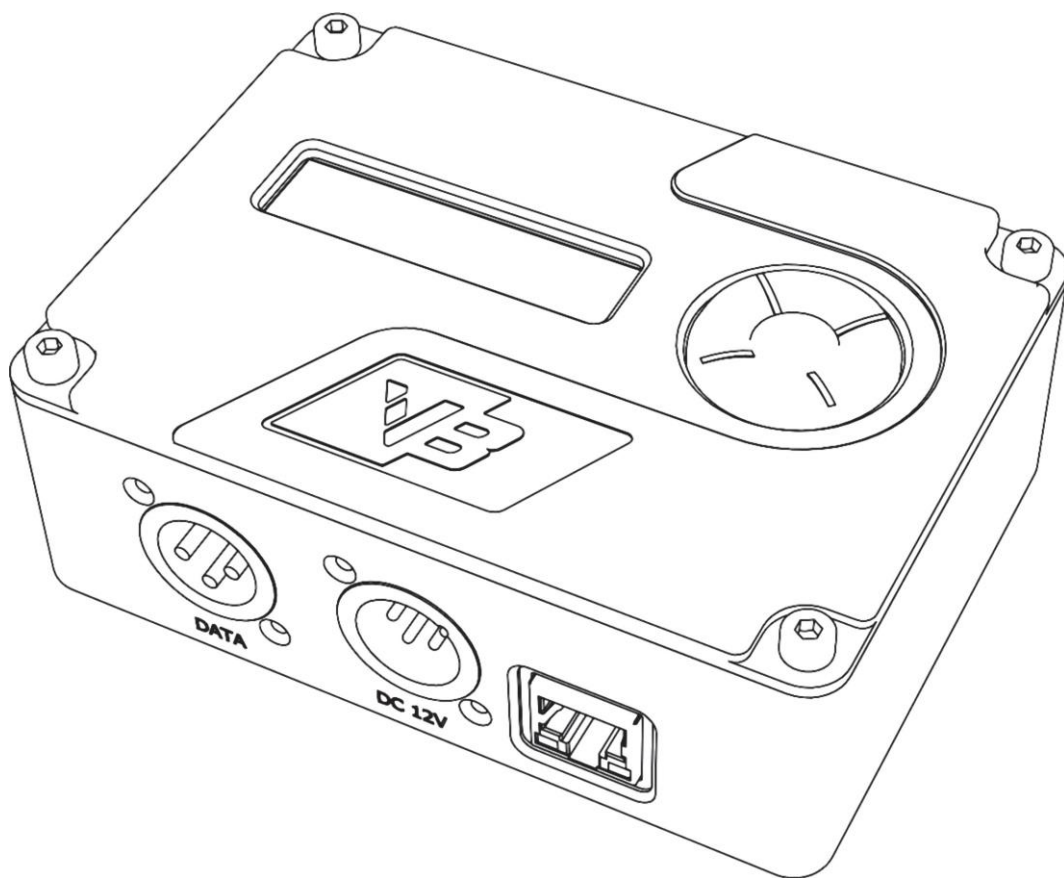


ODU User Manual

Revision v3 – 11.12.20

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Your Camera Control Outdoor Unit

Getting Started

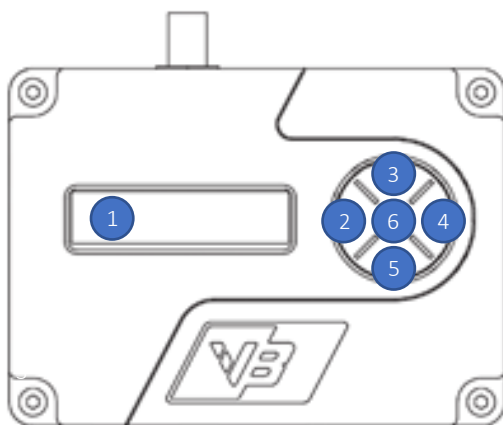
You will find the necessary information to connect and operate the ODU within this manual and our additional specific quick setup guides, if however, additional support is required please don't hesitate to contact your local distributor.

Introduction

The Videosys camera control system allows the user to replace the cables between the Remote-Control Panels, Camera Control Units and Cameras with a robust broadcast quality wireless link.

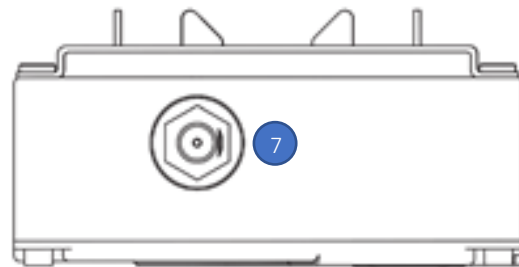
The Videosys camera control solution consists of three distinct components; an Indoor Unit (IDU) an Outdoor Unit (ODU) and a camera Receiver Unit (RX). Multiples of these components can be used to construct larger scale setups, for example multiple ODUs can be used to increase RF coverage forming a 'cell-like' infrastructure

Each camera to be controlled requires its own receiver unit (RX).



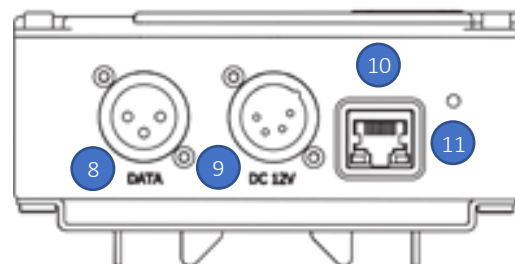
Front Panel

1. OLED Display
2. Left Button
3. Up Button
4. Right Button
5. Down Button
6. Enter Button



Connectors

7. TNC transmit antenna connector



Bottom Connectors

8. Data Input Connector (3 Pin XLR, Male)
9. Power Input Connector (4 Pin XLR, Male)
10. Ethernet Connector (RJ45)
11. RX signal indicator light

Principal of Operation

The Videosys ODU is fundamentally a data transmitter, it accepts data via Ethernet, RS232 or RS485 and transmits this data to be received by one or more camera control RX. The ODU-E has the capability to intercept and interpret camera control data, which combined with IP networking features such as multicast, allow for a huge amount of flexibility with multi ODU set-ups.

The most basic Uni-directional set up is shown in Fig 1. Where a single ODU is sending control data to be received by a single RX in Unidirectional Data Mode.

Fig 1. A simple Uni-directional camera control setup



Connecting Components

The Camera control ODU requires three things, a source of power, a source of data and an antenna with which to transmit.

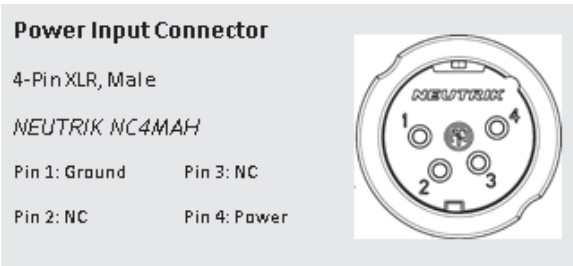
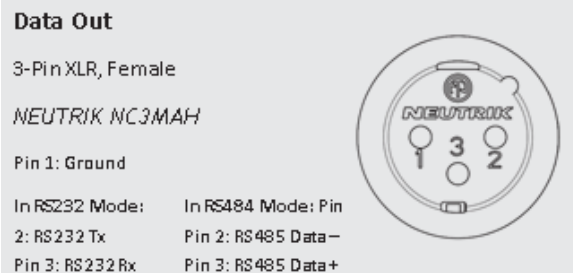
Power can be supplied either via the 4 pin XLR Power Input Connector, or via the RJ45 connector utilising Power over Ethernet. If both are connected at the same time the 4 pin XLR will take priority over the PoE by the ODU power path control circuit.

Data can be input to the ODU via the Data Connector utilising either RS232, RS485 data format or Ethernet via the RJ45 connector. The ODU can be configured to automatically select an active data source from the above list or to automatically select between groups of sources or locked to only respond to a specific source type e.g. RS485.

RS485 control when used with a Videosys IDU, will operate on up to 1500m cable lengths. Using Ethernet, cable lengths of up to 100m can be used. It should be noted that many cheap and readily available range extending solutions exist for IP networks. RS232 connectivity is only rated for 15M and is provided to allow operators to use equipment such as off-the-shelf serial to fibre converters.

Connector Wiring Diagrams

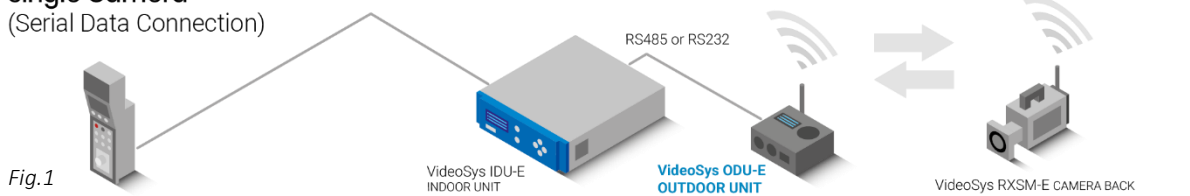
The following diagrams are from the point of view of the rear panel of the ODU facing the user.



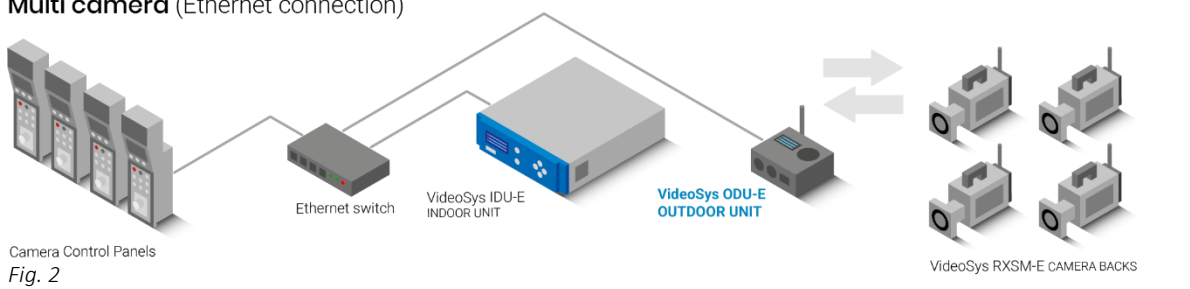
System Designs

The Videosys Camera Control ODU-E has been designed for ease of use and can be used in a of system designs to enable full coverage for multiple cameras and multiple areas.

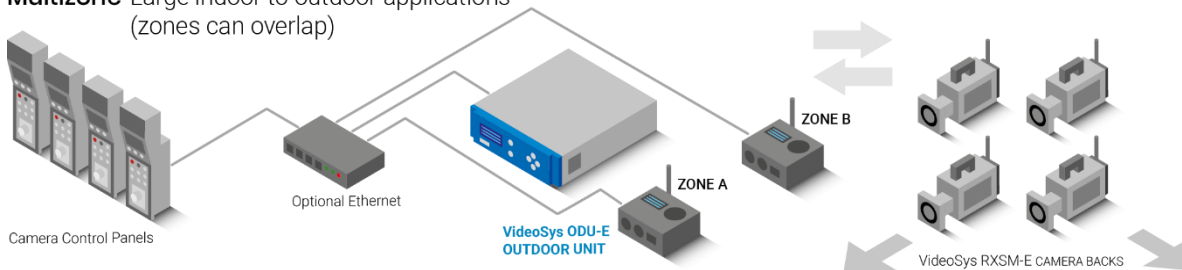
Single Camera (Serial Data Connection)



Multi camera (Ethernet connection)



Multizone Large indoor to outdoor applications (zones can overlap)



As previously mentioned, the ODU connection can be made from the IDU by either RS485, RS232 or Ethernet. In Fig 1 a simple single camera control system is shown but can control up to 4 cameras as shown in Fig 2.

Using IP connection in Multicast mode multiple ODUs can be deployed to create a 'Cell-Like' structure where ODUs can be placed in different zones. For example, this could be utilised in a large building where the camera may need to operate in different rooms or parts of the building or on golf courses where the topography may create RF dead spots.

Fig 3 shows such a set up where two ODUs are used in two different zones. A further very powerful feature of the Videosys camera control system is the camera receiver units are capable of auto-switching their receive frequencies as the camera move from one zone to another.

For full details on how to set up a multi zone control system, please consult the Multizone Quick Set Up guide.

Navigating Menus

The Up, Down, Left, Right and Enter buttons are used to navigate through the menus.

Menus are organised into lists; these can be scrolled through with the Up and Down buttons.

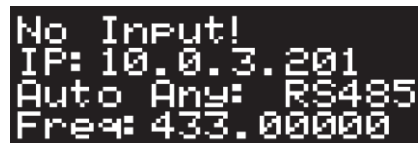
To enter the selected submenu or option, press the Right button. Left will return the user to previous menu. The centre-click Enter button is used to set or save options such as frequency or IP addresses.

Within a text edit screen, use the left and right buttons to select the characters being edited and the up and down buttons to change the character.

To save and return press the Enter button, to discard and return use the Left button to scroll back to the first character and then press Left once more to return.

Status Screens

The first screen that will be displayed to the user is the status screen (Fig 2), this is designed to give a quick overview of the ODU's configuration and operating status.



```
No Input!  
IP: 10.0.3.201  
Auto Any: RS485  
Freq: 433.00000
```

Fig 2. The ODU status screen

The first line of text shows the transmitting status. While the unit receives valid data on its input, it will be in transmit mode and display 'Transmitting'. If the ODU loses its data input, it will display 'No Input!'.

On the second line the IP address of the ODU. This is the address used to gain access to the web browser page and is the target address used to send data over IP from the IDU to the ODU.

Data input type is displayed on the third line. If a range of inputs are selected this is also displayed along with the current selection, in this case the ODU is not receiving any valid data but the range is 'Auto Any' and the last 'good' selection the device made was 'RS485'. If a single input is selected rather than a range this screen will display 'Locked' and then the selected input.

The final line shows the current frequency the ODU RF output is set to.

Serial Data Configuration

As well as ethernet mode, the ODU-E can operate in RS485 or RS232 serial mode. This can be selected from the front panel by selecting:

ODU > Input Mode >

The user has the options:

Auto Any – this automatically selects between any of the data input types

Auto Serial Only – This automatically selects between RS485 and RS232 and ignores any IP connection

Locked RS485

Locked RS232

Once the correct data input type has been selected and valid data is received the ODU-E will automatically start transmitting and report 'Transmitting' on the front panel.

IP Configuration

Pre and Post IDU v141 software version

The IP connectivity has been integrated as a means of easily passing Videosys camera control data over an IP path in either a simple point to point fashion, as in Uni-cast or multiple ODUs as in Multi-cast.

Originally IP data out was used by the Videosys Camera Control system as a means to cascade camera control data from one IDU-E into one or more IDU-E's and out to a single ODU over serial, allowing in excess of four cameras to be controlled over a single UHF channel. This is useful in high traffic areas such as large golf events or other such large-scale events where RF spectrum is at a premium.

- **Prior to v141 IDU software** - Due to IP cascade's legacy it did not contain the data required to change the ODU-E's frequency from the IDU-E front panel meaning the ODU-E front panel had to be used to change the frequency and power output level. Also, if a cascade's address was entered into the IDU, the serial data out port on the rear of the IDU became inoperative. This can lead to problems when the equipment was re-deployed onto another job if the cascade address was not reset to 0.0.0.0 the user would think the serial data out was broken.
- **IDU software v141 onwards** - Addresses the issues raised with previous versions. v141 onwards contains separate ODU IP setup menus to allow the ODU-E to be set up from the front panel of the IDU and even if a cascade address entered, the serial data port is still operational.

Initial Setup

Both the IDU-E and the ODU-E should be connected to the same Local Area Network. In practice this means making sure that the primary IP address of both the IDU-E and ODU-E fall within ranges permitted by their subnet masks. A fairly typical set up could be:

ODU-E

- IP Address: 192.168.1.240
- Subnet Mask: 255.255.255.0
- Gateway: 192.168.1.254

IDU-E

- IP Address: 192.168.1.200
- Subnet Mask: 255.255.255.0
- Gateway: 192.168.1.254

ODU-E

To use the IP data input feature, the ODU-E will need to be configured to operate in either 'Locked IP' or 'Auto Any' input mode. The input mode menu can be found under Main Menu > System > Input mode.

IDU-E - Unicast Mode

Make sure that the transmitted data type from the IDU-E is Cola V2 CRC16 as follows:

Main Menu > System > Data Link Version.

Set the ODU connection to IP and enter the IP address of the ODU:

ODU > Input Mode > IP > Unicast Settings > ODU IP Address.

Upon setting the address, the IDU will then attempt to connect to the ODU-E and start sending data immediately.

Multicast Mode

Multicast is used when connecting multiple ODU's to the network. This allows for a powerful 'cellular' style topography for covering large areas such as golf courses, marathons etc.

Extra special care should be taken selecting the frequencies as each ODU is set to avoid intermodulation issues. Once the user has decided the structure and frequency plan, each ODU should be programmed with its own static IP address **and** then enter Multicast Group Address.

On the ODU:

Network > IP Address > ENTER static IP Address.

Network > Multicast Group Address > Enter Multicast Group Address.

To use the system in Multicast mode, on the IDU set the ODU connection as follows and enter the Multicast group address:

ODU > ODU Connection > IP > Multicast Settings > Multicast Group Address.

Once set the data should stream out to all ODU's in the Multicast group.

NOTE: In Multicast mode the ODU status cannot be displayed on the IDU. To set the frequency and power output you must use either the ODU front panel or the web browser page of the ODU in question.

Menu Structure

Pressing Enter will move the user from the status screen to the main menu, this main menu has the category groupings for the various settings and options, these are as follows;

Radio – Within this submenu there are pages that allow the user to view and set the radio transmit frequency and power. Due to the radios operation it can only transmit on frequencies that are a multiple of 6.25KHz, in the case that an invalid frequency is entered, the unit will select the nearest valid frequency.

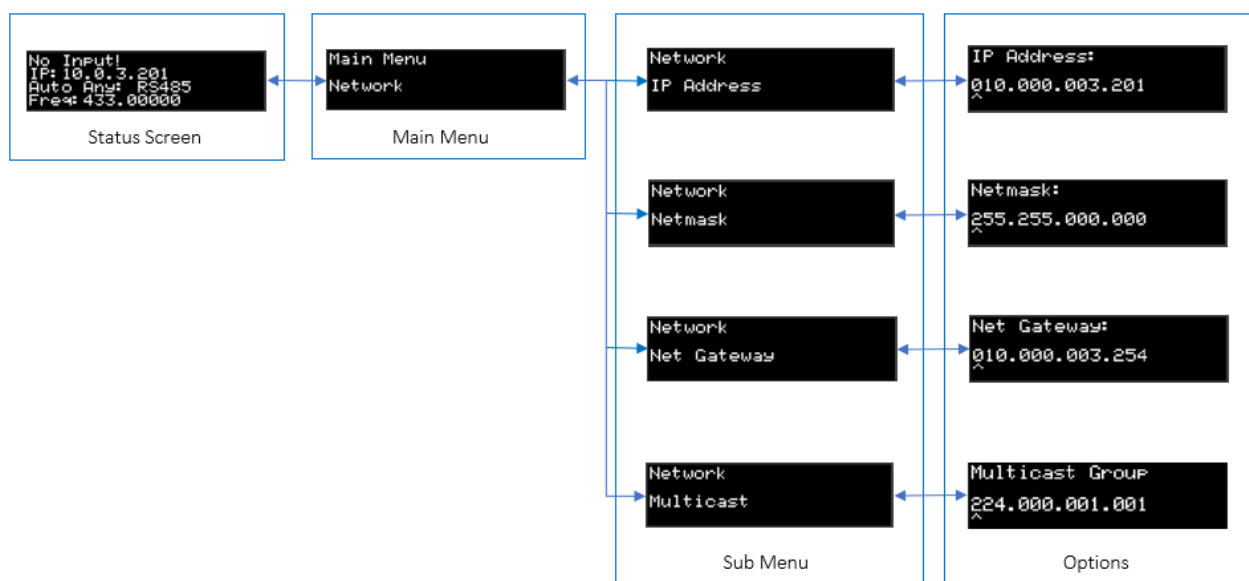
Pressing Enter will move the user from the status screen to the main menu, this main menu has the category groupings for the various settings and options, these are as follows;

Network – Set IP address, netmask, gateway and multicast options.

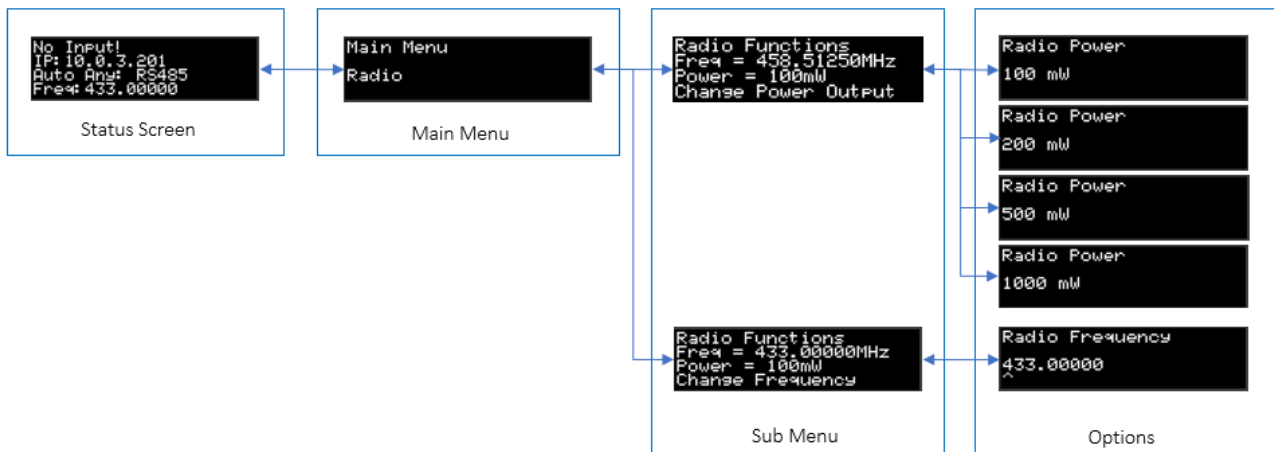
Radio – Within this sub menu there are pages that allow the user to view and set the radio transmit frequency and power. Due to the radios operation it can only transmit on frequencies that are a multiple of 6.25KHz, in the case that an invalid frequency is entered, the unit will select the nearest valid frequency.

System – Contains options such as data input modes (RS232, RS485, IP, Auto Serial Only and Auto Any), System Reset and System Info. System Info displays software version, unit serial number and Satel module serial number.

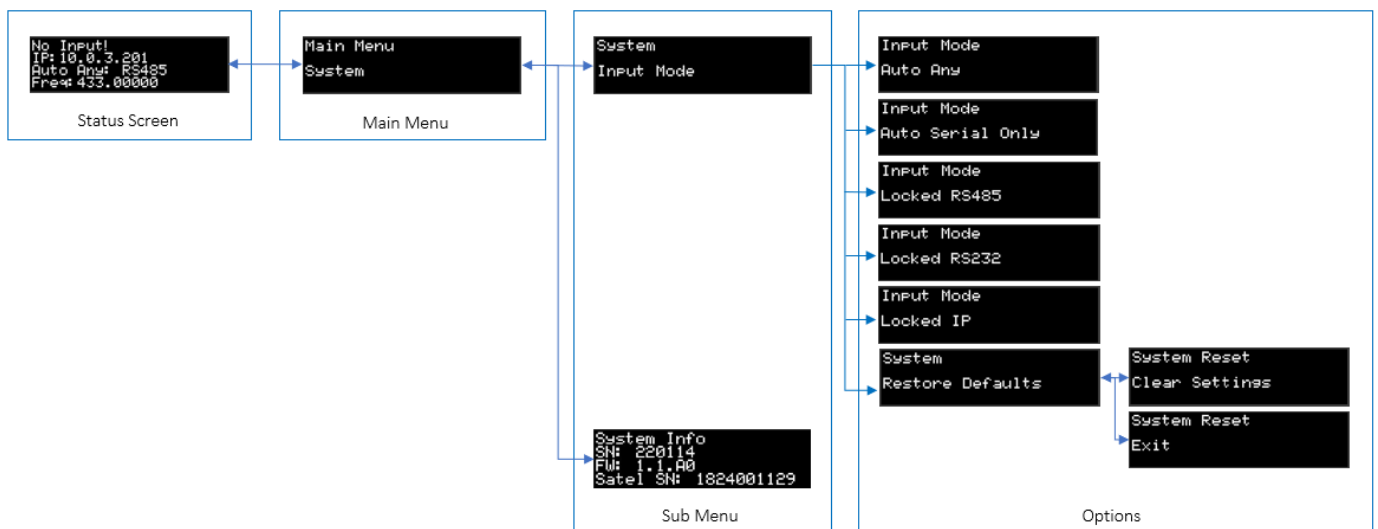
Network



Radio



System



Web Interface

The ODU has a built-in webserver and serves a range of useful control pages, if the user has a device with a web browser on the same network, they can use this interface to quickly change settings and perform updates.

Accessing the Web Interface

To Access the Web interface, firstly power up the ODU and connect a PC or laptop up to the same IP network as the ODU. Find the IP address of the ODU (this can be found on the status page) and enter this into the browser, this will take the user to the configuration web page.

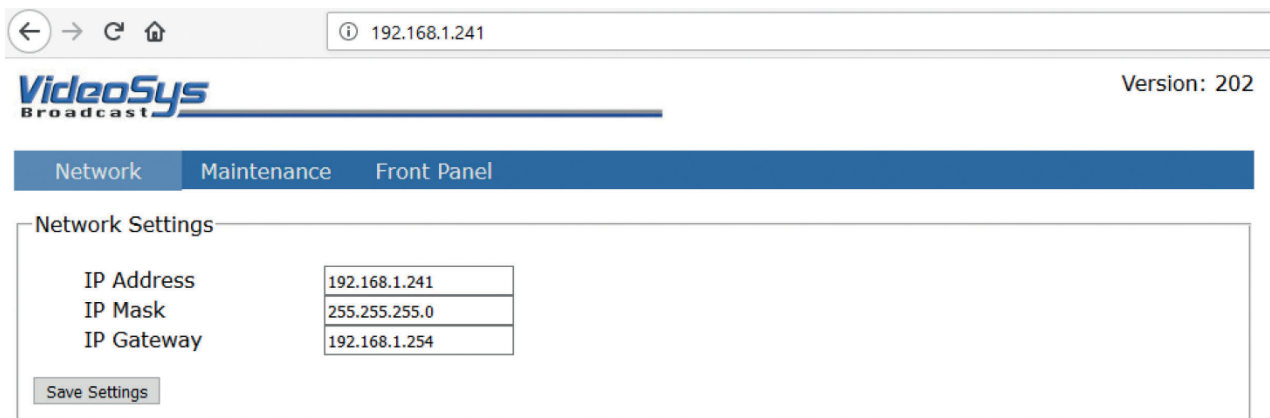


Fig 4. The ODUs Network Configuration Webpage

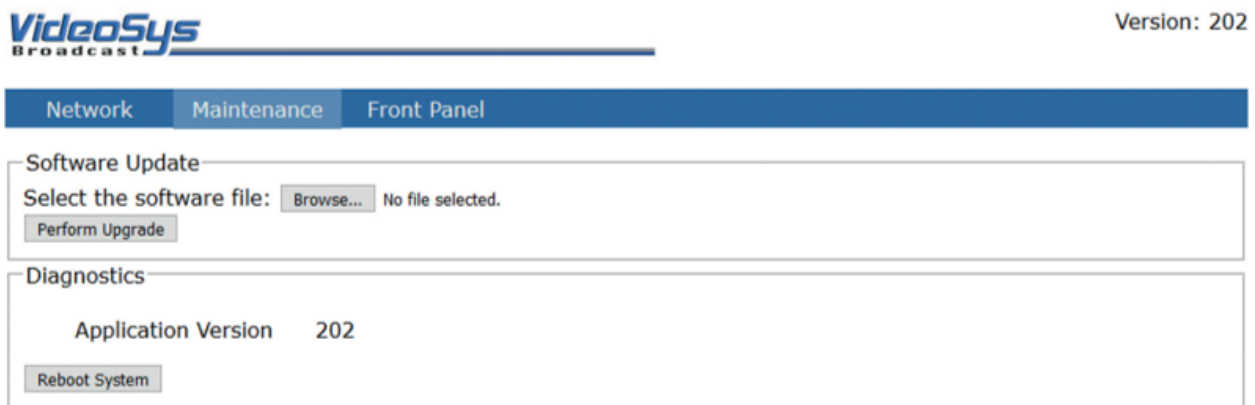


Fig 5. The ODUs Maintenance Webpage

Once the webpage has loaded (see 'Accessing the Web Interface'), the 'Network' Page is then visible (fig 4), from this page the user can easily and quickly configure the unit as part of an IP network. There is also a 'Maintenance' page, giving device information and allowing for updates (these can be found on our website) and a 'Front Panel' page that mirrors the information presented on the ODUs front panel and allows all of the same functionality as the unit's physical front panel.

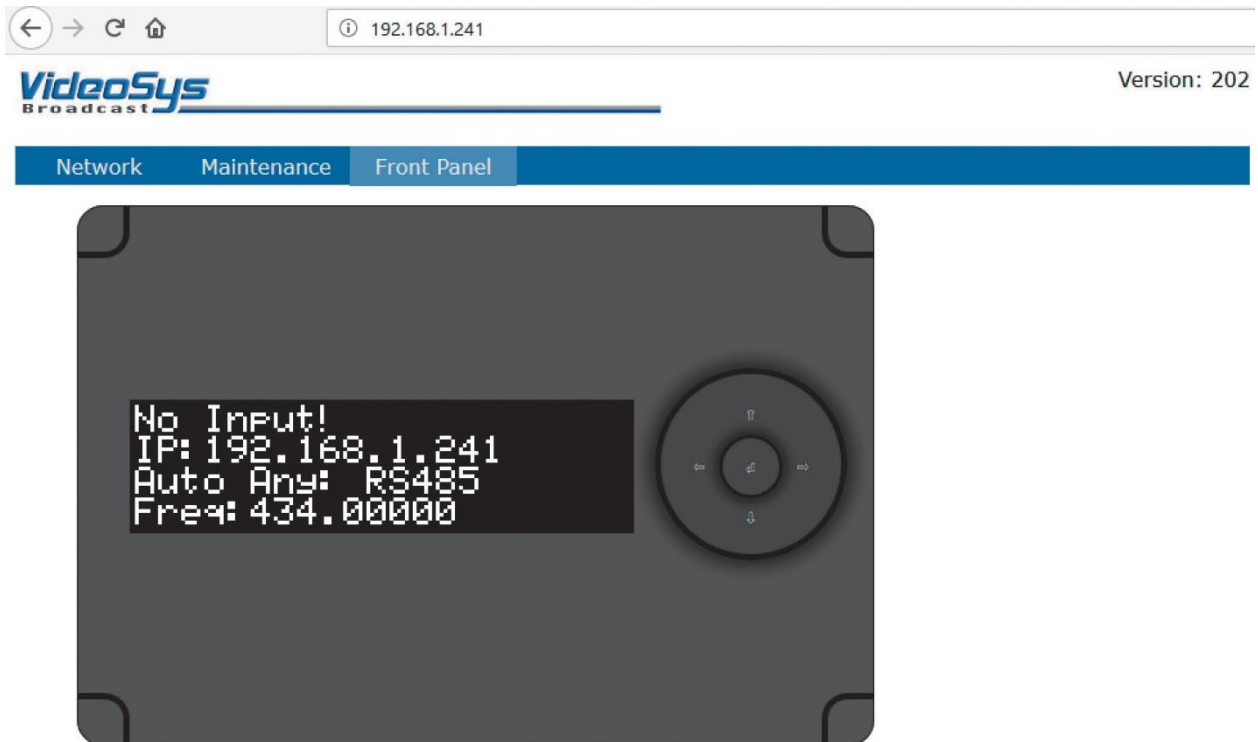


Fig 6. The ODUs Front Panel Webpage

Unit Updates

To update the ODU, firstly a new firmware image will be required, these are available on our website. Please check the release notes bundled with the firmware images carefully, they will explain precisely what changes have been made. The next step is to access the webpage (see 'Accessing the Web Interface'). On the 'Maintenance' page (fig 5). There is a software update section, use this to select and upload the file. During the update the ODU will inform you that it is restarting and then that it is updating. Any questions regarding which firmware image should be used or for any additional support please your local distributor.

Backwards Compatibility

We have multiple generations of hardware, which due to our commitment to backwards compatibility can, in the vast majority of cases, still be used to build a high-performance camera control system. If the user is integrating new components into a previous generation system however, some of our latest features might not be available.

Please check our software release notes for the version required or contact our sales department for more information.

Physical Parameters

Dimensions

Width: 125mm
Height: 104mm
Depth: 46mm (Without Mounting Bracket) 63mm (With Mounting Bracket)
Weight: 510g (Excluding Brackets)
Weather proofing: Unrated – Splash proof front/top
Temperature Range: 0-50 °C
Sound Output: None – Fanless

Electrical Parameters

Voltage Input: 9-36V DC (4 pin XLR)
36-57V IEEE802.3af PoE (RJ45)
Power Requirement: 6W typical at 1W transmit.
3W typical Idle.
Radio Output Power: 100mW, 200mW, 500mW,
1000mW (Selectable)
Radio Frequency: 403 - 473 MHz (Selectable)
Radio Bandwidth: 12.5KHz

