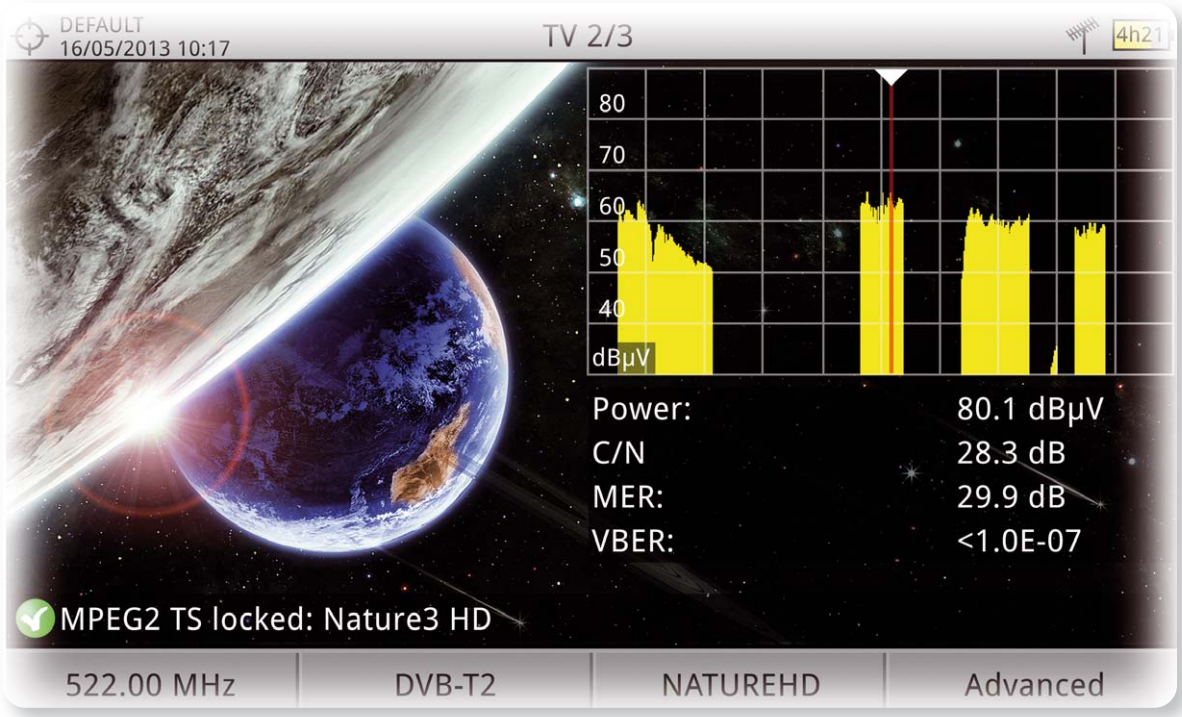
PROMAX NEWSLETTER

Nº 26



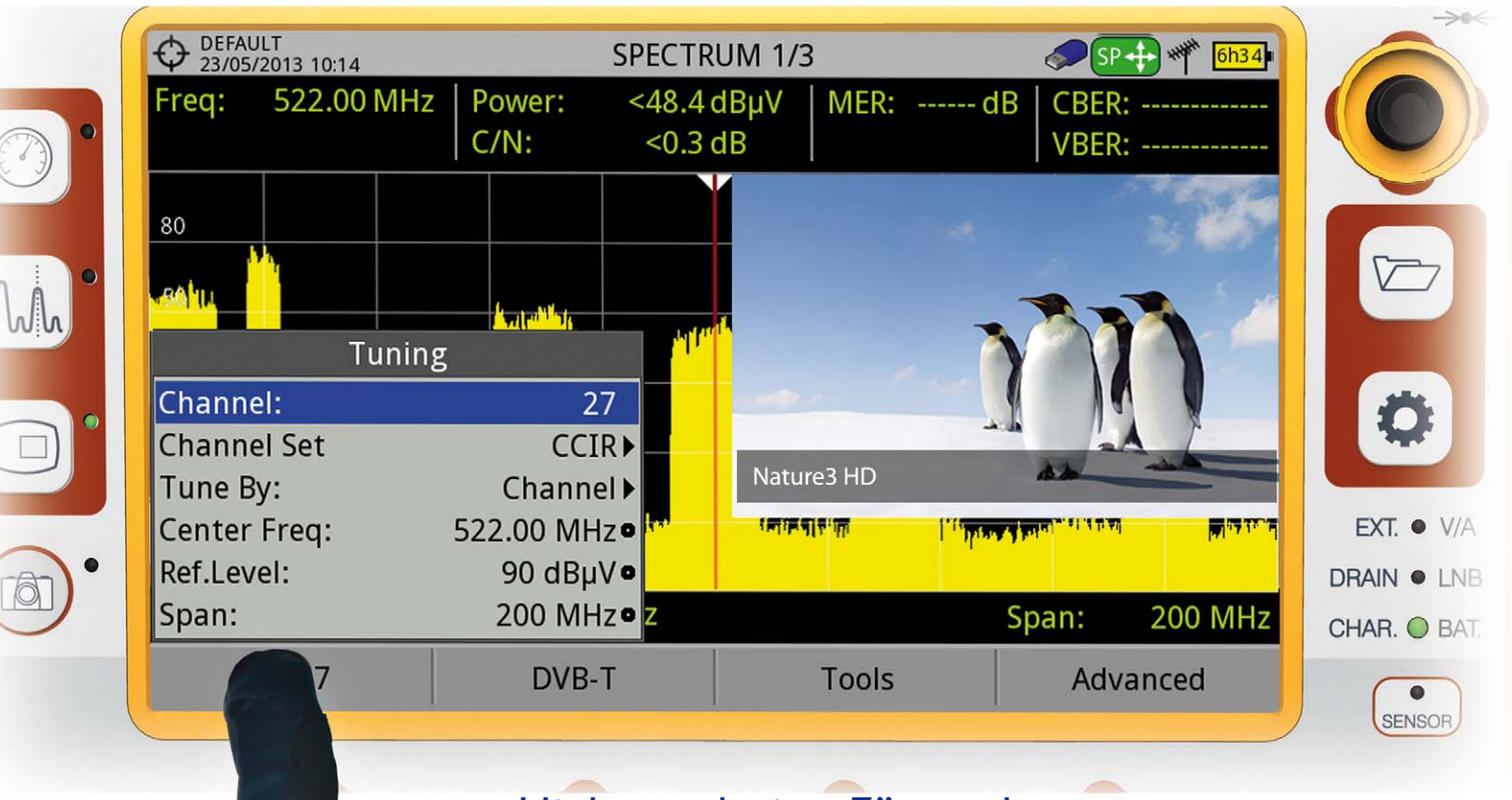
THE smart field strength meter YOU must have

HD RANGER 2 ~~see~~ touch to believe!

- ✓ ***HD RANGER 2**: Field Strength Meter*
- ✓ ***PROMAX-37**: DOCSIS / EuroDOCSIS 3.0 Analyser*
- ✓ ***PROLITE-77B** : FTTH Analyser*
- ✓ ***MO-480/81**: Broadcast grade **DVB-T2** modulator*
- ✓ ***DT-511** : **DVB H.264** Encoder / Modulator*
- ✓ ***TVHUNTER+**: Handheld analyser for **DVB-T2***
- ✓ ***PROMAX-10 SE** 50 Years edition*

PROMAX

HD RANGER 2 ~~see~~ touch to believe!



High resolution 7” touch screen

It helps you work easier and faster

The HD RANGER 2 features a new touch screen with excellent brightness and superior image sharpness. You will ~~see~~ touch the difference! It can also be used wearing gloves.

Hybrid operation

Touch or no touch. Your decision

The control software is designed in such a way that the meter can be fully operated using both the touch panel and the conventional keyboard.

Improved mechanical design

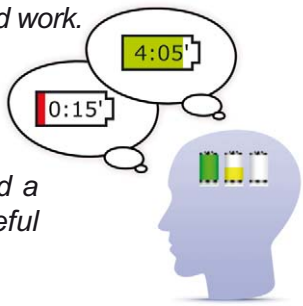
Setting new standards for handheld field strength meters

***Ergonomic handle**, tripod coupling, specially formulated chassis composition and more..., make the HD RANGER 2 robust, compact and ready for the hazards of the field work.*

Smart battery control

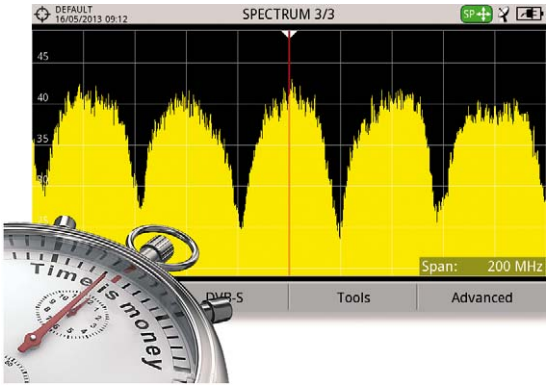
5 hours battery operating time

*The **HD** RANGER 2 uses a high quality, long operating time Li+ battery and a special control system that shows the remaining battery time. This is also useful to know at any instant what the exact battery charge situation is.*



HD RANGER 2 *Improved computing power*

The HD RANGER 2 can display information on several screens at any single time



Fast & accurate spectrum analyser

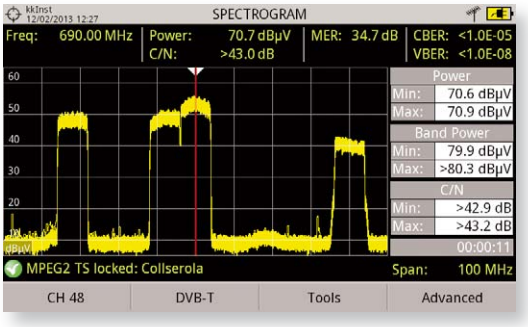
90 ms sweep time & amazing resolution

Variable span, 10, 5, 2 or 1 dB/DIV vertical scales, max and min hold, persistence control, etc... are some of the outstanding features of the HD RANGER 2 spectrum analyser function.

Merogram and Spectrogram

Identifying intermittent or random problems at a glance

They have been developed to allow for an early identification of intermittent and sporadic problems that may only happen in limited periods of time.



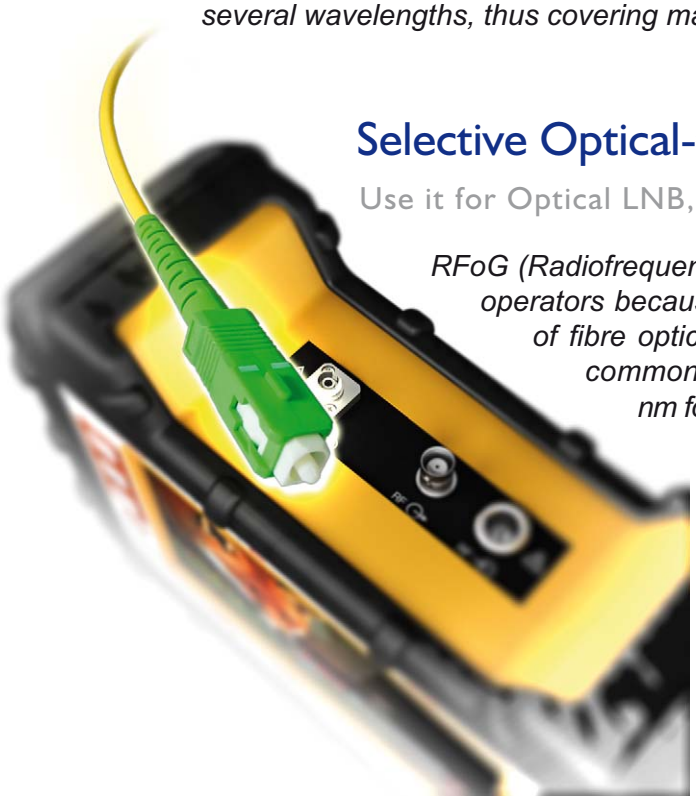
StealthID

Identifying the tuning parameters

The HD RANGER 2 StealthID function instantly identifies the required demodulation settings while you are doing the tuning process so that you don't need any previous information about the signal.

HD RANGER 2 *Optical measurements option*

The HD RANGER 2 optical option is a versatile '2-in-1' tool: a selective Optical Power Meter and a selective Optical-to-RF converter. It is worth mentioning the triple optical filter (1310 nm, 1490 nm, 1550 nm) integrated in the optical module, which allows you to work simultaneously with several wavelengths, thus covering many more applications than with other meters.



Selective Optical-to-RF converter

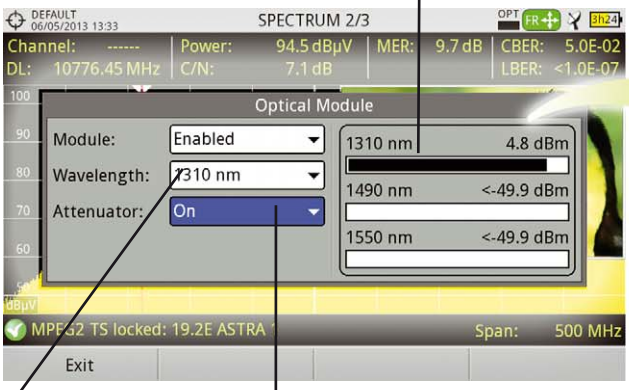
Use it for Optical LNB, RFoG, FTTH, GPON...

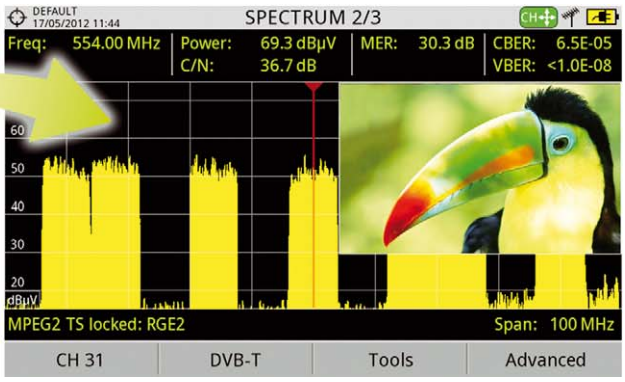
RFoG (Radiofrequency-over-Glass) is used more and more by CATV operators because it allows them to benefit from the advantages of fibre optics to compete with FTTH service providers. It is common to combine two downstream wavelengths:1550 nm for Digital TV and 1490 nm for Data services.

TV&SAT distribution in buildings is also taking advantage of the benefits of fibre optics, thanks to the use of Optical LNB's and RF/FO converters which will presumably be extended over the next years. Having integrated optical filters, the HD RANGER 2 is compatible with the latest technologies using two wavelengths simultaneously to distribute up to 2 satellites (including all 4 polarities each), in addition to the terrestrial channels.

The RF signal at the converter output can be analysed, measured and decoded by the meter as one would usually do with any DVB or Analog TV&Satellite signal over copper wires.

1. Check which wavelentghs, 1310, 1490 or 1550 nm are active in your system





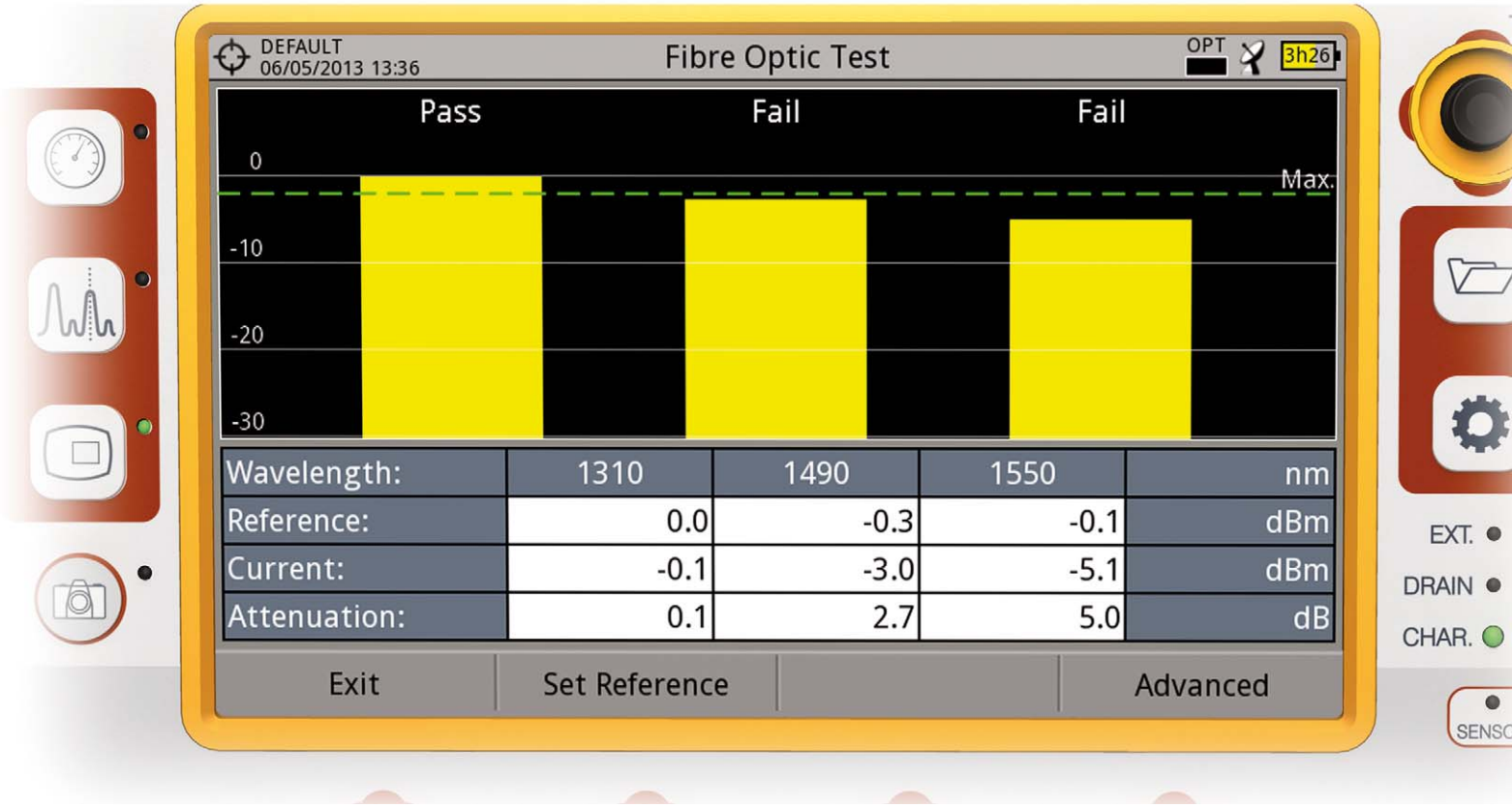
RF Spectrum + Measurements + Picture

2. Select the wavelength to be converted into RF

3. The built-in 15 dB RF attenuator can be set to ON at the output of the headend or at the antenna and OFF in the building.

4. Select the RF band (terrestrial/satellite) and polarity (high/low, vertical/horizontal) to work with.

HD RANGER 2 *Optical measurements option*



Selective Optical Power Meter

Test and Certify Optical Networks

The selective HD RANGER 2 OPM combined with a portable triple laser source such as ***PROLITE-105*** *(sold separetely) forms a complete Optical Loss Test Set that allows you to measure fibre attenuation. This is of great interest in live FTTH/GPON installations certification or even before they are in service.*

HD RANGER 2 *Advanced satellite functions*

19” Rack versions

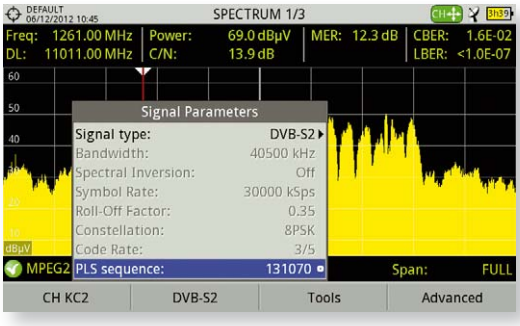
Available for **HD** RANGER **2** and **HD** RANGER **+**

Both HD RANGER 2 and HD RANGER + are available in 19” rack mounting formats. This is specially interesting in applications such as permanent monitoring or SNG vans where all the equipment is contained in a 19” rack frame.

DVB-S2 multistream

Working with multi transport stream transponders

Advanced modulation techniques allow you to aggregate several independent transport streams into one single RF carrier. Selecting a specific TS is easy with your HD RANGER 2 using the ISI Filtering function. This feature is available for DVB-S2, T2 and C2.



PLS - Physical Layer Scrambling

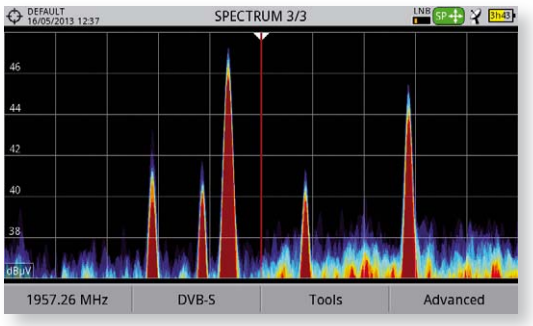
Decoding PLS encrypted transponders

The PLS index is a number generated by the broadcaster that must be properly decoded by the customer so that demodulation is possible. HD RANGER 2 can also work with these type of signals.

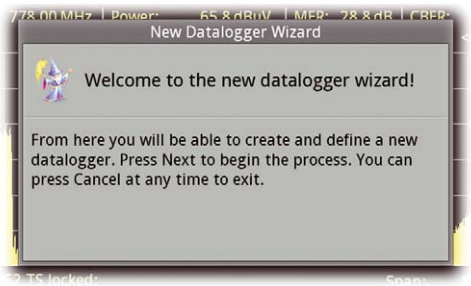
Beacon - Flyaways, SNG and VSAT

Helping live broadcast in remote areas

The HD RANGER 2 spectrum analyser function makes it easy for technicians working in VSAT applications to set up their satellite transmission-reception systems.



HD RANGER 2 *Powerful Datalogger and installation menu*



Datalogger wizard

Configuring Datalogger and installations easily

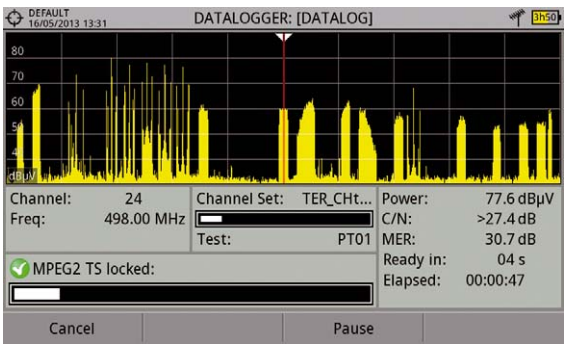
Datalogger configuration is usually the less automated part of operating a datalogger and it is the main source of user errors. HD RANGER 2 includes a configuration wizard that helps you complete this process fast and easy.

Automatic Datalogger

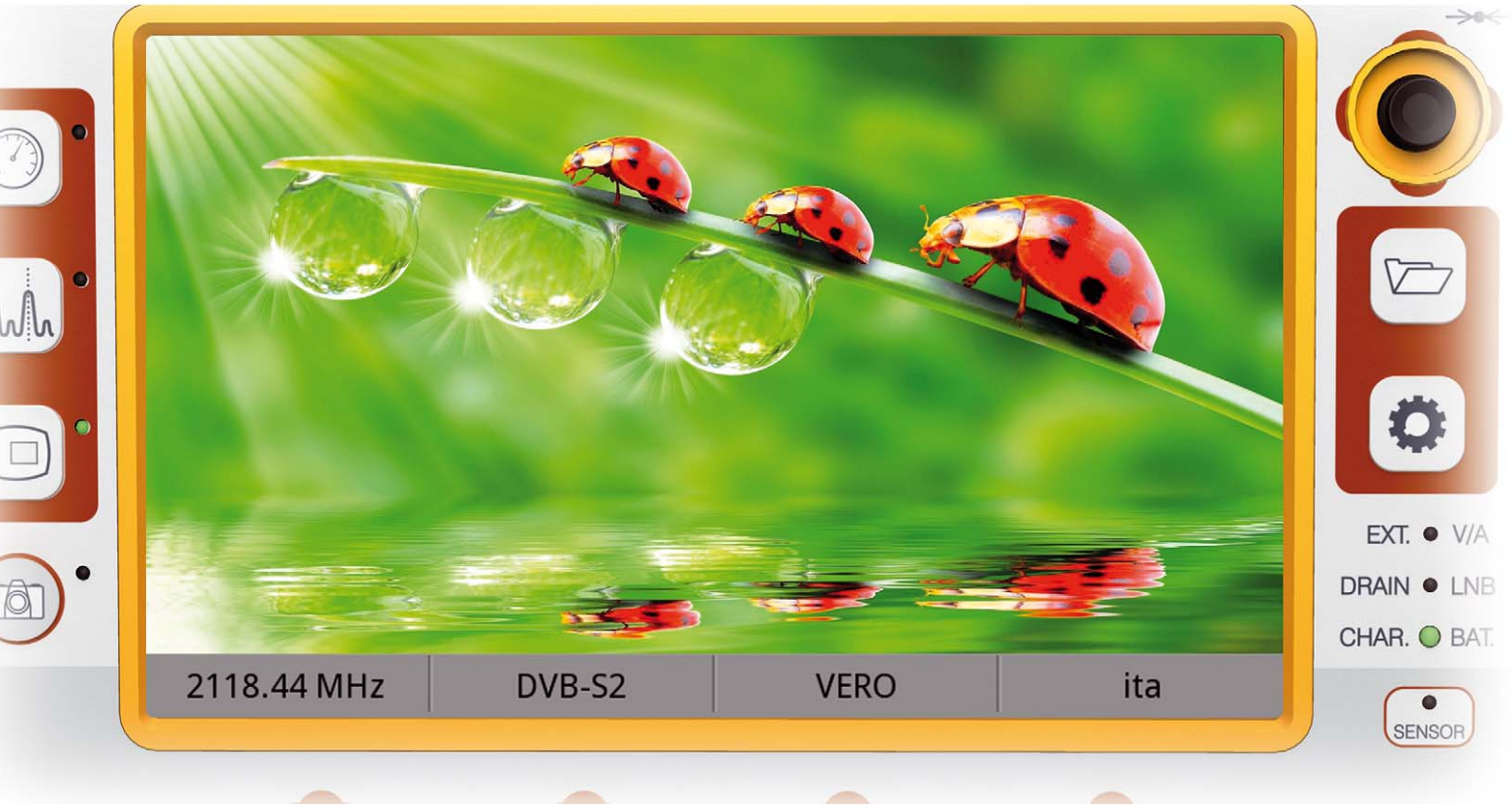
Running automatic data acquisition

The datalogger can perform channel power, carrier/noise, BER and MER measurements automatically. It can also save information from the NIT table such as the network name or even the SID and names of the services in the mux under test.

All this information is saved inside the meter and can be copied to a USB memory or to a PC for further processing later on.



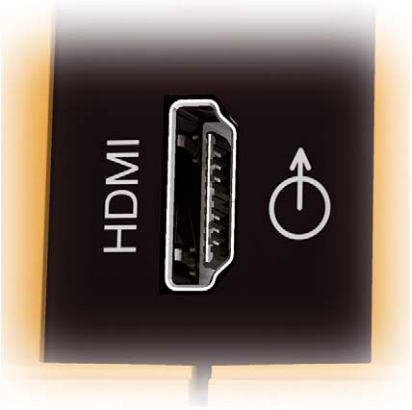
HD RANGER 2 *Extended connectivity features*



HDMI Interface

Using the meter as a source of high definition video

The HD RANGER 2 includes an HDMI output to interface with other High Definition equipment. It can also be very useful to check proper operation of the client's TV while on a service call. Everything that can be seen on the meter's screen is available through the HDMI.



Transport stream input and output

Interfacing with professional headend equipment

Having a TS-ASI input and output is an essential feature when you work with professional digital headend equipment. You can monitor and analyse streams coming from satellite receivers, transport stream players, multiplexers, etc... You can use the transport stream received by the HD RANGER 2 to feed the signal to other devices as well.

HD RANGER 2 IPTV Input

IP input

Interfacing with IPTV equipment

IPTV stands for TV over IP networks. It actually means TV over any type of IP packet based distribution network. They can be referred to as LAN (Local Area Network), ethernet, computer networks, etc..

With the growth of LAN based TV distribution systems, having an IPTV input in your field strength meter becomes a handy feature

IPTV Reception

Displaying video over IP

The HD RANGER 2 allows you to receive television programmes coming from IPTV networks. Those programmes can be displayed on the screen together with other important service information.

Measurements on IPTV signals

Quantifying IPTV signal quality

Although some concepts are similar, signal quality assessment metrics is not the same in IPTV as it is in digital TV over radio frequency. The HD RANGER 2 offers you the measurements you need to understand, identify and correct the new problems that can be found in this new type of television distribution networks.

	HD RANGER 2	HD RANGER+	HD RANGER
Touch screen	✓		
DVB standards	T2 C2 S2 T C S	T2 C2 S2 T C S	S2 T C S
Dolby Digital Plus	✓	✓	
Common interface	✓		
HDMI output	✓		
TS-ASI in/out	✓		
IP input	✓		
Optical measurements	●	●	●
3 GHz band extender	●	●	●
Wi-Fi dongle	●	●	●

✓ Included ● Optional

DVB T2/C2/S2

DOLBY DIGITAL PLUS

Lte

ip.tv

Optical fibre capable

HDMI HIGH-DEFINITION MULTIMEDIA INTERFACE

WiFi

ASI-TS IN&OUT

USB

R·D·S RADIO DATA SYSTEM

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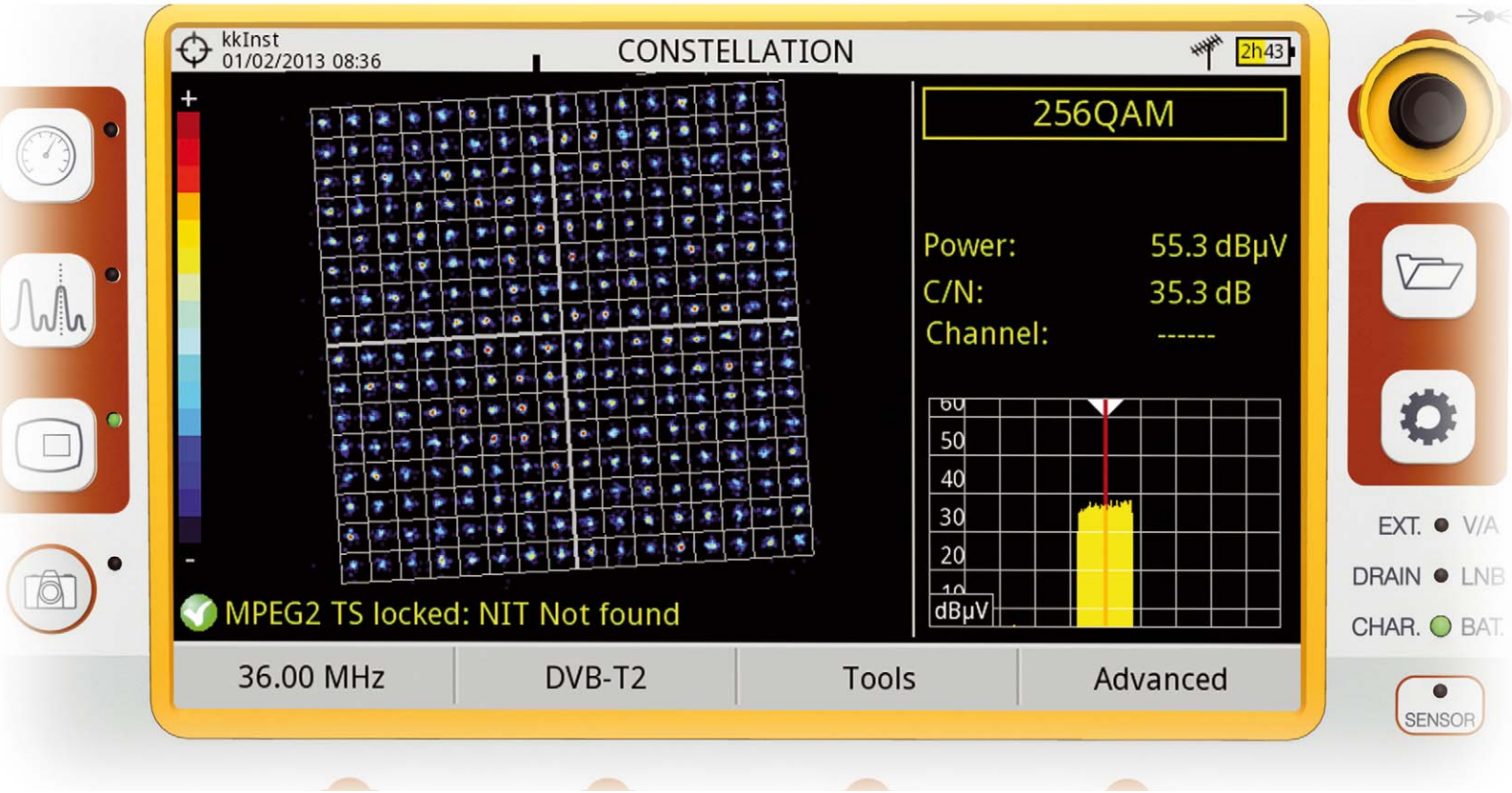
HD RANGER 2 *Constellation diagram*



COFDM constellation

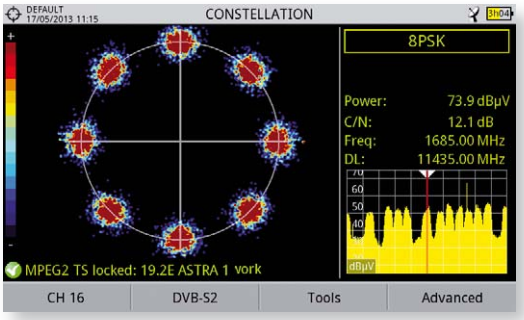
Detecting signal impairments at a glance

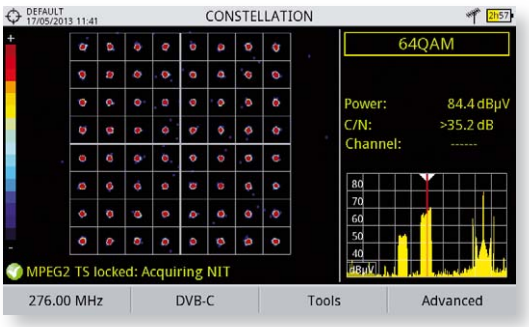
The constellation diagram is a graphic representation of the digital symbols received over a period of time. There are different types of constellation diagrams for the different modulation modes. DVB-T/T2, DVB-C/C2 and DVB-S/S2 constellations are available on the HD RANGER 2.

8PSK and QPSK constellation

Looking at the satellite case

In the case of an ideal transmission channel, free of noise and interferences, all symbols are recognised by the demodulator without mistakes. In this case, they are represented in the constellation diagram as well defined points hitting in the same area and forming a clear dot).





16, 32, 64, 128, 256 QAM constellation

Using the Cable TV modes

Every modulation type is represented differently. A DVB-C 16QAM signal is represented on the screen by a total of 16 different zones, and a DVB-C 64QAM is represented on the screen by a total of 64 different zones and so on.

HD RANGER 2 *LTE interference*

LTE interference on SMATV systems

Minimizing LTE effect on your TV system

The HD RANGER 2 has a variety of tools that allow you to compare the signal reception quality measurements on digital TV channels with and without the LTE filter. This is very helpful to anticipate the performance improvement you should expect on your TV distribution system well before you physically make changes to the cabling to insert the LTE filter.

LTE interference on CATV networks

Locating interference sources to prevent service calls

Some of the bands allocated to LTE are near or inside former television bands. For example band 5 (uplink 824-849 MHz; downlink 869-894 MHz). The HD RANGER 2 has special functions to help installers determine the level of activity in those bands and therefore anticipate potential interference problems.

Downlink and Uplink interference

Visualizing the two different scenarios

Downlink interference comes from the mobile phone base stations which are placed at fixed locations and are always on. This is not the case of Uplink interference which comes from the handheld devices and therefore it can be a lot more difficult to locate and mitigate.

HD RANGER 2 *Common Interface and Dynamic Echoes Analysis*

Common Interface

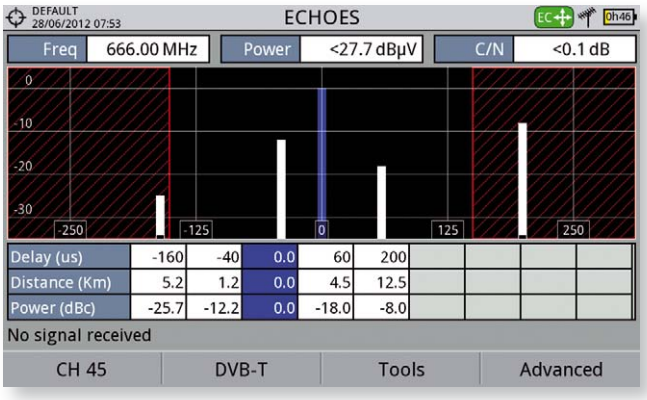
Decoding encrypted channels

The HD RANGER2 includes a CI slot that allows interfacing with CAM modules available in the market and decoding encrypted channels. The use of encryption is widely spread among television operators so this function is very useful indeed.

Dynamic echoes analysis

Displaying signal echoes real time

Dynamic echoes measurement is an essential function in DVB-T, DVB-T2 and recently in DVB-C2 as well.HD RANGER 2 covers all these standards. The information about the various echoes received at the test point is displayed on a bespoke screen where data is laid down in a comprehensive way including power, delay and other channel details.

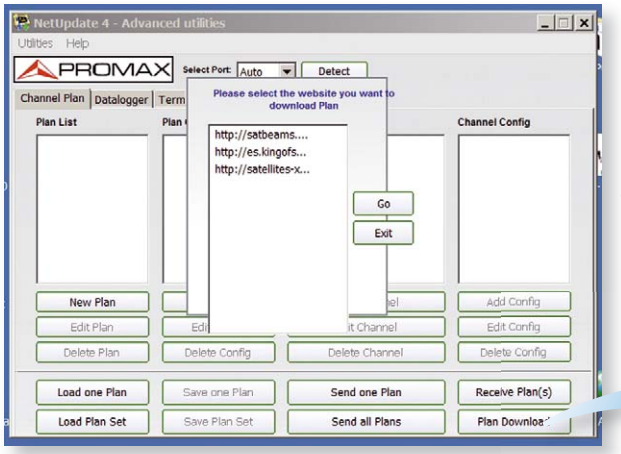


HD RANGER 2 *WIFI Dongle and USB Interface*

WIFI DONGLE

Checking your measurements from a smartphone or tablet

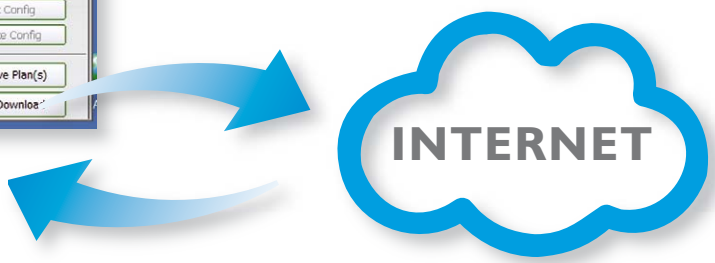
A WIFI Dongle device is also available as an option. It connects the HD RANGER 2 to a WIFI hot spot so that it can be accessible from a smartphone or tablet located anywhere in the network. Additionally, using the provided software the HD RANGER 2 can be connected directly to the mobile device if they are both within WIFI range.



PC Connection

Connecting the analyser to your PC

The USB interface in the HD RANGER 2 can be used to connect it to a USB memory or to a PC computer. NetUpdate4, a free download PC software, is also available from our website. This complete application allows updating the meter's firmware, editing channel tables, processing datalogger information, etc...



PROMAX-37 DOCSIS / EuroDOCSIS 3.0 Analyser

Downstream:
- Σ Power measurement
- Channel power measurement
- Quality test: MER, BER, Pre BER and Post BER
- Constellation diagram
- Full band power
- Frequency, channel and active channel plan
- Modulation type and symbol rate
- Spectrum / Scan measures

Upstream:
- Σ Power measurement
- Power measurement
- Attenuation at CMTS
- Frequency and bandwidth
- Modulation and symbol rate
- Communications test
- Spectrum / Scan measures

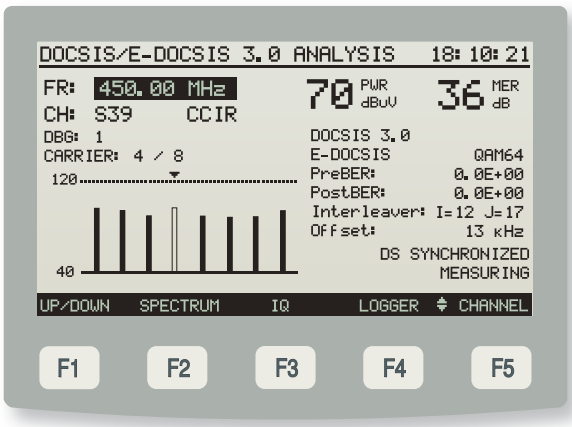
Digital and analog channel TV measurements

Communications Test (in Registered mode):
- IPTV analyser (television over IP)
- VoIP analyser (voice over IP)
- IP report
- Ping test
- Ratio of lost packets

Serial interface to External Cable Modem (loop-through mode)

DOCSIS 3.0

channel bonding + sweeper function



Channel bonding

This technology boosts the bandwidth available by dividing the data into stream packets, sending it through multiple channels and reordering it again at the destination.

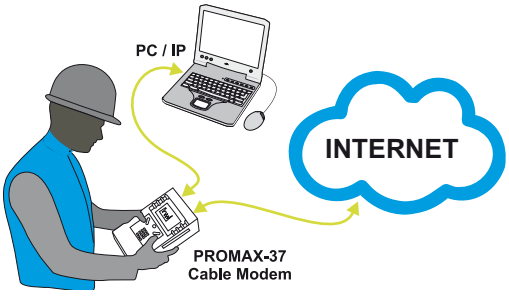
VoIP

VoIP *(voice over IP) or IP Telephony, is a group of resources that make it possible for the voice signal to travel over the Internet using IP (Internet Protocol). The* ***PROMAX-37 VoIP*** *function performs an analysis of the network based on the quality of service parameters, named UGS, according to the standards* ***DOCSIS / EuroDOCSIS 3.0****.*

IPTV service analysis

PROMAX-37 *analyses parameters than can affect quality signal, like latency, jitter, lost packets and* ***trace route****, which trace the route of sent packets on a graph.*

This function may be useful to detect possible bottlenecks.



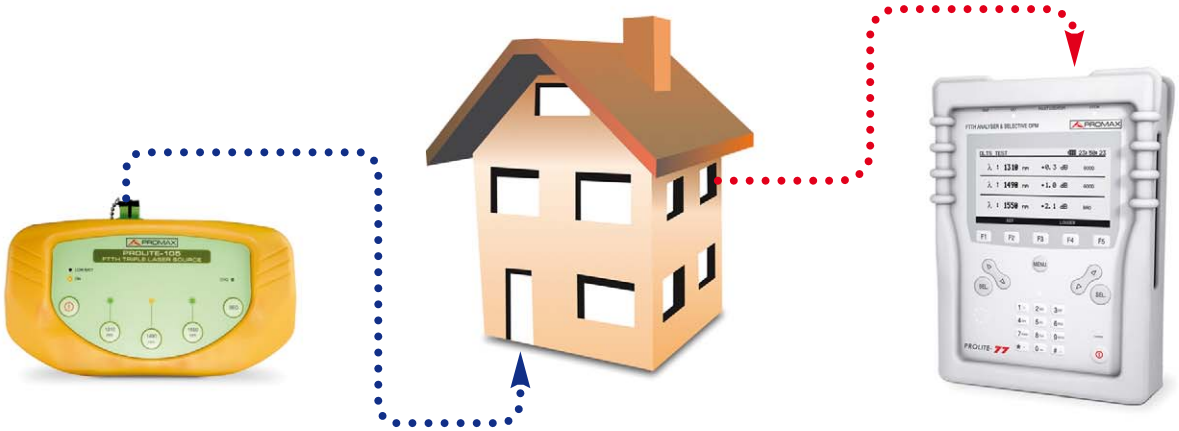
PROLITE-77B *FTTH analyser & Selective OPM*

*The **PROLITE-77B** is an instrument optimised for analysis, installation and maintenance of fibre optics networks based on GPON architecture.*

The instrument provides filtered measurements, individualised and simultaneous for the three wavelengths that are used in GPON (1490 and 1550 nm for Downstream and 1310 nm and 1550-1626 nm for Upstream).

*Optionally, a **Spectrum Analyser module for Band C** is available (**OP-077-S** option). It is designed specially for ITU G692 channels separated by 100 GHz (0.8 nm) in C band (1529-1564 nm).*

Quick and easy FTTH networks certification



Step 1

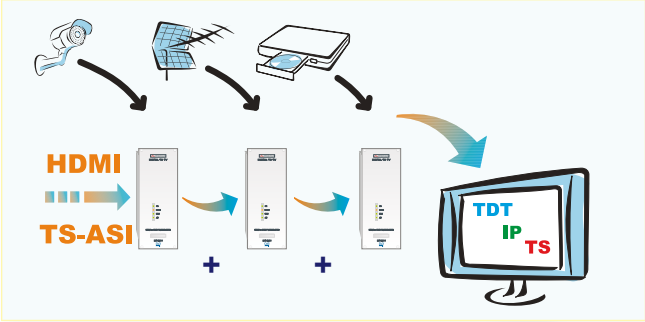
Connect a LASER source (such as our **PROLITE-105**) to the main fibre optic connector of the building and let it generate all three wavelengths simultaneously.

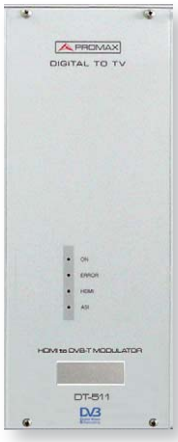
Step 2

Measure the optical power in each wavelength to ensure the losses are within the acceptable range.

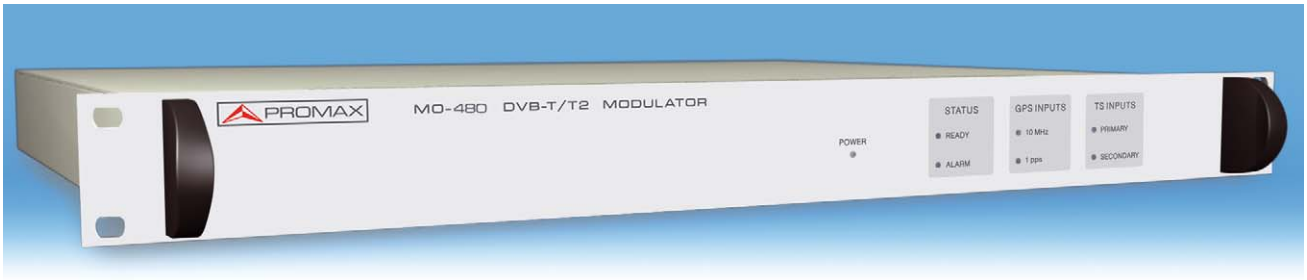
DT-511 *DVB H.264 Encoder / Modulator*

*Besides being an inexpensive and self-sufficient device the **DT-511** module is also compatible with DTTV headends. Thanks to its internal multiplexer several HD programmes can be added to the distribution network on a single RF channel.*





MO-480 / 481 DVB-T2 HDTV *Modulators*



*The **MO-480/481** is a broadcast grade DVB-T2 modulator available in a standard 1U high 19" rack case (**MO-480**) and also in an open frame chassis (**MO-481**) that can be used for MFN as well as SFN applications.*

*The modulator has several Transport Stream and T2-MI inputs in ASI and IP formats so that it can be easily interfaced with other existing transmission equipments such as gateways. The modulator can be configured to generate any of the transmission modes listed in the corresponding **DVB-T2** standard including single and multiple PLP, MISO or SISO. It can also be used for DVB-T applications.*

SATHUNTER+, TVHUNTER+, TVHUNTER+ ISDB-T/TB

We can now offer three versions of this light and compact handheld meter. Sathunter+ can be used for satellite dish alignment and covers DVB-S2, DVB-S and DSS standards. Similarly TVHunter+ is available for terrestrial TV applications in DVB-T & DVB-T2 or ISDB-T/Tb modulations.

DVB T/T2

DVB S/S2

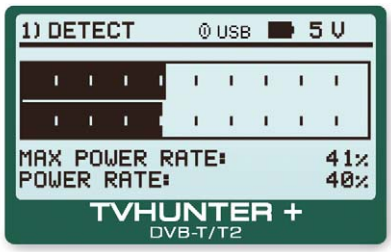
ISDB-T/TB

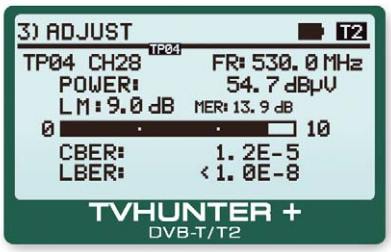
Detection ••••••••➤ Identification •••••➤ Adjustment

The meter shows information about the received signal power (wide band analogue and digital) in the form of two graphic bars with two different time constants and an audible indicator.

In this mode the meter shows information about the received digital channels including the service list as well. (DVB-T/T2 or DVB-S/S2 or ISDB-T/TB) depending on the model.

In this mode the equipment shows digital measurements (DVB-T/T2 or DVB-S/S2 or ISDB-T/TB) such as, POWER, MER, CBER, VBER or LBER, depending on the model.





PROMAX-10 SE 50 Years Edition

*We are proud to introduce a new version of our world-wide renown **PROMAX-10** CATV Analyser. Featuring QAM annex A/B/C Channel Power, C/N, BER, MER, Constellation and spectrum measurements this high quality, field proof handheld meter is now offered at an **unprecented price** on the occasion of **PROMAX** 50th anniversary.*

Included accessories:

- *Power adapter*
- *Mains cable*
- *F/F input connector*
- *Soft carrying bag*
- *Rubber shock protector*

PROMAX 50th ANNIVERSARY (1963 – 2013)

For half a century now, **PROMAX** has been on the vanguard in the design and production of test and measurement instruments.

Our success has gone beyond the imagination of our founders and over the past 50 years our products have spread to every corner of the world.

We have been supporting the deployment of changing telecommunication networks, helping in their migration to new standards. We have assisted manufacturers in producing higher quality and more efficient products. And we have been helping universities to introduce their students into new technologies.

Looking back and observing the results of our efforts encourages us to continue developing products to help building a better society.

We would like to thank our customers for all your confidence along these years.

José Mª Clotet
CEO

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