TELESTE

Teleste Luminato

Headend platform for Cable TV, IPTV and OTT networks

Teleste Luminato is a high density modular headend platform for acquiring, processing and ingesting live video.

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Teleste Luminato headend platform is designed for live content processing. It receives the content from various sources and descrambles and re-organises this content into operators' network for CATV, OTT and/or IPTV delivery. It is trusted by cable TV operators and Telco's of varying sizes and feature demands. One thing is common though; they all appreciate its unparallel reliability and ease of use.

Modularity enables effectiveness

The chassis has been divided into six processing module slots. The module slots can be equipped with any combination of available Luminato receivers and output modules, depending on the application requirements. All modules can be hot-swapped and auto-configured, minimising service outage. Due to an internal switch, the need for cabling is minimised, resultingin simple and cost-effective installation.

The chassis has two Gigabit Ethernet interfaces with electrical or optical SFP modules for IP payload traffic. Both MPEG-2 and MPEG-4 with SD and HD are supported, suitable for IP centric Cable TV, IPTV and OTT networks.

Receive content from various sources

Teleste Luminato receivers provide a best-of-breed receiving platform for operators. The receivers enable a flexible selection of free-to-air and scrambled services from DVB-S/S2, DVB-T/T2, DVB-ASI, DVB-C or IP sources, which can be adjusted to the operator's service line-up with the built-in advanced transport stream-processing capabilities.

Satellite and terrestrial receivers are available as quad-receiver models or dual-receiver models with DVB descrambling. All Luminato module slots furnished with quad-receivers enable having up to 24 receivers in one RU chassis. As one receiver can process multiple services per receiver, the amount of received services can be vast. The optional de-scrambling uses DVB Common Interface modules, flexibly supporting a large variety of Conditional Access Systems.

Content ingestion in several formats

Luminato output modules are available for DVB-ASI, COFDM and QAM and they enable flexible multiplexing of SPTS and MPTS video services as well as PSI/SI table streams. Luminato comes with two integrated IP ports which means saving space and cost as a separate module is not needed.

The output modules 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. All the modules support Standard Definition and High Definition video in MPEG-2 and MPEG-4 AVC video formats and numerous audio formats.

Keep your stream lean

It is essential to be able to modify components in incoming and outgoing transport streams. Received services may include several unnecessary languages or even harmful data like unwanted set-top box software updates – all of them stealing bandwidth and endangering a quality subscriber experience.

Luminato comes with built-in advanced transport stream processing capabilities. It can filter the unwanted data and allow tidying of received and outgoing services from any unwanted components. This enables great savings in bandwidth and improves service quality.

Consumer level usability, yet access to all the finesses

The intuitive user interface makes management of Luminato effortless – everything is visible in a single graphical display, and administrators can add new services simply by drag-and-drop. This eliminates a lot of the manual configuration work and provides an easily understandable view on the network. Services can be set up within a few minutes, and yet there is access to all DVB finesses. Luminato also provides a simple but effective command line interface (CLI) for those appreciating extreme simplicity.

- Realistic view to module composition
- Drag and drop services with multiple selection
- Simple and intuitive navigation
- Device status at single glance
- Playlist view to all available channels
- Search available for easy finding of all services
- Monitoring with any PC including tablet computers

Quality is not a coincidence

We consider high quality to be one of the key assets of the Luminato platform. The cost of a non-functioning device is high and therefore we have made a special effort to make sure these situations can be avoided.

Over the years, Luminato has proven to be one of the most reliable headend platforms on the market. There are thousands of devices operational around the world and serving subscribers with tens of thousands of services around the clock. Yet, the failure rate has prooven to be lower than 0,3%.

Hot-swap for all modules
- Configurations copied and transferred automatically

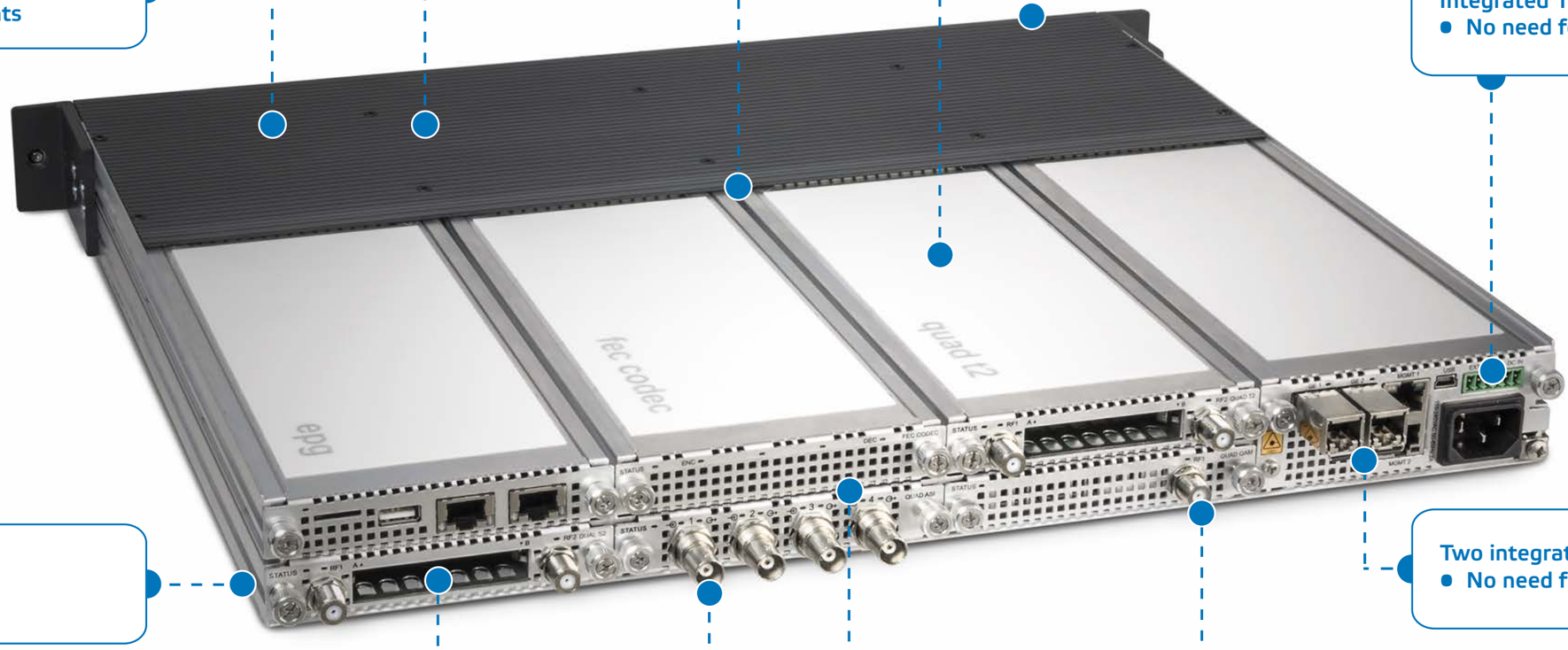
Internal switch
- Minimized need for cabling

Advanced stream processing
- Save bandwidth by filtering unwanted components

Inbuilt scrambling
- No need for cabling

High quality fans
- Automatically adjusting and hot-swappable fans with remote monitoring

Integrated 1+1 redundancy
- No need for external equipment



Demultiplexing
- MPTS to SPTS

Multiservice descrambling
- One CI-module descrambles multiple services

High density input
- Up to 24 receivers in 1 RU

Two integrated GigE ports
- No need for a separate module

High density output
- Up to 24 multiplexes in 1 RU

Future proof
- Supporting upcoming satellite transponders with up to 45 Msymb/s

Embrace reliability

The basis for solid functionality is created early, on a drawing board. There are choices to be made and all of them can affect reliability. Here's a list of a few Luminato features guaranteeing a high level of reliability:

- Hot swappable modules with automatic copying of configuration
- Unobstructed air flow by four hot swappable, actively controlled and automatically adjustable fans
- One platform can include two PSU's or connect to an external PSU serving several platforms
- 1+1 platform redundancy with automatic and fast switch over between primary and secondary platforms
- SID follow-up
- Stream redundancy with configurable triggers and automatic recovery
- Service priority for ensuring priority service pass-through in case of overbooking
- Monitoring of descrambling and automatic CA-module refreshment/rebooting

Customer testimonials

MTS – the leading telecommunications provider in Russia and the CIS:

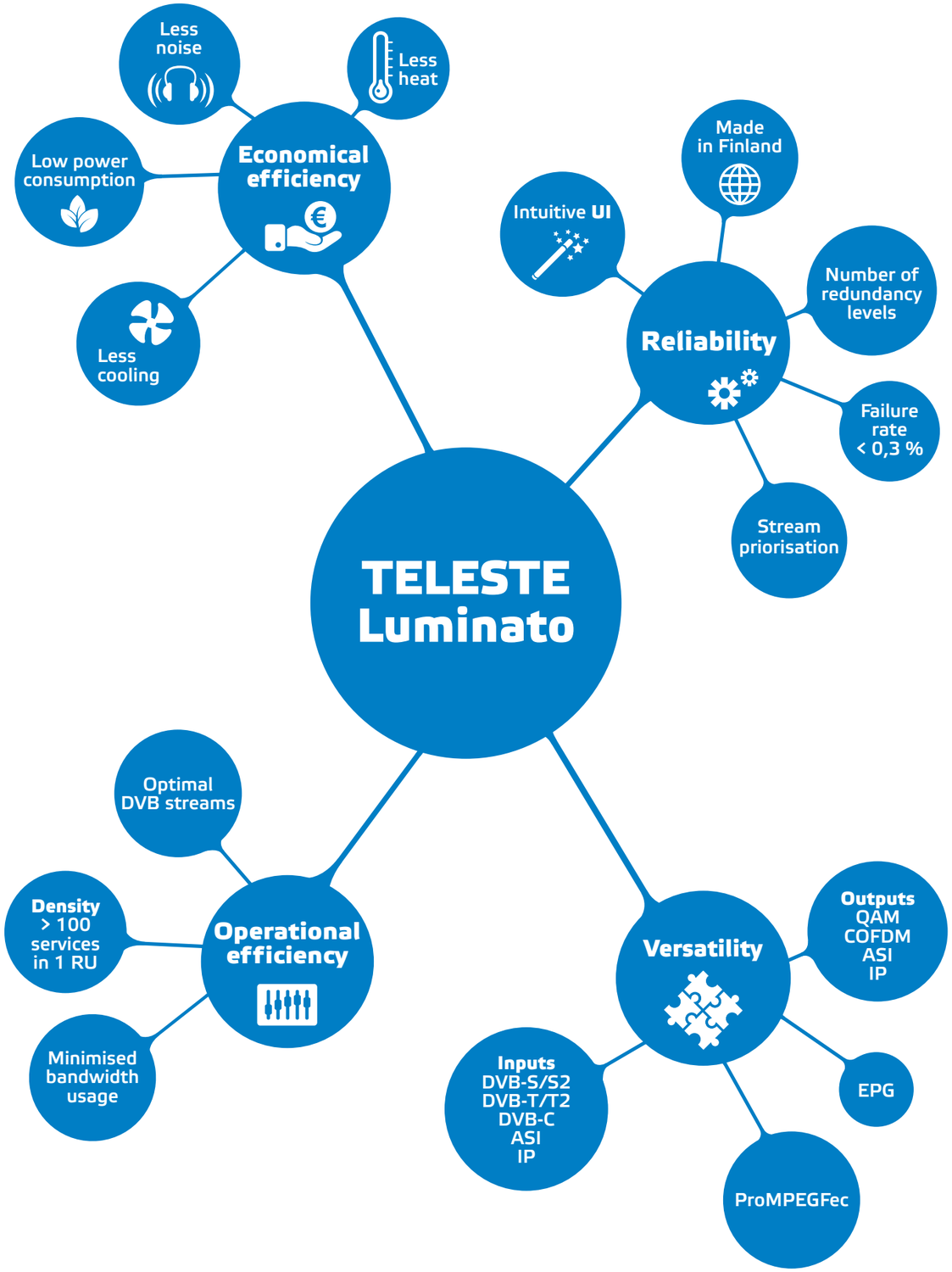
"*After a bidding competition and careful evaluation, we decided to choose Teleste Luminato to empower our nationwide headend network in Russia. After a couple years of operation, we are very pleased with our choice as Teleste Luminato headends have required almost no maintenance at all. Teleste Luminato provides us with the most compact and flexible solution for delivering a premium-quality digital TV experience and surviving long into the future. Therefore, we felt comfortable to expand the Luminato based headend network to tens of new cities as a second phase of our project.*"

Quadriga – the hospitality industry's leading integrator of network applications and in-room entertainment systems:

"*We have been using Teleste Luminato in hundreds of hotel TV headend installations worldwide since 2008. Luminato makes a perfect match with our demands as it is small in size, requires minimal management due to automated features, makes barely any noise and doesn't require any special arrangements for cooling. It is simply very easy to install and extremely reliable in operation. Our engineers have given it a nickname "install'n'forget" – that tells of their opinion about the ease of usage and the service reliability.*"

Numericable – the leading cable TV operator in France:

"*In the first place, we chose Teleste Luminato due to its modularity and density. By using Luminato, we needed only one device per headend to receive TV services from a backbone as IP, locally as DVB-T and ingest services to our network in required formats. Tested and proofed technology together with top-class usability reflects to us as simple operability. Luminato redundancy features and ease of use were considered outstanding as well, all resulting in high reliability and cost savings which we appreciate.*"



Teleste Luminato chassis specifications

Chassis	
Mounting	19” rack mountable, 1RU Installation rails for easy installation
Dimension (H x W x D)	1U x 19” x 385 mm
Operating voltage	100-230 VAC 50/60 Hz, 48 VDC
Power consumption	Max 120 W / fully occupied chassis
Operating temperature	-10…55 ºC ambient
Relative humidity	Up to 90% (non-condensing)
Cooling	Replaceable fans
Management interfaces	
Two 10/100 BaseTX	For CAS and NMS
USB	For initial setup
Stream interfaces	
Two gigabit Ethernet ports	Supports electrical and optical SFP modules
Management and monitoring	
Web user interface	
CLI (telnet / ssh, USB-serial)	
SNMP monitoring	
TFTP file transfer	
Interface modules	
6 slots for hot swappable processing modules	

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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.

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.

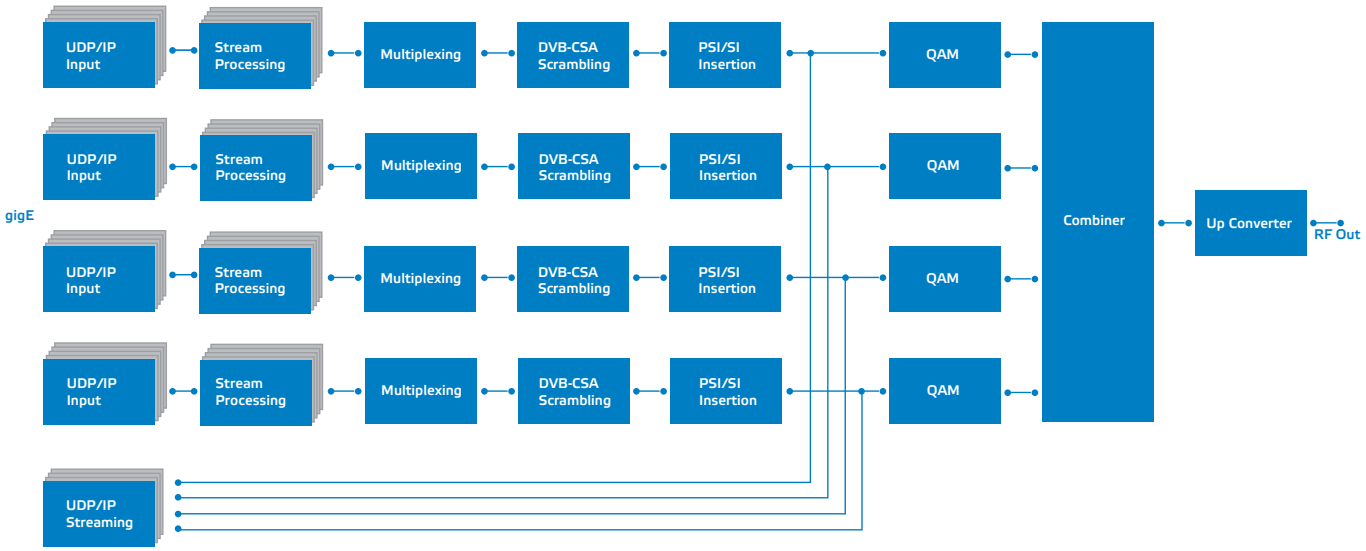
Embedded content protection

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.



Block Diagram, Quad QAM Out

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
IP inputs		
Frame formats	UDP/IP, RTP/UDP/IP	
TS packet per UDP frame	1...7	
Max inputs streams/module	120	
Dejittering buffersize	200 ms	
Multiplexers		
Number of multiplexer	4	
Max input service/multiplexer	120	
Max components per service	32	
Output speed	depends on QAM modulator settings	
DVB Common Scrambling Algorithm Content Protection		
Max scrambled services per module	120	LQM-A, LQM-C
QAM Output		
Standard	ITU-T J.83 Annex A and C	
QAM constellations	64, 128, 256	
Symbol Rate	4…7,4 MS/s	
Impedance	75 ohm	
Output return loss	>14 dB	active channel
	>12 dB	act. ch 81…862 MHz
	>10 dB	act. ch 862…1000 MHz
Output Level	102 … 112 dBµV	Four adj. channels
	104 ... 114 dBµV	Three adj. channels
	106 … 116 dBµV	Two adj. channels
	110 … 120 dBµV	One adj. channel
Output Level accuracy	+/- 2 dB	
Output Power step size	0,2 dB	
Output center frequency	85...999 MHz	
Output frequency accuracy	+/- 30 kHz	
Output frequency step size	50 kHz	

Parameter	Specification	Note
Out of band noise, 3)	<-58,5 dBc	1st adj. channel
	<-62 dBc	2nd adj. channel
	<-64 dBc	3rd adj. channel
	<-66 dBc	other channels
	-70 dBc	other channels, 4)
Harmonics	<-60 dBc	
MER	>43 dB	LQM-A, LQM-C
IP streamer output of multiplexer		
Framing format	UDP/IP, RTP/UDP/IP	
Traffic type	unicast or multicast	
TS format	CBR, VBR	
Max TS packet speed/streamer	directly related QAM output speed	
Maximum speed total	250 Mb/s	shared with 4 outputs
General		
Power consumption	15 W	
Supply voltages	24 V	
Connectors, DVB-C RF Out	F	
Dimensions	20 x 109 x 253 mm (HxWxD), 1)	
Weight	0,4 kg	
Enclosure classification	IP21	
Operating temperature range	-10...+55 ºC	
Storage temperature range	-30...+70 ºC	
Specification is met	0…+45 ºC	

Notes

1) Dimensions excluding connectors and locking screws
3) Values for quad channels active. Excluding harmonics
4) Typical value outside 100 MHz of active channel block

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