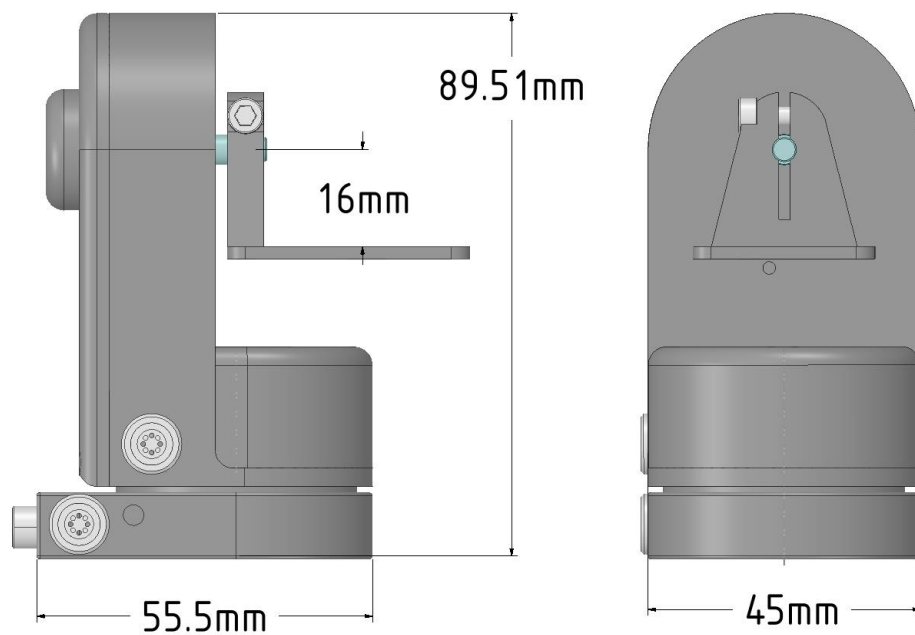
## Specifications

|                |                               |
|----------------|-------------------------------|
| Power:         | 12 – 35v @ 0.5A + camera      |
| Camera power:  | 12v @ 1A max.                 |
| Weight:        | 250gm.                        |
| Payload:       | 400gm.                        |
|                | 20 – 60mm wide                |
| Cam Protocols: | Marshall VISCA,<br>Dreamchip, |
| Pan Range:     | 350 deg.                      |
| Tilt Range:    | 360 deg.                      |
| Environmental: | IP66 (with plugs)             |

## Safety

There are 2 M4 bolts fitted to the base which should be used for a safety bond if the unit is rigged above head height.

Also on the base is a standard 1/4" camera mounting thread and 3x M4 threads. Any of these can be used for mounting the unit to a suitable platform.



## Camera Specific Connections



For Marshall cameras, the table below is correct if a Male connector is fitted on the camera. ie. if the connector on the camera itself has pins – like in the picture.

### Marshall Cameras

| Hard wired cable assembly into camera |                       | HR-10A-10P-12S(73) |                |               |
|---------------------------------------|-----------------------|--------------------|----------------|---------------|
| Core Colour                           | Function              | Lemo 7 pin No.     | Hirose pin No. | Normal Colour |
| Screen (around Yellow)                | Power GND             | 1                  | 8              | Blue          |
| Orange                                | Data A                | 2                  | 6              | Green         |
| Grey                                  | Data B                | 3                  | 5              | Yellow        |
| Red                                   | Power 12v             | 4                  | 9              | Red           |
|                                       |                       | 5                  |                | no connection |
|                                       |                       | 6                  |                | no connection |
|                                       |                       | 7                  |                | no connection |
| White                                 | 3.3v for Menu control |                    |                | Insulate      |
| Yellow                                | Menu Control          |                    |                | Insulate      |
| Black                                 | SDI co-ax             |                    |                |               |

Not all the functions you may see on a controller are actionable by all the types of camera that can be controlled. The controls to which Marshall cameras will respond are;

- Zoom – if a motorised zoom is fitted
- Focus – if a motorised focus is fitted
- Iris - if a motorised Iris is fitted
- Auto Iris
- IR Mode
- Camera Gain -3dB – 30dB
- Shutter Speed
- Auto Push White
- Full Auto Tracing White
- Preset White 3,200K & 5,600K
- Manual White Balance
- Red Gain
- Blue Gain
- Cam Detail
- Cam Gamma
- Output Standard - 1080i & 1080p in 50Hz & 60Hz frame rates.
- Picture Flip
- Cam DNR

## Dreamchip Cameras

HR-10A-7P-6S(73)

ATOM one

| Core Colour | Function        | Lemo 7 pin No. | Hirose Pin No. | Alternative Colour |
|-------------|-----------------|----------------|----------------|--------------------|
| Blue        | GND             | 1              | 5              | Brown              |
| Green       | Data A (+)      | 2              | 1              | Orange             |
| Yellow      | Data B (-)      | 3              | 2              | Black              |
| Red         | Power 6-36v     | 4              | 6              | Red                |
| White       | Looped to Pin 2 | n/c            | 3              |                    |
| Black       | Looped to pin 1 | n/c            | 4              |                    |

For Dreamchip cameras the available controllable functions are;

- Zoom – if a motorised zoom is fitted
- Focus – if a motorised focus is fitted
- Iris - if a motorised Iris is fitted
- Auto Iris
- Camera Gain -0dB – 30dB
- Shutter Speed
- Auto Push White
- Full Auto Tracing White
- Preset White 3,200K & 5,600K
- Manual White Balance
- Red Gain
- Blue Gain
- Green Gain
- Master Pedestal
- Red Pedestal
- Blue Pedestal
- Green Pedestal
- Cam Detail
- Cam Gamma
- Knee
- Output Standard - 1080i & 1080p in 50Hz & 60Hz frame rates. 4K standards for 4K cameras
- Picture Flip
- Cam DNR

Other camera protocols will be added as they become available.