Scientific Atlanta
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Headend Systems

Quantum RF™
QAM Modulator/Upconverter

Description

The Quantum RF™ modulator/upconverter is the next step in building compact solutions for modulation in the digital headend. The module handles the complete QAM modulation process, from ASI input to RF output.

Space is used to the full extent, 8 modulators can be housed in a 4 RU chassis. The RF up-conversion is performed by the latest generation up-convertor, low phase noise and optimized output stability is hereby guaranteed.

The available management interface allows for centralized, remote management of the QAM modulators' settings and alarms using Scientific Atlanta's ROSA® Network Management and Control (NMC) system. The same interface can be used by third party management systems.

Features

- QAM modulator module with RF output
- Complies fully with ITU-T J.83 standards, annex A (DVB), B (OpenCable) and C (Japan)
- Fully agile from 45 to 870 MHz @ 61 dBmV
- Packet-stuffing on/off and PCR re-stamping
- Static PID filtering
- NIT update
- Supports 16 to 256 QAM constellations
- Excellent MER (> 40 dB in RF)
- ASI input with active loop-through
- IF out @ 44.000, 36.150 or 36.650 MHz
- IF & RF test point on front
- Hot-swappable
- Compact design allows up to 8 modules in 4 RU chassis
- Self cooled modules, racks are stackable
- User-friendly front panel control
- Full remote control and diagnostics with ROSA management system
- Software programmable relay contact
- Backup task and automatic level alignment available via ROSA

Specifications

Electrical Specifications	
ASI input (standard)	
Connector	BNC, 75 Ω
Interface type	Asynchronous Serial Interface (according to EN 50083-9)
Packet format	Auto detection (188 / 204 byte packets non-channel encoded)
Bit rate	1 to 215 Mbit/s (min. 1 Mbit/s payload)
Syntax	SPTS or MPTS (according to ISO/IEC 13818) with DVB SI (as per ETSIprETS300 468 & ETR211)
RF output	
Connector	F-type (75 Ω) or BNC (75 Ω)
Frequency	45.000 to 870.000 MHz
Frequency step	12.5 kHz
Bandwidth	8, 7 or 6 MHz
Level	50 to 61dBmV in 0.2 dB steps
Return loss	> 12 dB in channel
Frequency stability	±6 ppm
IF output	
Connector	F-type (75 Ω) or BNC (75 Ω) or BNC (50 Ω)
Frequency	ITU-T J.83 Annex B & C versions Fc = 44.000 MHz ITU-T J.83 Annex A version BW ≤ 7 MHz : Fc = 36.650 MHz BW > 7 MHz : Fc = 36.150 MHz
Level	40 dBmV
Return loss	≥ 18 dB
Relay contact	
Connector	3-pins (quick disconnect)
Contacts	Common, normal open and normal closed
Contact type	Relay
Alarms	Software configurable

Remote Control	
Connector	9-pins male Sub-D – separate connector per unit
Physical layer	RS-485
Protocol	RCDS over RS-485
Speed	Up to 19.2 kbaud

Specifications (continued)

Signal Specifications	
Channel encoding	According to ITU-T J.83 Annex A, B or C
EVM (before equalizer)	≤ 2 % RMS (at RF)
MER (after equalizer)	≥ 40 dB (at RF)
BER	≤ 5.10^{-9} (pre FEC and @256 QAM)
Packet format	Auto detection: 188 / 204 byte packets (non-channel encoded)
SNR	≥ 50 dB in band
Bandwidth	6 MHz or 7 to 8 MHz
QAM constellations	ITU-T Annex A and C: 16, 32, 64, 128, 128-alt and 256 ITU-T Annex B: 64 and 256
Supported input bit rate	Up to 215 Mbit/s
Symbol rate	1 to 7 MSymbols/s (Annex A) and 1 to 5.5 MSymbols/s (Annex B & C)
PID range filtering	Selectable
NIT update	Selectable, Annex A & C only

Environmental Specifications	
Operating temperature	+32°F 122°F (0 to 50°C)
Storage temperature	-4°F to +158°F (-20° to 70°C)
Power supply (nominal)	100 to 240 V AC
Power consumption (nominal)	< 30 W

Mechanical Specifications	
Height	7.0 in. / 177 mm
Width	2.12 in. / 54 mm
Depth	17.9 in. / 455 mm
Weight	Approx. 4.41 lbs / 2.0 kg

Quantum RF sub rack	
4 RU 19 inch rack capable of holding up to 8 Quantum RF modules	

Ordering Information

Quantum RF – QAM Modulator/Upconverter	Part Number
Quantum RF unit	
QUANTUM RF, AC, ITU-A (DVB), ASI, IF BNC (50 Ω), RF Agile BNC (75 Ω), Euro Power Cord	V9528200
QUANTUM RF, AC, ITU-A (DVB), ASI, IF F (75 Ω), RF Agile F (75 Ω), Euro Power Cord	V9528204
QUANTUM RF, AC, ITU-B (US), ASI, IF F (75 Ω), RF Agile F (75 Ω), US Power Cord	V9528212
QUANTUM RF, AC, ITU-C (Japan), ASI, IF F (75 Ω), RF Agile F (75 Ω), US Power Cord	V9528213
Quantum RF sub rack	
PUSON/QUANTUM RF AC 4 RU Chassis (Max. 8 modules)	V9523325

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