

GQ-3655

Multi-functional IPQAM



Product Overview

GQ-3655 is the GOSPELL's latest multi-functional IPQAM product series, which can receive multiple program sources from cable (or satellite, DTT network), IP network and local ASI, and then re-multiplexing, scrambling and modulating it with channel coding.

GQ-3655 adopts GOSPELL's flexible licensing mechanism for scrambling function and numbers of QAM channels. This flexibility can provide a lower capital expenditure (CAPEX) in initial phase and better asset protection in network expansion stage to DTV operators. Due to its flexibility and versatility, GQ-3655 can be widely applied to DTV head-end system, in different areas, depending on operators requirements, such as cable DTV head-end, sub head-end, or broadcasting center.

Main Features

- Supports RF demodulation input, TS re-multiplexing, scrambling and QAM modulation
- Up to 8 DVB-ASI Inputs and(or)4 DVB-S/S2(DVB-C/DTMB) RF Inputs
- Supports TS-over-UDP/RTP input and outputs
- Up to four adjacent QAM channel outputs
- ITU-T J.83 Annex A/B/C compliant, 6MHz or 8MHz bandwidth
- Supported constellation: 16QAM, 32QAM, 64QAM, 128QAM and 256QAM
- Up to four DVB SimulCrypt CAS(s) and complies with DVB-CSA
- Multiple firmware options to enable built-in scrambler and modulation channels
- Supports UDP, RTP, ARP, ICMP and IGMP protocols
- Supports PID filtering, pass-through, PCR auto-correction
- Supports various customizable PSI/SI table extraction, resolving and modification
- Self-adaptive filter circuit design ensures outstanding out-of-band rejection
- Web and SNMP management for remote management, monitoring and control

Technical Specifications

RF Input (Hardware Options)

Satellite Input Option

Number of Inputs	Up to 4 x L-band Input (with L-band Loop Out each)
Standards	DVB-S (EN300421) DVB-S2(EN302307)
Constellations	DVB-S: QPSK DVB-S2: QPSK/8PSK
Frequency Range	950MHz to 2150MHz
Input Signal Level	-65 to -25dBm
LNB Power Output	0V/+DC 13V/18V, I _{max} =400mA
Connector Type	F-Type (Female, 75Ω)

Cable Input Option

Number of Inputs	Up to 4 x RF Input (with RF Loop Out each)
Connector Type	F-Type (Female, 75Ω)
Standards	DVB-C (EN300429)
Constellations	16/32/64/128/256 QAM
Frequency Range	50MHz to 860MHz
Input Signal Level	-20 to +20dBm (64QAM)

Terrestrial Input Option

Number of Inputs	Up to 4 x RF Input (with RF Loop Out each)
Connector Type	F-Type (Female, 75Ω)
Standards	DTMB (GB20600-2006)
Constellations	4QAM, 4QAM-NR, 16/32/64 QAM
Carrier Mode	SCPC and MCPC
FEC Mode	0.4/0.6/0.8
Frequency Range	434 to 858MHz
Input Signal Level	-84dBm

ASI Input (Hardware Options)

ASI Input	Up to 8 x ASI Input
MPEG-TS Format	188/204 Bytes self-adaption
Input Bit Rate	270Mbps each
TS Mode	Uniform and burst
Connector Type	BNC (Female, 75Ω)

IP Input & Output

IP Interface	1 x 100/1000 Base-T Ethernet(RJ-45)
MPEG TS Format	7 x 188 Bytes
IP Encapsulation	MPEG TS-over-UDP/RTP
MPEG TS Mode	MPTS or SPTS
Operation Mode	TS Inputs and multiplexing outputs
Number of TS	Input: 128(max.) Output: 4
Addressing	Unicast or Multicast
Protocol	UDP, RTP, ARP, IGMP, ICMP

TS Re-multiplexing

Capacity of Processing	Up to 4 TS multiplexing outputs Up to 256 programs
PCR	Auto correction
PSI	PSI generation, manual insertion
PID	Remapping, filtering, pass-through
PSI/SI Standards	ISO/IEC 13818-1 DVB SI(ESI EN300468)

TS Scrambling (License Options)

Number of Scrambler	Up to 4
Number of CAS	Up to four DVB SimulCrypt CAS(s)
Scrambling Algorithm	Comply with DVB-CSA
CAS Standard	ETSI TS 103 197
CAS Interface Protocol	TCP/UDP (via NM Port)
EMM Bandwidth	Up to 3 Mbps
Scrambling Rate	Up to 60 Mbps per QAM channel
Scrambling Level	Program-level
Real-time Statistics	TS rate, program rate, PID rate

Modulation Output (License Options)

Output Connector	1 x RF Output 1 x -20dB RF Output (Test Port)
Connector Type	F-Type (Female, 75Ω)
RF Frequency Range	54 to 860 MHz
Bandwidth	6 or 8MHz
Numbers of Output	Up to 4 QAM channels(or carriers)
Modulation Standards	ITU-T J.83 Annex A, B and C
Constellations	16/32/64/128/256QAM
Symbol Rate	Annex A: 4.2 to 7 M baud Annex B: 5.057 M baud Annex C: 4.2 to 5.3 M baud
RF Output Power Level	90 to 110dBμV (RF output Port) 70 to 90dBμV (-20dB test port)
MER	≥38dB (64QAM, 6.875MBaud)
SNR(Out of band)	≥50dB
Return Loss	≥12dB
Carrier Suppression	>58dB
Frequency Accuracy	±25kHz
Gain Fine-tune	0 to 5.0dB, Step Size 0.25dB

Network Management

Interface	1 x 10/100 Base-T Ethernet
Connector	RJ-45
Management	Web and SNMP management

Miscellaneous

Front Panel	3.5" LCD with 6 x Control Button for 2-lines alphanumeric display and parameter settings 3 x Dual color LED, for status indications of power, work and Alarm
Rear Panel	1 x Serial console port(RJ-45) 1 x Power Supply Input 1 x Power switch

Power Supply

Input Voltage	110 - 240 VAC, 50/60Hz
Power Consumption	40W (Max.)

Environmental

Operating Temperature	0°C to 45°C (32°F to 113°F)
Storage Temperature	-20 to 80°C (-4°F to 176°F)
Operating Humidity	90%, non-condensing

Mechanical

Product Dimensions (W x H x D)	483mm x 44.5mm x 450mm 19" x 1.73" (1 RU) x 17.7"
Product Weight	6.0Kg (13.2 lbs)

Rear Panel View (Sample config.)



Ordering Information

Hardware Options

Hardware Codes	Descriptions
GQ-3655-BASIC	GQ-3655 IPQAM with 1 QAM channel, 1 x Gigabit Ethernet in & out-put(RJ-45), 1 x RF output
3655-2ASI	2 x ASI Inputs
3655-4ASI	4 x ASI Inputs
3655-8ASI	8 x ASI Inputs
3655DR-S	4 x DVB-S/S2 L-band Input
3655DR-C	4 x DVB-C RF Input
3655DR-T	4 x DTMB UHF-Band RF Input

License Options

License Codes	Descriptions
LC-3655-CA1	1 x SimulCrypt CAS
LC-3655-CA2	2 x SimulCrypt CAS
LC-3655-CA4	4 x SimulCrypt CAS
LC-3655-QAM2	2 x QAM channels
LC-3655-QAM4	4 x QAM channels

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