



IP Forward Error Correction for the Luminato platform

FEC CODEC MODULE

The FEC codec module enables error protection and the correction of IP streams. The module is ideal when error-resistant, high-quality IP network streams are either received in the headend or delivered from the headend.

Versatile functionality

The Luminato FEC codec module provides an advanced error correction and protection platform for SPTS and MPTS IP streams. It makes it possible for a Cable TV operator to provide high-quality, error free services in an optimal and flexible way.

The module supports both encoder and decoder functions in the same module with either mode. Versatile configuration options supported by numerous monitoring functions make it possible to select the most efficient method for minimizing the impact of errors in the IP network.

The Luminato FEC codec 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's architecture, the stream is processed on the FEC codec modules, which enables low-cost applications, even with a partially equipped chassis, while having the performance scalability of a fully equipped chassis.

Extreme error resistance

The Luminato ProMPEGFEC encoder and decoder support both 1D and 2D FEC patterns up to 120 streams. The FEC matrix size is fully configurable, enabling square and parallelogram rectangle shapes.

The FEC decoder is able to recover all recoverable packets, regardless of whether they are erroneous, lost, reordered or duplicated. Versatile monitoring functions that have been completed using statistics information enable a comprehensive view of the input streams; this can also be done for a longer period of time. One benefit of the Luminato FEC decoder is the network jitter monitoring feature, which can show the current and peak jitter of the received packets, thus helping to reveal possible network problems.

The FEC encoder provides error protection for the output IP streams. The adjustable configuration supported by the FEC overhead and decoding latency estimation enables the operator to select the most efficient mode that has been adapted for the network infrastructure.



Block diagram, ProMPEG FEC encoder module



Block diagram, ProMPEG FEC decoder module

Features

- RTP/IP streaming with ProMPEG FEC CoP#3 encoding
- RTP/IP stream reception with ProMPEG FEC CoP#3 decoding
- Error correction based on ProMPEG FEC CoP#3
- Supports both 1D (column only) and 2D (column+row) FEC streams
- Wide supported matrix size range: $L \cdot D \leq 120$
 - in 1D mode: $L=1 \dots 20$, $D=4 \dots 20$
 - in 2D mode: $L=4 \dots 20$, $D=4 \dots 20$
- Recursive packet recovery
- Stream monitoring with encoder:
 - Input packet format and current bitrate
 - Calculated overhead and latency
 - FEC mode and matrix size
- Stream monitoring with decoder:
 - Input packet format and current bitrate
 - FEC Mode and matrix size
 - Latency
 - Valid, uncorrected, duplicated and reordered packets
 - Discontinuity and incorrect sequence number detection
 - Network jitter monitoring

ProMPEG Encoder IP inputs		ProMPEG FEC Decoder Error Correction	
Frame formats	UDP/IP or RTP/IP	Standards	ProMPEG CoP#3 SMPTE 2022-1-2007
IP input interfaces	GE1, GE2 or internal	Matrix size, L	in 1D mode: 1...20 in 2D mode: 4...20
ProMPEG FEC Encoder Error Protection Coding		Matrix size, D	4...20
Standards	ProMPEG CoP#3 SMPTE 2022-1-2007	Matrix size, L*D	≤ 120
Matrix size, L	in 1D mode: 1...20 in 2D mode: 4...20	Max decoded inputs streams per module	120
Matrix size, D	4...20	Max streaming capacity	1.0 Gb/s
Matrix size, L*D	≤ 400	ProMPEG FEC Decoder IP outputs	
ProMPEG FEC Encoder IP outputs		Frame formats	UDP/IP or RTP/IP
Frame formats	RTP/IP	IP input interfaces	GE1, GE2 or internal
ProMPEG FEC ports		General	
	RTP/IP port +4 for row RTP/IP port +2 for column	Power consumption	6 W
Max encoded output streams per module	120	Supply voltages	24 V
Max streaming capacity	500 Mb/s	Connectors	n/a
IP output interfaces	GE1, GE2 or internal	Dimensions	20 mm x 109 mm x 253 mm
ProMPEG Decoder IP inputs		Weight	0,3 kg
Frame formats	UDP/IP or RTP/IP	Enclosure classification	IP21
ProMPEG FEC ports	RTP/IP port +4 for row RTP/IP port +2 for column	Operating temperature range	-10...+55 °C
IP output interfaces	GE1, GE2 or internal	Storage temperature range	-30...+70 °C
		Specification is met	0...+45 °C
		Notes	
		1) Dimensions excluding connectors and locking screws	

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