

PROMAX-10 SE

- * BER & MER ON QAM DIGITAL SIGNALS
- * MULTISTANDARD ANNEX A / B / C
- * ANALOGUE CHANNELS
- * DIGITAL CHANNELS
- * BROADBAND POWER DETECTION
- * SCAN
- * C/N, CSO, CTB
- * TRANSIENT DETECTOR
- * MAX AND MIN HOLD
- * CHANNEL POWER BY INTEGRATION
- * TILT
- * DATALOGGER
- * PRINTING
- * CONNECTION TO PC

Analogue and digital

PROMAX-10 SE is a multi purpose CATV Analyser ideal for all size MSO's and contractors as a service and installation tool. The most outstanding feature of this unique meter is its capability to measure MER and BER on QAM digital channels but it is not missing any of the measurements a meter of its class must have. Also it allows to check a possible input saturation of some broadband demodulators by means of the power detection function.

As a signal level meter it can be tuned by frequency or by channel. Various channel tables are available on board and they are all customer definable. Operating as much by means of the channel tuning as of frequency tuning mode can offer several advantages such as:

- Detection of the total power. This parameter indicates the total power that is being transmitted through the connected coaxial cable to the **PROMAX-10 SE** in the band from 5 to 863 MHz.
- Automatic selection of analog or digital measurement mode.
- Faster tuning via rotating tuning knob.
- No need to type-in channel number or frequencies.
- Combined multi-measure display (video, video/audio, carrier/noise).

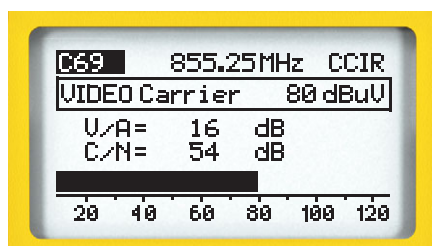
Multifunctional Display

The **PROMAX-10 SE** displays with each of the measurements all the information required for the evaluation of the quality of signal under test. It has a GRAPHIC BAR for the interpretation, adjustment and convenient optimization of any cable television system, microwave link or terrestrial aerial.

It is also possible to tune the audio carrier, allowing demodulation to listen to the sound via a built-in loudspeaker.

Carrier to Noise (C/N)

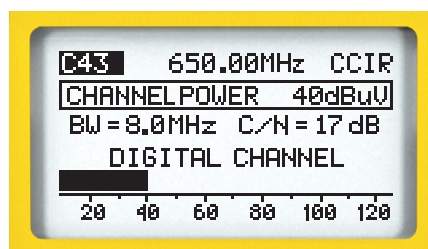
To evaluate the signal quality, the Carrier/Noise Ratio with a sensitivity level of



2 dB is also fundamental as parameter to evaluate the signal quality, both in analogue and digital transmission. In the menu this C/N ratio is displayed together with Signal Level or Channel Power, Audio Level and Video / Audio Ratio.

Digital channel power

Just pressing a button, the channel power measurement (using an integration



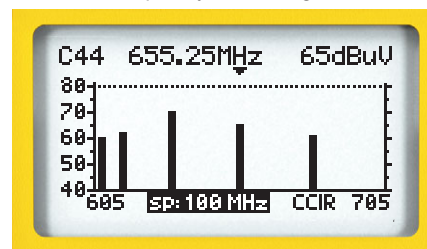
method), carrier/noise, BER and MER can be carried out. It has been demonstrated that measurements as MER, are useful to



determine the digital signal quality, reason why is essential to have them available in the measurement instruments.

Scan

In this mode we can see all the channels of the selected channel plan graphically represented with their associated signal levels. A MARKER can be placed on any of the channels displayed on the screen in order to find their frequency or their signal level.



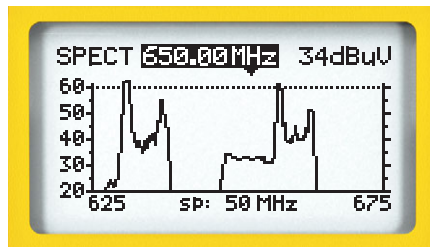
The SPAN and the REFERENCE LEVEL can be changed in order to adapt the presentation to the users test requirements.

PROMAX-10 SE

Spectrum Analyser

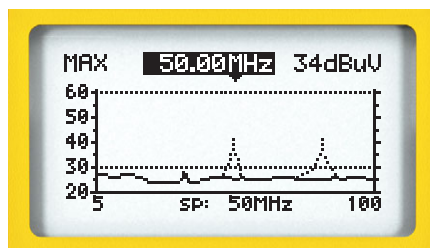
It can be very helpful for interference and noise troubleshooting both in the forward and return bands. It can be essential to solve cable modem related problems.

It is provided with a HOLD function to maintain maximums and minimums, this is of great value for identifying interfering signals, for example, in the return band.



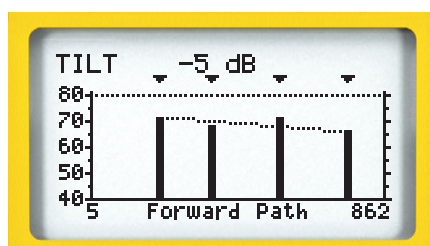
Return path

It also includes return path spectrum analyser with max hold function for testing of the cable modem transmission at the subscriber premises. This allows the installer to test that the upstream generator of the subscriber cable modem is working properly.



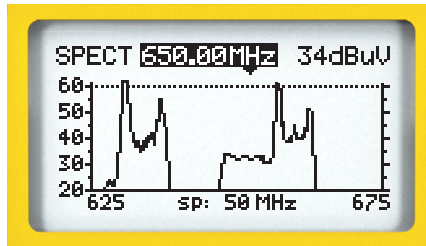
Tilt

The Tilt function provides a graphic and numeric representation of the absolute level of any 4 defined pilot frequencies and the difference between two of them. An interesting application is found in the return path where the PROMAX-10 SE together with the RP-110, Pilot Generator, will permit to evaluate the frequency response in a graphical and comfortable mode.



Intermodulation (CTB/CSO)

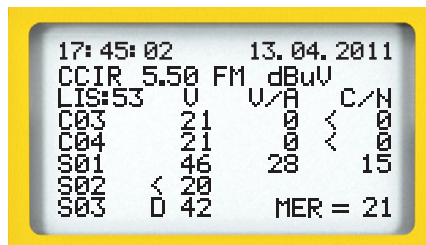
The Composite Triple Beat (CTB) and Composite Second Order (CSO) are an indication of the level of interference in the television channel generated by intermodulation of signals from other channels. Usually, other channels from the same system. Over certain level CTB and / or CSO the interference becomes visible on the television signal.



Data Logger

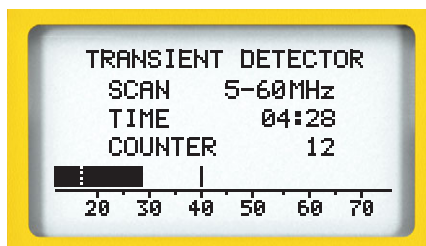
In this mode of operation the PROMAX-10 SE can acquire the measurements that are required and can memorize them for a subsequent review, for printing or transfer to a PC.

Carrier levels, digital channel powers, V/A or C/N ratios can be saved in the PROMAX-10 SE without the need for any external device. The channels to be analysed by the data logger can be selected from the channel plan by means of the configuration.



Transient detector

The function of transient detector in the PROMAX-10 SE enables it to count how many of these pulses have exceeded a limit level predefined by the user.

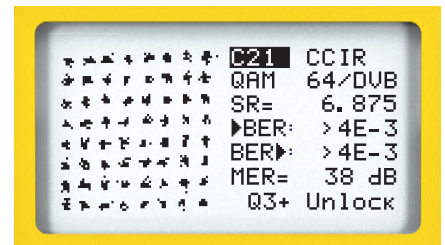


Language

It can be selected among English, French, German and Spanish.

Constellation

The constellation diagram allows to evaluate graphically the received signal quality, the aspect of the on screen diagram will depend on the digital transmission characteristics.



Leakage

PROMAX-10 SE is not a leakage meter but many users find it useful for that application too.

The frequencies used for leakage detection can be manually tuned or programmed as part of the channel tables

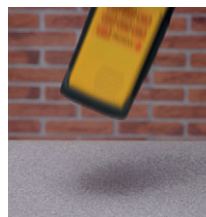
Input connector

The input connector is a frequent point of breakdown in field instruments. Therefore we have designed a replaceable F/F adapter.



Robustness

Both units were designed according to the recommendations of IEC standard on mechanical robustness. Their construction with a mixture of ABS and Polycarbonate provides them both with resistance



and elasticity. The PROMAX-10 SE is supplied with a rubber shock-absorption protector (DC-284) to ensure maximum protection.

Power supply

The instrument can be supplied from its internal rechargeable batteries or from an external DC source. When connected to the mains or to the car lighter adapter it is possible to simultaneously operate the instrument while charging the batteries.

MULTIFUNCTION

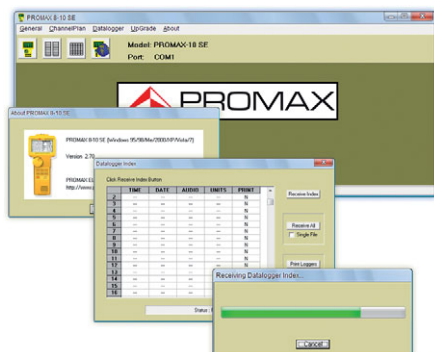
PROMAX-10 SE

Data processing

RM-010 software package is a perfect complement to the **PROMAX-10 SE**.

This program has two main functions:

a) Datalogger: Allows to open stored Data Loggers in the **PROMAX-10 SE** (up to a maximum of 55) or to transfer a Data Logger acquisition from the **PROMAX-10 SE** to the PC.



b) Upgrade: Allows to upgrade the **PROMAX-10 SE** internal control software (firmware) to newer versions.



SPECIFICATIONS	PROMAX-10 SE	BER (Bit error rate)	
TUNING Tuning range Tuning mode Channel plan Resolution Indication	From 5 to 863 MHz. By channels or by frequency Selectable 10 kHz Graphic display with backlight	Measured before RS decoding (PreBER) Measurement range Measured before RS decoding (PosBER) Measurement range Constellation Diagram Lock range Symbol rate Measurement Datalogger	10 E-2 to 10 E-8 (low resolution) E-9 (High resolution), E-10 in Continuous mode 10 E-2 to 10 E-8 (low resolution) E-9 (High resolution), E-10 in Continuous mode DVB-QAM signals (Annex A/B/C) & DOCSIS / Euro-DOCSIS 50 dBμV to 120 dBμV (-10 dBmV to 60 dBmV) 1000 to 7000 Msym/s for 16/64/256 QAM For each digital channel, the level and the MER can be stored. (BER for data dumping to printer or transfer to PC) QAM 16/32/64/128/256 ITU J83 annex A/C and QAM 64/256 ITU J83 annex B. 8 MHz 62.5 kHz.
LEVEL MEASUREMENT Measurement Analogue Channels Digital Channels Measurement range Maximum input level From 5 to 863 MHz DC to 60 Hz Reading Accuracy Analogue channels Digital channels	Signal level measurement on video carrier Channel power measurement by integration through channel bandwidth From 35 to 120 dBμV (-25 dBmV to 60 dBmV) 120 dBμV (60 dBmV) 60 V DC or RMS Digital in dBμV, dBmV or dBm and analogue by Graphic display with backlight. 1 dB resolution. ± 2 dB (0 to 40 °C) Negative video modulation ± 3 dB (0 to 40 °C) For 8 MHz channel bandwidth	Modulation type Bandwidth Frequency tuner	QAM 16/32/64/128/256 ITU J83 annex A/C and QAM 64/256 ITU J83 annex B. 8 MHz 62.5 kHz.
Digital measurements MER (Modulation error ratio) Measurement range Accuracy	22 dB to 40 dB * ± 2 dB	MECHANICAL FEATURES Dimensions Weight	W. 70 (90 at display) x H. 218 x D. 50 mm 825 g.

* (for signal power >60 dBμV), for Lower power dynamic range will reduce linealy