

Televes®



T.DX SERIES

ES CDC H/E MANAGER

Refs. 5559, 555901

User instructions

www.televes.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 128M x 8 Bit NAND Flash Memory		
Interfaces 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 Radio Interface	Transmission power	GSM-850 / 900 Power peak 2W RF (+33dBm) over 50 Ohm	VSWR (Voltage Standing Wave Ratio)	max. absolute ≤ 10 :1
		DCS-1800 / PCS-1900 Power peak 1W RF (+30dBm) over 50 Ohm		recommended ≤ 2:1
	Reference Sensitivity	GSM-850 / 900 -107 dBm DCS-1800 / PCS-1900 -106 dBm	Input power (peak)	> 2 W
	Antenna gain	1.5dBi ≤ Gain < 3dBi (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

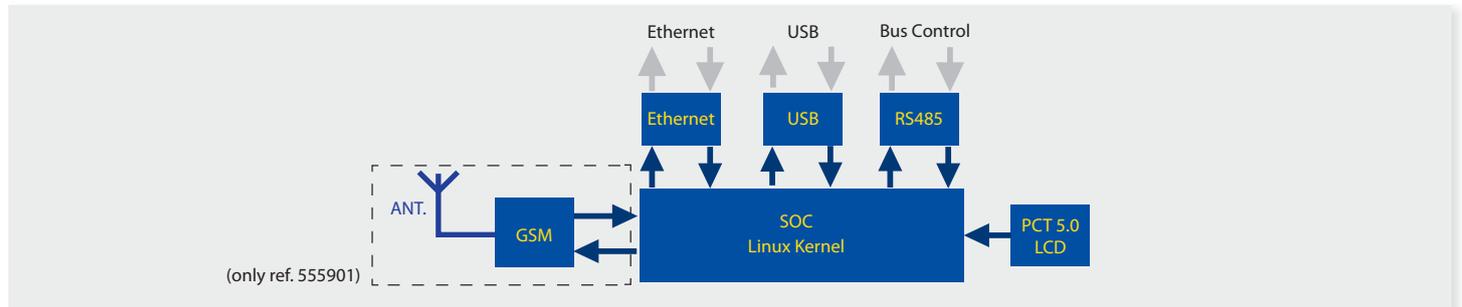
Amplifier 5575	Frequency range	MHz	46 ... 862	Connector	type	"F"
	Gain	dB	44 ± 2,5	Powering voltage	Vdc	24
	Regulation margin	dB	20	Consumption at 24 Vdc	mA	450
	Output level (60 dB 42 CH CENELEC)	dBμV	105	Test socket	dB	-30
Amplifier 451202	Frequency range ⁽¹⁾	MHz	47 ... 862	Connector	type	"F"
	Gain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

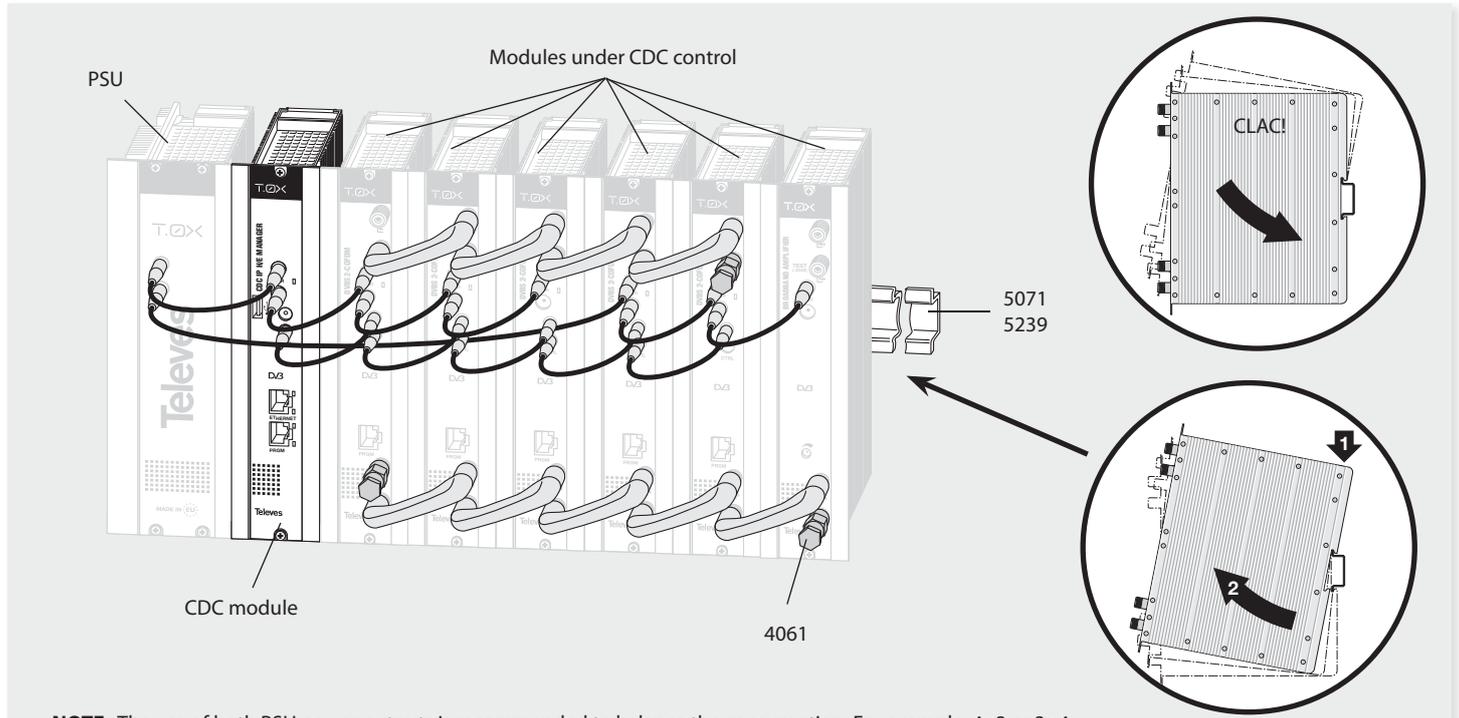


2. Description of references

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

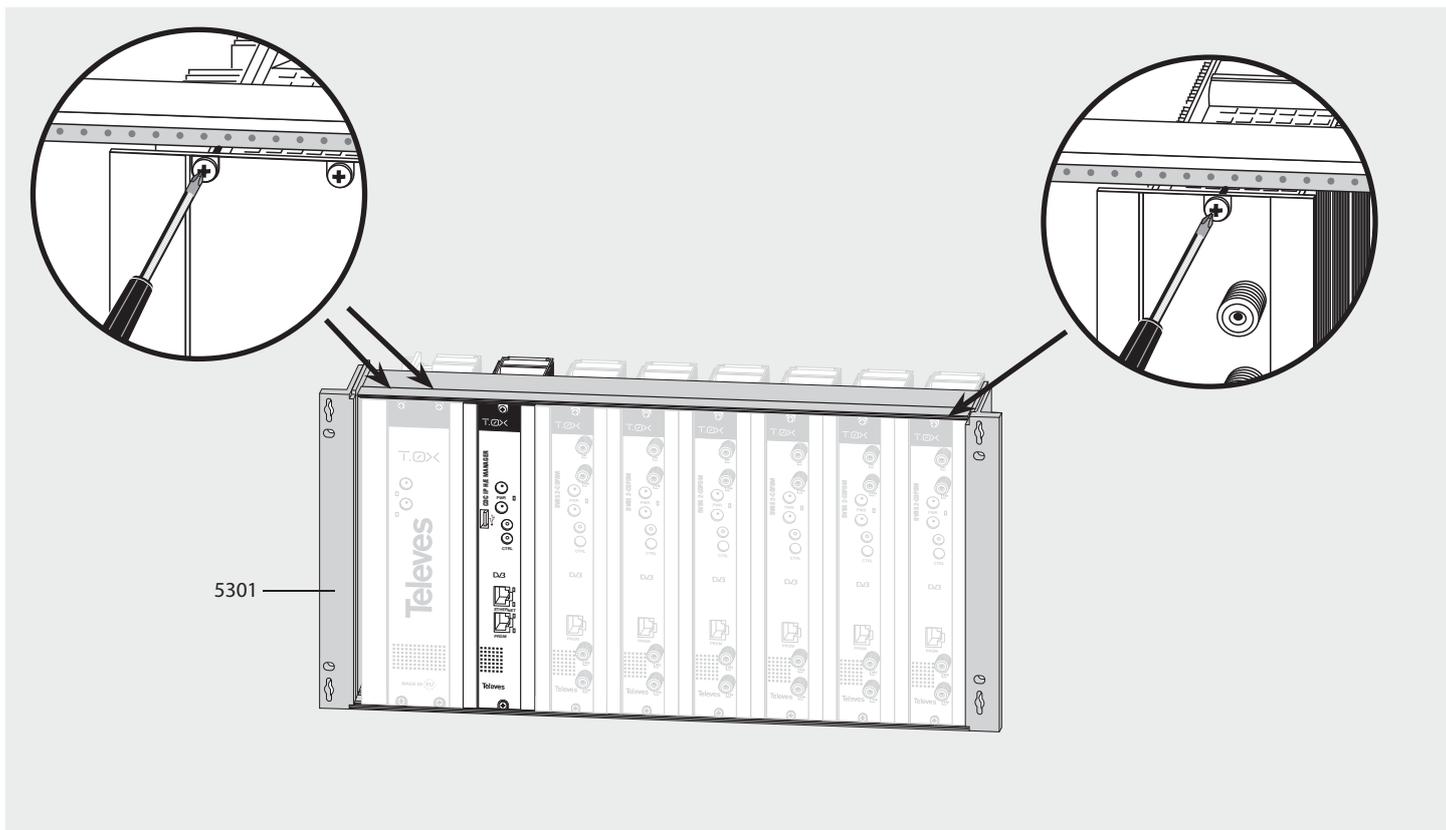
3. Mounting

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)

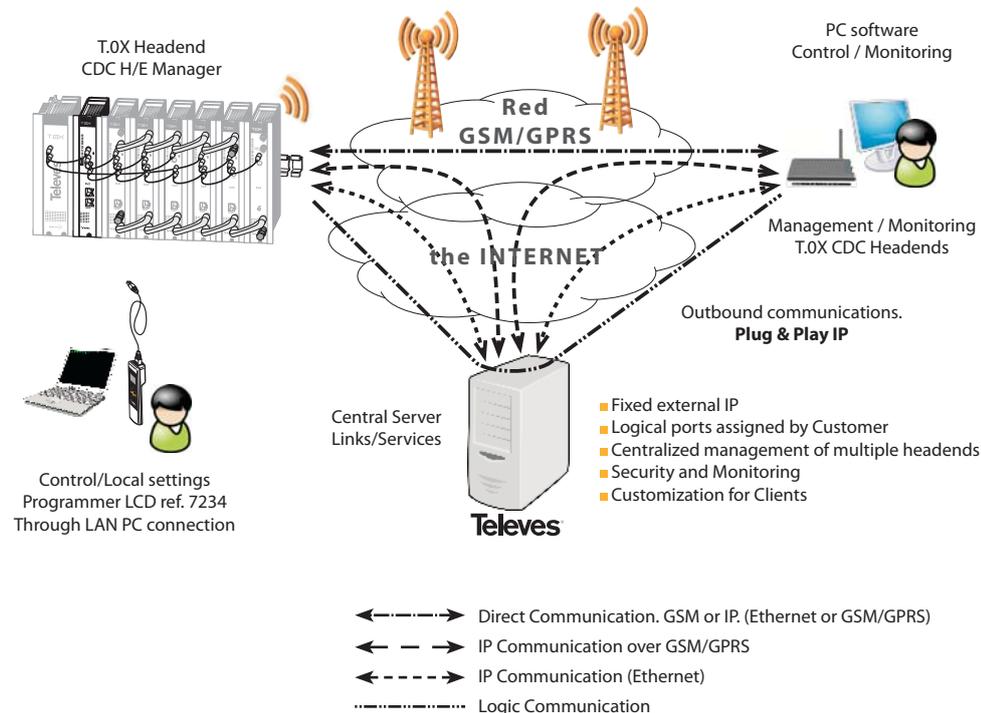
The CDC H/E Manager has the ability to access the external IP world (the Internet) using any of the available technologies, preferably broadband, always-on Internet connection (Always On).

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

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

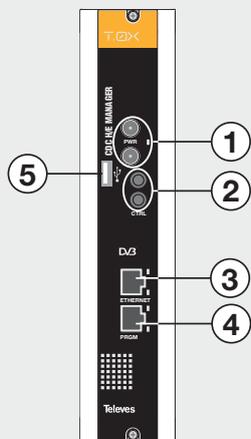
Allows for easy IP installation, by centralizing the connections.

Plug-and-play IP installation.

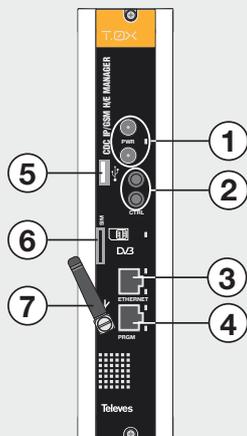


5. Description of modules

5.1. Module CDC H/E Manager



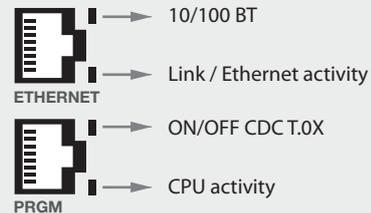
Ref. 5559
CDC-IP



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

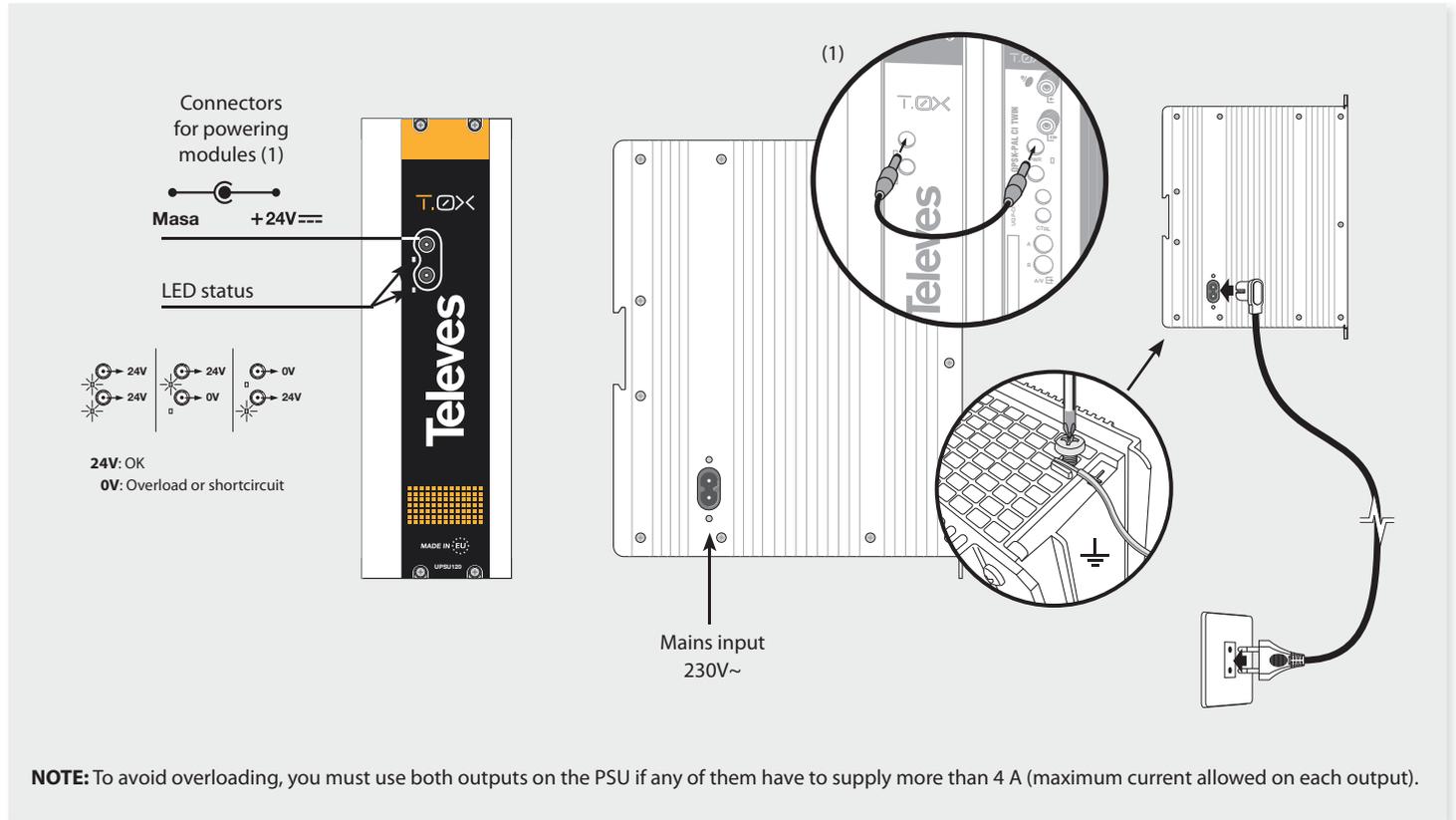
The sensitivity, in accordance with the specifications for Class 1 portable terminals DCS 1800/PCS-1900, is -106 dBm, in normal conditions of operation.

GSM antenna

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

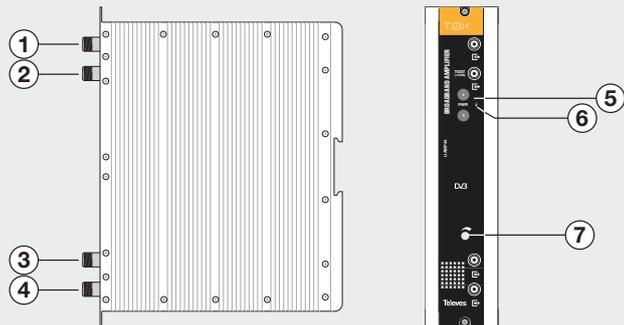
Bandwidth	80 MHz in EGSM, 150 MHz in GSM 850, 170 MHz in DCS, 140 MHz in the PCS band	
Gain	1.5dBi ≤ Gain < 3dBi (referred to the λ/2 dipole)	
Impedance	50 ohm	
Input power	> 2 W power peak	
VSWR (Voltage Standing Wave Ratio)	max. absolute	≤ 10:1
	recommended	≤ 2:1

5.2. Power Supply Unit



5.3. Amplifier options

OPTION "A" - Ref. 5575



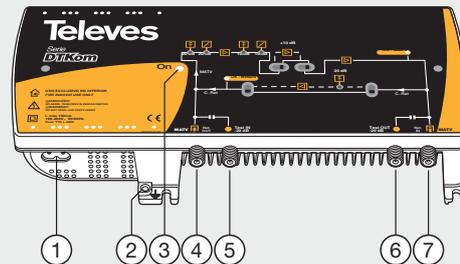
- 1. RF output
- 2. Test output
- 3. RF input
- 4. RF input
- 5. Input powering
- 6. LED status
- 7. Attenuator

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.

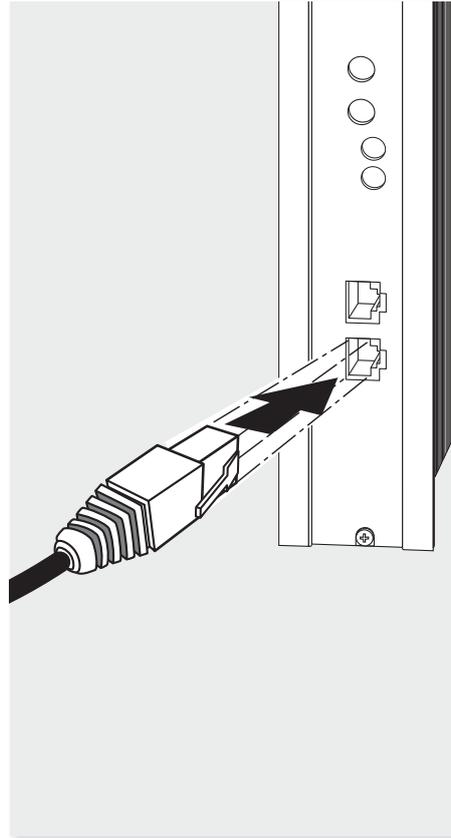
OPTION "B" - Ref. 451202



- 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

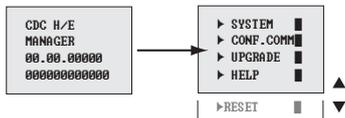
The basic installation of the CDC H / E MANAGER start with a **local setting**, either through the **LCD Programmer Ref 7234** or by the **Local Web** in IP alias (169.254.1.254).

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:

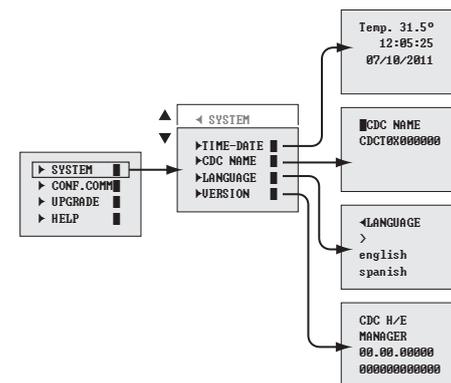
- The selected option in the menu is displayed blinking.
- To move around the menu, use ▲ or ▼ keys.

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.

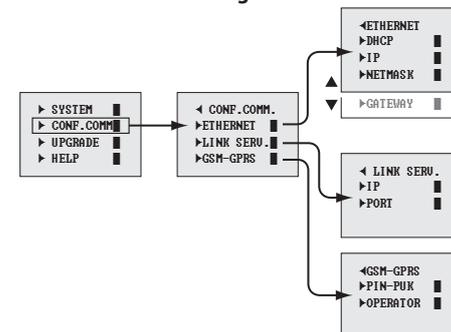
The following figures show the different menus.. As shown, if you select SYSTEM, you can change the name of the **CDC H/E Manager** to enable better tracking, set the **date and time**, select the **menu language** and finally **display the Start Menu** to check the software versions and reference number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

System



EN

Communications settings

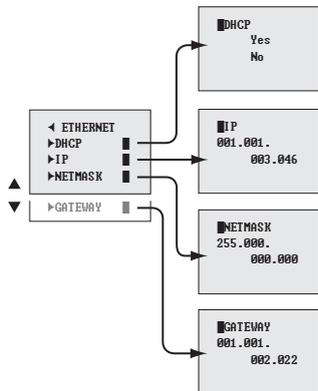


Communications settings

Ethernet

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

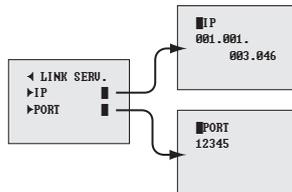
The configuration depends on the LAN that connects to the CDC H/E MANAGER.



Communications settings

Links server

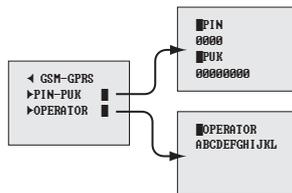
The Link Server setup, by default, brings the address and the IP port that allows to use the Links Server.



Communications settings

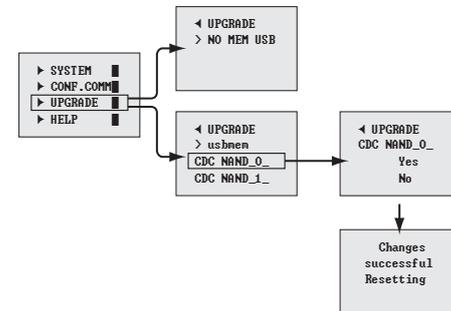
GPRS Modem

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.

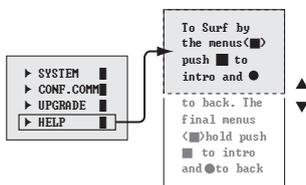


After inserting the USB storage device, and making use of the programmer, it will be shown all files that can be updated from the root of the device. By selecting one of them starts the update process. The updating will be successful if, after restarting the programmer, the home menu appears again.

Help and Reset with the programmer.

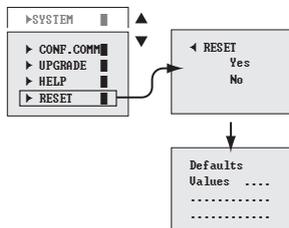
Help

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.

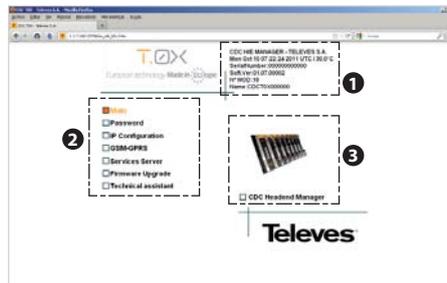
The Web Server will be published both on the local LAN address of the device as in the alias address 169.254.1.254 on port 15 706 (http://169.254.1.254:15706).



By default, the Login is:

User's name: cdct0x
Password: Televes1

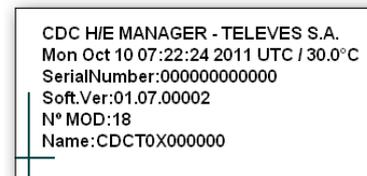
The following is the the homepage of the CDC T.0X.



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.

Device LED: ● OK - ● Warning - ● Error - ● No Information

Color: ● Poll OK ● Color: ● Poll recovered or scan Color: ● Poll Error

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	●	DVB-S2-COFDM TOX
13	5633	1.07	●	DVB-S2-COFDM C.I TOX
14	5639	1.00	●	DVB-S2-QAM C.I TOX
102	5633	1.03	●	DVB-S2-COFDM C.I TOX
2	5634	1.00	●	COFDM-COFDM C.I TOX
103	5633	1.03	●	DVB-S2-COFDM C.I TOX
104	5631	1.03	●	DVB-S2-COFDM TOX
105	5631	1.03	●	DVB-S2-COFDM TOX
106	5631	1.03	●	DVB-S2-COFDM TOX
3	5634	1.00	●	COFDM-COFDM C.I TOX
6	5630	1.01	●	TWIN DVB S2 QAM TOX
9	5631	1.07	●	DVB-S2-COFDM TOX
11	5633	1.03	●	DVB-S2-COFDM C.I TOX
12	5633	1.07	●	DVB-S2-COFDM C.I TOX
15	5638	1.00	●	T.GX COFDM-QAM CI
101	5633	1.03	●	DVB-S2-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	●	DVB-S2-COFDM C.I TOX
-----	------	------	---	----------------------

Error (red)

8	5631	1.03	●	DVB-S2-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.



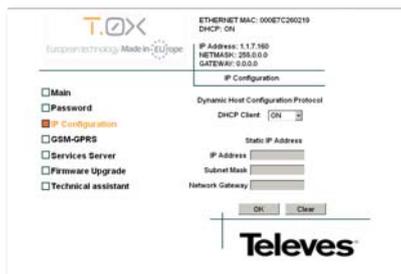
Password and IP Configuration

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



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

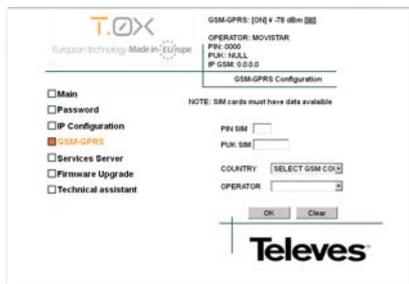
The IP Configuration allows you to enable or not the DHCP as well as statically configure the Ethernet interface.



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:

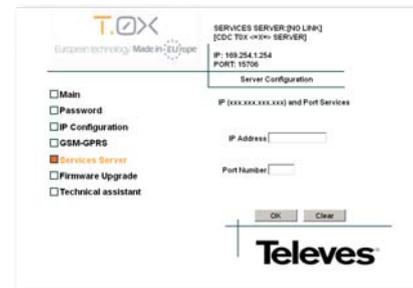
- [||||] Maximum signal level
- [|||] -
- [||] - -
- [|] - - -
- [----] No signal or without an antenna

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.

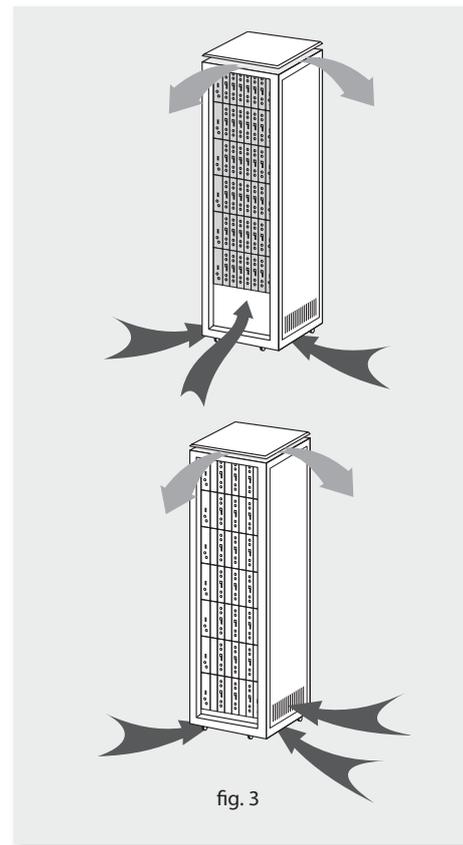
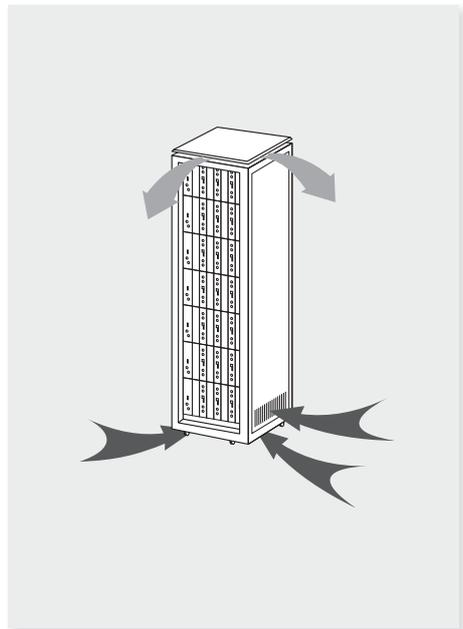
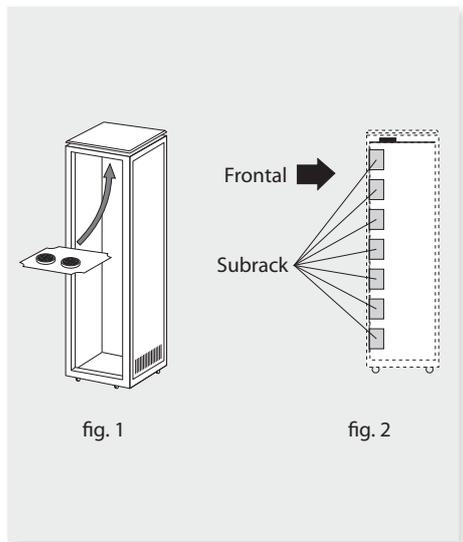


7. Rackmount Standards (max. 49 T.OX modules - 7 subracks with 5U height - 8,7")

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.

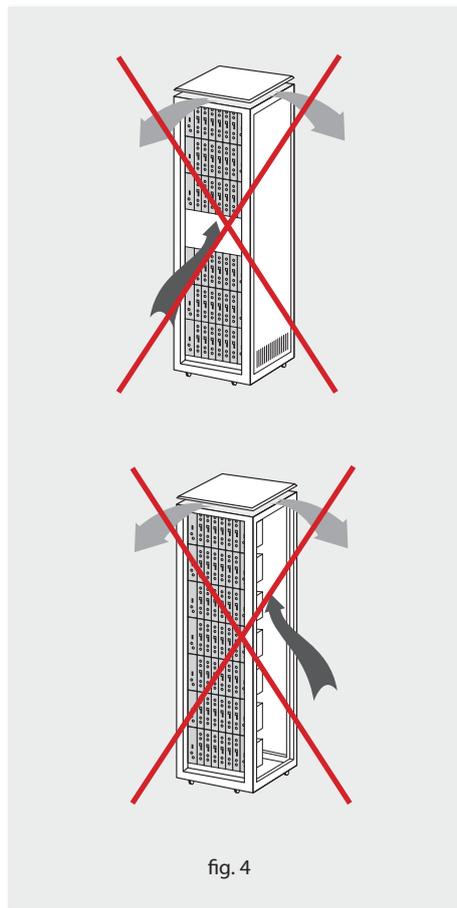
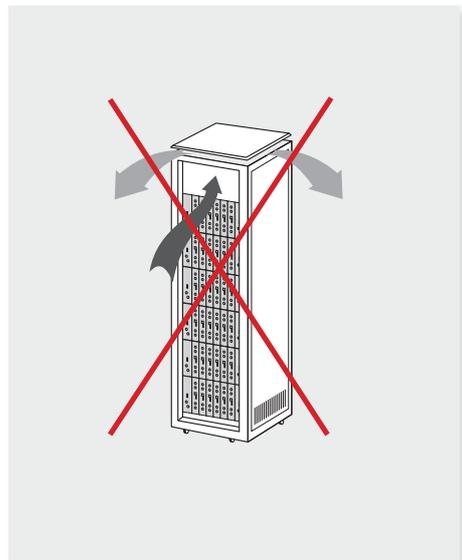


fig. 4

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.

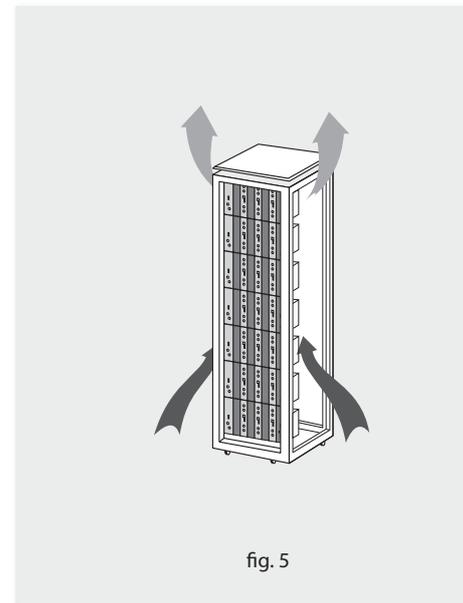


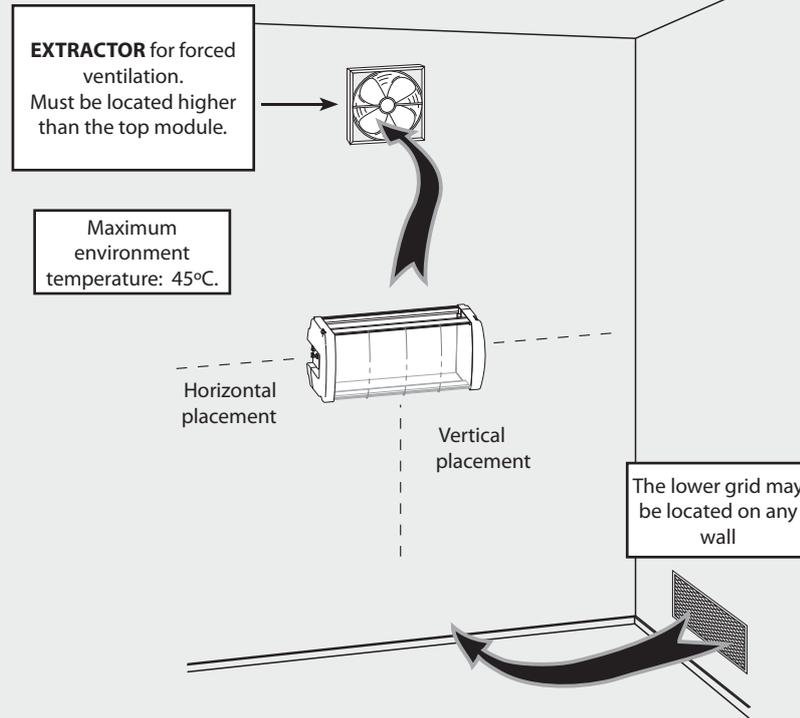
fig. 5

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.

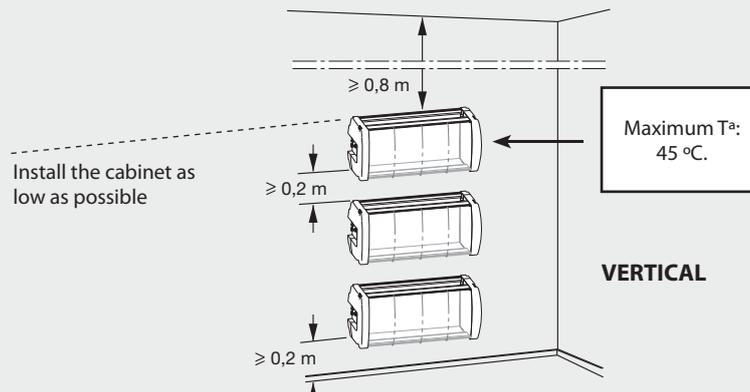
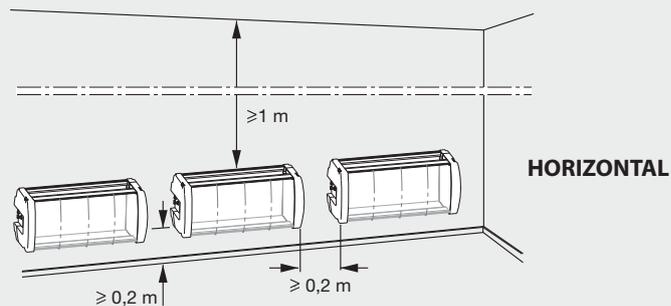


IMPORTANT

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.

The harm produced by improper usage, wear and tear, manipulation by a third party, catastrophes or any other cause beyond the control of Televés S.A. is not included in the guarantee.

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