Advanced Digital TV & Sat Level Meter Prolink-4C Premium

Extremely versatile portable instrument

Surprise is the first impression when you encounter this meter for the first time. It seems simply unbelievable that its designers managed to pack so many functions and features into such small and lightweight case. It measures only 294 x 106 x 274 mm and weights 5 kg.

Few years ago, much simpler instruments were significantly bigger, heavier and more expensive. They could measure only satellite TV signals and were equipped with monochromatic displays. Prolink-4C Premium of Promax Electronica can measure satellite, cable and terrestrial signals - both analog and digital. It is suitable not only for the analysis of every possible SDTV signal but also for DAB and FM radio. It can process WiFi signals, NICAM audio, RDS as well as Teletext. It has LCD color display of good resolution that can show not only the measurements results and frequency spectrum but also the video of a TV channel.

Older meters could only show you the analog TV video, this one can additionally show video of digital channels. This is true not only for the FTA channels but also for the scrambled channels - if only a proper CAM module with a valid smart card is inserted in the Prolink's Common Interface slot.

Except for the built-in display, video is available on a Scart connector. Nothing prevents connecting a regular TV-set to the instrument to see video in full resolution. In this way, you can use Prolink-4C Premium as an analog or digital TV receiver. Of course, the meter has also a loudspeaker to output audio when in TV mode.

Prolink-4C Premium can output the received transport stream in parallel format (SPI), so if you have the appropriate MPEG-2 PC card, you can save the data for further analysis. It is also possible to input MPEG-2 transport stream to the meter through another 25-pin connector. RS-232 interface can be used to control the instrument from a PC, transfer measurement results to PC or making printouts on the external serial port printer.

As you can see on the photographs, the meter's case is robust as you should expect for a portable instrument, but at the same time it is elegant. Its carrying bag is very practical.

Except for the carrying bag, you get a mains power supply and a car lighter charger to charge meter's internal accumulator, as well as several adapters for different connector types.

User manual is written in Spanish, English and French. It is well designed and very extensive (120 pages). Included screenshots help the reader to understand a large number of functions and features offered by the meter. Information is cross referenced, so it is really easy to find the explanation you need at the moment. The appendix provides TV channel frequency charts for different standards as well as the short form satellite charts for Astra, Astra 2 and Hotbird satellites.

The basic functions are available directly from a front panel keyboard. After pressing the tuning knob, you get access to the rest of them. The knob is used to move the marker (when in spectrum analyzer view), scroll the list of functions and accept the selection (by pressing it). There are 2 keys in the keyboard that can be programmed for functions you need most often – quite convenient feature.

When compared with the other similar instruments, user interface is easier to remember and more intuitive. One small annoying thing is that you are returned from the menu to the measurement mode each time you accept a single setting. For example, when you want to change a band, a frequency span and a reference level before taking actual measurements, you have to enter the menu 3 times.

But how can you use this meter in satellite TV setups? Prolink-4C Premium will be very helpful in a dish align process. If your dishes are perfectly aligned but you still have a reception problem, this meter will allow you to determine if it is caused by the poor LNB performance, excessive losses or interference introduced into the signal distribution network (cables, switches, amplifiers, attenuators).
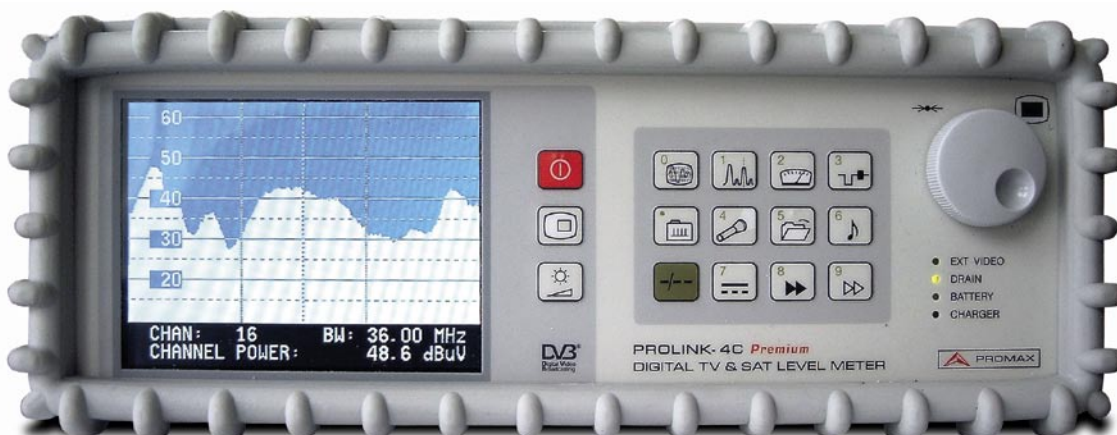
It is easy to measure the sensitivity of a receiver. You can also evaluate UHF signal output in your set-top-box. If you distribute such signal throughout your family house, Prolink-4C Premium can also be used to examine what is coming to TV-sets inputs in different rooms.

We started our tests with a check how fast the meter reacts during dish alignment. To tell you the truth, we think that even in a high resolution mode the instrument could be used for the purpose.

However, there are 2 more suitable modes: Fast and Antenna Alignment. They are less precise but faster. Antenna Alignment mode does not display the numerical values and is even faster than the Fast mode. If you cannot watch the display when directing your dish, you can switch on the Prolink's audible level indicator and judge the signal level by the pitch of sound.

Another feature - DVB channel identifier - is very helpful during initial stages of dish alignment. It displays a network provider for a digital transponder. Thanks to this, it is easy to identify to what particular satellite you have pointed your dish.

When in spectral analyzer view, you can move the marker line with dial knob and read the frequency and level values at the bottom of the screen. When you switch Prolink to the double marker mode, you will addition-

ally see the frequency difference and level difference expressed in dB. After entering the menu (by pressing the dial knob) you can change meter settings. Signal level can be expressed in dBm, dBµV or dBmV depending on your preferences. Meter's frequency span for the satellite band can be switched in the following sequence: Full-500-200-100-50-32-16-8-4 MHz. You can change the scale maximum value from 10 dBµV to 130 dBµV as well as scale resolution per division (10-5-2 dB/div).

Meter's own noise floor is about 15 dBµV. This is pretty good parameter because the regular satellite TV signals are normally in the 50-60 dBµV range. In other words, meter's own noise will not affect the C/N measurements. Level measurement accuracy is 1.5 dB for the satellite band (950 – 2150 MHz) what is also a very good result.

What parameters can Prolink-4C Premium actually measure? You name it, you have it. Practically everything you can think of. Signal level, channel power, carrier to noise ratio (C/N) in automatic and manual mode (when a user determines the reference noise level), bit error rate (BER) before and after MPEG-2 error correction, modulation error rate (MER) and a number of wrong packets received in a period of time.

Prolink can display even such "exotic" things like digital video resolution or current video bit rate. By the way, we were surprised when we saw how many digital channels are broadcast from Hotbird satellites with decreased resolution. No wonder, that you can find more than 1000 channels on that satellite position.

Some parameters like: signal level, channel power, channel number or frequency can be measured directly in the spectrum analyzer view. The others - after setting a marker on the signal of interest and switching to the measurement mode.
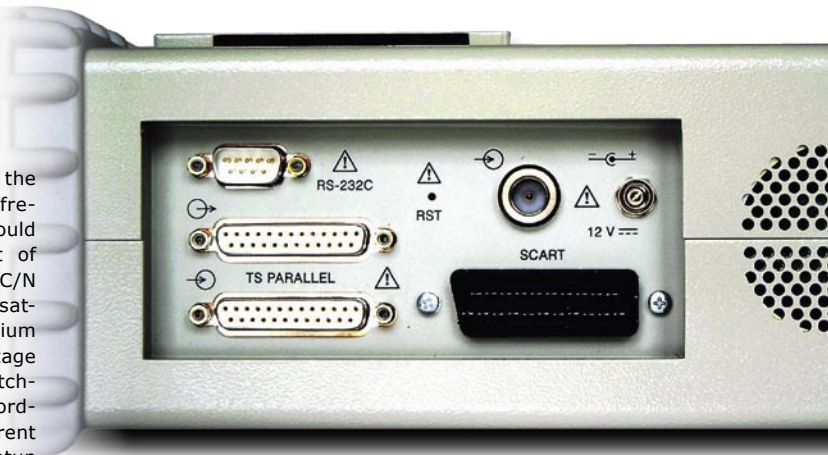
We found that in all modes, the results are updated quite frequently. For example, we could immediately see the impact of LNB's tilt adjustment on the C/N ratio. When measuring the satellite signal, Prolink-4C Premium generates the supply voltage (13, 15 or 18 V) and the switching frequency 22 KHz in accordance with your settings. Current consumed by your antenna setup (LNB, switches etc.) is measured and displayed. And that's not all. It can generate DiSEqC commands, so you can test the complete setup.

Manufacturer specifies that the meter is DiSEqC 1.2 compatible. As we checked it has no problem to control the DiSEqC 1.0 and even so called "simple DiSEqC" or "tone burst" switches. The meter can detect a short-circuit. In such state, it displays appropriate message until you remove the fault. However this works when you are in TV mode or in the menu. We did not see the message when the meter was in spectrum analyzer mode.

Although the spectrum analyzer is not designed for that purpose, the feed hunter can easily use Prolink-4C Premium to quickly detect the presence or absence of the feed transmissions on a given satellite. At first look you can tell if there is something live or not. After identifying the frequency in spectrum analyzer, you can initiate a channel search for the single transponder in your regular receiver. Nothing can be faster - blind scan receivers can not match spectrum analyzer.

Watching TV is not the most intended meter's application but it is possible. We checked that for analog and digital channels. We also confirmed that a CAM module inserted in CI slot makes PayTV reception possible. It can be very important for the installer that he can demonstrate to the customer that everything is working – including the scrambled channels reception.

Satellite TV measurements make up for, maybe, 30% of meters functionality. You can use it for terrestrial or cable TV measurements. Except for the satellite dish, almost always, you have the terrestrial TV antenna. Sometimes, when you have to receive TV signals from various directions with many antennae, the terrestrial antenna system is more complicated than the satellite one. We successfully used Prolink-4C Premium to measure the performance of antenna filters and amplifiers. The meter also did very well in analog cable TV measurements.

When you complement the meter with a noise generator, for example the NG-281 from Promax, you will get a fantastic measurement setup for testing frequency response of filters, amplifiers or other devices. On the figures accompanying this report, you can see how the passband ripple or the rolloff of a filter can be measured. Prolink-4C Premium is an invaluable test instrument not only for the installer of various TV equipment, it is also very useful for an equipment distributor. If you have it, you can objectively compare similar products from different manufacturers or deal with customer complaints.

RS-232 interface can be used either to connect the meter to a PC or to a serial printer. With a PC, you can control the instrument and transfer the measurements. Promax Electronica offers optional software for this purpose. A serial printer may be used to print spectral views or numerical values. The manufacturer also offers a suitable model of such printer.

Expert conclusion

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Prolink-4C Premium is an extremely versatile meter – like a whole laboratory. It is really portable - small and light. It can measure satellite, cable or terrestrial TV signals of any standard used all over the world. Its good accuracy and low noise level allows you to take credible measurements.

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During our tests we observed that there was no short-circuit error message when the meter was in spectrum analyzer view and we intentionally shorted the input cable.

TECHNIC
DATA

Manufacturer	Promax Electronica, S.A., Barcelona, Spain, http://www.promax.es
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Model	Prolink-4C Premium
Description	Advanced Digital TV & SAT Level Meter
Frequency	Band 1: 5 – 862 MHz Band 2: 950 – 2150 MHz
Measurement range	Terr.: + FM Band: 20 – 120 dBµV Sat.: 30 – 120 dBµV
Accuracy	1.5 dB
Monitor	5" TFT color
Color system	PAL, SECAM, NTSC
TV Standard	M, N, B, G, I, D, K and L
Synchronization 50/60 Hz	Automatic selection according to system
QPSK Symbol Rate	2 – 45 Msps
Accumulator	Li-Ion 7.2 V, 13 Ah 2 hours of autonomy operation 4 hours charging time
Operating temperature	5 – 40 ℃

Measuring filter rolloff   **Measuring pass band ripple**