

# Televés®



T.DX SERIES

ES CDC H/E MANAGER

Refs. 5559, 555901

User instructions

[www.televés.com](http://www.televés.com)



## CDC H/E Manager

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## 1. Technical specifications

### 1.1. CDC H/E Manager ref. 5559 (IP), ref. 555901 (GSM/GPRS)

|                             |                          |  |   |                            |
|-----------------------------|--------------------------|--|---|----------------------------|
| CPU                         | Processor                | ARM920T™ ARM®  |   |                            |
| Memories                    | Type                     | 8 MB Flash   |   |                            |
|                             |                          | 64 MB de SDRAM<br>128M x 8 Bit NAND Flash Memory             |   |                            |
| Interfaces<br>Connectors    | T.OX powering            | 24V---   | RJ45 connector                              | 10/100 Base-T Ethernet     |
|                             | Interface                | RS-482   | RJ45 connector                              | Debugging / Programmer LCD |
|                             | Interface                | USB 2.0 Full Speed Host (12 Mbps)                            | GSM Antena connector                        | F connector                |
|                             | SIM Interface            | SIM cards reader   |   |                            |
| GSM/GPRS<br>Radio Interface | Transmission power       | GSM-850 / 900<br>Power peak 2W RF (+33dBm) over 50 Ohm       | VSWR<br>(Voltage<br>Standing<br>Wave Ratio) | max. absolute ≤ 10 :1      |
|                             |                          | DCS-1800 / PCS-1900<br>Power peak 1W RF (+30dBm) over 50 Ohm |   | recommended ≤ 2:1          |
|                             | Reference<br>Sensitivity | GSM-850 / 900 -107 dBm<br>DCS-1800 / PCS-1900 -106 dBm       | Input power (peak)                          | > 2 W                      |
|                             | Antenna gain             | 1.5dBi ≤ Gain < 3dBi<br>(reference: λ/2 dipole )             | Antenna impedance                           | 50 ohm                     |
| Peripherals                 |                          | Real Time Clock/ Alarm                                       |   |                            |
|                             |                          | Digital thermometer  |   |                            |
| Operating system            |                          | Linux Kernel 2.6.16  |   |                            |
| General                     | Powering                 | 24 V---  | Operating temperature                       | -5 .... +45°C              |
|                             | Consumption              | 300 mA   | Protection index                            | IP20                       |

These technical specifications are defined for an ambient temperature of 45 °C (113 °F). For higher temperatures forced ventilation must be used.

### 1.2. Technical specs. Broadband Amplifiers

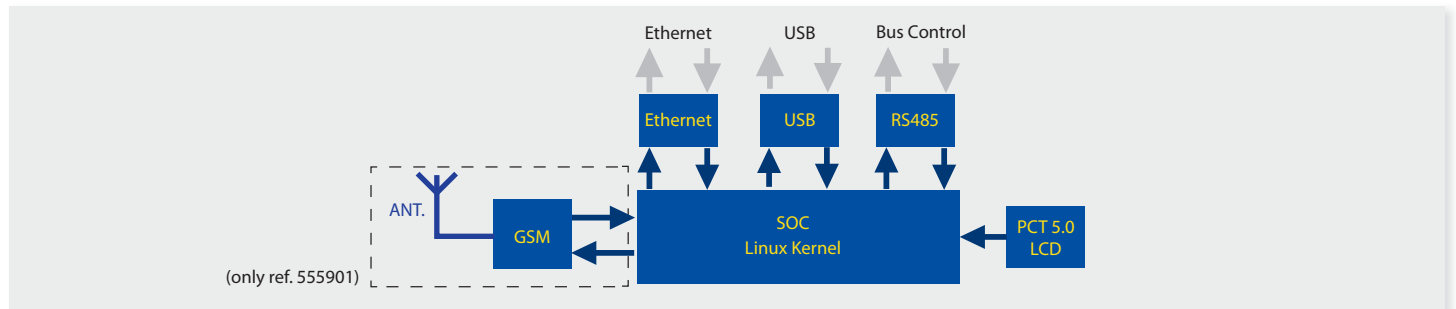
|                  |  |      |                      |                       |        |                   |
|------------------|--|------|----------------------|-----------------------|--------|-------------------|
| Amplifier 5575   | Frequency range                                | MHz  | 46 ... 862           | Connector             | type   | "F"               |
|                  | Gain   | dB   | 44 ± 2,5             | Powering voltage      | Vdc    | 24                |
|                  | Regulation margin                              | dB   | 20                   | Consumption at 24 Vdc | mA     | 450               |
|                  | Output level (60 dB 42 CH CENELEC)             | dBμV | 105                  | Test socket           | dB     | -30               |
| Amplifier 451202 | Frequency range <sup>(1)</sup>                 | MHz  | 47 ... 862           | Connector             | type   | "F"               |
|                  | Gain <sup>(1)</sup>                            | dB   | 40 - 53 (selectable) | Mains voltage         | Vac/Hz | 196 - 264 / 50-60 |
|                  | Max. output level <sup>(1)</sup> DIN 45004B    | dBμV | 129                  | Max. Power            | W      | 16                |
|                  | Frequency range <sup>(2)</sup>                 | MHz  | 5 ... 30             | Test socket           | dB     | -20               |
|                  | Gain typ. <sup>(2)</sup>                       | dB   | 20/ -3               |                       |        |                   |
|                  | Maximum output level <sup>(2)</sup> DIN 45004B | dBμV | 129/ ---             |                       |        |                   |

(1) Forward channel      (2) Return channel (active/passive)

### 1.3. Technical specs. Power Supply Unit

|                        |                |        |                   |   |   |                         |
|------------------------|----------------|--------|-------------------|---|---|-------------------------|
| Power Supply Unit 5629 | Mains voltage  | Vac/Hz | 196 - 264 / 50-60 | Total current (max) (output 1 + output 2) | A | 5 (24V $\overline{=}$ ) |
|                        | Output voltage | Vdc    | 24                | Max. current per output                   | A | 4 (24V $\overline{=}$ ) |

### 1.4. Blocks diagram

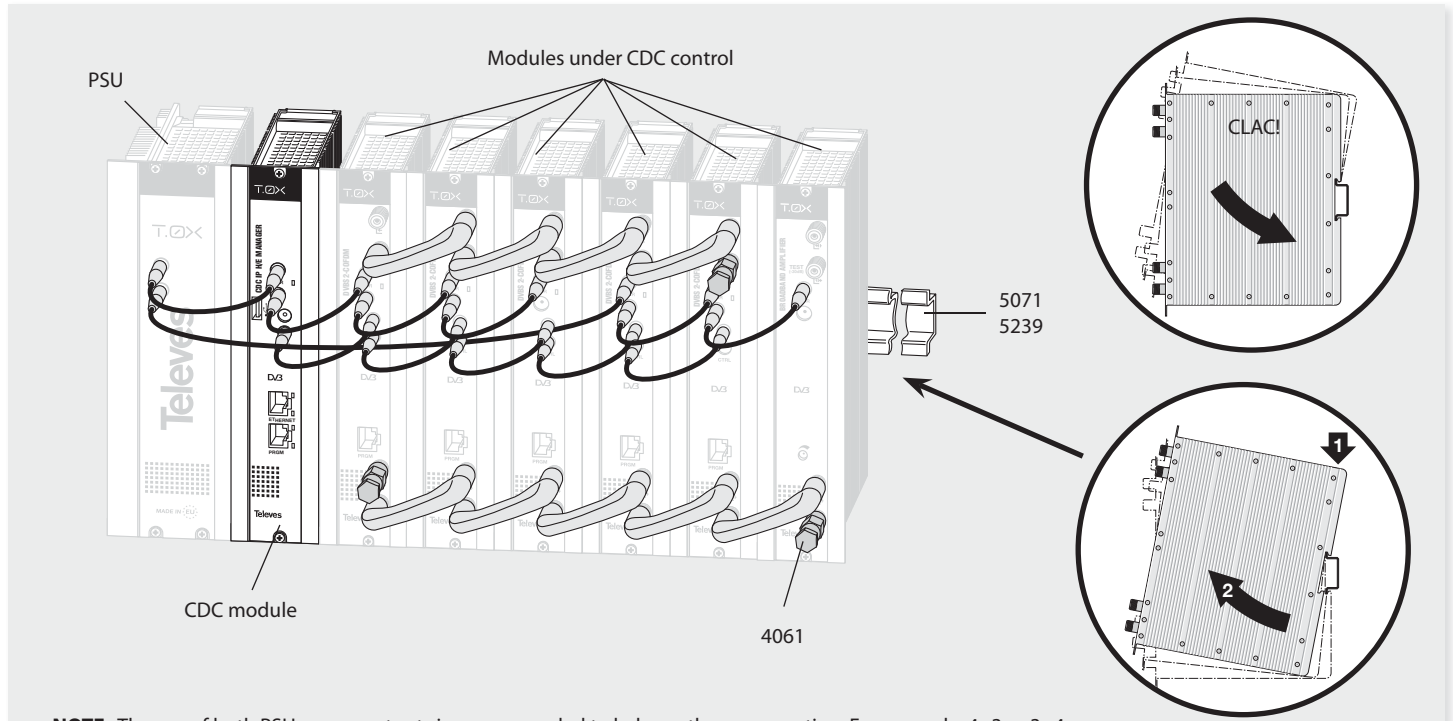


## 2. Description of references

| Product Range |                                       | Accessories |   |
|---------------|---------------------------------------|-------------|---|
| 5559          | T.OX Headend Manager CDC-IP           | 7234        | Universal Programmer  |
| 555901        | T.OX Headend Manager CDC-IP GSM       | 5071        | T03-T05-T.OX Wall mounting rail L=50 cm                       |
| 5575          | T.OX Broadband Amplifier 44dB 120dBμV | 5239        | T03-T05-T.OX Wall mounting rail (12 Modules+PSU) L=56 cm      |
| 451202        | Amplifier DTKom (47 - 862 MHz)        | 5301        | 19" Subrack frame   |
| 5629          | T.OX Power Supply Unit 24Vdc/5A       | 507202      | T.OX Lockable cabinet with Ventilation Unit (7 Modules + PSU) |
|               |                                       | 4061        | 75 Ohm DC-Block terminal load                                 |
|               |                                       | 4058        | 75 Ohm terminal load  |
|               |                                       | 422601      | T05 to T.OX Power interconnection lead L=40 cm                |
|               |                                       | 422602      | T05 to T.OX Management interconnection lead L=40 cm           |
|               |                                       | 422603      | T.OX Management interconnection lead L=1m                     |
|               |                                       | 5673        | Blank plate   |

### 3. Mounting

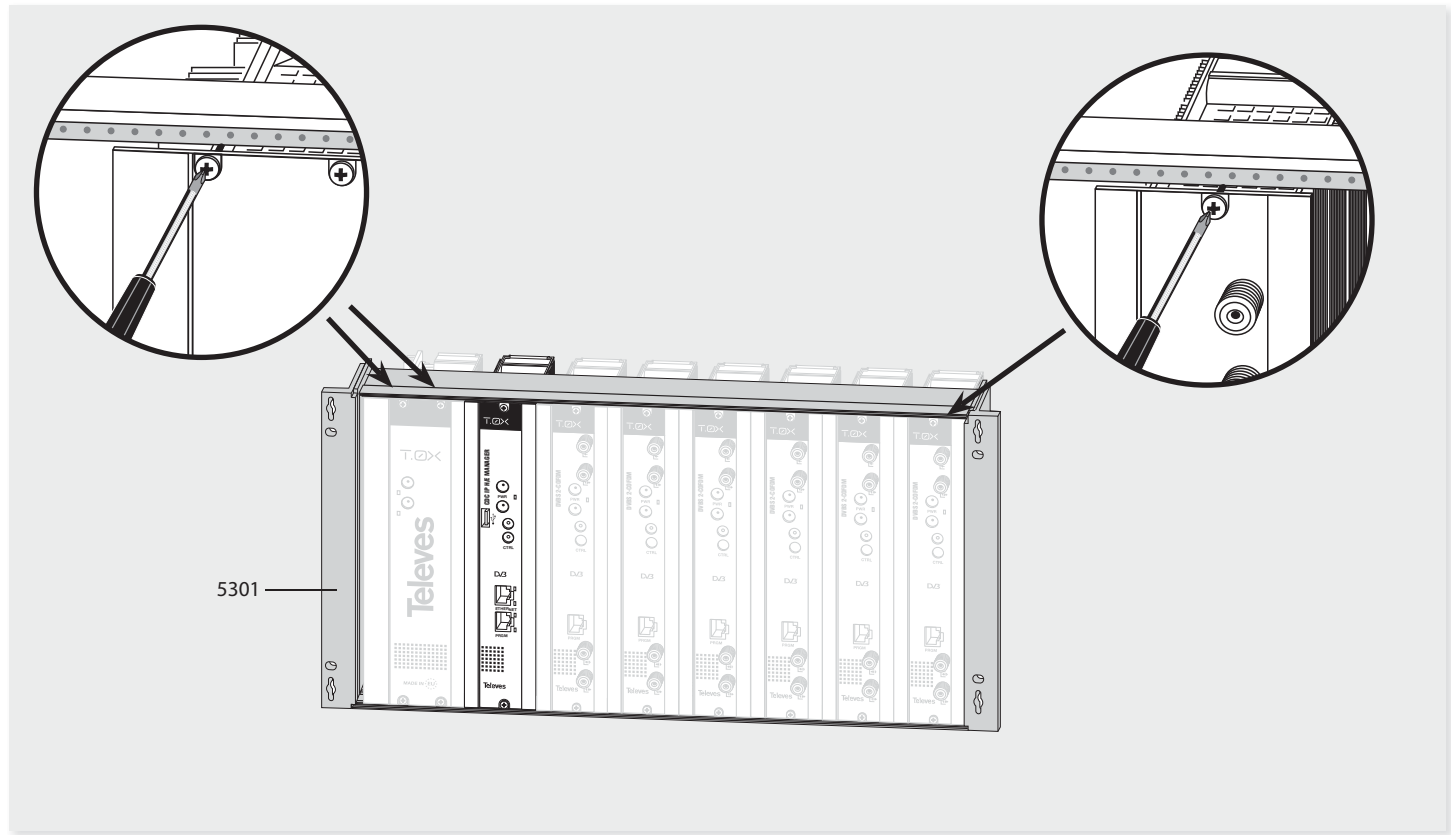
#### 3.1. Wall mounting



**NOTE:** The use of both PSU power outputs is recommended to balance the consumption. For example, 4+3 or 3+4



### 3.2. 19" rack mounting



## 4. The CDC system

The **CDC H/E Manager** implements an element with ability to convert Televés headends in a **communications center**, either through its internal modem GSM/GPRS (Ref 555901) or via the Ethernet interface for IP communications (Ref 5559 and Ref 555 901). This way, the IP world is enabled to access the control bus of all Televés headends.

- It allows **control and monitoring, both locally and remotely**, of T.OX headends of Televés, serving as a base platform for the implementation of current and possible future services.
- **Proprietary hardware platform** capable of processing, treating and properly send all the information generated by the different systems of the headend.
- It uses the 32-bit RISC microprocessor. Complete system (System on Chip - SoC), implemented with a microprocessor ARM (Advanced RISC Machines) ARM920T™ ARM® Thumb® Processor.

### Operating System (GNU / Linux)

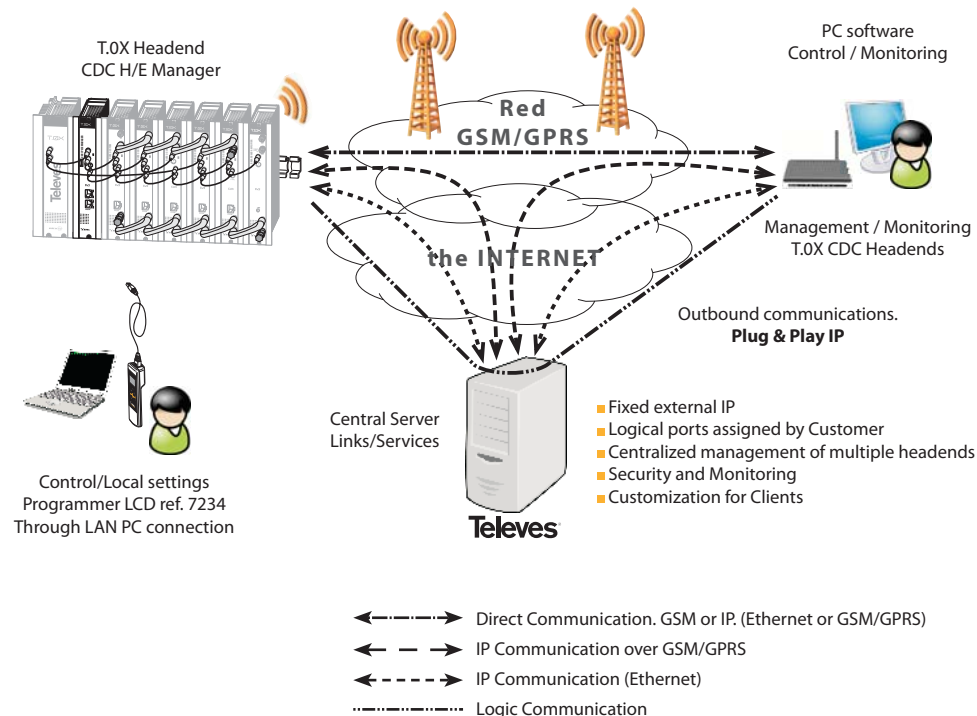
The CDC H/E Manager has the ability to access the external IP world (the Internet) using any of the available technologies, preferably broadband, always-on Internet connection (Always On).

**New services** oriented to Televés customer, through our Central Server of Links-Services,

where you can “centralize” all communications to the end customer.

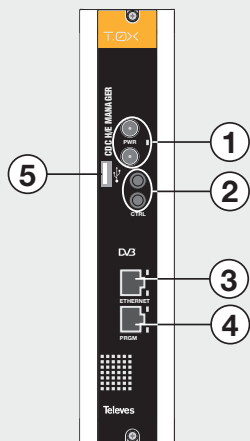
Allows for easy IP installation, by centralizing the connections.

### Plug-and-play IP installation.

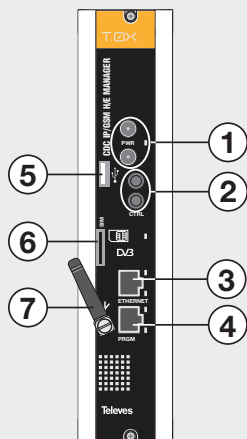


## 5. Description of modules

### 5.1. Module CDC H/E Manager



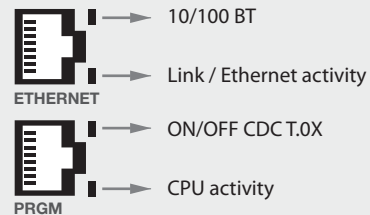
**Ref. 5559**  
CDC-IP



**Ref. 55901**  
CDC-IP/GSM

1. Powering bus connector. Status LED
2. Control bus connector
3. RJ45 Ethernet connector
4. Programmer / PC connector
5. USB Host connector
6. SIM. GSM/GPRS operator card
7. GSM Antenna (Quadband)

RJ45 connectors



## Product description

### 1. Powering bus connector. LED status.

Power input of 24 Vdc single voltage from which we obtained the rest of the internal voltages.

External LED indicator for 24 Vdc input detection.

### 2. BUS control connector. Jack input for the RS485 BUS. Communication via EIA-485[TIA-485] standard.

### 3. ETHERNET. RJ-45 Ethernet connector. Input Ethernet 10/100 Base-T standard.

### 4. Programmer/PC connector. Connector that supports configuration using the LCD RCU Ref. 7234 and can be used for debugging the system using the Linux Session..

### 5. USB Host Type A connector. Host Port Connector USB 2.0 Full Speed (12Mbps).

### 6. SIM Interface, 3 Volts (Ref 555901). Slot for inserting the SIM card operator to connect to the GSM/GPRS network. Supports Phase 2 of standard GSM11.14-SIM 3 volts. It allows hot SIM card changing. It can be removed and reinserted into modem even though it is active.

### 7. ANTENNA. Antenna GSM/GPRS' connector (Ref. 555901).

## Indicators LEDs

**LED indicator for 24 Vdc voltage.** It is used to indicate that the device is properly powered from the power bus.



**Ethernet Rate.** ON: 100Mbps; OFF: 10 Mbps.



**Ethernet link.** It indicates activity when blinking.



**It monitors the 3V8 output of the DC-DC converter.** GSM/GPRS powering.



**CPU activity.** It will blink slowly in case of little activity (and vice versa)..



**LED status of GSM/GPRS.** Indication of the availability of network. Reports on the availability of the services to the GSM network, and the actual state of the GSM call.



| LED status                          | Modem status GSM/GPRS  |
|-------------------------------------|--|
| Always ON                           | Active call (incoming or established)                        |
| Rapid sequence of blinking (1 sec.) | GSM network search. Device is not registered. Shutting down. |
| Slow sequence of blinking (3 sec.)  | Registered device in GSM network.                            |
| Always OFF                          | Device switched off  |

## GSM/GPRS Interface (Ref. 555901)

### Operating frequencies

Operating frequencies in the GSM mode, DCS, PCS are according to GSM specifications.

| MODE      | Freq. TX (MHz)  | Freq. RX (MHz)  | Channels (ARFC) | TX-RX offset (MHz) |
|-----------|-----------------|-----------------|-----------------|--------------------|
| E-GSM-900 | 890.0 - 914.8   | 935.0 - 959.8   | 0 - 124         | 45                 |
|           | 880.2 - 889.8   | 925.2 - 934.8   | 975 - 1023      | 45                 |
| GSM-850   | 824.2 - 848.8   | 969.2 - 893.8   | 128 - 251       | 45                 |
| DCS-1800  | 1710.2 - 1784.8 | 1805.2 - 1879.8 | 512 - 885       | 95                 |
| PCS-1900  | 1850.2 - 1909.8 | 1930.2 - 1989.8 | 512 - 810       | 80                 |

### GSM transmission power

The GSM/GPRS Interface of the CDC H/E Manager in GSM-850/00 mode is Class 4, in accordance with the specification, which determines a RF nominal peak power of 2 W (+33 dBm) on 50 Ohm.

### Reference' sensitivity

#### • GSM-850/900

The sensitivity, in accordance with the specifications for Class 4 GSM-850/900 portable terminals, is -107 dBm, in normal conditions of operation.

#### • DCS-1800 / PCS-1900

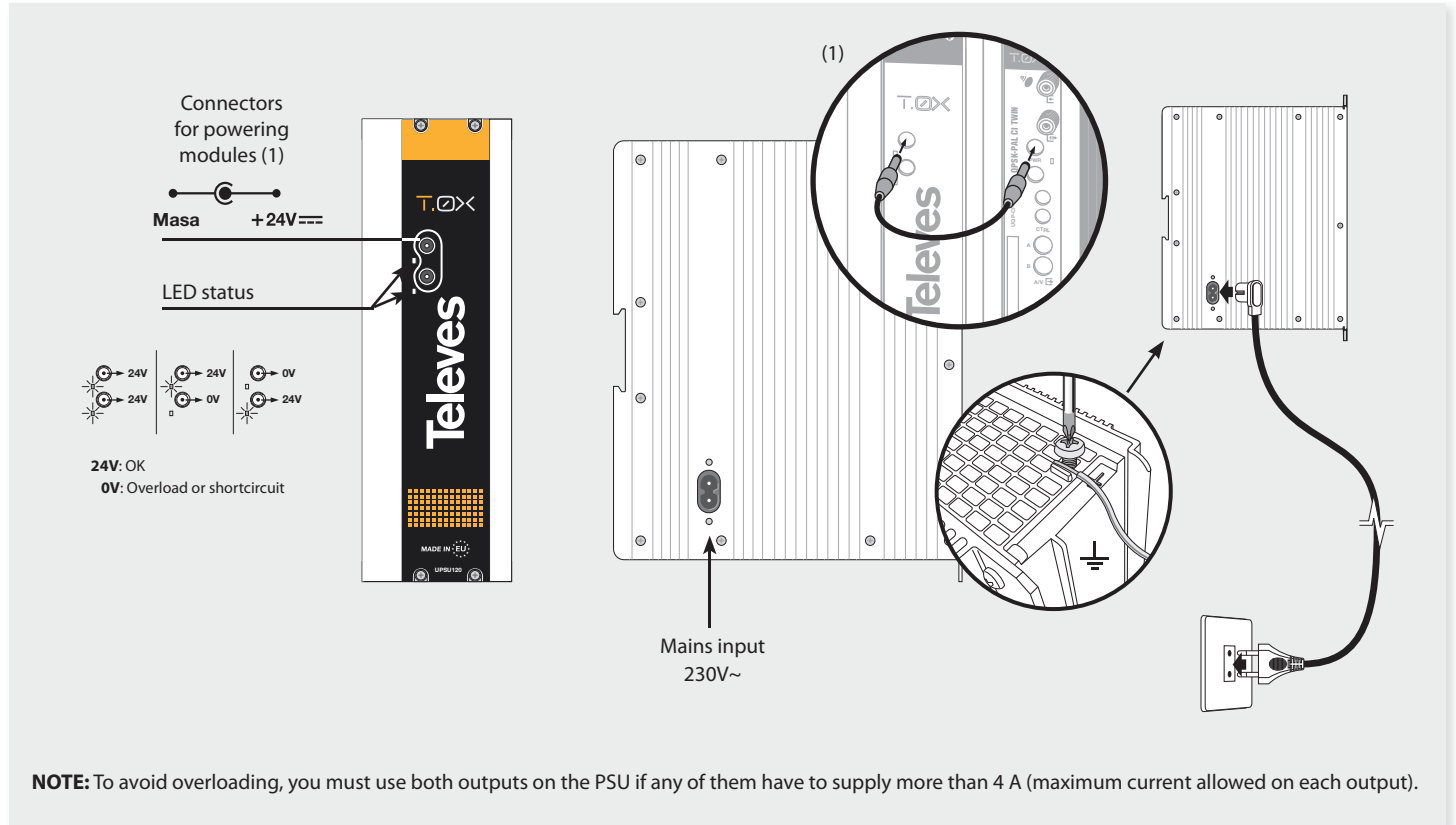
The sensitivity, in accordance with the specifications for Class 1 portable terminals DCS 1800/PCS-1900, is -106 dBm, in normal conditions of operation.

### GSM antenna

The antenna that comes with the product meets the following requirements:

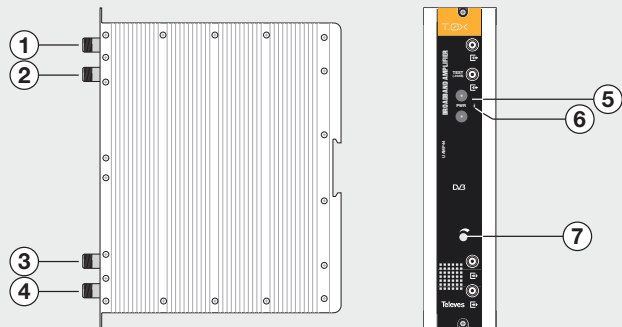
|   |  |        |
|---|--|--------|
| Bandwidth                                   | 80 MHz in EGSM,<br>150 MHz in GSM 850,<br>170 MHz in DCS,<br>140 MHz in the PCS band |        |
| Gain  | 1.5dBi ≤ Gain < 3dBi<br>(referred to the λ/2 dipole)                                 |        |
| Impedance                                   | 50 ohm   |        |
| Input power                                 | > 2 W power peak   |        |
| VSWR<br>(Voltage<br>Standing<br>Wave Ratio) | max. absolute  | ≤ 10:1 |
|   | recommended  | ≤ 2:1  |

## 5.2. Power Supply Unit



### 5.3. Amplifier options

**OPTION "A" - Ref. 5575**



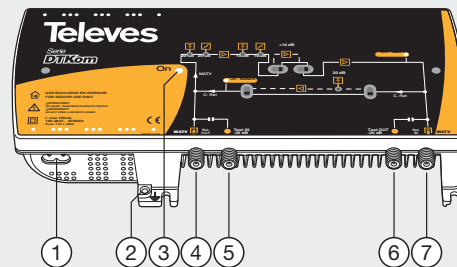
- 1. RF output
- 2. Test output
- 3. RF input
- 4. RF input
- 5. Input powering
- 6. LED status
- 7. Attenuator

It features two input signal connectors to allow channel mixing coming from two different systems. If using only one input, it is recommended to load the unused input with a 75 ohm load, ref 4061.

Features an output connector and a test output (-30dB) located at the top front panel.

The module is powered with 24V, through a patch cable equal to that used to power the other system modules.

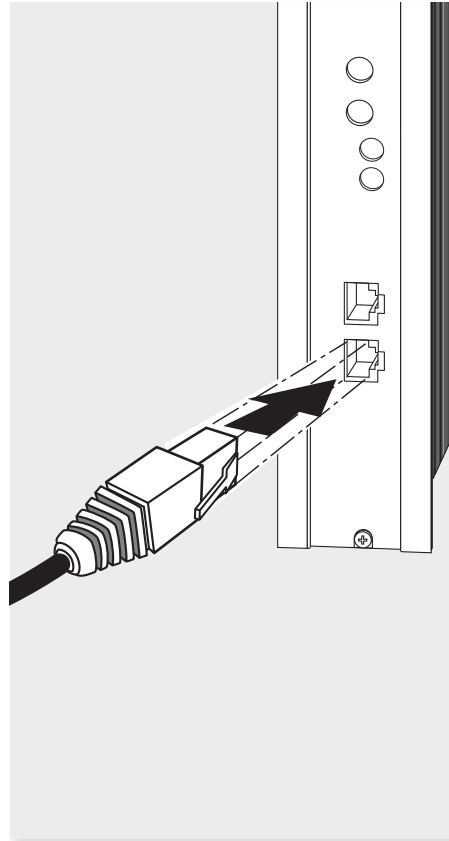
**OPTION "B" - Ref. 451202**



- 1. Mains input (196-264 V~ 50/60 Hz)
- 2. Ground terminal
- 3. ON/OFF LED
- 4. MATV input
- Return path output
- 5. MATV input test
- 6. MATV output test
- 7. MATV output
- Return path input

This is a broadband amplifier for all channels within the frequency band from 47 to 862 MHz.

## 5.4. Universal programmer PCT 5.0



The programmer is handled with 4 keys:

|       |   |
|-------|---|
| ●     | (short press) - Selection of parameter positioning of the cursor. |
| ▲-▼   | Modification of the parameter chosen by the cursor (flashing)     |
| ■     | (short press) - Change menu                                       |
| ●     | (long press) - Change between Principal and Extended menus        |
| ■     | (long press) - Save changes to memory                             |
| ■+●+▲ | Increases the contrast of the screen.                             |
| ■+●+▼ | Decreases the contrast of the screen.                             |



## 6. Installation of CDC H/E Manager

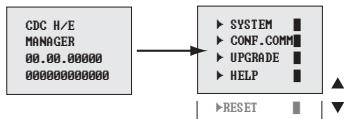
The basic installation of the CDC H / E MANAGER start with a **local setting**, either through the **LCD Programmer Ref 7234** or by the **Local Web** in IP alias (169.254.1.254).

### Programmer LCD ref. 7234

Insert the programmer in the socket ("PRGM") that is located on the front of the CDC module. First, it will display the firmware version of the programmer:



Afterwards, it is displayed the information about the CDC module connected to the programmer. (device name, SW version and serial number). Finally, the main menu appears.



How to manage the menus:

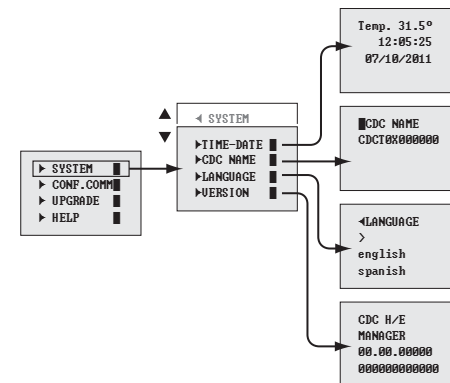
- The selected option in the menu is displayed blinking.
- To move around the menu, use ▲ or ▼ keys.

**Nota:** *If the menu is longer than one page, use the ▲ or ▼ to scroll the menu and access the options that are hidden.*

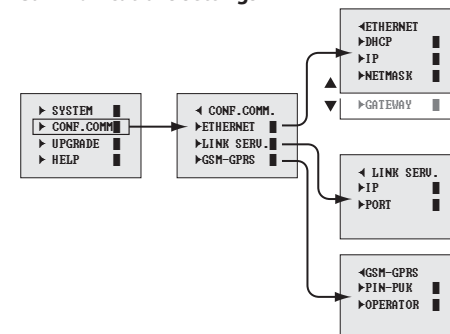
- To browse the normal menus (shown with ▶). Press █ to enter. Press ● to go back.
- In the final menu (shown with █), press and hold █ to accept. Press the ● key to return to normal menu.

The following figures show the different menus.. As shown, if you select SYSTEM, you can change the name of the **CDC H/E Manager** to enable better tracking, set the **date and time**, select the **menu language** and finally **display the Start Menu** to check the software versions and reference number of the unit.

### System



### Communications settings

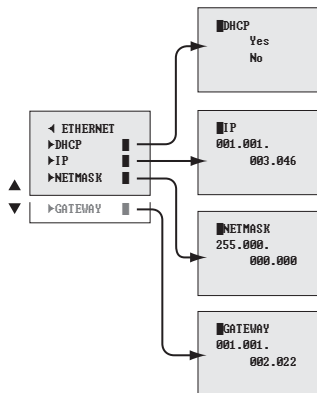


### Communications settings

#### Ethernet

In the IP configuration is desirable to **enable the DHCP** (default), thus avoiding setting a static IP with all its parameters.

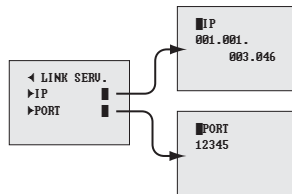
The configuration depends on the LAN that connects to the CDC H/E MANAGER.



### Communications settings

#### Links server

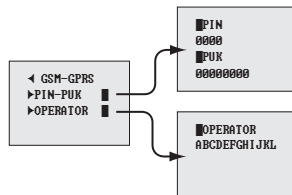
The Link Server setup, by default, brings the address and the IP port that allows to use the Links Server.



### Communications settings

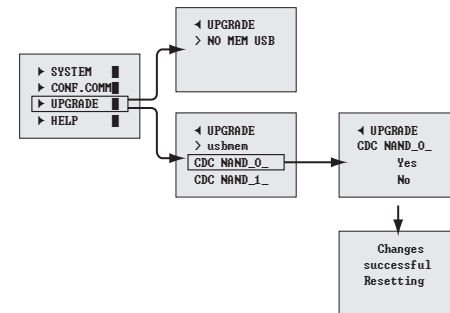
#### GPRS Modem

GPRS modem settings depends on the PIN and PUK provided by the operator. It is also necessary to provide the identity of the operator.



### Firmware update using the LCD programmer.

Using the programmer Ref 7234, and an USB memory device that contains valid files to be updated, you can carry out the updating of the CDC H/E Manager.

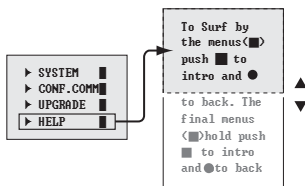


After inserting the USB storage device, and making use of the programmer, it will be shown all files that can be updated from the root of the device. By selecting one of them starts the update process. The updating will be successful if, after restarting the programmer, the home menu appears again.

## Help and Reset with the programmer.

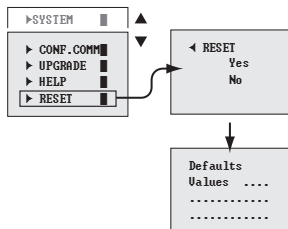
### Help

All program menus have self-help text, as well as the menu that has been exposed, which explains the possible navigation through menus and configuration of the parameters.



### Reset

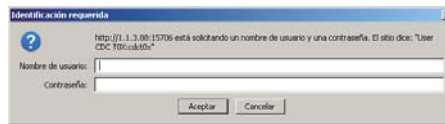
You can perform a restart of the application by using the programmer and reinstall the default values.



## Local Web Server

Local Web Server enables both the configuration and the firmware update through the different websites.

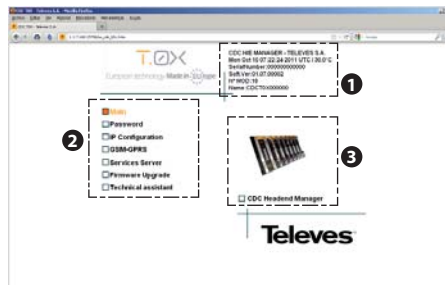
The Web Server will be published both on the local LAN address of the device as in the alias address 169.254.1.254 on port 15 706 (http://169.254.1.254:15706).



By default, the Login is:

**User's name: cdct0x**  
**Password: Televés1**

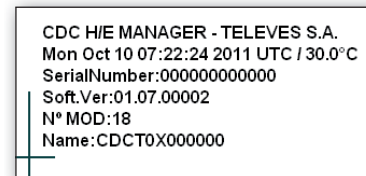
The following is the the homepage of the CDC T.0X.



As you can see, the page is divided into three zones:

### Information Box (1).

- Product information is displayed as:
- Date/Time; CDC module temperature.
  - Manufacturing serial number.
  - Version of Software.
  - Number of modules installed.
  - The name of this T.0X CDC module.



### Main Menu (2).

Access to the different module configuration options:

- Main
- Password
- IP Configuration
- GSM-GPRS (ref. 555 901)
- Services Server
- Firmware Upgrade
- Technical Assistance

- Main
- Password
- IP Configuration
- GSM-GPRS
- Services Server
- Firmware Upgrade
- Technical assistant

**Status of the headend (3).**

Access to a list of modules connected to the CDC.



**Monitoring**

The website allows monitoring at the level of operation of the devices in the RS485 BUS, sending surveys and waiting for the answer. This lets you know which devices are correct or not in the BUS.

| Add. | Ref. | Vers. | LED | Description           |
|------|------|-------|-----|-----------------------|
| 1    | 5806 | 1.02  | +   | TWIN MODULADOR TOX    |
| 5    | 5637 | 3.26  | +   | TWIN QPSK-PAL C.I TOX |
| 8    | 5631 | 1.03  | +   | DVBSS2-COFDM TOX      |
| 13   | 5633 | 1.07  | +   | DVBSS2-COFDM C.I TOX  |
| 14   | 5639 | 1.00  | +   | DVBSS2-QAM C.I TOX    |
| 102  | 5633 | 1.03  | +   | DVBSS2-COFDM C.I TOX  |
| 2    | 5634 | 1.00  | +   | COFDM-COFDM C.I TOX   |
| 103  | 5633 | 1.03  | +   | DVBSS2-COFDM C.I TOX  |
| 104  | 5631 | 1.03  | +   | DVBSS2-COFDM TOX      |
| 105  | 5631 | 1.03  | +   | DVBSS2-COFDM TOX      |
| 106  | 5631 | 1.03  | +   | DVBSS2-COFDM TOX      |
| 3    | 5634 | 1.00  | +   | COFDM-COFDM C.I TOX   |
| 6    | 5630 | 1.01  | +   | TWIN DVB S2 QAM TOX   |
| 9    | 5631 | 1.07  | +   | DVBSS2-COFDM TOX      |
| 11   | 5633 | 1.03  | +   | DVBSS2-COFDM C.I TOX  |
| 12   | 5633 | 1.07  | +   | DVBSS2-COFDM C.I TOX  |
| 15   | 5638 | 1.00  | +   | T.OX COFDM-QAM C.I    |
| 101  | 5633 | 1.03  | +   | DVBSS2-COFDM C.I TOX  |

Here is a table that contains the T0X elements of the headend and displays their status by colors.

**Correct (green)**

| Add. | Ref. | Vers. | LED | Description        |
|------|------|-------|-----|--------------------|
| 1    | 5806 | 1.02  | +   | TWIN MODULADOR TOX |

**Identified (ambar)**

|     |      |      |   |                      |
|-----|------|------|---|----------------------|
| 102 | 5633 | 1.03 | + | DVBSS2-COFDM C.I TOX |
|-----|------|------|---|----------------------|

**Error (red)**

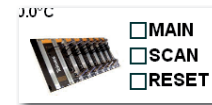
|   |      |      |   |                  |
|---|------|------|---|------------------|
| 8 | 5631 | 1.03 | + | DVBSS2-COFDM TOX |
|---|------|------|---|------------------|

There are 3 additional buttons:

**MAIN:** Return to main menu.

**SCAN:** it performs a full checking of the headend and deletes existing items.

**RESET:** Resets the application with the default values.



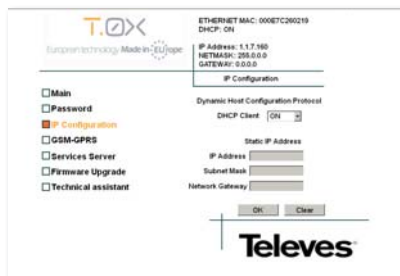
**Password and IP Configuration**

The Web server allows the configuration of Web or SSH access by password.



*Cambio de Password para el acceso Web y el acceso SSH.*

The IP Configuration allows you to enable or not the DHCP as well as statically configure the Ethernet interface.



Configuración IP, similar a la del mando LCD.

## GSM-GPRS configuration

The configuration begins by entering the PIN, PUK, and the operator's name being hired. Once active the interface displays the signal level and the GPRS IP provided by the operator.



Under GPRS connection, it displays the configuration and the assigned IP within the GSM network.



The indication of signal level is as follows:

- [ IIII ] Maximum signal level
- [ III- ]
- [ II-- ]
- [ I--- ] Minimum signal level
- [ ---- ] No signal or without an antenna

In the space reserved for information is listed all possible errors of the GMS interface: SIM card not inserted, if there are problems with the antenna, if the modem is not detected due to problems with hardware, ...

**Note:** The configuration menu GSM interface is not active in the Ref 5559, displaying that it is that reference (Ref. 5559: ETHERNET ONLY).

## Links Server

In the area for Server Configuration Links are shown the current values and the status of the connection.



## Firmware Update Website

Simple process using the Web interface, which updates the firmware of the CDC H/E Manager. After selecting the file, the upload process will show a progress bar, ending with the confirmation of the file and restarting the application.



## SSH (Secure SHell)

The CDC H / E Manager also features a SSH secure shell, through which you can access the operating system and control actions and management.

**NOTE:** Both the user and the password of the SSH and Web Server are the same and can only be changed via the web access to that page.



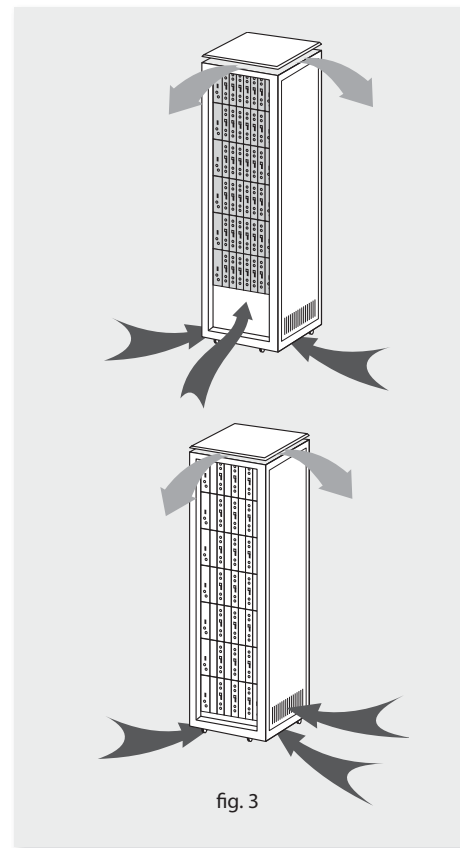
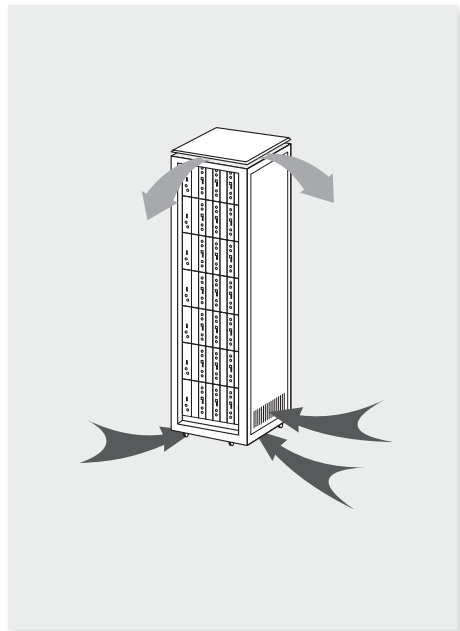
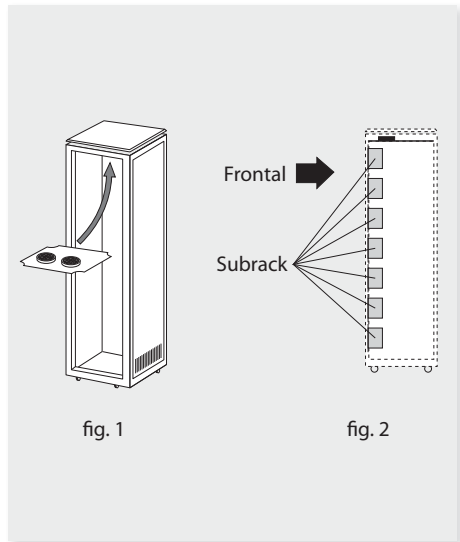


## 7. Rackmount Standards (max. 49 T.OX modules - 7 subracks with 5U height - 8,7")

### 7.1. Installation of the rack with ventilation facilities

To facilitate the renewal and circulation of the air inside the rack, in order to reduce the temperature of the units and improving their performances, it is advisable to place 2 ventilation units of 25W, particularly when the rack with the DVBS2-QAM CI is located in warm places, with ambient temperatures higher than 45°C.

These ventilators will be installed on a tray that is fixed on top of the cabinet (fig. 1 & 2). This way, the fans are forcing circulate the cool air that enters through the base of the cabinet between the modules, which is expelled through slots on top of the cabinet (3-5 cm approx.). See fig. 3.





It is very important that this process operates correctly, therefore the following must be observed:

- Do not open the side doors, as this would cause the ventilators to extract the air from the outside rather than the air inside the rack.
- Do not place objects near the rack that could clog the ventilation inlets and outlets.
- If the rack is not complete, the subracks must be placed from the top downwards without leaving any gaps in between, fig. 4.

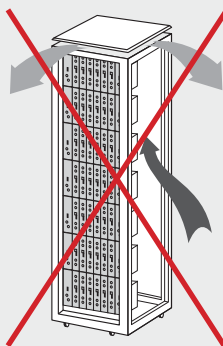
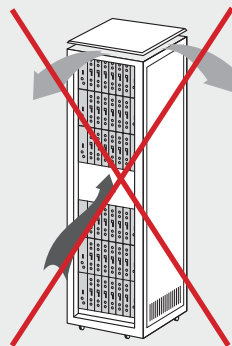
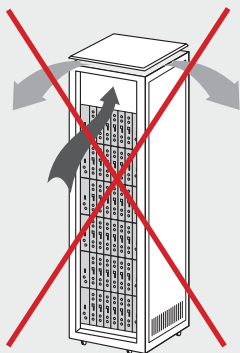


fig. 4

## 7.2. Installation of the rack without ventilation facilities

To install the units in racks without installation facilities, and when the rack is located in places with temperatures around 45°C, it is advisable to place the rack completely open; in other words, do not use the side doors. This is to facilitate the ventilation of the units, fig. 5.

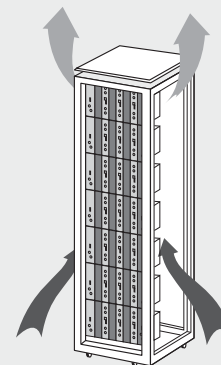


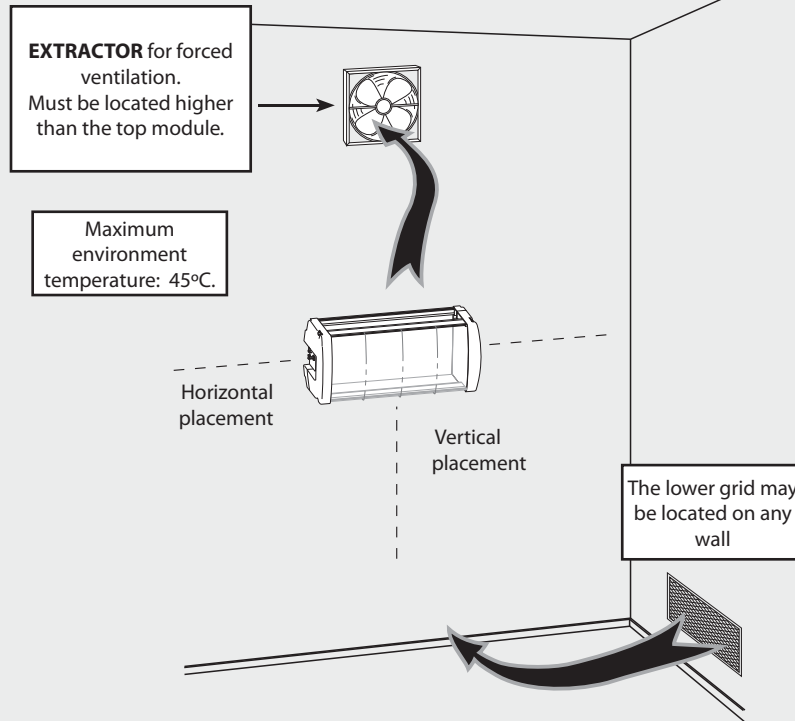
fig. 5

## 8. Standards for mounting cabinets

### IMPORTANT

The scheme of recommended ventilation is the one shown in the figure, for any way of placement of the cabinet (horizontal or vertical).

Around the cabinet located higher, the maximum temperature permitted is 45°C, either for cabinets placed horizontally or vertically.

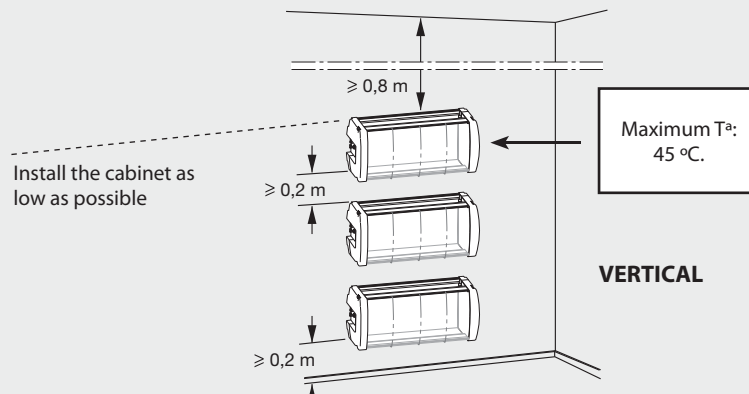
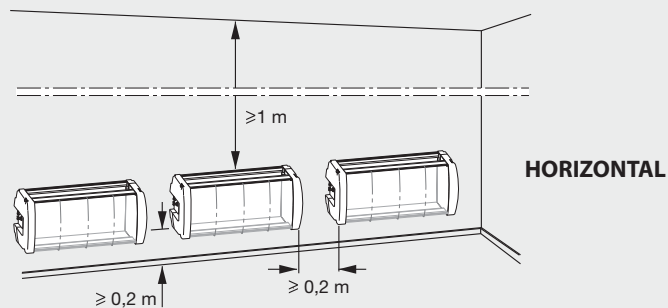


**IMPORTANT**

Horizontal placement of cabinets is strongly recommended by fixing them as near as possible to the floor .

If the horizontal placement is impossible, then vertical placement is allowed.

Respect the recommended minimum distances in the attached schemes.



## Guarantee

Televés S.A. offers a two year guarantee, beginning from the date of purchase for countries in the EU. For countries that are not part of the EU, the legal guarantee that is in force at the time of purchase is applied. Keep the purchase invoice to determine this date.

During the guarantee period, Televés S.A. complies with the guarantee by repairing or substituting the faulty equipment.

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EN 60950-1:2006 + A11:2009, EN 55022:2006 + A1:2007, EN 55024:1998 + A1:2001 + A2:2003

Santiago de Compostela, 28/12/2011



  
José L. Fernández Carnero  
Technical Director

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standardite:


ETSI EN 301 489-1:2011-Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services. Part 7: Specific conditions for mobile and portable radio and ancillary equipment of digital cellular radio telecommunication systems (GSM and GPRS).

ETSI EN 301 511:2003-Globel System for Mobile communications (GSM); Harmonized EN for mobile stations in the GSM 900 and GSM 1800 bands covering essential requirements under article 3.5 of the R&TTE directive (1999/5/EC).

EN 60950-1:2006 + A11:2009-Information technology equipment - Safety - Part 1: General requirements.

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