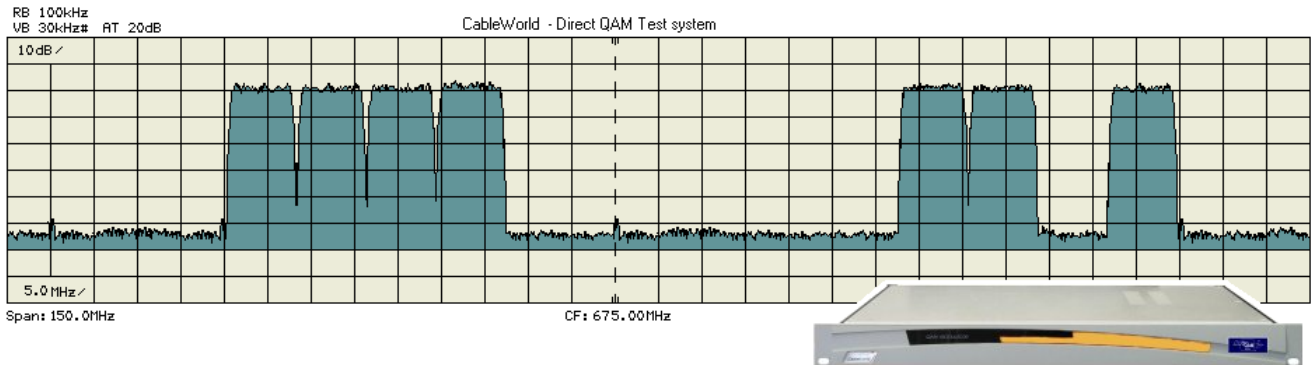


CW-4268 QAM MODULATOR-8

4 + 4 adjacent QAM channels in two independent groups
50 to 850 MHz output frequency in 12.5 kHz raster
Gigabit IP input



The CW-4268 QAM Modulator-8 represents the most advanced digital television technology, which breaking with the conventional solutions produces the QAM signal in direct way.

In this direct QAM technology, after processing the digital input signal, the high frequency output signal will directly be produced by a digital to analogue converter (DAC) working beyond 2 GHz, thus the expensive mixers and converters are not needed anymore. The incredibly high speed of the applied circuitries permits producing four adjacent QAM channels simultaneously. The model CW-4268 applies two DACs thus it is capable of producing $2 \times 4 = 8$ QAM channels around 2 independent carrier frequencies. The QAM channels can be switched on and off individually.

The 8×40 to $50 = 320$ to 400 Mbit/s input signal of the 8 independent modulators is fed to the device through gigabit IP network. For compiling the MPTS (multiprogram transport stream) data streams of the QAM channels the CW-4951 IP Remultiplexer & Streamer is recommended, which starting from 256 IP input signals, is capable of simultaneously producing the input data streams for four QAM channels. At simple transmodulation jobs the QAM Modulator-8 is capable of inserting new NIT tables thus in such cases even the external remultiplexer is not needed.

The CW-4268 QAM Modulator-8 can be accessed with the Microsoft Internet Explorer 7.0 at IP address 10.123.13.103. Setting the operation parameters is made with SNMP messages. The IP address can be changed with the SW-4268 software, which is available for download at www.cableworld.eu.

The extremely low power consumption of the device results in high reliability and long lifetime.

Main features:

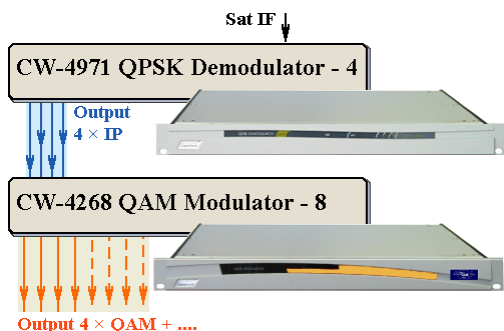
- Direct QAM technology – output signal produced directly on the carrier frequency
- 32-, 64-, 128- and 256 QAM mode according to EN 300 429 (Annex A)
- 2×4 adjacent output channels in the 50-850 MHz band in 12.5 kHz raster, with the possibility of switching on and off the channels individually
- Transport stream feeding through gigabit IP input in unicast or multicast mode
- NIT-actual replacing option
- High output level stability, high signal purity; suitable for building multichannel systems
- Low power consumption (approx. 15 W), high reliability

CW-4268 QAM MODULATOR-8

The CW-4268 QAM Modulator-8 produces the high frequency output signals using direct QAM technique. Without input signal the internal symbol generator delivers null packets. In working condition these null packets will be replaced with the packets arriving through the IP network. The input signal has to be fed to the input of the device in MPTS format, packetized in UDP packets, using unicast or multicast connection. For removing the jitter of the IP network, the input stage is equipped with a temporary store, whose average content can be set by programming.

The CW-4268 QAM Modulator-8 can be used in a very wide field of application.

Figure 1 shows the block diagram of a simple four-channel QPSK-QAM transmodulator, where the included NIT replacer feature is



used to speed up the channel search in the set-top boxes.

Fig 1. Block diagram of a simple four-channel QPSK-QAM transmodulator

In case of individual requirements the programs of the particular QAM channels can be compiled with the CW-4951 IP Remultiplexer. Figure 2 shows a setup, where the signals of all eight QAM channels can be compiled optionally, since each of the QAM modulators receives the data stream to be transmitted from an own remultiplexer. At programming the remultiplexers the streams can be selected from the data streams of 256 different transport streams.

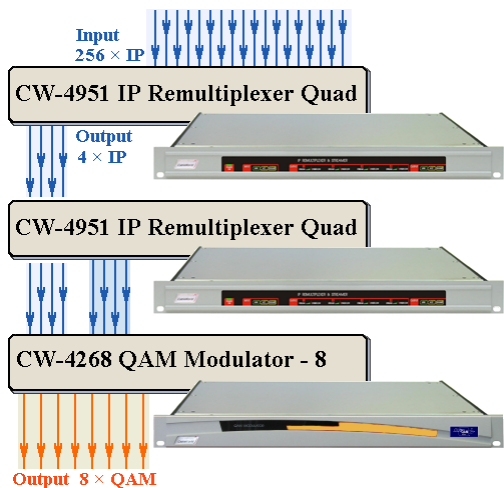


Fig. 2. Block diagram of producing 8 QAM channels with remultiplexing by channel and using IP based TS transmission

Note that the applied IP transmission and the high grade integration drastically reduce the equipment price per channel, which can only prevail when a large number of channels is used simultaneously. At programming the satellite receivers, OFDM receivers etc. set them to multicast output signal so that the most possible devices can use their signals. The input signal of the QAM modulator can be set also to unicast connection, but the supervision of the system and the signals is easier with using multicast connection here too. At high numbers of channels the data rate of even the gigabit transmission may be not enough. In such case the solution is separating the input and output data streams.

The CW-4268 QAM Modulator-8 is a common product with our Dutch partner STN BV (www.stnbv.nl).

Technical data

Input signal

TS format	MPTS transport stream
IP format	1 to 7 packets / UDP

Output signal

Format	8 high frequency QAM signals according to DVB-C
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Transmission parameters

TS processing	according to ETS 300 429
Modulation	32-, 64-, 128-, 256 QAM
Symbol rate	4.48 ... 7 MS/s
MER	>40 dB (typically 42 dB)

Input data

Input	Gigabit Ethernet Port (IEEE802.3af)
Data rate	1000 Mbit/s
Input connector	RJ 45 (with LEDs for Act and Link)
Protocol	unicast, multicast (IGMP V2)
IP jitter removal	up to 100 ms
NIT buffer	10 kBytes

RF output data

Nominal output impedance	75 Ω
Output return loss	better than 14 dB
Nominal output level	
With one channel	105.8 dBμV
With 8 channels	96.0 dBμV
Regulation range	0 to -20 dB (in 0.5 dB steps)
Output level response	better than ±0.2 dB within the channel
Output frequency range	50 to 850 MHz (channel centre)
Frequency raster	12.5 kHz
Frequency stability	5 ppm
Frequency accuracy	5 ppm
Level of unwanted products	< -60 dB (related to 105.8 dBμV level)
Output connector type	F-type socket

Auxiliary information

Device control software	Microsoft Internet Explorer 7.0
Effective bandwidth	$B = 1.15 \times SR$
B:	Bandwidth in Hz
SR:	Symbol rate in symbol/sec

General data

Service period	continuous
Power requirement	230 V +10 % ... -15 %, 50 / 60 Hz
Power consumption	max. 20 VA
Physical dimensions	19" × 1 HU
Width × height × depth	486 × 43.6 × 473 mm
Mass	max 3.5 kg
Operating temperature range	
For fulfilling the specification	+5 to +40°C
For maintaining operation	0 to +45°C
Relative humidity	max. 80 %
Storage temperature range	-25 to +45°C
Relative humidity	max. 95 %, non-condensing

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