

CM 2SCI-TC

082002

Common Interface

8PSK-COFDM/QAM

TWIN Transmodulator

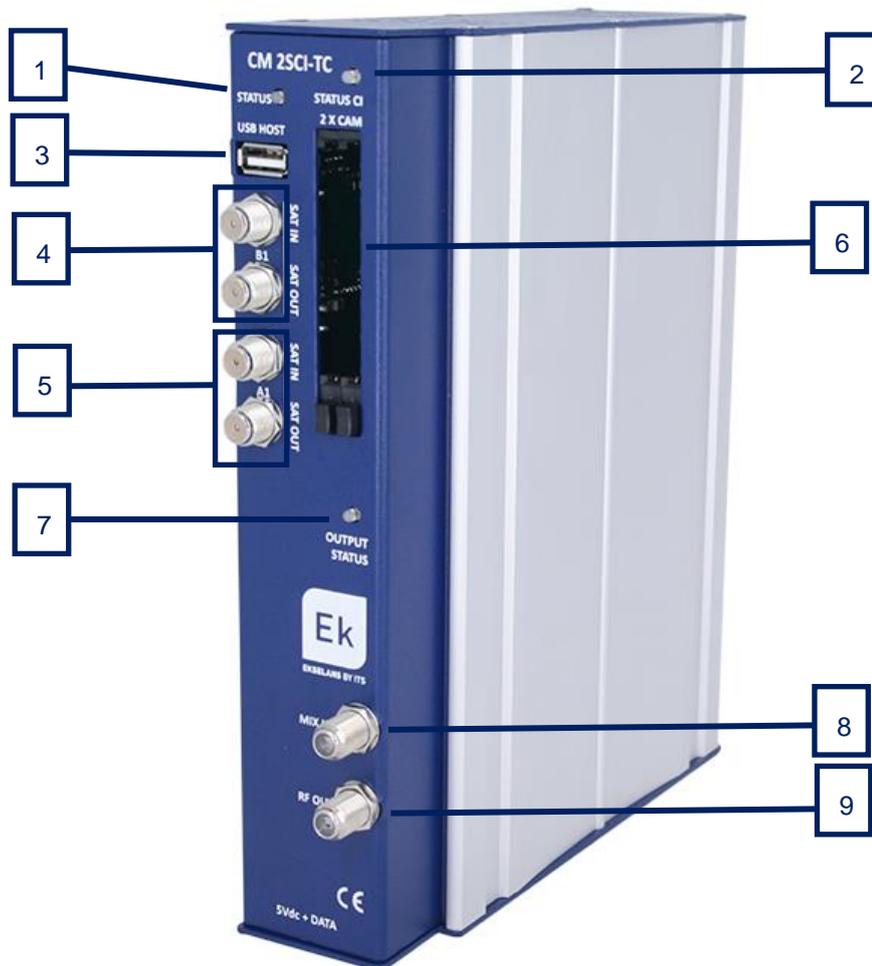
User's Manual



EKSELANS BY ITS

1 CM 2SCI-TC – USER’S MANUAL

1.1 General Description



| Number | Description |
|--------|---|
| 1 | LED status. Displays the status of the A1 and B1 tuner inputs. The tuners will be operating properly when there is a 1 blinking sequence in red and 5 blinking sequences in green. Each blinking specifies: 1) USB connected. 2) Time/date received from the satellite. 3) Tuners A with locked signal. 4) Analysis of tuners A satellite tables. 5) Tuners B with locked signal. 6) Analysis of tuners B satellite tables. Green blinking indicates OK and red NOT OK |
| 2 | LED CI status. Displays the operating status of the two Common Interface slots. |
| 3 | USB Host Connector. Connecting an external memory device to the host connector TS files can be played and modulated in RF. |
| 4 | SAT B1 tuner and loop |
| 5 | SAT A1 tuner and loop |
| 6 | Common Interface Slots. Units so as to insert 2 decoding PCMCIA's |
| 7 | LED status. Displays the status of the modulated output in COFDM/QAM. The RF output is working properly when the LED blinks green |
| 8 | RF MIX connector |
| 9 | RF OUT connector. In this output are the muxes generated by the module itself, plus those which are entered via the connector 8 |

2. Installation and wiring

1. Fasten the transmodulator module to a wall frame (CHM TR) or a rack chassis (CHR TR). To this end assemble on the upper rear part of the module the supplied metal part, as is shown in the picture



2. Connect the power supply (FA 524) to the module or either connect same to the previous module using the supplied power cable
3. Connect the LNB(s) to the inputs of the transmodulator module. For professional installations the use of a HV-HV Quattro LNB (LNB 44 model) is recommended.
4. So as to program the module, connect the FA 524 power supply to a PC via a USB-USB cable as follows:



5. Install the "CMManagement" software on the PC or the "EK Pro" software package which is also included. Both programmes can be downloaded from the website www.ekselansbyits.com, Documentation >> Software section.
6. Run the programming software on the PC (**Important:** connect the FA 524 power supply to the PC before running the software so that the driver of the PC can correctly detect the software).

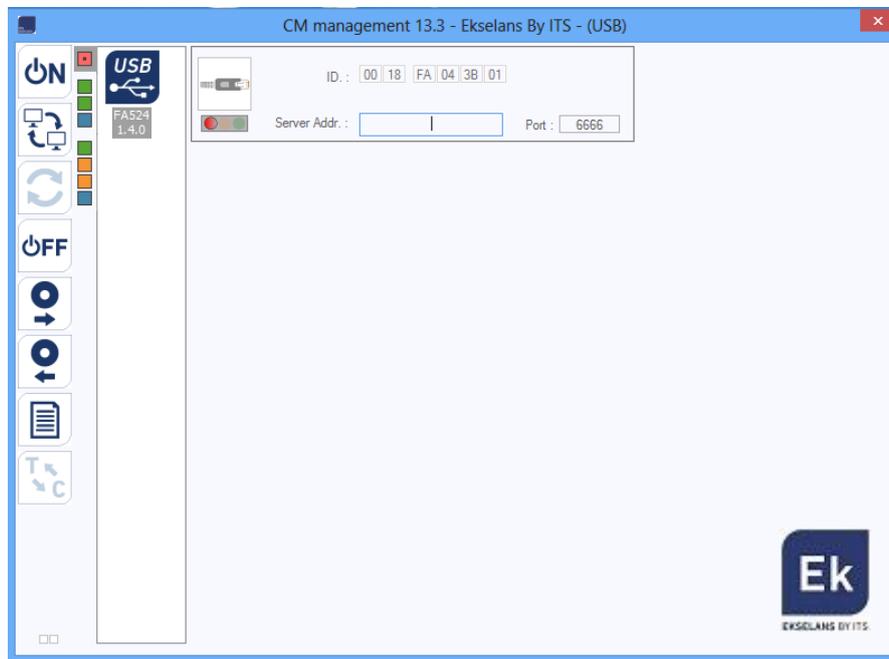
3. Software Programming: CM management

The "CM management" programming software enables the programming and running of all modules of the CM headend. The program is available only for Windows operating system (XP version 7 and above).

Once downloaded from the website www.ekselansbyits.com, Documentation >> Software section, having previously run the program with the PC connected to the USB port of the FA 524 power supply. In this fashion, it is ensured that the driver detects the core.

3.1.Main screen

The main screen of the "CM Management" software is as follows:

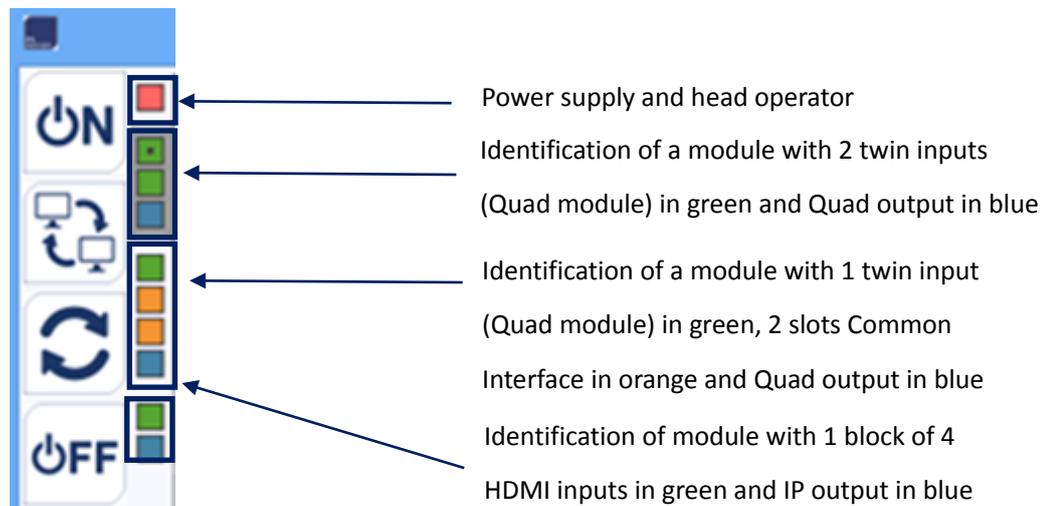


Through this function, one can run and program all modules connected to the power supply.

Explained below is the function of each of the options:

| Number | Button | Function |
|--------|---|---|
| 1 |  | Once connected the PC to the FA 524 power supply through the USB-USB cable, press this button in order for the power supply to identify the modules connected to it. Once activated, the blue logo is displayed |
| 2 |  | This icon will be displayed in blue with white lettering once the connection is established with the headend. If not, it will be otherwise the white logo with blue lettering which will be displayed, making it then necessary to press button 1 again. |
| 3 |  | Through the FA 524 it is possible to carry out a remote connection with a headend and to that end this button is used. The remote connection is explained below. If displayed in blue the remote connection is activated, and if white it is not activated. |
| 4 |  | Firmware updating. Press this button to load a file to update the firmware of the modules. |
| 5 |  | Press this button to switch off the FA 524 power supply of the operation of the various modules of the headend. If it is disconnected, the logo will be displayed in white and blue lettering. |
| 6 |  | This option enables one to load a configuration program previously saved on the PC. The configuration file will have the .dtc extension |
| 7 |  | This option enables saving on the PC a programming configuration of a module to be subsequently loaded using button 6. A .dtc format file will be created. |
| 8 |  | Enables changing the output of the DVB-T (COFDM) modules to DVB-C (QAM). |
| 9 |  | Data-logger. Enables saving the data of the different modules of the headend. |

The main screen of the "CM management" enables to easily identify the different modules connected to the power supply, as can be seen in the following screen:

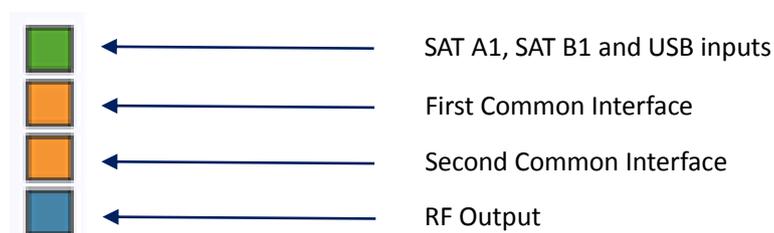


Each module is identified by means of a series of different coloured boxes. Depending on the module, this will be represented by 2, 3 or 4 boxes where the green represents the inputs, the blue the output and the orange the Common Interface slots.

3.2. Programming of CM 2SCI-TC module

3.2.1. Tuning of DVB-S / DVB-S2 transponders

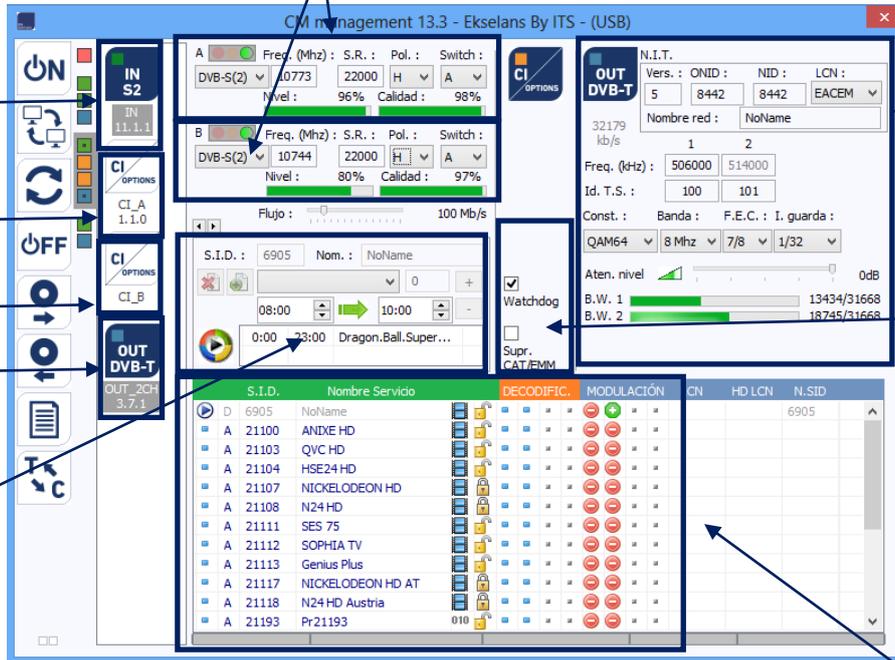
Once the CM 2SCI-TC module is connected to the FA 524 power supply, this in turn to the PC and the "CM management" programme open, select the CM 2SCI-TC which is represented as follows:



Select the upper green box, the programming interface of the SAT A1 and SAT B1 tuners will be displayed as is shown below:

SAT A1 y B1 tuner inputs

programming parameters



SAT A1 and B1 inputs

Common Interface 1

Common Interface 2

RF output

TS file selection for modulation in the output

RF output

programming parameters

Watchdog

activation and suppression of

CAT tables and

EMM

messages

Available programmes in the transponder(s) selected in the SAT A1 and B1

In order to program the module, specify first the parameters of the DVB-S/DVB-S2 input signals of each tuner specifying the frequency, symbol rate, polarity and DiSEqC (A, B, C, D) switch parameter, if they are any existing. Once these values are specified, the program will search the transponder at the satellite input, tune the transponder and the corresponding tuner light will change to green. Similarly, the level and quality of the input signal will be estimated, and will be displayed in the area of the bottom of the window the services found in the transponder(s) in question.

Important note: the level and quality percentage is an estimated value and for informational purposes only and under no circumstances whatsoever shall denote a professional measurement. To this end it is recommended to measure the signal using a field strength meter (for example, the Ekselans TSF 1).

Displayed in the bottom window are the transponder services selected in the input, similarly specifying as to whether or not they are television () or radio () programs, and whether or not they are open () or are codified ().

3.2.2. Modulation of the services in 2 COFDM muxes

After downloading the services which are wished to be transferred to the output, all these services will appear at the bottom of the screen. From here one can make his/her assignment to each of the two RF output channels. As shown in the figure below, in the "Modulation" section there are two columns, one of which corresponds to the two COFDM mux outputs.

| S.I.D. | Nombre Servicio | DECODIFIC. | MODULACIÓN |
|---------|-------------------|------------|------------|
| D 6905 | NoName | | |
| A 21100 | ANIXE HD | | |
| A 21103 | QVC HD | | |
| A 21104 | HSE24 HD | | |
| A 21107 | NICKELODEON HD | | |
| A 21108 | N24 HD | | |
| A 21111 | SES 75 | | |
| A 21112 | SOPHIA TV | | |
| A 21113 | Genius Plus | | |
| A 21117 | NICKELODEON HD AT | | |
| A 21118 | N24 HD Austria | | |
| B 28721 | tagesschau24 | | |

Depending on which column is selected the () , the service will appear in either output channel.

At the top right of the window one can set the RF output parameters:

OUT DVB-T N.I.T.

Vers. : ONID : NID : LCN :

5 8442 8442 EACEM

Nombre red : NoName

32204 kb/s

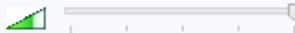
1 2

Freq. (kHz) : 506000 514000

Id. T.S. : 100 101

Const. : Banda : F.E.C. : I. guarda :

QAM64 8 Mhz 7/8 1/32

Aten. nivel  0dB

B.W. 1  14962/31668

B.W. 2  17241/31668

- Vers: refers to the NIT version
- ONID: network identifier value (the original network ID), which varies depending on the country
- NID: network identifier
- LCN: selection of the LCN type (EACEM for Europe, ITC for the United Kingdom ...)

- Network Name: identifies the name of the local network
- Output frequencies: in this section the KHz output channels frequency is specified. It is important to note that the two RF output muxes are adjacent, reason why the value of the first mux is set, the following value will be automatically recalculated
- Const: selection of the output constellation (64QAM, 16QAM, QPSK)
- Band: bandwidth of the output channel (7 MHz or 8 MHz)
- FEC: selection of different values for error recovery
- Saved I.: selection of the save interval value between symbols
- Atten. level: controller for attenuation of the output level. The maximum output level of the CM 2SCI-TC module is 95 dB μ V, and through this controller can be reduced up to 20 dB.

In this output, parameter selection section there also appears information on the bit rate of each one of the mux outputs:

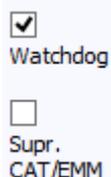


In the above image the bit rate of each mux output on the maximum total which it can carry (31668 Kbps/31.6 Mbps) is displayed. As more services are added to the different output channels, these diagrams will be updated in real time. It is recommended not to exceed 80% of the maximum in order to avoid subsequent overflow problems.

Important note: if no services are added to the RF output channel, this will not be activated.

Furthermore the "CM management" also enables to activate two options:

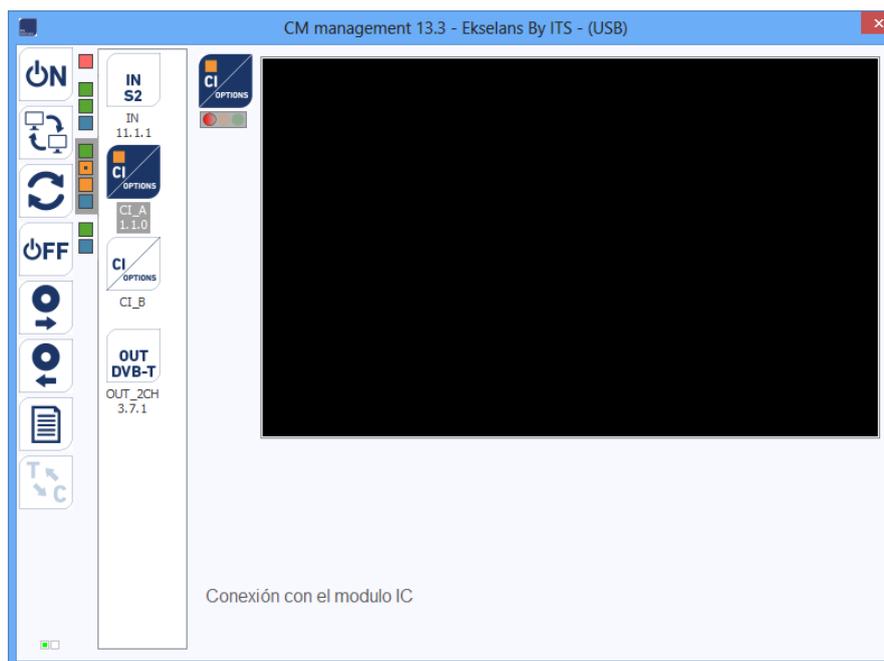
- Watchdog: internal control system to confirm that the codified channels sent to the CAM to be decoded, which are actually being decrypted. Otherwise, it causes a micro-reset of the CAM so as to correct the problem.
- Suppression of the CAT/EMM: enables the open passing or suppression of the conditional access tables (CAT) and the rights management messages



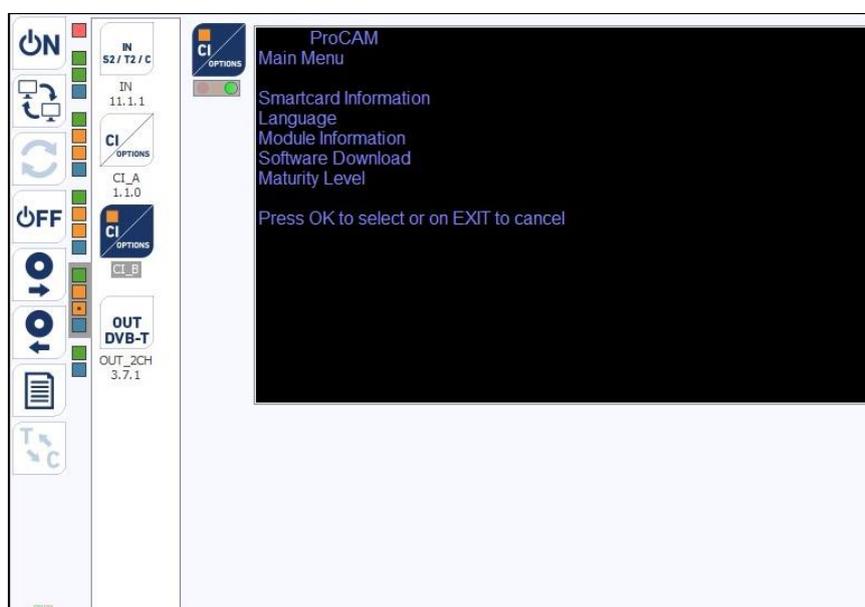
3.2.3. Common Interface

The CM 2S CI-TC module has two Common Interface slots. Each slot can run a PCMCIA for the decryption of coded satellite services.

Selecting the second or third box - both orange in colour - the 2SCI  of the CM-TC module, the following window is displayed:



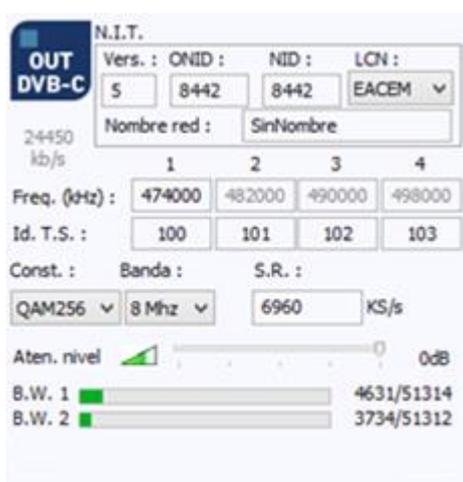
The connection between the transmodulator module and the selected PCMCIA is then activated, displaying its information.



3.2.4. Change of output modulation

The CM 2S CI-TC module enables the selection between two output modulations: COFDM –set as the default– and QAM. To change same, click the icon  of the right panel of the "CM management" software.

This operation may take 3 to 4 minutes. Once the change is made, the output modulation shall be QAM and the available muxes will be 4. The selection and assignment services per mux output process will be exactly the same as explained in the previous section.

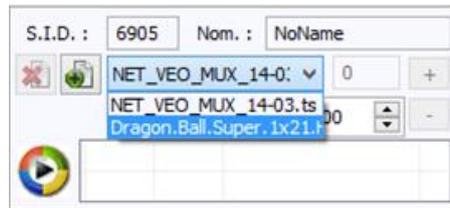


3.2.5. TS file modulation

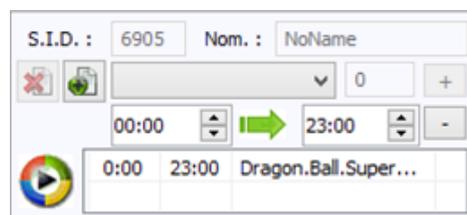
With the CM 2SCI-TC module it is possible to create a service from a .TS (transport stream) file and to modulate same in the RF. This option enables the creation of a local program, to modulate same in the output together with the other services from the satellite, and transmit all services to the jacks of the installation.

Any type of video file or PowerPoint presentation, previously converted to the .TS format can be transmitted. This conversion can be performed using the applications available for this purpose (for example, OJOSoft Total Video Converter, Moyea, ...).

Once the files are converted to the .TS format files, the files must be transferred to a USB memory device and connect the device to one of the two connectors marked "USB HOST" on the front of the module. When connecting USB memory device, the files contained in it may be viewed and the file which is wished to be modulated selected.



After selecting the desired file, the service name (Name option) can be changed, the program identifier (SID), which should be different from the other services downloaded from the satellite- and even specifying the time in which it is desired to play the file.



More than one .TS file can be included in the playing cycle if the files are in the USB memory device. Specific hours of playback can be allocated to each file and a local channel with different videos and presentations can be created.

When carried out, the service will be displayed in the output as an additional service, which can be selected as those downloaded from the satellite, which may be modulated in any of the four output muxes together with the other desired services. For all purposes it shall be another program when tuning the program on a television set.

| | S.I.D. | Nombre Servicio | DECODIFIC. | MODULACIÓN | LCN | HD LCN | N.SID |
|---|---------|-----------------|------------|------------|-----|--------|-------|
| ▶ | D 6905 | NoName | | | | | 6905 |
| ▶ | C 17500 | SAT.1 | | | | | 17500 |
| ▶ | C 17501 | ProSieben | | | | | 17501 |
| ▶ | C 17502 | kabel eins | | | | | 17502 |

If instead of assigning a SID different to that of the local service, the same SID will be assigned to one of the satellite services which will be modulated in the output, during the period specifying that the modulation of the television programme will be replaced by that locally generated from the USB memory device.

3.2.6. Saving and loading a configuration

The "CM management" software enables saving on the PC the transmodulator for subsequently uploading to another CM 2SCI-TC module. Its running is carried out using the following two buttons, available in the vertical menu on the right:

| | |
|---|---|
|  | <p>Save on the PC a programming configuration of a module to be subsequently loaded. A .dtc format file will be created.</p> |
|  | <p>Load a configuration program previously saved on the PC. The configuration file will have the .dtc extension</p> |

It is important to load onto the CM 2SCI-TC a .dtc file previously created with another similar module. Otherwise, the "CM management" software will display that it is not possible to load it.

3.2.7. Data-logger

The "CM management" software, through the Data-logger option enables one to generate and save to the PC a report containing the data of the various modules connected to a head core.

To that end, click on the icon  and specify the file name. A document with the html format which can be opened with a browser, similar to the following will be created.

| CM management 13.3 - Elselabs By ITS - (USB) | | | | | | | |
|--|-----------|--|--------|--------------------------|-----------|---------|----------|
| FA524 V1.4 | | | | | | | |
| ID | IP de | Identificación | | usuario | | | |
| 0018F6640970 | 0.0.0.0 | | | cm.distribucion.com:6666 | | | |
| IN V11.1 | | | | | | | |
| configuracion | | | | | | | |
| | FREC. | S.R. | F.E.C. | SWITCH | LEVEL | Calidad | ESTADO |
| A | 1118938Hz | 27500 | SI | A | 92% | 64% | OK |
| configuracion | | | | | | | |
| | FREC. | S.R. | F.E.C. | SWITCH | LEVEL | Calidad | ESTADO |
| B | 1245438Hz | 22000 | SI | A | 64% | 0% | UNLOCKED |
| RATE | | | | | | | |
| | | | | 100 Mb/s | | | |
| Streaming S.I.D. 980F 0504BEE - Canal EK) | | | | | | | |
| DE | HASTA | PICHIA | | | | | |
| 05:00 | 12:00 | Drapac Real Super 1411 HD TV Canal 33-07 | | | | | |
| 10:01 | 12:00 | NET_VBO_180X_1448.n | | | | | |
| Lista Trans. | | | | | | | |
| ID | MOD | NOBRE | Type | Otrudo | Utilizado | | |
| D | 49015 | Canal EK | TV | | X | | |
| A | 12045 | RTL Germany | TV | | X | | |
| A | 12094 | RTL France/ROM | TV | | X | | |
| A | 12065 | RTL HD 32G | TV | | X | | |
| A | 12066 | RTL 3G | TV | | X | | |
| A | 12020 | RTL2 | TV | | X | | |
| A | 13040 | RTL Living | TV | X | X | | |
| A | 12040 | SUPER RTL | TV | | X | | |

Important: in order to generate this report it is necessary that the "CM Management" program be run as the administrator.

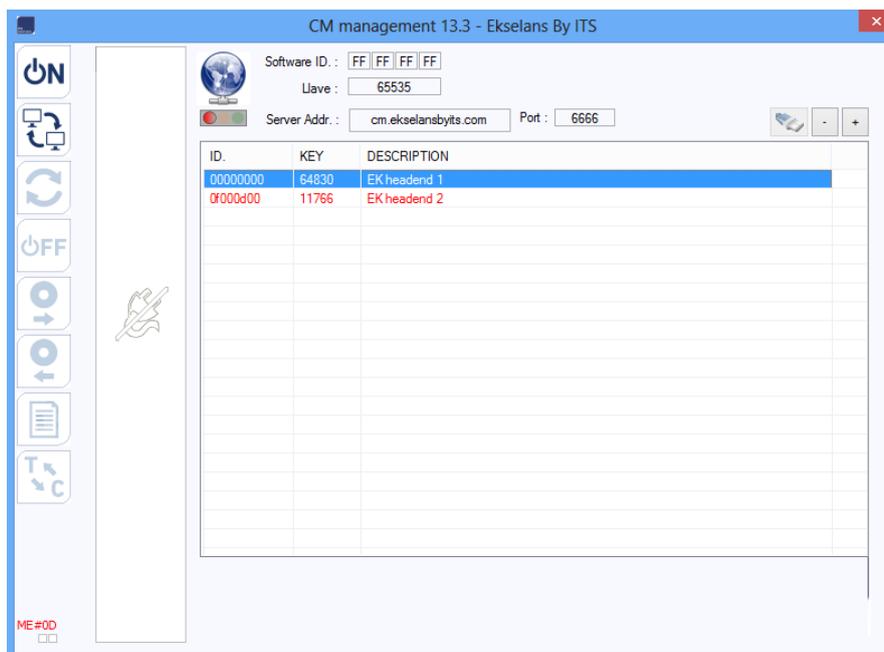
3.3. Remote control of the headend

The headend CM can be run and controlled remotely. This function is integrated in the FA 524 power supply and in each of the head modules.

3.3.1. Access and remote programming of the CM 2SCI-TV module

It is possible to remotely access a CM 2SCI-TV module. To do so it must be connected to the FA 524 power supply and this in turn to the Internet.

In order to remotely access a head in which the CM 2SCI-TV module which is wished to be run is connected, press the menu icon on the left.  The following screen will then be displayed:



Upon the first connection the software's ID and a password must be specified. These are personal and non-transferable. In order to make use of same, please contact your Ekselans distributor so that it may be supplied. Once available, enter the password on the top part of the previous screen (Software ID and Password).

If all parameters are entered correctly, a connection with the cm.ekselansbyits.com server, dedicated to the remote running of the CM cores can be performed.

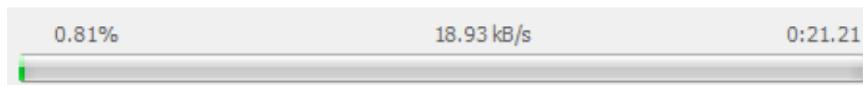
On this list all cores connected to the central server can be viewed. Remember that each 524 power supply includes FA the remote control manager, so that each power supply specifies a head. These are identified by an ID. Furthermore in order to access a password must be entered in the corresponding field.

If all data are correct, the connection to the server and the corresponding head shall be performed. When carried out, the head can be accessed as if it were in situ.

3.3.2. Remote modification of the .TS file

If the CM 2SCI-TC module has a USB memory device connected to the .TS files, the files may also be run remotely. To that end, once connected to the remote headend click on the icon. This will open a window in order to select the desired file from the local PC and transmit it to the head.

Whilst the file transfer is being carried out a message specifying the progress will be displayed:



Once this process is completed, the .TS file loaded into the USB memory device as is explained above can be programmed.

4 Technical specifications

| Reference | CM 2S CI TC |
|-----------------------|--|
| Code | 082002 |
| Inputs | |
| Number of inputs | 2 (A1, B1) |
| Input frequency | 950 – 2150 MHz |
| Input level | 43 – 83 dB μ V |
| Bandwidth | 36 MHz |
| Modulation type | QPSK – 8PSK |
| Remote power feeding | 13V/18 V/22 KHz/DiSEqC (A/B/C/D) |
| Common Interface | 2 x CI |
| Output | |
| Number of outputs | 1 + loop-through (-1.5 dB) |
| Maximum output level | 95 dB μ V |
| Output adjustment | 20 dB (per software) |
| Output frequency | 45 – 862 MHz |
| Output MUXES | 2 COFDM or 2 QAM (adjacent) |
| Channel width | 7 MHz (VHF)/8 MHz (UHF) |
| COFDM modulation mode | 2K |
| COFDM constellation | QPSK/16QAM/64QAM |
| QAM constellation | 16, 32, 64, 128, 256 QAM |
| FEC | 1/2, 2/3, 3/4, 5/6, 7/8 |
| Save interval | 1/4, 1/8, 1/16, 1/32 |
| MER | > 35dB |
| Miscellaneous | |
| Programming | Software PC “CM management” PC Software via USB connected to a FA 524 power supply |
| Power Supply | 5 Vdc |
| Consumption | 1.9 A + LNB + CAMs |
| Temperature range | 0 – 40° |

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www.ekselansbyits.com

