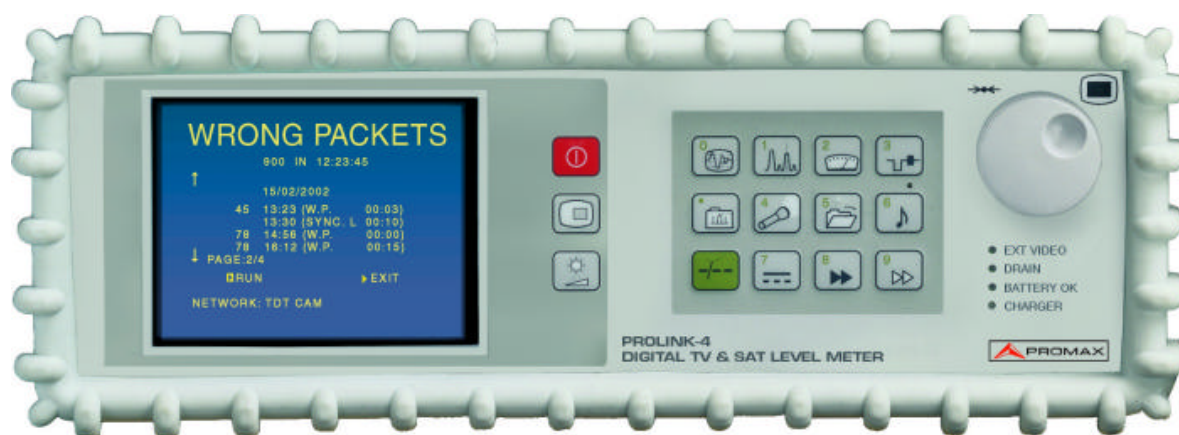


The **WRONG PACKETS** function included on the PROLINK-4 carries out a detailed analysis of the MPEG-2 digital stream or “Transport Stream”. This analysis consists in continuously monitoring the received packets, to detect the origin of the impairments in received signals. For instance, it can be a key function to detect impulsive noise. In Digital Terrestrial transmission, this type of electrical interference, caused by vehicles, electrical appliances motors, fluorescent lights, etc. is one of the problems encountered in signal reception.

On a correctly tuned Digital Terrestrial channel (DVB-T), as a first step, we will check whether the BER is acceptable or not. If we find that the number of errors is below the acceptable limit (QEF), we can then move on to the WRONG PACKETS function to analyse the Transport Stream. When the function RUN is pressed, the program will start to analyse the received packages. Each sequence of the same type of error detected will be called an “event”.

In TRANSPORT STREAM mode, the PROLINK-4 permits a real time measurement of the reception. From the moment the session has started, the instrument will register all the detected events on the MPEG-2 Transport Stream. These events will be registered according to TR 110 290 standards. “Measurement guidelines for DVB systems” defined by ETSI (European Telecommunications Standards Institute). Time as well as duration of the error is registered. The number of occurrences as well as the total time is also registered.



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The **WRONG PACKETS** function sorts the type of error so to facilitate the identification of the source. This classification is done under the guidelines of the named TR 110 290 standard. This way, it is possible to differentiate among four different types of incidences: three of them are of first priority or “Needed to decode the signal” and the fourth is of second priority or “Recommended for continuous monitoring”. The three first priority incidences are:

- **Loss of synchronism.** This is the most important one as it disables the capacity to extract any information from the received signal. The loss of a certain number of synchronism bytes would cause a loss of synchronism event.
- **Error in the synchronism byte.** This type of event appears when incorrect value is detected in the synchronism byte. The synchronism byte is allocated at the beginning of each data stream. This information is fundamental to decode the signal.
- **PAT (Program Association Error).** Basically, this error occurs when there is no PAT received for more than 0.5 seconds. This time is fixed under DVB standards. The information contained in the PAT is a must to locate the corresponding selected packages (video, audio or data). The lack of this table would disable the MPEG-2 decoder to work properly.

To enhance the wrong packets detector function in the TS, the PROLINK-4 has the capability to detect a second priority event which, not being indispensable, it is of high importance when the different services that make up the transmission have different sources or go through complex multiplexing and processing procedures. It is then important in network maintenance, it is:

- **Transport error.** This event is activated when a packet marked as wrong is detected. A packet is automatically marked as wrong when it contains errors that can not be recovered using the established procedures in each transmission (Viterbi, Reed-Salomon). The monitoring of this packets at different points in the network, will clarify in which transmission the error has been produced.

Apart from these error classification, the function keeps a counter with the number of wrong packets received at the demodulator. This counter reflects the number of packets that have been locally marked as non-correctable (contains more errors than the Forward Error Correction) can correct. The difference between this counter and the Transport Error events is that this counter reflects the errors which have occurred during the last transmission while the Transport Error were packages already marked as wrong during previous transmissions (errors detected at other points in the network).