



# User Manual

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## PROFLEX VERSATILE HEADEND MODULE Ref. 5500 - 5501



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# 1. INTRODUCTION

## 1.1. Product description

The ProFlex satellite module has 4 inputs allowing the reception of 4 different satellite bands per module. Because the module has 8 satellite tuners and a built-in multiswitch, reception of 8 different transponders coming from any of the 4 input satellite bands is possible.

Depending on the type of configuration, up to 8 DVB-T/C multiplexes, 4 MPTS or 64 STPS streams can be distributed per module, offering you one of the most flexible and cost-efficient solutions available on the market. Other benefits include:

- versatile: one module for multiple applications
- flexible: tailor-made configuration
- future proof: configuration upgradable
- scalable: features upgradable
- feature activation can be time based

The ProFlex should be slid in a 19 inch or wall mount DMH rack (Ref. 5065W or 5066W).

## **1.2. Typical installation**

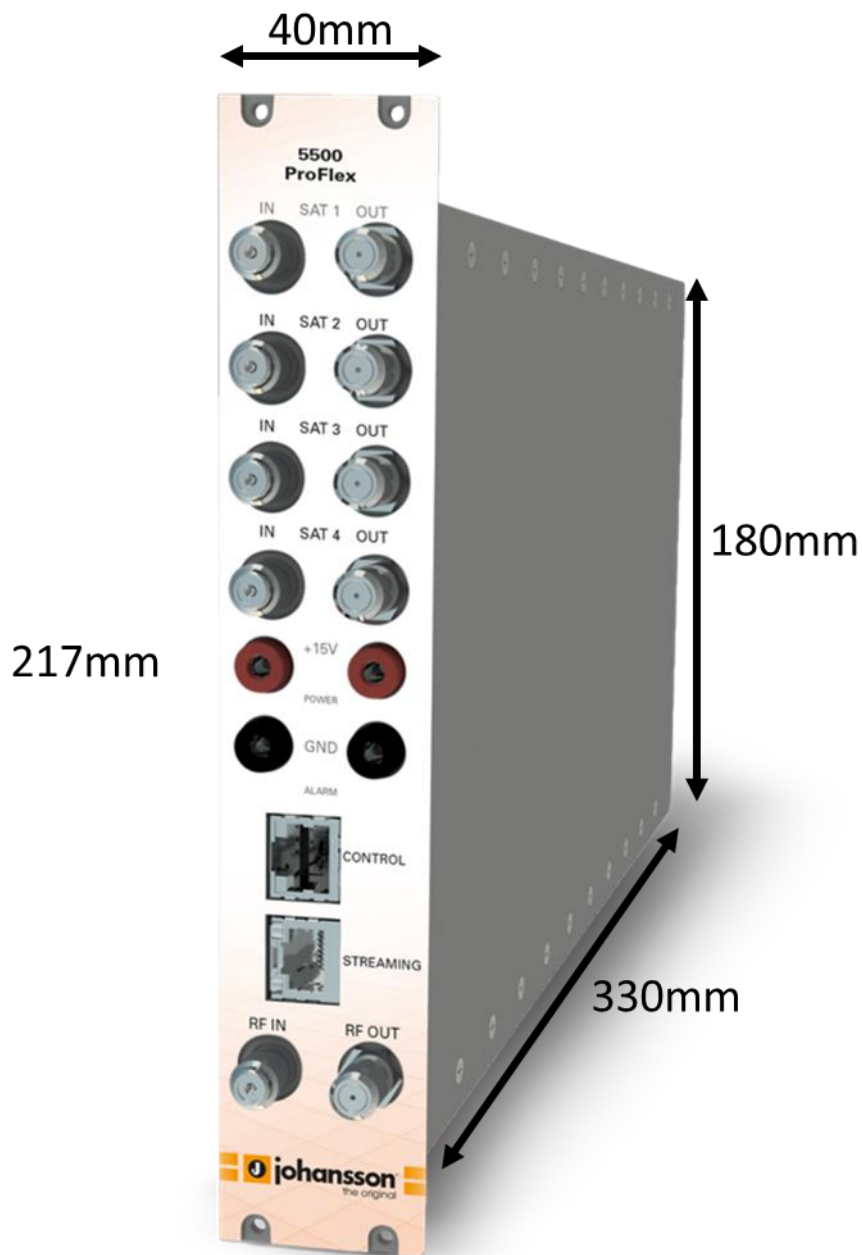
The ProFlex can be used to provide high quality satellite television in a wide range of projects, both in the hospitality as in the residential market. Typical buildings or infrastructures where the ProFlex can be used include, but are not limited to:

- Large and small hotels, hostels, bed and breakfasts, holiday parks
- Hospitals, resthomes, prisons
- Large and small multi-dwelling units with an international public, settlements
- Maritime infrastructure such as boats, yachts, barges

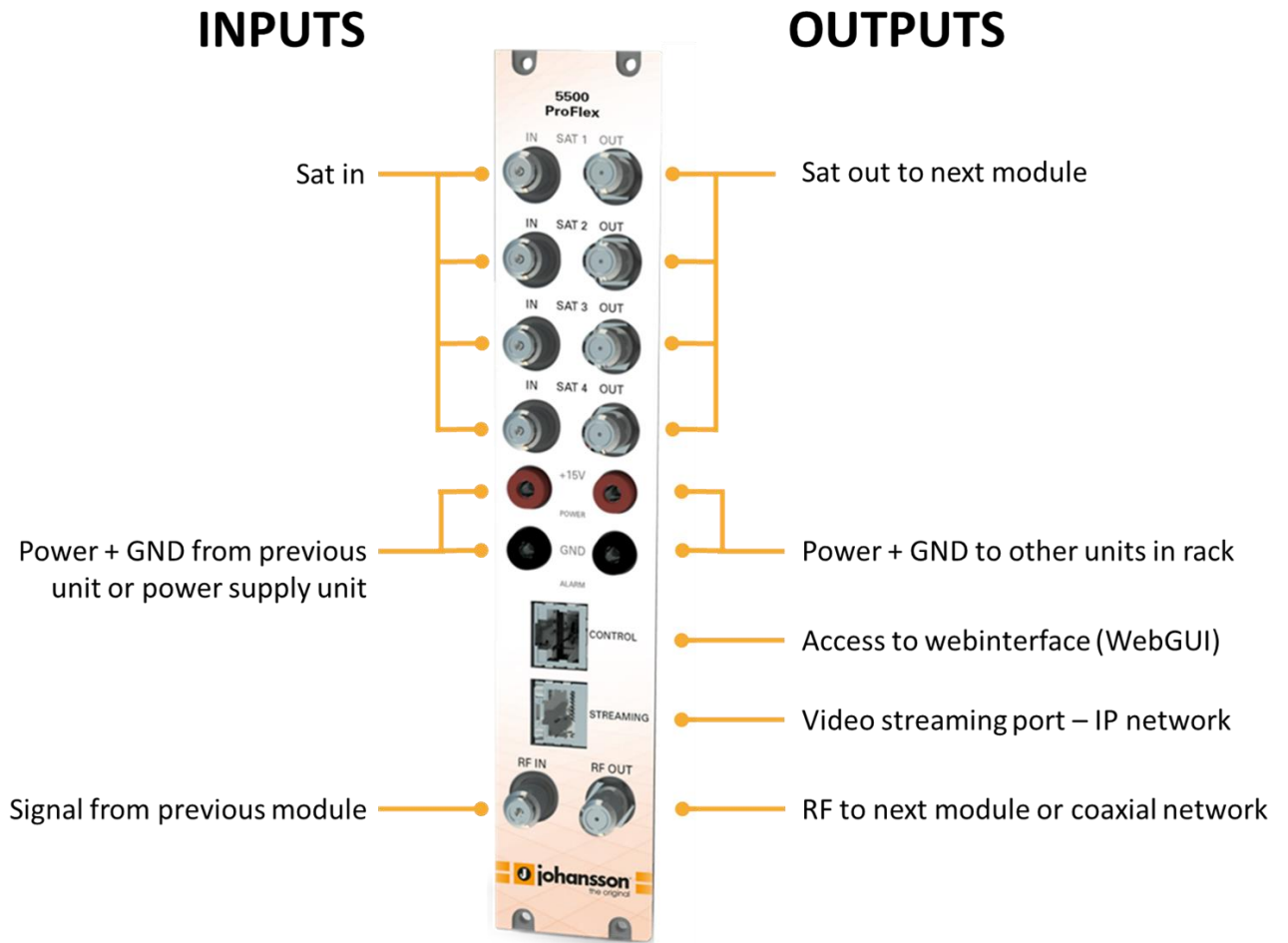
## **1.3. Package contents**

- 1 x ProFlex (ref. 5500 or 5501)
- 2 x DC banana bridges
- 5 x 75 Ohm terminators
- 4 x RF bridges

## 1.4. Product dimensions



## 1.5. Front view of the module



## 1.6. Mounting

Proper installation is critical to system performance. It is particularly important to install the ProFlex correctly in order to receive optimal signal quality.

- Install the ProFlex in a well ventilated and cool room in combination with a fan unit (Ref. 5062W or use in combination with Ref. 5066W). Keep the ambient temperature of the room lower than 30°C (or 91°F).
- Slide the ProFlex in a 19 inch DMH rack (Ref. 5065W or 5066W). screw 4 bolts in the front plate of the ProFlex to secure it to the DMH rack.
- Plug the 4 satellite cables in the Satellite in ports. If applicable, loop the satellite signal through to the next module using the RF bridges. If not applicable, insert a 75 Ohm terminator in each Satellite out port.
- If the ProFlex should receive RF signal from a previous module in the rack, plug the 125mm coaxial cable in the RF in port.
- If the ProFlex is configured to read CAM cards, insert the CAM cards\* and smart cards\* in the slots on the backside of the ProFlex. (\*Not included with the ProFlex).
- Depending on your video communication network: If video communication is over IP network: plug an Ethernet cable in the streaming port and insert a 75 Ohm terminator in the RF out port. If video communication is over coaxial network: insert a coaxial cable in the RF out port.
- Connect the ProFlex to the power supply unit (Ref. 5050W or 5051W) (power + GND) using the DC banana bridges. If applicable, also connect the ProFlex to the next module in the rack, making sure they are powered as well. Once it is powered, a **RED** LED above the control port will start blinking. When the LED stops blinking and turns **BLUE**, the module is completely booted and ready for configuration. This will take approximately 4 minutes.
- For configuration of the module, plug one end of the Ethernet cable in the control port, and the other end in a computer (or connect via a network switch) to access the webinterface. Connecting with a remote control unit (Ref. 5951 or 5952) is also possible (to remotely access the Universal User Interface).
- More information about configuration of the ProFlex module can be found in the next section

## 2. CONFIGURING THE PROFLEX USING THE WEBINTERFACE

### MINIMAL SYSTEM REQUIREMENTS

The WebGUI is supported by the following web browsers:

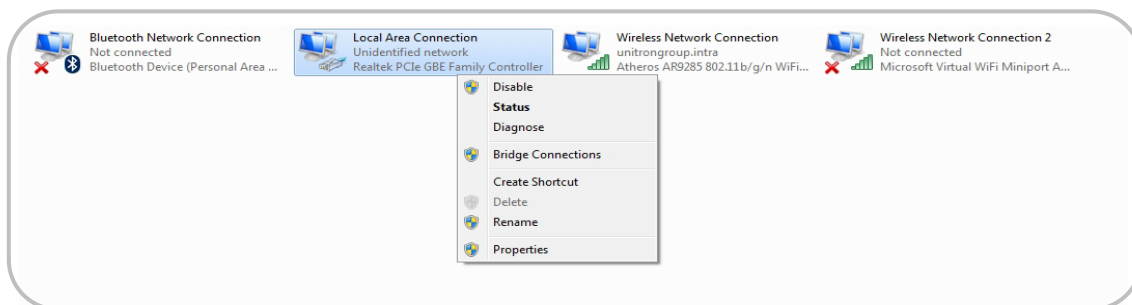
- Google Chrome
- Mozilla Firefox
- Internet Explorer
- Safari

Make sure to use the most recent version of the browser. When using a different browser, we cannot guarantee a correct functioning of the interface.

### LOGGING IN TO THE DEVICE

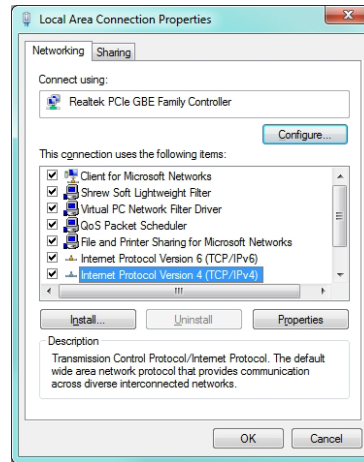
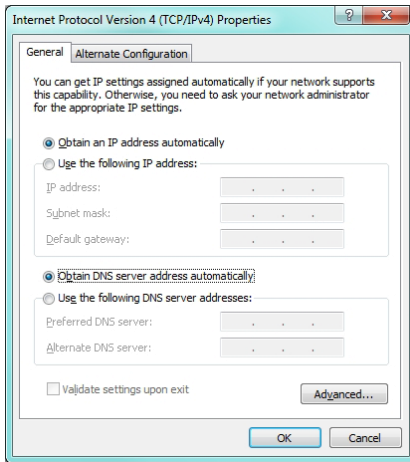
To connect the module to your computer, plug one end of the Ethernet cable in the control port, and the other end in a computer (or connect via a network switch). Once the ProFlex is powered and fully booted, the module is reachable and ready to be configured.

- The module will obtain an IP address from your PC, this will take a little while.
- For this operation to work, **it is important that the PC is NOT set with a manual IP address!**
  - o Set the adapter to obtain an automatic IP address as explained in the following procedure (for Microsoft Windows7®)
  - o Navigate to the *Control Panel* (Start → Control Panel).
  - o Enter the *Network and Sharing Center* and go to the *Adapter Settings*
  - o Right-click on the *Local Area Connection* and choose *Properties*.





- Double click on Internet Protocol Version 4 (TCP/IPv4) to enter the IP settings of your adapter.
- Make sure the *'Obtain an IP address automatically'* checkbox is selected.
- Click **OK** to save the settings.



## GENERAL CONFIGURATION

- Open your network browser, and go to:

<http://start>

- The landing page to login to the device will appear. On this screen, you get an overview of the output status of the module. In the top right corner, you will see the device status. If the status "LED" is green, there are no alarms. When you move your cursor over the status "LED", the alarm status will appear.

SID	State	Name	LCN
2		Anirang TV HD	2
3		Channel 4 HD	3
1		4seven	1

SID	State	Name	LCN
5		RT HD	1
9		More4	2

SID	State	Name	LCN
7		BBC One Wales	1
8		BBC Two Wales	2

SID	State	Name	LCN
6		NHK World HD	2
4		ETV5	3

- By clicking on login, you can log in to the module. Use the password "admin".  
! change the password as soon as you log in to the module via Management Port!
- After logging in, the Device information window will appear again. On this screen, you see information about the device type, name, ID, serial number, firmware version, hardware version and device features. The menu structure of the web interface can be found in the left column.

The following actions are critical for optimal system performance:

- *Management port:*
  - Define the hostname and IP settings of your management port: Here you can configure the hostname of the module. This name can be used to access the module by simply typing it into your browser as the address and surf to it. This is more convenient than using the IP address.
  - Change your password to secure your module for unauthorized users
- *Streaming port:*
  - Define the IP settings of your streaming port.
  - Set Time-to-Live according to your network needs (default is 64)
  - Set Encapsulation to UDP or RTP
- *Firmware Upgrade:*
  - Click on the **BROWSE** button and open the upgrade file. Click **UPLOAD** to send the file to the device, this will install the new firmware on the device.
- *License management:*
  - For first configuration, the device license is already set and should not be altered.
  - For a license upgrade, first upload the license file\* and then activate the device license via “Activate Device License” and press Apply. Finally, reboot the device to make sure the firmware upgrade succeeds.

\* the procedure to obtain a new license file is to send your current license identifier (LID) to UnitronGroup and request for a new configuration according to your needs
- *Device Settings:*
  - Go to this tab if you want to import a settings file from another module (click on **choose file** and select the .exp file on your computer), or export a settings file (so you can later upload it to another module).
  - This tab can also be used to store and restore the device settings
- *Reset device:*
  - If it is at issue, go to the Reset Device tab to reboot your ProFlex. Via this tab you can also reset certain settings or restore the default configurations of your ProFlex. All settings can be reset to default by means of a factory reset.
  - The ProFlex can also be manually reset. This can be done by inserting a pin (e.g. a paperclip) in the small opening in the front plate of the ProFlex right above the letters “GND” (between the power and alarm LEDs).
    - By pressing this button less than 2 seconds (LED above management port will turn **RED**), the device will reboot
    - By pressing this button longer than 5 seconds (LED above management port will blink **GREEN**), the device will reboot, the IP settings will be reset and the password will be reset to the default, i.e. “admin”.
- *Logout:*
  - When you are finished configuring the ProFlex, click logout to secure the web interface for unauthorized users.

## DEVICE CONFIGURATION

It is of utmost importance that your device is configured in a right way in order to make the ProFlex installation successful. To do so, follow the below mentioned steps carefully.

### 1. Input

#### 1.1 Define the LNB settings (INPUT > LNB)

- **Label:** custom label for each input (e.g. VLow, or ASTRA 19.2VLow, ...)
- **Voltage:** The LNB voltage to select the polarization
  - 13V: Vertical polarization
  - 18V: Horizontal polarization
- **Extended Voltage:** Add 1V to the LNB voltage to compensate the cable losses for long coaxial cables.
- **Tone:** LNB tone to select low/high band
  - ON: high band
  - OFF: low band
- **DiSeqC<sup>®</sup>:** control of a DiSeqC<sup>®</sup> switch (A/B/C/D)
- **Band:** Satellite band
  - Ku-band (LO 9750/10600)
  - C-band (LO 5150)
  - S-band (LO 3620)
  - KU (LO 10750)
  - KU (LO 11300)
- **Enable:** do not forget to enable the LNB input, this is disabled by default)
- Press **APPLY** to confirm the parameters.

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**Device**

- Overview
- Information
- Preferences
- Management Port
- Streaming Port
- Firmware Upgrade
- License Management
- Device Settings
- Reset Device
- Logout

**Input**

- LNB
- Tuner

**Output**

- SPTS

**CAM**

- Settings
- Configuration

LNB Input 1	LNB Input 2	LNB Input 3	LNB Input 4
Label: <input type="text" value="V low"/>	Label: <input type="text" value="H low"/>	Label: <input type="text" value="V high"/>	Label: <input type="text" value="H high"/>
Voltage: <input type="text" value="13V"/>	Voltage: <input type="text" value="18V"/>	Voltage: <input type="text" value="13V"/>	Voltage: <input type="text" value="18V"/>
Extended: <input type="checkbox"/> +1V	Extended: <input type="checkbox"/> +1V	Extended: <input type="checkbox"/> +1V	Extended: <input type="checkbox"/> +1V
Tone: <input type="text" value="OFF"/>	Tone: <input type="text" value="OFF"/>	Tone: <input type="text" value="22kHz"/>	Tone: <input type="text" value="22kHz"/>
DiSeqC: <input type="text" value="A"/>	DiSeqC: <input type="text" value="A"/>	DiSeqC: <input type="text" value="A"/>	DiSeqC: <input type="text" value="A"/>
Band: <input type="text" value="Ku"/>	Band: <input type="text" value="Ku"/>	Band: <input type="text" value="Ku"/>	Band: <input type="text" value="Ku"/>
Enable: <input checked="" type="checkbox"/>	Enable: <input type="checkbox"/>	Enable: <input type="checkbox"/>	Enable: <input type="checkbox"/>
<input type="button" value="Apply"/>	<input type="button" value="Apply"/>	<input type="button" value="Apply"/>	<input type="button" value="Apply"/>

## 1.2 Define the settings for each of the 8 tuners (INPUT > TUNER)

- **Input:** this refers to the LNB inputs; make sure the transponder frequencies you choose correspond to the right polarity of the LNB inputs
- **Frequency:** choose the frequency of the transponder you want to receive
- **Baud Rate:** choose the baud rate of the transponder signal you want to receive
- **Modulation:** choose between DVB-S and DVB-S2
- **Enable:** click the tick box to enable the tuner (this is disabled by default)
- Press **APPLY** to confirm the parameters.
- Check the lock status, signal level, signal quality and signal to Noise to see if the tuner locks on the selected transponder
- The module will now set the tuner to this frequency. Wait until the correct parameters are loaded. When the tuner is able to lock on the frequency, the services status from this transponder will be shown.

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**Device**

- Overview
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**Input**

- LNB
- Tuner**

**Output**

- SPTS

**CAM**

- Settings
- Configuration

Tuner 1
Tuner 2
Tuner 3
Tuner 4
Tuner 5
Tuner 6
Tuner 7
Tuner 8

**Tuner Settings**

Lock Status ●

Bitrate  42.21 Mbps

Level  -38 dBm

Quality  10<sup>-6</sup>

SNR  17 dB

Input Selection V low

Frequency (MHz) 11307

Baud Rate (kBa) 27500

Modulation DVB-S

Enable

Apply

**Network Parameters**

Name	ASTRA
ONID	2
TSID	2110
NID	32
Version	3

**Services List**

SID	Type	State	Name
53300			True Crime+1
53305			True Crime

## 2. Output

\* depending on the configuration of your ProFlex

### 2.1 Set all the SPTS\* (OUTPUT > SPTS)

- **Status**
  - The bitrate bar shows the total bitrate of all enabled services combined in the cluster. The ProFlex disposes of 4 SPTS clusters, each cluster can contain up to 16 services. The maximum bitrate per cluster is 100 Mbps. It is however advisable to keep a buffer of 20%, to prevent possible overflow (bitrate of services can fluctuate in time).
- **Service Settings**
  - To add a service, select tuner, name, CI and Priority, then click +
  - Click arrow down symbol (V) to drop down the tuner menu. If necessary, you can block services. Click the save icon to save your changes.
  - Select another cluster by clicking on the tabs on top of the page to add more services.
- **PID Settings**
  - Block Private Data: This option blocks private data tables that do not serve a clear purpose. Everything what is not recognized as video or audio will be blocked.

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**Device**

- Overview
- Information
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- Streaming Port
- Firmware Upgrade
- License Management
- Device Settings
- Reset Device
- Logout

**Input**

- LNB
- Tuner

**Output**

- SPTS**

**CAM**

- Settings
- Configuration

SPTS 1 - 16 | SPTS 17 - 32 | SPTS 33 - 48 | SPTS 49 - 64

**Status**

Bitrate: 19.91/100 Mbps

**Service Settings**

Tuner	Name	CI	Priority							
1	True Crime+1	FTA	<input type="checkbox"/>	+						
Tuner	SID	Name	CI	Priority	IP Destination	UDP Port	Enable			
3	50903	CBS Drama	FTA	<input type="checkbox"/>	239.0.0.1	49152	<input checked="" type="checkbox"/>	▼		
3	55214	CBS Reality	FTA	<input type="checkbox"/>	239.0.0.2	49152	<input checked="" type="checkbox"/>	▼		
3	55213	High Street TV 3	FTA	<input type="checkbox"/>	239.0.0.3	49152	<input checked="" type="checkbox"/>	▼		
3	55201	High Street TV 5	FTA	<input type="checkbox"/>	239.0.0.4	49152	<input checked="" type="checkbox"/>	▼		
2	21030	ITV HD	FTA	<input type="checkbox"/>	239.0.0.5	49152	<input checked="" type="checkbox"/>	▼		

**PID Settings**

Block Private Data

Apply

\* or MPTS according to the configuration of your ProFlex

## 2.2 Set all the Mux\* (OUTPUT > MUX)

The screenshot shows the Johansson web interface for configuring a Satellite Module. The top right corner displays '5500 - Satellite Module'. The left sidebar contains a navigation menu with categories: Device (Overview, Information, Preferences, Management Port, Firmware Upgrade, License Management, Device Settings, Reset Device, Logout), Input (LNB, Tuner), Output (Mux, Network), and CAM (Settings, Configuration). The 'Mux' option under 'Output' is selected. The main content area has tabs for 'Mux 1', 'Mux 2', 'Mux 3', and 'Mux 4'. Two configuration panels are shown:

- Modulation Settings:**
  - Frequency(kHz): 474000
  - Bandwidth: 8
  - Constellation: 64-QAM
  - Code Rate: 7/8
  - Guard Interval: 1/32
  - Level (dBm): -25
  - Enable:
  - Apply button
- Transport Stream Settings:**
  - TSID: 1
  - Apply button

- **Modulation Settings**
  - **Frequency(kHz):** Here you can select the frequency you want to transmit on. For DVB-T: 47000 to 862000, for DVB-C: 47000 to 1002000
  - **Bandwidth:** Choose the desired bandwidth.
  - **Constellation:** Choose the type of constellation you want to use. (64QAM, 16QAM, QPSK)
  - **Code Rate:** select the code rate (N/A, 1/2, 2/3, 3/4, 5/6 or 7/8)
  - **Guard Interval:** select the guard interval (N/A, 1/32, 1/16, 1/8, or 1/4)
  - **Level(dBm):** define the level of RF (between -25 to -40)
  - **Enable:** click the tick box to enable the tuner (this is disabled by default)
  - Press *APPLY* to confirm the parameters.
- **Transport Stream Settings**
  - **TSID:** Choose your Transport Stream ID

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5500 - Satellite Module ●

**Device**

- Overview
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- Preferences
- Management Port
- Firmware Upgrade
- License Management
- Device Settings
- Reset Device
- Logout

**Input**

- LNB
- Tuner

**Output**

- Mux
- Network

**CAM**

- Settings
- Configuration

**Status**

Bitrate:  26.59/31.67 Mbps

**Service Settings**

Tuner	Name	CI	Priority	New Sid	LCN	
1	E4+1	FTA	<input type="checkbox"/>		0	+

Tuner	SID	Name	CI	Priority	New SID	LCN	Enable		
3	21200	Channel 4 HD	FTA	<input type="checkbox"/>	3	3	<input checked="" type="checkbox"/>	▼	
3	21250	4seven	FTA	<input checked="" type="checkbox"/>	1	1	<input checked="" type="checkbox"/>	▼	
4	53150	Arirang TV HD	FTA	<input type="checkbox"/>	2	2	<input checked="" type="checkbox"/>	▼	

**PID Settings**

Block Private Data

- **Status**
  - The bitrate bar shows the current bitrate of the selected multiplex. Depending on the model, the ProFlex disposes of 4 or 8 multiplexes. The maximum bitrate per MUX is 31 Mbps (DVB-T) or 50 Mbps (DVB-C). It is however advisable to keep a buffer of 20% to prevent possible overflow (bitrate of services can fluctuate in time). Select another multiplex by clicking on the tabs on top of the page.
- **Service Settings**
  - To add a service, select tuner, name, CI and Priority, New Sid, LCN then click +
  - Click arrow down symbol (V) to drop down the tuner menu. If necessary, you can block services. Click the save icon to save your changes.
  - Select another cluster by clicking on the tabs on top of the page to add more services.
- **PID Settings**
  - Block Private Data: This option blocks private data tables that do not serve a clear purpose. Everything what is not recognized as video or audio will be blocked.

### 2.3 Define the networks (OUTPUT > NETWORK)

- **ONID:** The Original\_Network\_ID (ONID) is defined as the “unique identifier of a network”, check the spreadsheets on <http://www.dvbservices.com> to find your correct ONID
- **NID:** Choose your Network ID
- **Network Name:** set your network name
- **Version:** set the version of the network (value between 0 and 31)
- **Private Data Specifier:** choose between EACEM - ITC - NORDIG
- Press *APPLY* to confirm the parameters.



**Device**

- Overview
- Information
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- Firmware Upgrade
- License Management
- Device Settings
- Reset Device
- Logout

**Input**

- LNB
- Tuner

**Output**

- Mux
- Network

**CAM**

- Settings
- Configuration

**Network**

<i>ONID</i>	<input type="text" value="1000"/>
<i>NID</i>	<input type="text" value="1000"/>
<i>Network Name</i>	<input type="text" value="NoName"/>
<i>Version</i>	<input type="text" value="1"/>
<i>Private Data Specifier</i>	<input style="border-bottom: 1px solid #ccc;" type="text" value="EACEM"/>



## 3. CAM

### 3.1 Set the CAM configurations for the ProFlex (CAM)

- **Type:** To prevent network overflow, it is important to choose the type of the CAM (this can be found on you CAM-card:
  - Low-speed (legacy CAM) up to 50 Mbps
  - High-speed (modern CAM) up to 100 Mbps
- **Watchdog:** The watchdog monitors the scrambling status of all services going through the CAM. In case one or more service sare no longer descrambled, the watchdog will proceed to the reset of the CAM module to try to restore the descrambling of the service(s). Activate this feature only once all services are properly descrambled by the CAM module.
- **Reference Transponder:** It is necessary to enable and select a reference transponder in the CAM menu (for each CAM individually). The CAM module needs authorization to descramble services. Select the reference transponder with authorization information for each CAM individually.
- Press *APPLY* to confirm the parameters.

The image displays two screenshots of the Johansson ProFlex web interface, illustrating the steps to configure CAM settings.

**Left Screenshot: CAM Settings**

- The left sidebar shows the navigation menu with "Settings" selected under the "CAM" category.
- The main content area is titled "CAM Settings" and contains two panels: "CAM Settings 1" and "CAM Settings 2".
- Each panel has a "Type" dropdown menu set to "LOW-SPEED", and checkboxes for "Watchdog" and "Enable", all of which are currently unchecked.
- An "Apply" button is located below the settings panels.

**Right Screenshot: Reference Transponder**

- The left sidebar shows the navigation menu with "Configuration" selected under the "CAM" category.
- The main content area has tabs for "Cam 1" and "Cam 2", with "Cam 1" selected.
- The "Reference Transponder" section is active, showing an "Enable" checkbox checked and a "Reference" dropdown menu set to "Tuner 1".
- An "Apply" button is located below the "Reference Transponder" section.
- Below this, the "CAM Menu" section is visible, containing "Menu" and "Return" buttons.

### 3. TECHNICAL SPECIFICATIONS

General		
Dimensions	-	5 RU x 8 TE x 367 mm
Consumption	A	1.2 (ref. 5500) - 1.8 (ref. 5501)
Power supply voltage	VDC	15
Integrated multiswitch	-	Yes, allows flexible routing of satellite programs to multiplexes (QAM or QOFDM)
Configuration	-	Built-in webserver or optional UUI configuration software
Remote access	-	via RMU ref. 5951 or 5952
Encoded programs	-	From all 8 tuners. Can be routed through the CAMs and can be decoded using multi-service CAMs

Configuration possibilities		
1	-	DVB-S/S2 to DVB-C
2	-	DVB-S/S2 to DVB-T
3	-	DVB-S/S2 to IPTV
4	-	DVB-S/S2 to IP

Feature possibilities		
1	#Tuners	1 to 8
2	#Mux	1 to 8
3	#CAM	0 to 4
4	#SPTS	16, 32, 48, 64
5	#MPTS	1 to 4

**Input: DVB-S/S2**

Inputs	-	4 x F female (75Ω) (with passive loop-through)
Loop-through loss	dB	2.5
RF switch	-	4 x 8
Number of satellite tuners	-	8
Input level	dBμV	42 - 98
Frequency range	MHz	950 - 2150
LO frequency - Ku-band - C-band - S-band - Ku-band - Ku-band	MHz	9750/10600 5150 3620 10750 11300
Supported modulation	-	DVB-S QPSK: 1/2, 2/3, 3/4, 5/6, 7/8 DVB-S2 QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 DVB-S2 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
LNB control and powering - band - polarity - current - control	kHz V mA -	0, 22 0, 13, 18 350 per input DiSEqC 1.0

**Output: DVB-T**

Standard	-	EN 300 744
DVB-T output connector	-	F female (75Ω)
DVB-T input - connector type loop-through	-	F female (75Ω) directional coupled
Loop-through loss	dB	2.5
Return loss	dB	10
RF channel(s) - Quad - Octo (only for Ref. 5501)	- -	4 adjacent channels in a 32 MHz window 4+4 adjacent channels in a 32+32 MHz window
Number of services per multiplex	-	up to full bandwidth (up to 31.7 Mbps / multiplex)
Selectable channel frequency range	MHz	47 - 862
Output frequency step	KHz	1
Bandwidth	MHz	6,7,8
Output level	dBm	69 - 84
Output level step	dBm	1
Spurious in band	dBc	-50
MER (Modulation Error Ratio)	dB	≥ 43

OFDM mode	-	2K
Constellation	-	QPSK, 16-QAM, 64-QAM
FEC (forward error correction)	-	1/2, 2/3, 3/4, 5/6, 7/8
Guard interval	-	1/4, 1/8, 1/16, 1/32
Transmission	-	Non-hierarchical
Shoulder Attenuation	dB	4
Frequency stability	ppm	-5 - +5
Phase noise @ 10 KHz	dBc/Hz	-98

### Output: DVB-C

Standard	-	EN 300 429 ITU-T J.83 Annex A & Annex C
DVB-C output connector	-	F female (75Ω)
DVB-C input connector (loop-through)	-	F female (75Ω)
Loop-through loss	dB	2.5
Return loss	dB	10
RF channel(s) - Quad - Octo (only for 5501)	- - -	4 adjacent channels in a 32 MHz window 4+4 adjacent channels in a 32+32 MHz window
Number of services per multiplex	-	up to full bandwidth (up to 51.3 Mbps / multiplex)
Selectable channel frequency range	MHz	47 - 1002
Output frequency step	KHz	1
Bandwidth	MHz	6,7,8
Baudrate	Mbaud	1.0 - 7.0
Constellation	-	16-QAM, 32-QAM, 64-QAM, 128-QAM, 256-QAM
Output level	dBμV	69 - 84
Output level step	dBμV	1
Spurious in band	dBc	-50
Spectral inversion	-	ON/OFF
Unequalized MER	dB	≥ 43
Shoulder Attenuation	dB	43
Frequency stability	ppm	-5 - +5
Phase noise @ 10 KHz	dBc/Hz	-98

**Output: IP**

Connector	-	RJ-45
Standard	-	Ethernet 100/1000 Base-T
Protocols	-	ARP, ICMP, DHCP, UDP/RTP, IGMPv2/v3
TS packets per frame	-	7 MPEG2-TS
Address		
- Unicast	-	10.X.X.X - 172.X.X.X - 192.168.X.X
- Multicast	-	224.0.0.0 to 239.255.255.255
UDP port number	-	1 024 to 65 535
Number of SPTS services	-	64 channels
Streaming mode		
- SPTS	-	VBR
- MPTS	-	CBR
Payload capacity	Mbps	400
IP output	-	Up to 4-MPTS transport streams in Unicast (CBR)
IPTV output	-	Up to 64-SPTS channels in Multicast (VBR)

**CAM**

Number of CAM slots	-	2 (Ref. 5500) - 4 (Ref. 5501)
Standard	-	DVB-CI (EN50221)
Throughput	-	≤ 100 Mbps (per slot)
CAM module type	-	PC-Card type II
Hot pluggable	-	Yes



## 4. SAFETY INSTRUCTIONS



**Read these instructions carefully before connecting the unit**

- ⚠ To avoid any risk of overheating:
  - Install the unit in a well aery location and keep a minimum distance of 15 cm around the apparatus for sufficient ventilation
  - Do not place any items such as newspapers, table-cloths, curtains,... on the unit that might cover the ventilation holes.
  - Do not place any naked flame sources, such as lighted candles, on the apparatus
  - Do not install the product in a dusty place
  - Use the apparatus only in moderate climates (not in tropical climates)
  - Respect the minimum and maximum temperature specifications
- ⚠ To avoid any risk of electrical shocks:
  - Connect apparatus only to socket with protective earth connection.
  - The mains plug shall remain readily operable
  - Pull out power plug to make the different connections of cables
  - To avoid electrical shock, do not open the housing of adapter.



**Maintenance**

- ⚠ Only use a dry soft cloth to clean the cabinet.
- ⚠ Do not use solvent
- ⚠ For repairing and servicing refer to qualified personnel.



**Dispose according to your local authority's recycling processes**

## 5. CONDITIONS OF WARRANTY

Unitron N.V. warrants the product as being free from defects in material and workmanship for a period of 24 months starting from the date of production indicated on it. See note below.

If during this period of warranty, the product proves defective, under normal use, due to defective materials or workmanship, Unitron N.V, at its sole option, will repair or replace the product. Return the product to your local dealer for reparation

### THE WARRANTY IS APPLIED ONLY FOR DEFECTS IN MATERIAL AND WORKMANSHIP AND DOES NOT COVER DAMAGE RESULTING FROM:

- Misuse or use of the product out of its specifications.
- Installation or use in a manner inconsistent with the technical or safety standards in force in the country where the product is used
- Use of non-suitable accessories (power supply, adapters...).
- Installation in a defect system.
- External cause beyond the control of Unitron N.V. such as drop, accidents, lightning, water, fire, improper ventilation...

### THE WARRANTY IS NOT APPLIED IF:

- Production date or serial number on the product is illegible, altered, deleted or removed.
- The product has been opened or repaired by a non-authorized person.

### NOTE

Date of production can be found in the product's serial number code. The format will either be "YEAR W WEEK" (e.g., 2016W01 = year 2016 week 1) or "YYWW" (e.g., 1447 = year 2014 week 47).



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