

V2.0 (27/05/2004)

In order to respond to the measurement needs of radio digital signals using **DAB** (Digital Audio Broadcasting) technology PROMAX has developed a specific **DAB module** for the TV & Satellite level meter **PROLINK-4 Premium** and **PROLINK-4C Premium**.

This module allows the following functions:

- **Tuning and listening** to a DAB signal, by frequency and by channel, using the included table of DAB standard channels.
- **Measuring** the parameters related to the quality of the signal that allow to verify and align the transmission and reception equipment or to determine the reception quality in the field.
- **Showing data and information** related to the signal we are receiving such as the multiplex, the service or the selected audio. With these data the signal can be **identified** completely and the transmission format in use can also be determined.

The functions related to **DAB** signals are perfectly integrated in the user interface of the **PROLINK-4/4C Premium**, and can be controlled from the keyboard or remotely to facilitate the development of automated control and monitoring systems.

**DAB measurements** are also integrated with the functions already available in the equipment such as the spectrum analyser that visualises the signal under test together with other signals that may cause interference or affect the correct reception of the DAB. It is also possible to measure power level or C/N ratio related to the DAB bandwidth.

Similar functions for **FM / RDS** signals and powerful remote control have been added as well.

Thanks to this new features for DAB **PROLINK-4/4C Premium** are uniquely positioned in their market segment being the first to incorporate a DAB receiver on board.

Following some aspects of the DAB module functions are detailed.

## DAB measurements in the PROLINK *Premium* family

The **PROLINK-4/4C Premium** analysers can **tune**, **demodulate** and **decode** terrestrial DAB signals (ETS 300 401):



**Figure 1:** View of the main measurement screen displaying the quality of the signal received on channel 11D, the indication of a possible loss of synchronism and the name of the tuned multiplex.

- Measurement of the received signal quality and demodulation.
- Identification of tuned multiplex
- Identification of the decoded audio

### Technical specifications:

#### **Tuning:**

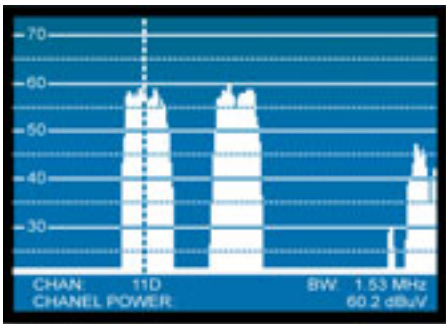
Terrestrial band-III:  
by frequency: 174 - 240 MHz  
by channels: 5A - 3F

#### **Decoding:**

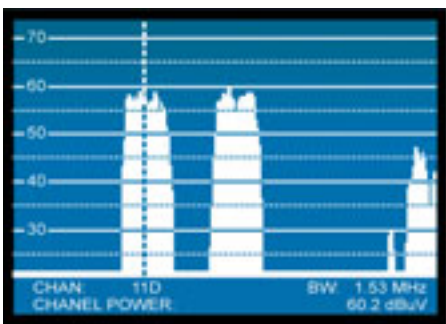
Transmission mode: 1, 2, 3 and 4

## Functionality:

Each DAB multiplex contains a number of services and each service can contain a number of components. The **PROLINK-4/4C Premium** equipment shows a list of all the components (audio or data) available in the multiplex. Another screen with additional information shows the multiplex, service and information on the component selected by the user.



**Figure 2:** C/N and power measurements can be made when working as spectrum analyser to determine in which channels a DAB signal is received and the possible presence of other interfering signals.



**Figure 3:** Detailed data for identification as well as signal codification format appears on the screen when additional information for the active audio is requested.



**Figure 4:** Available audio programs can be easily selected from a list once the multiplex data has been acquired.

### MULTIPLEX:

Shows the multiplex name and its identifier.

### SERVICE:

Shows the name of the service and its identifier.

### AUDIO:

Includes information about audio mode detected, bitrate, codification standard and identification information.

Standard:

- MPEG-1 Layer II: ISO/IEC 11172-3.
- MPEG-2 Layer II: ISO/IEC 13818-3.

### Audio mode:

- Mono
- Dual channel
- Joint Stereo
- Stereo

### Bitrate:

- In case of MPEG-1 detection:
  - \* 32, 48, 56, 64, 80, 96, 112, 128, 160, 192 kbit/s, in case of mono.
  - \* 64, 96, 112, 128, 160, 192, 224, 256, 320, 384 kbit/s in case of stereo, joint stereo and dual channel.
- In case of MPEG-2 detection:
  - \* 8, 16, 24, 32, 40, 48, 56, 64, 80, 96, 112, 128, 144, 160 kbit/s all modes.

### Service Component Description:

- Indication of audio or data component, primary or secondary component according to ETS 300 401, 6.3.1

### Component name:

- The user can use the name to select the active audio component of audio.

## Measurements

### SNR:

Signal to Noise ratio (dB). Measurement range from 0 dB to > 25,5dB.

### SIGNAL ERROR LEVEL:

The signal error level indicates the average number of corrected errors in the selected audio component. As indicated on the instrument's measurement screen the reference values are:

- From 0 to 15: good reception.
- From 15 to 30: average reception
- Greater of 30: poor reception.

### LOST SYNC:

It tells the number of times the DAB signal sync is lost over time. This counter is reset when there is a change in the tuned channel or frequency.



## AHEAD OF ITS TIME



## PROLINK *Premium*

PROMAX launched 10 years ago the **PROLINK** family. These equipments has allowed their up date for the new digital services, such as **DTT**.

For that ones they have trusted in new **PROLINK-4C Premium** series, now we offer more exclusive functions among others:

- MPEG-4
- RDS Analyser
- Wi-Fi Functions
- DAB (Digital radio)