



User Manual

TITANIUM

COMPACT SATELLITE HEADEND
Ref. 8700 – 8701 – 8703



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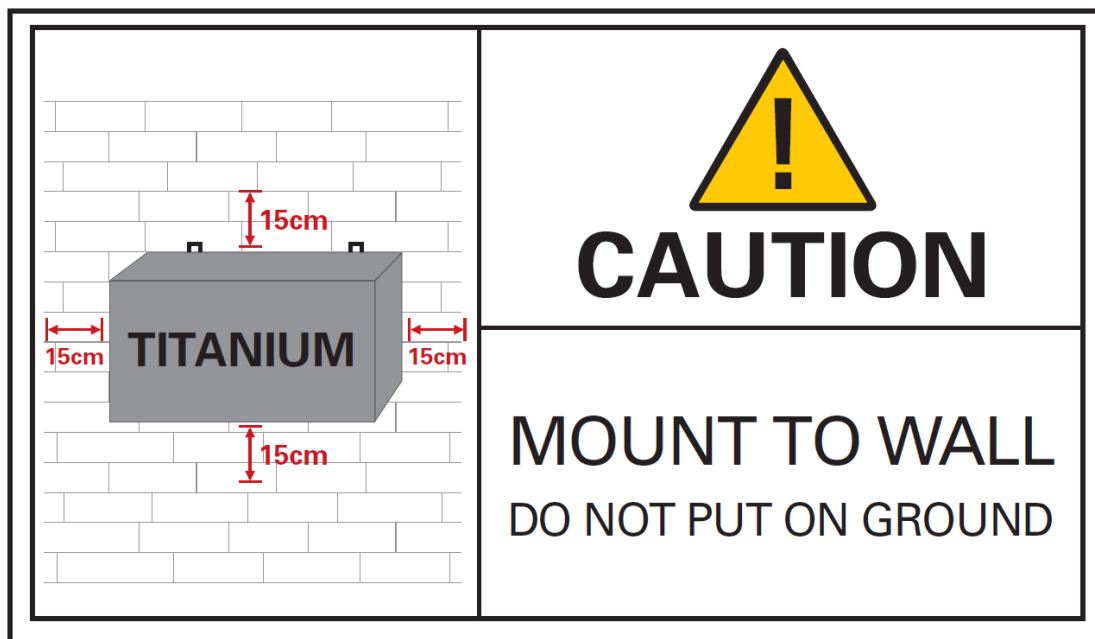
www.unitrongroup.com

1. INTRODUCTION

1.1. Product description

The Titanium is a compact satellite headend with 4 (Ref. 8700) or 8 (Ref. 8701, 8703) tuners. It is a transmodulator with 4 output MUXs (DVB-T/DVB-C) or 8 output MUXs (Ref. 8703). The standalone module with built-in power supply allows for very fast installation. The Titanium has 2 CI slots for CAM cards (Ref. 8703 has 4 CI slots).

ATTENTION! The Titanium should be wall-mounted.
For ventilation purposes, leave a minimum of 15 cm around all sides of the module.



1.2. Typical installation

The Titanium 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 Titanium can be used include, but are not limited to:

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

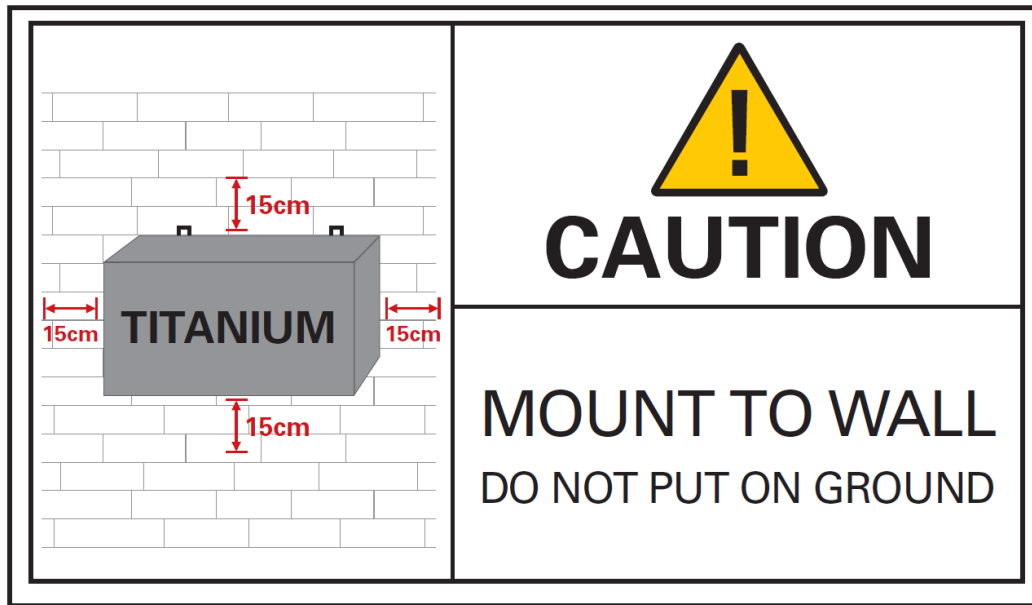
1.3. Package contents

- 1 x Titanium (ref. 8700 or 8701 or 8703)
- 1 x 75 Ohm terminators
- 1 x Mains cable (1,80 m)

1.4. Product dimensions



1.5. Mounting



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

- Mount the Titanium to a wall in a well ventilated and cool room.
For ventilation purposes, leave a minimum of 15 cm around all sides of the module.
- Plug the 4 satellite cables in the SAT 1-4 ports.
- If the Titanium should receive RF signal from another Titanium or an external source, connect a coaxial cable to the RF IN port. If not applicable, insert a 75 Ohm terminator in the RF IN port.
- Connect the coaxial TV network to the RF out port.
- If the Titanium is configured to read CAM cards, insert 1, 2, 3 or 4* CAM cards** and smart cards* in the slots on the backside of the Titanium.
(* depending on Titanium type)
(**Not included with the Titanium).
- Power the Titanium with the mains cable.
Once it is powered, a **RED** POWER LED 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, the web interface must be accessed.
Therefore, plug an Ethernet cable in the control port, and the other end in a computer.
- More information about configuration of the Titanium module can be found in the next section

2. CONFIGURING THE TITANIUM USING THE WEB INTERFACE

MINIMAL SYSTEM REQUIREMENTS

The WebGUI is supported by the following web browsers:

- Google Chrome
- Mozilla Firefox
- Internet Explorer
- Safari

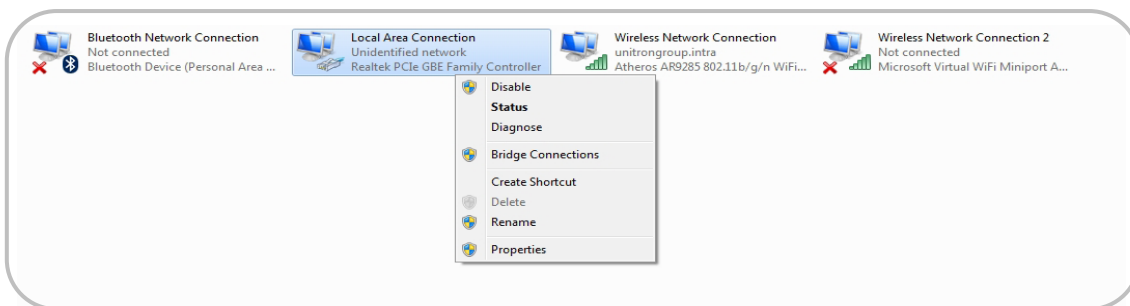
Make sure to use the most recent version of the browser. When using a different browser, we cannot guarantee a correct functioning of the interface.

LOGGING IN TO THE DEVICE

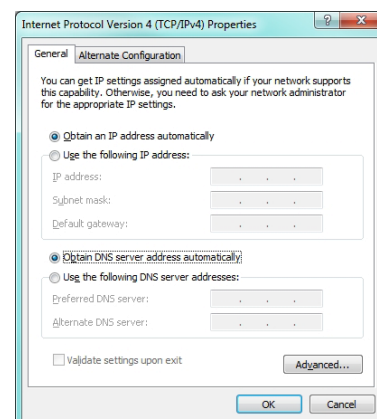
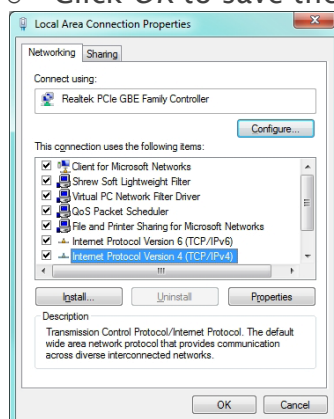
Plug one end of an Ethernet cable in the control port and the other end in a computer. Once the Titanium is powered and fully booted, the module is reachable and ready to be configured.

For a more reliable WebGUI connection, we advise to use fixed IP or DHCP. Therefore, carefully follow the steps below:

- Set the computer to obtain an automatic IP address as explained in the following procedure (for Microsoft Windows 10®)
 - Navigate to the *Control Panel* (Start → Control Panel).
 - Enter the *Network and Sharing Center* and go to the *Adapter Settings*
 - Right-click on the *Local Area Connection* and choose *Properties*.



- Double click 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.



- Open your web browser, and go to: **http://start**
 - The web interface of the Titanium will now open.
 - Go to Management Port
 - Tick off Obtain IP address from DHCP
 - Choose an IP Address, for instance: 192.168.55.55
 - Press Apply



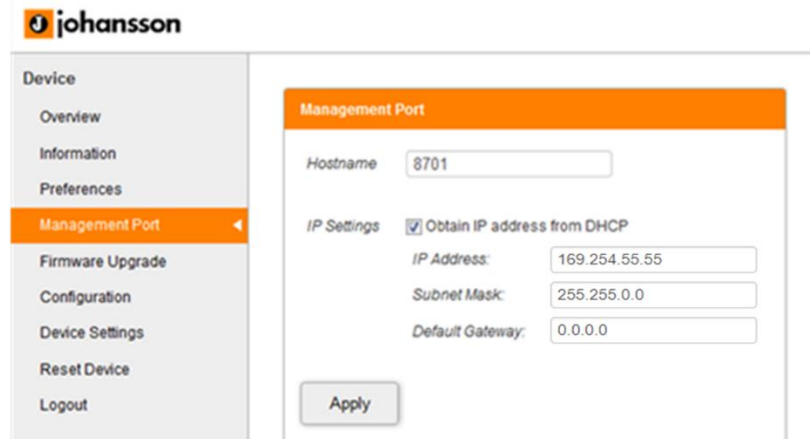
- Go back to Local Area Connection Properties, select Internet Protocol Version 4 (TCP/IPv4) to enter the IP settings of your adapter
 - Tick Use the following IP address
 - Fill in the IP address you chose in the Titanium Management Port, but **make sure that the last group of digits is different**, for instance:
192.168.55.10

- Open your webbrowser and go to **http://start**

Now a stable connection is guaranteed

Connecting the module(s) to a network with DHCP

To connect the module(s) to a network, go to the Management Port in the web interface.



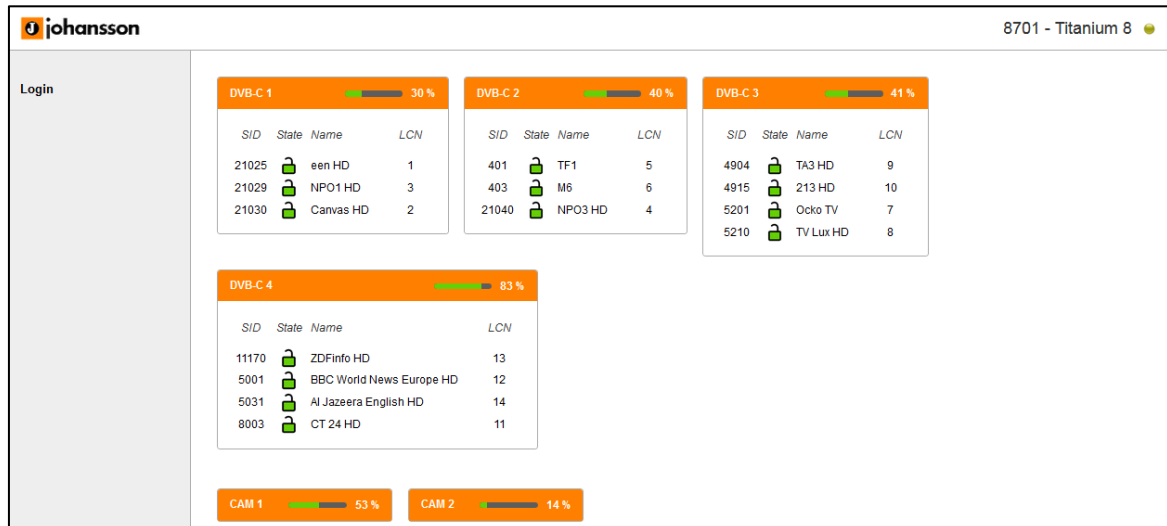
Tick *Obtain IP address from DHCP* and give each Titanium a unique hostname (for instance: <http://8701>). Click apply to confirm. Now the module can be accessed via <http://hostname> (for instance: <http://8701>) or check your DHCP server for IP address.

DEVICE CONFIGURATION

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

1. Login

- After the web interface opens (see previous step), the home page with an overview of active services appears. On this screen, you see information about the output MUXs, the CAM status and the chosen TV services.
- 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.
- 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 Overview window will appear again. The menu structure of the web interface can be found in the left column.



2. Overview

The following actions are critical for optimal system performance:

- **Information:**
 - The following information can be found here: Device Type, Device Name, Device ID, Serial Number, Firmware Version, Hardware Version, Device Features and Device Temperature
- **Preferences:**
 - Choose dBm or dBμV as level unit. Click *APPLY* to confirm
- **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.
 - Dynamic DNS: configuration for remote access to register a fixed IP address
- **Firmware Upgrade:**
 - Click on the Browse button, and open the upgrade file (.upg). Click Upgrade to send the file to the device, this will install the new firmware on the device.
- **Configuration**
 - Choose the configuration of your Titanium: DVB-T or DVB-C. Press *APPLY* to confirm
- **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 there is an issue, go to the Reset Device tab to reboot your Titanium. Via this tab you can also reset certain settings or restore the default

configurations of your Titanium. All settings can be reset to default by means of a factory reset.

- The Titanium 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 Titanium, between the power and alarm LEDs.
 - By pressing this button less than 2 seconds (LED above control port will turn **RED**), the device will reboot
 - By pressing this button longer than 5 seconds (LED above control port will blink **GREEN**), the device will reboot, the IP settings will be reset and the password will be reset to the default password "admin".

- **Logout:**

- When you are finished configuring the Titanium, click logout to secure the web interface for unauthorized users.

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Device

Overview

Information

Preferences

Management Port

Firmware Upgrade

Configuration

Device Settings

Reset Device

Logout

Input

LNB

Tuner

Output

Mux

Network

CAM

DVB-C 1 31 %

SID	State	Name	LCN
21025	🔒	een HD	1
21029	🔒	NPO1 HD	3
21030	🔒	Canvas HD	2

DVB-C 2 33 %

SID	State	Name	LCN
401	🔒	TF1	5
403	🔒	M6	6
21040	🔒	NPO3 HD	4

DVB-C 3 36 %

SID	State	Name	LCN
4904	🔒	TA3 HD	9
4915	🔒	213 HD	10
5201	🔒	Ocko TV	7
5210	🔒	TV Lux HD	8

DVB-C 4 76 %

SID	State	Name	LCN
11170	🔒	ZDFinfo HD	13
5001	🔒	BBC World News Europe HD	12
5031	🔒	Al Jazeera English HD	14
8003	🔒	CT 24 HD	11

CAM 1 51 %

CAM 2 15 %

3. Input

3.1 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®:** control of a DiSEqC® switch (A/B/C/D)
- **Band:** Satellite band
 - Ku-band
 - C-band
- **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
- Firmware Upgrade
- Configuration
- Device Settings
- Reset Device
- Logout

Input

- LNB**
- Tuner

Output

- Mux
- Network

CAM

- CAM

LNB Input 1

Label: Vlow E5

Voltage: 13V

Extended: ☐ +1V

Tone: OFF

DiSEqC: A

Band: Ku

Enable: ☒

Apply

LNB Input 2

Label: Vlow A19

Voltage: 13V

Extended: ☐ +1V

Tone: OFF

DiSEqC: A

Band: Ku

Enable: ☒

Apply

LNB Input 3

Label: Vhigh A23

Voltage: 13V

Extended: ☐ +1V

Tone: 22kHz

DiSEqC: A

Band: Ku

Enable: ☒

Apply

LNB Input 4

3.2 Define the settings for each of the tuners (INPUT > TUNER)

- **Input Selection:** this refers to the LNB inputs; make sure the transponder frequencies you choose correspond to the right polarity of the LNB inputs
- **Frequency (Mhz):** choose the frequency of the transponder you want to receive
- **Baud Rate (kBd):** 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)
- Check the lock status, signal level, signal quality and signal to Noise to see if the tuner locks on the selected transponder
- Press **APPLY** to confirm the parameters.
- 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 list from this transponder will be shown.
- **Services list:** after a tuner is locked, the services will appear. A RED lock indicates that the service is scrambled, a GREEN lock indicates that the service is clear
- **Network parameters:** this is an overview of the following information: Name, ONID, TSID, NID and version

The screenshot displays the johansson web interface. On the left is a navigation menu with categories: Device, Input, Output, and CAM. The 'Tuner' option under the 'Input' category is selected. The main area shows 'Tuner 1' settings. The 'Tuner Settings' panel includes a 'Lock Status' indicator (green dot), and progress bars for 'Bitrate' (59.18 Mbps), 'Level' (-41 dBm), 'Quality' (10⁻⁷), and 'SNR' (13 dB). Below these are input fields for 'Input Selection' (Hhigh A23), 'Frequency (MHz)' (12187), 'Baud Rate (kBd)' (29900), and 'Modulation' (DVB-S2). The 'Enable' checkbox is checked. An 'Apply' button is at the bottom. To the right, the 'Network Parameters' panel shows: Name (M7 Group), ONID (3), TSID (3225), NID (3), and Version (6). Below the settings is the 'Services List' table.

SID	Type	State	Name
21012		🔒	AT5
21020		🔒	NET5 HD
21025		🔒	een HD
21029		🔒	NPO1 HD
21030		🔒	Canvas HD
21035		🔒	Veronica/DisneyXD HD
21040		🔒	NPO3 HD
21045		🔒	FOX Sports 2 HD int
21055		🔒	24Kitchen
21060		🔒	EUROSPORT2 BE
21061		🔒	Cartoon Network
21062		🔒	TEST 11-2
21070	129	🟢	Downl CAM 2

4. Output

4.1 Set all the Mux (OUTPUT > MUX)

- **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 (DVB-T):** Choose the desired bandwidth.
- **Baud Rate (DVB-C) (MBd):** choose the baud rate of the transponder signal you want to output
- **Constellation:** Choose the type of constellation you want to use. (64QAM, 16QAM, QPSK)
- **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 Modulation Settings.

Transport Stream Settings:

- **TSID:** choose a identifier for the Transport Stream (value between 1 and 65535). Press *APPLY* to confirm the Transport Stream Settings.

Status:

- The bitrate bar shows the current bitrate of the selected multiplex. Depending on the model, the Titanium disposes of 4 multiplexes. The maximum bitrate per MUX is 30 Mbps (DVB-T) or 50 Mbps (DVB-C). It is however advisable to keep a buffer of 4 Mbps, 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:

- **Tuner:** choose the input stream you set in INPUT
- **Name:** choose the service
- **CI:** choose the routing of the service: FTA (Free-to-Air) - CAM 1 - CAM 2
- **Priority:** provides the possibility to prioritize some services (e.g. Primetime services) to guarantee better quality on TV in case of sporadic bandwidth overflow due to throughput limitation of the multiplex. It is advised not to exceed 30% of total number of services to be prioritized for each multiplex.
- **New SID:** Change the Service Identifier to remap the SID
- **LCN:** Give a Logical Channel Number to order the number of channels on the end-devices
- **Individual PID filtering:** click the \vee to drop down the menu... here individual PIDs can be blocked per service
- **Click the + sign to add the service to the list**
- Define this for each service in the list.
- After a service is changed, it can be saved (save icon) or deleted (bin ico)
- Each service can be saved or deleted.
- Press *UPDATE* to confirm the parameters.

PID Settings:

- **Block others:** Tick this box and press *APPLY* to block all irrelevant program information data. Only the essential PID will be passed through: video, audio, CAS,...

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Device

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

Input

- LNB
- Tuner

Output

- Mux
- Network
- CAM
- CAM

Mux 1 Mux 2 Mux 3 Mux 4

Modulation Settings

Frequency(KHz) 474000

Bandwidth 8

Baud Rate (MBd) 6.900

Constellation 256-QAM

Level (dBm) -25

Enable ☒

Apply

Service Settings

Tuner	Name	CI	Priority	New Sid	LCN	
1	AT5	FTA			0	+

Tuner	SID	Name	CI	Priority	New SID	LCN	Enable			
1	21025	een HD	CAM1		21025	1	<input checked="" type="checkbox"/>	✓	✖	🗑
1	21029	NPO1 HD	CAM1		21029	3	<input checked="" type="checkbox"/>	✓	✖	🗑
1	21030	Canvas HD	CAM1		21030	2	<input checked="" type="checkbox"/>	✓	✖	🗑

Transport Stream Settings

TSID: 1

Apply

PID Settings

☐ Block Others

Apply

Status

Bitrate: 15.82/51.29 Mbps

4.2 Define the output network (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.

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Device

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

Input

- LNB
- Tuner

Output

- Mux
- Network
- CAM
- CAM

Network

ONID 1000

NID 1000

Network Name NoName

Version 1

Private Data Specifier EACEM

Apply

5. CAM

5.1 Set the CAM configurations for the Titanium (CAM > CAM 1-2-3-4)

- **CAM settings**
 - **Type:** Defines type of CAM module
 - Select low-speed (default) for legacy CAM module that can run up to 50 MBps
 - Select high-speed for second generation CAM module that can run up to 100 MBps
 - **Watchdog:** The watchdog monitors the scrambling status of all services going through the CAM. In case one or more services are no longer descrambled, the watchdog will proceed to the reset of the CAM module to try to restore the descrambling of the service(s). Important: Activate this feature only once all services are properly descrambled by the CAM module.
 - **Enable:** Click *ENABLE* to activate the CAM (default). Press *APPLY* to confirm the parameters.
- **Reference Transponder**
 - **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.
- **CAM Menu:** the CAM menu will appear here when inserted. Click the tabs for more info

The screenshot displays the JOHANSSON web interface for configuring CAM settings. On the left is a navigation menu with options: Device (Overview, Information, Preferences, Management Port, Firmware Upgrade, Configuration, Device Settings, Reset Device, Logout), Input (LNB, Tuner), Output (Mux, Network), and CAM (highlighted). The main content area has tabs for CAM 1 and CAM 2. Under CAM 1, there are three sections:

- CAM Settings:** Includes a 'Type' dropdown set to 'LOW-SPEED', 'Watchdog' and 'Enable' checkboxes (both checked), and an 'Apply' button.
- Reference Transponder:** Includes an 'Enable' checkbox (checked) and a 'Reference' dropdown set to 'Stream 1', with an 'Apply' button.
- CAM Menu:** Shows 'Aston CAM' with 'Smart card number 571.800.337'. It lists three menu items: '# 1 : Subscription information', '# 2 : Settings', and '# 3 : Information'. 'Menu' and 'Return' buttons are at the bottom.

3. TECHNICAL SPECIFICATIONS

Input: QPSK/8PSK (DVB-S/S2)		
Inputs	-	4 satellite bands 1 x RF in
Tuners	-	4 tuners (4 transponders) (Ref. 8700) 8 tuners (8 transponders) (Ref. 8701) 8 tuners (8 transponders) (Ref. 8703)
Frequency range	MHz	950-2150
Level	dBm	-55 to -25
Bandwidth	MHz	36
Modulation	-	DVB-S2: QPSK, 8PSK / DVB-S: QPSK
DC remote power at RF input	-	13 V/18 V/22 kHz
Integrated multiswitch	-	Yes, allows flexible routing of satellite programs to multiplexes (QAM or QOFDM)
Configuration	-	Built-in webserver accessible via management port
Encoded programs	-	From all 4 or 8 tuners. Can be routed through 1, 2, 3 or 4 CAMs and can be decoded using multi-service CAMs
Max current per input to feed LNB	mA	350 per input
Output: RF		
Outputs	-	1 with 4 MUXs (DVB-T or DVB-C) (Ref. 8700-8701) 1 with 8 MUXs (DVB-T or DVB-C) (Ref. 8703)
DVB-T output	Mbps	Up to 31.7 / MUX
DVB-C output	Mbps	Up to 51.3 / MUX
Output MER	dB	≥ 43
General		
Power consumption	W	22 (excl. external LNBs)
CI slots	-	2 (Ref. 8700 - 8701) 4 (Ref. 8703)
Dimensions	cm	34.5 x 7 x 18.2
Operating temperature	°C	0 to +50

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., 2018W01 = year 2018 week 1) or "YYWW" (e.g., 1447 = year 2014 week 47).



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