

IP to 8x QAM Module – EdgeQAM **TANGRAM GT23W**

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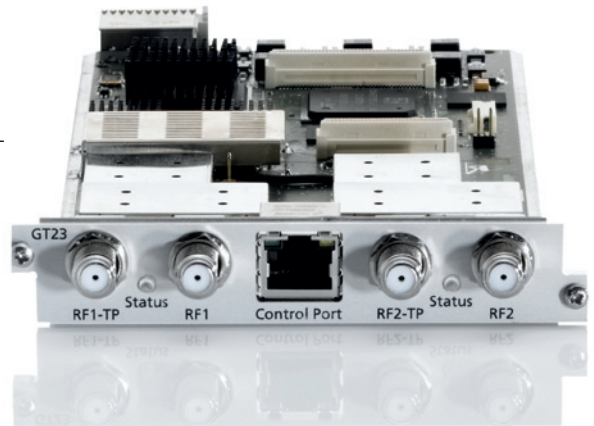
The GT23W module is part of the TANGRAM product portfolio. GT23W is a high performance edge module which is allowing you to add up to 8 channels in QAM (DVB-C) format per module to your network. TANGRAM is a very high density and highly flexible solution for all kinds of networks. The WISI Tangram chassis uses a fully redundant concept.

High-density EdgeQAM

The IP to QAM module for TANGRAM platform enables flexible receiving, multiplexing of SPTS and MPTS streams for modulation into digital DVB-C QAM channels.

Features

- HIGH QUALITY IP TO QAM MODULATION
- UP TO 8 QAM CHANNELS ON 2 RF OUTPUTS
- HIGH DENSITY 48 QAM CHANNELS IN 1 RU
- FOR MEASUREMENT/MONITORING TEST PORTS OF THE OUTPUT SIGNAL
- DVB CSA SIMULCRYPT SCRAMBLING
- RTP/IP INPUT STREAMING WITH FEC ERROR CORRECTION
- ADVANCED DVB TRANSPORT STREAM PROCESSING
- QAM CHANNELS INDIVIDUALLY SWITCH ON/OFF
- IP INPUT REDUNDANCY WITH UP TO THREE ALTERNATIVE INPUTS



Solutions with TANGRAM



CHANNEL PROCESSING

Headends for residential, regional and national networks.



HOUSING INDUSTRY

Headends for housing complexes, hotels and hospitals.



RF OVERLAY

Solutions for video services in GPON and Active Ethernet networks.

Technical Information

DVB-C QAM Modulation	
Constellation	16, 32, 64, 128 and 256 QAM
Symbol rate	4,45 – 7,00 MSym/s
Roll-Off	12%, 13%, 15%, 18%
MER	> 45 dB, typ. 46 dB
BER	$\leq 1 \cdot 10^{-12}$
Spectrum flatness	$\pm 0,3$ dB
Shoulder attenuation	≥ 55 dB
DVB compliance	DVB-C (EN 300 429), Annex A, B and C

IP Input	
Max. SPTS/MPTS input streams per module	32 (CBR or VBR)
Max. streaming capacity per module	<800 Mbit/s
Communication protocol	Unicast and Multicast, SPTS and MPTS, IGMPv2 and IGMPv3
Packet Format	MPEG over RTP/UDP
Packet Size	188 byte
Time stamp & de-jitter	yes
Remultiplexing	yes
PID remapping and filtering	yes

General Data	
Signaling	Multicolor LEDs (Power on - green, Error - red)
Front Ethernet connector	RJ45 (only for local management)
RF connectors	2x F-Connector (RF-Output) 2x F-Connector (Test-Output)
Power consumption	$\leq 19,2$ W
Operating temperature range	-5°C to +45 °C (ETSI EN 300 019-1-3 Class 3.1)
Nominal temperature range	15°C ... +35°C
Max. humidity (non condensing)	95 %
EMV	EN 50083-2

RF Parameters	
Output ports	2
Channels per port	up to 4
Output impedance	75 Ohm
Output frequency	45...1002 MHz
Output frequency window	34,2 MHz/port
Output frequency steps	1 kHz
Modulation	QAM
Channel bandwidth	6/7/8 MHz
Output level (each RF port)	119 dB μ V (1 ch), 115 dB μ V (2 ch), 113 dB μ V (3 ch), 111 dB μ V (4 ch)
Output level stability	± 1 dB
Output return loss	≥ 14 dB (45 MHz) -1,5 dB/Octave
Output level setting	0...30 dB (0,5 dB steps)
Spurious (Inside TV-Channels)	>60 dB
Spurious (Outside TV-Channels)	45...450 MHz, typ. 66 dB 450..1002 MHz, typ. 64 dB

Related SW Options	
GTM1	Service Level Agreement extension 1 year
GTM3	Service Level Agreement extension 3 years
GTFC	Enabling IP streaming with FEC in per module
GTMUX	Enabling selection of services from several input sources to an output
GTSPISI	Enabling PSI / SI sharing between TANGRAMs in a system
GTSYMUX	Enabling sharing of NIT, SDT Other and EIT Other between TANGRAMs in a system
GTRED	Enabling IP input redundancy
GTSCR	Enabling DVB-CSA Simulcrypt Scrambling

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