



EKSELANS BY ITS

USER MANUAL

CM 8SH CI-TC

082256

DVB S/S₂ TO COFDM/QAM
WITH DUAL CI TRANSMODULATOR

V01

TABLE OF CONTENTS

INTRODUCTION:.....	3
Description:	3
Key features:	3
Package contents:	3
CONNECTIONS AND INTERFACES:.....	4
INSTALLATION AND WIRING:.....	5
General installation and wiring:.....	5
Installation of a multi-module head-end:	6
“CM Management” PROGRAMMING SOFTWARE:.....	7
Main screen:	7
CM 8SH CI-TC module configuration:	9
Input card:	10
Program pool:	11
DVB-C output card:	12
Advanced Configuration:	12
Remote head-end management:.....	13
FAQS.....	14
Configuration Example.....	15

INTRODUCTION:

Description:

It is a 4 input – 8 tuner DVB S/S2 + USB 2.0 + HDMI IN, with dual CI transmodulator, transmodulated to 4 FLEXIBLE COFDM/QAM, 13/18V, 22 KHz and DiSEqC output channels. 95 dBuV output level. MER (Modulation Error Rate) >32dB. Intelligent remultiplexing of services. PC Programming connected to the power supply. Integrated remote control from FA 524 power supply.

Key features:

- OCTO module with 4 SAT inputs and 8 tuners
- 1 HDMI input
- 1 USB 2.0 input
- Dual CI (Common Interface) reader
- Independent control of each i13/18V - 22KHz - DiSEqC (A/B/C/D). input
- Flexible remultiplexing of services on any output channel.
- NIT tables editing, SID remapping and transmission or deletion of EMM messages and CAT tables.
- Programmable QAM/COFDM output.
- Output up to 4 COFDM/4 flexible QAM channels.
- High output level.
- Excellent output signal quality with high MER (Modulation Error Rate).
- LCN / LCN HD insertion.
- Programming via PC Software ("CM Management") for Windows.
- Configuration cloning and report generation.
- On-site (FA 524 / CM PR) or remote (FA 524) management

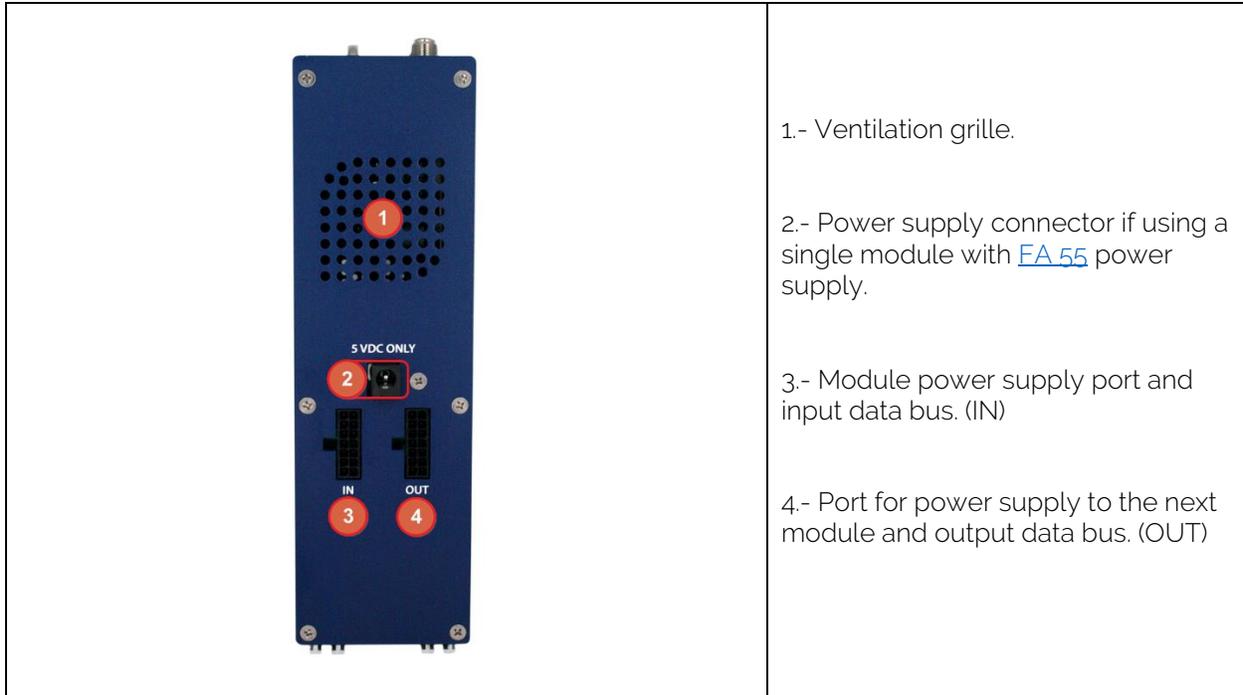
Package contents:

- 1x CM 8SH CI-TC module (082256)
- 1x Power supply cable (082123)
- 1x 63.25mm jumper (082148)
- 1x Mounting tab (251008)



CONNECTIONS AND INTERFACES:

1. USB input
2. HDMI input
3. Status LED. Status information of the input tuners.
4. Dual CI input
5. Input connectors to each tuner.
6. Status LED. Reports the status of the COFDM/QAM modulated output. The output will be working properly when the LED blinks green.
7. RF mix input connector.
8. RF output connector. This output will supply the MUX's generated by the module itself, plus those entering through connector number 7.



INSTALLATION AND WIRING:

General installation and wiring:

1.- For installations of several modules (head-end) or a single module, mount the transmodulator module to a wall chassis ([CHM TR](#)) or to a rackmount chassis ([CHR TR](#)).

To do this, mount the supplied metal piece (COD: 251008) on the upper rear part of the module as shown in the image.



Important note: If installing a head-end with several modules, always place the power supply to the **left** of the modules to be installed.

2.- Connect the power supply (FA 524) to the module or connect it to the previous module using the supplied power cable.



The FA 55 power supply can also be used to power a single module.



3.- Connect the input signals to the transmodulator inputs.



Important note: Pay particular attention to the input type and port. Follow the instructions on the front panel.

4.- Install the "CM Management" software on the PC. It can be downloaded from the website <https://ek.plus> Software / CM Head-ends Section. [Link](#)

5.- To program the module, perform any of the following connections:

5a.- PC – FA 524 programming via **USB**. Connect the FA 524 power supply to a PC using a USB (A) - USB (B) cable.

5b.- PC – FA 524 programming via **Ethernet**. Connect the power supply and the PC via Ethernet cable, connect these on the same LAN (the power supply provided with the address **192.168.0.222**). If it is necessary to be connected when not connected to the LAN itself, the [CM KEY](#) access key must be enabled beforehand.

5c.- PC - [CM PR](#) programming via **USB**. Connect the module to the device using the power and data cable. Connect the PC to the CM PR via USB cable.

6.- Run the PC SW programming.



Important note: Connect the [FA 524](#) power supply or the [CM PR](#) programming device and [FA 55](#) power supply to the PC before running the software so that it is correctly detected by the PC driver.

Installation of a multi-module head-end:

In the event of wishing to install the module as a further element of a head-end consisting of other CM series modules it is very important to follow the instructions below.

- Connect the different modules in series using of the supplied power cable and then the power supply, which must always be to the left of the head-end.
- Check the consumption of the modules. In general, up to 5 modules can be connected with an FA 524 power supply. However, it is recommended to check the power consumptions of the modules to be installed.

- It is recommended to install the modules with CIs downstream of the power supply.
- It is possible to use the long jumper to deliver the input signal to adjacent modules.
- The attenuation at the output of each module can be adjusted to compensate for cable losses at high frequency.

“CM Management” PROGRAMMING SOFTWARE:

Main screen:

The main screen of the “CM Management” software is displayed as follows:



Always check that the latest [WEB](#) software version is installed.
It can be directly connected via USB or LAN.

For the LAN, select the equipment and for connection press: 

- **ID:** enter the MAC of the corresponding power supply.
- **KEY:** enter the CM Key, if any. If not "0".
- **LOCAL IP:** the local IP will be entered if connected via LAN from the same network.
- **DESCRIPTION:** description.

Using the "CM Management" software, all modules connected to the power supply can be controlled and programmed. The function of each of the main side options is explained below:

	Connect to the modules via the power supply using the USB connector.
	Connect to the modules via the power supply using the LAN interface.
	<u>Firmware update</u> button for any of the cards. If any SW is available, the corresponding card will be displayed with a white triangle in the inner left corner. By double-clicking the button will change the color to orange and the icon will change from gray to blue. Clicking the icon will update the FW of all selected cards. <u>It is recommended to update each button one at a time via a RESET of the power supply at the end.</u>
	Reset selected card. This function is not available for all cards.
	This option enables loading a programming configuration previously saved in the PC to the head-end. The configuration file will have a *.dtc extension.
	This option enables the programming configuration of a head-end to be saved on the PC, to be subsequently loaded following the steps of the preceding point. THE DISTRIBUTION OF THE MODULES MUST BE IDENTICAL TO THAT OF THE *.dtc FILE.
	Data-logger. Enables saving the data of the different head-end modules in a single *.html. file
	Enables changing the output of the DVB-T (COFDM) modules to DVB-C (QAM).

The main "CM Management" screen enables easy identification of the different modules connected to the power supply, as can be seen in the following screen:

	Power supply and head-end manager (red).
	Identification of a module with an input card (green) and an output card (blue).
	Identification of a module with only one input card (green), two CIs (orange) and one output card (blue).
	Identification of a module with two input cards (green) and one output card (blue).
	In this case it would be a power supply and three modules, each one with its different internal cards.

Click on the corresponding module to enter its specific configuration menu.

Never open the CM MANAGEMENT program twice, this will cause configuration problems.

CM 8SH CI-TC module configuration:

	<ol style="list-style-type: none"> 1. Selected module 2. Selected module configuration 3. Input card. Select between DVB-S DVB-S2. NO MULTISTREAM 4. CI section. Activate Watchdog 5. Output card. Select output frequency in KHz. FLEXIBLE channels and different attenuations. 6. Program pool available on the configured inputs.
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Input card:

In this part of the menu the input card will be configured. Selecting A, B, C, D, E, F, G or H in order to choose the input tuner that is to be configured:

On: Click on "Check" to activate the selected tuner.

Input: Select one of the physical inputs, 1, 2, 3 or 4.

Polarity: HOR. - VER. Select the horizontal or vertical polarity.

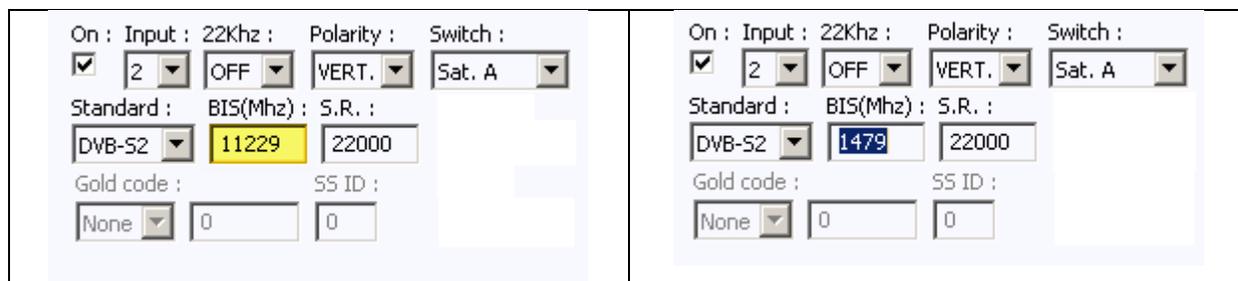
Switch: if having a DiSEqC multiswitch then select between A, B, C or D. If there is no DiSEqC multiswitch, this will not affect the selected value.

Common fields for each of the four physical inputs 1-2-3 and 4.

Standard: Select DVB-S or DVB-S2 for the satellite input.

BIS. (MHz): Tuner frequency. The conversion is performed automatically.

Example: 11229 MHz. - 9750 = 1479MHz.

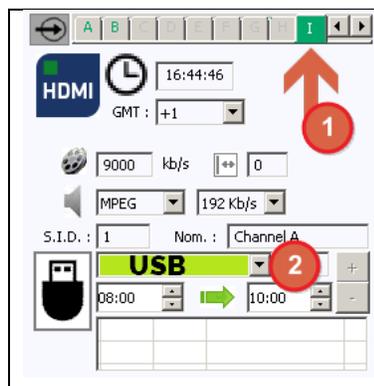


S.R.: Symbol Rate of the selected MUX.

Once the parameters have been correctly configured, the signal will be acquired, acquired and an approximate value of these parameters will be specified in **Power (Level)** and **C/N (Quality)**. The power in dBm and the quality in dB CANNOT BE CONSIDERED AS A PROFESSIONAL MEASUREMENT.

Several fields for the eight different satellite inputs. A-B-C-C-D-E-F-G and H.

Input I: HDMI – USB 2.0



By selecting input **I(1)**, the HDMI - USB 2.0 input can be configured.

The HDMI input is automatic, it will always work with a maximum resolution of 1080p. Check the [Technical Specifications](#) of the equipment.

The USB input can be configured to be enabled at an interval of hours, and at the end of the time, it will automatically return to the HDMI input. The USB input works with videos in TS output format. Click on the drop-down menu **(2)** to select the video.

Download the [EK CONVERTER](#), software, and where the video can be generated using the TS extension.

Link: <https://ek.plus/en/sw/ek-converter-en>

Program pool:

In this table all channels, services, which correspond to the selected entries will be listed. From here the services that are wished to be assigned to each MUX output can be selected. Each service is assigned to the input tuner from which it has been tuned.

S.I.D.: S.I.D. (Service Information Descriptor) assigned at source to that service.

Service name: name assigned to the service at source. Next, a symbol appears indicating whether the service is TV or Radio, and whether it is encrypted or open.

DECODIFIC.: This module is provided with two slots to insert two CAMs. By clicking on it, we activate or not the service so that it decodes in the selected CAM. [See an example.](#)

MODULATION: each circle corresponds to a MUX output: 1, 2, 3 or 4. By clicking on that circle, it changes from red to green, and this service is assigned to a MUX output.

DVB-T output card:

This part of the menu consists of three differentiated sections:

- N.I.T. (Network Information Table) parameters
- RF output channel parameters
- Information window on the throughput of each MUX output

N.I.T. parameters:

- Vers.: N.I.T. version
- O.N.I.D.: Original Network Identification Descriptor.
- N.I.D.: Network Identification Descriptor.
- L.C.N.: Logical Channel Number. LCN type selection (EACEM for Europe, ITC for the United Kingdom ...)
- Network Name: identifies the name of the local DTT (Digital Terrestrial Television) network.

RF output channel parameters:

- Freq. (KHz): Center frequency, in KHz, of the desired output channel. **E.g. CH21-474000**
- Id. T.S.: T.S. identifier, in general, it is not necessary to change the identifier.
- Const.: Constellation. Select the desired output constellation: 64QAM, 16QAM, QPSK.
- Band: Output channel bandwidth: 7MHz or 8MHz.
- F.E.C.: (Forward Error Correction). Select the error correction level: 7/8, 5/6, 3/4, 2/3, 1/2.
- Guard Int. Select guard interval: 1/32, 1/16, 1/8, 1/4.
- Atten. Level: The power level of the modulator is 95dBuV; it can be adjusted 20dB by using this attenuator.

Information window on each MUX output throughput:

Four bars are displayed corresponding to each MUX output. The green line indicates the percentage of channel occupied.

The number above indicates the total throughput being transmitted.

At the end of each bar there are two numbers: the first number indicates the throughput being modulated on that channel and the second the maximum possible throughput for the selected modulation parameters. **The first number should not exceed 80% of the second unless for services with constant throughput.**

DVB-C output card:

For DVB-C it is all identical to the DVB-T except for the modulation parameters:

- Const.: Select the desired output constellation: 256QAM, 128QAM, 64QAM, 16QAM.
- Band: Output channel bandwidth: 7MHz or 8MHz.
- S.R.: Enter the required value.

Whenever the modulation of a head-end module is changed, the power supply must be reset.

Advanced Configuration:

LCN Function:

The transmodulator enables labeling the information Transport Streams so that the TV programs are displayed in order on the TV set, in its program guide as specified from the head-end. In this way, all TV sets with the LCN function will have the same contents in each program number on the TV set. Although this function is useful for hotels or cable operators, as it avoids manual reordering of the programs on each TV set, tuning of each TV set is required. To perform the program number assignment, simply double-click on the LCN column of the program to be changed and apply the number of the desired position. Example:

S.I.D.	Service name	UNCRYPT	MODULATION	LCN	N.SID
B 4033	CSC TEST	[-] [-] [-]	[-] [-] [-]		
B 4002	SBS6	[-] [-] [-]	[-] [-] [-]	6	4002
B 4011	NPO1	[-] [-] [-]	[-] [-] [-]	1	4011
B 4012	NPO2	[-] [-] [-]	[-] [-] [-]	2	4012
B 4013	NPO3	[-] [-] [-]	[-] [-] [-]	3	4013
B 4016	CD/TVV info&nieuws	[-] [-] [-]	[-] [-] [-]	7	4016
B 4044	RTL4	[-] [-] [-]	[-] [-] [-]	4	4044
B 4045	RTL5	[-] [-] [-]	[-] [-] [-]	5	4045

Configuration of SID and NSID parameters:

The transmodulators enable a "remapping" of the SID fields. This functionality will enable to change the content of a program in the TV, leaving it in the same output channel of the head-end module, without the need to retune the TV. To do this, it is necessary to activate the new program to be transmitted in the same NSID where the previous program being broadcasted, by double clicking on the NSID column of the program to be changed. Example:

S.I.D.	Service name	UNCRYPT	MODULATION	LCN	N.SID
B 4033	CSC TEST			6	4002
B 4002	SBS6			1	4011
B 4011	NPO1			2	4012
B 4012	NPO2			3	4013
B 4013	NPO3			7	4016
B 4016	CD/TVW info&nieuws			4	4044
B 4044	RTL4			5	4045
B 4045	RTL5				

Flow: Adjustment of the data transfer rate to the output:

As a general rule, we will set the FTA (Free To Air) modules to 160Mbps.

Example flow calculation: 31668Mbps x 4 = 126672 Mbps - The value above would be 160 Mbps.

IMPORTANT:

If the CI (Common Interface) is used, in any of its two slots, the maximum speed specified by the service provider to leave the flow at the appropriate value must be taken into account, as all the selected flow will be delivered through the CAM regardless of whether it has to be encoded or not.

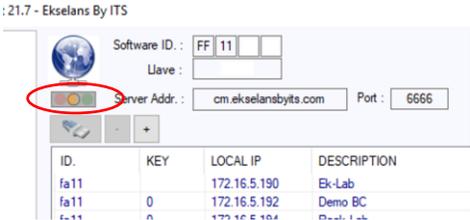
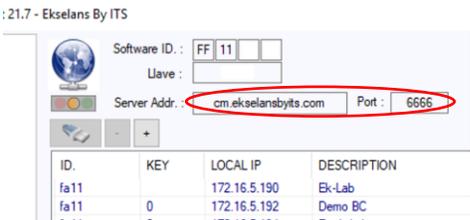
Remote head-end management:

The CM head-end can be managed remotely. This function is integrated in the [FA 524](#) power supply and in each of the head-end modules. To do so, a CM KEY ([082015](#) code) must be available.

Each CM KEY is associated with a **single power supply** and will only enable remote management of that power supply. The installer will provide the Power Supply identifier to ITS Partner when requesting the CM KEY.

Each installer company, in either event, will have a unique Software ID and Key which will be supplied together with the [CM KEY](#).

:21.7 - Ekselans By ITS Software ID.: FF11 Llave: FF11 Server Addr.: cm.ekselansbyits.com Port: 6666				Software ID: Installer/Installer Company Identifier. Key: Installer/Installer Company Identifier. ID: Power Supply Identifier (MAC). KEY: CM KEY supplied.
ID	KEY	LOCAL IP	DESCRIPTION	
fa11		72.16.5.190	Ek-Lab	
fa11	0	172.16.5.192	Demo BC	
fa11	0	172.16.5.194	Demo BC	

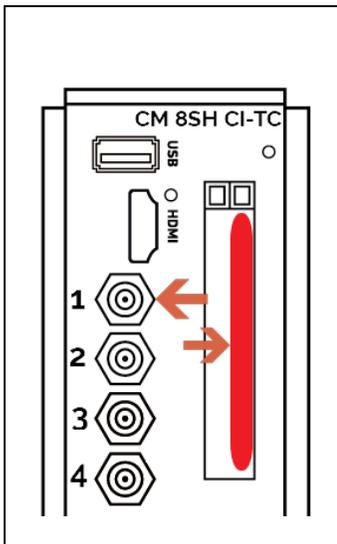
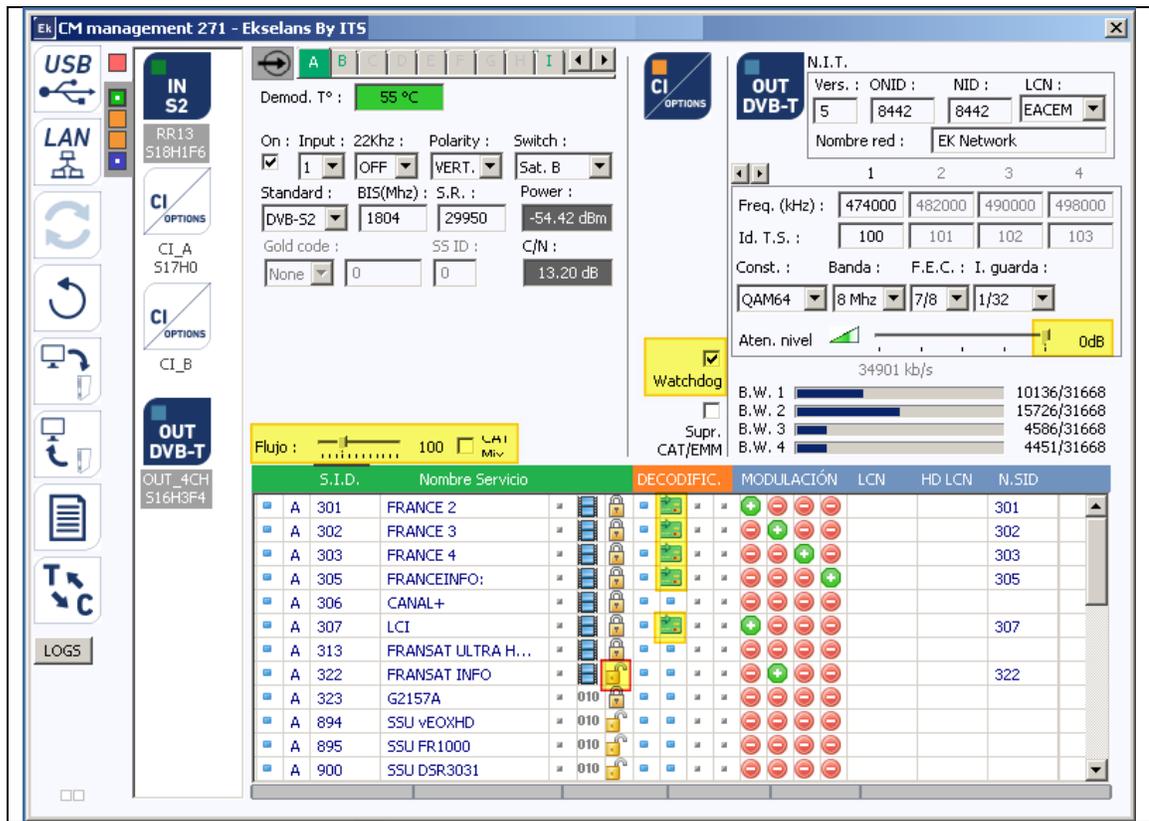
	<p>Red: No Internet connection.</p> <p>Orange: Connection to the Internet and server.</p> <p>Green: Connection established against head-end modules.</p>
	<p>Address and port of the data server which facilitates the remote connection.</p> <p>It is configured by default. DO NOT CHANGE.</p>

FAQS

- What loads can be used for the module?
Use isolated loads [CF 2150 A \(163002\)](#) type
- How many services can be installed on a MUX output?
It depends on the size of the channel selected in the "Program Pool". For HD channels less channels can be installed than for SD channels.
- Why does the head-end module not detect anything?
Set the FA 524 to the left. Connect the head-end module to the right. Plug the power to the FA 524, connect a USB cable to the PC and open the CM MANAGEMENT program. Press the USB button and it will connect to the module.
- Why is there no signal at the tuner input?
Check the orientation of the satellite dish and the LNB with the [Metek](#).
- If the MER (Modulation Error Rate) is located next to the power socket, can it be improved?
For installations where there are problems with the MER (Modulation Error Rate), an improved performance of the product can be obtained, in the event that it has been attenuated at the head-end, leaving the attenuator at 0dB in the CM Management, and adding an external attenuator at the head-end output until the same attenuation is obtained.

- How can I see the configuration examples?

Example 1:



Input 1: ON – Tuner A – 22KHz. Disabled.
 EUTELSAT 5°O Satellite – Frequency 11554 VERTICAL 29950 11554-9750=1804Mhz.
 No DISEQ. Input 1 – Standard: DVB S2
 6 channels in the COFDM modulated program pool:
 2 Encoded services– Channel 21 – 474000 MHz. No attenuation.
 1 Encoded service – Channel 22 – 482000 MHz. No attenuation.
 1 Uncoded service – Channel 22 – 482000 MHz. No attenuation.
 1 Encoded service – Channel 23 – 490000 MHz. No attenuation.
 1 Encoded service – Channel 24 – 498000 MHz. No attenuation.
 HDMI Input– Tuner I – Not selected
 100Mb streaming, as the operator has assigned it like this.
 Watchdog Enabled, as it is the internal control to confirm that the channels are actually decrypted.

Example 2:

The screenshot shows the 'CM management 271 - Ekselans By ITS' interface. On the left, there are icons for USB, LAN, CI options (CI_A, CI_B), and OUT DVB-T. The main area displays 'Demod. T°: 48 °C' and various input settings: On: Input: 22KHz, Polarity: OFF, Switch: Sat. B, Standard: DVB-S2, BIS(MHz): 1346, S.R.: 29950, Power: -55.75 dBm, Gold code: None, SS ID: 0, C/N: 12.40 dB. The 'OUT DVB-T' section shows N.I.T. settings: Vers.: 5, ONID: 8442, NID: 8442, LCN: EACEM, Nombre red: EK Network. Below this, a table shows channel frequencies (506000, 546000, 586000, 626000 kHz) and IDs (100, 101, 102, 103). A 'Watchdog' checkbox is checked. A 'Flujo' slider is at 100. At the bottom, a table lists channels with columns for S.I.D., Nombre Servicio, DECODIFIC., MODULACIÓN, LCN, HD LCN, and N.SID.

S.I.D.	Nombre Servicio	DECODIFIC.	MODULACIÓN	LCN	HD LCN	N.SID
A 401	TF1					401
A 417	NRJ12					417
A 423	TMC					423
A 425	LCP					425
A 403	M6					403
A 404	ARTE					404
A 419	FRANCE 5					419
A 421	W9					421
A 422	6TER					422
B 301	FRANCE 2					301
B 302	FRANCE 3					302
B 303	FRANCE 4					303
B 305	FRANCEINFO:					305
A 424	TFX					424
B 306	CANAL+					306
B 307	LCI					307
I 1	Channel A					1
A 426	VIAVOSGES					
A 427	KTO					
A 4133	NOUVELLE AQUITAI...					
B 313	FRANSAT ULTRA H...					
B 322	FRANSAT INFO					

The diagram shows the front panel of the CM 8SH CI-TC module with four CI slots labeled 1, 2, 3, and 4. A red arrow points to slot 2.

Input 1: ON – Tuner A – 22KHz. Disabled.
 Input 1: ON – Tuner B – 22KHz. Disabled.

A: EUTELSAT 5°O Satellite – Frequency 11096 VERTICAL 29950
 B: EUTELSAT 5°O Satellite – Frequency 11554 VERTICAL 29950

DISEQ B. Input 1 – Standard: DVB S2
 DISEQ B. Input 1 – Standard: DVB S2

16 Encoded channels in the COFDM modulated program pool:
 4 – Channel 25 – 506000 MHz. 10dB attenuation at the output.
 5 – Channel 30 – 546000 MHz. 7dB attenuation at the output.
 4 – Channel 35 – 586000 MHz. 5dB attenuation at the output.
 3 – Channel 40 – 626000 MHz. 2dB attenuation at the output
 + HDMI Input– Tuner I

100Mb streaming. As the operator has it assigned like this.
 Watchdog Enabled, as it is the internal control to confirm that the channels are actually decrypted.
20874+24813+20258+22684 = 88.62Mb.
Less than 100Mb peak throughput on module with the Ci inserted in slot 2.