TELESTE

Dense modulator for the Luminato 4X4 platform

HIGH QUALITY QAM MODULATION

The Luminato 4X4 dense modulator enables flexible multiplexing of SPTS and MPTS video services and PSI/SI table streams. High quality QAM modulation with agile up conversion provides smooth broadcast delivery over HFC network and ensures availability of high-performing video services for years to come.

Versatile functionality

The Teleste Luminato 4X4 equipped with dense QAM modules provides very compact edge QAM platform for Cable TV operators for multiplexing of SPTS and MPTS video services and also PSI/SI table streams. High quality QAM modulation with agile up conversions secures seamless broadcast delivery over HFC network.

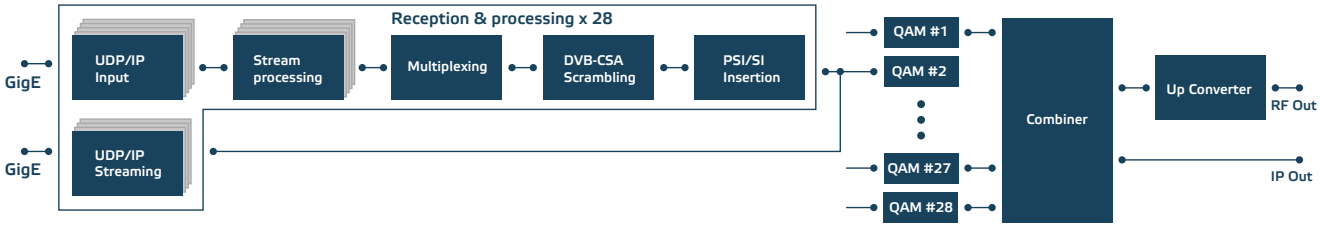
The Luminato dense QAM modules sustain selection of free-to-air and scrambled services from IP stream sources, which can be adjusted to the operator's service line-up with the built-in advanced transport stream processing capabilities. The Luminato dense QAM module supports Standard Definition, High Definition, UHD and 3D video in CBR and VBR formats and numerous audio formats. Optional content protection is based on DVB simulcrypt standard.

Effective flexibility

The Luminato 4X4 dense modulators allow up to 168 QAM channels in one high-performance Luminato 4X4 chassis. According to the Luminato system architecture, the video processing is performed on the dense QAM modules. This 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

One or more dense QAM modules can be included in 1 RU Luminato platform with Luminato satellite, terrestrial, cable, IP and DVB-ASI receivers, together forming a complete cable TV headend. The flexible architechture enables comprehensive service bouquet with locally received content in the edge of the network.



Block Diagram, Dense modulator

Embedded content protection

Dense modulator has the optional capability for 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. Component level scrambling is also supported to allow only video and audio scrambling to avoid descrambling challenges in set-top boxes.

Efficiency and reliability

With the advanced transport stream processing, operators can select the services and components that are relevant to their network, enabling them to efficiently manage the network capacity usage. Thanks to a high degree of automated functions the cost of system set-up and operation is minimised. The automated functions also reduce downtime due to changes in the received services.

IP INPUTS		
Frame formats	UDP/IP	
TS packet per UDP frame	1...7	
Max inputs streams/module	1000	
Dejittering	PCR processing & buffering	
MULTIPLEXERS		
Number of multiplexers	28	
Max input services/multiplexer	120	
Max components per service	32	
Output speed	depends on QAM modulator settings	
DVB COMMON SCRAMBLING ALGORITHM CONTENT PROTECTION		
Max scrambled services	480 per module	
QAM OUTPUT		
Standard	ITU-T J.83 Annex A, B and C	
QAM constellations	Docsis CM-SP-DRFI-I16-170111 (64, 128, 256)	
Symbol Rate	4…7,4 MS/s	
Impedance	75 ohm	
Output return loss	>14 dB	active channel
	>12 dB	out of act. ch 81…862 MHz
	>10 dB	out of act. ch 862…1200 MHz
Output Level	102 dBµV	21…24 channels
	104 dBµV	17…20 channels
	105 dBµV	13…16 channels
	107 dBµV	7…12 channels
	110 dBµV	1…6 channels
Output Power step size	0,2 dB	
Output center frequency	85...900 MHz	
Output frequency step size	50 kHz	

OUT OF BAND NOISE, 1)	
< -60 dBc	1st adj. channel
< -64 dBc	2nd adj. channel
< -70 dBc	3rd adj. channel
< -70dBc	other channels
Harmonics	< -63 dBc
MER	> 45 dB
IP STREAMER OUTPUT OF MULTIPLEXER	
Framing format	raw UDP/IP
Traffic type	unicast or multicast
TS format	CBR, VBR
Max TS packet speed/ streamer	directly related to QAM output speed
GENERAL	
Power consumption	37 W
Supply voltage	24 V
Connectors	F 75 Ω, RJ45
Dimensions (h x w x d), 2)	(20 x 109 x 253) mm
Weight	0,3 kg
Enclosure classification	IP21
Operating temperature range	-10...+55 ºC
Storage temperature range	-30...+70 ºC
Specification is met	0…+45 ºC
Notes	
1) Values for at least quad channels active. Exluding harmonics 2) Dimensions excluding connectors and locking screws	

TELESTE CORPORATION
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