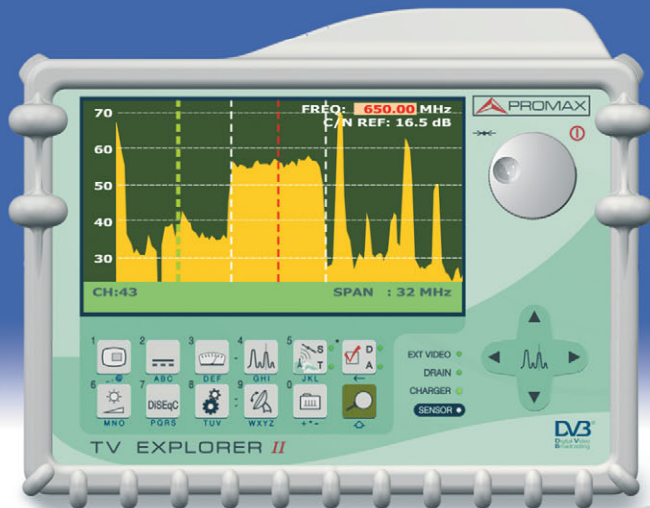




# We changed



# the way



# measurements are made!

# One model for every need

Select yours

	TV EXPLORER	TV EXPLORER II	TV EXPLORER II+
LCD size	5.5	6.5	6.5
LCD aspect ratio	4:3	16:9	16:9
Transflective LCD		✓	✓
DVB-T Terrestrial	✓	✓	✓
DVB-S Satellite	✓	✓	✓
DVB-S2 Satellite		✓	✓
DVB-C Cable	✓	✓	✓
DVB-H mobile TV		✓	✓
Analog TV	✓	✓	✓
Spectrum analyser	✓	✓	✓
Constellation diagram		✓	✓
Auto identification	✓	✓	✓
Explorer function	✓	✓	✓
Automatic measurements	✓	✓	✓
Reports	✓	✓	✓
Automatic Internet updates	✓	✓	✓
Satellite IF test	✓	✓	✓
Cable TV: Return path		✓	✓
Cable TV: 1 GHz			✓
Encrypted channels (common interface)			✓
Video stream recorder and player			✓
Screen capture			✓
Storage capacity	768 KB	128 MB	1 GB
PkTools software	optional	included	included
Transport case	optional	included	included



TV EXPLORER



TV EXPLORER II



TV EXPLORER II+

## Digital TV:

*It is switch-over time!*



*"I waited for the right time to invest in a new analyser. I chose the **TV EXPLORER** because it is meant to be a meter for digital and analog.*

*But, I found out that it is much more than that. It has all the features I would have ever dreamt of to make my work faster and more reliable.*

*It is really **helping me** out to develop my **business**."*



## Transflective LCD

*From darkness to bright sunlight* ★

➤ The **TV EXPLORER II** and **TV EXPLORER II+** incorporate a transflective 6.5" colour LCD with a 16:9 aspect ratio. The new transflective technology combines the advantages of the transmissive and reflective displays.

The transmissive ones are those illuminated from behind the screen, with good vision in the darkness. The reflective ones use the reflection of the external light in the back of the display.

The result is an **stunning** vision in darkness and by the direct sunlight.

The big 6.5" panoramic colour screen allows to extend the area to display the measurements and make readings easier.

With the 16:9 aspect ratio the instrument can test any television signal independently of the receiver available.

The temperature range for the LCD is extended from 80° C to -40°C allowing its use in very **extreme conditions** away from the operating limits of other components.



★ according to model

## 6.5" panoramic colour 16:9 LCD

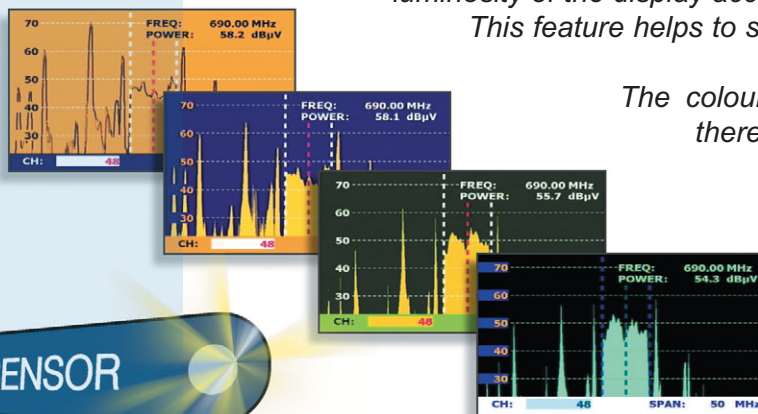
*Large display, compact size ★*



## Select colors and skins:

*Automatic adjustment*

↘ The **TV EXPLORER** includes a light **sensor** that selects the contrast and luminosity of the display according to the environmental conditions. This feature helps to save batteries.



The colours and skins are user-selectable and there are **several** combinations..

This feature can help to improve the LCD viewing experience in certain light conditions specially when working with spectrum graph.




★ according to model

## Easy to use

### *Setting a new standard*

➤ The **TV EXPLORER** is been designed for the installation, maintenance and surveillance of terrestrial, satellite and cable TV systems.

It provides complete information about the channels available in a network and their quality. This includes:

-  Measurements
-  Spectrum analyser
-  Signal decoding

The main difference with all instruments available until now is that it is easier to use. It can detect the type of signal, standard, modulation type, symbol rate... and just display the results. In other words, it does not require any preliminary information about the signals to be analysed.

The **TV EXPLORER** has set new standards in the way installers make and understand measurements. It includes an impressive new range of functions developed to easy measurements and to detect impairments in both digital and analog systems.

The **TV EXPLORER's** compact and rugged construction and its large colour LCD, makes it ideal for field use. With the **TV EXPLORER** it is possible to take measurements automatically, to store the results and print reports.

From now on, your analyser will be a much more intelligent and easy to use tool!



## Small and light: *In the palm of your hands*



↘ The **TV EXPLORER** has changed the concept for this type of product. It is **easier** to use, has **advanced** functions and... it is **small**.

It has an amazing shape factor, making compatible a very large display area with a really small size. It **fits** within the palm of your hands.

The **TV EXPLORER** is been designed for outside use. The classic PROMAX strong aluminium construction and an original **anti-shock** rubber cover, ensures highest protection to your investment. Depending on the model, it weights 2 - 2.2 kg (5 lbs).

The front panel is been designed with **flat keys** that avoid accidental water ingress.

The instrument comes with a **strap** to hang it to the neck or to fasten it around the waist. In this way, both hands are free to take the measurements, make adjustments, etc.

It can also be used within the **carrying bag** that protects the instrument from the weather conditions. A transparent **plastic cover** allows the operation of the keyboard even under the light rain.

The **TV EXPLORER II** and **TV EXPLORER II+** are delivered with a heavy duty **transport case**.

## Lithium-ion batteries: *The best solution available*



↘ The **TV EXPLORER** is fitted with Lithium-Ion batteries. These batteries provide a high operating time, with an estimated duration of **more than 4 ½ hours** (depends on the type of use).

This type of batteries can be **recharged** at any time and have an exponential charging cycle so that it can recover a large portion of the charge back in a very short time. It can be charged from the car through the lighter.

**Battery charge indicator** (  ) shows the status of the charge at any time.

## Auto-identification: *The magic key!*

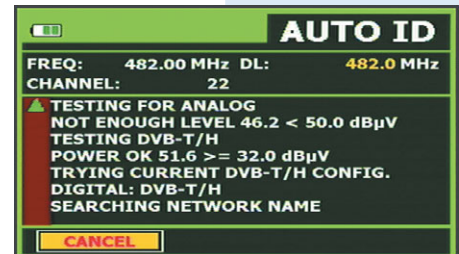
➤ The **TV EXPLORER** has been specially designed to satisfy the measurement needs in terrestrial, satellite and cable TV during the transition period to the analog switch off. For this reason it is equipped with functions to measure both analog and digital signals.

When pressing the “**explorer**” key briefly, it identifies the signal under test. First it recognises whether the channel is analog or digital.

If the channel is analog, it determines the television standard of the signal (PAL/SECAM/NTSC).

When the signal is digital, it analyses the modulation type: **QAM / QPSK / COFDM** (European Zone models) and all the associated parameters such as the system, the symbol rate, the code rate, etc and it tries to lock the signal.

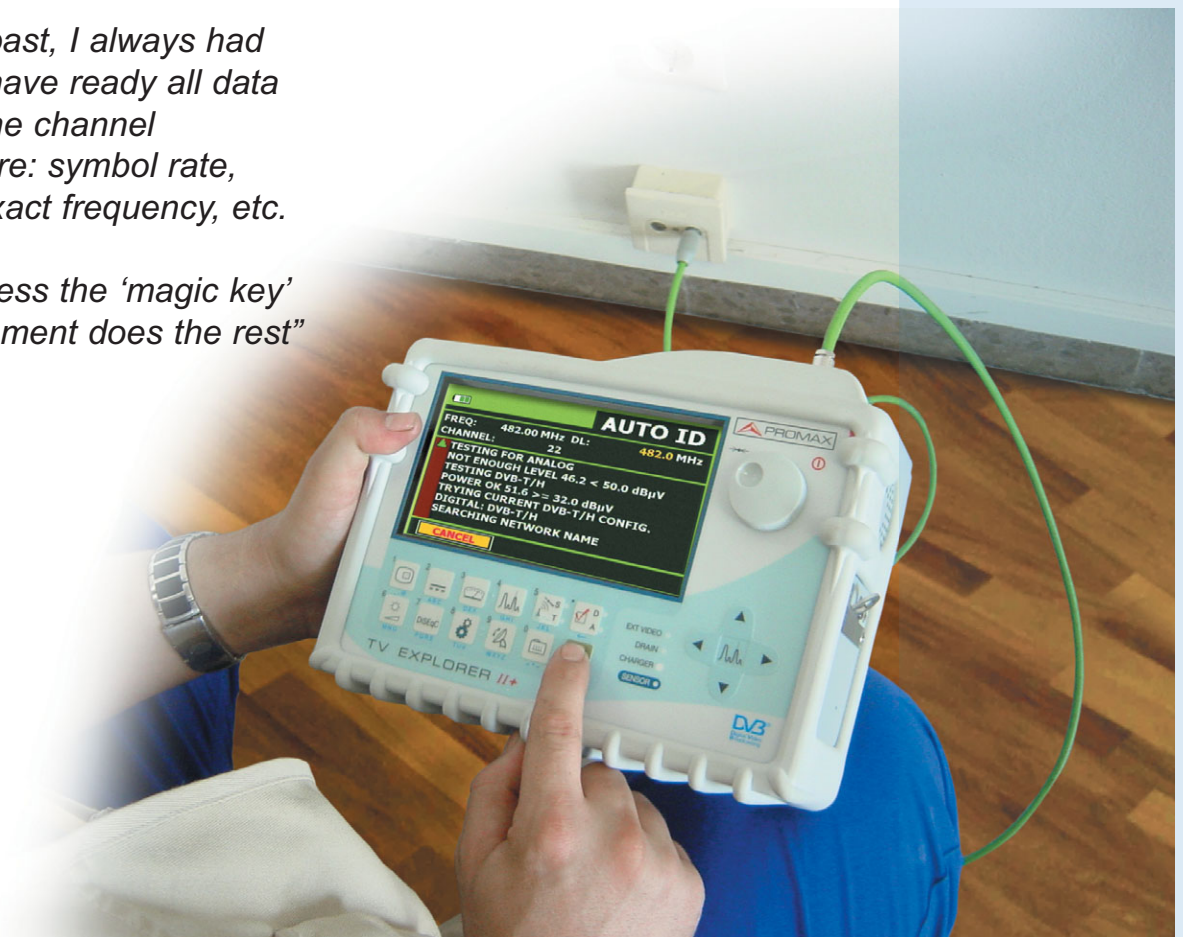
In this way, the **TV EXPLORER** becomes a **fully automatic** and agile instrument, able to detect and to identify all of the channels in a television system. When the conditions of the signal to be identified are too poor, the equipment allows to use the manual configuration



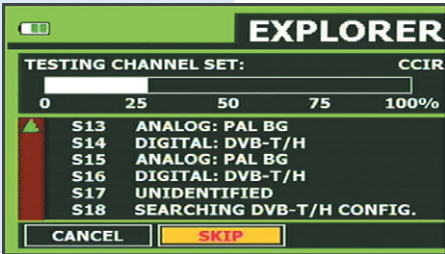
Auto identification screen

➤ *“In the past, I always had to strive to have ready all data of the channel to measure: symbol rate, code rate, exact frequency, etc.*

*Now I just press the ‘magic key’ and the instrument does the rest”*



# Explorer: *One key and go!*



Explorer function screen

When the “explorer” key is pressed for a few seconds, a new spectrum exploration session begins. The **TV EXPLORER** makes a dynamic exploration of the spectrum, detecting all the channels in the swept band and identifying all its parameters to lock the signal.

This new measurement concept sets a **radical change** in the way to understand and to use the meter. The analyser is no longer a passive unit, that only measures the channels. It is the analyser on its own that begins by locating all the channels available in the band.

The **TV EXPLORER** detects all the channels in the band with no need for any previous details such as, the number of channels available, the type of signals transmitted or their characteristics.

The **TV EXPLORER** is then able to determinate the nature of the signal (analog or digital) and the channel bandwidth. It can also automatically identify channel shifts that the instrument will automatically detect.



With the data collected after each exploration, it creates a register that contains tables of channels that can be independent for each area or system. Each of these tables can be saved with a different name.

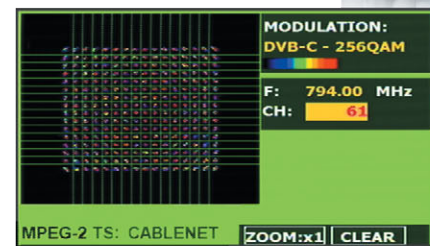
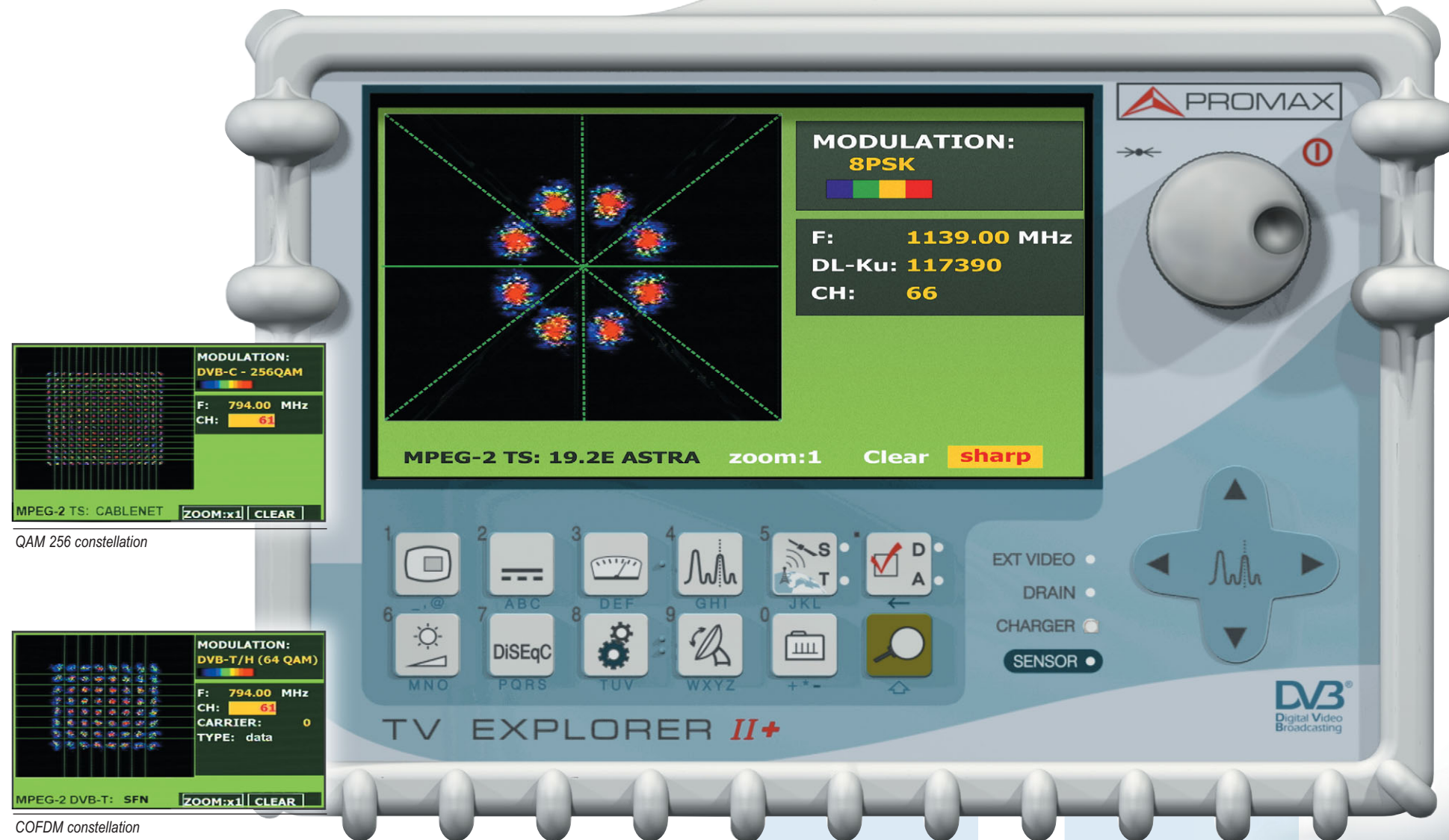
At any time, the stored sessions can be retrieved and the pattern used for a new sweep. This is specially useful in countries with MFN Digital Terrestrial Television networks where the design of channel plans can be complex.

This feature can help to reduce measuring times dramatically



## Constellation diagram:

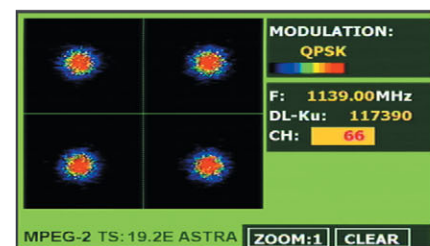
*Detecting impairments at a glance* ★



QAM 256 constellation



COFDM constellation



QPSK constellation

➔ "This function is helping me a lot.

By just looking at the shapes, I learned to read the quality of the systems."

➔ The **constellation diagram** is a graphic representation (called I-Q) of the digital symbols received over a period of time.

There are different types of constellation diagrams for the different modulation modes. With the **TV EXPLORER II** & **TV EXPLORER II+** it is possible to display constellations for DVB-T/H, DVB-C, DVB-S and DVB-S2 signals.

In 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.

Noise and impairments cause the demodulator to not always read the symbols correctly. In this case the hits disperse and create different shapes that at the end will allow to determine at a glance the **type of noise** in the signal.

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.

The constellation shows in different colours the **density** of hits and includes zooming and scrolling possibilities and also a clear button to clean the picture.





## Measurements:

*Including DVB-S2 and DVB-H ★*

✚ In the **TV EXPLORER** all the measurements are displayed simultaneously on the same screen. Whenever the Measurement function is selected the instrument shows the different parameters that define the quality of the signal under test.

Digital terrestrial DVB-T COFDM (2k/8k):

- ✚ Power
- ✚ C/N
- ✚ MER
- ✚ CBER
- ✚ VBER
- ✚ Noise margin

Digital mobile DVB-H (only **TV EXPLORER II & II+**):

- ✚ Power
- ✚ C/N
- ✚ MER
- ✚ CBER
- ✚ VBER
- ✚ Noise margin

Digital satellite DVB-S QPSK:

- ✚ Power
- ✚ C/N
- ✚ MER
- ✚ CBER
- ✚ VBER
- ✚ Noise margin

Digital satellite DVB-S2 8PSK (only **TV EXPLORER II & II+**):

- ✚ Power
- ✚ C/N
- ✚ MER
- ✚ CBER
- ✚ LBER

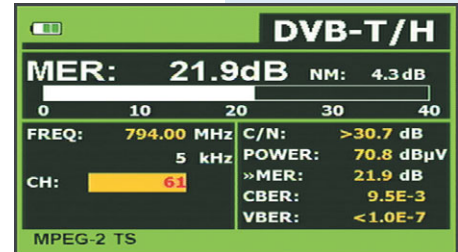
Digital cable DVB-C QAM (16/32/64/128/256):

- ✚ Power
- ✚ C/N
- ✚ MER
- ✚ BER
- ✚ Noise margin

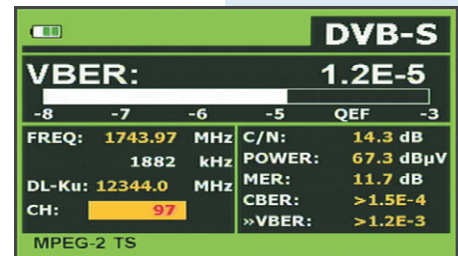
In case of an analog channel:

- ✚ Level
- ✚ V/A
- ✚ C/N

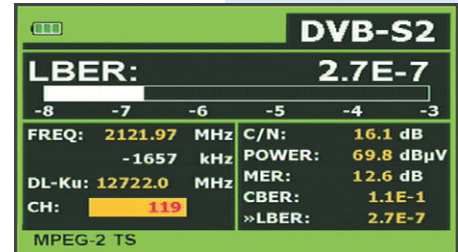
One of the measurements can be selected as a preferred and then it will be highlighted and a graphic bar for this particular measurement displayed in a preferential position. The analyser adapts to the user preferences.



Digital terrestrial / mobile (DVB-T/H) measurements



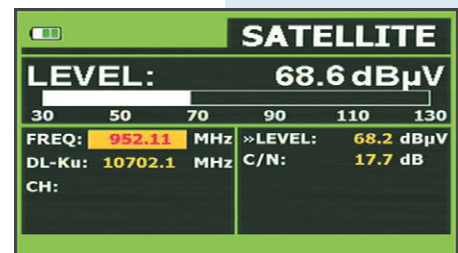
Digital satellite (DVB-S) measurements



Digital satellite (DVB-S2) measurements



Digital cable (DVB-C) measurements



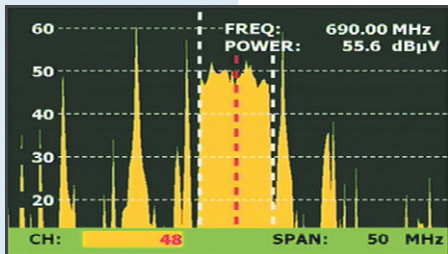
Analog satellite measurements

★ according to model



## Spectrum analyser:

*Direct keys, more intuitive*



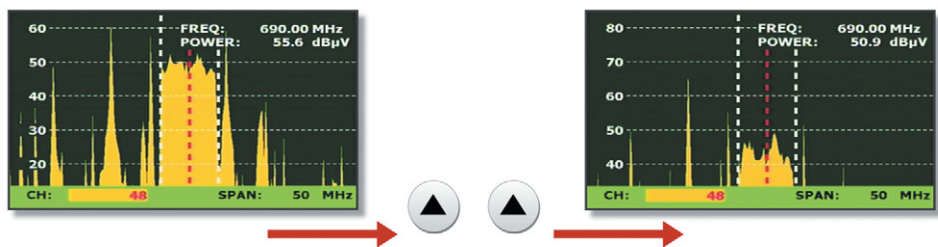
Spectrum analyser

➤ The **TV EXPLORER** presents an **innovative** spectrum analyser. **Four arrows** control completely the system making it very intuitive.

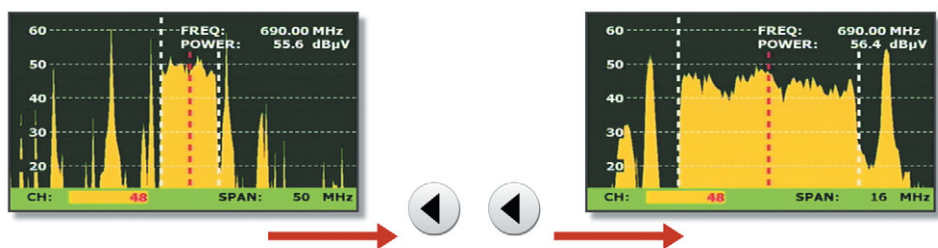
The **“UP-DOWN”** arrows set the reference level, so that when pressing the **“UP”** arrow reference level is increased by 5 or 10 dB. When pressing the **“DOWN”** arrow, the reference level is reduced by 5 or 10 dB allowing to check signals of lower level.

The **“LEFT-RIGHT”** arrows allow to select the span or expansion, so that when **“RIGHT”** is pressed the margin of frequencies in display can be increased up to full span and when **“LEFT”** is pressed the zone around the cursor can be analysed with more detail.

On the **TV EXPLORER II & II+** the measuring filters are variable and selected automatically depending on the span used.



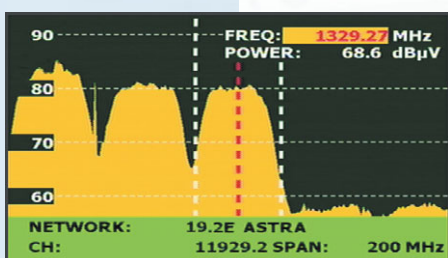
By pressing UP key twice, the instrument sets the reference level from 60 to 80 dBµV



By pressing LEFT key twice, the instrument sets the SPAN from 50 to 16 MHz

## What satellite is this?

*“... another world's exclusive on the TV Explorer”*



Spectrum showing signal identifier

When using **“AUTO-IDENTIFICATION”** function from spectrum analyser or antenna alignment modes the **TV EXPLORER** provides information about the origin of the signal. If in Satellite mode, the information shown is the **orbital position** and the **satellite**.

This is also valid for digital channels on DTT or Cable TV



## Decoding:

### MPEG-2 picture and MPEG-4 detection

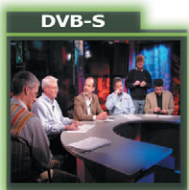
➤ In this mode the signal will be decoded according to its standard.

When decoding an analog channel (cable or terrestrial only), the **TV EXPLORER** shows with the video and audio, information about the channel on tune, the name of the channel plan and the TV system.

If the signal is digital, it is possible to display the **SERVICE LIST** and it shows all the programs and services available within the tuned channel. Selecting one particular program or service becomes **very intuitive** using the encoder and/or the arrow keys to show all the data related to the program.



TV Explorer decoding a DVB-S program



Signal type and decoded MPEG-2 image.



Type (TV, radio, data), OSD (ON-OFF), encrypted or free, MHP

**ASTRA-VH CHANNEL: 100**  
**F: 1922.00 MHz DL: 125220**

Channel plan, frequency, channel and frequency deviation.

**VIDEO:**  
**MPEG-2 2797 kb/s**  
**MP@ML 720x576i 4:3 25Hz**  
**VPID: 111 TSID: 97**

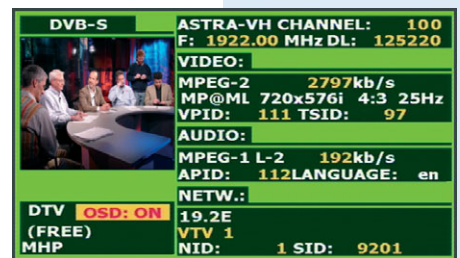
Video Stream type, bitrate, profile&level, frame size, aspect ratio, frequency, video PID, transmitter ID

**AUDIO:**  
**MPEG-2 L-2 192kb/s**  
**APID: 112 LANGUAGE: en**

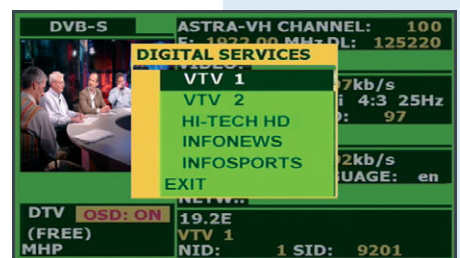
Audio stream type, bitrate, audio PID and coded language

**NETW.:**  
**12.9E**  
**VTV 1**  
**NID: 1 SID: 9201**

Network name, service name and network & service identifiers



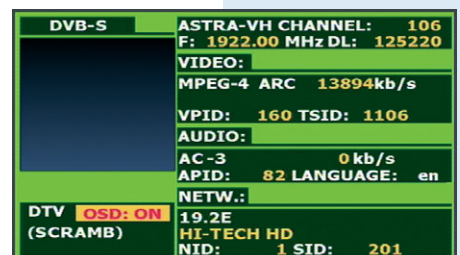
Complete details on the channel



Other DVB-T services on the multiplex

If the program selected uses MPEG-2 compression, the picture and audio appear together with the program data for a few seconds and then using the whole screen. If it is MPEG-4, it will be possible to detect the program data such as name of the channel, bitrate, etc.

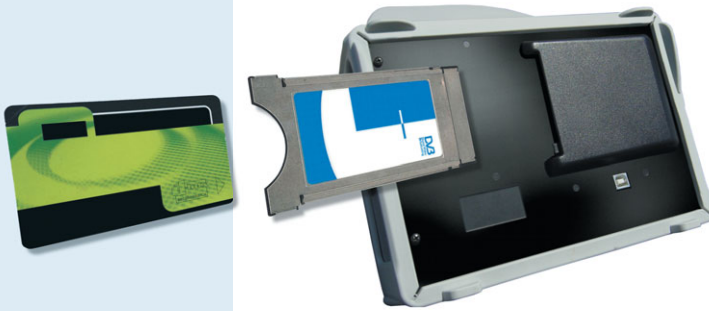
With the **TV EXPLORER II+** it is possible to use the CAM module interface to decode and display some types of MPEG-4 programs even if they are encrypted.



A MPEG-4 channel in this service

## Decoding encrypted channels:

*Using PROMAX patented technology ★*



▶ The **TV EXPLORER II+** includes a CAM slot that allows **decoding encrypted** channels.

The use of encryption systems is widely spread in digital pay TV. The operator encodes the signals and the subscriber can get a *Smart Card* giving access to those channels.

Today there are solutions to use MPEG-4 decoders implemented in the size of a CAM card. In these cases, using the suitable smart card, it is possible to decode MPEG-4 programs.

## Recording transport streams

*Keep trace on the video impairments ★*

The **TV EXPLORER II+** includes a function that allows to **record** video streams in the field and **play** them. This is a very interesting feature when it comes to analyse problems that can require some further study or interpretation.

**VIDEO  
STREAM**



★ according to model

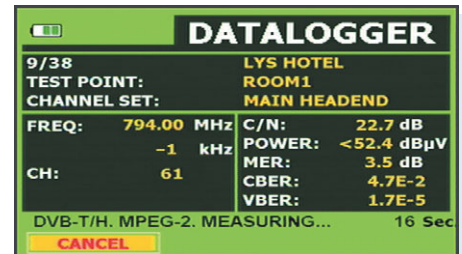
# Automatic measurements

## Datalogger

### Run a datalogger

The process is simple, just run the application and the instrument takes all the measurements.

When running the datalogger, the TV EXPLORER starts a **sweep** of all the channels in the active channel plan stores all the measurements: channel power, carrier/noise, BER, MER, etc.



Datalogger taking automatic measurements

### One Logger, several Test points

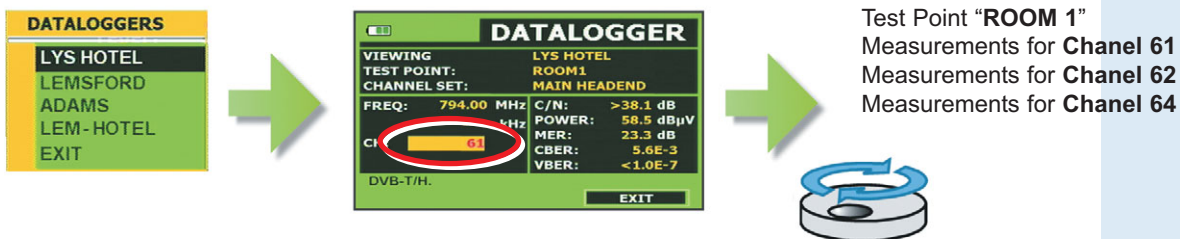
Every acquisition becomes in fact a **Test Point** inside a **Logger** and both the Logger and the Test Point can be personalised.

For instance, the **Logger** can be given the **name of the site**, building or installation and the **Test Point**, the **specific place** where test is made, for instance bedroom, kitchen, etc.

### View all channels on a Test Point

All the data previously acquired can be checked using the **view datalogger**. If the cursor is set over the channel, you can view the measurements of all channels on the present Test Point.

This function is very useful to **check** the channel equalisation.



### View one channel in each Test Point

If the cursor is set over the Test Point when turning the encoder you can view the measurement of the present channel in all the test points. This function is specially useful to check the signal drop along the system.



# Printing reports

*And keep it updated with NetUpdate!*

- The **PKTools** software is been designed to:
  - Transfer data from the computer to the **TV EXPLORER**.
  - Transfer data from the **TV EXPLORER** to the computer.
  - Management of this data to produce **reports** or to **transfer** into files.



- **NETUPDATE** software available from **PROMAX** website  
[www.promaxelectronics.eu](http://www.promaxelectronics.eu)

Allows the **automatic firmware update** of the instrument. This software is installed in your PC and everytime there is a new firmware version available, your computer will suggest the update.



## Cable test

### *Certify the installation*

➤ The **IF TEST** function allows to check buildings cabling system before the antennas and head-end systems are operative. For this application PROMAX has specially designed **RP-050**, **RP-080** and also **RP-250** signal generators.

The main difference is the RP-050 covers **satellite IF** while the RP-080 covers also the **terrestrial** band. The RP-250 is an **agile signal generator** with selectable frequency and level across the 5-2500 MHz band.

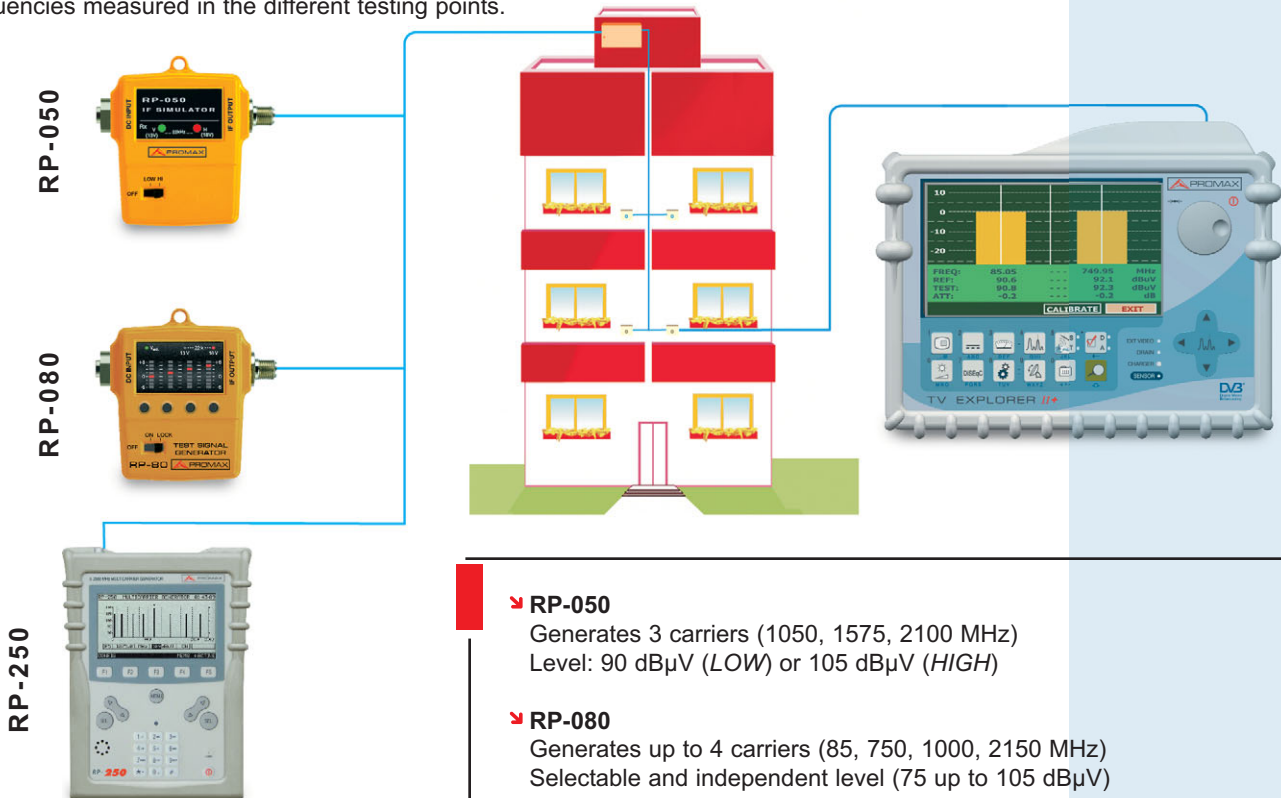
The procedure allows to evaluate the frequency response across the whole TV signals distribution network by means of two steps.

#### ➤ Step 1: Calibrating with TV Explorer

Connect the generator directly to the **TV EXPLORER** and calibrate. The instrument compensates all the cable and connector drops and sets signals at the detected frequencies as the **reference**.

#### ➤ Step 2: Measure pilots throughout the network

Once calibrated, start to make level measurements in each outlet. On the screen will appear the attenuation values for the pilot frequencies measured in the different testing points.



#### ➤ RP-050

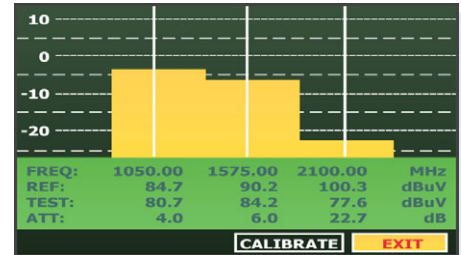
Generates 3 carriers (1050, 1575, 2100 MHz)  
Level: 90 dB $\mu$ V (*LOW*) or 105 dB $\mu$ V (*HIGH*)

#### ➤ RP-080

Generates up to 4 carriers (85, 750, 1000, 2150 MHz)  
Selectable and independent level (75 up to 105 dB $\mu$ V)

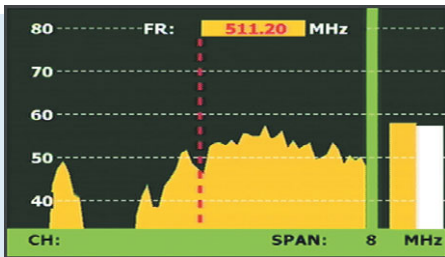
#### ➤ RP-250

Generates up to 8 pilot carriers (UHF, VHF, sub band, ISM)  
Selectable and independent level (90 up to 110 dB $\mu$ V)

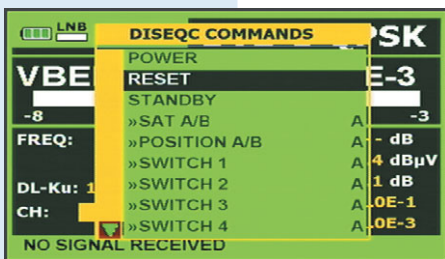


IF test using RP-050

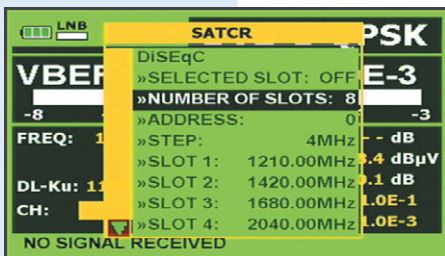
## Antenna installation: *DiSEqC™ & SaTCR commands*



Antenna alignment screen



Some of the DiSEqC™ commands available



Some of the SaTCR commands available

➤ The **TV EXPLORER** has been designed to make compatible different types of measurements that require of very different working configurations.

A specific function has been developed to **easy antenna alignment**. In this mode, the instrument configures itself to offer a very fast sweep time in spectrum analyser mode. At same time, it shows a high sensitivity graphic bar that allows the fine adjustment of signal peaks, necessary to optimise antenna alignment.

### ➤ Supply voltage

The **TV EXPLORER** incorporates the supply voltage for amplifiers and LNBS, including the 5 V for DVB-T indoor antennas.

### ➤ DiSEqC™

DiSEqC™ is an open communications protocol created by Eutelsat. It consists of control commands overlapping the supply voltage that are recognised by receivers and other devices. They are used to switch polarities, bands, move motors, etc.

### ➤ SaTCR commands

The **TV EXPLORER** includes SaTCR commands as well.

## Automatic detection of saturation *Adjust easily maximum gain*



Adjusting the head-end

➤ This function is very useful to identify problems related to the distortion or excess of amplification of the analog channels, that can occur in the mast, system or distribution amplifiers.

When the gain in the head-end of a distribution system is too high, it can cause saturation. If the signal that arrives at the **TV EXPLORER** suffers saturation, the “detection of saturation” symbol appears on the screen. This function is very useful to find the **maximum gain** adjust of analog channel amplifiers.



**DC-229**  
**Transport case**

This heavy duty suitcase is included with **TV EXPLORER II** and **TV EXPLORER II+**. It is ideal for extra protection during transport.



**DC-267**  
**Carrying bag**

This soft carrying bag is adequate for external use. It is specially recommended for working under wet weather conditions.



**NG-281 / NG-282**  
**Noise generators**

- NG-281: from 5 to 1000 MHz Level 70 dB $\mu$ V, flatness  $\pm$ 2 dB
- NG-282: from 20 to 2000 MHz Level 50 dB $\mu$ V, flatness  $\pm$ 3 dB
- Power supply: batteries or external power adaptor



**RP-250**  
**Multicarrier generator**

- 5 to 2500 frequency range
- Generates up to 8 carriers (3x UHF / VHF, 3x SAT, 1x Sub Band, 1x ISM)
- Levels: 90 to 110 dB $\mu$ V



**RP-050**  
**IF satellite generator**

- Generates three pilots at 1050, 1575 and 2100 MHz for testing satellite TV networks prior to signal being available.
- RF levels: 90 & 105 dB $\mu$ V
- Power supply included



**RP-080**  
**SAT & Terrestrial simulator**

- Generates four pilots at 85, 750, 1000 and 2150 MHz with selectable level for testing TV and SAT networks prior to signal being available.
- Levels: 75 to 105 MHz



**CV-245 / CV-589**  
**2.4 / 5.8 GHz band converter**

- Converts signals from ISM 2.4 GHz or 5.9 GHz (depending on model) to IF satellite band
- Supply from the signal level meter



**AMC/1**  
**Master aerial**

- Connected to any field strength meter is able to find the intensity of the electric field in any location.

Please visit [www.promaxelectronics.eu](http://www.promaxelectronics.eu) to get more information or contact our distributor: