



IQS User Manual



Intelligent Quad Split Camera System



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Change History

Version	Date	Change Summary	Author
v1.0	5/9/2017	Initial Draft	RE
v1.1	5/5/2021	Comms Protocol Amendment	RE

About the User Manual

This user manual describes the operation of the IQS.

This user manual introduces the reader to the operation of the system, which includes a description of the various components in the kit and a guide to their use. As part of this, hardware interfacing, connections and system configuration are all described in detail.

Additionally the use of software tools to control the camera and view video are explained.

The guide follows a step by step approach, describing the simple initialisation sequence to get the user up and running in the shortest possible time.

This is followed up with a description of technical specifications, connector interfaces and dimensions.

Warranty and Support

All Visual Engineering products are supplied as standard with a 12 month 'Return to Base' warranty.

In the event of a suspected product failure, users should contact the Visual Engineering support team on the telephone number +44 (0) 1206 211842 or please email us at:

support@visualengineering.co.uk

Should the fault persist or if the support team are unable to resolve the fault, it may be necessary to return the equipment.

Equipment should only be returned using the RMA (Returns Management Authorisation) process. Users should contact the support team on the above number and request an RMA number.



IQS Introduction

The IQS is an accessory for the Visual Engineering range of cameras. It allows multiple solid state PTZ cameras to be connected together at a single point of control, allowing 360° coverage with no moving parts.

The [Visual Engineering Miniature ATM](#) allows operators to pan, tilt and zoom within it's 3.1 megapixel field of view. IQS allows four of these cameras to be 'stitched' together to increase the field of view.

The IQS constantly communicates with the attached cameras, when one is about to pan outside of its available range the IQS automatically switches to the next camera in the direction of movement.

Particularly suited to vehicle fits, IQS together with four ATM cameras can be concealed behind a 1.5mm aperture, covering all four sides of the vehicle, giving a 360° pan, 60° tilt and 3x magnification.

To provide greater over-lapping coverage, IQS units can be cascaded together to increase the number of available camera inputs.

To the outside world the IQS appears as a standard PTZ camera, responding to Sony Visca protocol over RS232 communication.

It outputs analogue, composite video in either PAL or NTSC.



The IQS Kit

In addition to the IQS module and four ATM cameras the kit also contains interconnect cables, a mains power supply with a range of wall connectors and a USB memory stick.

The complete kit is housed in a foam lined case, as shown here.



Part Numbers

The part number for the complete IQS kit is:

- IQS Camera System **110-3417**

The IQS kit contents are listed below, along with their part numbers:

- 1 x IQS Control Module **110-8882**
- 4 x ATM Camera **110-8659**
- 1 x IQS Power Comms Cable **110-3993**
- 4 x IQS ATM Interface Cable **110-3994**
- 1 x Power Supply - AC/DC 15V 1.6A **110-8661**
- 1 x USB Memory Stick 2GB **110-8679**

Support Documentation and Software

The kit includes a USB memory stick. This contains software applications and documentation to support the IQS system.





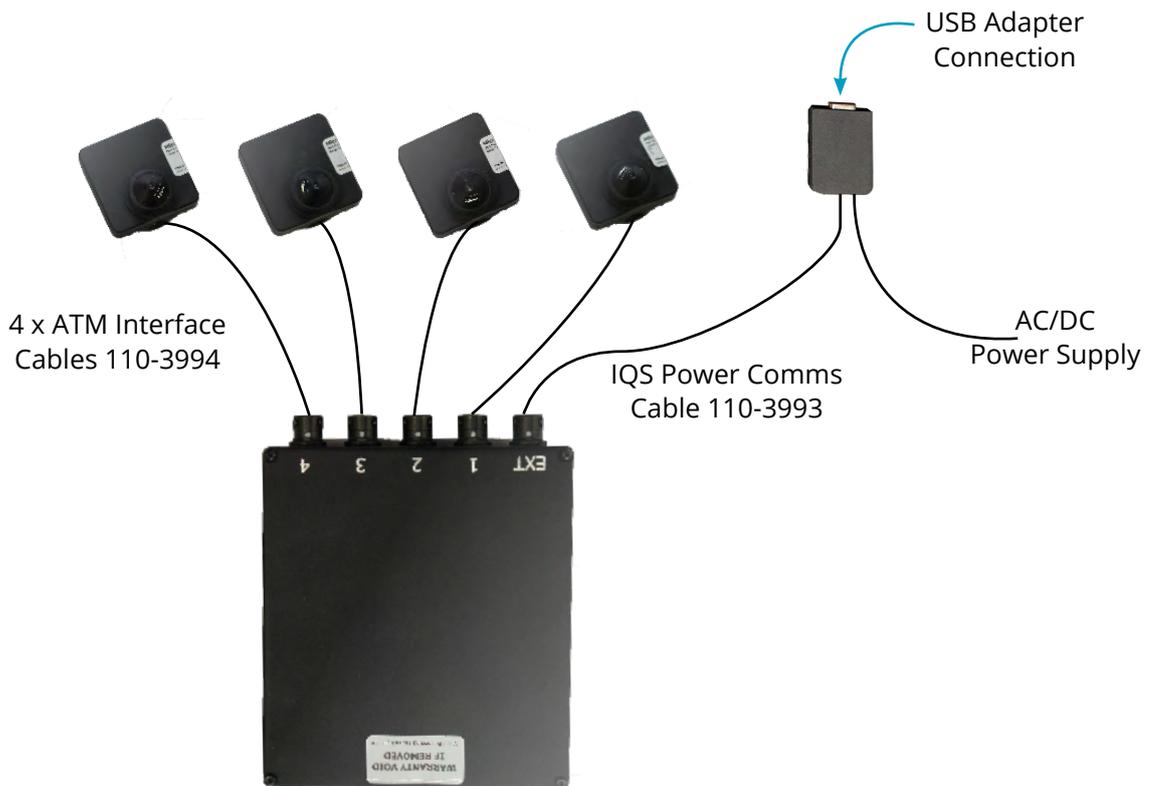
Connections

Each ATM camera is connected to the IQS module using the four ATM interface cables (110-3994).

The AC/DC power supply is plugged into the IQS power comms cable (110-3993). The IQS power comms cable can then be connected to the IQS module.

The 9-way D-Type connector should be connected to a serial to USB adaptor, the other end of the USB adaptor is then connected to a PC to allow for software control of the IQS.

The yellow RCA connector is the SD video output. This should be connected to the recording or video transmission equipment of choice.





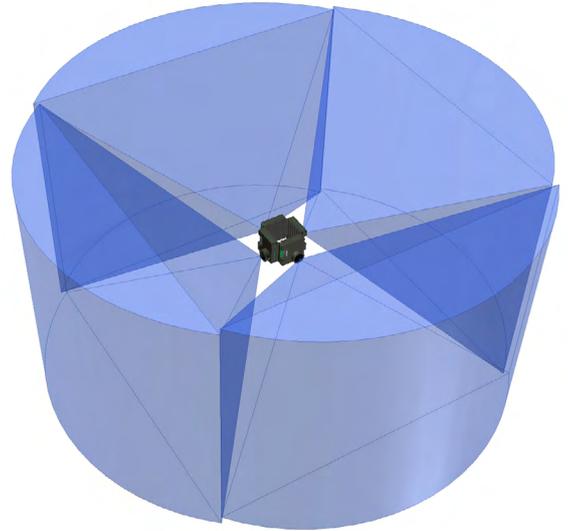
Camera Setup

Field of View

The IQS camera system allows multiple solid state PTZ cameras to be connected together at a single point of control, allowing 360° coverage with no moving parts.

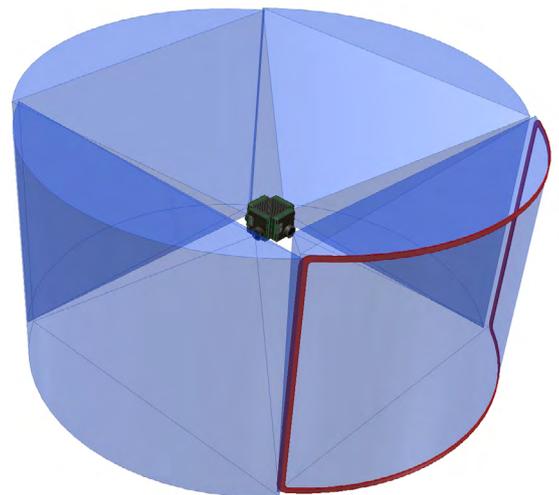
Particularly suited to vehicle fits, the IQS module together with four ATM cameras can be concealed behind a 1.5mm aperture, covering all four sides of the vehicle, giving a 360° pan, 60° tilt and 3x magnification.

This configuration on the right illustrates four ATM cameras positioned 90° to each other giving a complete 360° field of view.



Zoomed Out

The highlighted section shown here illustrates the field of view of a single ATM camera zoomed out to its widest limit.

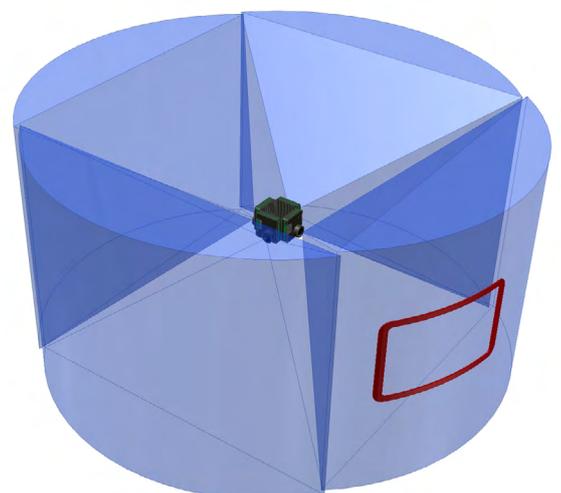


Zoomed In

Since the ATM camera has a HD sensor and outputs a SD video signal it is possible to view video from just a windowed section of the complete HD sensor.

The field of view highlighted on the right illustrates the single ATM zoomed in with a 3x lossless magnification without the need for a varifocal lens.

This is made possible due to the windowed section of SD video derived from the HD sensor.



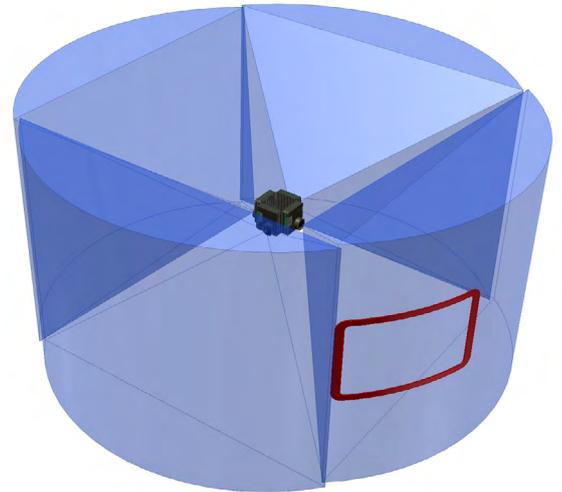


Pan Movement

In the same way the camera can window a section of the HD sensor through zoom it can also move the window area across the sensor, thereby panning the video feed, left and right.

It is illustrated here that the sliding video window has been panned right.

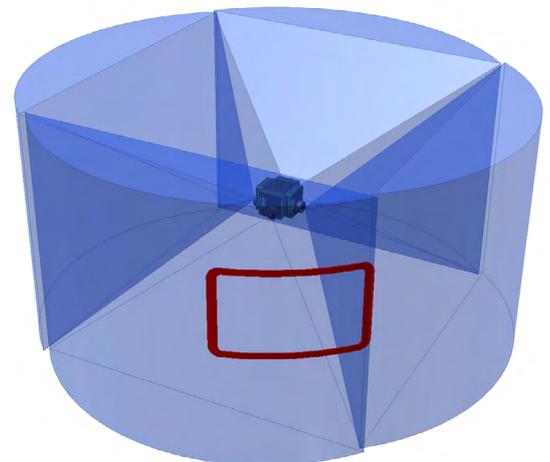
A similar effect is also possible with the tilt axis, which allows a movement of 60°



Camera Switch Over

As the camera shown above pans to the far right of its pan axis the IQS module will switch to the next ATM camera in the cluster at the far left of its pan axis.

In this way a seamless 360° field of view is stitched together as the operator moves around the video field using a camera PTZ software controller.





Software Control

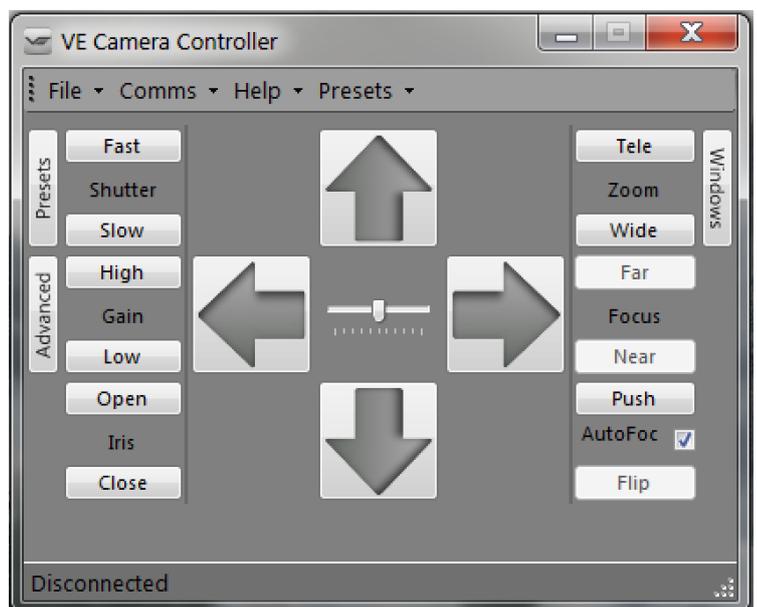
The IQS supports serial communication control over RS232 using Sony Visca protocol.

The user may choose to use a software controller of their choice or use the VE Camera Controller. This software application is included on the USB memory stick in the kit or available for download from:

<http://www.visualengineering.co.uk/supportdownload/9>

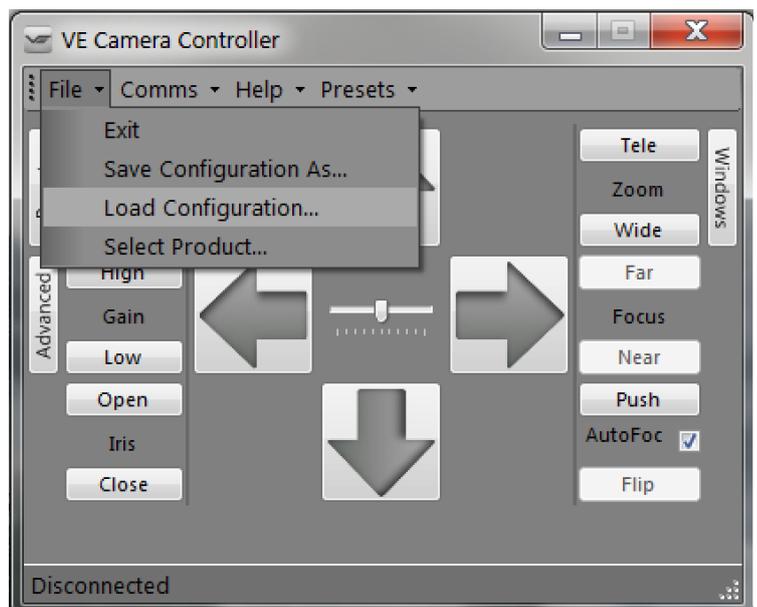
The user should install the Software application on a PC.

The image on the right shows the software application.

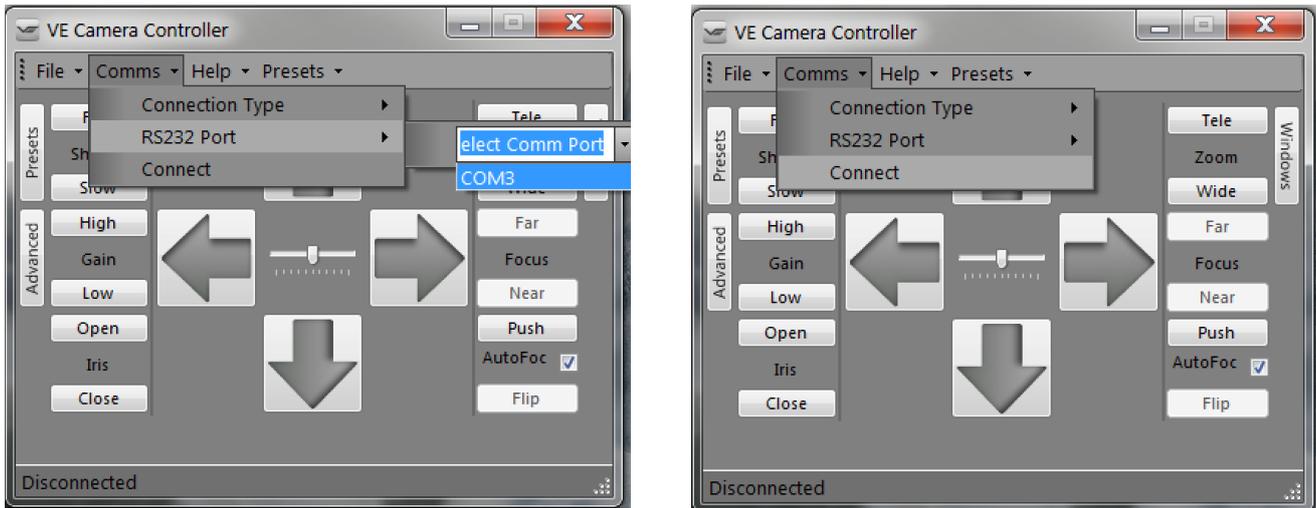


To load in the correct preferences for the IQS the user should load the configuration file "MicroATM.ccc", which is included on the USB memory stick.

Use the File menu to Load the Configuration as shown on the right.

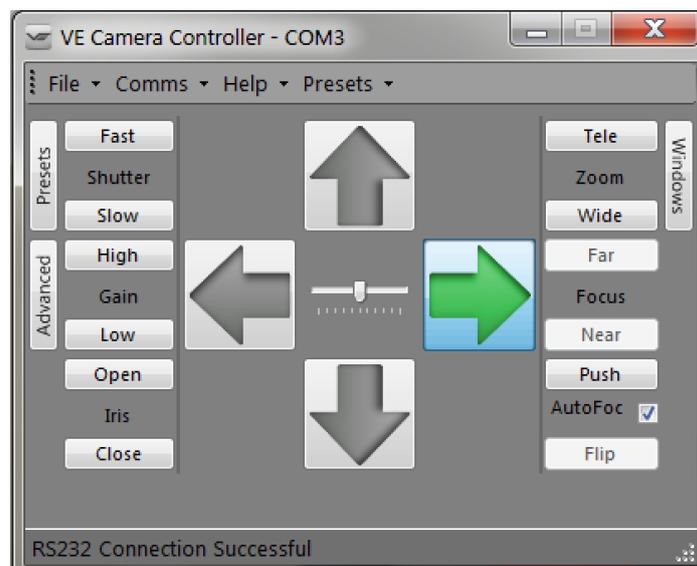


It is now necessary to connect the USB to serial comms lead to the PC. The operating system of the computer will allocate this a COM port number. Once this connection between the comms lead and the computer's operating system has been made the user can go ahead and connect the application to the COM port. In the example below the port COM3 has been selected. Now select Connect.



Now connect the USB serial to comms lead 9 way D-type connector to the IQS Power Comms Cable 110-3993.

The functions of the software can be used. In the example below the pan right command has been selected. This will cause the video feed to digitally pan right. Similar commands for pan left, tilt up & down and zoom functions can also be tried out using the intuitive software user interface.





ATM Camera

Joystick Description

On the rear of the ATM camera there is a mini joystick which allows the user to control a range of functions within the camera.



Joystick Functions

The mini joystick allows the user to control and configure the ATM camera. The list below details what movement controls which features.

- | | |
|------------------------------|-------------------------------|
| • Up Movement | Image Tilts Up |
| • Down Movement | Image Tilts Down |
| • Left Movement | Image Pans Left |
| • Right Movement | Image Pans Right |
| • Centre Short Press | Zoom Function |
| • Centre Long Press (5 secs) | Enters on-screen Display Menu |

Zoom Function

There are six preset zoom positions available, each short press on the centre of the joystick steps the zoom position in once until the last position is reached, another click returns the image to fully wide.

Motion Detection

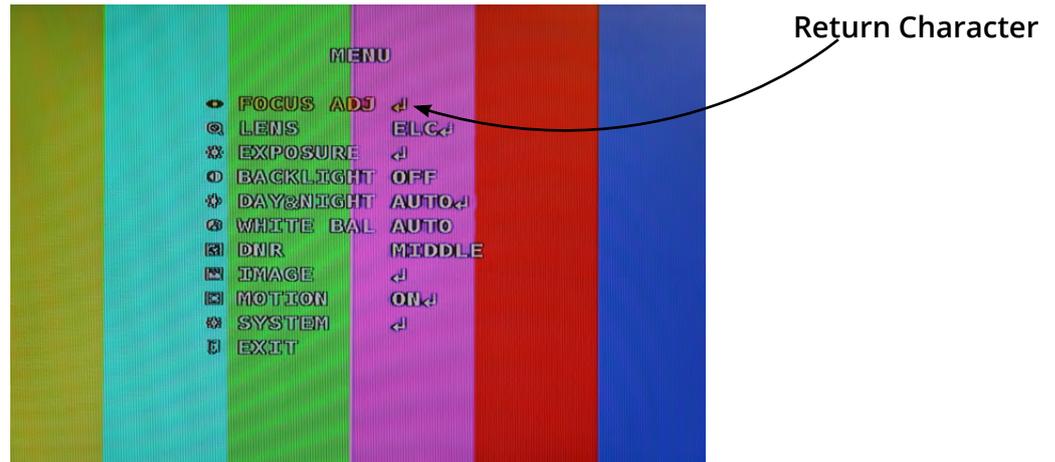
If motion detection is enabled the camera will automatically Pan, Tilt, and Zoom in on the motion area, while there is no motion detected the camera will return to wide.

Presets

The ATM supports user presets, these can be saved and recalled via the serial comms link. The last PTZ position the device was at before power down will be recalled on boot up.

OSD

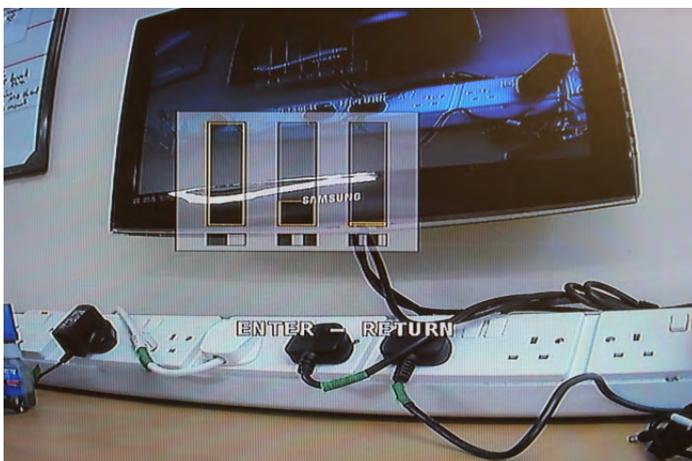
The camera supports an On Screen Display. To enter this feature press the centre of the mini joystick in for about five seconds, the mini joystick can be found on the rear of the ATM camera. Once the OSD has been activated the user will observe the camera parameters that can be altered. An example of the OSD screen is shown below.



In the above example the OSD is pointing towards the FOCUS ADJ menu, since this is the highlighted parameter. Since this parameter has a **Return Character** next to it there are more options available within this sub-menu. Pressing the mini joystick in will select this option and the OSD will enter the sub-menu for FOCUS ADJ.

Moving the joystick up and down or left and right will allow the user to change any of the many parameters the ATM camera supports.

If the current example FOCUS ADJ menu is selected it will bring up an overlay on the current video image. The overlay aids the user to get the camera to the optimal focus. An example screen showing this is below.



Address Selection and OSD Remote Control

The Camera Address can be set via the OSD menu, the allowed range is between 1 and 6.

If the address is set to 7 the OSD menu can be controlled using PTZ commands on any of the supported protocols via the serial comms connection.

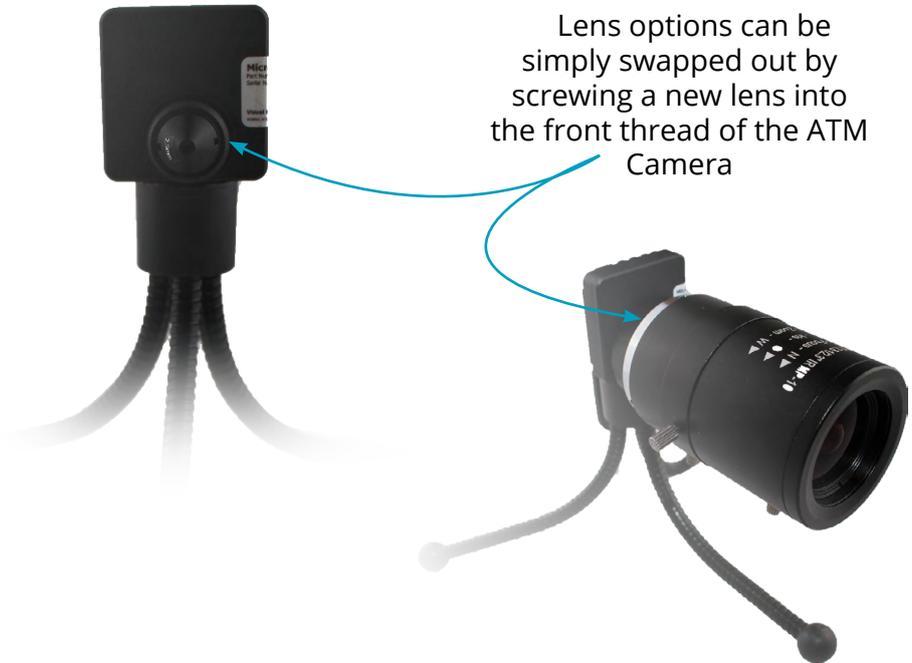


Changing the Lens

The ATM camera can be fitted with different lenses according to the field of view required for a particular scenario.

The lenses can be swapped out by simply unscrewing which ever lens is currently fitted to the camera and screwing in the new one.

The standard lens fitted is 2.5mm offering a 85° x 64° field of view.



Long Lens Adaptor

M12 lenses with a back focal length of >3.2mm will require the M12 long lens adaptor. The M12 long lens adaptor screws into the front thread of the camera in the same way as any lens fitting. This allows M12 lenses with a back focal length of >3.2 mm to be fitted and focused.

C and CS Mount Adaptors

For fitting larger C mount or CS mount lenses to the ATM Camera use the adaptor. These adaptors also screw onto the front thread of the camera.



Specifications

Specifications			
Power & Control Input	Fischer MiniMax	Control Protocol	Sony Visca
Input Resolution	3.1Megapixel	Baudrate	Selectable
Output Video	PAL or NTSC	Optional Storage	Up to 32GB
Field of View - Pan	360°	Temperature	-20 to +40°C
Field of View - Tilt	60°	DC In	9 to 18V
Available Zoom	3x lossless	Power Consumption	2.5W
Sensitivity	0.1 Lux	IQS Module Weight	200 grams
Resolution	> 2000TVL	IQS Module Dimensions	80 x 80 x 22mm
SNR	> 50dB	ATM Camera Weight	20g
Lens Type	S mount M12	ATM Camera Dimensions	30 x 28.5 x 8mm
Comms Standard	RS232	Environmental	IP65
Connection	Supplied Cable	Casing	CNC Machined Aluminium

Factory Default Settings

RS232
9600 Baudrate

Connector Interfaces

ATM 5-Way Molex Picoblade

1. +12v
2. GND
3. CVBS composite video
4. RS232 TX / RS485 A
5. RS232 RX / RS485 B

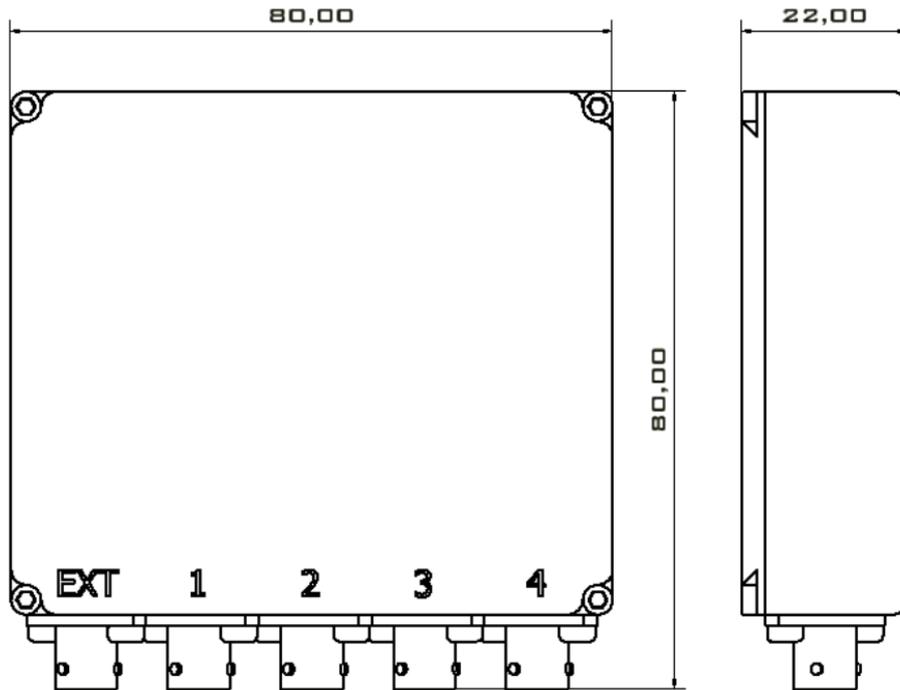
9-Way D-Type

1. n/a
2. RS232 TX / RS485 A
3. RS232 RX / RS485 B
4. n/a
5. GND
6. n/a
7. n/a
8. n/a
9. n/a

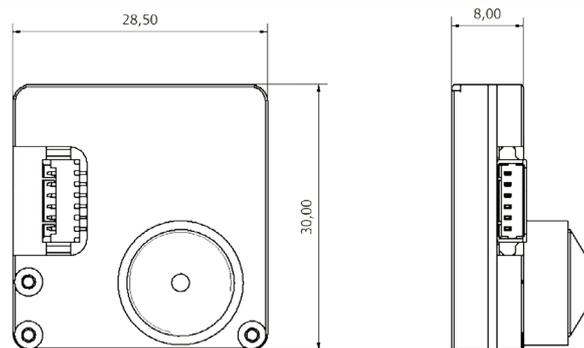


Dimensions

IQS Module



ATM Camera



Visual Engineering Technologies LTD

Kemps Farm
Stanway
Colchester
Essex
CO3 8NB
UK



Product specifications subject to change without notice

Tel: +44 (0)1206 211842
Web: www.visualengineering.co.uk
Email: sales@visualengineering.co.uk