



# Qx 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 Symbols used in these instructions

Safety cautions are included in these instructions. These safety instructions must be followed to avoid possible injury and avoid possible damage to the product



### **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.



**WARNING!** If the clear lens ring is removed, ensure that when re-attaching to the unit, the threads are correctly engaged before tightening the ring. Use Vaseline on the lens thread and around the rubber to maintain a good seal.

## 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. 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 Qx robotic camera system is based around four main components. The main Qx 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 Qx.

Qx has some major improvements over its Q-Ball and Q3 predecessors. These are based on an improved camera block providing higher sensitivity and resolution. Features such as genlock are still provided as for the original Q3 head.



All the original Q3 options are still provided for control of the head. These include standard Camera Corps audio data, RS232, RS422 and IP all at varying baud rates.

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

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

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

The new Qx camera block uses the latest technology “Clairvu™” sensor providing superb imaging quality.

## Main Qx Head Unit

 The Qx 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 ¼” UNC thread, or special mount adapter.

Although Qx 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 Qx head to the interface box. The maximum cable length is 20m for 1080i mode and 10m for 1080p.

## 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 LED is normally off when using the serial data inputs, but flashes green as data blocks are received. The Cue/Tally can be used to test the data system and ID are set and working correctly even if the Qx 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 from the camera available.

See Appendix 'E' later in this document for full connector wiring details.

The Ethernet connector is provided to enable 'Serial over IP' control from a network. Typically, a Camera Corps IP box at the Joystick position can provide a fully networked control solution.

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 Comp Video Out BNC to the right of the DIP switches is not available for use with Qx.



The two right hand BNC’s both provide a digital HD output. The LED shows a solid green colour 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, Q3 or other Camera Corps equipment the wiring and operation of Qx will be well known as it uses all the same principles of operation.

One difference to the older QBall 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 preventing the head from hitting it's 'hard' tilt endstops during operation. Note that neither pan nor tilt endstops can be set from the PTZF joystick controller for Qx.

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 ignored during the initialisation procedure, but will be used if this memory position is used during normal head operation.

Note that the joystick controller must have Q-Ball 3 or Q-Ball 3(x) set as its head type and the RCP must be set to camera type CameraCorps Qx. (Note that both of these settings are done in the 'Setup' Menus of the respective units). Recommended minimum software versions are v7.1 for the PTZF and v10.4 for the RCP. Earlier versions may work but not necessarily have all the features enabled. RCP Versions from 8.1 onwards will work but the camera selection should be CIS HD10ZM. Not all features will work properly with the earlier versions though.

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 4800 baud and the RCP will be set to 2400 baud).

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, tilt, 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. 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.

Another major difference between Qx 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 not available on the RCP, 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 HDR (High Dynamic Range) and Colour Suppression.

The other major improvement available with Qx is the addition of a Genlock function. This avoids the need for a synchroniser when using Qx with other cameras into a mixing point. The timing can be adjusted from the RCP>ENG menu. There are both H & V phase adjustments available. 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. A camera memory function is also now available. This stores up to 4 camera memories.

## Fiber Card Option

The optional fiber 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 (supplied with the upgrade kit), 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. Analogue genlock video is also fed into this unit if required. It also provides 2 x HD-SDI video signals.

## PTZF joystick additional functions

The standard PTZF joystick will function perfectly well with Qx. However, it should have software version v7.1 or later to provide all the new functions that are available with Qx.

After deciding on the ID being used for a particular Qx, enter the 'Setup' menu and select Q-Ball 3(x) 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 Qx 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 2.0 (2secs) up to 25.5 (25.5secs). Moving downwards below speed setting 1 will go straight to time 25.5 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 approximately 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. (Up to 40 positions are available if you are using your own control software).

Move the pan, tilt, zoom and focus axes to the required destination positions 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. (Different speed/times can be set for each memory position).

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 Qx camera head you will need an RCP with software version v10.4 or later. Select 'CameraCorps' as the manufacturer and Qx as the Model.

Once the required channel has been selected go to the 'Setup' menu and choose Manufacturer 'Camera Corps' followed by camera type 'Qx'. 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, just follow the onscreen item labels to access all the available settings. 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 both 'Manual' and 'Auto'. (Button above the Iris knob selects Manual/Auto Iris). The gain steps up in 3db steps to a maximum of 30db. There is also an 'Auto' setting which can be useful in low light conditions.

## Shutter

Shutter is available in both Manual and Auto Iris mode. The default position is '1/50'. Higher settings will reduce the light level and there is also an 'Auto' setting which be useful in high light levels conditions.

## 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 Qx 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. There is also an 'Auto IR' setting which will enable the camera to automatically switch to IR when the light level drops below a 'threshold' value. The threshold can be adjusted using the OSD settings.

## 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. The AWB mode can be selected and then pressing the White Bal button adjusts the white balance correctly when looking at a white sheet.

## 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. The various modes also include some 'Knee' settings.

## 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. Default is 'Center' with 'Cen Spot', 'Backlight' and 'Averaged' also available.

## Iris Speed

Iris speed sets the speed at which the iris responds when in auto mode. This should be set to as high a value as possible to reduce 'flutter' when adjusting the iris.



## ENG Menu

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

## Mem No. Save Load.

Up to four camera preset memories can be selected using the 'up/down' buttons. Pressing the 'Save' button will save the current camera settings to memory and pressing 'Load' will restore those memories to the camera.

## Shading

Picture shading can be adjusted from 'Off' to 10. Adjust for best picture with the least shading errors.

## 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:-

1080p60, 1080p59.94, 1080p50, 1080i60, 1080i59.94, 1080i50, 1080p30, 1080p29.97, 1080p25, 1080p24, 1080p23.98, 720p60, 720p59.94, 720p50

It is also possible to set the formats to 60, 30 and 24 hz instead of 59.94, 29.97 and 23.97

## 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 adjusts the vertical timing phase.

## Noise Red (Noise Reduction)

This has a range from 'Off' to 6. Increasing the value will reduce the noise in the picture but at the expense of a slight reduction in horizontal resolution.

## Iris Mode

This is not used for the Qx camera.

## Appendix 'A' – RCP panel and Joystick panel settings

Note that the RCP panel should be selected to 'CameraCorps' camera make, and 'Qx camera type to control Qx. For software versions earlier than v10.4 select CIS HD10ZM to control the Qx camera. (Some described functions will not be available so get a software update for your RCP by contacting Camera Corps Ltd.)

The baud rate would normally be set 2400 baud.

The Joystick panel should be set to 'Q-Ball 3(x)' in the setup menu. The baud rate of the Joystick would normally be set to 4800 baud.

Note that if Qx 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.



Warning! - Isolate the product from the power supply before removing the cover.

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

LK4 This is currently not implemented and should be left in the supplied position.

LK5 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 Qx with your own external software, but it may be useful to be able to change these particular functions. See the ‘Qx Protocol’ document for a full explanation of controlling Qx from your own software.

The positions and functions are listed here:-

ID set to 9

Group set to 0 Disable all return data from head to Interface Box.

- 1 Enable camera return data. (Note: Not valid during preset moves)
- 2 Reserved
- 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).

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

## Ethernet Port RJ45 8/8 connector

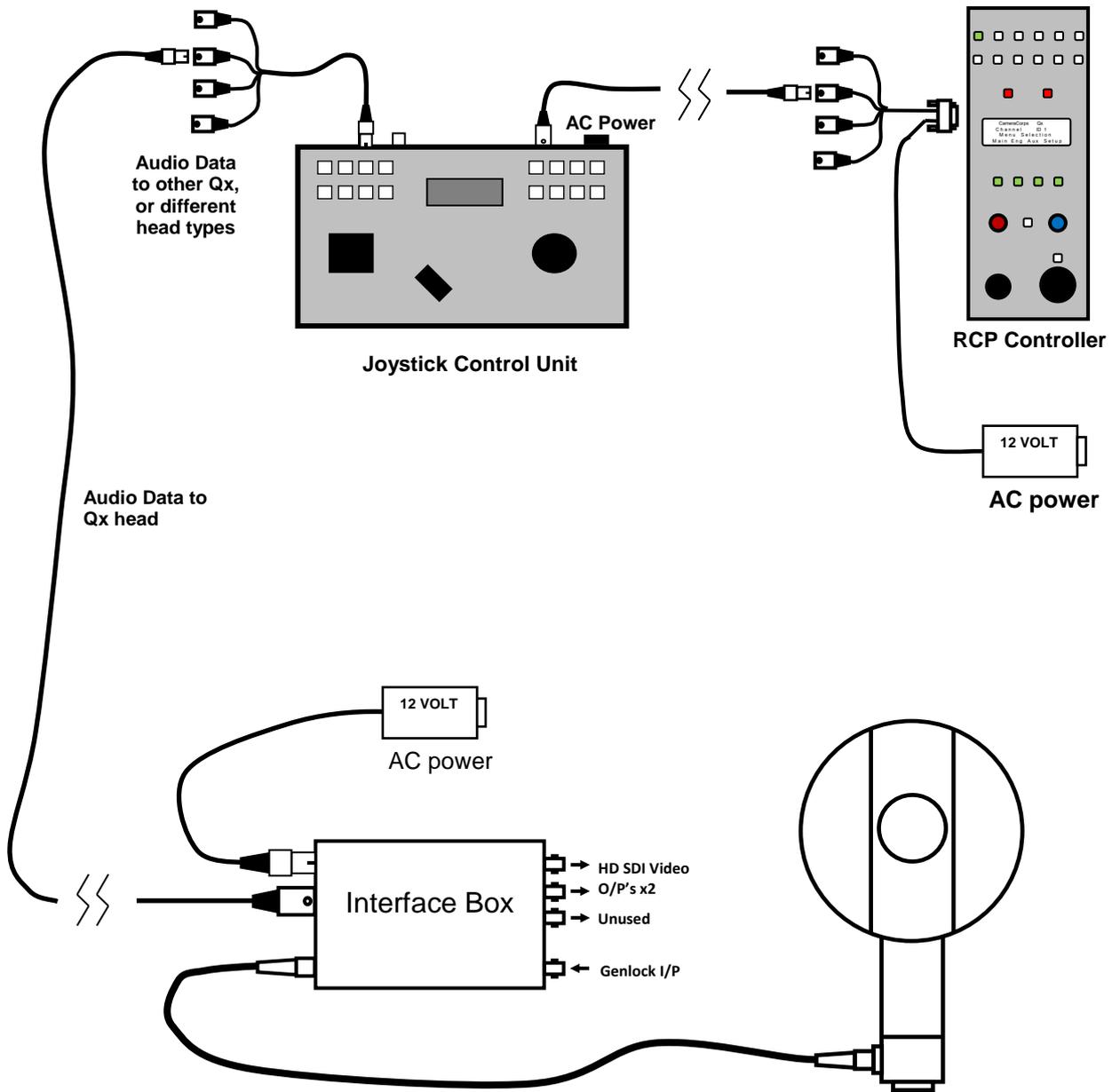
Note the Ethernet Port uses an XPort adapter. Use the link below for configuring software.

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

A separate document is available to describe how to configure the XPort adapter. Note that a Serial or Audio to IP adapter will also be required to convert the joystick serial output to IP data. Contact Camera Corps for details of available converters.

- 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" CMOS "Clairvu™" sensor.
Effective Pixels	1944(H) × 1213(V)
Unit Cell Size	2.75µm(H) × 2.75µm(V)
Chip Size	5.346mm(H) × 3.336mm(V) (Effective pixels)
Resolution	1080p,1080i : 1920(H) × 1080(V) 720p : 1280(H) × 720(V)
Lens	18x Optical zoom. Focal length : fw=4.7mm , ft=84.6mm Maximum aperture ratio : wide F1.6 , tele F2.8
Iris	256 steps from Close to F1.6
Master Black	200 steps
Format	1080p/60, 1080p/50, 1080p/59.94, 1080p/30, 1080p/25, 1080p/24, 1080p/29.97 1080i/60, 1080i/50, 1080i/59.94 720p/60, 720p/50, 720p/59.94
Synchronisation	Internal / External CSync, Tri-level HD Sync
Sensitivity	f5.6 2000lx
Min Illumination	F1.6 1.5lx Conditions : VIDEO 50%, AGC 30dB, Electric shutter OFF
Max Gain	+30db
Gamma Correct	0.5, 709+knee, REC709, 0.4+knee, 0.4
Day / Night	IR mode with manual or automatic operation
Shutter	Auto, 1/50sec ~ 1/8,000sec
Edge Enhance	8 steps
Operation Temp	0 ~ 60°C

### 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



## Q3 Interface Box

Head Cable	Lemo 10w + Coax. 20m, 10m available Max 10m for 1080p modes
Inputs	Audio Data (Camera Corps standard) RS232, RS422, Ethernet IP Genlock – BNC
Outputs	HD-SDI x2 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

### Contact:

Camera Corps Ltd. (Part of the Vitec group)  
Unit 2, 111 Chertsey Road  
Byfleet  
Surrey  
KT14 7AX  
UK  
[info@cameracorps.co.uk](mailto:info@cameracorps.co.uk)



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