CW-4958 16-Channel Edge TS Remultiplexer

64 transport stream remultiplexers with 60 IP and 4 ASI inputs,
for producing constant data rate input signals for IP-input modulators

The CW-4958 type 16-Channel Edge TS Remultiplexer has been designed primarily for feeding 16 QAM modulators over IP network. According to the latest trends, for the feasibility of VOD and similar applications, the QAM modulators will be placed on and on closer to the subscriber, to the edge of the network, therefore the CW-4958 remultiplexer designed for feeding these modulators has been denoted with the „Edge" attribute. The device contains 64 TS remultiplexers, each of them is capable of producing MPTS or SPTS with any optional composition. Each remultiplexer is equipped with a 6 Mbit SDRAM for smoothing the VBR peaks and with a PCR corrector for restoring the error to the 500 ns limit. The number of the remultiplexers that can be utilized from the available 64 is limited by the capacity of the gigabit output, that is, the sum of the data rates of the individual remultiplexer output streams cannot be larger than the capacity of the 1000Mbit/s IP output. Thus for feeding DVB-C QAM modulators, on the average signals for 16 channels can be produced, whereas for OFDM modulators, which work with lower data rate even feeding signals for 64 channels can be produced.

The CW-4958 is a remultiplexer of serial operation mode that means that each input packet can be used once only, that is, one packet can be built in one output transport stream only.

Beyond the 60 IP inputs the device is equipped with four additional ASI inputs that permit inserting also the signals of local studios, security cameras and other similar devices in a simple way.

The input and output of the device can be connected with both copper and optical cable.

The extremely low power consumption and the vapour phase soldering technology raise considerably the reliability and lifetime of the device.

- 64 transport stream inputs (60 IP and 4 ASI) with a total input data rate beyond 1500 Mbit/s
- Gigabit IP input with optical or UTP cable connection, with unicast or multicast connection mode
- Logically and physically separated gigabit IP input and IP output
- 64 TS remultiplexers, each with 6 Mbit SDRAM and a 500 ns PCR corrector
- Each remultiplexer delivers its output stream with a fixed data rate programmable individually in 10.5 kbit/s raster
- The number of the utilizable remultiplexers is limited by the available total output TS data rate only
- Extremely low power consumption (typically 20 W), high reliability, long lifetime

The CW-4958 type 16-Channel Edge TS Remultiplexer has been optimized primarily to producing input signals for IP-input modulators. When producing signals for 16 QAM channels with 40 to 50 Mbit/s data rate each, the output signal of 640 to 800 Mbit/s data rate just goes into the capacity of the gigabit output, thus in this case 16 from the total of 64 remultiplexers contained in the device can be utilized. When producing output signals with lower data rates, the number of the utilizable remultiplexers is limited by the capacity of the 1000 Mbit/s output only.

The CW-4958 is serial mode remultiplexer, which means that each packet arriving at the input can be built in one output stream only. The scheme of the serial remultiplexing is shown in Fig. 1. For multiple use of the packets they need to be supplied in multiplied way.
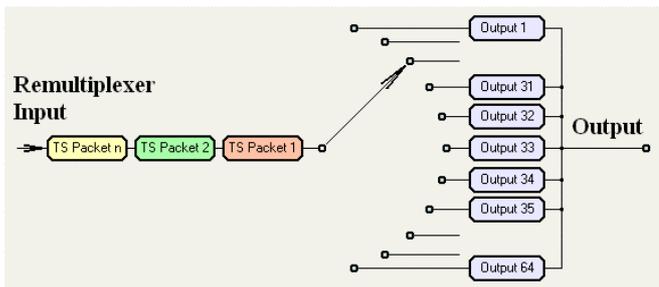

Figure 1. Working principle of the serial mode remultiplexer

The CW-4958 is capable of producing both SPTS and MPTS streams alike, the output data rate is always constant regardless of the input data rate; in lack of incoming data the device fills the output stream with null packets.

The input unit of the device can receive 60 IP and 4 ASI data streams. The ASI inputs are of loop-through type. The IP input and the IP output is separated from each other both logically and physically. When delivered, the device can be connected through UTP cable in 10-, 100- and 1000 Base-T mode. When equipping the Mini GBIC receptacles with SFP optical converters, the device can directly be connected to optical network.

The 64 TS remultiplexers built in the device can be set for producing 64 optional SPTS and MPTS streams. The gigabit output unit packs the output signal of the 64 remultiplexers in UDP packets and puts them to the IP network. The IP Address, Port Number and MAC Address of the output data streams can freely be configured by the user (both the unicast and the multicast range can be used). During operation the streams will be sent out unconditionally, with streaming mode.

The content of the streams will individually be defined by the user; it can be of MPEG-2 and MPEG-4 format, carrying SD and HD content, featuring SPTS and MPTS mode. The input data streams can be equipped with additional data from the background store of 4 PSI Inserters per channel. The background store of the PSI Inserters has a total capacity of 64 × 4 × 512 TS packets.

The device control software of the CW-4958 type 16-Channel Edge TS Remultiplexer is the SW-4953 Universal TS Remultiplexer Controller software, which can freely be downloaded from the www.cableworld.eu web site.

If the 64 TS remultiplexers are needed without producing constant output data rate and without PCR corrector the right choice is the CW-4956 type 64-channel IPTV Remultiplexer, which in its further parameters is identical with the CW-4958. Both models will be programmed with the SW-4953 software.

Technical data

IP input

Transport stream + device control	10, 100 and 1000Base-T (auto negotiation)
Protocol	Ipv4, ARP, IGMP, ICMP-Ping, UDP
Number of inputs	60 unicast / multicast connections
Connector type	RJ-45
Optical input	receptacle for SFP (Mini-GBIC) module

IP output

Transport stream	10, 100 and 1000Base-T (auto negotiation)
Protocol	Ipv4, ARP, UDP
Number of outputs	64 UDP/IP streams
Connector type	RJ-45
Optical output	receptacle for SFP (Mini-GBIC) module

ASI inputs and (loop-through) outputs

Structure and protocol	according to TM 1449 Rec. 1
Impedance	75 Ω
Number of connectors	4 × 2 BNC sockets (loop-through inputs)
Input and output data rate	max. 640 Mbit/s (total for all ASI inputs)

Transmission parameters

PID filtering	for each of the 64 × 8192 PID values
PID Remapping	for each of the PID values
Number of output modules	64 streamers (with free programmable IP Address, Port Number and MAC Address)
Size of the temporary buffer	6 Mbit/channel DDR2 SDRAM
Output data rate / channel	1 UDP/sec … 65,535 UDP/sec (up to about 200 Mbit/s in 10.5 kbit/s raster)
UDP format	1 … 7 TS packet/UDP
PCR correction	for each of the PID values up to the 500 ns limit, the corrector can be switched on and off

Programming of the device

Programming and control	over IP network, via the IP input
Programming software	SW-4953 Universal TS Remultiplexer Controller

General data

Front panel LED displays	2 × LINK, ACT, FIBER, OVERFLOW, Power On
Rear panel LED displays	2 × LINK & ACT, Gigabit mode, FIBER (optical transmission)
Mass	approx. 3.5 kg
Size	19" × 1 HU
W × H × D	483 × 43.6 × 473 mm
Service period	continuous
Power requirement	90 … 264 V AC, 47 … 440 Hz
Power consumption	max. 25 VA
Operating temperature range	+5 … +40 ºC
Relative humidity	max. 80 %
Storage temperature range	-25 ... +45 ºC
Relative humidity	max. 95 %, non-condensing