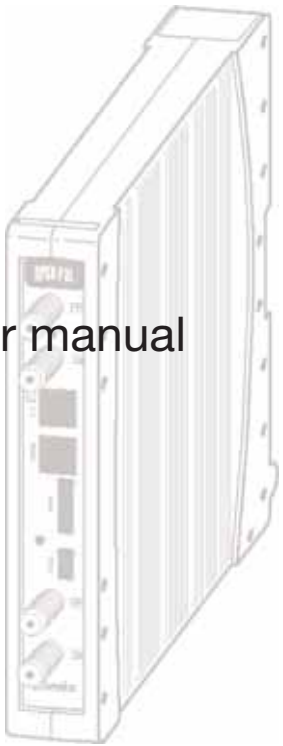
Televés

QPSK-PAL

Stereo

User manual



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1.- TECHNICAL SPECIFICATIONS

1.1.- QPSK-PAL STEREO Ref. 5037

QPSK demodulator	**LNB powering:**	Selectable 13/17V⎓ (±0.5 V) / OFF 22KHz (±2Khz) (Selec. ON/OFF)	**Input symbol rate:**	3 - 45 Mbaud
	Input through losses:	< 1.5 dB (950-2150 MHz)	**Symbol rate capture range:**	± 960 ppm
	Input frequency:	950 - 2150 MHz	**Roll-off factor:**	35%
	Frequency steps:	1 MHz	**Convolutional code:**	1/2, 2/3, 3/4, 5/6, 7/8
	Locking margin:	± 5 MHz	**De-scrambling:**	ETS300421
	Input level:	44 a 84 dBµV (-65 a –25 dBm)	**De-interleaving:**	ETS300241
	VSWR input (75 ohm):	> 7 dB (950 - 2150 MHz)	**Block code:**	RS(204,188)
MPEG-2 decoding	**Input format:**	TS MPEG-2/DVB	**Video rate:**	1.5 to 15 Mbits/sec
	Decoding:	MP@ML	**Video resolution:**	Max. 720 x 576
	TS input rate:	Max. 60 Mbits/sec	**Video output**	Composite video PAL
RF output	**Output frequency:**	46-862 MHz or channel tables	**VSWR output (75 ohm):**	10 dB min. 14 dB typ.
	Frequency steps:	250 KHz	**Through losses:**	< 1.5 dB (46-862 MHz)
	Maximum output level:	80 dBµV ±5 dB (selec. SW)	**Spurious level:**	55 dBc min. >60 dBc typ.
	Regulation margin:	> 15 dB		
General	**Consumption:**	5V⎓: 1,2 A typ 15V⎓: 0,5 A typ. 18V⎓: 0,3 A max. (if powering a converter) / 0 A (powering converter off)		

The technical specifications are defined with a maximum room temperature of 40º C.

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1 . 2.- Technical specifications Amplifier ref. 5075

Amplifier	**Frequency range:**	47 ... 860 MHz	**Connector:**	"F"
	Gain:	45 ± 2 dB	**Powering:**	15 V⎓
	Regulation margin:	20 dB	**Consumption at 15 V:**	800 mA
	Output level (60 dB):	105 dBµV (42 CH CENELEC)	**Test socket:**	-30 dB

1 . 3.- Technical specifications Power Supply ref. 5029

Power Supply	**Mains voltage:**	230 ± 15 % V~	**Maximum current provided:**	24V⎓ (0,55 A) 18V⎓ (0,8 A) 15V⎓ (4,2 A)(1) 5V⎓ (6,6 A)
	Output voltages:	5, 15, 18, 24V⎓		

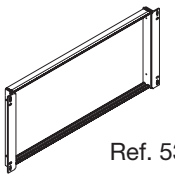
(1) If you use 24V and/or 18V, you need to take the power consumed by these from the 15V power.

2.- REFERENCE DESCRIPTION

Ref. 5037 .... QPSK-PAL (46 - 862 MHz)

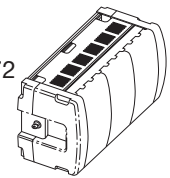
Ref. 5075 .... Launch Amplifier (47 - 862 MHz)

Ref. 5029 .... Power Supply Unit (230 V~ ± 15 % - 50/60 Hz)
(24 V⎓ - 0,55 A)
(18 V⎓ - 0,8 A)
(15 V⎓ - 4,2 A)(1)
(5 V⎓ - 6,6 A)



Ref. 5301

Ref. 5072



Ref. 7234 .... Universal Programmer

Ref. 5071 .... Wall support (10 mod. + PSU)

Ref. 5239 .... Wall support (12 mod. + PSU)

Ref. 5073 .... Blank plate

Ref. 4061 .... "F" 75 ohm adapter load

Ref. 5072 .... Universal cabinet

Ref. 5301 .... 19" subrack

Ref. 5052 .... PAL headend control

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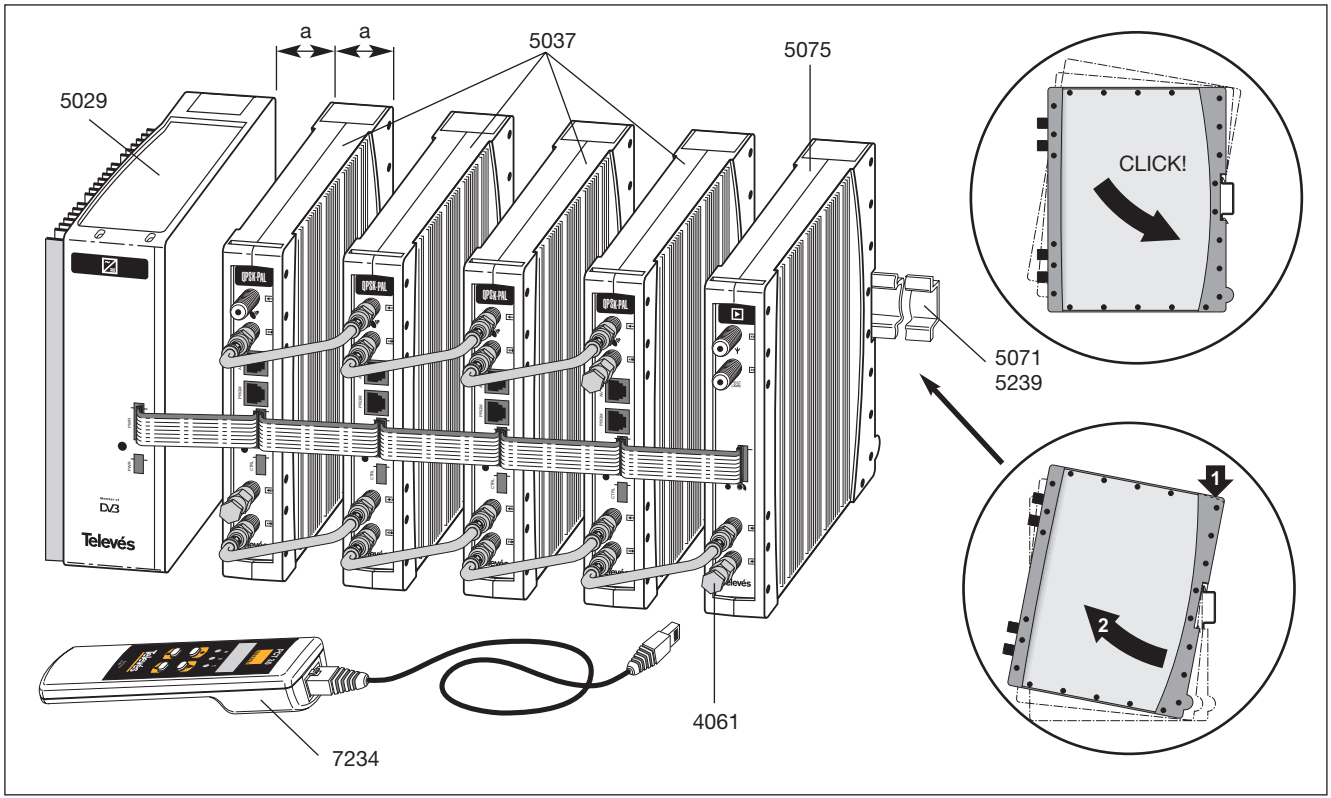
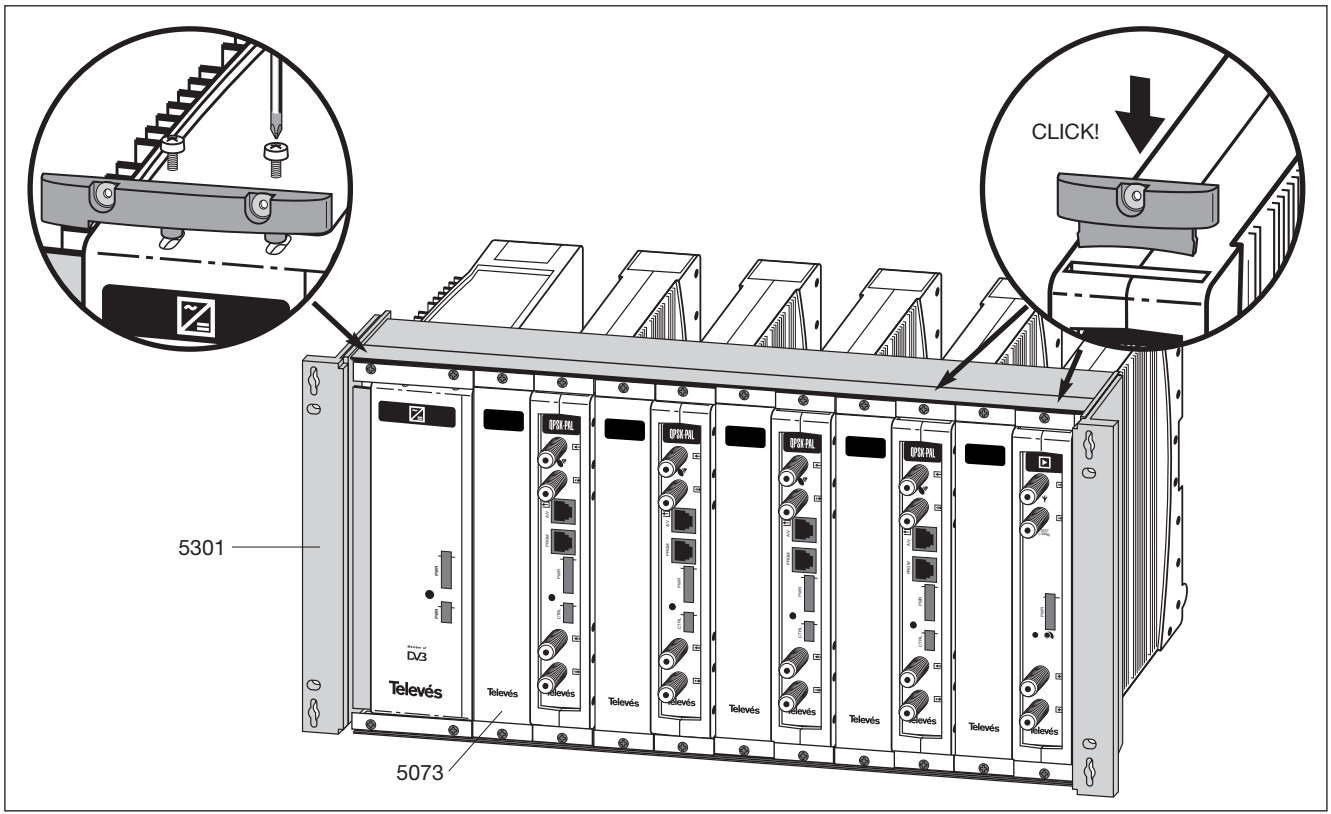
3 .- MOUNTING

3.1.- Wall mounting

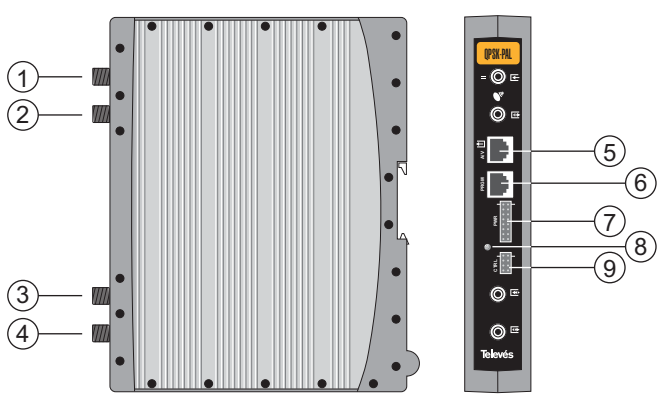


3.2.- 19” rack mounting



4. - ELEMENT DESCRIPTION

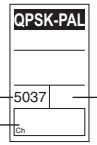
4.1.- QPSK-PAL



1.- IF input
2.- IF output
3.- RF input
4.- RF output
5.- A/V output (1)
6.- Programmer connector
7.- Powering input
8.- LED
9.- Control BUS connector

(1)

Ground -1
Video output -2
"R" audio output -3
"L" audio output -4
-5 -
-6 -
-7 -
-8 -



Product reference
Indicate the programmed output channel

Note down the device's address in the Headend Control (001 ... 254)

The QPSK-PAL transmodulator turns a TV or radio channel (chosen by the user) from the existing channels in a satellite transponder (QPSK modulation and an approximate bandwidth of 36 MHz) into a VHF/UHF channel (PAL modulation and a bandwidth of 7/8 MHz).

To do this, the unit carries out the QPSK demodulation of the input channel (transponder), thereby obtaining an MPEG-2 TS (MPEG-2 transport stream) to carry out the subsequent modulation (according to the standard) of the audio and video signals of the selected program in any channel or frequency between 46 and 862 MHz.

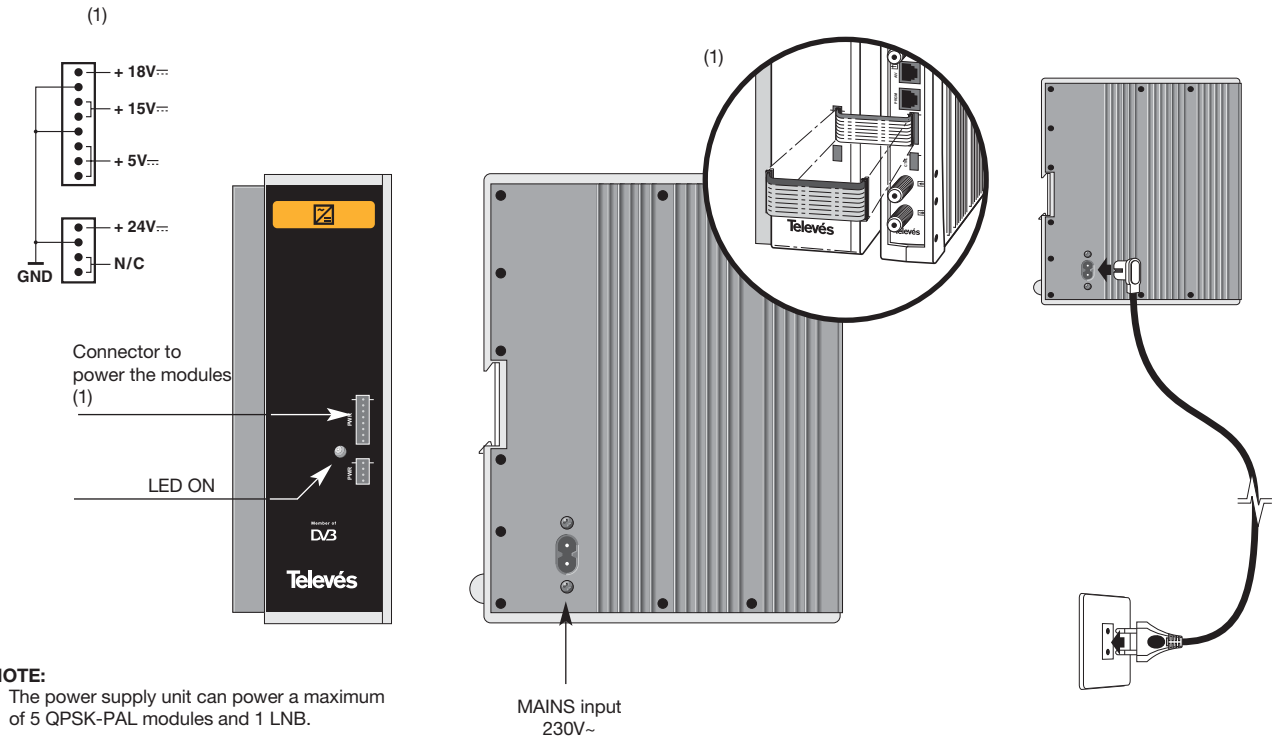
The selection of the different parameters (input frequency, S.R, output level, output frequency, ...) is carried out via the programmer ref. 7234, that connects to the front of the device.

It is also possible to control the unit from a PC as explained in section 6.

The QPSK-PAL transmodulator disposes of an IF input and output in the upper "F" connectors with the aim of enabling the input signal to pass to various modules and to allow the powering of a converter via the IF input (13V or 18V), as well as to be able to generate a 22 KHz tone for the selection of the converter's oscillator.

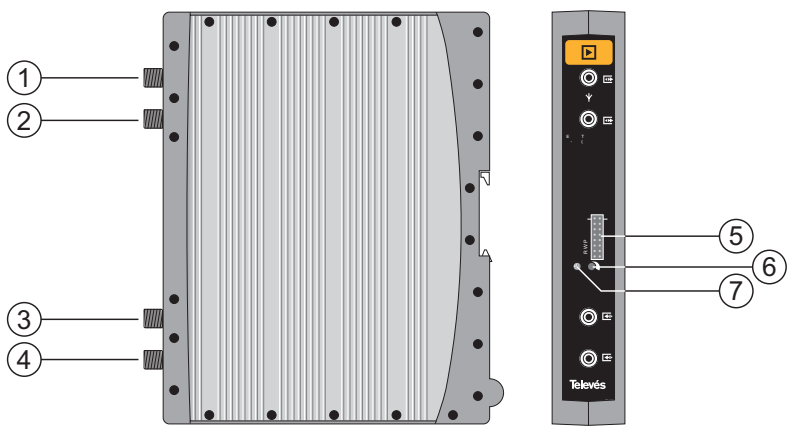
It also has an RF input and output connector so as to be able to mix the channels for their subsequent amplification.

4.2.- Power supply unit



NOTE:
The power supply unit can power a maximum of 5 QPSK-PAL modules and 1 LNB.

4.3.- Amplifier



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

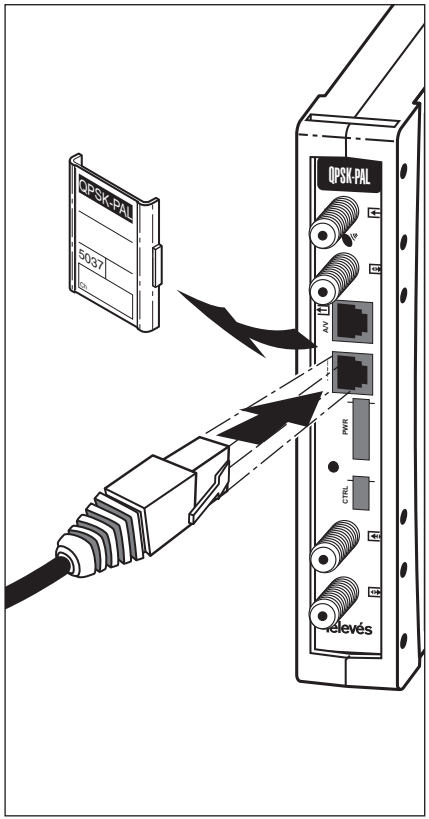
The amplifier carries out the amplification of the generated channels in the QPSK-PAL transmodulators, covering a frequency range of 47 - 862 MHz.

It disposes of two input signal connectors to mix the channels coming from two systems. If only one of the inputs is used, it is advisable to load the unused input with 75 ohm, ref 4061.

The amplifier disposes of an output connector and a Test socket (-30dB) located at the top of the front panel.

The amplifier is powered with 15V via a cable, the same type as that used for powering the other modules of this system.

4. 4. - Programmer ref. 7234



The programmer consists of 4 buttons:

■ : Button to change the programming menu and to save data.

● : Button that selects a digit within a specific programming menu. It also carries out the change from the normal menu to the extended menu.

▲ : The button that increases the value of the selected digit.

▼ : The button that decreases the value of the selected digit.

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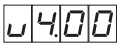
5. - HOW TO USE THE PRODUCT

To carry out the configuration of each QPSK-PAL module, it is necessary to use the programmer and follow these steps:

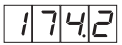
5.1.- Normal menu

Insert the programmer into the front connector of the QPSK-PAL programming module ("Program."). First, the version of the software will appear. For example 4.00:



a.- Output channel

After a couple of seconds, the first menu appears. This is the **Output channel**, for example 174.25 MHz:

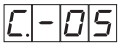


To change the value indicated, you must press the ● button, this will make the selected digit flash on and off. By using the ▲ and ▼ buttons, you can modify the value of the digit. By pressing the ● button again, the following digit is selected, that can be modified modificado too. When the cursor is over the decimal digit, and when you press the ▲ and ▼ buttons, the following permitted digits will appear:

- .0 => .00 MHz
- .2 => .25 MHz
- .5 => .50 MHz
- .7 => .75 MHz

The range of input values is from 46 to 862 MHz.

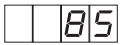
It is also possible to select the **output channel** if in channel mode (see extended menus). In this case, the number of the chosen channel will appear, for example, channel 5:



In this case, only the ▲ and ▼ buttons can be used to select the desired channel.

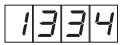
b.- Output level

By pressing the ■ button, you enter the **output level** selection. In this case, there is no cursor for the selection of the digit, and instead the ▲ and ▼ buttons are used to choose the desired output level from between 00 (minimum) and 99 (maximum). For example, 85:



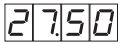
c.- Input frequency

The following menu allows the user to enter the **input frequency**. This is done in the same way as the output frequency menu. The ● button allows you to select the digit that you want to modify, and you can either increase or decrease its value using the ▲ or ▼ buttons. The range allowed for the input frequency values is from 950 - 2150 MHz. For example, 1334 MHz:



d.- Symbol rate

By pressing the ■ button, the following menu appears on the display. This is the **symbol rate**, for example 27.50 Mbaud:



This is done in the same way as the input channel; the ● button allows you to choose between the different individual digits of the symbol rate and the▲ and ▼ buttons modify the selected digit. The range of values permitted for the symbol rate is from 3.00 to 45.00 Mbaud.

If you put the cursor over the digit that corresponds to the decimal figure and then press the ● button again, the display will

change and the cursor will move to the digit that corresponds to the units. For example, if we have a baud rate of 14.356 Mbaud the following will appear on the display:

When we press the ● button again, the display will change again and the cursor will be situated over the digit that corresponds to the tens of thousands.

Normally, it will only be necessary to modify the units in case of a low baud rate.

e.- Program number

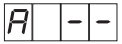
By pressing the ■ button, you enter the **program** selection, for examle, program 5:

The ▲ and ▼ buttons let you choose the desired program between 1 and the number of programs available in the *multiplex*. This change takes place immediately but it is not saved.

f.- Audio channel

By pressing the ■ button, the selected **audio channel** is displayed, for example, channel 1:

It is possible to select the desired audio channel between those available in this service using the ▲ and ▼ buttons. If this service doesn't dispose of an audio channel, this will be shown on the display:

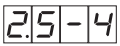


As is the case with the program number, the change takes place immediately, but it is not saved.

g.- CBER

By pressing the ■ button, the **CBER** reading or the bit error rate before Viterbi is displayed. Since this is a read-only menu, neither the ● button, nor the ▲ and ▼ buttons are in use. The first three digits correspond to the mantis and the third corresponds to the exponent.

Example:



This indicates an error rate of 2.5 x 10^{-4}. A signal with a typical C/N of around 12 dB should correspond to an error measurement of approximately 10^{-4}, the minimum for an acceptable reception being around 10^{-2}.

Once here, the main parameters of the QPSK-PAL module have been configured. By pressing the ● button for approximately 3 seconds, you can access a series of options that are less frequently used and that are called the Extended Menus.

5.2.-Extended menus

a.- Device address

The first option that appears in the extended menus is the **selection of the device's address**. For a headend to be remote controlled, each controllable element must have a *unique address*.

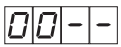
We must make sure that no addresses are repeated in the control bus.

The ● buttons lets us select the digit that we want to modify, increasing or decreasing the value using the using the ▲ or ▼buttons. The addreses available are from 1 ... 254, for example, the address number 34:

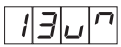
b.- LNB powering

The next extended menu is the **LNB powering mode** and the selection of the **22 KHz**

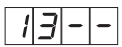
tone. There are 5 possible options, that can be selected via the ▲ and ▼ buttons. These select the powering voltage of the LNB via the input signal of the QPSK-PAL module. The 22 kHz tone is also chosen in this way:



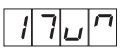
LNB not powered. No tone.



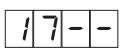
LNB powered at 13V. Tone activated.



LNB powered at 13V. Tone de-activated.



LNB powered at 17V. Tone activated.



LNB powered at 17V. Tone de-activated.

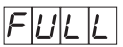
c.- Video format

The next menu that appears is the **Video format**. This lets you select the type of output for the video mode when transmissions are received in 16:9 format.

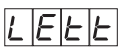
There are three possible ways to adapt the picture to the screen format 4:3.

- Pan&Scan: The picture is centralised and cut along the sides.

- Full Screen: The picture is adapted to the whole screen but it is deformed.

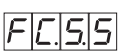


- Letterbox: The whole picture is shown and some black bars are added along the top and bottom.



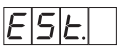
d.- Audio subcarrier

By pressing the ■ button again, the **audio subcarrier** frequency in MHz selection menu appears . The possible values, that are selected using the ▲ and ▼ buttons are 4.5, 5.5, 6.0 and 6.5 MHz. When the selected carrier is 5.5 MHz the output is stereo and 2 carriers are created for the other settings. If the output is mono, an audio carrier is created in 5,5. For example, for 5.5 MHz:



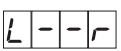
e.- Audio mode

If 5.5MHz is selected in the audio subcarrier menu, we can select the STEREO modes (DUAL / L R):



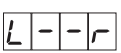
Stereo mode (L+R)/2 —> 5.5MHz and R —> 5.74MHz.

Dual mode L—>5.5 MHz and R—> 5.74MHz. With a compatible television set, you will be able to select the channel that you want to listen to (ZWEITON).

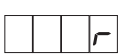


Modulates (L+R)/2 (Mono mode)

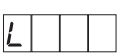
If the audio subcarrier that is selected is not 5,5MHz there are some mono possibilities (audio L, audio R or L+R/2).



Modules (L+R)/2 (Mono mode)



R is modulated in the carrier(s).



L is modulated in the carrier(s).

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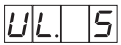
The different modes can be changed using the ▲ and ▼ buttons.

f.- Video carrier

The following menus enable the selection of the different modulation parameters. The first of these is for the selection of the **video carrier** level (modulation depth) between 8 possible values (from 0 - 7), via the ▲ and ▼ buttons. For example 5:

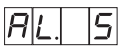


The relationship between the parameter selected and the programmed modulation depth is approximately the following:

0: 72.5% **4**: 82.5%
1: 75.0% **5**: 85.0%
2: 77.5% **6**: 87.5%
3: 80.0% **7**: 90.0%

g.- Audio deviation

By pressing the ■ button, it is possible to access the following menu, where we can choose the **audio deviation** (audio level). There are 14 possible values (from 0 to 13) that can be selected using the ▲ and ▼buttons. For example. 5:



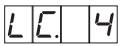
The values that appear, indicate the input audio level for each digit on the display of the programmer which is used to make the modulation deviation ± 50KHz as long as there is an input signal of 1KHz.

Display	AL (dBm)
1	7
2	5
3	3
4	1
5	0
6	-1
7	**-2 (1.7Vpp aprox.)**
8	-3
9	-5
10	-7
11	-9
12	-11
13	-13
14	-15

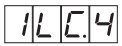
In other words, if the input signal is 1KHz at 1,7Vpp we have to program the value 5 into the AL menu of the programmer.

h.- Carrier ratio

The following menu lets us select the **carrier ratio** (video to audio). The user can select one of 4 possible values. For ex. 4:



If the subcarrier were 5.5MHz this menu would be referring to the main stereo carrier (5.5 MHz) and the menu would show:

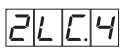


The relationship between the parameter and the carrier ratio in dB is approximately:

1: -11dB **5**: -15dB
2: -12dB **6**: -16dB
3: -13dB **7**: -17dB
4: -14dB **8**: -18dB

i.- Secondary carrier ratio

The following menu (it only exists if the audio subcarrier frequency is 5.5) lets the user select the stereo **secondary carrier ratio** (5.74) (video to audio). It is possible to select one of 4 possible values. For example 4:



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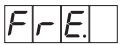
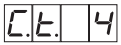
The relationship between the parameter and the carrier ratio in dB is approximately:

1: -18 dB
2: -20 dB
3: -22 dB
4: -24 dB

j.- Frequency/output channel

The following menu allows us to select the **frequency-channel** menu for the output frequency. There are 7 tables for the available channels. The selection is carried out using the ▲ and ▼ buttons.


Frequency mode.


Channel mode.
Table 4 has been selected

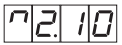
As we change from the frequency mode to the channel mode, the lowest channel is chosen from the selected table. As we change from the channel mode to the frequency mode, the channel frequency that was selected appears on the display.

There are 7 possible channel tables that can be selected using the following menu:

Table **1**: CCIR, New Zealand and Indonesia. Italian channels
Table **2**: China, Taiwan and CCIR hyperband..
Table **3**: M/N, Chile.
Table **4**: France.
Table **5**: Australia.
Table **6**: South Africa, K1 (8 MHz), I (Ireland, 8 MHz).
Table **7**: Old USSR and OIRT.

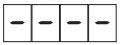
j.- MPEG decoder version

The last of the extended menus indicates the **firmware version** of the MPEG. For example version 2.10:



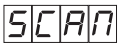
5.3.- Parameter saving

To record the data, it is necessary to press the ■ button for approximately 3 seconds. When the data is correctly recorded, the following appears on the programmer's display:



If the configuration data is modified but is not saved, the previous configuration is retrieved once 30 seconds has passed, in other words, the changes carried out are cancelled.

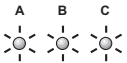
Whenever an input parameter is modified (input frequency and/or symbol rate) and once the unit has managed to lock onto the input signal, an automatic search of all the available services will be carried out. The time this takes depends on the number of services that the transponder has. While the analysis is taking place, the display will show the following message:



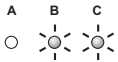
During the analysis of the input signal, it is not possible for the programmer to carry out any other operation.

5.4.- LEDS

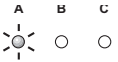
Finally, the programmer's LEDS indicate the following operational status:



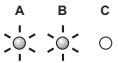
Correct operation



Insufficient input signal level



Unlocking of the QPSK demodulator



MPEG incorrectly tuned

If the LEDs are switched on, this means that it is working properly. If one of them is switched off, this means that something is not working properly.

NOTE:
The "C" LED will switch off whenever the selected program has not been tuned in propertly. This will happen every time a scrambled service is selected.

6.- CONTROLLING THE DEVICE

This version of the QPSK-PAL permits configuration and control from a PC, both locally and via remote control.

a.- Local control

The user must have the "Headend Management" program and a special cable (provided with this program) that connects a PC serial port to the "PRGM" connector of the QPSK-PAL.

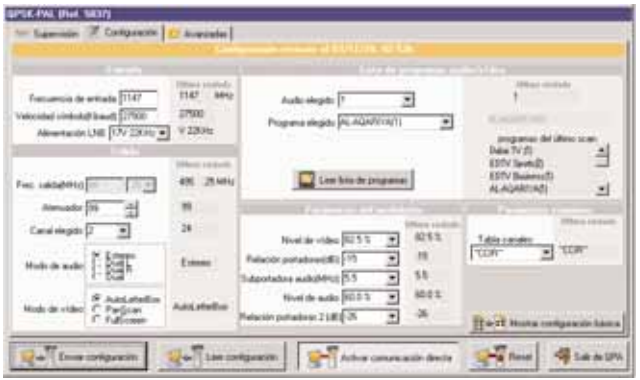
Using the program, the user can configure and read all of the parameters, as well as check that the device is working properly.

Below is a configuration screen of the QPSK-PAL.

It is possible to see that the configurable parameters are the same as those that can be configured using the remote control. Another advantage is that you can select the program by its name.

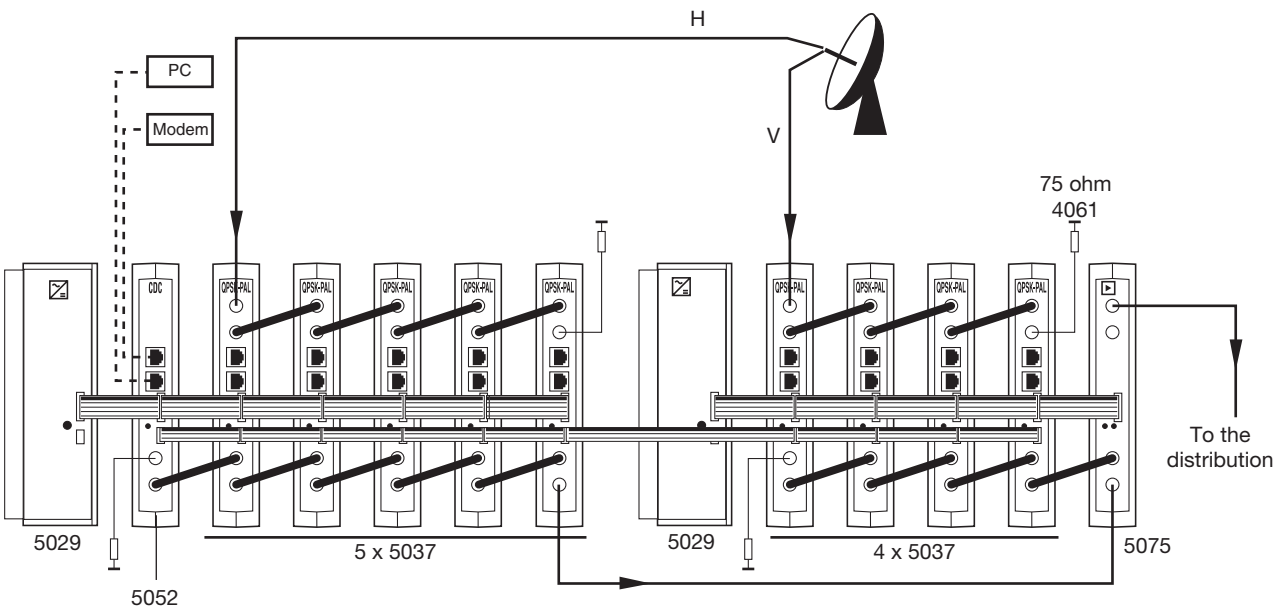
b.- Remote control

As well as the program previously mentioned, it is necessary to have a Headend Control module (ref. 5051 or 5052) and the corresponding modem connected to the telephone line. Once communication has been established with the headend control, you will be able to access all the controllable devices that have been installed in the headend.



7.- TYPICAL APPLICATION

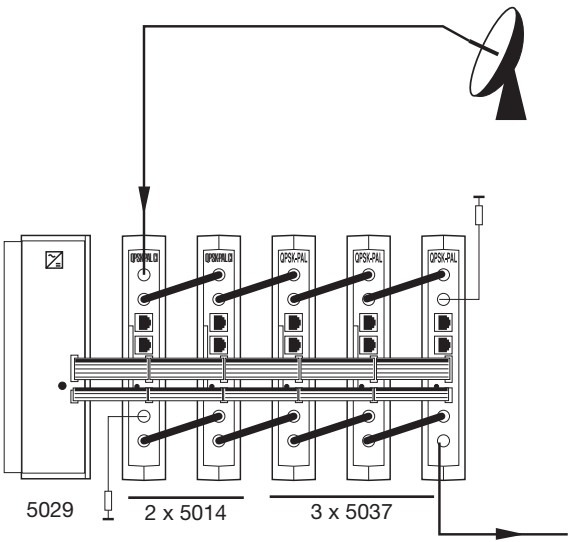
With Headend Control (CDC)



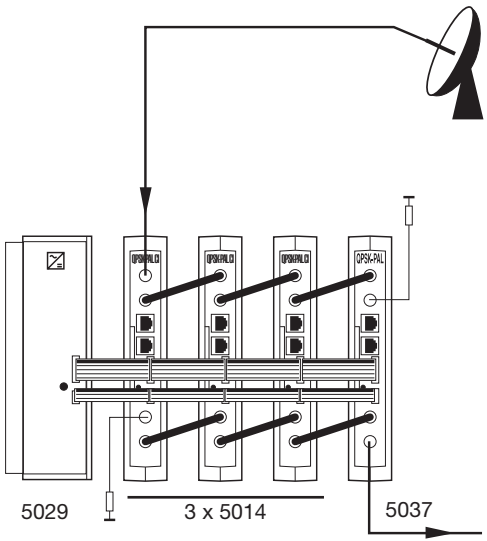
Televés

Mixed mounting QPSK/PAL ref 5037 or 5079 and QPSK/PAL CI ref 5014.

Case A:



Case B:



When using only one power supply 5029 with units ref. 5037 or 5079 together with units ref. 5014, it will be possible to mount up to 5 units per power supply, as long as the maximum number of units ref. 5014 is 2.

Note: *It is recommended to connect ref. 5014 in the closest positions to the power supply.*

8.- NORMS FOR RACK MOUNTING (max. 35 QPSK-PAL - 7 subracks 5 units high - 8.7")

8.1.- Installation of the rack with ventilation facilities.

To facilitate the renewal and circulation of air inside the rack, and thus reduce the temperature of the units thereby improving its characteristics, it is advisable to place 2 ventilation units of 25W, particularly when the rack with the QPSK-PAL is located in warm place, with a temperature higher than 40°C.

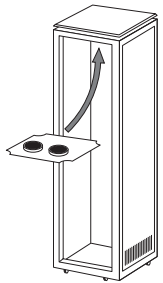


fig. 1

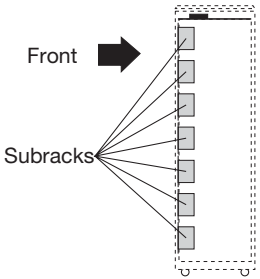


fig. 2

These ventilators will be placed on a tray, that is screwed onto the top part of the Rack, fig. 1 and 2, and in this way the ventilators will be able to extract the air from the QPSK-PAL and will be able to expel it via the gap (approx. 3-5 cm) at the top of the Rack. The new air will enter through the bottom of the rack, fig 3.

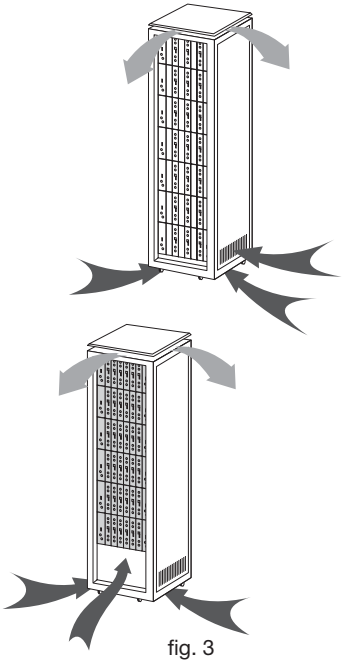


fig. 3

To mount the units in the rack with ventilation, you must mount a blank plate ref. 5073 between the modules to allow the correct ventilation of the equipment, fig. 4.

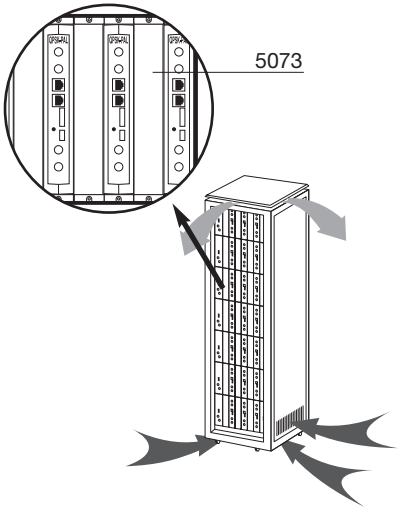


fig. 4

Televés

It is very that this cycle functions correctly, therefore do not:

- Open the side doors, as this would cause the ventilators to extract the air from the outside rather than the air in the inside of the rack.
- Place objects close to the rack that may block the entry and exit points of the air.
- When the rack is not complete, the subracks should be placed from the top all the way down without leaving any gaps in the middle, fig 5.

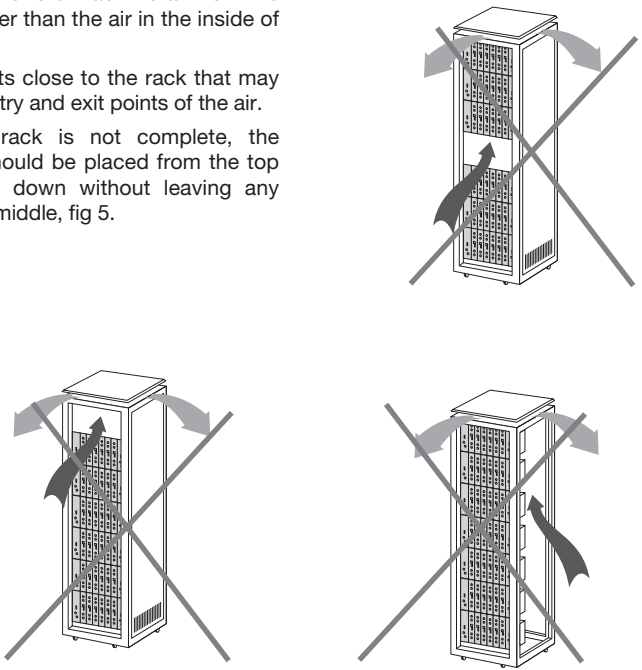


fig. 5

8.2.- Installation of the rack without ventilation facilities.

When the rack is located in an area where the temperature is approximately 40°C, it is advisable to install it in such a way that it is left totally open, in other words, without adding the side doors thus facilitating the ventilation of the units with the option of placing the blank plates ref. 5073, fig. 6.

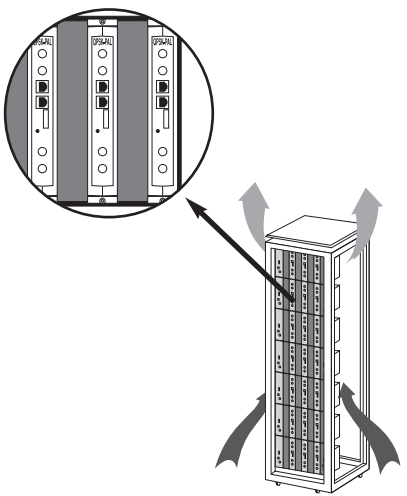


fig. 6

Televés

A.- CHANNELS TABLE

C / CH	Tab1	Tab2	Tab3	Tab4	Tab5	Tab6	Tab7
	CCIRR N. Zealand Indonesia	China Taiwan Hyper-CCIRR	M/N Chile	France	Australia	South Africa K1 (8Mhz) I (8Mhz Ireland) French Terr. Angola (4….9)	USSR OIRT
0				47.75	46.25		
1		49.75		55.75	57.25		49.75
2	48.25	57.75	55.25	60.50	64.25	53.75	59.25
3	55.25	65.75	61.25	63.75	86.25	61.75	77.25
4	62.25	77.25	67.25		95.25	175.25	85.25
5	175.25	85.25	77.25		102.25	183.25	93.25
6	182.25	168.25	83.25		175.25	191.25	175.25
7	189.25	176.25	175.25		182.25	199.25	183.25
8	196.25	184.25	181.25		189.25	207.25	191.25
9	203.25	192.25	187.25		196.25	215.25	199.25
10	210.25	200.25	193.25	176.00	210.25	223.25	207.25
11	217.25	208.25	199.25	184.00	217.25	231.25	215.25
12	224.25	216.25	205.25	192.00	224.25		223.25
13		471.25	211.25	200.00		247.43 (247.5)	
14		479.25	471.25	208.00			
15		487.25	477.25	216.00			
16		495.25	483.25				
17		503.25	489.25				
18		511.25	495.25				
19		519.25	501.25				
20		527.25	507.25		138.25 (5 A)		
21	471.25	535.25	513.25		203.25 (9 A)		
22	479.25	543.25	519.25				
23	487.25	551.25	525.25				
24	495.25	559.25	531.25				
25	503.25	607.25	537.25				
26	511.25	615.25	543.25				
27	519.25	623.25	549.25		521.25		
28	527.25	631.25	555.25		527.25		
29	535.25	639.25	561.25		534.25		
30	543.25	647.25	567.25		541.25		

Televés

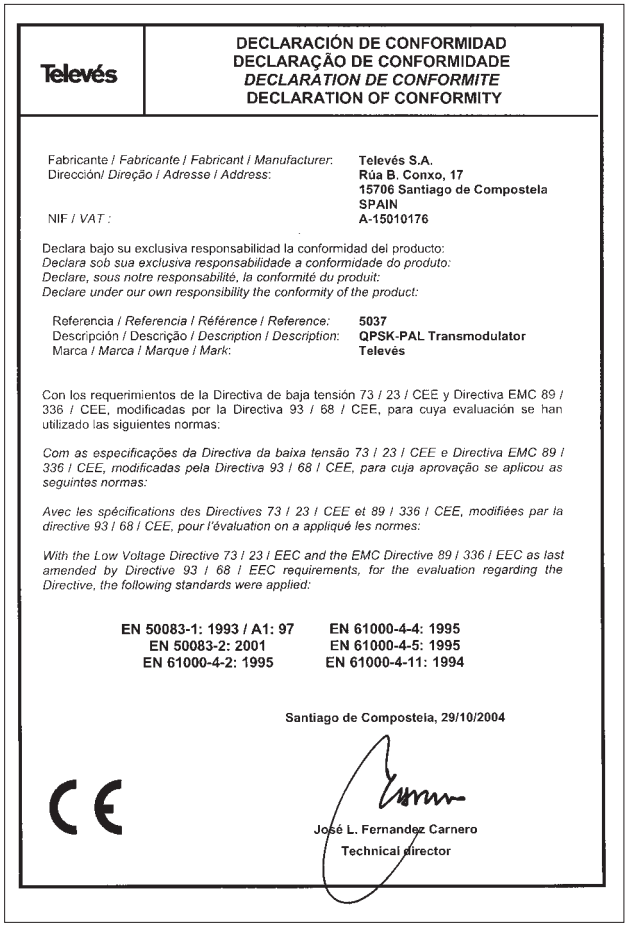
C / CH	Tab1	Tab2	Tab3	Tab4	Tab5	Tab6	Tab7
31	551.25	655.25	573.25		548.25		
32	559.25	663.25	579.25		555.25		
33	567.25	671.25	585.25		562.25		
34	575.25	679.25	591.25		569.25		
35	583.25	687.25	597.25		576.25		
36	591.25	695.25	603.25		583.25		
37	599.25	703.25	609.25		590.25		
38	607.25	711.25	615.25		597.25		
39	615.25	719.25	621.25		604.25		
40	623.25	727.25	627.25		611.25		
41	631.25	735.25	633.25		618.25		
42	639.25	743.25	639.25		625.25		
43	647.25	751.25	645.25		632.25		
44	655.25	759.25	651.25		639.25		
45	663.25	767.25	657.25		646.25		
46	671.25	775.25	663.25		653.25		
47	679.25	783.25	669.25		660.25		
48	687.25	791.25	675.25		667.25		
49	695.25	799.25	681.25		674.25		
50	703.25	807.25	687.25		681.25		
51	711.25	815.25	693.25		688.25		
52	719.25	823.25	699.25		695.25		
53	727.25	831.25	705.25		702.25		
54	735.25	839.25	711.25		709.25		
55	743.25	847.25	717.25		716.25		
56	751.25	855.25	723.25		723.25		
57	759.25		729.25		730.25		
58	767.25		735.25		737.25		
59	775.25		741.25		744.25		
60	783.25		747.25		751.25		
61	791.25		753.25		758.25		
62	799.25		759.25		765.25		
63	807.25		765.25		772.25		
64	815.25		771.25		779.25		
65	823.25		777.25		786.25		
66	831.25		783.25		793.25		
67	839.25		789.25		800.25		
68	847.25		795.25		807.25		

C / CH	Tab1	Tab2	Tab3	Tab4	Tab5	Tab6	Tab7
69	855.25		801.25		814.25		
70	53.75		807.25				
71	62.25	303.25 (S21)	813.25				
72	82.25	311.25	819.25				
73	175.25	319.25	825.25				
74	183.75	327.25	831.25				
75	197.25	335.25	837.25				
76	201.25	343.25	843.25				
77	210.25	351.25	849.25				
78	217.25	359.25	855.25				
79	224.25	367.25	861.25				
80	105.25	375.25					
81	112.25	383.25					
82	119.25	391.25					
83	126.25	399.25					
84	133.25	407.25					
85	140.25	415.25					
86	147.25	423.25					
87	154.25	431.25					
88	161.25	439.25					
89	168.25	447.25					
90	231.25	455.25					
91	238.25	463.25 (S41)					
92	245.25						
93	252.25						
94	259.25						
95	266.25						
96	273.25						
97	280.25						
98	287.25						
99	294.25						

Italian channels

"S" bands

Televés



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Referencia / *Referencia / Référence / Reference*:	**5037**
Descripción / Descrição / *Description / Description*:	**QPSK-PAL Transmodulator**
Marca / *Marca / Marque / Mark*:	**Televés**

Con los requerimientos de la Directiva de baja tensión 73 / 23 / CEE y Directiva EMC 89 / 336 / CEE, modificadas por la Directiva 93 / 68 / CEE, para cuya evaluación se han utilizado las siguientes normas:

Com as especificações da Directiva da baixa tensão 73 / 23 / CEE e Directiva EMC 89 / 336 / CEE, modificadas pela Directiva 93 / 68 / CEE, para cuja aprovação se aplicou as seguintes normas:

Avec les spécifications des Directives 73 / 23 / CEE et 89 / 336 / CEE, modifiées par la directive 93 / 68 / CEE, pour l'évaluation on a appliqué les normes:

With the Low Voltage Directive 73 / 23 / EEC and the EMC Directive 89 / 336 / EEC as last amended by Directive 93 / 68 / EEC requirements, for the evaluation regarding the Directive, the following standards were applied:

EN 50083-1: 1993 / A1: 97
EN 50083-2: 2001
EN 61000-4-2: 1995
EN 61000-4-4: 1995
EN 61000-4-5: 1995
EN 61000-4-11: 1994

Santiago de Compostela, 29/10/2004

CE

José L. Fernandez Carnero
Technical director

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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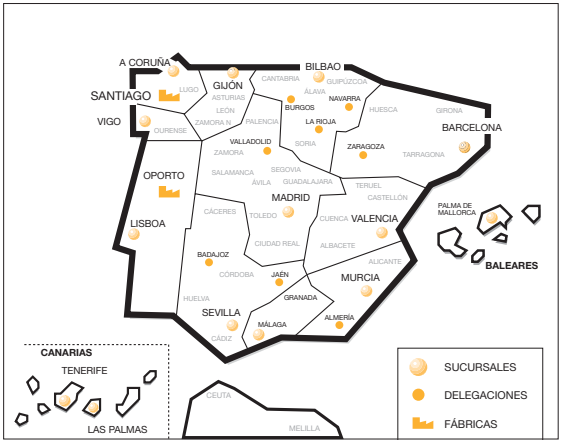

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