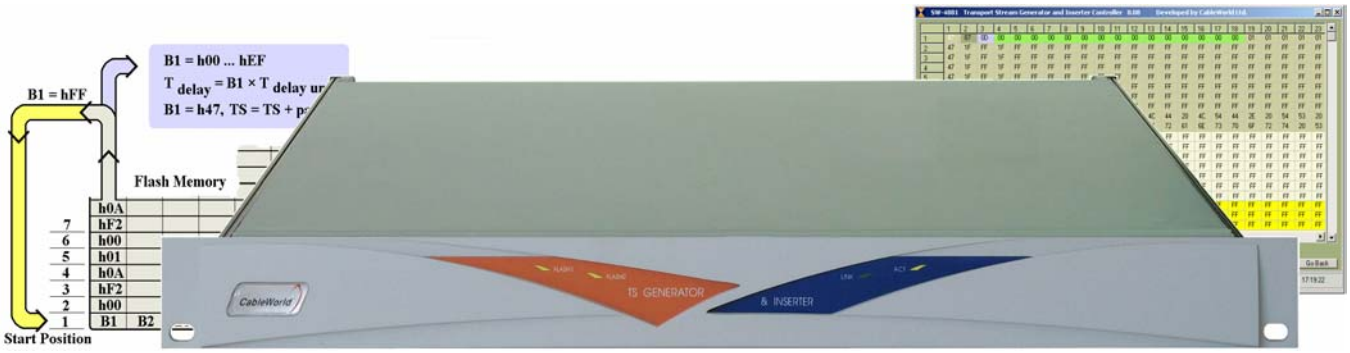
CW-4881 **TS GENERATOR & INSERTER**

- Generation of EPG, CAT, SDT, NIT, BAT and similar repetitive data streams
- Generation and implantation of set-top box upgrading software
- Generation of streams carrying logos and advertising spots
- Generation of data streams for information channels
- Retrieval of TS packets up to 32 Mbit size from flash memory



In the launching phase of digital television technology operators face severe challenges, but day by day more and more of them attain the necessary knowledge and become good specialists. At this advanced stage they start to request special devices for realizing their own ideas. The CW-4881 TS Generator & Inserter has been designed for those creative users and application companies requiring to fit services in the transport stream by their own.

The CW-4881 Transport Stream Generator & Inserter is equipped with two flash memories of 32 Mbits each. One of them is operating and the other can be programmed from the user's computer. The packets written in the memory can be fit with programmable timing in the input transport stream replacing the null packets, or can be delivered at the output as an original transport stream.

Scope of application:

1. By programming in the device's memory EPG (Electronic Program Guide) data stream packets, CAT, NIT and other tables or ECM, EMM data streams etc., the transport stream passing through the device will be supplemented with them. The other memory can be programmed with new data without disturbing the device's operation. The changeover between the two memories occurs synchronised, thus the continuity of the transport stream is not disturbed.

2. By loading in the device's memory software upgrade for a set-top box type, the CW-4881 will fit in the transport stream the packets necessary for the software upgrade. The output data stream will be repeated as programmed permitting the subscribers to upgrade their set-top box's software any time.

3. By programming in the device's memory the MPEG data stream of still or motion pictures, cyclically repeated advertising spots or information channels can be established. This application can excellently be used e.g. in exhibitions to generate and cyclically display the company's logo and short introduction spots.

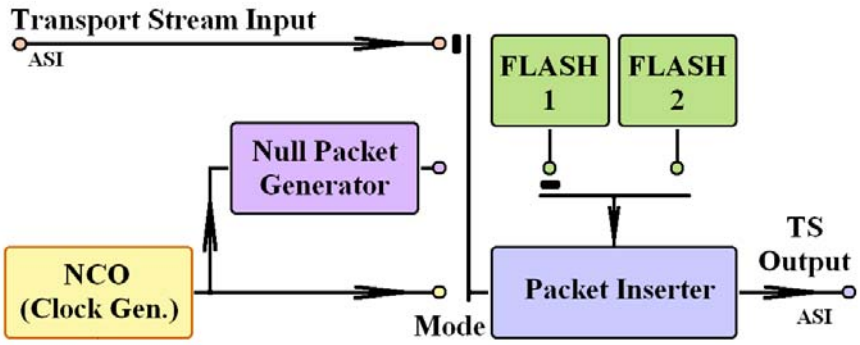
4. Professionals of the measuring and developing field can program in the memory the packets of measuring signals, creating by this a special measuring signal generator, which cannot be obtained anywhere else. The device's internal clock generator permits delivering an original transport stream even without input signal.

The above examples give a broad outline of the wide spread application possibilities of the device and the way how it allows free hand to realize the users' ideas. By bringing this device to the market, CableWorld Ltd strives to activate the imagination of the experts of digital technology. The designers of the device would be pleased to receive at cableword@cableworld.hu reports on how the CW-4881 was used to realize particular ideas.

CW-4881 TRANSPORT STREAM GENERATOR & INSERTER

The CW-4881 Transport Stream Generator & Inserter in spite of its simple architecture offers a very wide range of application. Its setting and programming is made through the CW-Net system.

The device is equipped with two flash memories of 4 Mbytes each, which can be loaded by the user with any kind of 188 byte packets. By the individual timing data assigned to the packets, the interval between the packets can be set to (0 ... 249) × (0.2 ... 51.2) ms. The device provides three operation modes according to the following:



Block diagram of the CW-4881 TS Generator & Inserter

1. Transport stream packet inserter

In this mode the device continuously inspects the incoming transport stream and fits the packets stored in the memory in the place of the null packets. Fitting a packet starts always after elapse of the waiting time assigned to the packet. In *Transport stream packet inserter* mode the device can excellently be used for inserting in an existing transport stream EPG, CAT, NIT and other tables, set-top box upgrading software, advertising spots etc.

2. Continuous transport stream generator

HF digital modulators can only work with continuous, steady transport stream. For solving their tasks equipment designers, manufacturers and even users often need transport streams with special properties. The device's digital clock generator covering a wide programmable frequency range, along with a null packet generator delivers a transport stream in the 800 bit/s to 80 Mbit/s band, consisting of null packets. In *Continuous transport stream generator* mode the packets stored in the memory will be inserted by the packet inserter in the stream consisting of null packets, with the method described in the above section. This mode has been designed for generating new streams, measuring signals and special control signals, but it can be the starting point to generate any complex transport stream, too.

3. Transport stream burst generator

Applications merging computer technology, IP technology and digital television technology need effective, most possibly compressed data streams and are eminently capable of processing periodical, burst format data streams, too. In *Transport stream burst generator mode* the device puts the packets stored in the memory as individual packets to the output. The distance between the packets is defined by the waiting time assigned to the packet, and the distance between the bytes within the packet can be set with the NCO. This mode can advantageously be used to generate input signal for one input of transport stream remultiplexers (e.g. set-top box software upgrade simultaneously at multiple channels), to generate data streams and measuring signals for IP networks, IP TV systems and others.

The block diagram of the CW-4881 is shown in the picture. The device operates continuously, the changeover between the two flash memories occurs synchronised, that is, outputting the new data content only starts at the end of the content of the data stream of the operating memory. Programming the flash memory does not disturb the function of the operating memory. The content of the flash can be read out. The content of the flash memory can be divided in parts of any size and can be embedded in each other by using 15 flag bytes.

Technical data

ASI input and output

Input type	loop-through (2 × BNC sockets)
Output type	double (2 independent BNC outputs)
ASI connection	according to TM 1449 Rec.1
Input voltage	200 … 880 $mV_{(P-P)}$
Output voltage	min. 800 $mV_{(P-P)}$
Input and output impedance	75 Ω

Transmission parameters

Data format	burst or continuous format
Packet format	188 or 204
Format recognition	automatic
Input data rate	tested between 0 … 56 Mbit/s
Data rate range	800 bit/s ... 80 Mbit/s
Raster	8 bit/s
Accuracy	1×10^{-4}

General data

Service period	continuous
Power requirement	90 ~ 264 V, 47 ~ 440 Hz
Power consumption	max. 35 VA
Mass	approx. 3.8 kg
Physical dimensions:	19" × 1 HU
W × H × D	483 × 43.6 × 473 mm
Temperature range for operation	+5 … +40°C
Relative humidity	max. 80 %
Temperature range for store	-25 … +45°C
Relative humidity	max. 95 %

CableWorld Ltd
Budapest XI., Kondorfa u 6/B
Hungary
Tel.: +36 1 204 7815
Fax: +36 1 204 7839
Internet: www.cableworld.eu
E-mail: cableworld@cableworld.hu