

QAM Module for Luminato platform

Quad QAM module for Luminato platform

The QAM module enables flexible multiplexing of SPTS and MPTS video services and also PSI/SI table streams. High quality QAM modulation with agile up conversion provides easy adaptation to DVB-C delivery over HFC-network.



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Versatile functionality

The Teleste Luminato quad QAM modules provide an advanced DVB-C platform for Cable TV operators. The QAM module enables flexible multiplexing of SPTS and MPTS video services and also PSI/SI table streams. High quality QAM modulation with agile up conversion provides easy adaptation to DVB-C delivery over HFC-network.

The Luminato quad QAM multiplexers support selection of free-to-air and scrambled services from IP stream sources, which can be adjusted to the operator's service line-up with the built-in advanced transport stream processing capabilities. The Luminato quad QAM module support Standard Definition, High Definition and 3D video in MPEG-2 and MPEG-4 AVC video formats and numerous audio formats. Optionally content protection can be done based on DVB simulcrypt standard.

Effective flexibility

Luminato quad QAM module is fully compatible with the high-performance

Luminato chassis, where it can be fitted freely to any of the six module slots. In accordance with the Luminato system architecture, the video processing is performed on the quad QAM modules, which enables low-cost applications even with partially equipped chassis, while having the performance scalability to fully equipped chassis.

Complete cable TV headend in 1 RU

As one or more Quad QAM modules can be included in 1 RU Luminato platform with Luminato DVB-S, DVB-S2, DVB-ASI, DVB-T, DVB-T2 and DVB-C receivers, together they can form a complete cable TV headend. Furthermore, this provides effective way for complementing service bouquet with locally received content in the edge of the network.

Embedded content protection

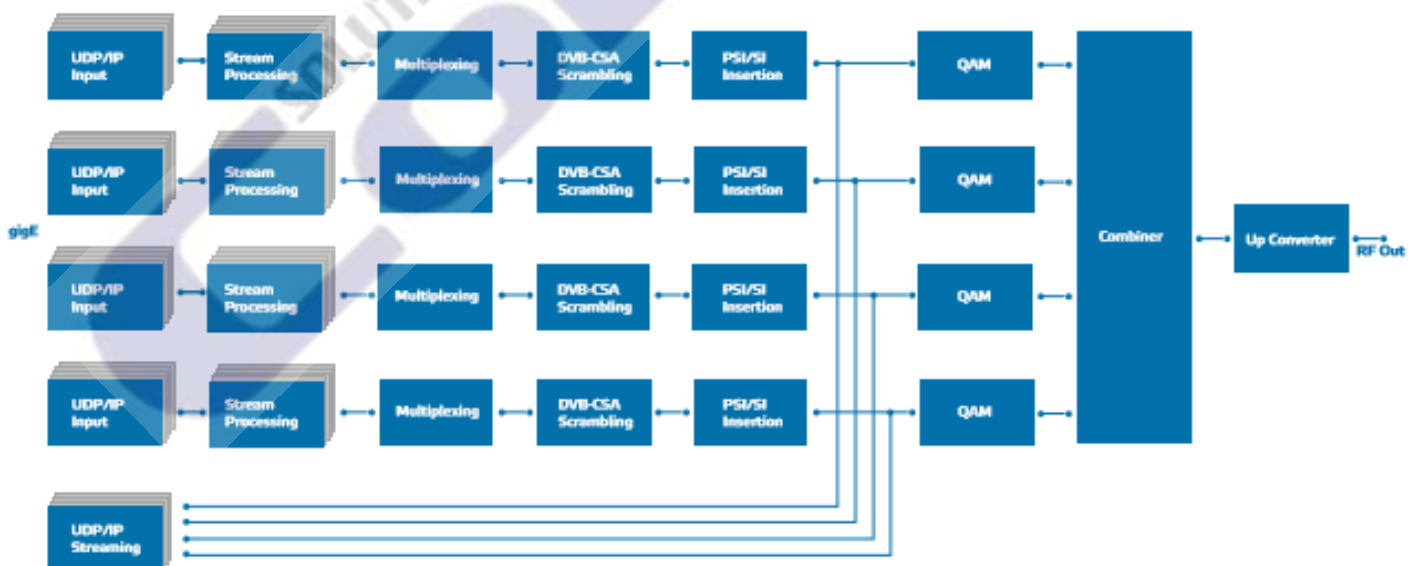
Quad QAM module has the optional capability to do DVB Common Scrambling Algorithm content protection. The embedded scrambling doesn't require any additional hardware and the user

can freely select which services will be scrambled. The component level scrambling is also supported to allow only video and audio scrambling and leave other streams untouched to avoid descrambling challenges for bursty data in set-top box.

Efficiency and reliability

With the advanced transport stream processing, operator can select the services and components which are relevant to his network. The Luminato will follow-up any changes on the stream to automatically readjust the processing to provide uninterrupted service. This will allow the operator to efficiently manage network capacity usage.

The available tools provide high degree of automated features to minimise the cost of system set-up and operation, and avoiding downtime due to changes in the received services.



Features

- DVB TS over UDP/IP, RTP/UDP/IP reception
- IP address / UDP port selector for input streams
- Network dejittering
- Support CBR and VBR TS
- Support SPTS and MPTS multiplexing
- Advanced transport stream processing
- PCR processing
- Multiplexing
- DVB CSA content protection
- Automatic PSI/SI table generation
- Custom PSI/SI creation and streaming
- High quality QAM modulation
- Agile upconversion
- MPEG transport stream over UDP/IP and RTP/UDP/IP streaming
- Multiplex IP streaming (VBR or CBR)

Technical specifications

Parameter	Specification	Note	Parameter	Specification	Note
IP inputs			Out of band noise, 3)	<-58,5 dBc	1st adj. channel
Frame formats	UDP/IP, RTP/UDP/IP			<-62 dBc	2nd adj. channel
TS packet per UDP frame	1...7			<-64 dBc	3rd adj. channel
Max inputs streams/module	120			<-66 dBc	other channels
Dejittering buffersize	200 ms			-70 dBc	other channels, 4)
Multiplexers			Harmonics	<-60 dBc	
Number of multiplexer	4		MER	>43 dB	LQM-A, LQM-C
Max input service/multiplexer	120		IP streamer output of multiplexer		
Max components per service	32		Framing format	UDP/IP, RTP/UDP/IP	
Output speed	depends on QAM modulator settings		Traffic type	unicast or multicast	
DVB Common Scrambling Algorithm Content Protection			TS format	CBR, VBR	
Max scrambled services per module	120	LQM-A, LQM-C	Max TS packet speed/streamer	directly related QAM output speed	
QAM Output			Maximum speed total	250 Mb/s	shared with 4 outputs
Standard	ITU-T J.83 Annex A and C		General		
QAM constellations	64, 128, 256		Power consumption	15 W	
Symbol Rate	4...7,4 MS/s		Supply voltages	24 V	
Impedance	75 ohm		Connectors, DVB-C RF Out	F	
Output return loss	>14 dB	active channel	Dimensions	20 x 109 x 253 mm (HxWxD), 1)	
	>12 dB	act. ch 81...862 MHz	Weight	0,4 kg	
	>10 dB	act. ch 862...1000 MHz	Enclosure classification	IP21	
Output Level	102 ... 112 dB μ V	Four adj. channels	Operating temperature range	-10...+55 °C	
	104 ... 114 dB μ V	Three adj. channels	Storage temperature range	-30...+70 °C	
	106 ... 116 dB μ V	Two adj. channels	Specification is met	0...+45 °C	
	110 ... 120 dB μ V	One adj. channel			
Output Level accuracy	+/- 2 dB		Notes		
Output Power step size	0,2 dB		1) Dimensions excluding connectors and locking screws		
Output center frequency	85...999 MHz		3) Values for quad channels active. Excluding harmonics		
Output frequency accuracy	+/- 30 kHz		4) Typical value outside 100 MHz of active channel block		
Output frequency step size	50 kHz				