DIGITAL TELEVISION SYSTEMS AND INFOCOMMUNICATION DEVICES

CW-4000

CW-4971 QPSK DEMODULATOR QUAD
Four independent DVB-S receivers with common Gigabit Ethernet output

CW-4972 QPSK DEMODULATOR QUAD
Four independent DVB-S receivers with Common Interfaces and common Gigabit Ethernet output

CW-4973 QAM DEMODULATOR QUAD
Four independent DVB-C receivers with common Gigabit Ethernet output

CW-4974 QAM DEMODULATOR QUAD
Four independent DVB-C receivers with Common Interfaces and common Gigabit Ethernet output

CW-4975 OFDM DEMODULATOR QUAD
Four independent DVB-T receivers with common Gigabit Ethernet output

CW-4976 OFDM DEMODULATOR QUAD
Four independent DVB-T receivers with Common Interfaces and common Gigabit Ethernet output

For transmitting digital data streams over shorter or longer distances the most cost saving platform is the rapidly spreading Ethernet network. The Internet Protocol applied on the Ethernet network provides favourable environment also for the data signal of digital television technology, the Transport Stream. That's why in more and more systems IP transmission will be used instead of ASI transmission. CableWorld Ltd refers to its new system using IP transmission as

Digital Television System

with **T**ransport **S**tream **T**ransmission **o**ver **IP.**

This data sheet introduces the input units of this system, the models of the CW-497x series, which are equipped with IP output, but with the exception of this output solution are identical with the respective CW-487x models, which use ASI outputs. Therefore this data sheet deals with the solution of the IP output only; the characteristics of the demodulator part and the Common Interface are discussed in the CW-487x data sheets.

The output signal of the CW-497x series devices is delivered by the CableWorld Gigabit Ethernet Controller module, which uses four independent, programmable TS Sender units to put the four transport streams to the 1000Base-T output connector.

For using the worldwide rapidly spreading IP based TS transmission and for configuring the devices CableWorld provides comprehensive technical support.

- 4 transport streams of up to even 40-50 Mbit/s data rate each, combined to a single Gigabit IP output
- Unicast and multicast mode with extensive configuration options
- Device control and transport stream transmission over the same IP network
- Lower power consumption and lower price compared with the devices of the ASI-output CW-487x series

CW-497x DVB-S, -C and -T demodulators with IP output

The devices of CableWorld's demodulator quad series comprise four demodulators and are marketed under model numbers CW-487x with ASI outputs and under CW-497x with the new Gigabit IP output. The sole difference between the CW-497x and CW-487x versions is the solution of the output; therefore this data sheet deals with the design and characteristics of the IP output only.

In the CW-497x models the outputs of the four demodulators are connected to an extensively programmable TS Sender unit each. The TS Senders encapsulate the data of the transport stream in UDP/IP packets, and output them on the IP network without delay. All four TS Senders work to the same IP output; outputting the UDP packets will be done in the sequence of their completions.

The user can encapsulate the transport stream in the UDP packets according to their demands. They can send out the 204-byte packets of the demodulators without change, but they can cut them to 188 bytes, too. They can remove the null packets and set the number of packets to be put in a UDP packet between 1 and 7 according to their wishes. Beyond these, for measuring purposes and professional applications even the CW-Net format can be chosen.

The operation of the four TS Senders can be set by programming. With the „Do not Send TS" instruction sending packets can be stopped. The „Send TS" instruction works only until the mains voltage will be switched off; with the „Always Send TS" instruction the settings will be saved, and the device goes in this mode after being powered on.

Delivery of the UDP/IP packets, which carry the transport stream, can be set to unicast and multicast mode.
When set to a particular IP address, the device uses ARP messages to search the addressee, which can be located both within and outside the network.
In multicast mode and in manual addressing mode the UDP packets will be sent out unconditionally.

The devices of the CW-497x demodulator quad series will be configured with the programmes available at www.cableworld.eu for free downloading: the demodulators and the Common Interfaces will be set with the programmes SW-487x used also with the CW-487x series demodulator devices, and the Gigabit IP output will be set with the SW-4901 software. On configuring the Gigabit Ethernet Controller and the IP network a detailed description is given in the „Transport Stream Managing Over IP" file.

Beyond the numerous remote control facilities available through the IP network, the Gigabit Ethernet Controller can also be remote controlled and programmed with SNMP messages, and in case of operating failures it can signal the errors by sending out Trap messages.

The transmission of the transport stream over IP network and the extensive use of the multicast mode are technical novelties, which should be get acquainted with by the users very shortly. Configuring the networks and survey of the suitability of switches etc. are not simple tasks. CableWorld provides its partners high-level support in solving these problems.

In systems transmitting the transport stream over IP network the multicast transmission mode gets an eminent role. The novelty of CableWorld's solution is in using the same network for controlling the devices and transmitting the TS, thus the user needs to establish one single network only. Separation of these two functions will be made with the Port Numbers: for the TS transmission a dedicated Port Number range has to be programmed into the device, which then must not be used for device control.

In large-scale systems serving many users, the configuration module of the Gigabit Ethernet Controller is recommended to be locked by the System Administrator using the security key to avoid unauthorized actions.

Technical data

IP Input/Output

Physical layer	1000Base-T / 100Base-T (Auto Negotiation)
Operation mode	full duplex
Protocol	IPv4 (prepared for IPv6)
Number of connectors	1 (common TS output and device control)
Type of connector	RJ-45

TS output signal

Signal outputting	with 4 separate programmable TS Sender units
Operating modes	unicast and multicast
• Send TS to Me	for computer connection
• Send TS to Broadcast	for general signal distribution
• Send TS to IP	for sending signals to one single device
• Send TS to Multicast	for sending signals to more than one device
• Send TS to Manual	for special applications
TS processing	encapsulating the data in UDP packets
• Type of the data packets	UDP/IP
• Packet format	188 or 204 bytes/packet
• Number of packets	1 … 7 packets/UDP
• Sync search	on / off switchable
• Faulty- and null packet removal	on / off switchable
• Special feature	CW-Net format (128 … 1440 bytes/UDP)

Device control

Physical layer	the same network as used for transmitting the TS
Selection of the messages	upon the Port Number (the Port of the device control must not fall into the Port number range of the transport streams)

General data

Power consumption	the power consumption of the CW-497x series IP output versions is considerably lower than that of the respective CW-487x series ASI output versions

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