CHAMELEON
Installation Guide

Rear View

CHAMELEON

Single Hardware Headend

THE CHAMELEON PRODUCT LINE COVERS ALMOST EVERY NEED FOR CABLE-TV AND SMATV DISTRIBUTION WITH ONLY ONE HARDWARE..
The different inputs, processing and outputs are defined by software options, and all software options can be updated at any time.
The CHAMELEON includes a dual DVB-S/S2/T/T2/C receiver, furthermore it includes decoding of MPEG-2 and MPEG-4 video formats as well as it supports MPEG, AAC HE and Dolby audio decoding. The Dolby audio decoding requires the latest HW version.
The SW options define the different "product realisations" you can implement with the unique HW. For your specific application, you simply buy the SW options you need. When you need further functionality, just purchase additional SW options, and update the installed HW.

CHAMELEON Product examples

- Receiver DVB-S/S2/T(T2)/C
- Transmodulators
- DVB-C, DVB-T modulators
- DTMB modulator
- Analog VSB RF-modulators
- FM modulator
- Edge QAM/COFDM
- Dual MPEG2/4 SD decoder
- Single MPEG2/4 HD decoder
- CI multi-decryptions
- Remultiplexer multiple TS
- DVB_CSA Scrambler
- IP streamer
- ASI streamer
- SDI generator

Support

For support information and help, please contact our s

upport organisations. Taylor in Oldham

m.rea@btinternet.com

Telephone:
0161484 3100

1 Getting started

Your Chameleon Unit comes pre configured as your order so all you have to do is set the RF frequency and v ideo settings if required

Available software options

INPUT	PROCESSING	OUTPUT	MISCELLANEOUS
DVB-C Receivers GNC, GNDC	**Common Interface Decryption** GNCI, GNDCI	**DVB-C Modulators** GNCMOD, GNDCMOD, GNTCMOD, GNQCMOD	**MPEG Encoder** GNHWENC
DVB-S/S2 Receivers GNS2, GNDS2	**Simulcrypt Scrambling** GNSCR	**J.83 Annex B/C Modulators** GNJ83B, GNDJ83B, GNJDJ83C, GNQJ83C	**System Management** GNSYSMG
DVB-T/T2 Receivers GNT, GNDT, GNT2, GNDT2	**Remultiplexing** GNMUX, GNSYMUX	**DVB-T Modulators** GNTMOD, GNDTMOD	**Service License Agreement** GNM1, GNM3
ASI input & output GNASI, GNDASI	**Redundancy** GNRED	**Analogue Modulators** GNVMOD, GNDVMOD	**All Software Options** GNALL
IP Streaming input & output GNSTR, GNSTREC	**Dolby AC3** GNDOL	**FM Radio** GNDFM, GNOCTFM	
		DTMB Modulator GNDMOD	
		SDI output GNSSDI, GNDSDI	
		ASI input & output GNASI, GNDASI	
		IP Streaming input & output GNSTR, GNSTREC	

3   Chameleon in GN50

NOTE!

For Chameleon running FW2.0 and installed in a GN50, please make sure that the GN50/GT11 FW is upgraded to SW version 2.0.

Most of the functionality of FW2.0 will be possible to access while running FW1.1.1 in GN50, but new functionality added in FW2.0 for Chameleon, such as IP VBR input to digital output is only possible to manage via the System UI if the GN50 is upgraded to SW2.0. Functionalities not supported via the System UI can still be managed when connected directly to the management IP address of the Chameleon.

For more information about this SW version for GN50, and for access to the SW2.0 file, please refer to documents .

7 Connecting to the CHAMELEON user interface

Default IP address: 192.168.0.20

The default IP address for a CHAMELEON module is 192.168.0.20. Change the IP address to a unique IP address in your network, in the web UI under **Settings / Networking**, or by using the **IP-Supporter**.

Connecting with web browser

Use a standard web browser on your computer to connect by typing the IP address of the CHAMELEON in the address field.
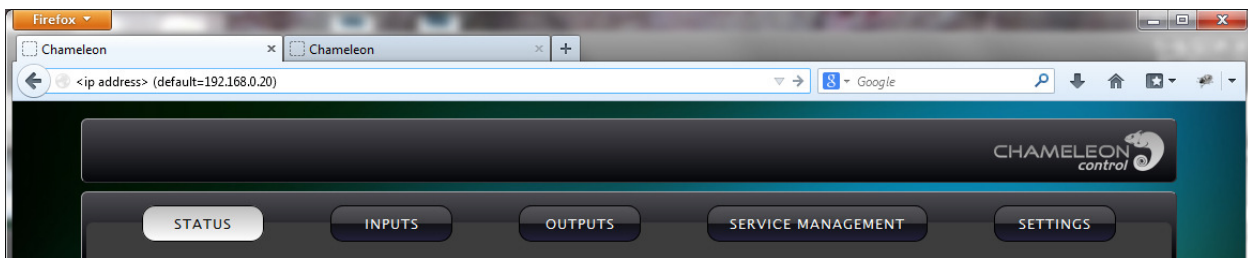
Supported web browsers

The CHAMELEON web interface is verified for Firefox version 14 and Internet Explorer 9. Other browsers might work, but the functionality cannot be guaranteed.

General information about the web interface structure

The web UI is designed to get a logical structure for the user/installer, and an overview of the module via the top tabs.

Operation mode must be selected before starting to use the CHAMELEON. The selected Operation mode will have implications on the general functionality of the module, e.g. the possible output standard and the IP streaming capability. The main interface while managing services is the **Service Management**. Here, you will have an overview of the configured inputs and outputs, and you will also manage the service selection, remultiplexing and decryption. Before you start managing the services, you should add and configure the inputs and the outputs in their respective tabs.

The **Settings** tab contains module settings such as Networking, Headend System Management, Operation Mode, Common Interface, SW and Entitlement Upgrade, Maintenance, and Log. The CAM menu, if available, is also displayed in the Common Interface menu under the Settings tab.

8 Select operation mode

Your equipment comes pre configured additional functions listed below
can be added ,contact m.rea@btinternet.com

Mode selection implications

The selected operation mode will have an impact on the possible selection of output.

■ **Analog mode:** for 1 or 2 analog RF and/or SDI output.

■ **DVB-T mode:** for 1 or 2 digital terrestrial modulation (COFDM).

■ **DVB-C mode:** for digital cable TV modulation (QAM), 1 to 4 DVB-C multiplexes.

■ **J.83 Annex B mode:** for digital cable TV modulation (J.83 Annex B), 1 or 2 J.83 Annex B multiplexes.

■ **J.83 Annex C mode:** for digital cable TV modulation (J.83 Annex C), 1 to 4 J.83 Annex C multiplexes.

■ **Streaming mode:** for IP-TV output (TS over IP). Up to 20 IPTS out.

■ **FM mode:** for up to 8 analog FM outputs.

■ **DTMB mode:** for 1 DTMB out

For all the different operation modes, your CHAMELEON module must also be equipped with the appropriate SW options, see more details in **§15**.

ASI and IP for all operation modes

In all operation modes, input and/or output via ASI is available simultaneously. The ASI in/out can be used simultaneously with the modulated and IPTS outputs. The different operation modes also have capability for simultaneous IPTS (SPTS and/or MPTS) inputs and outputs. The number of IPTS in different operation modes are given to the right.

Number of IPTS[1] in/out in different operation modes

- Analog: 2 IPTS in / 4 IPTS out

- DVB-T: 20 IPTS in / 4 IPTS out

- DVB-C: 20 IPTS in / 6 IPTS out

- J.83B: 20 IPTS in / 4 IPTS out

- J.83C: 20 IPTS in / 6 IPTS out

- Streaming: 4 IPTS in / 20 IPTS out

- FM: 8 IPTS in / 2 IPTS out

- DTMB: 10 IPTS in / 2 IPTS out

[1] IPTS = SPTS and/or MPTS

9 Add and configure inputs

Go to Inputs

Click on the **Inputs** tab. Depending on the SW options in your CHAMELEON, you can configure inputs from:

- Tuner (up to 2 tuner inputs, note that available inputs depends on HW version)

- ASI (up to 2 ASI inputs)

- IP (up to 20 IPTS inputs, depending on Operation Mode)

Add an input

1. Click on **ADD NEW INPUT** to expand the input creation menu.

2. Select input type in the Choose input type drop-down list (ASI, DVB-C, DVB-S, DVB-S2, DVB-T, DVB-T2, IPTV. Selectable tuner inputs will depend on the tuner installed).

3. Enter the settings, and confirm/save by clicking the "green tick"
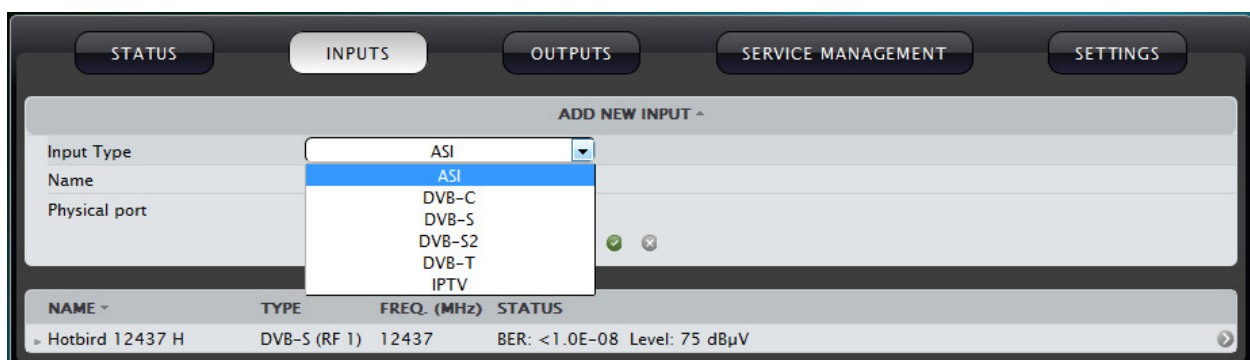
Configure the input

For each type of input, you will get configuration settings in the expanded view.

1. Type a name for the input. This name will be shown in the overview of the inputs.

2. Fill out the required information/parameters and click **Save**.

Input status

If your settings were OK, the status will show you basic information and no error indication.

If your settings were not OK, a red exclamation mark will indicate an error, and the mouse-over will give indication about the art of the error.

9.1 Add ASI and IP inputs

Adding ASI inputs

Go to **Inputs**, and click on **ADD NEW INPUT**. Select **ASI** in the drop down list for Input type. Type a name for your ASI input. Select the Physical port from the drop down list. Port 1 is the top BNC 1 connector, port 2 is the lower BNC 2 connector. Click the "green tick" ✅ to save the settings.

> **!** ASI inputs automatically detects the incoming bit rate.

ADD NEW INPUT ^		
Input Type	ASI	
Name	My ASI in	
Physical port	BNC 2	
	BNC 1	
	BNC 2	✅ ⊗
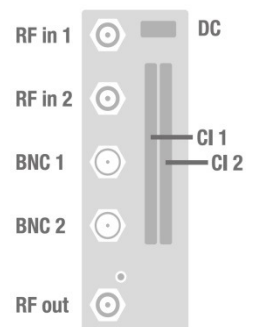
Add IP inputs

Go to **Inputs**, click **ADD NEW INPUT**. Select **IPTV** in the drop down list for Input type list. Type a name for your new IPTV input. Select Bitrate mode:

- CBR Automatic (auto-detects the incoming constant bit rate)

- CBR Manual (manual setting of constant bit rate in)

- VBR (Variable bit rate in)

Select Network interface. If no network interface is available, you can use the link **Manage interfaces**. More information about Network Interfaces are given in **§13.1**

ADD NEW INPUT ^		
Input Type	IPTV	
Name	My IPTV in	
Protocol	Detected automatically	
Bitrate mode	CBR Automatic	
Network interface	IP streaming interface	Manage interfaces
Routing scheme	Multicast	
Multicast address	239.11.12.13	
Port	1234	
Source address	0.0.0.0	
		✅ ⊗

Select Routing scheme, Multicast or Unicast:

- For Multicast; enter the Multicast address and Port

- For Unicast: enter the Port (address will be the same as the IP address of the streaming interface)

Click the "green tick" ✅ to save the settings.

Input status and edit settings

If your settings were OK, the status will not indicate any error. Expand the input by clicking the ▶ in front of the input name to see further information. Click the ▶ in front of Settings to edit settings.

NAME ▾	TYPE	FREQ. (MHz)	ADDRESS	BITRATE	STATUS	
▸ Hotbird 12437 H	DVB-S (RF 1)	12437			BER: <1.0E-08 Level: 76 dBµV	⊙
▾ My IPTV in	IPTV		239.123.51.1:1234	3.69 Mbit/s	Protocol: UDP	⊙

Status: No error
Services: 1, TSID: 17003, ONID: 0
Active configuration: Primary
Detected protocol: UDP

SETTING	VALUE	
Name	My IPTV in	
Protocol	UDP	
Bitrate mode	VBR	
Network interface	IP streaming interface	
Routing scheme	Multicast	
Multicast address	239.123.51.1	
Port	1234	
Source address	0.0.0.0	
Active configuration	Primary	
Redundancy mode	Off	
▸ Alternative configurations		

9.2 Add tuner inputs

Adding tuner inputs

1. Go to **Inputs** and click on **ADD NEW INPUT** .

2. Select the tuner type in the Input type list.

3. Type a name for your input.

4. Select the Physical port from the drop down list. Port 1 is the top F-connector (RF in 1), port 2 is the lower F-connector (RF in 2), see picture in **§9.1**.

5. Fill out the required settings and click the "green tick"   to save the settings.

Note that each input type has its own set of input settings. Below some examples.

> **!** The available tuner input types will depend on the SW options, and on your HW.

Example of terrestrial input settings

ADD NEW INPUT ▲	
Input Type	DVB-T
Name	My DVB-T input
Physical port	RF 2
Frequency (MHz)	E44
	658
Bandwidth	8 MHz

Example of satellite input settings

ADD NEW INPUT ▲	
Input Type	DVB-S
Name	Mu DVB-S input
Physical port	RF 2
Transponder frequency (MHz)	10744
LNB type	Universal
Polarisation	Horizontal
22 kHz tone	Auto
Symbol rate (kBaud)	22000
FEC	Auto
Voltage	Auto
DiSEqC type	4-way
Source	1

Example of cable TV input settings

ADD NEW INPUT ▲	
Input Type	DVB-C
Name	My DVB-C input
Physical port	RF 2
Frequency (MHz)	E35
	586
Symbol rate (kBaud)	6875
Constellation	Auto

Input status and edit settings

If your settings were OK, the status will not indicate any error. Expand the input by clicking the ▶ in front of the input name to see further information. Click the ▶ in front of Settings to edit settings.

NAME ▼	TYPE	FREQ. (MHz)	STATUS	
▼ Hotbird 12437 H	DVB-S (RF 1)	12437	BER: <1.0E-08 Level: 76 dBµV	

Status: No error
Services: 47, TSID: 1, ONID: 1
SNR: 12.1 dB, BER: <1.0E-08, Level: -33 dBm 76 dBµV

SETTING	VALUE	
Name	Hotbird 12437 H	
Physical port	RF 1	
Transponder frequency (MHz)	12437	
LNB type	Universal	
Polarisation	Horizontal	
22 kHz tone	Auto	
Symbol rate (kBaud)	27500	
FEC	Auto	
Voltage	Auto	
DiSEqC type	4-way	
Source	2	

10 Add and configure outputs

Go to OUTPUTS

Depending on SW options, and Operation mode, you can configure up to:

■ 2 Analogue RF out (PAL, SECAM)

■ 8 analogue FM radio

■ 2 SDI out

■ 2 ASI out

■ 2 DVB-T out

■ 4 DVB-C out

■ 2 J.83 Annex B out

■ 4 J.83 Annex C out

■ 1 DTMB out

■ 20 IPTS out

> ! ASI in/out and SDI shares the 2 BNC ports. These ports are controlled by software settings.

Add and configure an output

In the **Outputs** tab, click **ADD NEW OUTPUT**.

1. Select output type (ASI, SDI, IPTV, DVB-C, J.83 Annex B, J.83 Annex C, DVB-T, ANALOG, FM, DTMB) from the drop-down list. The available selection depends on Operation mode and SW options.

For each type, you will get different configuration settings in the expanded view.

2. Fill out the required information/parameters

3. Click the "green tick"   to save the settings.

Output status

After saving, the status of the configured outputs is shown. If e.g. too many outputs are configured, or an output that is not supported in the current Operation mode, there will be an error message displayed.

> **Required actions**
> • One or more outputs has faulty settings!
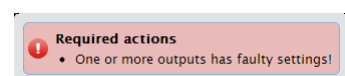
10.1 Add and configure analogue (PAL, SECAM) outputs

Adding analogue output

Select Analog mode as Operation Mode, see also **§8**.

1. In the **Output**, select **Analog** in the Output type list

2. Type a name for the output

Decoder settings

1. Select decoder instance (there are 2 decoder instances available)

2. Select the service in the Services drop down list. Note: if the incoming service is encrypted, you have to select the input to the CAM in **Settings / Common Interface**, and select to descramble the service in the Service Management. In the Services drop down list, make sure to select the decrypted service.

3. Select PAL or SECAM video standard in the Video standard drop down list

4. Select audio language (Optional. If only 1 audio language is transmitted use "Default")

Subtitling settings

1. Select Subtitling ON

2. Select subtitling language from the drop down list, or enter the 3 letter language code according to ISO 639-2.

3. Select Subtitle priority, Subtitle type, Teletext codepage, and optionally Subtitle conversion and WSS subtitle configuration

Modulator settings

1. Select TV standard, Audio system and Frequency table from the drop-down lists

2. Enter an output frequency, or select a channel from the drop down list.

3. Enter an output carrier level

Save settings

Click the "green tick" ● to save the settings.

Advanced settings

To get access to the advanced settings, click the ▶ in front of the Advanced settings.

Language selection for audio language and subtitling

For audio language, you can use default language, select the language from the drop down list, or manually enter the 3 letter language code according to ISO 639-2. When you use the manual settings, you can find the PID number in the Service Management, on the input side, when expanding to service level.

For subtitle language, you can select language from the drop down list, or enter the ISO 639-2 code.

> **!** Dolby audio decoding requires hardware revision 1402 or higher, and the GNDOL SW option.

Important information about HD to SD downscaling

The MPEG decoder can downscale one service from MPEG2/4 HD to SD. When using the MPEG decoder for downscaling, you are limited to 1 analogue output.

Dual mono output
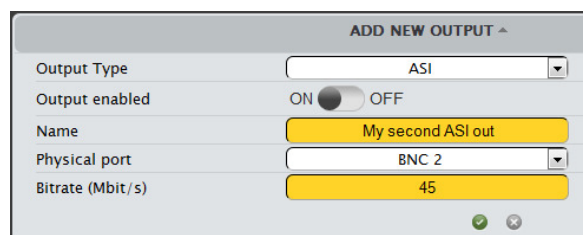
It is possible to set up one analogue output with dual mono sound (different languages in left/right audio channel).

1. Create 2 analogue outputs
2. Set up both decoders with the same service but different audio languages
3. Select Stereo mode: Dual mono (Decoder settings)
4. Deactivate the second analogue output (Output enabled = OFF)
5. In the Modulator settings, select Audio system A2 Dual mono or NICAM Dual mono
6. Select Dual mono source: Both decoders

10.2 Add and configure ASI, SDI and FM outputs

Add ASI outputs

1. In the **Output**, select **ASI** in the drop down
list for Output Type

2. Enter name, physical port and bitrate

3. Click the "green tick"   to save the settings.

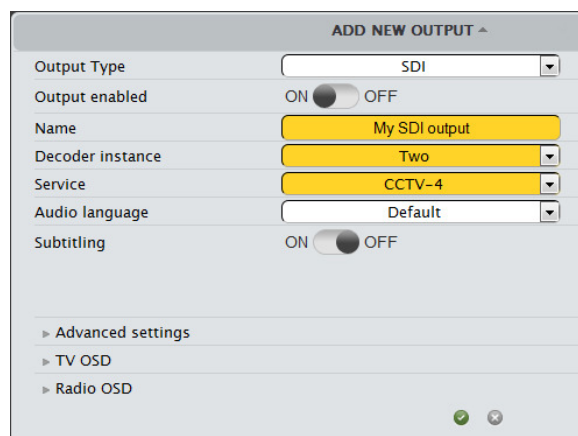| ADD NEW OUTPUT ⌃	
Output Type	ASI
Output enabled	ON ⬤ OFF
Name	My second ASI out
Physical port	BNC 2
Bitrate (Mbit/s)	45

Add and configure SDI outputs
Select Analog Operation Mode

1. In the **Output**, select **SDI** in the Output Type list

2. Select the service in the Services drop down
list

3. Set the audio language and subtitle settings

4. Optionally, select Audio language

5. Click the "green tick"   to save the settings.

ADD NEW OUTPUT ⌃	
Output Type	SDI
Output enabled	ON ⬤ OFF
Name	My SDI output
Decoder instance	Two
Service	CCTV-4
Audio language	Default
Subtitling	ON ⬤ OFF
▸ Advanced settings	
▸ TV OSD	
▸ Radio OSD	
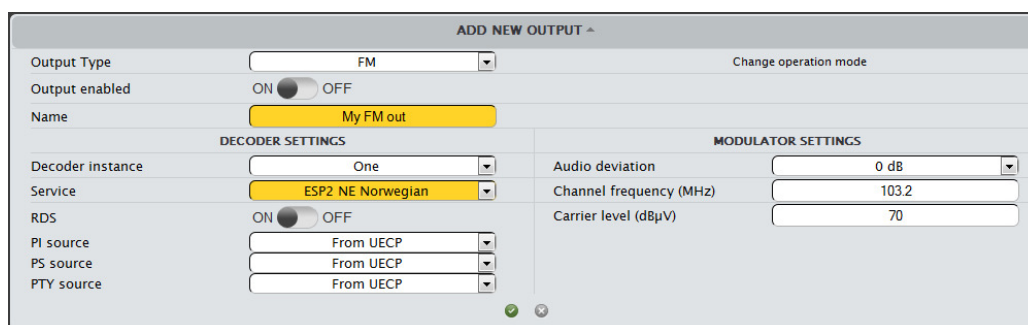
> See also §10.1 for more information
> about these settings.

Add FM radio outputs
Select FM mode as Operation Mode

1. In the **Output**, select **FM** in the drop down list for Output Type

2. Select the service in the Services drop down list

3. Enter Channel frequency and Carrier level

4. Optional: for RDS signalling, select the PI, PS and PTY sources, and enter the values if using manual settings.

5. Click the "green tick"   to save the settings.

ADD NEW OUTPUT ⌃			
Output Type	FM	Change operation mode	
Output enabled	ON ⬤ OFF		
Name	My FM out		
DECODER SETTINGS		**MODULATOR SETTINGS**	
Decoder instance	One	Audio deviation	0 dB
Service	ESP2 NE Norwegian	Channel frequency (MHz)	103.2
RDS	ON ⬤ OFF	Carrier level (dBµV)	70
PI source	From UECP		
PS source	From UECP		
PTY source	From UECP		

10.3 Add and configure DVB-T, DVB-C, J.83 ANNEX B, J.83 ANNEX C and DTMB outputs

Add DVB-T outputs

Select Operation mode DVB-T under **Settings**

1. In the **Output**, select **DVB-T** in the Output Type list

2. Enter a name for the output

3. Select Frequency table (CCIR or OIRT)

4. Select output channel, or set the output frequency in MHz

5. Select output bandwidth (5, 6, 7 or 8 MHz)

6. Set the output carrier level
Click the "green tick" ☑ to save the settings.
7. Select the Forward error correction (FEC), the Guard interval (GI), the Carrier mode and the Constellation from the dropdown lists

8. Click the "green tick" ☑ to save the settings.

ADD NEW OUTPUT ⌃	
Output Type	DVB-T
Output enabled	ON ⬤ OFF
Name	My DVB-T out
Frequency table	CCIR
Frequency (MHz)	E22
	482
Bandwidth (MHz)	8
Carrier level (dBµV)	75
Forward error correction	7/8
Guard interval	1/32
Carrier mode	8k
Constellation	64QAM

> **!** Channel bonding. All output muxes within 40 MHz band (5 channels @ 8 MHz)

Add additional DVB-T outputs
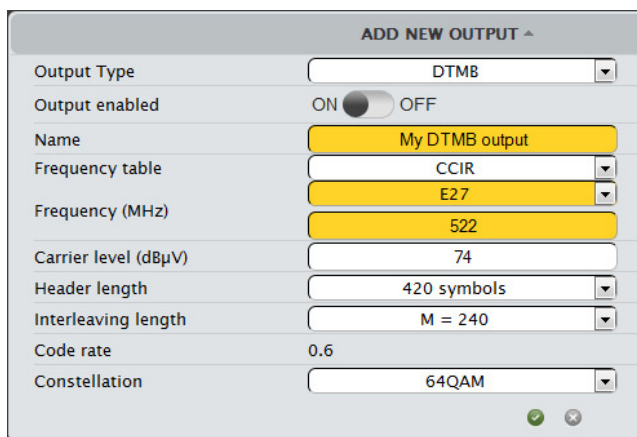
Repeat the steps above.

The **Output Enabled ON/OFF** gives you the possibility to configure an output without adding it to your network. With Output enabled set to **OFF**, no signals will be transmitted.

Add DTMB output

Select Operation mode DTMB under **Settings**

1. In the **Output**, select **DTMB** in the Output Type list

2. Enter a name for the output

3. Select Frequency table (CCIR or OIRT)

4. Select output channel, or set the output frequency in MHz

5. Set the output carrier level

6. Select the Header length in the drop down list

7. Select the Interleaving length in the drop down list

8. Select the Constellation in the drop down list

9. Click the "green tick" ☑ to save the settings.
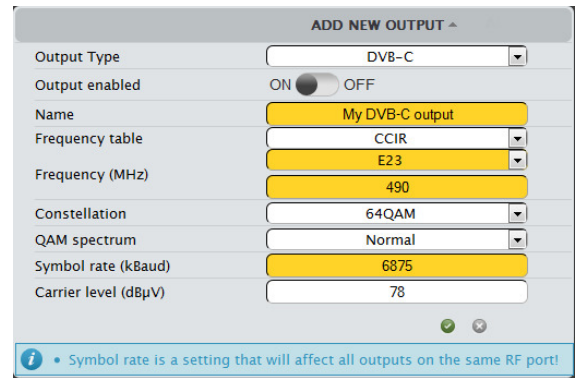
ADD NEW OUTPUT ⌃	
Output Type	DTMB
Output enabled	ON ⬤ OFF
Name	My DTMB output
Frequency table	CCIR
Frequency (MHz)	E27
	522
Carrier level (dBµV)	74
Header length	420 symbols
Interleaving length	M = 240
Code rate	0.6
Constellation	64QAM

Add DVB-C outputs

Select Operation mode DVB-C under **Settings**

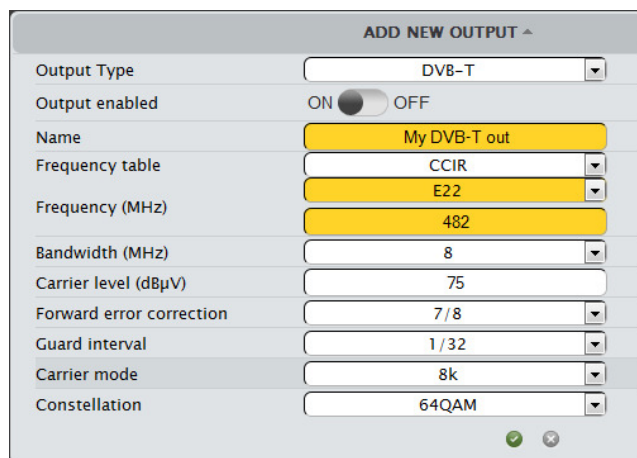**1.** In the **Output,** select **DVB-C** in the drop down list

for Output Type

2. Enter a name for the output

3. Select Frequency table (CCIR or OIRT)

4. Select output channel, or set the output frequency in MHz

5. Select Constellation in the drop-down list

6. Select QAM spectrum (Normal or Inverted)

7. Set the symbol rate

8. Set the output carrier level

9. Click the "green tick" to save the settings.

ADD NEW OUTPUT ▲	
Output Type	DVB–C
Output enabled	ON ◉ OFF
Name	My DVB-C output
Frequency table	CCIR
	E23
Frequency (MHz)	490
Constellation	64QAM
QAM spectrum	Normal
Symbol rate (kBaud)	6875
Carrier level (dBµV)	78

ℹ • Symbol rate is a setting that will affect all outputs on the same RF port!

! **Channel bonding. All output muxes within 40 MHz band (5 channels @ 8 MHz)**

Add J.83 Annex B outputs

Select Operation mode J.83 Annex B under **Settings**

1. In the **Output**, select **J.83 Annex B** in the Output Type list

2. Enter a name for the output

3. Select Frequency table (CCIR or OIRT)

4. Select the output channel, or set the output frequency in MHz

5. Select Constellation in the drop-down list

6. Select interleaving mode in the drop-down list

7. Select QAM spectrum (Normal or Inverted)

8. Set the output carrier level

9. Click the "green tick" to save the settings.

ADD NEW OUTPUT ▲	
Output Type	J.83 ANNEX B
Output enabled	ON ◉ OFF
Name	My J.83 Annex B out
Frequency table	CCIR
	E25
Frequency (MHz)	506
Constellation	64QAM
Interleaving mode	I = 128, J = 1
QAM spectrum	Normal
Carrier level (dBµV)	78
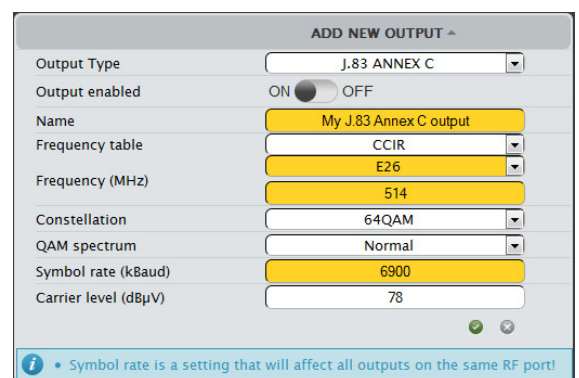
! **Channel bonding. All output muxes within 40 MHz band (5 channels @ 8 MHz)**

Add J.83 Annex C outputs

Select Operation mode J.83 Annex C under **Settings**

1. In the **Output**, select **J.83 Annex C** in the Output Type list

2. Enter a name for the output

3. Select Frequency table (CCIR or OIRT)

4. Select the output channel, or set the output frequency in MHz

5. Select Constellation in the drop-down list

6. Select QAM spectrum (Normal or Inverted)

7. Set the symbol rate

8. Set the output carrier level

9. Click the "green tick" to save the settings.

ADD NEW OUTPUT ▲	
Output Type	J.83 ANNEX C
Output enabled	ON ◉ OFF
Name	My J.83 Annex C output
Frequency table	CCIR
	E26
Frequency (MHz)	514
Constellation	64QAM
QAM spectrum	Normal
Symbol rate (kBaud)	6900
Carrier level (dBµV)	78

ℹ • Symbol rate is a setting that will affect all outputs on the same RF port!

! **Channel bonding. All output muxes within 40 MHz band (5 channels @ 8 MHz)**

Add additional DVB-C, J.83 Annex B or J.83 Annex C outputs
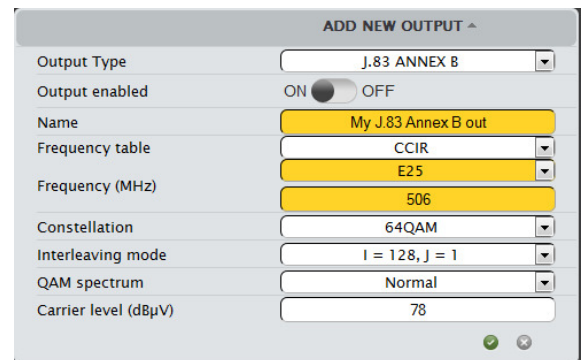
Repeat the steps above.

10.4 Add and configure IP (SPTS/MPTS) outputs

Configure a network interface for streaming (see also 12.1)

1. Go to **Networking** in the **Settings** tab, and select Add **interface**.

    – For GN01 or GN40 mounting, add a new network interface for the streaming port.

    – For GN50 mounting, add a new network interface to the backplane port.

2. Enter name for the interface, and IP parameters

3. Select **Streaming ON**, and click the "green tick" 🟢 to save the settings

Add IPTV outputs

1. In the **Output**, select **IPTV** in the drop down list for Choose output type

2. Select protocol, UDP or RTP

3. Select the bit rate mode, CBR or VBR

4. Set the output bit rate

5. Set the TTL (Time to live). The default TTL=255 => no limit for the lifespan of data.

6. Select Network interface

7. Set the destination (streaming) address and port.

8. Click the "green tick" 🟢 to save the settings

| ADD NEW OUTPUT ▲		
Output Type	IPTV ▾	Change operation mode
Output enabled	ON ⚪ OFF	
Name	IPTV output example	
Protocol	UDP ▾	
Bitrate mode	CBR ▾	
Bitrate (Mbit/s)	35	
Time to live (hops)	255	
Network interface	IP streaming interface ▾	Manage interfaces
Destination address	239.11.12.13	
Port	1234	
	🟢 ⊗	

Multicast vs. Unicast

Multicast or Unicast transmission is selected automatically by the address range used. In IPv4, addresses **224.0.0.0** through **239.255.255.255** are designated as multicast addresses.

11 SERVICE MANAGEMENT, service & PID management

Service Management functionality and pre-requisites

The **Service Management** tab is the main view for handling remultiplexing, service selection, decryption, encryption and PID management. Before using the Service Management for management of services and PIDs, the inputs and outputs of the CHAMELEON module must be configured, see **§9** and **§10**.
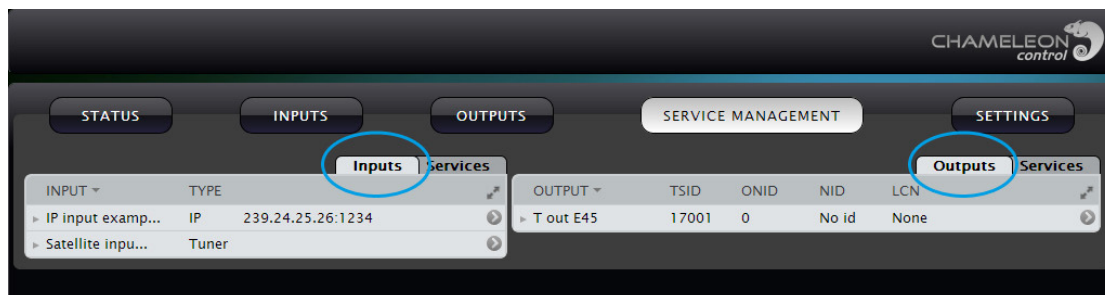
Service Management - left part for Inputs, right part for Outputs

The Service Management menu has 2 main parts. In the left part, information about inputs (Inputs, Services) are shown. The right part contains information about the outputs (Outputs, Services). You can select to show information about Inputs/Outputs or Services by clicking the tabs at the top of the 2 main views.

> **!** Note that the Input and Output parts of Service Management can be collapsed/expanded by clicking on the expand/collapse icon at the top right:

■ In the **Inputs view**, the listing is based on the configured inputs in the CHAMELEON, see **§11.1**

■ In the **Outputs view**, the listing is based on the configured outputs in the CHAMELEON, see **§11.1**

■ The **Services** views list all incoming/outgoing services, see **§11.2**

Information about inputs/outputs, services and PIDs can be accessed in any view, and the view you select to work with will depend on what you want to check or configure.

Service Management navigation

To navigate (expand/collapse) menu entries, the arrows in front of a menu is used:

■ Click the ▶ icon to expand a menu and show the sub-menus

■ Click the ▼ icon to collapse a menu and hide the sub-menus

Menu list sorting
All listings can be sorted according to any column name. Click a column name to sort the list entries by this column ▼ . Click again to sort in reversed order ▲ .

11.1 Navigating the In/Outputs view in Service Management

In the **Inputs** and **Outputs** views in **Service Management**, all inputs and outputs for the CHAMELEON are listed. The top entries in the navigation trees are the physical inputs and outputs configured. To navigate in the menus, use the ▶ and ▼ arrows to expand/collapse. The complete navigation graphs for these views are given in the next 2 pages.

Note that each entry in the lists has additional information via "mouse over" or hover that is displayed when you place the mouse pointer over an entry. The hover pop-up gives you information about the input or output name, and which module that the input or output is configured in.

From module: Chameleon 1 (Chameleon)

To add a service to an output, navigate to the Service level, click the ⦿ and select the output to add the service to. More information about the managing services and PIDs in the System Management is given in §11.4 and §11.5.

Navigation graph for the Inputs view for Inputs in Service Management

MODULE
INPUTS
INPUT   TYPE
...   ...

Hover Info: Input name – From module: Module name or module serial

PSI/SI
PSI/SI PID   TYPE   BITRATE
...   .

EMM
CA ID
EMM PID   BITRATE
...   ...

OTHER PIDS
OTHER PID   TYPE   BITRATE
...   .

SERVICES
SERVICE   SID   🔒 indicating service with scrambled PIDs
PMT: xxx, PCR: yyy
PIDS
PID   TYPE   BITRATE   LANG   🔒 scrambled PIDs
ECM
CA ID
ECM PID   BITRATE
...   ...

Navigation graph for the Outputs view for Outputs in Service Management
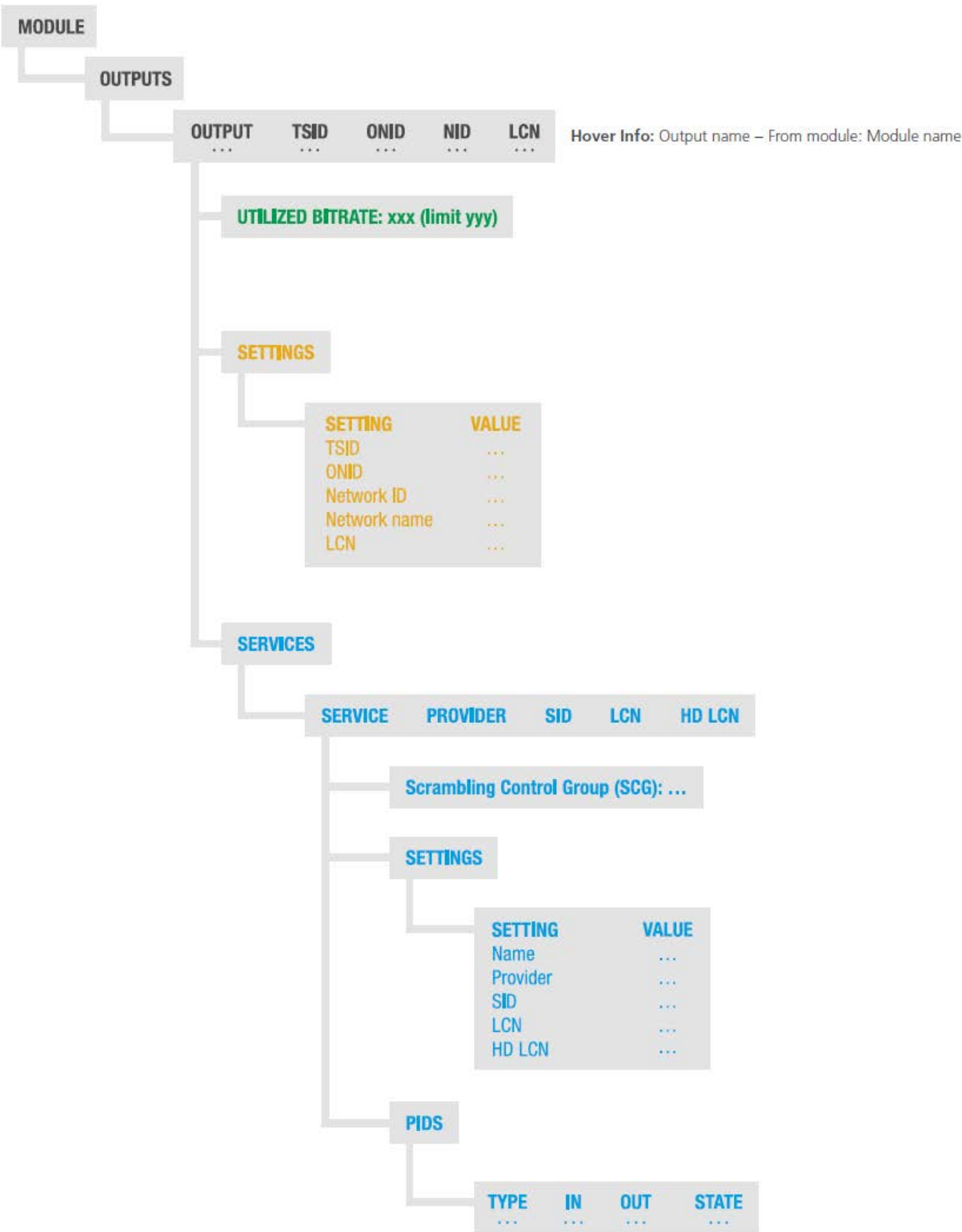
11.2 Navigating in the Services view in Service Management

In the **Services** views in **Service Management**, all services in and out for the CHAMELEON are listed. The top entries in the navigation trees are the services from the configured inputs and outputs. To navigate in the menus, use the ▶ and ▼ arrows to expand/collapse. The complete navigation graphs for these views are given in the next page.

Each entry in the lists of services have additional hover information when you place the mouse pointer over an entry. The hover pop-up states which module the service is coming from, the name of the input/output and (for output) the name of the input.

Inputs hover:

> From module: Romeo, input: Satellite input example

Outputs hover:

> From module: Romeo, output: T out E45, input: Satellite input example.

To add a service to an output, click the ⊘ tailing a service on the input side, and select the output to add the service to. More information about the managing services and PIDs in the System Management is given in §11.4 and §11.5.
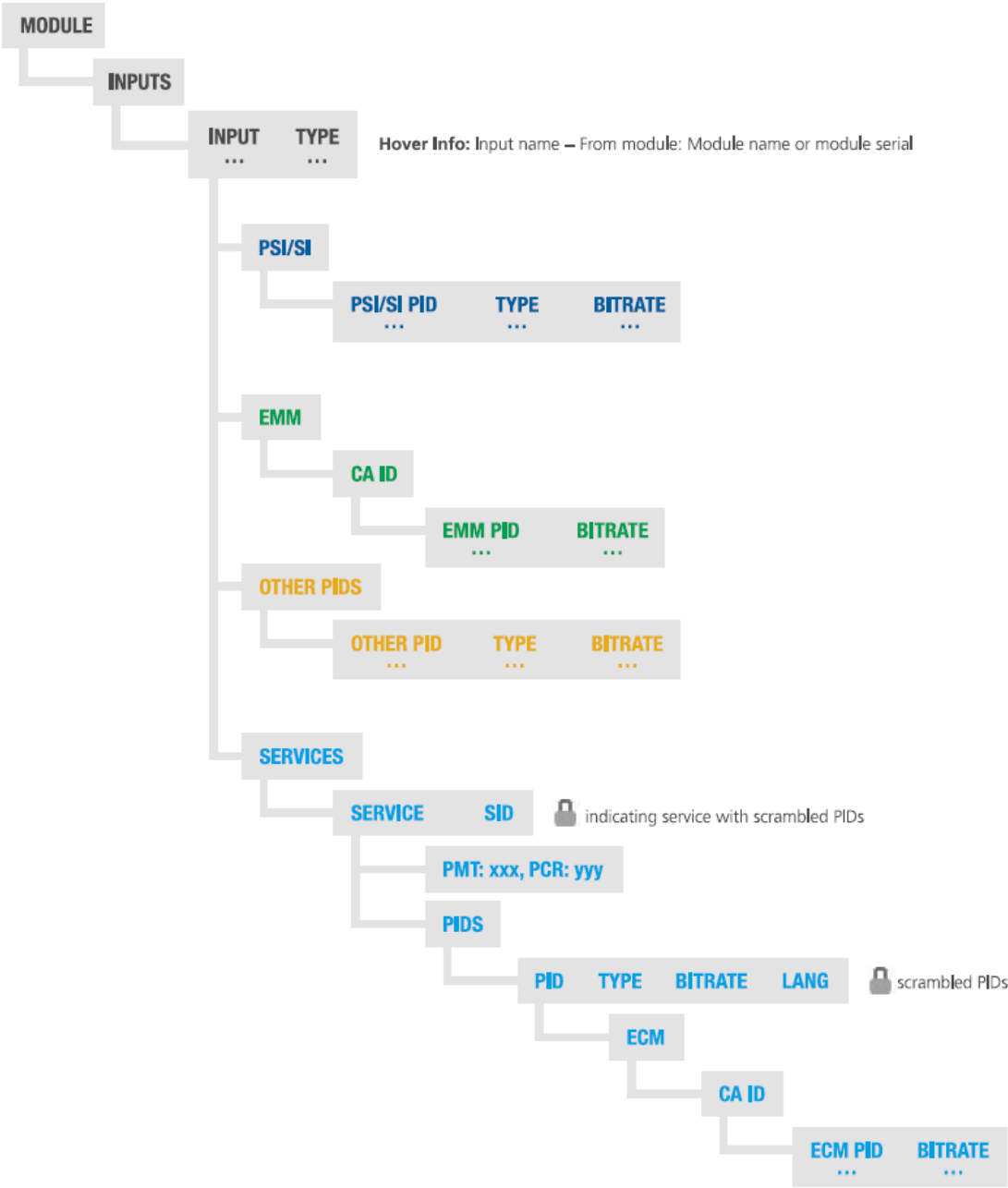
Navigation graph for the Services view for Inputs in Service Management

SERVICE	SID
Service 1	SID 1
Service 2	SID 2
…	…

Hover Info
From module: Module name
Input: Input name

🔒 indicating service with scrambled PIDs

PMT: xxx, PCR: yyy
Type: . . .
Running status: . . .

ECM

CA ID

ECM PID	BITRATE
. . .	. . .

PIDS

PID	TYPE	BITRATE	LANG

🔒 scrambled PIDs

Navigation graph for the Services view for Outputs in Service Management

SERVICE	PROVIDER	SID	LCN	HD LCN
Service 1	Name 1	SID 1	LCN 1	HD LCN 1
Service 2	Name 2	SID 2	LCN 2	HD LCN 2
…	…	…	…	…

Hover Info
From module: module name
Output: output name
Input: input name

Scrambling Control Group (SCG): …

SETTINGS

SETTING	VALUE
Name	. . .
Provider	. . .
SID	. . .
LCN	. . .
HD LCN	. . .

PIDS

TYPE	IN	OUT	STATE
. . .	. . .	. . .	. . .

11.3 Managing services and PIDs in the Inputs part of Service Management

Management of services, PIDs etc. in the Service Management is handled via pop-up menus. The presence of a pop-up menu is indicated by a grey arrow, ⬤ , at the end of an entry line. For the input services, the menus are used to select services to the outputs. For inputs from CI, descrambling of services or PIDs are also managed., see **§11.6**.

Entry line pop-up menus for Inputs in Service Management
The picture below shows the pop-up menus for the Inputs side of Service Management. Note that many of the entries contain important read-only information.

Detailed information about the different actions you can do in the pop-up menus are given in the following pages.
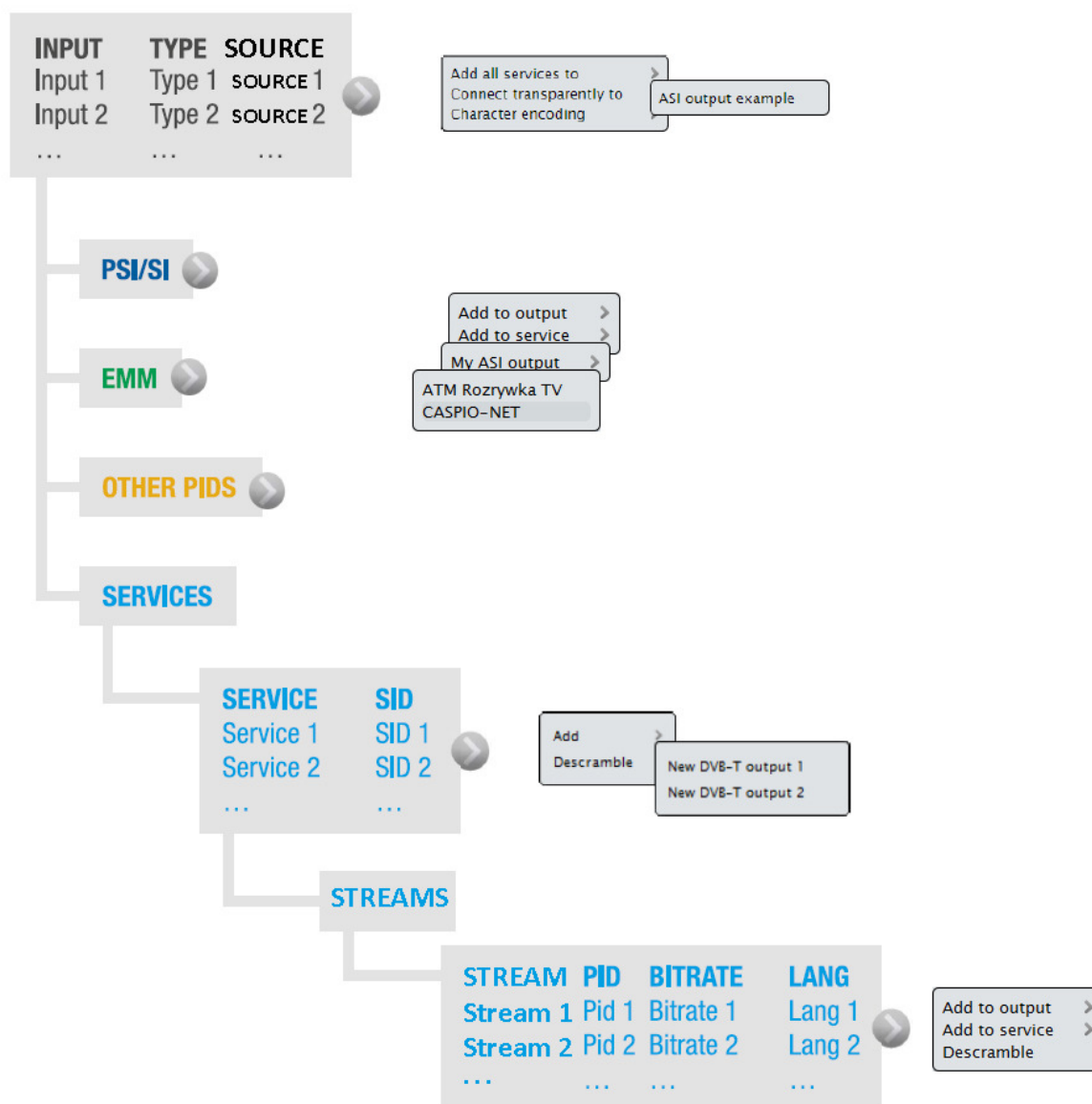
Managing services, PIDs and descrambling in Inputs in Service Management

Selection of services from inputs to outputs and descrambling of services or PIDs is managed via the pop-up menus indicated by a grey menu arrow, ⊙ , tailing the different menu line entries. If no menu arrow is present, the information is read-only.

Input level pop-up menu

The pop-up menu at **Input** level allows you to add all services of an input to an output, or to connect an input transparently to an output. The **Character encoding** menu allows you select the encoding standard for the service names and for the provider names, see **§11.4.2**.

Add all services

Click on **Add all services to**, and select the output to add the services to.

This will result in the same as adding all services one by one on the Service level, and the automatic remultiplexing including creating correct PSI/SI will be done.

Connect transparently to

When you select **Connect transparently to**, all services of an input will be added to the selected output, and no change is done in the PSI/SI information. An output that is connected transparently to an input is marked with the 🔗 icon.

Service level pop-up menu

The pop-up menu at Service level allows you to add services one by one to an output by clicking **Add** and selecting the output in the new pop-up menu.
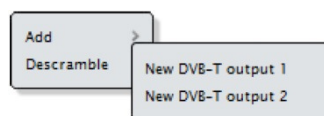
The **Descramble** command sets all PIDs to be descrambled. This command is only available for CI inputs. For more information about descrambling, see **§11.6**.

Stream level pop-up menu

The pop-up menu at Stream level allows you to descramble individual PIDs of a service. This menu is only available for CI inputs. The Descramble command on Stream level is activated only if the service is descrambled on Service level.
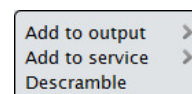
The Add to output and Add to service commands are covered in §11.3.1.

> **When selecting to descramble a PID, all other PIDs will become not selected for descrambling. Hence, if you need to descramble on PID level, make sure that you select descramble for all PIDs that you want to descramble.**

11.3.1 Advanced management of tables and streams in Inputs

The Service Management in FW2.0 includes advanced management of tables (PSI/SI tables) and streams (ranging from EMM and ECM streams to elementary streams such as audio streams or video streams). This enables a wide range of advanced applications, where the user is assumed to have thorough knowledge of how to manage the tables and streams.

Please note that using this functionality also adds the possibility to create configurations that will not be according to standard application, and hence potentially can create problems in a network. It is advised to contact Support if there are any doubts about correct settings or applications.

> **!** Please contact Support if you are unsure about how to use the Advanced settings.

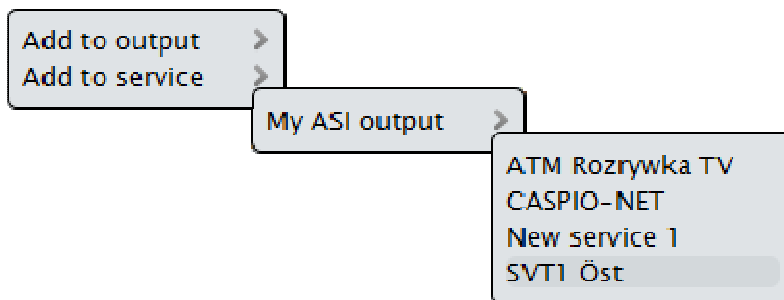### Pop-up menus for advanced applications

All menu entries below Service level at the Inputs part of Service Management have pop-up menus allowing you to add the entry to an output, or to a service of an output.

The presence of a pop-up menu is indicated by a grey arrow, ⚪ , at the end of an entry line.

Advanced application example

This user manual will not cover all settings and applications for the advanced settings. As one example of possible usage of the advanced settings, you can add incoming unreferenced streams ("PIDs") to an output, or to a service in an output. This can be used e.g. for adding OTA data or EPG (EIT) from external sources.

For specific use cases, please contact Support for help or further documentation.

		Inputs	Services
INPUT	**TYPE**	**SOURCE ▾**	
▸ Hotbird 12437 H	Tuner		»
▾ SVT	Tuner		»

TYPE ▾	**PSI/SI PID**	**BITRATE**	
CAT	1	15.11 kbit/s	»
EIT	18	449.86 kbit/s	»
NIT	16	600 bit/s	»
PAT	0	15.11 kbit/s	»
PMT	1810	15.01 kbit/s	»
PMT	5840	15.01 kbit/s	»
PMT	5800	15.01 kbit/s	»
PMT	5640	15.01 kbit/s	»
PMT	5540	15.01 kbit/s	»
PMT	1290	15.11 kbit/s	»
PMT	1280	15.01 kbit/s	»
PMT	1240	15.01 kbit/s	»
PMT	870	15.11 kbit/s	»
SDT	17	4.79 kbit/s	»
TDT	20	276 bit/s	»
TOT	20	276 bit/s	»

▾ **CA ID ▾**
▾ 0x0500

EMM PID ▾	**BITRATE**	
49	85.08 kbit/s	»
55	14.91 kbit/s	»

▸ Other pids

SERVICE ▾	**SID**	**TYPE**	**STATUS**	
▸ Barnkanalen/SVT24	870	▦		»
▸ Boxer Navigator	65534	▦		»
▾ Kunskapskanalen	1240	▦		»

PMT: 1240, PCR: 1249
Type: Digital television service (MPEG-2 SD)
Running status: Running

STREAM ▾	**PID**	**BITRATE**	**LANG**	
♫	1248	263.14 kbit/s		»
▦	1249	6.15 Mbit/s		»
▤	1004	263.14 kbit/s	dan, swe	»

▸ SVT1 Tal Txt	1280	▦	»
▸ SVT1 Tvärs	5800	▦	»
▸ SVT1 Öst	5840	▦	»
▸ SVT2 Tal Txt	1290	▦	»
▸ SVT2 Tvärs	5540	▦	»
▸ SVT2 Öst	5640	▦	»
▸ IP input from 51	IP	239.123.51.1:1234	»
▸ CI 1	CI	IP input from 51	»

## 11.4 Settings and management of Outputs in Service Management

For the Outputs part of Service Management there are pop-up menus and context menus where you type parameters. **Edit** in pop-up menus can open a context menu.

For the transport streams (TS) in the outgoing multiplexes, there are DVB Network related settings (TSID, ONID, Network ID, Network name, LCN type). There is also bitrate information for each output (utilized bitrate and configured (limit) bitrate).

For the services in the outputs, there are settings for service name, service provider name, SID (Service ID), LCN number and HD LCN number.

Entry line pop-up menus for Outputs in Service Management

The picture below shows the pop-up menus for the outputs side of Service Management. Note that many of the entries contain important read-only information. Detailed information about the different settings is given in the following pages.
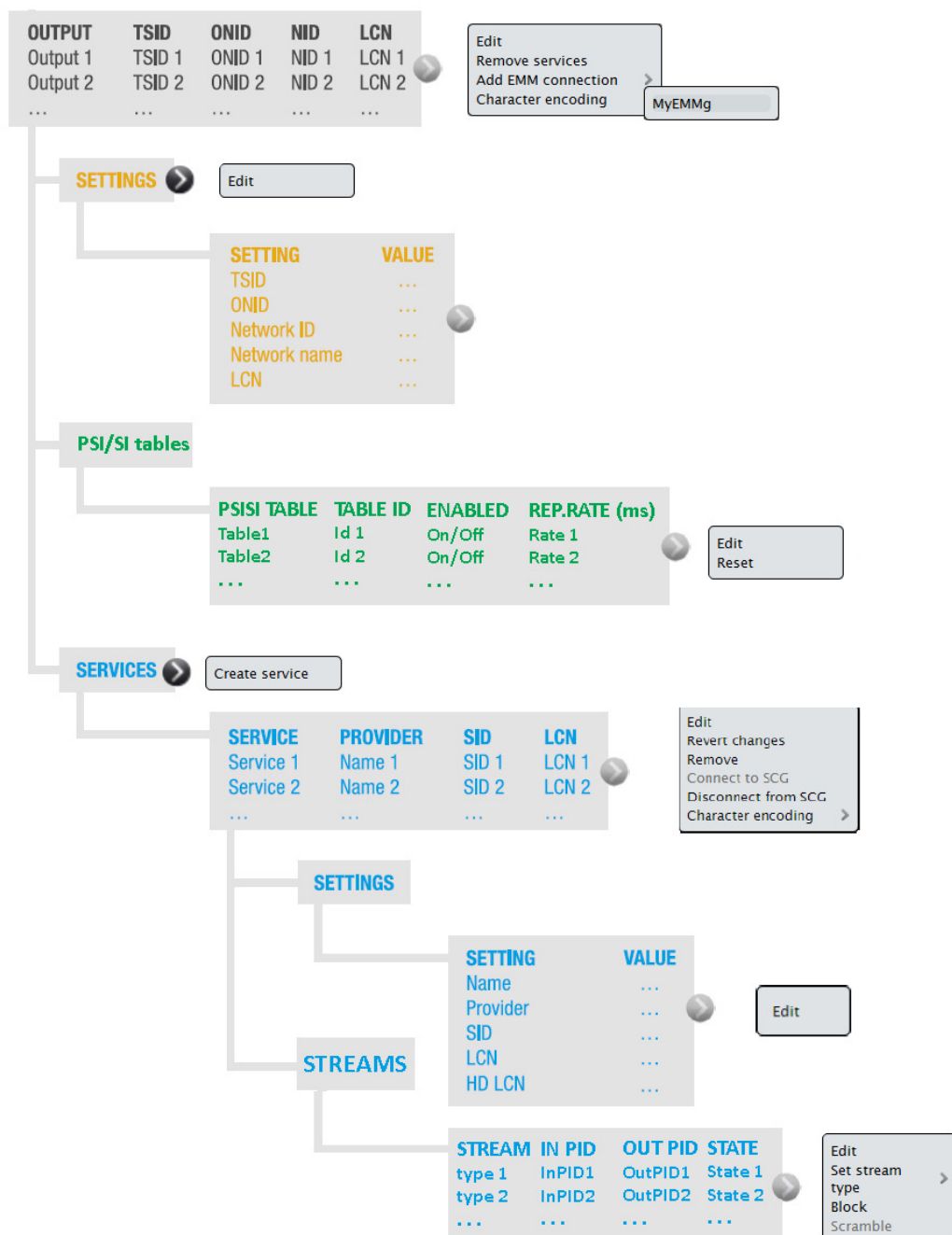
Managing output settings, service settings and PIDs

Removing services, edit output TS settings (TSID, ONID, Network ID, Network name, LCN type), edit service settings (service name, service provider name, SID, LCN and HD LCN number), and edit stream settings (IN PID number, OUT PID number, block/unblock, set stream type) is managed via the menus in the Output side of Service Management.

Connecting outputs to EMMg and services to SCG is managed in the Outputs of Service Management. Elementary stream level scrambling is also managed in these menus. The scrambling related settings will be covered in **§12**.
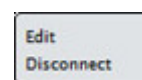
Output level pop-up menu (remuxed)

The pop-up menu at Output level allows you to edit the main TS DVB Network settings, remove all services from an output, add an EMM connection (see **§12**), and set the Character encoding (see **§11.4.2**).
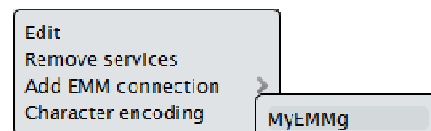
### Output level pop-up menu (transparently connected)

The pop-up menu at Output level of an output that is transparently connected from an input allows you to disconnect the transparent connection or edit the Network ID (NID). Note that editing the NID is possible only if you have selected **Share NIT** to **ON** under **Setting**.

Note: there are 2 different ways to edit the DVB Network settings for an output:

■ Select **Edit** in the **Output** level pop-up menu

■ Navigate to the **Settings** under an output, and select **Edit** for this menu, see the following page

These 2 menus have different layout, but contain the same information, except that the Network name entry is not available from the Output level pop-up Edit.
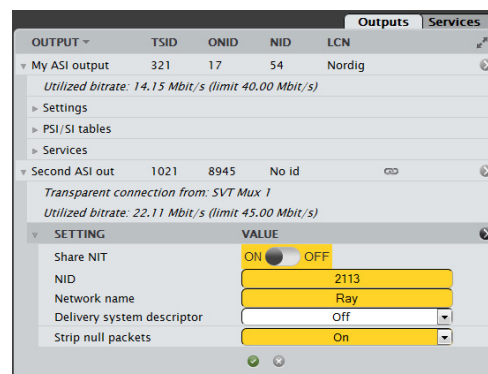
Output / Setting level pop-up menu

The Edit in the pop-up at **Output / Setting** enters the menu for the DVB Network settings for TSID (Transport Stream ID), ONID (Original Network ID), Network ID, Network name and LCN type. See more information about the DVB Network settings in **§11.9**.
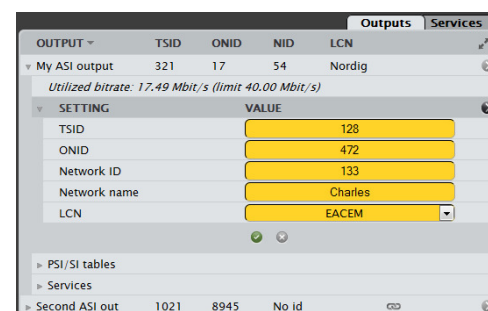
Output / PSI/SI tables level menu

Expanding the PSI/SI tables entry lists the tables, and for each table or sub-table there is a pop-up menu allowing you to Edit or Reset. These menus are generally intended for advanced settings, and will be covered in §11.4.1.

Output Service level pop-up menu

The pop-up at Service level allows you to edit the service settings (service name, service provider name, SID, LCN and HD LCN number). The **Revert changes** will reset all service settings to the original values. **Remove** will remove this service from the output. **Connect to / Disconnect from SCG** (for scrambling) is described in **§12**. The **Character encoding** menu allows you select the encoding standard for the service names and for the provider names, see **§11.4.2**.
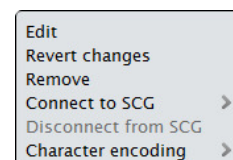
Output Stream level pop-up menu

The pop-up at stream level allows you to edit the Out PID value, set the stream type, block (or unblock) the stream in the output and scramble the stream. Scrambling is described in **§12.**
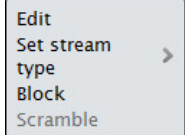
11.4.1 Advanced management of tables and streams in Outputs

The Service Management in FW2.0 includes advanced management of tables (PSI/SI tables) and streams (ranging from EMM and ECM streams to elementary streams such as audio streams or video streams). This enables a wide range of advanced applications, where the user is assumed to have thorough knowledge of how to manage the tables and streams.

Please note that using this functionality also adds the possibility to create configurations that will not be according to standard application, and hence potentially can create problems in a network. It is advised to contact Support if there are any doubts about correct settings or applications.

> **!** Please contact Support if you are unsure about how to use the Advanced settings.

Advanced application example

This user manual will not cover all settings and applications for the advanced settings. As one example of possible usage of the advanced settings, you can create a service in an output without adding a service from the Input part of Service Management.

SERVICE ▼	PROVIDER	SID	LCN	HD LCN	
	ADD NEW SERVICE			Create service	
Name		My new service			
Provider		ACME			
SID		1235			
LCN		Not set			
HD LCN		Not set			
PMT PID		1235			

For specific use cases, please contact Support for help or further documentation.

PSI/SI table management

All PSI/SI tables are listed under the PSI/SI table entry, and can be displayed by clicking the arrow ▶ in front of the entry line. The general pop-up menu is allows you to edit the table settings (enabled On / OFF, table repetition rate), or reset to the default values. For most tables, you can also create descriptors and/or block incoming descriptors.

As an example of PSI/SI table management, all the EIT Actual Schedule and EIT Other Schedule tables can be enabled or disabled, allowing you to modify the "EPG" data transmitted.

For specific use cases, please contact Support for help or further documentation.

					Outputs	Services
OUTPUT ▼	TSID	ONID	NID	LCN		
▼ My ASI output	321	17	54	Nordig		
Utilized bitrate: 13.06 Mbit/s (limit 40.00 Mbit/s)						
▶ Settings						
▼ PSISI TABLE	TABLE ID ▼	ENABLED		REP. RATE (ms)		
PAT	0x00	On		100		
▶ CAT	0x01	On		200		
▶ PMTs	0x02	On		100		
▶ TSDT	0x03	On		10000		
EIT PF actual	0x4E	On		2000		
EIT PF other	0x4F	Off		10000		
▶ NIT actual	0x40	On		3000		
▶ SDT actual	0x42	On		2000		
SDT other	0x46	On		10000	Edit	
TDT	0x70	On		20000	Reset	
▶ TOT	0x73	On		20000		
▶ AITs	0x74	On		2000		
▼ EIT ACTUAL SCH ▼	TABLE ID	ENABLED		REP. RATE (ms)		
0–3 days	0x50	On		10000		
4–7 days	0x51	Off		10000		
8–11 days	0x52	Off		30000		
12–15 days	0x53	Off		30000		
16–19 days	0x54	Off		30000		
20–23 days	0x55	Off		30000		
24–27 days	0x56	Off		30000		
28–31 days	0x57	Off		30000		
32–35 days	0x58	Off		30000		
36–39 days	0x59	Off		30000		
40–43 days	0x5A	Off		30000		
44–47 days	0x5B	Off		30000		
48–51 days	0x5C	Off		30000		
52–55 days	0x5D	Off		30000		
56–59 days	0x5E	Off		30000		
60–63 days	0x5F	Off		30000		
▶ EIT schedule others						
▶ Services						
▶ Second ASI out	1021	8945	No id		🔗	

11.4.2 Character encoding

DVB specifies a number of standard encodings of text strings, e.g. Service Names and Service Provider Names. These include ISO 8859-1 ISO 8859-15, GB-2312, BIG5, and UTF8. To indicate the encoding used, there is a flag in the SDT. If there is no flag, the name decoding should use ISO 6937.

Some transmissions omit the flag, but choose not to encode in ISO 6937. You may also want to use an encoding that is not defined by DVB.

Character encoding settings for inputs
On the input side of Service Management, there are settings for text encoding for the Service Name and the Service Provider Name. These settings can be used if there is no encoding flag in the incoming SDT.

> **!** This setting only has effect if the input service does NOT have a flag for character encoding.

Character encoding settings for outputs
At the output side of Service Management, there are encoding settings at output level as well as at service level. A service will inherit the encoding of the output unless you have set a specific encoding setting for the service.

For input services:

■ Selecting a character encoding only has effect if the incoming SDT is without character encoding flag

For output services:

■ For a not changed service name, and the output encoding set to Automatic (default), the service name is copied directly from the inputs

■ For a not changed service, and the output encoding set to anything other than Automatic, the service name is decoded (according to the setting/flag for inputs), and encoded with the selected output encoding

■ For a changed service/service provider name, and the output encoding set to Automatic, the CHAMELEON tries to encode the configured service name in an encoding that fits the text, e.g. "abcd" is encoded with ISO 6937 while "åäö" encoded with ISO 8859-9

■ If the service/service provider name is changed and the output encoding is set to anything other than Automatic, the name will be encoded with the set encoding.

- Automatic
  Big5-HKSCS
  CP1251 (Windows-1251)
  GB-2312
  ISO-8859-1
  ISO-8859-2
  ISO-8859-3
  ISO-8859-4
  ISO-8859-5
  ISO-8859-6
  ISO-8859-7
  ISO-8859-8
  ISO-8859-9
  ISO-8859-10
  ISO-8859-11
  ISO-8859-13
  ISO-8859-14
  ISO-8859-15
  UTF-8 (Unicode)
  UTF-16 (Unicode)
  No DVB signaling

In all cases except the first, for "No DVB signalling" the encoding used is removed.

11.5 Descrambling and Common Interface

11.5.1 Common Interface and CAM/smart card

Descrambling requires a CAM to be inserted in one of the CI slots, and a smart card with the rights for descrambling the services. Note that multi-descrambling using professional CAMs is supported. CI settings are managed in the **COMMON INTERFACE** menu under **SETTINGS**.

**Insert the CAM and smart card in the CI slot**

Insert the CAM and smart card into the correct CI slot. From a rear view, CI slot 1 is to the left, CI slot 2 to the right.

> **!** Make sure that CAM is inserted with text side to the right

Select CI source – set which input to be connected to the CI slot

In the **COMMON INTERFACE** menu, Click **Edit**. Type a name for the CI. This name will appear in the Service Management as a input with type CI.
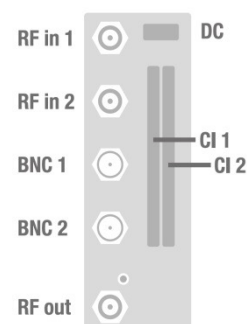
In the drop-down list of Select CI source, select the input to be connected to this common interface slot. The Bitrate selection in the drop-down list (72 Mbps, 62 Mbps, 55 Mbps) can normally be left at the default value 72 Mbps for all modern CAMs.
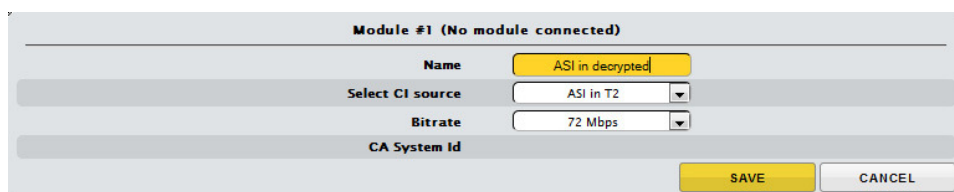
11.5.2 Descrambling – Service level & PID level

After selecting CI source in the COMMON INTERFACE menu, a new "input" of type CI will be displayed in the Inputs part of Service Management.

Select the services to be descrambled
Click the edit arrow ⬤ of the service you want to descramble, and select **Descramble** in the popup menu. To output a descrambled service, add the service from CI input to an output (see §11.4).

Descrambling status indication icons

🔒 Scrambled (service or PID)

🔓 Descrambled (complete service or individual PID)

🔓 Partly descrambled service (some of the services PIDs are descrambled)

❌❗ Unsucessful descrambling (complete service or individual PID)

❌❗ Unsucessful partly descrambled service

PID level descrambling

At the PID level in the Inputs of Service Management, click the edit arrow of the PID you want to descramble, and select **Descramble** in the popup menu.

NOTE: When selecting to descramble a PID, all other PIDs will by default be selected not to be descrambled. Hence, if you descramble on PID level, make sure that you select to descramble all PIDS that you want to descramble.
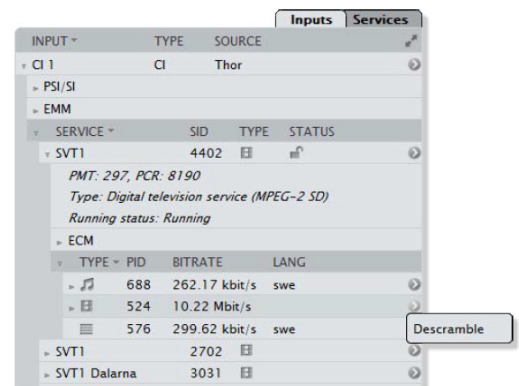
Descrambling for analogue output

In Operation mode Analog you have to use the **SERVICE MANAGEMENT** for handling the decryption. The analogue output service selection is made in the output menu, and when a CI source has been set, the list of available services for analogue output will include the services routed via the CAM.

11.6 Remultiplexing and PSI/SI
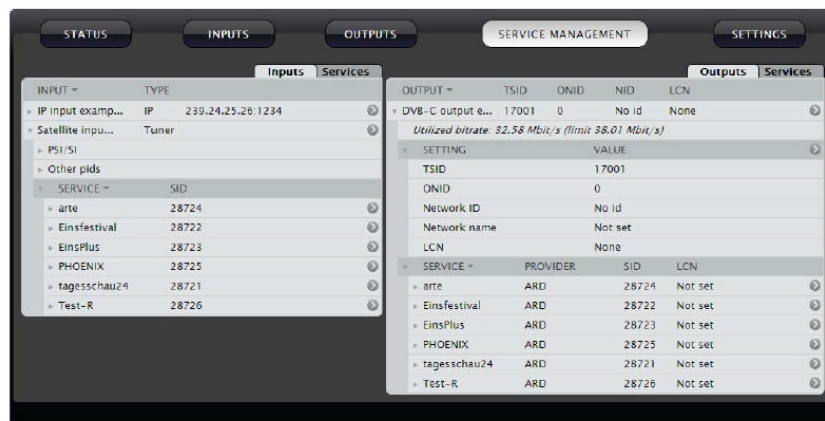
Remultiplexing

In a CHAMELEON, remultiplexing is automatically done as services are selected from the inputs to the outputs. As such, all remultiplexing is managed in **SERVICE MANAGEMENT.**

PSI/SI Management

The PSI/SI of the outputs are automatically generated as services are assigned to the outputs. Selecting services from a single input, or selecting services from several inputs both result in the updating of the PSI/SI tables of the outputs.

! Note that the SW option GNMUX is required for selecting services from several input sources to one output, and that the SW option GNSYMUX is required for sharing PSI/SI information between Chameleons.

DVB-Network PSI/SI Management

To create a DVB-network-wide correct PSI/SI structure, all CHAMELEONS in the same DVB network must be able to share PSI/SI information. The interconnection between the CHAMELEONS is enabled by the **HEADEND SYSTEM MANAGEMENT** functionality, see **§11.10**.

Further, the GNSYMUX SW option must be active to allow the interchange.

11.7 Service listings and service types

Input service listings

The services of an input transport stream (TS) or an output TS can be listed by navigating to the service level, see **§11.1**.

In the Inputs view of Service Management, expand an input, and expand Services to get a list of all services from this input.

To view a list of input services from all configured inputs, click on the Services tab to the right of the input side of Service Management.

Service listing information and types

The services in the input service listings have information columns SERVICE (service name), SID (service_id), TYPE (service type) and STATUS (indicating scrambling status).

The TYPE is indicated by icons (and also has mouse-over textual information):

Radio service	🎵
TV service	🎞
"Private data" (user defined)	👤
Data broadcast service	🗐

Output service listings

The services of an input transport stream (TS) or an output TS can be listed by navigating to the service level, see **§11.1**.

In the Outputs view of Service Management, expand an output, and expand Services to get a list of all services from this output.

To view a list of output services from all configured outputs, click on the Services tab to the right of the output side of Service Management.

Output service listing and information

The services in the output service listings have information columns SERVICE (service name), PROVIDER (service provider name), SID (service_id), LCN (logical channel number) and HD LCD.

OUTPUT ▾	TSID	ONID	NID	LCN	
▾ T out Tango	17001	2334	2111	Nordig	◉
Utilized bitrate: 14.71 Mbit/s (limit 31.67 Mbit/s)					
▸ Settings					

SERVICE ▾	PROVIDER	SID	LCN	HD LCN	
▸ Discovery Channel	SKY	14	1	51	◉
▸ NatGeo Wild	SKY	12	2	52	◉
▸ Sky Bundesliga 1	SKY	223	3	53	◉
▸ Sky Select	SKY	18	4	54	◉

11.8 PIDs and PID listings

PIDs and PID listings and PID types

The PIDs of an input transport stream (TS) or an output TS can be listed by navigating to the PID level, see **§11.1**. In the Inputs view of Service Management, all PIDs including PSI/SI PIDs, EMM PIDs and unreferenced PIDs are listed.

The Outputs view lists the audio PIDs, video PIDs, teletext PIDs and data PIDs related to the services.

In the Services views of the Service Management, the service PIDs (audio PIDs, video PIDs, teletext PIDs and data/unknown PIDs) are listed.

PID types and PID information

All PID listings have (at least) 3 columns:

- PID number

- PID type

- Bitrate

INPUT ▾	TYPE		
▸ IP input examp...	IP	239.24.25.26:1234	◉
▾ Satellite inpu...	Tuner		◉

PSI/SI PID ▾	TYPE	BITRATE
0	PAT	3.17 kbit/s
1	CAT	3.17 kbit/s
16	NIT	2.58 kbit/s
17	SDT	13.59 kbit/s
18	EIT	817.35 kbit/s
20	TDT	3.00 kbit/s
20	TOT	3.00 kbit/s
100	PMT	6.72 kbit/s
200	PMT	6.72 kbit/s
300	PMT	6.66 kbit/s
400	PMT	6.66 kbit/s
500	PMT	6.66 kbit/s
600	PMT	6.70 kbit/s

SERVICE ▾	SID	
▾ arte	28724	◉
PMT: 400, PCR: 401		

PID ▾	TYPE	BITRATE	LANG
▸ 401	▤	6.88 Mbit/s	
▸ 402	♫	203.60 kbit/s	deu
▸ 403	♫	203.34 kbit/s	fra
▸ 404	☰	262.62 kbit/s	deu
▸ 470	◉	10.08 kbit/s	
▸ 2171	◉	90.04 kbit/s	

▸ Einsfestival	28722	◉
▸ EinsPlus	28723	◉
▸ PHOENIX	28725	◉
▸ tagesschau24	28721	◉
▸ Test-R	28726	◉

PSI/SI PID types are given as table acronyms such as PAT, CAT NIT. Service PID types are indicated with icons:

Audio PIDs: ♫

Video PIDs: ▤

Teletext PIDs: ☰

Data PIDs: ▦

For outputs, the incoming as well as the outgoing PID number is listed in the columns IN and OUT. Often the outgoing PID number is the same as the incoming PID number, but if the PID number already exists in the system, there is an automatic PID remapping to avoid PID clashes. Just as for the PIDs of the input services, the stream (PID) types are indicated with icons.

SERVICE ▾	PROVIDER	SID	LCN	HD LCN	
▾ ATM Rozrywka TV	Cyfrowy Pols...	10511	Not set	Not set	◉
▸ Settings					

STREAM ▾	IN PID	OUT PID	STATE		
♫	442	442		✓ ✗	◉
♫	443	443			◉
▤	441	441			◉
☰	444	444			◉

11.9 Outputs TS DVB Network settings

TSID, ONID, NID, LCN type and Network Name

Each outgoing TS has a set of identifiers: TSID (transport stream ID), ONID (original network ID), NID (network ID), LCN (logical channel numbering type) and Network Name. All identifiers can be edited by clicking the edit arrow

OUTPUT ▾	TSID	ONID	NID	LCN	
▸ ASI out 52 (to...	17001	4	4	None	◉
▾ November T out...	55	23	3131	Nordig	◉
Utilized bitrate: 5.30 Mbit/s (limit 31.67 Mbit/s)					
▾ SETTING		VALUE			◉
TSID		55			
ONID		23			
Network ID		3131			
Network name		Sixten			
LCN		Nordig			

TSID

The transport_stream_id (TSID) is a 16-bit field which serves as a label for identification of this TS from any other multiplex within the delivery system. Hence, the TSID has to be unique within a DVB Network.

ONID and NID

The SI uses two labels related to the concept of a delivery system, namely the network_id (NID) and the original_network_id (ONID). The latter is intended to support the unique identification of a service, contained in a TS, even if that TS has been transferred to another delivery system than the delivery system where it originated.

> **!** If no network_id (NID) is set, the outputs will not contain any NIT.

Network Name

A string of characters that specify the name of the delivery system about which the NIT informs.
A change of the Network Name is propagated to all TS with the same NID.

LCN (LCN type)

The LCN type specifies which LCN implementation to use. For a DVBNetwork, the LCN type should be the same for all outgoing muxes.
Available LCN types are Nordig, EACEM and ITC (Independent Television).

> **!** The LCN number is edited in the settings for each service.

11.10 Outputs services settings

Service name, service provider name, service ID and LCN number

Each service in an outgoing TS has a set of identifiers: Service name, service provider name, service ID (SID) and LCN number. These identifiers are listed for all output services. All identifiers can be edited by clicking the edit arrow

SERVICE ▾	PROVIDER	SID	LCN	HD LCN	
▾ Discovery Channel	SKY	14	1	51	◉
▾ SETTING		VALUE			◉
Name		Discovery Channel			
Provider		SKY			
SID		14			
LCN		1			
HD LCN		51			
▸ Pids					
▸ NatGeo Wild	SKY	12	2	52	◉
▸ Sky Bundesliga 1	SKY	223	3	53	◉
▸ Sky Select	SKY	18	4	54	◉

SID

The service ID is a 16-bit field which serves as a label to identify this service from any other service within a transport stream (TS). Hence, the service ID is a unique identifier of a service within a TS.

Service name and service provider name

The service name and the service provider name is textual information used by the receivers to display information about the services.

LCN (LCN number) and HD LCN number

The LCN number, which will be used by a receiver to make a channel list, is edited for each service in each outgoing mux. For correct functionality, the LCN number must be unique for each service within a DVB network. For managing automatic reconfiguration of channel lists depending on receiver capability, the HD LCN can be used.

11.11 The System management and DVB Network PSI/SI

For creation of a network-wide correct PSI/SI structure in a DVB Network, information about PSI/SI has to be shared between the CHAMELEON modules in the same network. The basis for such a sharing is that the CHAMELEONS are connected via a switch, and that a communication is set up between the CHAMELEONS. Additionally, all CHAMELEONS that are to share PSI/SI information must have the SW option GNSYMUX.

Headend System management

Under **SETTINGS**, in the **HEADEND SYSTEM MANAGEMENT** menu, you can select CHAMELEONS in the same local (layer 2) network to be members in the same group, a HE Group.

When clicking **EDIT**, all CHAMELEON in the local IP network will be listed by their serial number.

To add a CHAMELEON to a HE Group, click the green ⊕ in the list of Selectable units. Please note that the settings done in one CHAMELEON will automatically update the headend System Management settings also for all CHAMELEONS in the same group.

DVB network and PSI/SI sharing – network settings

When setting up a system where PSI/SI information is shared, you must also select network settings for all outgoing transport streams. The network_id (NID) must be identical for all outgoing transport streams, and all the transport streams must have different Transport Stream ID (TSID), see also **§11.9**.

	T out 1 E33 (570)	17001	20	2117	Nordig		
	T out 2 E36 (594)	17002	20	2117	Nordig		

11.12 Transmodulation and transparent outputs
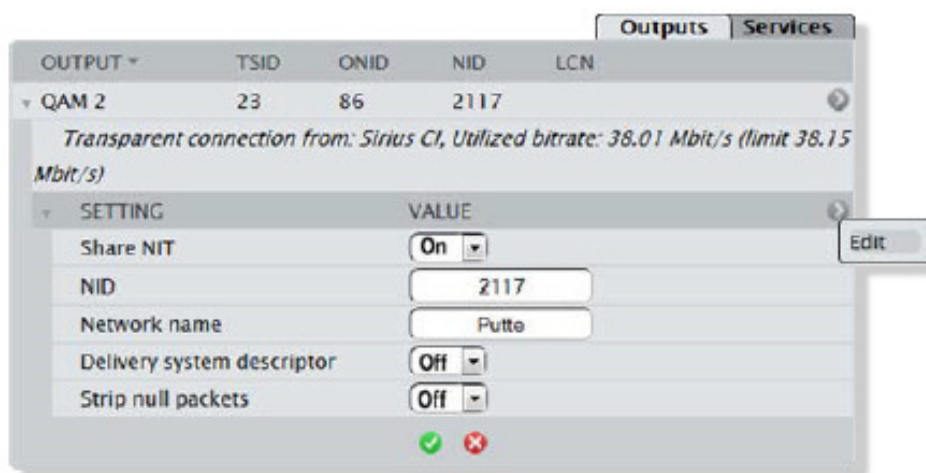
Connect input to output transparently

An input can be sent transparently to an output by selecting **"Connect transparently to"**. When an input is **"connected"** to an output, as default there is no change of the content of the transport stream from input to output:

■ All services, with all PIDs are sent from the input to the output

■ The PSI/SI tables are sent from input to output without any change or modification

Settings for transparent outputs

As an alternative to the default setting (no change of content or signalling) there are settings available for sharing NIT, Network ID (NID), Network name and Delivery system descriptor. You can also select to remove null packets from the output.

To edit these settings, click the ▶ for Settings, and then click the tailing ⊙ and select Edit.

	Outputs	Services		
OUTPUT ▾	TSID	ONID	NID	LCN
▾ QAM 2	23	86	2117	

Transparent connection from: Sirius CI, Utilized bitrate: 38.01 Mbit/s (limit 38.15 Mbit/s)

SETTING	VALUE	
Share NIT	On	Edit
NID	2117	
Network name	Putte	
Delivery system descriptor	Off	
Strip null packets	Off	

# 12 Encryption – DVB-CSA scrambling and Simulcrypt

Conditional Access System (CAS) general information

A conditional access system generally consists of two main subsystems:

■ A scrambling subsystem that a) scrambles the signal to prevent non-subscribers from receiving it and b) descrambles the signal at the subscribers' receivers.

■ An access control subsystem that processes access control messages to determine whether descrambling is to be performed.

A CHAMELEON used in this context contains a Control Word Generator (CWG) generating Control Words (CW) for the scrambling (DVB-CSA). To enable de-scrambling at the receiver side, the CW is transmitted in encrypted format as ECMs. The ECMs are created by the CAS, based on the CW, and an Access Criteria (AC) supplied by the CAS.

The access control system is handled by EMMs. EMMs are received from the CAS, and included in the outgoing transport streams.
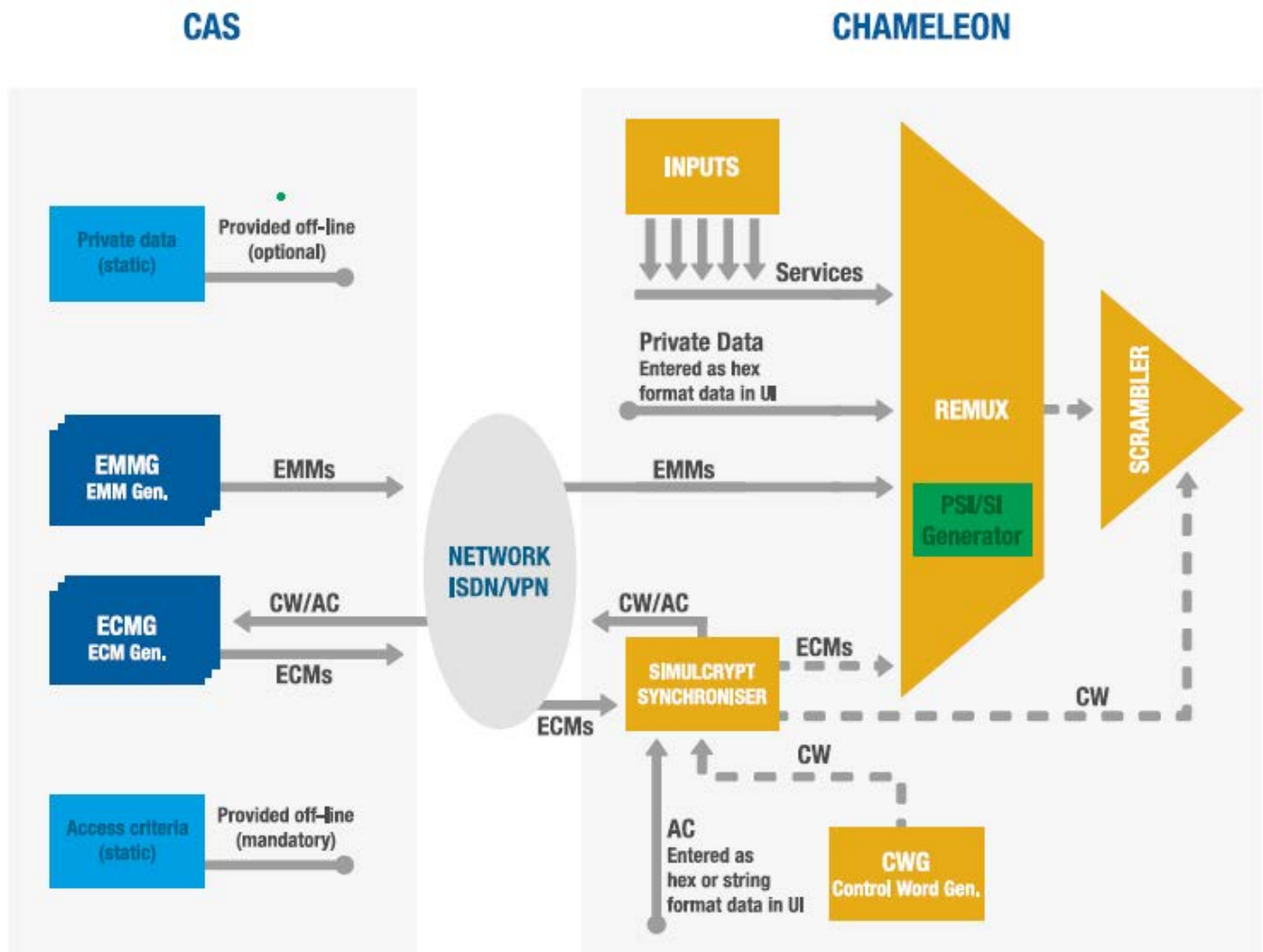
CAS vs. CHAMELEON interface structure

When setting up a CHAMELEON for scrambling, there are 2 main interconnections between the CHAMELEON and the CAS to be established:

■ The connection for receiving EMMs from the CAS

■ The connection for transmitting CW/AC to the CAS, and receiving the ECMs

Apart from this, there are some parameters/identifiers that has to be set internally in the CHAMELEON.

EMM communication req's

■ CHAMELEON IP address for the IP interface used for Simulcrypt, and port for receiving the EMMs (EMM port) has to be given to the CAS.

■ The Client ID has to be provided by the CAS, and entered in the CHAMELEON UI when setting up the connection.

The internal identifiers that has to be set in the CHAMELEON UI is the EMMg name. The EMM PID will be automatically assigned by the Chameleon, and can be changed in Service Management.

ECM communication req's

■ The CAS IP address to be entered in the CHAMELEON UI.

■ The SuperCAS ID, specified by the CAS, has to be entered in the CHAMELEON UI.

■ The ECM port, the port that CHAMELEON should connect to for the ECMs, must be supplied.

■ The Access Criteria has to be given by the CAS.

The internal identifiers that has to be set in the CHAMELEON UI is the ECMg name.
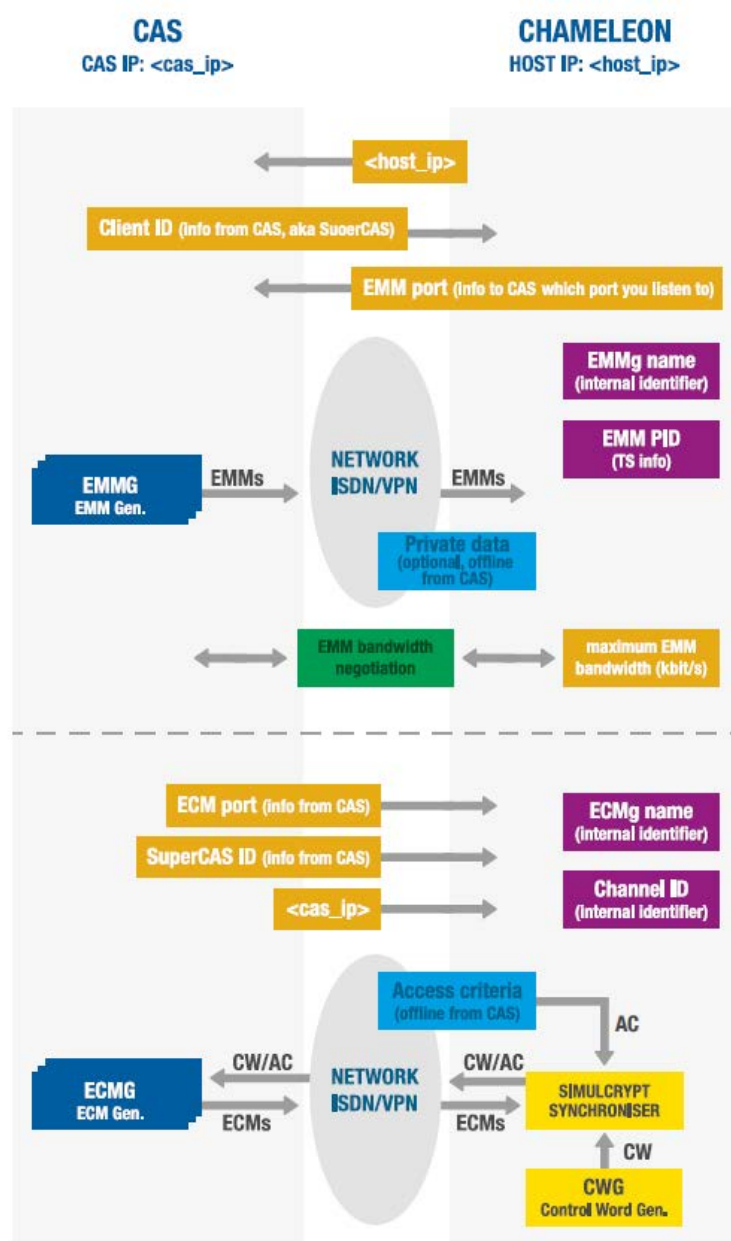
12.1 Encryption - scrambling overview

Encryption overview

Scrambling of services, or PIDs in services, requires a connection to a CA Server (CAS). CHAMELEON can connect to the CAS via the management IP interface or via the streaming interface. For setting up, or changing a network interface, for scrambling, set Simulcrypt to "On". For details about network interfaces, please refer to §13.1.

Setting up encryption in CHAMELEON includes the following steps:

1. Create your outputs, and add the services you want to have in your outputs

2. (Set up your CAS for EMM and ECM generation)

3. Add EMM Generator connections to the CHAMELEON SimulCrypt interface

4. Add EMM connection to the output(s)

5. Add ECM Generator(s) to the CHAMELEON SimulCrypt interface

6. Create Scrambling Control Groups (SCG) and set up connect ions to the ECMg

7. Connect the service(s) to be scrambled to an Scrambling Control Group (SCG)

Notes

■ In FW version 1.8.2, you can encrypt DVB-C, DVB-T, DTMB, J.83 Annex B, J.83 Annex B and ASI outputs.

■ The maximum number of PIDs that can be encrypted is 64 PIDs per output

■ The maximum number of encryption keys (SCG) is 64.

12.2 Add EMM Generator connections

The CA Server set-up for EMM and ECM generation is not covered by this manual. Please contact your CAS supplier for information.

The IP address to be entered in the CAS is the IP address of the CHAMELEON network interface used for SimulCrypt communication.

Adding an EMM Generator connection

In the **SimulCrypt** menu under **SETTINGS**, click **ADD** under the EMM Generators box.

1. Enter a name for the EMMg

2. Enter the Client ID (info from CAS supplier, often same as the superCAS). The Client ID should be entered as a hex number, but without the 0x prefix. As an example, if the Client ID is given as 0x320011ac, you should enter 320011ac in the UI. The Client ID shouldalways be 8 hex digits.

3. Select the Network interface you are using. Select a Simulcrypt enabled interface in the drop-down list, or remain with Auto. If Auto, the Chameleon will scan all Simulcrypt enabled interfaces and check if a connection can be established based on port and Client ID.

4. Enter the PORT (as the port stated by the CAS)

5. Optionally,, enter private data

6. Set the EMM bandwidth (check with your CAS provider)

7. Click the green OK tick ✅

Adding another EMM Generator connection

Repeat the steps above.

### EMM Generator connection status during initialisation

After configuring the EMMg, the CHAMELEON will start listening for a connection to the CA server. If the connection is established correctly, the STATUS of the EMMg is "Client connected".

12.3 Add EMM connection to the output(s)

Connecting an EMM Generator to an output

In **SERVICE MANAGEMENT**, for an output, click the grey arrow ⊙ to the right of an output. In the pop-up menu, select "Add EMM connection". Select the EMM generator you want to use for this output.
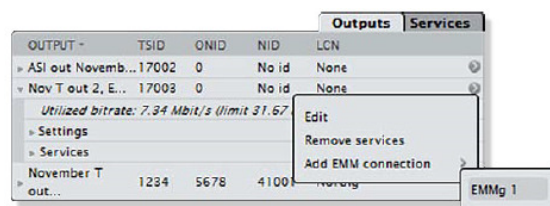
EMM information, and EMMg removal

An output connected to an EMMg will have an EMM entry under **Settings**. To remove an EMMg, click the ⊙ and select **Remove**
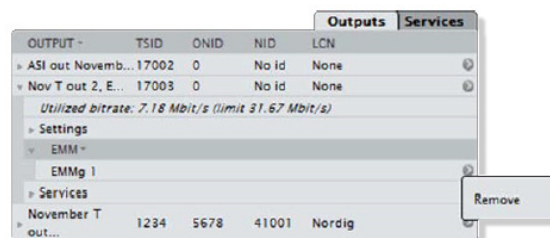
12.4 Add ECM Generator connections

The CA Server set-up for EMM and ECM generation is not covered by this manual. Please contact your CAS supplier for information.

Adding an ECM Generator connection

In the SimulCrypt menu under **SETTINGS**, click **ADD** under the ECM Generators box.

1. Enter a name for the ECMg (internal name/identifier, default name ECMg 1 is OK)

2. Enter the Super CAS ID (info from CAS supplier). The Super CAS ID should be entered as a hex number, but without the 0x prefix. As an example, if the Super CAS ID is given as 0x320011ac, you should enter 320011ac in the UI.

3. Enter the HOST ADDRESS, the IP address for the CAS (information from your CAS supplier)

4. Enter the PORT (information from your CAS supplier)

5. For Interface, select a Simulcrypt enabled interface in the drop-down list, or use Auto. If you use Auto, the Chameleon will try to connect using one interface at the time, and connection will be based on CAS IP address and port.

6. Click the green OK tick ✅ .

When the communication between the CHAMELEON and the CAS is established: STATUS is **Open**

12.5 Add SCG (Scrambling Control Group)

In the SIMULCRYPT menu, under SCG, click ADD to add a Group.

1. Enter e name for the SCG

2. Set the Crypto Period duration (CP Duration). This must be set to a duration higher than the minimum allowed CP duration set in the CAS.

3. Select Scrambling Policy in the drop-down list:

Never (never scramble)

All ECMgs connected (scramble only if all ECMgs are connected)

Any ECMg connected (scramble as soon as there is, or as long as there remains, a connection to any ECMg)

Always (scramble always, i.e. the outgoing service will always be scrambled with the created CW, even if there is no possibility for the CAS to create an ECM. If all connections to the CAS for ECM are lost nobody will be able to descramble)

4. Select Scrambling fall-back policy in the drop-down list:

Revert to clear (if connection to CAS lost for ECM, go to not scrambling)

Keep last CW (if connection to CAS lost for ECM, keep scrambling, but keep using the last used Control Word (CW), and the last received ECM. This means that even if the connection is lost, the Chameleon will continue scrambling using the last CW that will correspond to the last received ECM from the CAS, and receivers can continue descrambling..

12.6 Edit Group in SCG (set up connection to ECMg)

Scrambling Control Group (SCG) (ETSI TS 103 197 V1.5.1): data structure gathering together in one same logical set the list of A/V streams scrambled at the same time with the same control word and the list of ECMs that are going to be generated with the identifier of their CA system and with their respective Access Criteria

After adding an SCG, edit the group to set up connection to an EMMg.

1. Set ENABLED to ON

2. Enter an ECM ID (You can select any numerical value, as long as it will be unique for your network.)

3. Select how to enter the ACCESS CRITERIA: HEX or ASCII

4. Enter the ACCESS CRITERIA (info from CAS supplier)

5. Optionally: enter private data

6. Click green OK tic

Status at this stage (before any service is connected to the Group in Service Management)

In the Group header: "No services connected"

Under Details:

- Status   No services connected

- Scrambling status   Scrambling

- Current crypto period   235 (increasing with new CW being created)

SCG ▾	CP DURATION	SCRAMBLING POLICY	SCRAMBLING POLICY FALLBACK	STATUS	
▾ My group	10000	All ECMGs connected	Keep using last CW	No services connected	❷
▾ DETAIL		VALUE			
Status		No services connected			
Scrambling status		Scrambling			
Current crypto period		235			
▾ ECM ▾	ENABLED	ECM ID	ACCESS CRITERIA	PRIVATE DATA	
▸ ECMg 1	On	13	HEX ▾ 00000000		❷

12.7 Connect output services to an SCG (to a group)

Connecting a service to a Scrambling Control Group (SCG)

In **SERVICE MANAGEMENT** under **Outputs**, click the grey arrow ❷ to the right of a service.

In the pop-up menu, select **Connect to SCG**, and select the Scrambling Control Group you want to connect to.

When an output service connected to a Scrambling Control Group is expanded (clicking the leading ▶), the SCG it is connected to is displayed below the service name.

Services that are scrambled are indicated with a padlock 🔒

For the services connected to an SCG, all video and audio PIDs will be scrambled.

Scrambling (or not) on PID level

In the PID listing of a scrambled service, you can select which PIDs you want to scramble or not. Click the grey arrow ❷ to the right of a PID, and select Scramble ❷ , and then Scramble or Do not scramble.

OUTPUT ▾	TSID	ONID	NID	LCN	Outputs Services
▾ ASI out scrambled	17001	32	33	Nordig	❷
Utilized bitrate: 2.84 Mbit/s (limit 40.00 Mbit/s)					
▸ Settings					
▾ EMM ▾		PID			
Cryptoguard EMMg		6000			❷
▾ SERVICE ▾	PROVIDER	SID	LCN	HD LCN	
▸ EU TV	ESS	7704	1	Not set	❷
▸ Inedit TV	ESS	1059	2	Not set	❷

Edit
Revert changes
Remove
Connect to SCG
Disconnect   My group
Character encoding

OUTPUT ▾	TSID	ONID	NID	LCN	Outputs Services
▾ ASI out scrambled	17001	32	33	Nordig	❷
Utilized bitrate: 3.39 Mbit/s (limit 40.00 Mbit/s)					
▸ Settings					
▾ EMM ▾		PID			
Cryptoguard EMMg		6000			❷
▾ SERVICE ▾	PROVIDER	SID	LCN	HD LCN	
▾ EU TV	ESS	7704	1	Not set 🔒	❷
▸ Settings					
▾ ECM ▾		PID			
My group – ECMg 1		6001			
▾ TYPE ▾	IN	OUT	STATE		
♪	7604	7604	🔒		❷
▦	7504	7504	🔒		❷
▸ Inedit TV	ESS	1059	2	Not set	❷

12.8 Simulcrypt menu for a correct set-up

Status information for OK set-up:

■ **EMM Status:** Client connected

■ **ECM Status:** Opened

■ **SCG Status in Group header(s):** Scrambling (this will be the case if a service is connected to an SCG in Service Management)

Under Details in each group under SCG:

■ **Status:** Scrambling

■ **Scrambling status:** Scrambling

■ **Current crypto period:** xyz (increasing with new CW being created)

Group Status (Connections under SCG):

■ **Enabled:** ON

■ **ECM ID:** existing and unique

■ **Access criteria:** entered (as HEX or ASCII)

13 Settings: Managing the CHAMELEON module

Under **SETTINGS**, all module specific setting are managed.

NETWORKING: Networking settings for IP interfaces, see **§13.1**.

HEADEND SYSTEM MANAGEMENT: for CHAMELEON interconnection, see **§11.11**

MODE: selection of output mode, see **§8**

COMMON INTERFACE: In the COMMON INTERFACE menu, you select the input source for the CI, and you have access to the menu from the inserted CAM or CAMs. See **§11.6**.

SIMULCRYPT: for setting up EMM and ECM connections to a CA Server, and connecting ECM streams to Scrambling Control Groups, see **§12** and sub-paragraphs.

DATE AND TIME: Settings for TDT source, and connection to NTP server. See **§13.2**

SCHEDULER: Task scheduling for scripts, see **§13.3**

**SNMP:** settings for SNMP, traps etc., see **§13.4**

SAP: settings for Session Announcement Protocol, see **§13.5**

USER MANAGEMENT: password protection for UI access, see **§13.6**

SOFTWARE AND ENTITLEMENT UPGRADE: Software upgrade, used both for uploading new FW and for uploading SW options (entitlement files), see **§13.7**

MAINTENANCE: For software reboot, factory reset and configuration backup and restore, see **§13.8** and **§13.9**

LOG: For displaying logged data, see **§13.10**
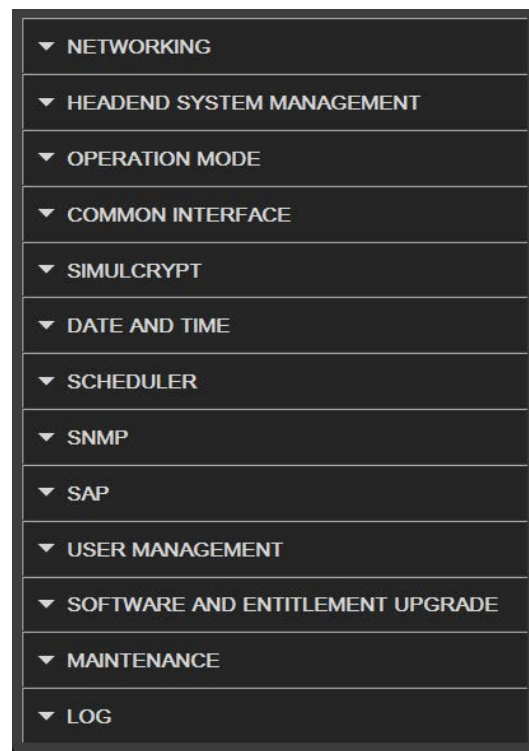
13.1 Add and configure Network interfaces

Adding network interface for streaming

1. Click on **NETWORKING** in the **SETTINGS** tab

2. Click **Add new interface**

3. Type a name for the interface

4. Enter the IPv4 address, the Netmask and the Gateway

5. Select IGMP version

6. Select the capabilities needed for the interface (e.g. Streaming)

7. Click **SAVE**

CHAMELEON has 2 IP ports in the front, a 10/100 Ethernet management port, and a GigE port for streaming. By default, there are no IP interfaces defined for the streaming port. When connecting a PC to the streaming port, the Ethernet port of the PC must have GigE capability. CHAMELEONS installed in a GN50 base unit use the backplane connector for both management and streaming interfaces.

Creating a new streaming interface, see also §12.1

13.2 Date and time (NTP server access and Time sources)

The **DATE AND TIME** menu allows you to connect the CHAMELEON to an NTP server for establishing a valid UTC time reference. The time reference can be used as a time source for the creation of the TDT table. The TDT and TOT is used to enable receivers to detect correct time, and is also the time basis for the EPG (EIT).

The connection to an NTP server requires Internet connection to the CHAMELEON.

As an alternative, TDT information from incoming streams from the input sources can be used as a time source.

NTP server connection for UTC time reference

In the **DATE AND TIME** menu under **SETTINGS**, click **Edit**

1. Select your Time zone in the drop down list

2. Select daylight saving time **ON/OFF**

3. Enter a valid URL to an NTP server (e.g. ntp.pool.org)

4. Click **Save**

The added NTP server will be shown under Time sources. The UTC time from the NTP server is displayed, and if there are other valid time sources, their times will also be displayed.

As default, the NTP time reference is used for the TDT.

NAME ▼	TIME	USED	ENABLED	
IP input example		NO	On	❯
NTP		YES	On	❯
Satellite input e...	2013-06-12 13:17:56	YES	On	❯

Selecting Time source for the TDT manually

1. Click the grey edit arrow ❯ to the right of the Time source that is indicated as **YES** under USED

2. Select **OFF** in the drop-down list under ENABLED

3. Click the green confirmation symbol ✔ , or click enter

The Time reference will automatically switch to another Timer source.

13.3 Scheduler – commands scripting

The **Scheduler** is a task scheduler that can be used to run LUA commands from the UI of the CHAMELEON. The triggering of the tasks (set of commands) are based on local time (hour and minute), with the time source in **Date and Time** as reference.

Adding a new task

1. Click the green plus ➕ , or **Add new task**.

2. Enter a name for the task

3. Set the time the task should be run (hh:mm)

4. Enter the LUA commands in the Lua script window

5. Click **Save**

> 💡 For information about available LUA commands, please contact Support.

Adding a new task

Running (testing) a task

You can test a task / the LUA commands manually by clicking **Execute Script**

13.4 SNMP

SNMP, Simple Network Management Protocol

SNMP can be used for alarms (traps/notifications) or to read (Get) or write (Set) information from/to a CHAMELEON.

To use SNMP, you need an **NMS** (Network Management System) that is connected to the CHAMELEON.

SNMP versions supported

In the current implementation, SNMP v1 and SNMP v2c is supported.

SNMP settings

■ **Enable agent:** for turning the SNMP agent in CHAMELEON ON/OFF

■ **Agent port:** UDP listen port (161 is the standard port used)

■ **Agent community read string:** a "password" that has to be set in the NMS. The standard default string is "public".

■ **Agent community write string:** a "password" that has to be set in the NMS. The standard default string is "private".

■ **Enable traps:** for turning ON/OFF the alarm functionality

■ **Traps address:** destination address of the NMS receiving the traps

■ **Destination port:** destination port of the NMS receiving the traps

■ **Traps Community string:** a "password". Should be stated in the NMS. Default standard: "public"

> **Please contact Support for information about the MIB, MIB structure and NMS integration.**

Supported traps and SNMP read/write in FW2.0

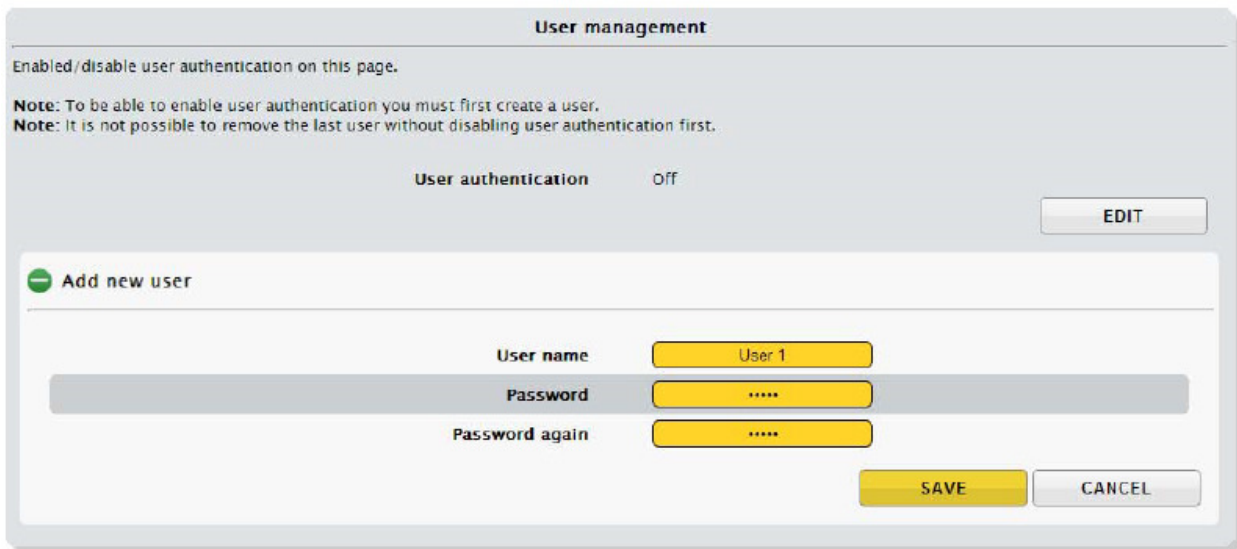| SNMP traps	SNMP read/write
■ Tuner locked status change ■ Loss of IP input bit rate (IP input bit rate = 0) ■ IP input changed alternative input (for input redundancy) ■ CHAMELEON temperature exceeding 65 °C ■ Video decoder not running ■ FM decoder running / not running ■ PAT on input timed out ■ Simulcrypt EMMg connected/disconnected ■ Simulcrypt ECMg connected disconnected	■ Tuner input status ■ Tuner input configuration ■ IP input status ■ IP input configuration ■ CHAMELEON module temp. (read only) ■ CHAMELEON module name (read only) ■ CHAMELEON module description (read only) ■ GN50 slot number (read only)

13.5 SAP

Session Announcement Protocol (SAP) is a protocol for broadcasting multicast session information (corresponding to SDT and NIT for DVB transmissions). The information transferred over the SAP transport is formatted in compliance with the Description Protocol (SDP) format defined in RFC 2327. Under SAP, senders periodically broadcast SDP descriptions to a well-known multicast address and port. A SAP listening application can listen to the SAP multicasts and construct a guide of all advertised multicast sessions.

In Chameleon, when IP SPTS is used as output, the SAP can be enabled, and the Announcement interval can be set.

13.6 User management – password protection

The **User Management** allows settings of password for the UI. You can add users, and create passwords for each user.

Adding a user and password

1. Click **Add new user**, or the green plus ⊕

2. Enter a user name

3. Enter a password

4. Confirm the password by entering it again

5. Click **Save**
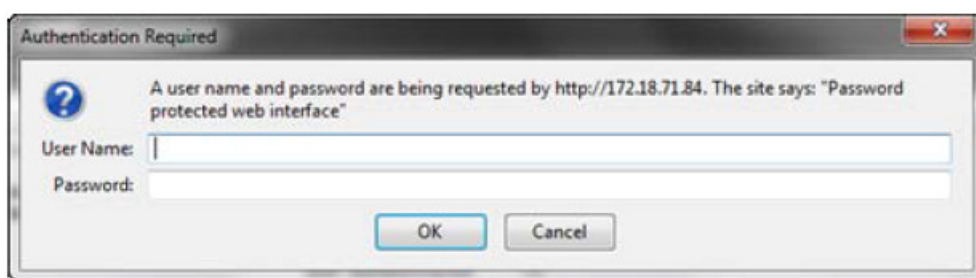
Enabling password control

1. Select **User authentication ON**

2. Click **Save**

The web UI will respond with a "Authentication Required" where you should enter the user name and password.

> **!** Make sure to remember your user names and passwords!

13.7 Software and SW options (entitlement) upgrade

Both FW and SW options are uploaded via the **Software and Entitlement Upgrade** in the **Settings** tab. Additionally, there is status information about the running software version, and, if a new software is uploaded, also about the latest (not running) software version.

Uploading Firmware

1. Click **Upload**. Click Browse… in the pop-up, and select the software file (*.bin file) to be uploaded from your computer

2. Click the **Upload** button

3. After upload complete message, reboot the module
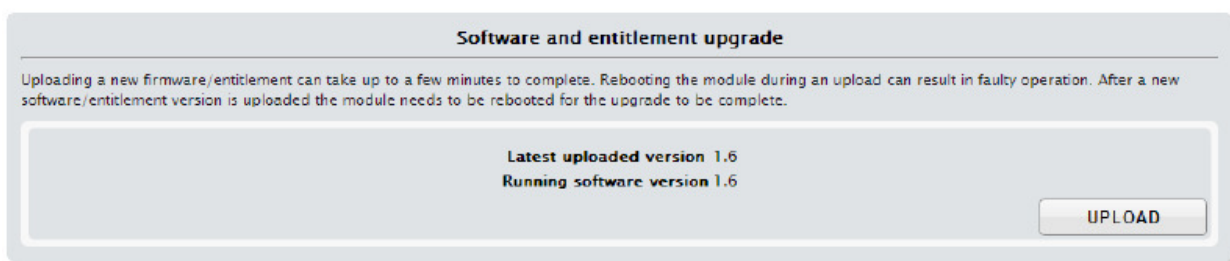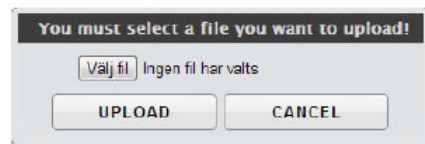
Uploading software options

1. Click **Upload**. Click **Browse**… in the pop-up to browse for the software options file (*.ent) for this specific CHAMELEON module

2. Locate the software options file on your computer, and select it

3. Click the **Upload** button

4. Reboot the module

> The SW options file will have the format <serial number>.ent. If you need to, you can download the entitlement file from the wisiconnect.tv portal, see §4.

13.8 Module maintenance

Reboot

Some operations, such as upgrading the software, requires a reboot. Click the **Reboot** button to reboot the unit. During the rebooting process, Rebooting will be shown.

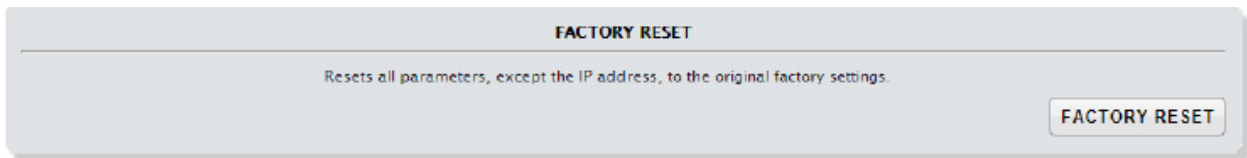### Reboot from Rescue mode

In very special circumstances the CHAMELEON can enter the Rescue mode. Click the **Reboot** button in the rescue mode to return to normal mode. Make sure to re-enter the IP address of your CHAMELEON in the address field of your browser to access the normal mode web GUI. In the rescue more, you can access basic functionality, and upload new software and software options.

13.9 Factory reset & Backup/Restore

Factory reset

The CHAMELEON module can be reset to the same status as when delivered from the factory, apart from the SW option that will remain as before factory reset, and the management IP address that will be kept. Go to the **Settings** tab, and **Maintenance**. Click on **Factory Reset**.

FACTORY RESET

Resets all parameters, except the IP address, to the original factory settings.

[FACTORY RESET]

Backup and restore (saving configuration)

The backup and restore functionality gives you the possibility to save the complete configuration of a CHAMELEON to your computer. The stored file is in xml format.

The backup file can be used for e.g. copying configurations between different installations, or keeping a possibility to upload the original configuration to a CHAMELEON if you have tested a different configuration.

Additionally, the backup file is useful for sup

BACKUP AND RESTORE

You can choose to make a backup of the settings in the module or restore the settings here.

[BACKUP]   [RESTORE]
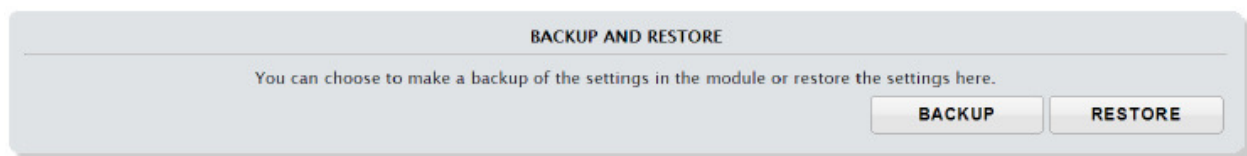
13.10 Log

The Log contains information about rebooting and failures/exceptions. You can also enable Syslog for logging more information. If the Chameleon has access to a time reference, the log entries are time stamped.

Log

A '*' in the date field means that the time given is since the last boot of the module. The log is sorted in descending order.

Syslog   Off

[EDIT]

DATE	TIME	PRIORITY	MESSAGE
2013-09-05	07:25:25	INFO	Unit booting
2013-09-05	07:25:23	INFO	Manual reboot
2013-09-05	07:24:45	INFO	Unit booting
*	1m 43s	INFO	Automatic reboot after Operation mode change
*	0s	INFO	Unit booting
*	1m 44s	INFO	Automatic reboot after factory reset

[RESET SORTING]   [CLEAR]

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14 Status information

The **Status** tab gives a general overview over the CHAMELEON module. This page is also the starting page for the web UI.

MODULE IDENTIFICATION

Serial number and the HW version is shown. Further, there are 3 editable fields; Name, Location and Description. Clicking **Edit** below the box enables you to save your own selected information about this CHAMELEON module.

CONFIGURATION

The configuration box shows you the Operation mode, the Software version, and the enabled SW options. A warning will be shown if no operation mode is selected.

STATUS

Uptime (from last reboot), and current module temperature.

SERVICE LICENCE AGREEMENT

Shows if the CHAMELEON is registered at the wisiconnect.tv portal, and the expiry date of the service level agreement. If the demo/trial period is still on, the remaining demo uptime is displayed. If not, **Demo Expired** will be shown.

| STATUS | INPUTS | OUTPUTS | SERVICE MANAGEMENT | SETTINGS |

MODULE IDENTIFICATION

Serial	0430011081500005
Hardware revision	1102
Name	Chameleon 1
Location	GN40
Description	S/S2/T/C

EDIT

CONFIGURATION

Operation mode	DVB-T mode
Software version	2.0
Software options	GNALL, GNHWUW

STATUS

Uptime	02m 09s
Temperature	47.5 °C

SERVICE LICENSE AGREEMENT (SLA)

Demo	Terminated
Registered	Yes
Expires	2014-10-09

15 Software options

CHAMELEON "products" range from receiver, to edge, to streamer and to scrambler. The different "products" realisations are controlled by the SW options enabled in any specific CHAMELEON module.

To get an overview of all different SW options currently available, please contact your sales representative or contact the CHAMELEON Support.

List of uploaded SW options

Under the **Status** tab, all enabled SW options are listed.

How to get and upload additional SW options

Please contact your sales representative at Taylor .Oldham

> **!** During DEMO trial period all SW options are enabled. Don't forget to order SW options needed for the actual installation.

Available software options

INPUT	PROCESSING	OUTPUT	MISCELLANEOUS
DVB-C Receivers GNC, GNDC	**Common Interface Decryption** GNCI, GNDCI	**DVB-C Modulators** GNCMOD, GNDCMOD, GNTCMOD, GNQCMOD	**MPEG Encoder** GNHWENC
DVB-S/S2 Receivers GNS2, GNDS2	**Simulcrypt Scrambling** GNSCR	**J.83 Annex B/C Modulators** GNJ83B, GNDJ83B, GNJDJ83C, GNQJ83C	**System Management** GNSYSMG
DVB-T/T2 Receivers GNT, GNDT, GNT2, GNDT2	**Remultiplexing** GNMUX, GNSYMUX	**DVB-T Modulators** GNTMOD, GNDTMOD	**Service License Agreement** GNM1, GNM3
ASI input & output GNASI, GNDASI	**Redundancy** GNRED	**Analogue Modulators** GNVMOD, GNDVMOD	**All Software Options** GNALL
IP Streaming input & output GNSTR, GNSTREC	**Dolby AC3** GNDOL	**FM Radio** GNDFM, GNOCTFM	
		DTMB Modulator GNDMOD	
		SDI output GNSSDI, GNDSDI	
		ASI input & output GNASI, GNDASI	
		IP Streaming input & output GNSTR, GNSTREC	