

<b>TUNING</b>	Digital frequency synthesis. Continuous tuning from 45 to 862 MHz and from 920 to 2150 MHz
<b>Tuning modes</b>	Frequency, Channel or Memory. Channel plan configurable on demand
<b>Resolution</b>	50 kHz
<b>Automatic search</b>	Threshold level selectable
<b>Memory</b>	99 positions for measurement configurations

## RF INPUT

<b>Impedance</b>	75 W
<b>Connector</b>	Universal, with BNC or F adapter
<b>Maximum signal</b>	130 dB $\mu$ V
<b>Maximum input voltage</b>	
<b>DC to 100 Hz</b>	50 V rms (powered by the AL-103 power adapter) 30 V rms (not powered by the AL-103 power adapter)
<b>45 MHz to 2150 MHz</b>	130 dB $\mu$ V

## LEVEL MEASUREMENT

<b>Measurement range</b>	
<b>Terrestrial TV &amp; FM bands</b>	20 dB $\mu$ V to 130 dB $\mu$ V (10 $\mu$ V to 3.16 V)
<b>Satellite TV band</b>	30 dB $\mu$ V to 120 dB $\mu$ V (31.6 $\mu$ V to 1 V)
<b>Reading</b>	Auto-range, reading is displayed on an OSD window
<b>Digital</b>	Absolute value calibrated in dB $\mu$ V, dBmV or dBm
<b>Analogue</b>	Relative value through an analogue bar on the screen
<b>Measurement bandwidth</b>	230 kHz (Terrestrial band) + 4 MHz (Satellite band) (maximum band ripple 1 dB).
<b>Audible indicator</b>	LV audio. A tone with pitch proportional to signal strength.
<b>Accuracy</b>	
<b>Terrestrial bands</b>	$\pm 1.5$ dB (30-120 dB $\mu$ V, 48,25-861 MHz) (22°C $\pm$ 5°C)
<b>Satellite band</b>	$\pm 1.5$ dB (40-100 dB $\mu$ V, 920-2050 MHz) (22°C $\pm$ 5°C)
<b>Overrange indication</b>	$\uparrow, \downarrow$

## MEASUREMENTS IN TV MODE

<b>Terrestrial bands</b>	
<b>Analogue channels</b>	Level, Video-Audio ratio and Carrier-Noise ratio (Auto and Referenced).
<b>Digital channels</b>	Channel power (Auto) and Carrier-Noise ratio (Auto and Referenced) and Bit Error Rate (BER) of COFDM modulated signals.
<b>Satellite band</b>	
<b>Analogue channels</b>	Level and Carrier-Noise ratio (Auto and Referenced)
<b>Digital channels</b>	Channel power (Auto) and Carrier-Noise ratio (Auto and Referenced) and Bit Error Rate (BER) of QPSK modulated signals.

## MEASUREMENTS

<b>COFDM:</b>	
<b>Parameters:</b>	BER after Viterbi. CSI (Channel Status Information). Qualitative measurement about channel quality. Measures from 0 to 100%. 0% value corresponds to maximum quality. Number of non-correctable packets accumulated.
<b>Presentation:</b>	Numeric and level bar.
<b>QPSK:</b>	
<b>Parameters:</b>	BER before Viterbi. BER after Viterbi.
<b>Presentation:</b>	Numeric and level bar.

## COFDM SIGNAL PARAMETERS

Carriers	2k / 8k (Selected by user)
Guard Interval	1/4, 1/8, 1/16, 1/32 (Selected by user)
Code Rate	1/2, 2/3, 3/4, 4/5, 5/6, 7/8
Modulation	QPSK, 16QAM, 64QAM
Spectral inversion	On/Off
Hierarchy	None, 1, 2, 4.
FEC	Reed-Solomon (204, 188) and Viterbi

## QPSK SIGNAL PARAMETERS

IF Bandwidth	55 MHz
Symbol rate	23000 to 30000 kbauds 4000 to 30000 kbauds for channel separation 29.5 Mhz
Acquisition Margin of symbol rate	± 70 ppm
Carrier frequency deviation	± 0.1 x Symbol rate
Roll-off (a) Factor of Nyquist filter	0.35
Code rate	1/2, 2/3, 3/4, 5/6, 7/8 and Auto.
Spectral Inversion Equivalent	Selectable: On, Off.
Noise Degradation	< 1dB

## SPECTRUM ANALYSER MODE

Satellite band	30 dBµV to 120 dBµV (31.6 µV to 1 V)
Terrestrial bands	20 dBµV to 130 dBµV (10 µV to 3.16 V)
Measurement bandwidth	
Terrestrial	230 kHz, 1 MHz selectable
Satellite	230 kHz, 4 MHz selectable
Span	
Terrestrial	Full span (full band), 500, 200, 100, 50, 32, 16, 8 MHz selectable.
Satellite	Full span (full band), 500, 200, 100, 50, 32 MHz selectable.
Markers	2 with level, frequency, level difference and frequency difference indications.
Measurements	
Terrestrial bands	
Analogue channels	Level and Carrier-Noise ratio (Referenced)
Digital channels	Channel power (Integration method) and Carrier-Noise ratio (Referenced).
Satellite band	
Analogue channels	Level and Carrier-Noise rate (Referenced)
Digital channels	Channel power (Integration method) and Carrier-Noise ratio (Referenced).

## MONITOR DISPLAY

Monitor	B & W 4 ½ inches
Colour system	PAL and SECAM
TV standard	B, G, I, D, K and L
Synchronism and Burst	Graphic representation over the picture
Spectrum mode	Variable span and reference level
Sensibility	40 dBµV for correct synchronism
Synchronism 50/60 Hz	Automatic selection according to the system

## VIDEO SIGNAL

External video input	Scart (automatic)
Sensibility	1 Vpp (75W) positive video
Video output	Scart (75W)

## SOUND

<b>Input</b>	Scart
<b>Outputs</b>	Built in speaker, Scart
<b>Demodulation</b>	AM, FM, TV and NICAM, selectable
<b>De-emphasis</b>	50 $\mu$ s
<b>Subcarrier</b>	Digital frequency synthesis
<b>Variable</b>	From 4 to 9 MHz, 10 kHz resolution
<b>Fixed</b>	
<b>Terrestrial</b>	According to the active standard: 5.50 - 6.00 - 6.50 - AM - FM - LV - OFF.
<b>Satellite</b>	6.65 - 5.80 - 6.50 - 7.02 - LV - OFF

**TELETEXT**    Decodes at 1.5 level

## RS-232C INTERFACE

### EXTERNAL UNITS POWER

<b>SUPPLY</b>	Through the RF input connector
<b>Terrestrial</b>	External or 13/15/18 V
<b>Satellite</b>	External or 13/15/18 V
<b>22 kHz signal</b>	Selectable
<b>Voltage</b>	0.6 V $\pm$ 0.2 V
<b>Frequency</b>	22 kHz $\pm$ 4 kHz
<b>Maximum power</b>	5 W

**DiSEqC GENERATOR**    According to DiSEqC 1.2 standard

## POWER SUPPLY

### Internal

<b>Battery</b>	1 CB-046 7,2 V 8 Ah Ni-MH battery.
<b>Autonomy</b>	More than 90 min. in continuous mode, SAT band and powering a 5 W LNB
<b>Charger</b>	Built-in. It disconnects the powering when the charging process ends.
<b>Charging time</b>	4 h approximately if the equipment is switch off. If the equipment is switch on, the charging time depends on which operations are being carried out.
<b>Temperature of charge beginning between 0 and 40 °C</b>	Outside this margin of temperature, the charger will not initiate the charging process. With high ambient temperatures, the charging process will not be carried out of continuous way since the charger circuit has a heat-protection device that disconnects this circuit when surpassing 45°C, returning to connect itself when low of 40° C.

### External

<b>Voltage</b>	12 V
<b>Consumption</b>	42 W
<b>Auto power off</b>	After 15 minutes without operating on any control. Deactivable.

## OPERATING ENVIRONMENTAL CONDITIONS

<b>Altitude</b>	Up to 2000 m
<b>Temperature range</b>	From 5 to 40 ° C
<b>Max. relative humidity</b>	80 % (up to 31°C), decreasing lineally up to 50% at 40° C.

## MECHANICAL FEATURES

<b>Dimensions</b>	280 (W) x 95 (H) x 250 (D) mm
<b>Weight</b>	5.2 kg

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## INCLUDED ACCESSORIES

1x CB-046	Rechargeable Ni-MH battery 7.2 V, 8 Ah
1x AD-055	"F"/F-BNC/F adapter
1x AD-056	"F"/F-"DIN"/F adapter
1x AD-057	"F"/F-"F"/F adapter
1x AL-103	External DC adapter
1x DC-255	Carrying bag