EL170
IP Satellite Modulator
Elevation Product Family

ELEVATION

Description

The EL170 is a state-of-the-art satellite modulator designed for IP applications over satellite in full compliance with the DVB standards. As a real IP product, this modulator performs IP processing functions such as packet filtering, routing and encapsulation. Depending on the applications and the activated features, the EL170 can be used in conjunction with consumer satellite IP receiving devices, professional IP receivers such as the EL940, or professional satellite IP demodulators such as the EL970.

The EL170 offers an auto-switching Gigabit Ethernet interface and integrates seamlessly with terrestrial IP networks and equipment. The incoming IP packets can be filtered using e.g. VLAN or MAC addresses, transmitted transparently (data piping mode) or routed to several receiving points and destination addresses. Several routing and addressing mechanisms can be used and even combined:

- Routing to the MAC address of the IP receivers, using Multi-Protocol (MPE) or Ultra Light (ULE) encapsulation, or with the more efficient Extended Performance (XPE) encapsulation.
- Addressing using several PIDs (MPE or ULE only)
- Addressing using several stream identifiers (with the DVB-S2 Multistream mode)

With the Variable Coding and Modulation (VCM) option, the modulator allows each stream to be transmitted with its own set of modulation parameters.

At the output of the modulator, the signal is available on an L-band interface. Extended L-band, IF-band as well as BUC power supply and reference frequency are available as configuration options, providing a compact and cost effective solution.

For maximum bandwidth efficiency, the EL170 can also be used in Adaptive Coding and Modulation (ACM) mode, modifying the modulation parameters dynamically in function of the link conditions. An embedded FlexACM controller option is available for point-to-point applications, while the optional Base-Band Frame input option allows the EL170 to work with the external Shaper, Encapsulator and FlexACM controller EL860 in point-to-multipoint configurations.

When activated, the unique linear and non- linear predistortion option Equalink™ provides an additional link margin improvement of up to 2dB, truly unleashing the full efficiency of higher modulation schemes such as 16 and 32 APSK.

Combining new innovative features and advanced data encapsulations protocols with DVB-S2 technology, the EL170 ensures the highest bandwidth efficiency available on the market.

Key features

- DVB-S2 and DVB-DSNG/S compliant
- QPSK, 8PSK, 16APSK and 32APSK
- XPE, ULE, MPE, data piping encapsulation
- Data rates up to 133 Mbit/s
- L-band monitoring output
- Programmable amplitude slope equalizer
- DVB-S2 Multistream
- Optional Extended L-band
- Optional VCM and ACM operation (FlexACM)
- Optional 10 MHz reference input/output
- Optional Linear and non-linear predistortion (Equalink™)
- Featured-based pricing and software upgradability

Main advantages

- Lower operational costs thanks to highest bandwidth efficiency and lowest IP encapsulation overhead
- Integrated hardware and software offering for end-to-end solution
- Easy integration with terrestrial IP networks and routers
- High versatility and flexibility
- High compactness

Applications

- IP trunking and backbone
- Corporate networks
- Primary distribution of IPTV
- Backhauling for cellular networks
- Content distribution for digital signage and digital cinema

Related products

EL178 High speed IP satellite modulator
EL470 IP satellite modem
EL478 High speed IP satellite modem
EL940 IP satellite receiver
EL970 IP satellite demodulator
EL978 High speed IP satellite demodulator

EL860: ACM Controller, Shaper and Encapsulator (CSE)

AZ7x0 Frequency converters
AZ200 Universal Switching System
AZ210 1+1 Modulator Redundancy Switch

Related Documents

White paper Equalink ™
White paper optimization of satellite capacity
Care Pack Brochure
Reference cases

Newtec
SHAPING THE FUTURE OF SATELLITE COMMUNICATIONS

BUY NOW

Digisat International Inc.
4195 W. New Haven Ave., Suite 15
Melbourne, FL 32904
USA
+1-321-676-5250
Email: sales@digisat.org
http://www.digisat.org

Specifications – EL170 (R7)

Input interface

- Auto switching 10/100/1000 Base-T Ethernet interface
- Maximum rate: 133 Mbit/s or 67,000 packets per second
- Layer 2 bridge mode: Ethernet frames over satellite
- Layer 3 bridge or router mode: IP packets over satellite
- Supported encapsulation modes:
  - Data piping
  - Ultra Lightweight Encapsulation (ULE)
  - Multi Protocol Encapsulation (MPE)
  - Extended Performance Encapsulation (XPE) - Newtec's highly efficient encapsulation protocol for the encapsulation of Ethernet/IP frames in DVB-S2 Base-Band frames
- Filtering and routing capabilities:
  - Up to 32 VLAN filters
  - Up to 255 MAC filters
  - Up to 255 IP routes/air-MAC addresses
  - Up to 255 PIDs
  - Up to 16 DVB-S2 Streams
- Proxy ARP support
- Base Band Frame input (optional)

Modulation

Supported modulation schemes and FEC

- DVB-S/DSNG:
  Outer/Inner FEC: Reed Solomon /Viterbi
  MODCODs:
  QPSK: 1/2, 2/3, 3/4, 5/6, 7/8
  8PSK: 2/3, 5/6, 8/9
  16QAM: 3/4, 7/8
- DVB-S2:
  Outer/Inner FEC: BCH/ LDPC
  MODCODS:
  QPSK: 1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
  8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
  16APSK: 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
  32APSK: 3/4, 4/5, 5/6, 8/9, 9/10
- VCM support (optional)
- Embedded point-to-point FlexACM controller (optional)

Baud rate range

- DVB-S2
  QPSK/8PSK 0,05 – 45 Mbaud
  16APSK/32APSK 0,05 – 33 Mbaud
  (for higher baud rates see EL178)
- DVB-S/DSNG
  QPSK/8PSK/16QAM 0.05-45 Mbaud

Frame length

- DVB-S/DSNG 188 bytes
- DVB-S2 Short Frames 16200 bits
- DVB-S2 Normal Frames 64800 bits

Roll-off factor

- 20 % - 25 % - 35 %

Output interfaces

L-band output (default):

- Connector SMA (F), 50 ohms
- Return loss > 14 dB
- Level -35/+5 dBm (+/- 2dB)
- Frequency 950 - 1750 MHz (50 Hz steps)
- spurious: better than -65 dBc/4 kHz @ +5 dBm level and > 256 kbaud

Extended L-band output (optional)

- Connector SMA (F), 50 ohms
- Return loss > 14 dB
- Level -35/+5 dBm (+/- 2dB)
- Frequency 950 - 2150 MHz (50 Hz steps)
- spurious: better than -65 dBc/4 kHz @ +5 dBm level and > 256 kbaud

IF-band (optional):

- Connector BNC (F) - 75 ohms (intermateable with 50 ohms)
- Return loss 50 ohms : > 14 dB
  75 ohms : > 20 dB
- Level -30/+5 dBm (± 3 dB)
- Frequency 50 - 180 MHz (50 Hz steps)
- spurious: better than -65 dBc/4 kHz @ -10 dBm level and > 256 kbaud

L-band+IF (optional)

- L-band: -30/+0 dBm (+/-3dB) output level
- IF: fixed 70 or 140 MHz frequency
  -34/+1 dBm (+/- 3 dB) output level

L-band monitoring output (default):

- Connector SMA (F), 50 ohms
- Return loss > 7 dB
- Level -45 dBm
- Frequency default: identical to L-band output. with options AA-02 / AA-06: 1080 MHz
- spurious: better than -65 dBc/4 kHz @ -10 dBm level and > 256 kbaud

BUC power and reference frequency (optional)

- max. current 1,5 A
- voltage 24V
- frequency 10MHz
- stability ±5x10-8 over 0°C to 65°C

10 MHz reference input / output (optional)

- Connector BNC (F) – 50 ohms
- Input level -3dbm up to 7dBm
- Output level +7dBm

Internal Reference frequency

High Stability (optional)

Stability ±5x10^{-8} over 0°C to 70°C
Ageing: ± 15 ppb/day
± 300 ppb/year

Very High Stability (optional)

Stability ±2x10^{-9} over 0°C to 65°C
Ageing: ± 0.5 ppb/day
± 500 ppb/10 year

Generic

Monitor and control interfaces

- Web based GUI
- Diagnostics report, alarm log
- RMCP over TCP-IP/UDP and RS232/RS485
- SNMP v2c

Alarm Interface

- Electrical dual contact closure alarm contacts
- Connector 9-pin sub-D (F)
- Logical interface and general device alarm

Physical

- 1RU, width: 19", depth 51 cm, 6 kg
- Power supply: 90-130 & 180-260 Vac, 105 VA, 47-63 Hz
- Temperature
  - Operational: 0°C to 40°C
  - Storage: -40 to +70°C
- Humidity: 5% to 85% non-condensing
- CE label

Ordering information

EL170 IP SATELLITE MODULATOR		Order n°
Default Configuration		
DVB-S/DVB-DSNG/DVB-S2 IP modulator with GbE interface, data piping, MPE, ULE and XPE encapsulator, CCM, Multistream, SNMP Modulation & Baud rate: QPSK-8PSK, 5Mbaud Output interface: L-band (950 -1750 MHz)		EL170
Configuration options Category	Max. 1 option per category	
Output interface	L-band (950-1750 MHz)	Default
	IF (50-180 MHz)	AA-02
	Extended L-band (950-2150 MHz)	AA-18
	L-band + 10MHz for BUC	AA-03
	L-band + 10MHz + 24Vdc for BUC	AA-04
	IF+ L-band	AA-06
Modulation & Baud rate	QPSK-8PSK 5Mbaud	Default
	QPSK-8PSK 15Mbaud *	AB-06
	QPSK-8PSK 33Mbaud *	AB-07
	QPSK-8PSK 45Mbaud *	AB-08
	QPSK- 8PSK-16APSK/QAM 5Mbaud *	AB-09
	QPSK- 8PSK-16APSK/QAM 15Mbaud *	AB-10
	QPSK- 8PSK-16APSK/QAM 33Mbaud *	AB-11
	Q/8PSK-16APSK/QAM-32APSK 5Mbaud*	AB-13
	Q/8PSK-16APSK/QAM-32APSK 15Mbaud*	AB-14
	Q/8PSK -16APSK/QAM-32APSK 33Mbaud *	AB-15
Additional options Category	Max. 1 option per category	
10MHz reference In/Out	High stability: 1ppm	GR-01
	Very high stability : 0,01 ppm	GR-02
Predistortion	Equalink *	AC-01
	Base Band Frame input (for use with EL860)*	AR-01
	VCM*	AN-01
	VCM + Point-to-Point FlexACM controller*	AR-02
Services Category		
Assistance	Care Pack Basic	GA-06
	Care Pack Extended	GA-07

*) upgradeable via license key
Other configurations and options such as RF output interfaces are available on request.
Contact your sales representative for details (sales@newtec.eu)