HD Field Strength Meter

TSF-1

240001

User’s Manual

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1 TSF 1 – USER MANUAL

1.1 Safety Instructions

Thank you for having chosen this product. It is recommended to you carefully read the following safety instructions prior to use:

- Please carefully read this manual prior to using the equipment for the first time
- When the equipment switches suddenly from a warm to a cold temperature area, certain problems may appear due to the sudden change in temperature. In this case turn the meter off and turn on again after 1 - 2 hours
- Keep the equipment in clean and well ventilated areas
- Do not cover or place the meter next to or on heat sources
- Clean the meter with a soft cloth or rag
- Under no circumstances whatsoever remove the plastic shell casing from the meter
- Do not expose the meter for long periods to extreme sources of heat or cold, or excessive humidity
- Do not wet the meter

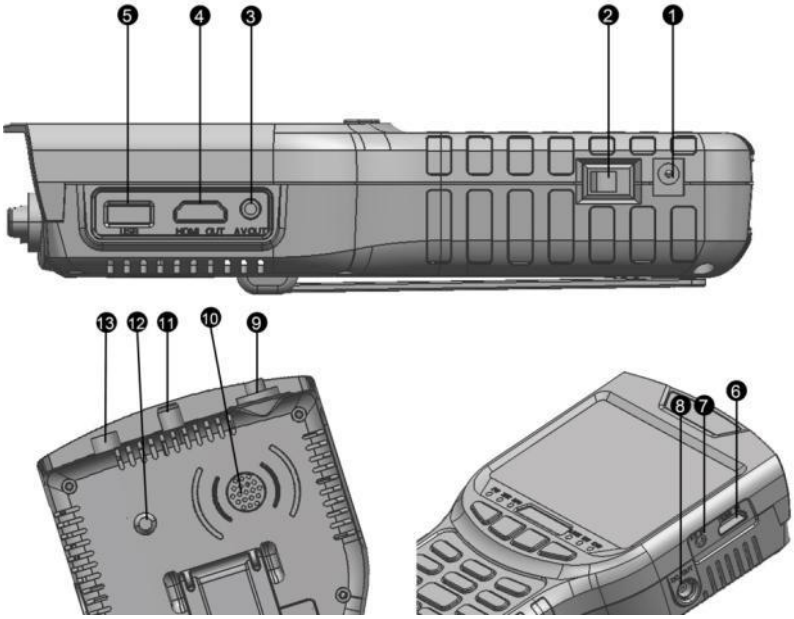
WARNING: the instructions refer to the firmware version installed on the meter at the time of purchase. The right to make modifications and improvements as regards the firmware without prior notice is hereby reserved.

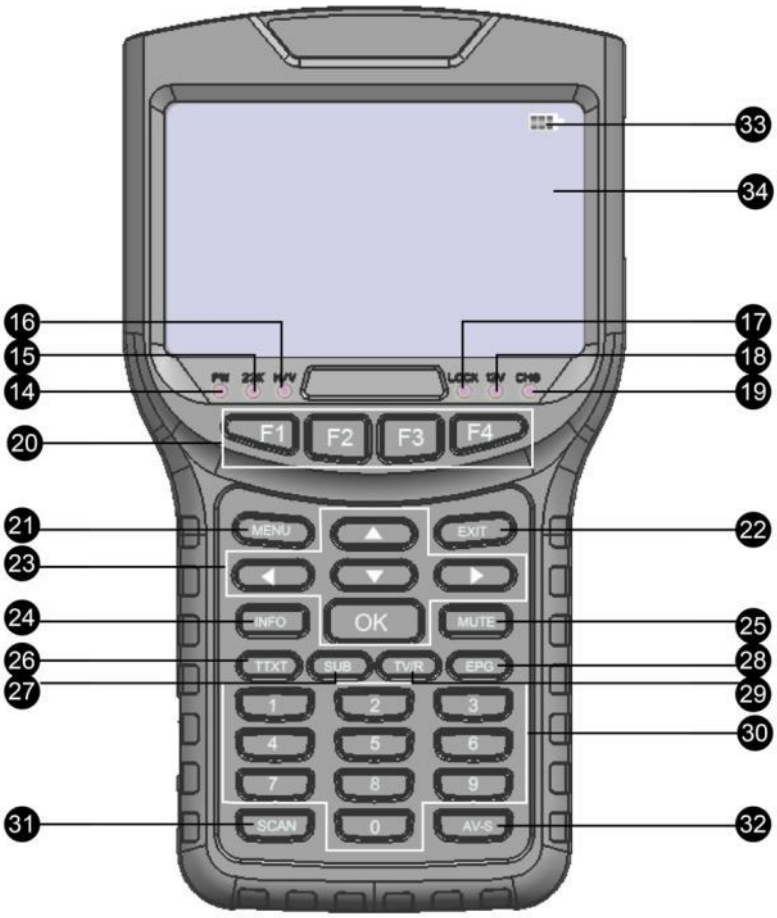
1.2 Contents

Open the box and check that the following accessories are included:

1. Field strength meter
2. Silicone protection
3. Battery
4. Charger - feeder
5. 12Vdc in-car charger
6. DC out power cable
7. HDMI-HDMI Cable
8. Cable jack – 3xRCA for A/V input and output
9. BNC – RCA Adapter
10. F female – F quick-connect male adapter
11. Optical fibre adapters (x2)
12. Fixed Attenuator
13. User Manual
14. Carrying bag

1.3 General Description





No.	Description	Function
1	DC Connector	Power supply to/charges the meter
2	ON/OFF Button	Turns on and off the meter
3	AV Output	Connects the meter to a monitor via an analogical A/V
4	HDMI Output	Connect s the meter to a monitor via the HDMI
5	USB Port	Connects data memory
6	HDMI Input	Connects the meter to an external source via the HDMI
7	AV Input	Connects the meter to an external source via the analogue A/V
8	12V DC Output	12V DC Output to supply power to an external device
9	Optical Fibre Connector	Connects an optical device
10	Speaker	Built-in speaker
11	SAT Input	Connect cable for DVB-S / DVB-S2 measurements
12	Flashlight	LED Flashlight
13	TER Entry	Connect cable for DVB-T / DVB-T2 measurements
14	PW	LED power on indicator
15	22KHZ	22 KHz LED tone indicator
16	13V/18V	13Vdc / 18Vdc LED power on indicator
17	LOCK	Signal locked LED indicator for carrying out measurements
18	12V	12Vdc LED power on indicator
19	CHG	LED charge indicator
20	F1-F4	Ancillary functions
21	MENU	Access the main menu or return to the previous menu
22	EXIT	Exiting the menu saving the configuration
23	◀ ▲ ▼ ▶	Arrow keys and menu navigation
24	INFO	Displays the status of the channel or program information displayed
25	MUTE	Activates / deactivates audio
26	TTXT (**red** button)	Accesses teletext **(plus additional colour functions in each menu)**
27	SUBT (**green** button)	Activates / deactivates subtitles
28	EPG (**blue** button)	Changes the audio channel of a program
29	TV/R (orange button)	Switches from a television program to a radio program
30	Numbers 0 through 9	Channel or program selection
31	SCAN	Program Search
32	AV-S	Activates / deactivates AV (7) or HDMI (6) input

33		Indicates battery level
34	Screen	LCD Screen

2. Main Menu

Pressing the MENU button to access the main menu which is shown as follows:

To scroll through the menu options, use the arrow keys▲▼◄► and confirm the selected choice pressing the OK button.

3.1 DVB-S2

To access this section, select the DVB-S2 option and press the OK button. The following screen will appear:

To scroll through the menu options, use the arrow keys ▲▼and confirm the selected choice pressing the OK button. Scroll downwards using the arrow key ▼until reaching the second screen within the DVB-S2 menu with the following options:

3.1.1 Satellite

Press the arrow key ►to access the pre-programmed satellite list. Using the arrow keys▲▼one can stroll through the various satellites available. Press OK to select the desired satellite.

3.1.2 Local Frequency

Using the arrow key ►one can access the list of the LNB types which can be used. Select the option for the installation in question via the arrow keys ▲▼and press OK.

3.1.3 Transponder

Using the arrow key ► one access the pre-programmed transponders list of the selected satellite. Select the option to be used in the installation via the arrow keys ▲▼and press OK.

3.1.4 Frequency

In the event of wishing to enter a certain frequency, enter the value in the MHz through the numerical keys of the keypad.

3.1.5 Symbol Rate

To change the symbol rate of the signal, enter the value using the numerical keys of the keypad.

3.1.6 Polarity

To change the polarity (V = Vertical / H = Horizontal) use the arrow keys ◄►.

3.1.7 Tone

Press the arrow keys ◄►to activate or deactivate the 22 KHz tone.

3.1.8 Beep Tone

Press the arrow keys ◄►to activate or deactivate the "beep" tone. If activated, the meter will beep when accessing the Quick Search satellite screen once that access has been detected.

3.1.9 DiSEqC Mode

Select using the arrow keys ◄► the DiSEqC selector switch type if necessary: DISEQC 1.0/DISEQC 1.1/ Unicable (for LNBs SatCR).

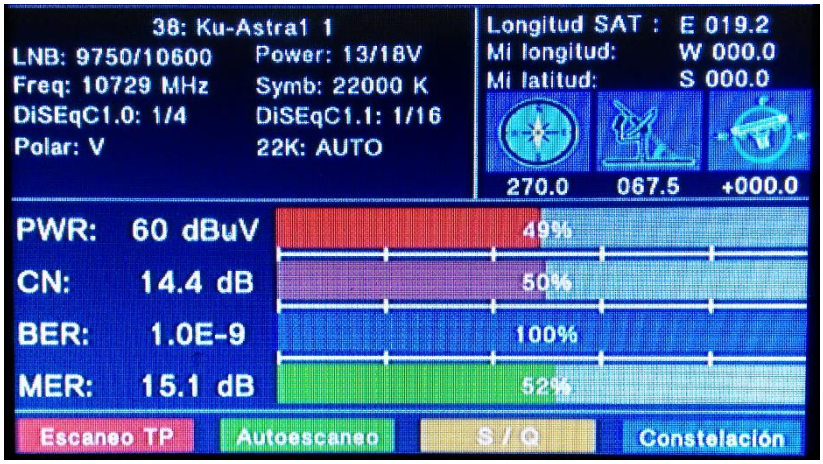
3.1.10 DiSEqC & Input

In the event of selecting the DiSEqC 1.0/1.1, using the arrow keys ◄►one can select the port number. In the event of selecting the Unicable option, the selection will change and using the arrow keys ◄► the "IF Channel" SCR Channel and centre frequency of each can be selected.

3.1.11 Quick Search

From any of the above options, pressing the OK button one can access the "Quick Satellite Search" function, a screen as shown below will be displayed which includes the comprehensive digital quality measurement (power, CN, BER and MER) values.

IMPORTANT NOTE: The equipment can measure up to 100dBµV. When measuring power values to the output of a main amplifier, it is necessary to add the supplied fixed attenuator to the input of the meter.



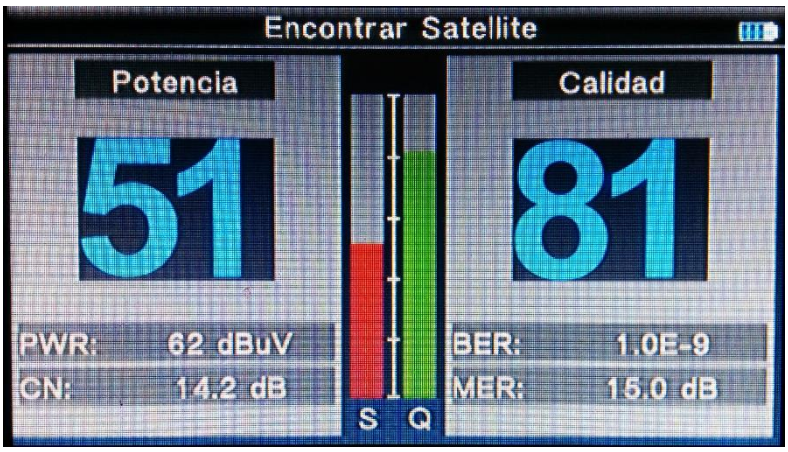
Specifying the latitude and longitude in the general menu options of the equipment (See Section 3.6.14 of this

manual), the orientation and the elevation of the satellite will appear on the top right hand corner of this screen. This can be useful when installing the antenna.

From this screen one can access the various submenus by pressing the coloured buttons on the keyboard:

- **TP Scan**: Press the red button to scan the current transponder programs.

- **Auto-Scan**: Press the green button to search for all satellite channels targeted (the search will be based on the transponders included in the meter's database).
- **S/Q**: press the orange button to access the following screen which shows the power and quality of the signal measurement.



- **Constellation**: press the blue button to access the representation of the constellation of the selected transponder.

3.2 Spectrum

Through this option one can access the satellite and terrestrial signals spectrum analyser.

Select the desired option from the two possible options.

3.2.1 Satellite Spectrum

Using this option the satellite spectrum can be displayed. Once selected the following satellite options screen will appear.

On this screen one can directly set the specific transponder parameters to be displayed and to measure the access to the spectrum. In the event if one wishes to display the selected satellite spectrum via the DVB-S2 option from the main menu, simply press the OK button to directly access it without needing to change any of these options.

To find a transponder in particular, select the desired values in the various options which are displayed:

- **Satellite:** selection of the desired satellite from the pre-configured meter list
- **Local Frequency:** selection of the local oscillator of the LNB
- **DiSEqC Mode:** selection of the DiSEqC or LNB SatCR (Unicable) selector switch if available
- **Transponder:** selection of transponder which is desired to be represented in the spectrum directly
- **Centre Frequency:** frequency of the transponder selected in the previous option
- **Polarity:** Indication of the polarity which belongs to the selected transponder
- **Tone:** activation of the 22 KHz tone
- **DiSEqC 1.0 and 1.1:** selection of the DiSEqC values if any

IMPORTANT NOTE: Once the values are selected, press OK from any option so as to bring up the spectrum.

In the spectrum:

Press horizontal arrow keys◄► to scroll through the frequencies

Press the **red button** to change the bandwidth (150 MHz, 600 MHz and complete spectrum - full)

Press the **green button** to change the polarity (Vertical / Horizontal)

Press the **orange button** to activate or deactivate the 22KHz tone.

Press the **blue button** to select the frequency representation mode (RF for the satellite or IF for the intermediate frequency)

Positioning the marker on a transponder and pressing the OK button, a search of the programs of the transponder in question shall be performed. Once the programs are displayed, press the Info button to obtain additional information as regards both the program as well as the digital quality of the selected transponder.

3.2.2 Terrestrial Spectrum

By selecting this option, the spectrum of the terrestrial band is displayed directly. To scroll the marker through the different

channels / frequencies in the band, use the horizontal scroll arrow keys ◄►.

Press the r**ed button t**o change the bandwidth of the spectrum display.

Press the **green button** to magnify the representation of a particular multiplex.

Press the **orange button** so as, once a multiplex is selected, lock its screen and display all digital measurement values (power, CN, BER and MER).

Press the **blue button** to scan the selected multiplex and download the programs contained in it. Once finished, the download the first program of the multiplex is displayed. Once the channel is displayed, pressing the info button twice, the information as regards both of the selected program and the quality of the multiplex in question will be displayed.

3.3 DVB-T2

To access this section, select the DVB-T2 option and press the OK button. The following screen will appear:

3.3.1 Country Settings

Using the arrow keys ◄►select the desired country.

3.3.2 Channel Number

Using the horizontal scroll arrow keys◄► select the specific terrestrial channel which is to be measured.

3.3.3 Frecuency

This displays the centre frequency of the terrestrial channel selected in the previous option. The frequency value in MHz

may be changed using the numeric keypad on the meter.

3.3.4 Bandwidth

Using the scroll arrow keys◄►one can select the transponder bandwidth to be measured (5 / 6 / 7 / 8 MHz).

3.3.5 Mode

Select using the arrow keys◄► the digital terrestrial television standard: DVB-T, DVB-T2 or both in the event that in the spectrum the multiplex of both standards is found.

3.3.6 LCN

Activation and deactivation of the LCN (Logic Channel Number) system. This option can be always activated.

3.3.7 Beep Tone

Using the arrow keys ◄►select the activation (ON) or deactivation (OFF) of the “beep” tone. If the ON is selected a beep on the quick channel scan screen will be emitted.(Point 3.3.10).

3.3.7 Antenna Power Supply

Select using the horizontal scroll arrow keys ◄►the power voltage of the active terrestrial antenna or signal preamplifier (5 V / 12 V / 24 V).

3.3.8 Antenna Power Supply (activation/deactivation)

This option is used to activate or deactivate the power supply of an antenna or a signal preamplifier. The voltage sent by the meter shall be as specified in the preceding point.

3.3.10 Quick Search

From any of the above options, pressing the OK button one can access the "Quick Search" function, the following screen will be displayed which includes the comprehensive digital quality measurement values:

IMPORTANT NOTE: The equipment can measure up to 100dBµV. When measuring power values to the output of a main amplifier, it is necessary to add the supplied fixed attenuator to the input of the meter.

▪**Scan**: Press the red button to search the programs of the selected terrestrial multiplex.

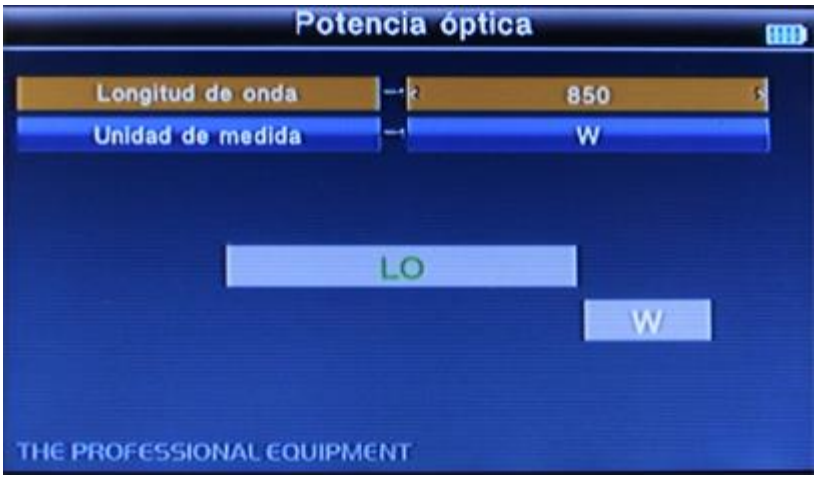
▪**Auto-Scan**: press the green button to perform a search of all programs in the terrestrial spectrum.

▪**S/Q**: press the orange button to access the following screen which shows the power and quality of the signal of the selected terrestrial multiplex.

▪**Constellation:** Press the blue button to access the representation of the constellation of the selected terrestrial multiplex

3.4 Optical power

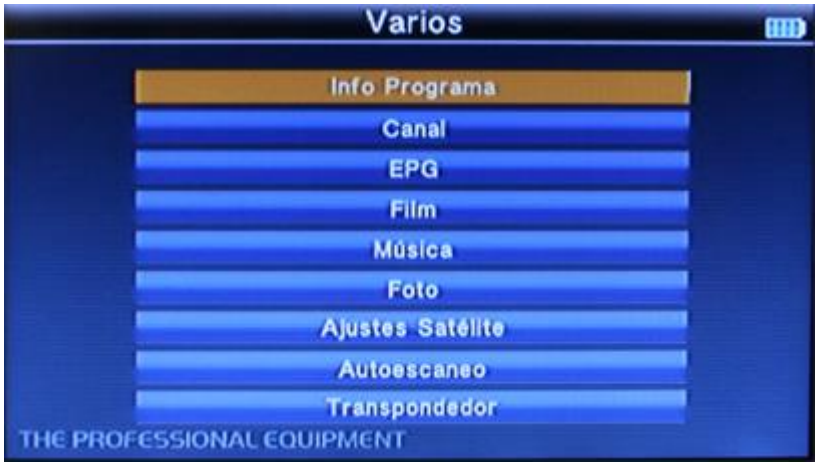
This menu allows one to measure the power of an optical signal. To that end, it will be necessary to specify the wavelength of the signal.



The power value can be displayed in W or dBm.

3.5 Miscellaneous

In this menu option there are several additional options offered by the meter. By selecting this option the following screen will be displayed:



3.5.1 Program information

This option provides comprehensive information on the terrestrial TV programs downloaded via the DVB-T2 option menu as well as the digital quality digital values of the multiplex belonging to the selected program at any given moment.

3.5.2 Channel

This option displays all television programs downloaded into the meter. The image as well as the PID audio values and current PID video are displayed.

- **S2<<>>T2**: pressing the red button will move quickly through the DVB-T2 programs to those of the DVB-S2 downloaded into the meter.
- **Lock**: pressing the green button the selected program will be locked.
- **Del**: pressing the orange button the selected program (Select Delete) or all programs (Delete All) will be deleted

3.5.3 EPG

With this option the programming guide of the selected programs will be displayed.

3.5.4 Film, Music and Photographs Options

Plays videos and music and displays pictures which are included in the USB pen drive connected to the equipment. The screen will display the files contained in the USB pen drive. Select the desired option by pressing OK.

3.5.5 Satellite Settings

Adjustment screen of the general pre-programmed satellite parameters in the meter.

Using this option it is possible to select a satellite from the list to orientate a satellite dish, graphically displaying the power and signal quality values.

- **TP Manager**: pressing the red button the information from the pre-programmed satellites can be edited, as well as adding new satellites. **IMPORTANT:** It is recommended not to access this option or modify the specified above information unless one is absolutely sure that it is correct. Otherwise the meter will delete the information through which the identification of satellites in the quick-search system is made.
- **Auto-Scan**: pressing the green button a search of the selected satellite transponders on the previous screen will be performed.
- **Select All**: Press the orange button to select all the satellites from the pre-programmed list.
- **Clear All**: press the blue button to cancel the selection made of pre-programmed satellites..

3.5.6 Auto scan

Carries out a search for the selected satellite.

3.5.7 Transponder

This option corresponds to TP Manager as specified in Point 3.5.5.

3.6 System Settings 

Contains general information on the meter settings.

3.6.1 Country Settings

Using the arrow keys ◄►select the desired country.

3.6.2 OSD Language

Using the arrow keys ◄►select the desired language.

3.6.3 TV Format

Using the arrow keys ◄►select the image format which is displayed in the meter (4: 3 or 19: 9).

3.6.4 Video Output

Using the arrow keys ◄►select the video output: RCA if the A/V or HDMI output is connected, or if it were connected.

3.6.5 TV Resolution

Using the arrow keys ◄►select the image resolution of the meter's monitor (576i, 576p, 720p_50Hz, 1080i_50Hz).

3.6.6 Digital audio output

Using the arrow keys ◄►select the digital audio quality output (LCPM, RAW).

3.6.7 Time Zone

Using the arrow keys ◄►select the time zone.

3.6.8 Channel lock

Using the arrow keys ◄►select the lock (ON) or release (OFF) of the meter. In the event of locking it, the default password for the unlocking is 0000.

3.6.9 Measurement Unit

Using the arrow keys ◄►select the measurement unit with which one wishes to display the digital power (dBmV, dBm, dBmV)

3.6.10 Speaker

Using the arrow keys ◄► select the activation or deactivation of the speaker integrated in the meter.

3.6.11 Flashlight

Using the arrow keys ◄►turn on or off the flashlight integrated into the back of the meter.

3.6.12 12V

Using the arrow keys ◄►activate or deactivate the 12V power supply.

3.6.13 Keyboard Light

Using the arrow keys ◄► turn on or off the feedback of the keys on the equipment keyboard.

3.6.14 Location Settings

Using this option the location values are specified (longitude and latitude) in the location where it is found. These data will be used to help orientate a satellite dish (See Point 3.1.11 of this manual).

3.6.15 Improvement (firmware update)

Updating of the meter's firmware. To that end, connect a USB pen drive with the new firmware version, select the file and follow the steps specified on the screen.

3.6.16 Default Values

Reset the meter option. Any information stored on the equipment will be lost (downloaded programs, location information ...)

4 TECHNICAL SPECIFICATIONS

REFERENCE	TSF 1	
Code	240001	
Measurements	DVB-T/T2	DVB-S/S2
Connectors	IEC FEMALE 9.5 mm	F FEMALE
Input frequency	48÷-862 MHz	950÷2150 MHz
Input Signal Level	-79.5 dBm (MAX)	-65÷25 dBm
Antenna power supply	5V/12V/17V, MAX 100 mA	-
Demodulation	QPSK, 16QAM, 64QAM, 256QAM	-
Symbol Rate	LCN on/off	-
Values	LEVEL, C/N, BER, MER, CONSTELLATION T/T2	LEVEL, C/N, BER, MER, CONSTELLATION S/S2
Selector Switch Tone	-	22 KHz
LNB Power Supply	-	13v/18V, MAX 400 mA, SCR, UNIVERSAL
Symbol rate	-	2<RS<45 M BAND (SCPC/MCPC)
AV Inputs/Outputs	HDMI JACK 3.5 mm	
Video	CVBS	
Video Output	Up to 1080	
Audio	STEREO	
Video Decompression	MPEG-2, MPEG 4- H.264	
Video Format	4:3 / 16:9	
Audio Decompression	MPEG-1LAYER I/II,PEG, MPGEG-2 LAYER I/II	
Image Demodulation	PAL - 25 FRAME@720*579, NTSC -30 FRAME@720*480	
Audio Output Mode	Stereo, Mono, R/L	
Data port	USB	
Protocol	2.0 USB Interface	
File management system	NTFS, FAT32, FAT16	
File Format	wma, mp3, mp4, avi, jpg, jpeg, bmp, img	
OPTICAL FIBRE		
Optical detector	InGaAs	
Wavelengths	800 - 1700 NM	

Optical power values	**-70dB a + 10 dBm@1550 nm**
Accuracy	**0.01**
Compatible connectors	**FC / SC**
GENERAL	
Feed and consumption	**7.4V/3000MAH / MAX 10W Lithium Battery**
Dimensions and weight	**9.5X15X4.5 cm / 0.5 Kg**

REFERENCIA	TSF 1	
Código	240001	
Medidas	DVB-T / T2	DVB-S / S2
Conectores	IEC HEMBRA 9,5 mm	F HEMBRA
Frecuencia de entrada	48÷862 MHz	950÷2150 MHz
Nível señal de entrada	-79,5 dBm (MAX)	-65÷-25 dBm
Alimentación de antena	5V/12V/17V, MAX 100 mA	-
Demodulación	QPSK, 16QAM, 64QAM, 256QAM	-
Tipo sintonia	LCN on/off	-
Valores	NIVEL, C/N, BER, MER, CONSTELACIÓN T/T2	NIVEL, C/N, BER, MER, CONSTELACIÓN S/S2
Tono de conmutación	-	22 KHz
Alimentación LNB	-	13V / 18V, MAX 400 mA, SCR, UNIVERSAL
Symbol rate	-	2<RS<45 M BAND (SCPC/MCPC)
Entradas/salidas AV	HDMI JACK 3,5 mm	
Video	CVBS	
Salida de video	Hasta 1080	
Audio	STEREO	
Descompresión de video	MPEG-2, MPEG 4 - H.264	
Formato de video	4:3 / 16:9	
Descompresión de audio	MPEG-1Layer I/II, MPEG-2 Layer I/II	
Demodulación de imagen	PAL - 25 frame@720*576, NTSC -30 frame@720*480	
Modo salida de audio	Stereo, Mono, R/L	
Puerto datos	USB	
Protocolo	Interfaz USB 2.0	
Sistema gestión archivos	NTFS, FAT32, FAT16	
Formato de archivos	wma, mp3, mp4, avi, jpg, jpeg, bmp, img	
FIBRA ÓPTICA		
Detector óptico	InGaAs	
Longitudes de onda	800 - 1700 nm	
Valores de potencia óptica	-70dB a +10 dBm@1550 nm	
Precisión	0,01	
Conectores compatibles	FC / SC	
GENERAL		
Alimentación y consumo	Bateria litio 7,4V/3000mAh / max 10W	
Dimensiones y peso	9,5x15x4,5 cm /0,5 Kg	