



# USER MANUAL



Equipment Description	PCB CS 2CH Video Encoder
Ixys Part Number:	101614

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## 1. INTRODUCTION

### 1.1. GENERAL NOTES

This document outlines and defines the installation, operation, and maintenance procedures for the PCB CS 2CH Video Encoder. The manual will contain all relevant data and methods to be able to use and maintain the device for its intended purpose.

It will be stated in the manual everything from technical specifications, installation, and maintenance to troubleshooting.

### 1.2. PURPOSE AND SCOPE

The purpose of this manual is to give instructions to install, operate and maintain the PCB CS 2CH Video Encoder supplied by Ixys AS.

The manual is to be used by trained and competent personnel only.

### 1.3. ABBREVIATIONS

Abbreviation	Description
PCB	Printed Circuit Boards
TCP	Transmission Control Protocol
UDP	User Datagram Protocol
ESD	Electrostatic Discharge
IP	Internet Protocol

### 1.4. SUPPLIER CONTACT INFORMATION

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Langmyra 11  
N-4344 Bryne  
Norway

+47 51 42 22 22

[post@ixys.no](mailto:post@ixys.no)





[www.ixys.no](http://www.ixys.no)

## 2. HEALTH, SAFETY AND ENVIRONMENT

### 2.1. GENERAL

Safety Notes and General Precautions shall be presented to all personnel concerned prior to testing, operation, maintenance, and repair. The operations shall be performed by the responsible engineer/supervisor. The personnel using this equipment must have knowledge of this type of equipment and have familiarized themselves with the applicable procedures and manuals for this product.

### 2.2. SAFETY MESSAGE LEVELS

Safety message level		Indication
	<b>DANGER:</b>	A hazardous situation which, if not avoided, will result in death or serious injury
	<b>WARNING:</b>	A hazardous situation which, if not avoided, could result in death or serious injury
	<b>CAUTION:</b>	A hazardous situation which, if not avoided, could result in minor or moderate injury or damage to equipment
	<b>Electrical Hazard:</b>	The possibility of electrical risks if instructions are not followed in a proper manner
<b>NOTICE:</b>		A potential situation which, if not avoided, could result in an undesirable result or state. A practice not related to personal injury

### 3. SPECIFICATIONS

#### 3.1. DESCRIPTION

The PCB CS 2CH Video Encoder is used to either encode or decode two composite video inputs to h264 compressed video streams.

Inbuilt network switch and two external 100Mbps ports enables daisy chaining of multiple devices.

Configuration is possible through Web interface in each of the two channels.

#### 3.2. TECHNICAL DATA

General	
Manufacturer	Ixys AS
Description	PCB CS 2CH Video Encoder
Weight	~150g
Dimensions	96 x 104 x 15mm (PC104 compatible format)

Electrical Data	
Supply Voltage	24 (9 – 30) VDC
Power Consumption	~ 5W

Cable Connectors	
Ethernet Ports	RJ45
J4 Power Supply	Wago 2091-1124
J1-2 Composite video in/out	SMB

Other	
Speed on network ports	100 Mbps
Default IP address channel 1	192.168.24.53
Default IP address channel 2	192.168.24.54
Recommended spacers under PCB	16mm

### 3.3. WARRANTY CONDITIONS AND GUARANTEE

- Improper use of equipment where use is not reflected in what it was intended to.
- Where general maintenance is not performed leading to defective parts or other type of defect.
- Incorrect handling or use of equipment.
- Packing not carried out in an ESD protective way.

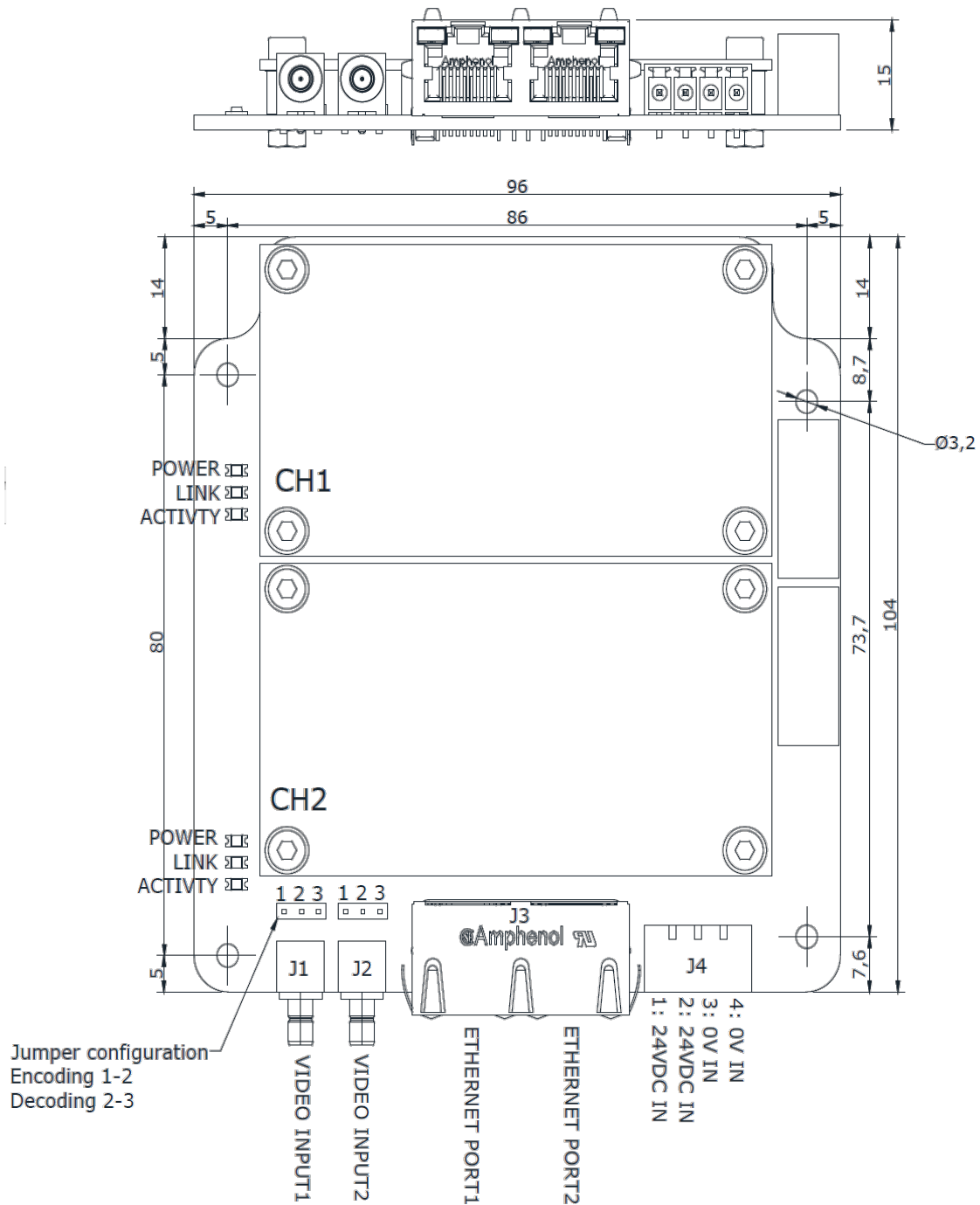
### 3.4. ORDERING

Ixys Part Number	Description
101614	PCB CS 2CH Video Encoder

### 3.5. ACCESSORIES

Ixys Part Number	Description
100365	Connector RJ45
100958	Connector SMB RG169 Right Angle
112073	Connector Wago 3.5mm 4way Plug 2091-1124

## 4. DRAWING

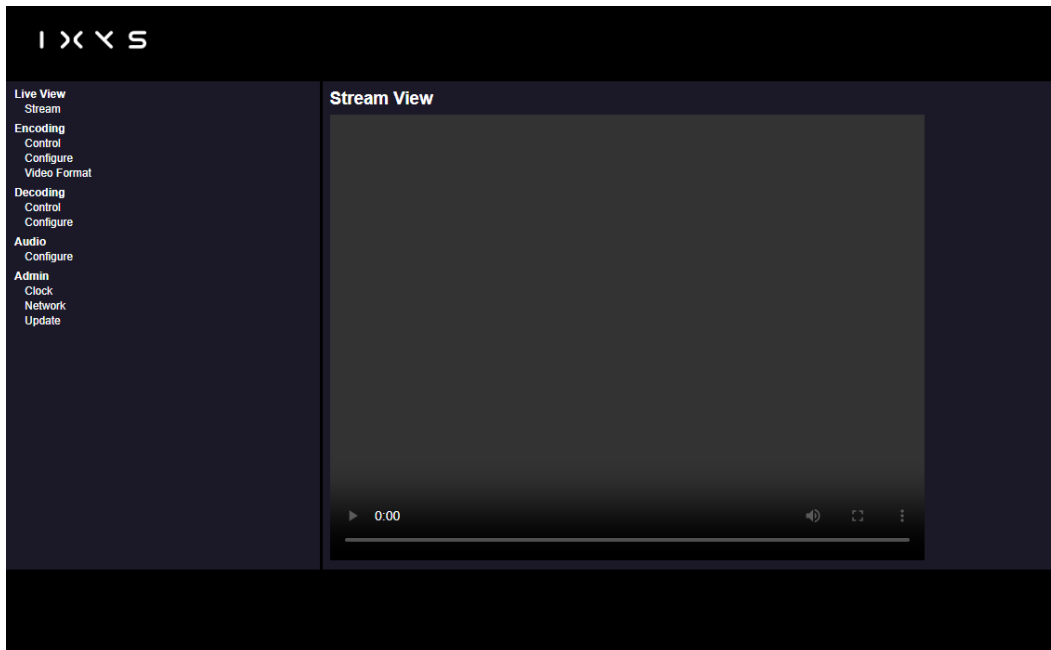


## 5. OPERATION

Inbuilt web server in each of the two channels are available by browsing to the IP address in a web browser. The following subchapters will describe the configuration pages available.

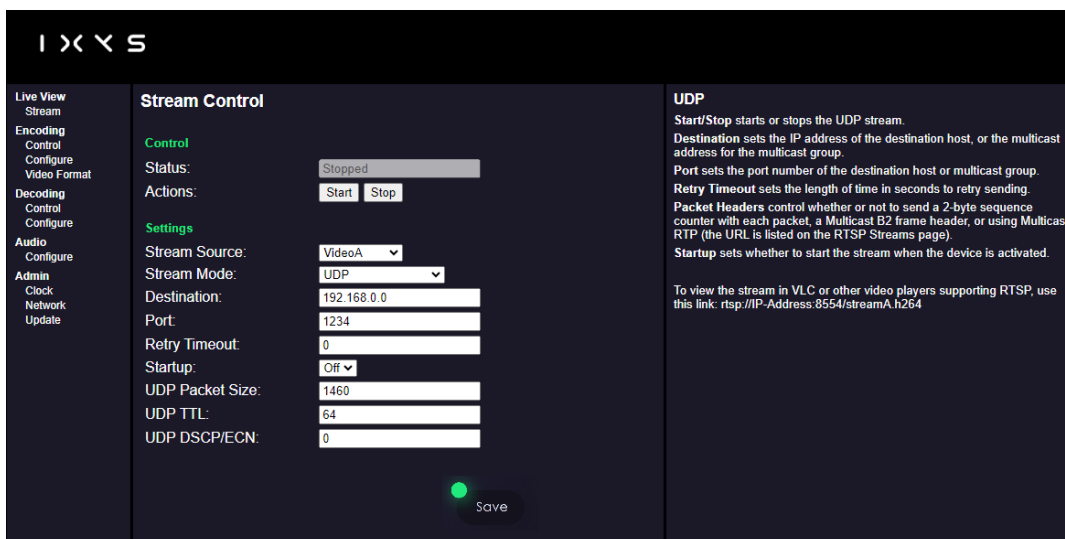
### 5.1. LIVE VIEW - STREAM

The live view stream page will show live video from the channel, this is meant for troubleshooting and other video decoding software is recommend for low latency display for real operation.



### 5.2. ENCODING - CONTROL

The encoding control page is used to select the outgoing stream type and destination.





### 5.3. ENCODING - CONFIGURATION

The encoding configuration page is used to select the encoding parameters in addition to an on-screen display feature. The bitrate can be adjusted to reduce the bandwidth usage for low bandwidth transmission formats.

**I X Y S**

**Stream Configuration**

**Stream**

Format:

**Video**

Resolution:

Frame Rate:

Bit Rate:

GOP Size:

Aspect Ratio:

Transform:

**OSD**

Enable:

Message:

X Position:

Y Position:

Date Display:

Seconds Display:

Background:

**Stream Settings**

Format sets the AV encoding and mux format.

H.264+AAC MPEG-TS: H.264 video, AAC-LC audio, MPEG transport stream.

H.264 MPEG-TS: H.264 video, no audio, MPEG transport stream.

H.264 VES: H.264 video elementary stream.

MPEG4+AAC MPEG-TS: MPEG4 video, AAC-LC audio, MPEG transport stream.

MPEG4 MPEG-TS: MPEG4 video, no audio, MPEG transport stream.

MPEG4 VES: MPEG4 video elementary stream.

MJPEG VES: Motion JPEG video elementary stream.

**Video Settings**

Resolution sets the frame size, in pixels.

Frame Rate sets the frame rate, in frames-per-second.

Bit Rate sets the H.264 stream rate, in bits-per-second.

GOP Size sets the H.264 I-frame interval.

Aspect Ratio sets the H.264 aspect ratio.

None: No aspect ratio information, implies 1:1 pixel aspect ratio.

4:3: Full-frame aspect ratio for NTSC and PAL.

16:9: Wide-screen aspect ratio.

JPEG Quality sets the JPEG quality setting, ranged 10 to 90.

Transform sets the image transformations.

None: No transformation.

Mirror Vertical: Mirror the video image vertically.

Mirror Horizontal: Mirror the video image horizontally.

Rotate 180: Rotate the video image 180 degrees.

**OSD Settings**

Enable sets the on-screen-displayed text on/off.

Message sets the text to be displayed. Control codes may be used:

\*d: Insert the current date.

\*t: Insert the current time.

\*i: Insert the current IP address.

\*c: Insert the current frame counter.

\*n: Insert a newline.

X Position sets the left edge of the displayed text, in pixels.

Y Position sets the top edge of the displayed text, in pixels.

Date Display sets the display format of the inserted date.

Seconds Display sets the display format of the inserted time.

Background sets the transparency of the text background.

### 5.4. ENCODING – VIDEO FORMAT

The encoding video format page is used to configure the composite video parameters for the video input.

**I X Y S**

**Stream Config - Video**

**Video**

Video Standard:

Field Mode:

Brightness:

Saturation:

Hue:

Contrast:

**Video Settings**

Video Standard sets the video standard used for all streams.

Field Mode controls how top/bottom fields appear in the video.

Interlaced preserves both fields in the recording.

Interpolated uses a single field and smoothly fills in-between lines.

Brightness sets the brightness of captured video.

Saturation sets the saturation of captured video.

Hue sets the hue of captured video.

Contrast sets the contrast of captured video.

Restore defaults restores the settings for Brightness, Saturation, Hue and Contrast to the default values.

## 5.5. DECODING – CONTROL

The decoding control page is used to select the incoming stream type and source.

**Output Stream Control**

**Control**

Status: Stopped

Actions: Start Stop

**Settings**

URL:

Port: 0

Packet Headers: None

Startup: Off

Save

**Settings**

Source address sets the IP address of the stream source, or the multicast address for the multicast group. When address is 0.0.0.0, it will play stream from any source.

Port sets the port number of the stream source or multicast group.

Packet Headers control whether or not to send a 2-byte sequence counter with each packet.

Startup sets whether to start the stream when the device is activated.

## 5.6. DECODING – CONFIGURE

The decoding configure page is used to set both the decoding parameters and the image standard as well as the on-screen display feature.

**Output Stream Configuration**

**Stream**

Format: MPEG-TS

**Video**

Video Standard: NTSC

**OSD**

Enable: Off

Message:

X Position: 0

Y Position: 0

Date Display: MM-DD-YYYY

Time Seconds Display: Whole

Background: Black

Save

**OSD**

Enable sets the on-screen-displayed text on/off.

Message sets the text to be displayed. Control codes may be used:

- ^d: Insert the current date.
- ^t: Insert the current time.
- ^i: Insert the current IP address.
- ^c: Insert the current frame counter.

X Position sets the left edge of the displayed text, in pixels.

Y Position sets the top edge of the displayed text, in pixels.

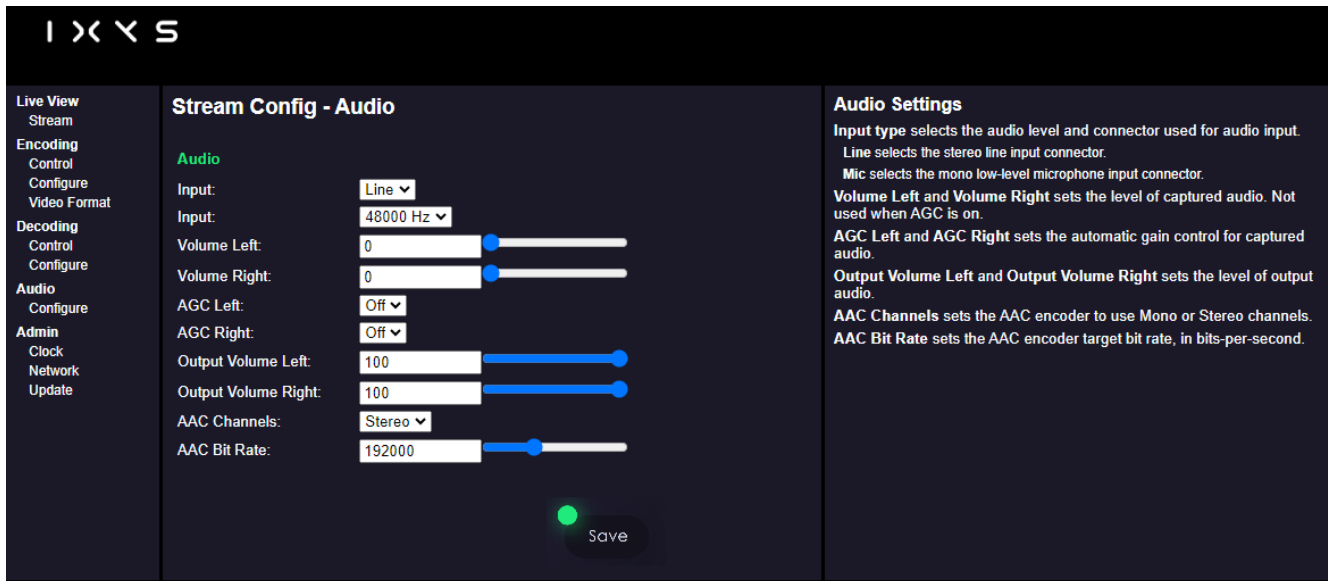
Date Display sets the display format of the inserted date.

Time Seconds Display sets the display format of the inserted time.

Background sets the transparency of the text background.

## 5.7. AUDIO – CONFIGURE

The audio configure page is used to set both the audio input and the output parameters.



**Stream Config - Audio**

**Audio**

Input:

Input:

Volume Left:

Volume Right:

AGC Left:

AGC Right:

Output Volume Left:

Output Volume Right:

AAC Channels:

AAC Bit Rate:

**Audio Settings**

**Input type** selects the audio level and connector used for audio input. Line selects the stereo line input connector. Mic selects the mono low-level microphone input connector.

**Volume Left** and **Volume Right** sets the level of captured audio. Not used when AGC is on.

**AGC Left** and **AGC Right** sets the automatic gain control for captured audio.

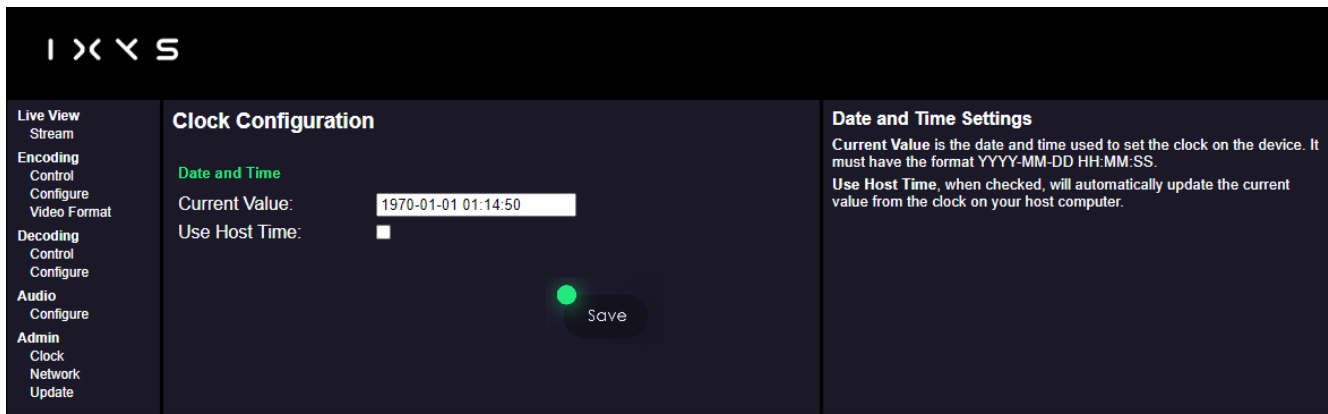
**Output Volume Left** and **Output Volume Right** sets the level of output audio.

**AAC Channels** sets the AAC encoder to use Mono or Stereo channels.

**AAC Bit Rate** sets the AAC encoder target bit rate, in bits-per-second.

## 5.8. ADMIN – CLOCK

The admin clock page is used to adjust the internal clock. There is no internal backup battery and the clock setting will be lost when power is turned off.



**Clock Configuration**

**Date and Time**

Current Value:

Use Host Time: ☐

**Date and Time Settings**

**Current Value** is the date and time used to set the clock on the device. It must have the format YYYY-MM-DD HH:MM:SS.

**Use Host Time**, when checked, will automatically update the current value from the clock on your host computer.

## 5.9. ADMIN – NETWORK

The admin network page is used to set the network configuration.

**Network Management**

**Network Configuration**

Network mode:

Hostname:

MAC Address:

Speed, Duplex:

**Static Configuration**

Address:

Netmask:

Gateway:

Primary DNS:

Secondary DNS:

**Network Settings**

**Network Mode.** This field determines how the device will configure its network interface. When set DHCP, it will configure the network interface automatically using a DHCP server on the local network. When set to static, it will configure using the specified network configuration entered below.

**Hostname** This hostname is used for the DHCP configuration and may allow external access through this name instead of ip address (if the DHCP server configures a DNS entry for this device)

**MAC address** This MAC address allows the device to use a different Media Access Control address for the local network. No two devices should ever use the same MAC address on the same local network.

**Static Configuration Settings**

**Address** This specifies the IP address of this device.

**Netmask** This specifies the network mask to use for the local network.

**Gateway** This specifies the IP address of the router that provides access to the Wide Area Network or Internet.

**Primary and Secondary DNS** This specifies the IP addresses of the Domain Name Servers to use when looking up hostnames. In some cases, this may be the same address as the Gateway, or it may be provided by your network administrator.

**Save**

## 5.10. ADMIN – UPDATE

The admin update page is used to read device information, perform factory reset and to update the firmware.

**Firmware Update**

**Board Information**

Serial Number: 850539

Firmware Timestamp: 2021 1008 1726

Firmware Build: 1410

Bootloader Version: 1.2.0

Software License: [click here](#)

System Reboot:

**Firmware Upload**

Firmware File:  No file chosen

**Reset Parameters**

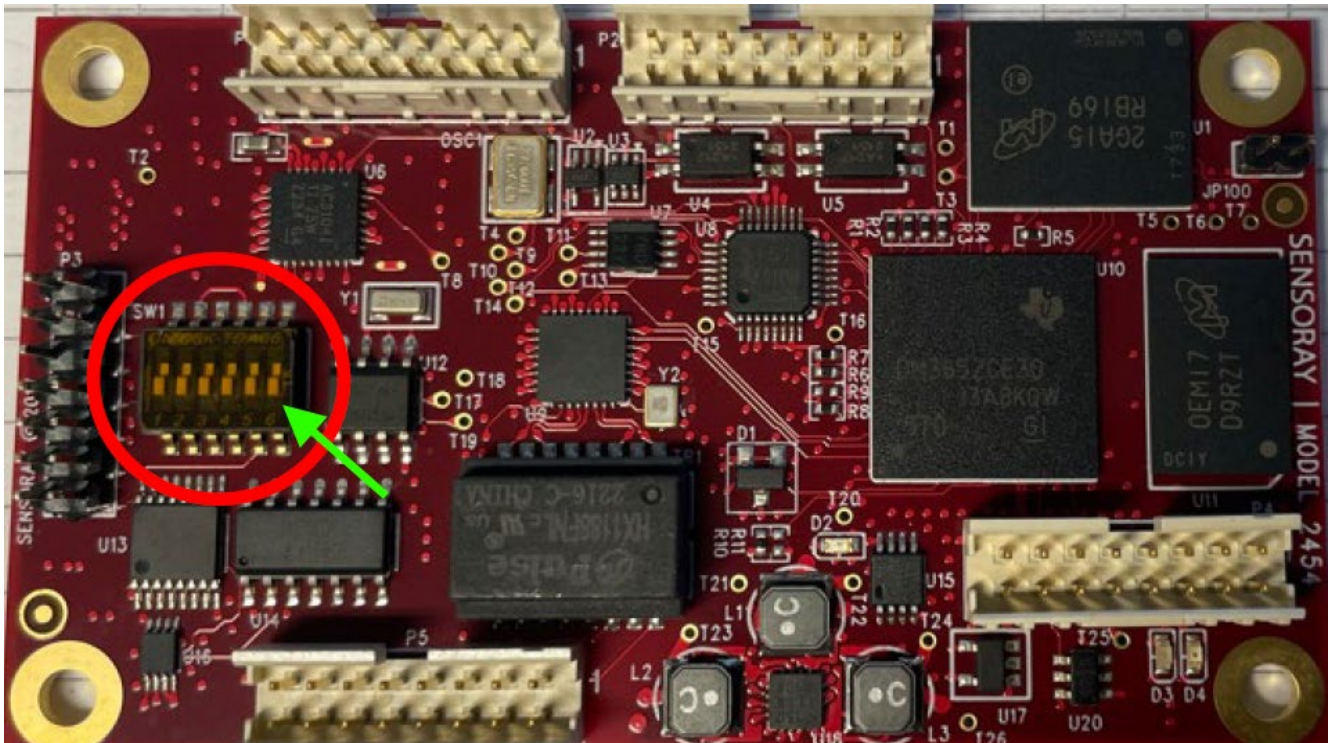
Action:

**Save**

### 5.11. RESET TO FACTORY DEFAULT SETTINGS

Switch #6 can be used to reset all settings to factory defaults in case there is no Ethernet access to the unit. Set switch #6 to On, power the board on. Turn the power off after approximately 10 seconds. Set switch #6 back to Off. All settings will be reset to the factory defaults.

After factory reset, go to the “Network” page, and set “Speed, Duplex” to “10Mbit, Full”. This is the speed used between the module and the inbuilt Ethernet switch on the mother board. For the external network ports, the speed is fixed to 100Mbps Full Duplex.



## 5.12. TROUBLESHOOTING / FAULTFINDING

### Preliminary fault isolation Check

- ✓ The electrical connections are correct as described in drawing in chapter 4.

Trouble shooting		
Symptom	Possible Causes	Remedy
No communication with web interface	• No power to board.	• Be sure power in a range from 9 – 30VDC is provided to the board.
	• Wrong IP address being used.	• Verify correct IP address being used.
	• Wrong network settings	• Reset to factory default, see section 5.11
No video or black picture	• Jumpers set to the wrong configuration	• Set jumpers to encode or decode depending on the need
Image is unstable	• Half duplex somewhere along the network	• Check each section of the network lines to verify full duplex link on all segments