

CW-4157 QAM MODULATOR



The digital cable television headends use QAM modulation to transmit the data signals of radio and television programs to the subscribers. As the digital technology spreads, more and more QAM modulators are used, thus their high quality and universal applicability is of eminent importance.

CableWorld's second generation QAM modulator, the model CW-4157 was designed with the customers' latest demands in mind. The unit's 51 to 862 MHz operational band permits delivering signals at any of the cable channels.

The automatic level control circuitry at the output is based on measuring the true RMS, which assures high output level stability and permits level read-out by means of numeric values (dB μ V, dBm or dBpW).

The high power consumption of digital signal processing raises the internal temperature of digital headends. The CW-4157 QAM modulator uses a built-in blower to protect its circuitry from these adverse conditions.

The unit can be remote controlled and supervised via CW Bus or the Internet.



Main features:

- QPSK, 16-, 32-, 64-, 128- and 256 QAM operation mode
- ASI or optional LVDS level parallel transport stream input
- Widely variable data transmission rate (8 ... 56 Mbit/sec)
- Variable roll-off factor by digital filter
- 51 ~ 862 MHz full band high level output
- Variable IF frequency
- High and very stable output level
- Output level read-out from true RMS detector, in dB μ V, dBm or dBpW
- High signal purity
- DVB and DAVIC compatible operation modes

Technical data

Input signal	DVB standard transport stream
Output signal	QAM modulated RF carrier
Output symbol rate	1 ... 7 MBaud
Transmission characteristics	
Modulation modes	QPSK, 16-, 32-, 64-, 128- and 256 QAM
Encoding and error protection	according to the DVB-C standard (ETS 300 429)
Nominal IF frequency	36.15 MHz
Roll-off factor	12 %, 15 %, 18 % (variable)
Input data	
ASI input (ISO/IEC 13818-1)	
Input data rate	270 MBaud
Minimum input voltage	140 mVp-p, differential
ASI bridged output (optional)	
Output voltage	typically 800 mVp-p
Optional parallel input (LVDS, DVB-TM1449)	
QPSK	6 ... 14 Mbit/s
16 QAM	12 ... 28 Mbit/s
32 QAM	15 ... 35 Mbit/s
64 QAM	18 ... 42 Mbit/s
128 QAM	21 ... 49 Mbit/s
256 QAM	24 ... 56 Mbit/s
Input signal	LVDS synchronous parallel, complies with DVB-TM1449
Maximum amplitude	2.0 V _{P-P}
Minimum amplitude	0.2 V _{P-P}
Common mode voltage	1.125 ... 1.375 V
Input impedance	100 Ω
Packet format	188 or 204 bytes
Output data	
RF main output	
Nominal output impedance	75 Ω
Nominal output level	117 dBμV
Variable range	0 ... -12 dB
Output frequency range	
Within the specification	110 - 862 MHz
Beyond the specification	51 - 862 MHz
Frequency accuracy	better than 1x10 ⁻⁴
Output level stability	better than ± 0.5 dB
Signal purity	
Harmonic amplitude	< -55 dB, typically -60 dB
Other products	< -56 dB, typically -60 dB
Phase noise of the RF carrier	
Measured at 10 kHz offset	< -82 dBc, typically -85dBc
RF test output	-20 dB / 75 Ω
IF control output	
Nominal signal level	77 dBμV
Optional IF output/input (CW-OP60)	
Nominal voltage level	97 dBμV
Nominal impedance	75 Ω

Programmable parameters

- Output signal frequency
Raster 50 kHz
- Output signal level
Below the nominal level
Up to -4 dB in approx. 0.1 dB steps
Further down in approx. 0.4 dB steps
- Read-out of the output level dBμV, dBm, dBpW
selectable from the menu
- RF output signal on/off
- QAM modulation modes see the User's Guide

Additional data

Bandwidth	B = k × SR
where	B: bandwidth (MHz)
	SR: symbol rate (MHz)
	k: 1 + roll-off factor

Additional read-out

continuous read-out of the temperature of the output amplifier hybrid

CW Bus connection

Loop through input and output to cascade the unit onto the RS-485 level CW Bus. Through the bus, the unit's parameters and operating modes can be supervised and programmed.

General data

Service period	continuous
Power	230V +10 % ... -15 % 50/60 Hz
Power consumption	max. 50 VA
Connectors	
- TS ASI input, output	insulated BNC socket, separated with transformer
- TS parallel LVDS input	25 pin D-socket
- RF main and RF test output	F-socket, optionally BNC socket
- IF control output	BNC socket
- Optional IF output, IF input	F-socket, optionally BNC socket
- CW-Bus connection	RJ -12 6-pole telephony socket
Physical dimensions	19" × 1 module height
Width × height × depth	486 × 43.6 × 473 mm
Mass	approx. 3.5 kg
Environmental data	
Operating	
To fulfil the specifications	+5 ... +40 °C
To maintain operation	0 ... +45 °C
Relative humidity	max. 80 %
Non-operating	
Relative humidity	- 25 ... +45 °C max. 95 %, non-condensing



Budapest XI., Kondorfa u 6/B
Hungary

Tel.: ++36 1 204 7815
Fax: ++36 1 204 7839

E-mail: cableworld@cableworld.hu
Internet: www.cableworld.hu