



Q3

Operation Manual



IMPORTANT SAFETY INSTRUCTIONS

For your personal safety, read these instructions. Do not operate the product if you do not understand how to use it safely. Save these instructions for future reference.



WARNING!

Where there is a risk of personal injury or injury to others, comments appear supported by the warning triangle symbol. Where there is a risk of damage to the product, associated equipment, process or surroundings, comments appear supported by the word 'Caution'



ELECTRIC SHOCK.

Where there is a risk of electric shock, comments appear supported by the hazardous voltage warning triangle.

Mounting and Installation

WARNING! Do not install this product onto a bracket, support or other equipment that is not designed to support the weight of the product and its payload. All ceiling or wall supports must comply with local government regulations.

WARNING! Installation of this product must only be performed by qualified and trained electrical engineers.

WARNING! Always ensure that all power and auxiliary communications cables are routed so that they do not present any danger to personnel.

Operating Environment

CAUTION! The product should not be used outside the operating temperature limits. Refer to the product Technical Specifications for the operating limits for the product.

Electrical Connection

WARNING! Risk of electric shock. Always disconnect and isolate the product from the power supply before attempting any servicing or removing the covers.

WARNING! Risk of electric shock. Always check cables for signs of damage. Damaged cables can cause personal injury and/or damage the equipment.

WARNING! The external DC PSU used must be approved to IEC 60950-1, 2nd edition, and have a power output limited to the requirements of the equipment.

CAUTION! This product must be connected to a power supply of the same voltage (V) and current (A) as indicated on the product. Refer to the Technical Specifications for the product.

CAUTION! We recommend that you use the power supply cable supplied with the product.

CAUTION! Using alternative power sources will invalidate the system EMC liability.

Cleaning

WARNING! Risk of electric shock. Always disconnect and isolate the product from the power supply before cleaning.

CAUTION! Do not use solvent or oil-based cleaners, abrasives or wire brushes. Only use detergent-based cleaners.

Maintenance

WARNING! The fitting of non-approved parts and accessories, or the carrying out of non-approved alterations or servicing can be dangerous and could affect the safety of the product. It may also invalidate the terms and conditions of the product warranty.



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General

The Q3 robotic camera system is based around four main components. The main Q3 head, the interface unit, the joystick control and the RCP.

The joystick control and the RCP have their own operation manuals so will not be described in detail here, except where they have specific functions applicable to Q3.

Q3 has some major improvements over its Q-Ball predecessor. These include an improved camera block providing higher sensitivity, resolution and features such as genlock. Also, the new system has been designed in such a way that improved camera modules may be fitted as new ones become available. This gives the new model a 'future proof' concept.



Many more options are now provided for control of the head. These include standard Camera Corps audio data, RS232, RS422 and IP all at varying baud rates.

A continuous data output is provided showing the pan, tilt, zoom and focus positions. This uses a standard D1 or 'raw' format although other formats can be provided on request.

An optional fiber interface can be added to the interface box providing data control, genlock and HD Video signals using two single mode fibers.

A PAL/NTSC output is provided at the same time as the HD output for most selected camera formats.

Multiple HD formats are available, detailed later in this manual.

The control software protocol for Q3 is readily available for third party use. Please contact Camera Corps Ltd. for full details and a control protocol description document.

Although Q3 has a camera block which uses the latest technology and sensor please remember that it is a single 1/3" chip and as such will not have the same high sensitivity as a large camera with 3 x 2/3" chips!

Main Q3 Head Unit

The Q3 head unit is sealed against moisture and dirt ingress. However, it should not be installed long term in an outdoor location without additional rain protection.

The mounting is by means of a standard 1/4" UNC thread, or special mount adapter.

Although Q3 does not have a tilt slipping it can still be mounted either upright or inverted without any mechanical changes to the ball itself.

The pan and tilt axes may be moved manually but only if the unit is not powered. Even then this is not recommended as it can cause excessive play in the gearboxes. Under no circumstances should the axes be moved manually while the unit is powered.

A single cable connects the head unit to the interface box. The cable has a Lemo connector at each end for connecting the Q3 head to the interface box. The maximum cable length is currently 10m.

Interface Unit - Front

The interface unit takes power from a standard XLR4 socket and will accept any voltage from 9v to 36v DC.

The data input on the XLR3 is for data which conforms to the standard Camera Corps data system. This is in the form of a balanced audio signal which can be sent over virtually unlimited distances down a normal microphone or CAT5 cable. No DC continuity is necessary. The joystick controller has output level adjustment to handle long cable lengths if necessary.



The left hand rotary switch should be set to the required ID number being used by this camera. Normally this will be in range 1-8 to agree with the channel selected on the RCP and PTZF controller. The right hand rotary switch sets the ID Group No. This allows extending the number of possible units being controlled using the Camera Corps Multi Camera control system to a maximum of 96.

The LED to the right of the Group switch is green when data is present on the XLR input, and changes to red if a Cue/Tally is sent from the RCP or PTZF controller. The Cue/Tally can be used to test the data system and ID are set and working correctly even if the Q3 head is not attached to the interface box.

The right hand LED shows if power is present.

The large circular Lemo connector is for the head cable. This cable has the same male connector at both ends.

Note that the head unit can be plugged in and out of the interface while power is on without damage. However, if the camera is plugged into an interface unit which is already switched on, then initial data which is sent to the camera during switch on will be missed and the camera may be in a non-standard condition.

The 9w 'D' connector is used for RS232/422 control input and outputs. Input control data can be used here and also return data with PTZF position information being made available.

See later in this document for full wiring details.

The Ethernet connector is provided to enable control from an Ethernet data source. Input control data can also be used here and return data is available with PTZF position.

The DIP switches on the front panel are used to select the input data source and baud rates as follows.

- DIP 1 When ON selects RS232 control data from 9w 'D' connector
- DIP 2 When ON selects RS422 control data from 9w 'D' connector
- DIP 3 When ON selects Ethernet control data from the Ethernet port

Note that only one of DIPs 1,2 and 3 should be ON at any one time.

DIPs 4, 5, and 6 select the data type and control baud rate as shown in the following table.

Baud Rate	4800	9600	19200	38400	Audio Data
DIP 4	OFF	ON	OFF	ON	x
DIP 5	OFF	OFF	ON	ON	x
DIP 6	ON	ON	ON	ON	OFF

Note that the Audio Data input will automatically select the baud rate to be either 1200, 2400 or 4800 when it receives some data bytes from the transmitting device.

Interface Unit - Rear

The Rear of the Interface Box has the video connections and fiber connectors (if this option is fitted).

The left hand BNC is for the Genlock input. This can be any analogue video signal with the correct frame rate. I.e. Composite Video, Black and Burst or Tri-level sync.

The BNC to the right of the DIP switches is for the Composite SD output. This is present for most camera formats.

The two right hand BNC's both provide a digital HD output. The LED shows green for a valid HD-SDI signal being present.

The DIP switch functions are as follows.

- DIP 1 ON = Genlock termination on for the left hand BNC genlock input.
- DIP 2, 3 These DIPs provide equalisation for the Genlock video input.
- DIP 4 This DIP selects either the Genlock BNC or a Genlock signal from the fiber card (if fitted). DIP switch 4 is ON for Genlock from the BNC and OFF for genlock from the fiber card.



General Operation

For those who are familiar with the existing QBall or other Camera Corps equipment the wiring and operation of Q3 will be well known as it uses all the same principles of operation.

One difference will be immediately apparent when the head is powered up. The head goes through an initialisation sequence which involves both panning and tilting movements to check the encoder values are set correctly in the event that the head has been manually turned while being switched off. This also sets the Tilt endstops to the correct positions which prevents the head from hitting its 'hard' Tilt endstops during operation. Note that neither Pan nor Tilt endstops can be set from the PTZF joystick controller for Q3.

After the initialisation procedure has finished the head will take up a roughly central position for both pan and tilt. However, it is possible to set this final position by simply storing the required position in memory 18. Move the head to the required shot and then press the Mem button on the joystick until it shows red. Now press and hold button 6 (now memory 18 button) until there is a 'beep'. Memory 18 has now been set to that shot. Whenever the head is powered up it will always return to this position after the initialisation procedure. Note that the speed/time setting will be used for this memory setting so a good value to set here is a speed value of 8.

Note that the joystick controller must have Q3 set as its head type and the RCP must be set to camera type Sony>Q3. (Note that both of these settings are done in the 'Setup' Menus of the respective units).

Assuming control is using an audio data link, and the system has only just been switched on, then the Interface Box needs to receive some bytes of data from the joystick to synchronise the baud rates. (Normally the Joystick baud rate will be set to 4800baud and the RCP will be set to 2400baud).

The easiest way to do this is to move the joystick around until the head starts moving, or do a couple of 'Update Camera' commands from the RCP.

Once everything is working you can operate the head in the normal way using the Joystick for pan and tilt, and the zoom and focus controls in the normal way. For new users note that the direction of operation of all these controls can be changed from the SW Menu on the joystick.

Other settings can be used to give the best type of control for a given situation. Then speed settings for Pan and Tilt set the maximum possible speeds for full joystick movement. If fast movement is required then set the speeds to a high value, if slower operation is required then much greater joystick sensitivity is obtained by setting the speeds to a lower value. Only set the speed as high as is needed for the fastest required movement to maintain good slow speed sensitivity.

The Zoom also has a speed adjustment setting and the focus can be set to four possible sensitivities plus an 'Auto' focus mode where the focus wheel is disabled and focus is adjusted automatically by the camera.

As well as speed adjustment there are settings for 'Damping'. The 'takeoff' damping sets the speed of acceleration of the head if the joystick is moved rapidly towards a high speed. 'slowdown' damping allows the head to decelerate slowly even if the joystick is moved rapidly back to its centre position. The 'reverse' damping sets how fast the head can

change direction and will override the other damping settings if the joystick is moved from one direction past the centre point to the opposite direction.

The RCP has a number of additional functions compared to the earlier QBall. There is a 'Bars' test function which is useful when lining up the camera into a studio or OB truck. The white balance button can now operate in 'Manual Colour Control' mode, i.e. in the same mode that allows operation of the colour control knobs.

Both Mirror and Flip picture reverses are available. The Flip can be used if the head is mounted upside down although this is not essential as the head can be turned through 180deg to achieve the same effect!

Another major difference between Q3 and the earlier QBall is that the camera format is set from the RCP ENG menu. This is described in detail later in this manual.

Also, the OSD (On Screen Display) menus allow access to changing some camera functions which are not available directly from the RCP. If any changes are made to these functions then they will be saved when exiting from the OSD menu screen and will remain unchanged even when the 'Update Camera' button is pressed. These functions include such things as WDR (Wide Dynamic Range), AE Peak, Eclipse and Defog.

The other major improvement of Q3 is the addition of a Genlock function. This avoids the need for a synchroniser when using Q3 with other cameras into a mixing point. The timing can be adjusted from the RCP>ENG menu. Vertical timing adjusts by one line for each setting change (up to a maximum of 15 lines) and Horizontal timing adjusts in pixel steps. Note that there may be some picture disturbance when making timing adjustments. The genlock signal can be any analogue video signal with the same frame rate as the camera format.

The Interface Box also provides a 'composite' video output which will be either PAL or NTSC depending on the camera format being used. This can be used for feeding a local SD monitor.

Fiber Card Option

The optional fibre card fits inside the interface box at the rear. If you wish to upgrade a system to include the fiber card then there is a separate document to describe how to fit the card into the interface box.

No external wiring to the interface box connectors is required. The audio data signal on the fiber is connected internally and the green data LED on the front panel should light as normal when a data signal is present.

The genlock video signal is also internally connected but DIP 4 must be set to OFF to select this input rather than the BNC on the rear panel.

The HD-SDI video signal is also connected internally so both external BNC's are still available for local video connections.

A separate fiber box is required to send/receive the fiber signals from the interface box. This is supplied with a fiber upgrade kit.

This requires a 12v power supply and takes in audio data from the PTZF joystick. It also provides 2 x HD-SDI video signals.

PTZF joystick additional functions

The standard PTZF joystick will function perfectly well with Q3. However, it should have software version 5.6 or later to provide all the new functions that are available with Q3.

After deciding on the ID being used for a particular Q3, enter the 'Setup' menu and select Q-Ball 3 as the head type.

Most functions of the joystick will be as described in the manual. However, the method of storing and recalling memory positions is slightly different and will be described here.

Memory Setting and Recalling

The main difference with Q3 preset positions is that there is a choice of either 'speed' or time settings for determining the motion during the move.

The selection is made by going to the 'Mem' function menu. The first screen here allows changing the speed and time settings using the up/down buttons on the left hand side of the screen. Moving above 15 for a speed value will take you into time settings which can be from 30 (3secs) up to 255 (25.5secs). Moving downwards below speed setting 1 will go straight to time 255 etc.

The 'speed' setting will make all four axes of movement (pan, tilt, zoom and focus) move at a constant speed so will not all arrive at their endpoint simultaneously.

The 'time' setting will give the time for the move from the current positions to the destination position in a given time. All four axes will move at a speed necessary to make them all arrive at the destination positions at the same time. Note though, that in extreme cases where one axis has a large movement and others a very short movement they may not all arrive at exactly the same time.

Once the required 'speed' or 'time' setting has been chosen, the destination position for a given move can be set.

Up to 18 different destination positions can be set using the memory buttons to the right of the LCD screen in the same way as for other heads.

Move the pan, tilt, zoom and focus axes to the required destination and then simply press and hold the required memory button until a 'beep' is heard. This will set that memory button to that destination with the current speed/time setting being stored as the movement parameter.

To recall a given memory position and cause the head to move from its current position to the new destination simply press and release the memory button for the required memory. Note that the head will not move if the speed/time setting screen is displayed on the LCD. Any other screen will allow movement of the head to a preset position.

Note that although the pan axis will always take the shortest route to a given preset position, the tilt axis will always have to take the long route avoiding the area where it would be looking directly into its base.

RCP functions

To control the camera head in Q3 you will need an RCP with software version 5.4 or later.

Once the required channel has been selected go to the 'Setup' menu and choose Manufacturer 'Sony' followed by camera type 'Q-3'. Note that you may be asked for a password which is 2146. The password feature may be disabled by holding down the 'Auto' button and then pressing and releasing the channel 3 button.

With the interface box and head connected to the RCP data output (probably through the joystick panel), press 'Update Camera' as usual to set the camera functions to agree with the settings in the RCP channel.

All functions normally available for other types of camera can be controlled as usual, but usefully this camera has the option for showing On Screen Display menus (OSD). This gives access to all possible settings in the camera head rather than just those available directly from the RCP.

Note that after moving down through the various OSD menus, pressing the OSD button again will move back up through the menus finally removing the menu display. Pressing 'Exit' will exit the LCD OSD display options.

Genlock timing adjustment is available to time the camera output to other camera sources and this is probably easier to set from the RCP than the OSD screen.

(If you set any functions from the OSD screen that are also available directly from the RCP then an 'Update Camera' button press will restore the RCP setting rather than anything you may have set on the OSD screen.) Only functions shown on the OSD screen which are NOT available from the RCP remain unchanged after an 'Update Camera' command.

Main Menu

From the Main RCP menu press the left hand function button to access the main camera control functions:-

Gain

Gain is available when the Iris is set to 'Manual' rather than 'Auto'. (Button above the Iris knob selects Manual/Auto Iris). The gain steps up in 2db steps to a maximum of 42db. There is also a -6db setting which acts like an ND filter and is useful in outdoor situations where there is plenty of light available.

Shutter

Shutter is only available in Manual Iris mode. The default position is 'Off'. Higher settings will reduce the light level, lower settings are also available which greatly increase the light level but the sensor only updates the image at reduced frequency.

Detail

Detail will increase or decrease the picture sharpness but will also affect the noise in the picture.

Chroma

Chroma affects the amount of colour saturation in the picture. This can be used to good effect when matching Q3 to other makes of camera.

IR

IR stands for 'Infra-Red' and switches the camera to monochrome and greatly increases the sensitivity in low light levels. An Infra-Red lamp may also be used to illuminate the viewing area. Note that when using purely infra-red light to illuminate a scene the focus may not be correct. An option in the OSD screen can be set to correct the focus in this case. Select OSD>Mode>AutoICR>FocusAdj ON/OFF to change this setting. Note this should only be changed when the lighting is entirely from an Infra-Red lamp. There is also an 'Auto IR' setting which will enable the camera to automatically switch to IR when the light level drops to a point where the 'auto gain' has increased beyond 36db. The 'Auto IR' option is only available in 'Auto Iris' mode.

AWC Mode

AWC mode sets how the colour of the camera is controlled. The default is 'Manual' which gives control to the red and blue colour knobs on the RCP. Other settings include 'ATW' which automatically adjusts the camera colour depending on the picture content. Also, fixed colour settings for 5600k and 3200k lighting types.

Gamma

Gamma controls the picture brightness in dark areas of the image. A lower gamma setting increases the brightness in dark areas and a high gamma value reduces the brightness in dark areas. The picture noise is increased for low gamma settings.

Noise Red (Noise Reduction)

There are three settings here On, Off and Auto. The effect is to decrease the picture noise at the expense of a slight reduction in resolution. The 'Auto' setting will automatically insert the noise filter as the gain level is increased.

Iris Area

The Iris area setting is used by the 'Auto Iris' function to determine which area of the picture is used to set the auto iris level. As the up/down function buttons are pressed, a brief display of a rectangle on the screen will show the area selected for the auto iris adjustment.

Iris Speed

Iris speed sets the speed at which the iris responds when in auto mode. This will probably need to be 'Slow' when there is a lot of light and the iris is nearly closed to prevent 'hunting'.

ENG Menu

From the main menu press 'ENG' to access the less frequently used settings for the camera.

Format

The camera head can be set to many HD formats. Note that the up/down function buttons will step through the various available formats without actually changing the format. The format will only change when leaving this menu by using the left or right menu buttons. The following formats are available directly from this menu:-

1080p59.94, 1080i59.94, 1080p29.97, 1080p50, 1080i50, 1080p25, 1080p23.97
720p59.94, 720p29.97, 720p50, 720p25.

It is also possible to set the formats to 60, 30 and 24 hz instead of 59.94, 29.97 and 23.97. This has to be done using the OSD menu on the video output screen.

Press the OSD button on the RCP which will activate the top level menu. Now press the Right Hand Menu button above the LCD display to select Mode. From Mode use the up/down buttons below the LCD display to access the HD Format Menu by pressing Select again. To set the NTSC formats to 60, 30 and 24 ensure that the NTSC Enable function is set to Disable. Now go to the format setting option and use the left/right buttons below the LCD display to select required format. When the correct format is displayed press Select (right hand menu button above LCD) to change to that format. Then use the OSD button and press until the OSD display screen is removed. Press Exit to exit the LCD menu back to the Main menu again. This new format will be saved if the camera is switched off.

H Phase

This is used to adjust the horizontal phase of the Genlock timing. It steps one pixel at a time unless the button is held down in which case it will step in steps of 20.

V Phase

This has a range of 0-15. Each step represents one line of adjustment. The default setting is 15 which is no advance. As the setting is reduced more timing advance is added to the system timing.

ABS/Rel (Absolute / Relative)

The default here is 'Absolute' which means that as the colour knobs are rotated they set the camera colour to absolute values sent from the RCP. If 'Relative' is selected then the variable controls (red & blue gain, master black and iris) only send increase or decrease commands to the camera. This can be useful when operating in 'Multi-Camera' mode and more than one RCP has control of a camera.

Appendix ‘A’ – CCU panel and Joystick panel settings

Note that the RCP panel should be selected to ‘Sony’ camera make, and ‘Q-3 camera type to control Q3. The baud rate would normally be set 2400 baud.

The Joystick panel should be set to ‘Q-Ball 3’ in the setup menu. The baud rate of the Joystick would normally be set to 4800 baud.

Note that if Q3 is being controlled over a very limited bandwidth audio link then the joystick baud rate should be reduced to 2400 or even 1200 baud. The RCP baud rate should always be the same as or less than the joystick setting.

Appendix ‘B’ – Removing the Interface Box lid.

To access the links, the lid of the interface box must be removed to access the PCB’s. First, remove the power from the unit. Then remove the four nuts holding the BNC connectors on the rear of the unit. Now remove the four cross head screws holding the rear plate and remove the rear plate with plastic surround.

Now loosen the two upper cross head screws on the front panel on the unit.

Now slide the lid of the box towards the rear and remove it completely.

To replace the lid simply reverse the above procedure.

Appendix ‘C’ – Internal link settings.

There are three links on the small PCB at the front of the Q3 Interface box, and a further two links on the main PCB.

Small PCB links

These links should all be set to the left hand position.

The right hand position is for possible future upgrades.

Links on the main PCB

LK1 This is set to synchronise the VR data and should not be changed.

LK2 This is currently not implemented and should be left in the supplied position.

Appendix ‘D’ – Startup Interface Box settings.

It is possible to change a number of the functions available from the head by switching on the Interface Box with the ID and Group setting switches in non-standard positions.

This is not as comprehensive as settings that are available when controlling Q3 with your own external software, but it may be useful to be able to change these particular functions. See the ‘Q3 Protocol’ document for a full explanation of controlling Q3 from your own software.

The positions and functions are listed here:-



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ID set to 9

- | | |
|----------------|---|
| Group set to 0 | Disable all return data from head to Interface Box. |
| 1 | Enable VR data in D1 format. |
| 2 | Enable VR data in 'Raw' format. |
| 3 | Mag sensors OFF. (Head will not initialise but should keep previous settings for tilt endstops and preset positions). |
| 4 | Mag sensors ON. (Head will initialise and move to preset 18). |
| 5 to 9 | not yet used. |

ID set to 0

Group 0 to 9 not yet used.

Note that the head must be connected when powering up with the switches set as above. The action only has to be carried out once as the head will remember the settings when they are applied.

After switching on there will be a delay of about 60 seconds as the head may be in 'initialise' mode. When the new settings are complete the data/cue light will start flashing. At this point remove power from the interface box and move the ID and Group switches back to the required positions before powering up again.

Appendix 'E' – Connector Wiring.

XLR4 Power connector:-

1. 0v
2. NC
3. NC
4. +9 to +36v DC

XLR3 Audio Data connector:-

1. 0v (An earth connection here is not essential as the data is transformer balanced in the interface box)
2. Balanced audio signal
3. Balanced audio signal (Note the polarity of the audio is not critical)

9w 'D' connector:-

1. +5v @ 100ma is available here
2. RS232 RX (Note the Rx baud rate is selectable on the front panel DIP switches)
3. RS232 TX. (The output baud rate is set at 38,400)
4. NC
5. 0v



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6. RS422 +ve output
7. RS422 –ve output
8. RS422 +ve input
9. RS422 –ve input

Ethernet Port RJ45 8/8 connector

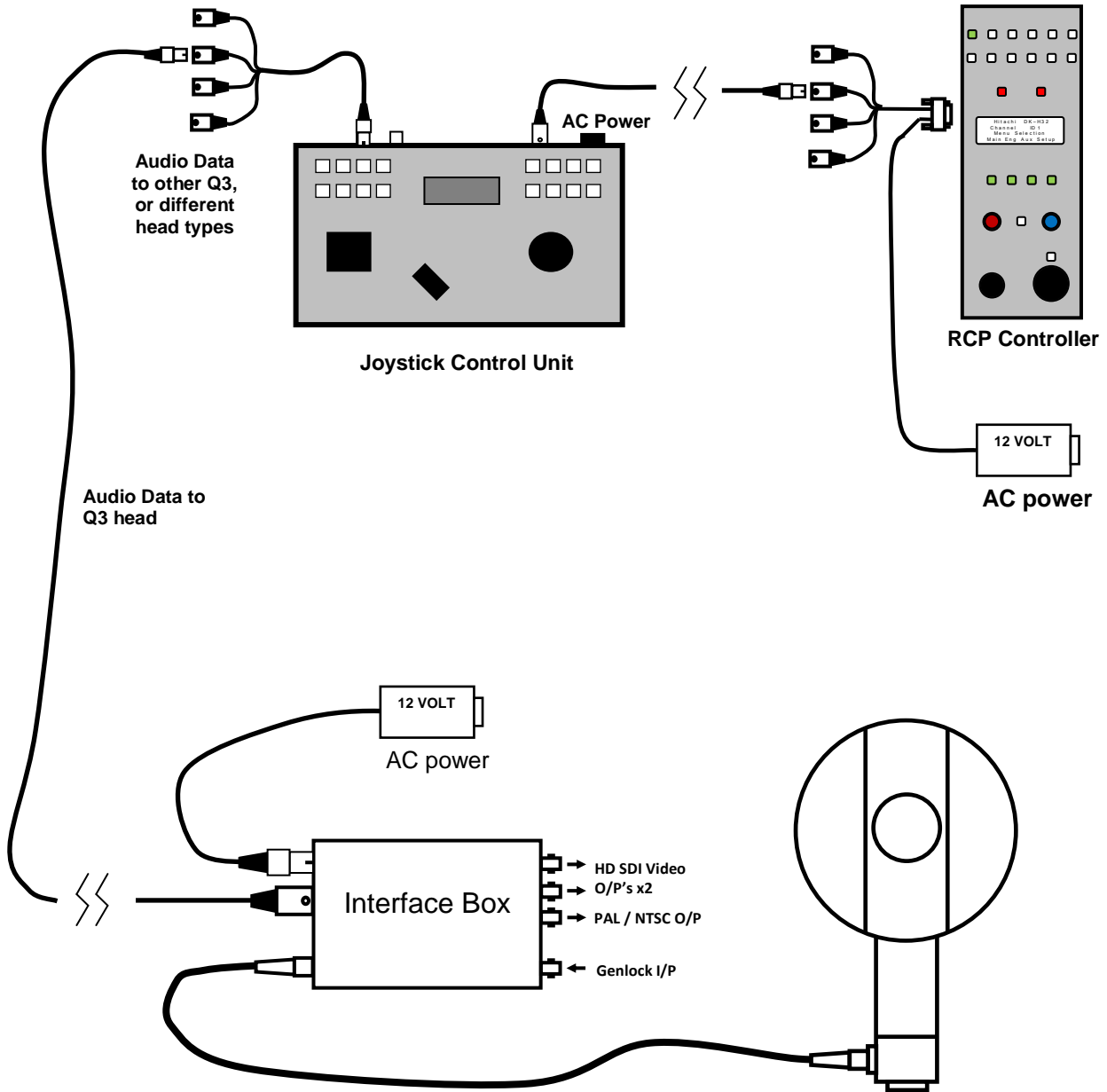
Note the Ethernet Port uses an XPort adapter. Use the link below for configuring software.

<http://www.lantronix.com/device-networking/embedded-device-servers/xport.html>

1. TX+ Transmit Data +ve
2. TX- Transmit Data –ve
3. RX+ Receive Data +ve
4. Terminated
5. Terminated
6. RX- Receive Data –ve
7. Terminated
8. Terminated

Shield – 0v Ground

Connection Diagram





Specifications

Camera

Sensor	1/3" RGB Bayer progressive CMOS sensor
Effective Pixels	2.1M pixels
Lens	20x Optical zoom
Angle of View	59.4° (wide) ~ 3.0° (tele)
Zoom Speed	Max Wide to Tele 3 secs
Focus Speed	10secs max
Iris	101 steps from Close to F1.6
Master Black	127 steps
Test Sig	Colour Bars
Format	1080p/60, 1080p/50, 1080p/30, 1080p/25, 1080p/24 1080i/60, 1080i/50, 1080i/30, 1080i/25 (p59.94, p29.97, p23.97 also available) 720p/60, 720p/50, 720p/30, 720p/25 (p59.94, p29.97, p23.97 also available)
Synchronisation	Internal / External CSync, Tri-level HD Sync
Min Illumination	B&W: 0.02lx (1/2sec, Gain +32db) Colour: 0.5lx (1/30sec Gain +32db) 1080p/30 @f1.6 (Wide end)
Dynamic Range	80db (with WDR ON)
Max Gain	+42db
Gamma Correction	0.3, 0.45, 0.475, 0.5, 0.525, 0.575, 0.6, 0.8, 1.0
Day / Night	IR mode with manual or automatic operation
Shutter	2sec ~ 1/10,000sec
Edge Enhance	16 steps
Operation Temp	0 ~ 60°C
Effects	Neg / Pos / B/W

Q3 head

Pan Speed	Maximum 90° / Sec	Minimum 0.25° / Sec (360° in 90 mins)
Tilt speed	Maximum 90° / Sec	Minimum 0.25° / Sec (360° in 90 mins)
Pos Repeat	.02°	
Mounting	Standard ¼" UNC or Special square slide mount	
Size	250mm high x 127mm diameter	
Weight	2.1kg	



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Q3 Interface Box

Head Cable	Lemo 10w + Coax. 10m available
Inputs	Audio Data (Camera Corps standard) RS232, RS422, Ethernet IP Genlock – BNC
Outputs	HD-SDI x2 BNC Composite Video BNC RS232, RS422, Ethernet IP
Size	160mm x 103mm x 53mm
Weight	0.5 kg
Power Supply	9 – 36v DC Input. (XLR4 pin1 0v, pin4 +ve)
Consumption	12 watts (14.4watts with fiber card fitted)

Fiber Option

The fiber option includes a fiber box for the base end and a card which is fitted inside the QBall 3 interface box, together with cables to connect it to plugs on the PCB. It can be retro fitted by customers.

Fiber type	2 x LC fiber connectors
Signals:-	
Base to I/F Box	Analogue Genlock Video Audio Data
I/F Box to Base	HD-SDI Digital Video