CW-4951 IP Remultiplexer & Streamer Quad
TS Remultiplexer with 256 IP inputs and 4 independent IP outputs

CW-4952 IP Remultiplexer & Streamer Quad
TS Remultiplexer with 256 IP inputs and 4 independent ASI outputs

The CW-495x IP Remultiplexer & Streamer represents the latest generation of transport stream remultiplexers and is capable of simultaneously processing the data streams of more than 1000 radio and television programs coming from 256 sources. The four independent remultiplexers comprised in the device generate four separate output data streams. The CW-4951 delivers the four output streams at gigabit IP output, which is both logically and physically independent from the input network. The CW-4952 delivers the output streams at four double ASI outputs.

The IP Remultiplexer & Streamer uses 4 × 256-Mbit SDRAMs as temporary storages for the data streams to be inserted and 4 × 32-Mbyte flash memories for storing tables, set-top box software updates etc. to be inserted. The comprised storage capacity of more than 2 Gbit in the just 1 HU height device allows implementing facilities, which so far needed the combination of multiple devices. The data rate of the gigabit input can be utilized in 100 %, and no limitations exist in the PID filtering and PID Remapping. The statistical type PCR corrector in the output stage performs full error correction at all PID values. The IP Remultiplexer & Streamer is equipped with integrated TS analyzer and complete diagnostic module.

The TS remultiplexer & Streamer will be programmed through the IP network using the SW-4951 software, which is available for free download at www.cableworld.eu. As a special feature, the software can be used also with CableWorld's earlier ASI remultiplexer versions.

Beyond the remultiplexer functions, the CW-4951 IP Remultiplexer & Streamer can be used without any additional unit as streamer in IP TV systems and as gateway in telecommunication networks.

- 256 IP inputs with multicast and unicast connections, 100Base-T and 1000Base-T operation mode
- Four independent TS remultiplexers with ASI or gigabit IP output
- Each remultiplexer supported by 256 Mbit SDRAM capacity and 12 PSI Inserters
- More than 2 Gbit integrated storage capacity, statistical type PCR corrector for each PID value
- Automatic and manual Service Identifier and PID handling (PID Remapping)
- IP TV Streamer mode with logically and physically separated IP output
- SNMP remote control facility
- Low power consumption (typically 35W), high reliability, long life time

In digital television systems IP technology is replacing ASI transmission and allows dramatic reduction of prices and simultaneously the application of many new technical solutions. Developing of the CW-495x IP Remultiplexer & Streamer was based on the possibilities offered by IP technology. As one of its remarkable features, the remultiplexer is capable of simultaneously receiving the streams of 256 different signal sources, and it can be programmed - even remotely - to assemble of them any optional streams, without changing the cabling.

The 256 inputs mean that through its gigabit socket the device can handle up to 256 multicast or unicast connections. The incoming IP data streams will be differentiated on the basis of their port numbers, the DVB elementary streams are identified by their port numbers and PID values. The input stage is capable of enabling, disabling or remapping to four different values the PID values of more than 2 million streams, prior to loading the packets in the SDRAM.

The 'Quad' in the device's designation means that the device comprises four independent TS remultiplexers, thus it can compose four independent output transport streams. Each remultiplexer is equipped with 12 output inserters, which allow inserting also own data streams in the output transport stream. These data streams can be tables, still and moving pictures loaded in the memory, set-top box update software or any other information the user may need. The semiconductor storage capacity of more than 2 Gbit allows applying many new solutions.

The CW-4951 delivers the four output streams at a single gigabit IP output, which is independent both logically and physically from the input network; the output streams can be both SPTS (single program/TS) and MPTS data streams that allows the device to be used without any additional unit as four-channel streamer in IP TV systems or gateway in telecommunication networks. The output signal can be configured to both unicast and multicast data stream. At composing the output data packets all facilities of the CableWorld gigabit system can fully be utilized.

The CW-4952 delivers the output signal at four double ASI outputs. When properly configured, the output signal can directly be used for driving high frequency modulators. The quite large PCR errors occurring in the input IP line will be corrected by PID, using statistical type PCR correctors of new solution.

The device is equipped with integrated transport stream analyzer and complete diagnostic unit. The actual content of the internal storages, the data rate and filling rate of the input and output streams can be inspected even during operation.

The SW-4952 new remultiplexer software was developed by CableWorld with a fully new approach. For the user with average knowledge the software offers automatic solutions in all fields, but for the skilled user possibility is given to override the automatic settings and realize their special ideas. Also the operating instructions are compiled according this: the special information is given in separated passages in small letters.

As an advantageous feature, the SW-4952 software is equipped with an interface module for programming the earlier ASI input CW-485x TS Remultiplexers, thus most of the automatic stream- and table composer features can be used also with our earlier products.

In order to maintain the device's position at the leading edge, its continued development is going on with designing optional GPS based TDT-TOT table generator and similar additional modules.

The handling instructions for the CW-495x TS Remultiplexer & Streamer, the SW-4952 operating software and the associated technical descriptions are available at www.cableworld.eu for free download and use. All information and software for all devices of CableWorld's

Digital Television System
with Transport Stream Transmission over IP

are also available there for download and use without limitation.

CW-4951 Rear panel

Technical data

IP input, IP or ASI output

IP input and output	1000Base-T / 100Base-T (auto negotiation)
Operational mode	full duplex
Protocol	IPv4 (prepared for IPv6)
Number of inputs	256 unicast/multicast connections
IP output	physically and logically independent from the IP input
ASI output	according to TM 1449 Rec. 1
Output voltage	800 mV$_{(p-p)}$
Output impedance	75 ohm
Number of connectors	2 × RJ-45 (CW-4951)
	1 × RJ-45 and 8 × BNC (ASI) (CW-4952)
Input data rate	1000 Mbit/s (theoretic maximum of 1000 Base-T)
Output data rate	max. 4 × 100 Mbit/s

Transmission characteristics

Number of TS Remultiplexers	4 (independently programmable units)
Number of PID Filter/Remappers	4 × 256 × 8192
Temporary storage capacity	4 × 256 Mbit SDRAM
Number of output inserters	4 × 12 Output Inserters with 4 × 32 MB memory
Programming/supervision	through the IP network

General data

Front panel LED displays	2 × LINK, ACT, GIGABIT
	4 × STREAM with OVERFLOW display
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. 35 VA
Operating temperature range	+ 5 … +40 ^{o}C
Relative humidity	max. 80 %
Storage temperature range	- 25 ... +45 ^{o}C
Relative humidity	max. 95 %, non-condensing