

CW-4000

CW-4956 64-Channel IPTV Remultiplexer

with 4 ASI and 60 IP inputs, for producing 64 SPTS or MPTS IP streams

More and more system installers realize the advantages of the new digital television technique, the television and radio program distribution using Internet Protocol (IPTV). The low cost of establishing the relevant Ethernet distribution network is widely known today but the headend which delivers the signals is quite mysterious yet. With the CW-4956 64-Channel IPTV Remultiplexer CableWorld offers professional solution for both small and medium-size systems and the largest ones.

In IPTV systems the radio and television programs will be organized in SPTS (Single Program TS) data streams that will then be sent to the IP network in individual series of UDP/IP packets. The CW-4956 64-Channel IPTV Remultiplexer itself represents a small size IPTV headend: from the MPTS and SPTS data streams led to its 60 IP and 4 ASI inputs it produces 64 output IP streams. At needs beyond 64 channels two or more devices can easily be combined using the loop-through ASI inputs and the multicast IP input. From the input data streams the 64 output streams can be organized independently from each other, including facility for remapping each of the PID values. Each of the 64 channels is equipped with a 4-channel PSI Inserter to allow inserting the PSI tables.

Spreading of IP technology requires upgrading the networks: applying optical cables instead of UTP. The IP input and IP output of the CW-4956 64-Channel IPTV Remultiplexer are universal gigabit ports separated from each other both physically and logically, and they can be connected beyond with conventional UTP cable also with optical cable, through an optional converter module.

The device is built of advanced FPGA circuits, their inner core works with a supply voltage of as low as 1.0 V, the temporary storage of the data is made in a DDR2 SDRAM thus the power consumption is extremely low resulting in high reliability and long lifetime.



- 4 loop-through ASI inputs and 60 IP inputs with multicast and unicast connection
- Gigabit IP input and IP output with connection over UTP cable or optionally over optical cable
- Physically and logically separated IP input and IP output
- 64 free configurable SPTS or MPTS output streams
- 4 PSI Inserters with 4 × 100 kBytes background storage per channel
- PID Filtering and PID Remapping for all input PID values
- SNMP remote control facility
- Low power consumption (typically 20 W), high reliability, long lifetime

The CW-4956 64-Channel IPTV Remultiplexer has been designed primarily for producing SPTS (Single Program Transport Stream) data streams for IPTV services, but its structure allows producing other kinds of data streams, e.g. MPTS streams, too. The input unit of the device is capable of receiving 4 ASI and 60 IP data streams. The comprised 64 TS remultiplexers can be configured by the user for producing 64 different SPTS or MPTS streams according to their demand. In the gigabit output unit the output signals of the 64 remultiplexers will be encapsulated in UDP packets and delivered to the IP network.

The IP Address, Port Number and MAC Address of the output data streams of the individual remultiplexers can freely be configured by the user (use of both the unicast and the multicast range is allowed), and the streams will be streamed out unconditionally.

The contents of the streams will separately be determined by the user; they can include MPEG-2 and MPEG-4, SD and HD, SPTS and MPTS data streams. The output data streams can be supplemented by 4 PSI Inserters per channel with data from their background storage. The background storage of the PSI Inserters is capable of storing a total of $64 \times 4 \times 512$ TS packets.

The ASI inputs are of loop-through type; the looped-through output signal is produced by refreshing the input signal in the output stage of the interface unit. The gigabit IP input and IP output is independent from each other both logically and physically. When delivered, the device can establish 10-, 100- and 1000 Base-T connection over UTP cable. After placing SFP (Mini GBIC) optical module in the input and output receptacles the device switches over to work over optical cable. The CW-4956 64-Channel IPTV Remultiplexer will be programmed with the SW-4956 software which can be downloaded free from the www.cableworld.eu web site.

CableWorld recommends the CW-4956 IPTV Remultiplexer primarily for establishing IPTV systems in towns, smaller settlements and institutions. The favourable price of the device allows even hotels, hospitals, schools and similar institutions to establish their own TV services adjusted to their demands.

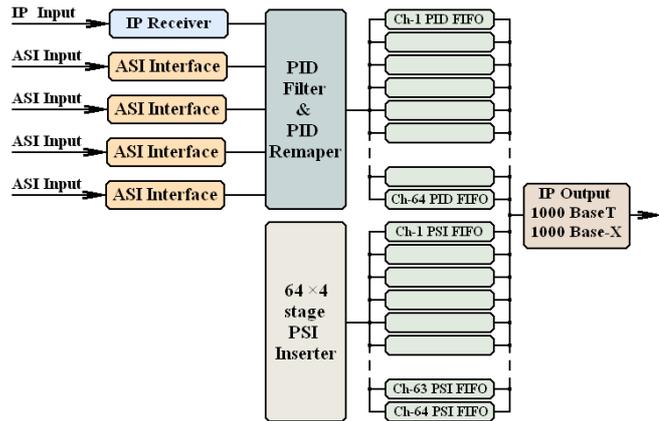
Beyond providing IPTV services the device can be used at any place where signals arriving over IP network need to be modified, redesigned. We presume our users will find numerous applications we not even considered at developing the device.

The most frequent question at presentations of the device:

- What is the difference between the IPTV Remultiplexer and the earlier TS Remultiplexers?

Answer:

- This device comprising 64 TS remultiplexers is referred to with the distinguishing attribute of IPTV because it has been designed for the future's digital world. Its application needs the further elements of the system – especially the receivers – being designed with the same approach. At places where analogue technique needs still to be served (e.g. PCR correction), this will be left to another system-element. The specification of the IPTV Remultiplexer allows fulfilling even the highest demands of pure digital technique.



Block diagram of the 64-Channel IPTV Remultiplexer

Technical data

IP input

Transport stream + device control Protocol	10, 100 and 1000Base-T (auto negotiation) IPv4 (prepared for IPv6)
Number of inputs	60 unicast/multicast connections
Connector type	RJ-45
Optical input	receptacle for SFP (Mini-GBIC) module

IP output

Transport stream Protocol	10, 100 and 1000Base-T (auto negotiation) IPv4 (prepared for IPv6)
Number of outputs	64 UDP/IP streams
Connector type	RJ-45
Optical output	receptacle for SFP (Mini-GBIC) module

ASI input and output

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. 80 Mbit/s

Transmission parameters

PID filtering	for each of the 64×8192 PID values
PID Remapping	for each of the PID values
Size of the temporary storage	$64 \times 0.5 = 32$ MBytes DDR2 SDRAM
Number of output modules	64 streamers (with free programmable IP Address, Port Number and MAC Address)

Programming of the device

Programming and control	over IP network, via the IP input
Programming software	SW-4956

General data

Front panel LED displays	LINK, ACT, FIBER, OVERFLOW
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 °C
Relative humidity	max. 80 %
Storage temperature range	-25 ... +45 °C
Relative humidity	max. 95 %, non-condensing