# EL940 Satellite IP Receiver Elevation Product Family



# Description

The EL940 is a high performance professional satellite IP receiver designed for the reception of IP traffic transmitted over satellite in compliance with the DVB-S, DVB-DSNG or DVB-S2 standards. The EL940 connects directly to terrestrial IP network infrastructures via a single auto-switching Gigabit Ethernet interface. The receiver demodulates, restores and filters the data received from the satellite at rates of up to 154Mbit/s.

The EL940 comes with a single, fixed hardware configuration optimized for applications that requires a low initial investment without compromising on performance. It is ideally suited for point-to-multipoint applications, such as content distribution.

The PC architecture and the Linux operating system of the EL940 allows to integrate data processing software, such as Newtec's Tellitec IP software, directly on the unit (this integration may modify the performance of the device).

# **Key features**

- DVB-S2 and DVB-DSNG/S compliant
- QPSK, 8PSK, 16APSK and 32APSK
- Multistream and VCM support
- Compatible with MPE and XPE encapsulation
- IP reception up to 154 Mbit/s
- Auto-switching GbE interface
- Linux-based PC architecture
- LNB control

#### **Main advantages**

- Cost-effective design for a low initial investment
- Full compatibility with the DVB-S/S2 standard for a guaranteed interoperability
- Highest service availability due to stable operation and robust build
- Advanced features for a maximum data throughput and operational flexibility
- Ideally suited for star topology
- Possible integration with data processing software

# **Applications**

The IP receiver can be used in both bidirectional applications and in unidirectional applications.

- · Content distribution: digital cinema, digital signage
- Primary distribution of IPTV
- IP trunking
- Corporate networking
- DSNG IP Applications

# **Related products**

EL170 Satellite IP modulator

EL178 High Speed Satellite IP modulator

EL470 Satellite IP modem

EL478 High Speed Satellite IP modem

EL970 Satellite IP demodulator

EL978 High Speed IP Satellite Demodulator

EL8x0 Protocol Enhancement Proxy appliances

TL100 TELLINET: IP traffic enhancement and security software

TL200 **TELLICAST**: reliable IP multicast software

DVB-S2 link calculator (free download on www.newtec.eu)

#### **Related Documents**

White paper optimization of satellite capacity Care Pack Brochure Reference cases









# **Specifications - EL940**(R6)

# **Input interface**

#### L-band input (dual input)

• Connector 2 x F-type (F), 75 ohms

Return loss > 7 dB
 Level -65/-25dBm
 Frequency 950 - 2150 MHz
 Adjacent signal < (Co+7) dBm/Hz</li>

where Co = signal level density

#### LNB power and control

• max. current 350 mA (on selected L-band input)

• voltage 11.5-14 V (vertical polarization), 16-19 V (horizontal polarization) & additional 22 kHz  $\pm$  4 kHz (band selection according to universal LNB for ASTRA satellites) & DiSEqC command transmission (DVB-S only)

#### **Demodulation**

#### **Baud rate range**

• DVB-S/DSNG: 1-45 Mbaud

• DVB-S2 Q/8PSK, 16APSK: 0.256 -45 Mbaud

• DVB-S2 32APSK: 1 - 30 Mbaud (with option AL-15)

#### Supported modulation and coding types

• DVB-S/DSNG:

Outer/Innner 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

• Support of DVB-S2 Variable Coding and Modulation (VCM) mode

#### **Performance**

### DVB-S2 performances at PER 1E-5

#### DVB DSNG/S performances at BER 1E-7 after RS

Config		Short Frames	Normal Frames	
OPSK. 1/3         -0.6         -0.7           OPSK. 2/5         0.4         0.2           OPSK. 1/2         1         1.4           OPSK. 3/5         3.1         2.8           OPSK. 3/5         3.8         3.6           OPSK. 3/4         4.5         4.3           OPSK. 3/4         4.5         4.3           OPSK. 5/6         5.8         5.5           OPSK. 8/9         6.7         6.6           OPSK. 8/9         6.7         6.6           OPSK. 8/9         6.5         6.3           BPSK. 3/3         8.6         8.4           BPSK. 8/3         8.6         8.4           BPSK. 8/9         11.4         11.1           16APSK. 3/3         9.9         9.6           16APSK. 3/3         10.9         10.5           16APSK. 4/5         11.6         11.5           16APSK. 8/9         13.6         13.3           16APSK. 8/9         13.6         13.3           13APSK.8/4         1         13.6           32APSK.8/4         1         13.6           32APSK.8/6         14.9         13.6           32APSK.8/6         14.9         14.5		< 15 Mbaud	< 45 Mbaud	
OPSK-2/5 0.4 0.2 OPSK-1/2 1 1.4 OPSK-3/5 3.1 2.8 OPSK-3/5 3.1 2.8 OPSK-2/3 3.8 3.6 OPSK-3/4 4.5 4.3 OPSK-3/4 4.5 4.3 OPSK-3/4 4.5 4.3 OPSK-3/4 4.5 4.3 OPSK-4/5 5.1 5.1 OPSK-5/6 5.8 5.5 OPSK-8/9 6.7 6.6 OPSK-9/10 6.7 6.6 OPSK-9/10 6.7 6.6 OPSK-9/10 6.7 6.6 OPSK-9/10 6.7 6.7 OPSK-8/9/1 6.5 OPSK-8/9/1 6.7 OP	Config	Es/No	Es/No	
OPSK 1/2         1         1.4           OPSK 3/5         3.1         2.8           OPSK 2/3         3.8         3.6           OPSK 3/4         4.5         4.3           OPSK 4/5         5.1         5.1           OPSK 5/6         5.8         5.5           OPSK 8/9         6.7         6.6           OPSK 8/9         6.7         6.6           SPSK 8/9         6.7         6.6           SPSK 8/9         6.5         6.3           SPSK 2/3         8.6         8.4           SPSK 8/9         11.4         11.1           16APSK 8/9         11.4         11.1           16APSK 8/9         1.16         11.5           16APSK 8/9         1.6         1.5           16APSK 8/9         1.3         1.3           16APSK 8/9         1.3         1.3           16APSK 8/9         1.3         1.3           22APSK-8/4         1.3         1.3           32APSK-8/6         1.4         1.4           32APSK-8/6         1.49         1.4	QPSK- 1/3	-0.6	-0.7	
QPSK 3/5 3.1 2.8 QPSK 3/3 3.8 3.6 QPSK 3/4 4.5 4.3 QPSK 3/4 4.5 4.3 QPSK 4/5 5.1 5.1 QPSK 5/6 5.8 5.5 QPSK 8/9 6.7 6.6 QPSK 9/10 - 6.7 QPSK 9/10 - 6.7 QPSK 9/10 - 6.7 QPSK 9/10 - 6.7 QPSK 9/10 - 16.7 QPSK 3/3 7.4 7.1 QPSK 5/3 6.5 6.3 QPSK 2/3 7.4 7.1 QPSK 3/9 1.1 Q	QPSK- 2/5	0.4	0.2	
OPSK 2/3         3.8         3.6           OPSK 3/4         4.5         4.3           OPSK 3/4         4.5         4.5           OPSK 4/5         5.1         5.1           OPSK 5/6         5.8         5.5           OPSK 8/9         6.7         6.6           OPSK 9/10         -         6.7           8PSK 8/9         6.5         6.3           8PSK 2/3         6.5         6.3           8PSK 3/4         8.6         8.4           8PSK 8/9         11.4         11.1           16APSK 8/9         11.4         11.1           16APSK 2/3         9.9         9.6           16APSK 4/5         11.6         11.5           16APSK 8/9         13.6         13.3           16APSK 8/9         13.6         13.3           13APSK 8/9         13.6         13.3           22APSK 8/4         13.6         13.6           32APSK 8/6         14.9         14.5           32APSK 8/6         1.6         16.1	QPSK- 1/2		1.4	
OPSK. 3/4         4.5         4.3           OPSK. 4/5         5.1         5.1           OPSK. 5/6         5.8         5.5           OPSK. 8/9         6.7         6.6           OPSK. 8/9         6.7         6.6           OPSK. 9/10         -         6.7           SESK. 3/5         6.5         6.3           SPSK. 2/3         7.4         7.1           SPSK. 2/3         7.4         7.1           SPSK. 3/6         8.6         8.4           SPSK. 5/6         10.2         9.7           SPSK. 5/6         10.2         9.9           16APSK. 2/3         9.9         9.6           16APSK. 2/3         10.9         10.5           16APSK. 4/5         11.6         11.5           16APSK. 8/9         13.6         13.3           16APSK. 8/9         13.6         13.3           16APSK. 8/9         13.6         13.3           2APSK. 8/4         -         13.6           3APSK. 8/9         -         14.9           3APSK. 8/6         -         14.9           3APSK. 8/9         -         16.1				
OPSK-4/5         5.1         5.1         5.1         OPSK-5/6         5.8         5.5         OPSK-5/6         5.8         5.5         OPSK-8/9         6.7         6.6         OPSK-9/10         -         6.7         6.6         OPSK-9/10         -         6.7         6.6         OPSK-9/10         -         6.7         8.5         6.5         6.3         RPSK-8/9         8.5         3.6         8.4         RPSK-8/9         8.6         8.4         RPSK-8/9         8.6         8.4         8.5         8.5         8.9         11.4         11.1         11.3         16APSK-8/9         11.4         11.1         11.3         16APSK-8/9         1.6         1.1         11.5         11.5         11.5         11.5         11.5         11.5         11.5         11.5         11.5         11.5         13.6         13.3         13.6         13.3         13.6	QPSK- 2/3	3.8	3.6	
OPSK: 5/6         5.8         5.5           OPSK: 8/9         6.7         6.6           OPSK: 8/9         6.7         6.6           OPSK: 8/9         6.7         6.6           SPSK: 3/2         6.5         6.3           SPSK: 3/3         7.4         7.1           SPSK: 3/6         6.0         9.7           SPSK: 6/6         10.2         9.7           SPSK: 8/9         11.4         11.1           IGAPSK: 2/3         9.9         9.6           IGAPSK: 2/3         10.9         10.5           IGAPSK: 4/3         11.6         11.5           IGAPSK: 8/9         13.6         13.3           IGAPSK: 8/9         13.6         13.6           32APSK: 8/9         13.6         13.6           32APSK: 8/9         13.6         13.6           32APSK: 8/9         13.6         13.6           32APSK: 8/9         11.6         11.5				
OPSK-8/9 6.7 6.6 OPSK-9/10 - 6.7 8PSK-3/5 6.5 6.3 8PSK-3/3 7.4 7.1 8PSK-3/4 8.6 8.4 8PSK-3/3 8.6 9.9 11.4 11.1 8PSK-9/10 - 11.3 16APSK-9/10 - 11.3 16APSK-9/10 - 11.3 16APSK-4/5 11.6 11.5 16APSK-4/5 11.6 11.5 16APSK-8/9 13.6 13.3 12APSK-8/9 13.6 13.3 22APSK-8/4 13.6 13.3 23APSK-8/4 13.6 13.3 23APSK-8/6 13.4 13.6 13.3			5.1	
OPSK-9/10         -         6.7           SPSK-3/5         6.5         6.3           8PSK-2/3         7.4         7.1           8PSK-3/3         7.4         7.1           8PSK-8/6         8.6         8.4           8PSK-6/6         10.2         9.7           8PSK-9/10         11.4         11.1           16APSK-23         9.9         9.6           16APSK-23         19.9         10.5           16APSK-34         11.6         11.5           16APSK-36         12.4         12.1           16APSK-8/9         13.6         13.3           13APSK-8/9         13.6         13.3           22APSK-8/4         -         13.6           32APSK-8/4         -         13.6           32APSK-8/5         -         14.9           32APSK-8/6         -         14.9           32APSK-8/6         -         16.1		5.8	5.5	
BPSK-3/5         6.5         6.3           BPSK-2/3         7.4         7.1           BPSK-3/4         8.6         8.4           BPSK-8/6         10.2         9.7           BPSK-8/9         11.4         11.1           BPSK-8/9         11.4         11.1           16APSK-2/3         9.9         9.6           16APSK-2/3         9.9         9.6           16APSK-4/5         11.6         11.5           16APSK-6/6         12.4         12.1           16APSK-8/9         13.6         13.3           32APSK-8/9         13.6         13.6           32APSK-8/4         -         13.6           32APSK-8/5         -         14.9           32APSK-8/6         -         14.9           32APSK-8/6         -         14.9		6.7	6.6	
8PSK: 2/3         7.4         7.1           8PSK: 3/4         8.6         8.4           8PSK: 5/6         10.2         9.7           8PSK: 8/9         11.4         11.1           8PSK: 9/10         -         11.3           16APSK: 9/10         -         11.3           16APSK: 3/2         9.9         9.6           16APSK: 4/5         11.6         11.5           16APSK: 4/5         11.6         11.5           16APSK: 8/9         13.6         13.3           13APSK: 8/9         13.6         13.3           32APSK: 8/4         -         13.6           32APSK: 8/5         -         14.9           32APSK: 8/6         -         14.9           32APSK: 8/6         -         16.1		-	6.7	
BPSK 3/4         8.6         8.4           BPSK 5/6         10.2         9.7           BPSK 8/9         11.4         11.1           BPSK 9/10         -         11.3           16APSK 2/3         9.9         9.6           16APSK 3/4         10.9         10.5           16APSK 4/5         11.6         11.5           16APSK 5/6         12.4         12.1           16APSK 8/9         13.6         13.3           13APSK-8/9         13.6         13.3           23APSK-8/4         -         13.6           32APSK-8/5         -         14.9           32APSK-8/6         -         14.9           32APSK-8/9         -         16.1	8PSK- 3/5	6.5	6.3	
8PSK-5/6         10.2         9.7           8PSK-8/9         11.4         11.1           8PSK-9/10         -         11.3           16APSK-72         9.9         9.6           16APSK-34         10.9         10.3           16APSK-34         11.6         11.5           16APSK-96         12.4         12.1           16APSK-970         -         13.6           32APSK-894         13.6         13.3           32APSK-895         -         13.6           32APSK-895         -         14.9           32APSK-896         -         14.9           32APSK-896         -         16.1		7.4	7.1	
8PSK-8/9         11.4         11.1           16APSK-2/3         9.9         9.6           16APSK-3/4         10.9         10.5           16APSK-3/5         11.6         11.5           16APSK-5/6         12.4         12.1           16APSK-6/9         13.6         13.3           16APSK-9/10         13.6         13.3           16APSK-9/10         13.6         32APSK-9/10           23APSK-9/10         14.5         32APSK-9/10           32APSK-9/9         14.5         14.5           32APSK-9/9         16.1         16.1				
8PSK-9/10         -         11.3           16APSK-23         9.9         9.6           16APSK-34         10.9         10.5           16APSK-45         11.6         11.5           16APSK-56         12.4         12.1           16APSK-809         13.6         13.3           16APSK-910         -         13.6           32APSK-834         -         13.6           32APSK-834         -         13.6           32APSK-856         -         14.9           32APSK-869         -         16.1	8PSK- 5/6		9.7	
16APSK-273         9.9         9.6           16APSK-344         10.9         10.5           16APSK-475         11.6         11.5           16APSK-5/6         12.4         12.1           16APSK-910         13.6         13.3           16APSK-910         - 13.6         32APSK-910           32APSK-91         - 13.6         32APSK-91           32APSK-91         - 14.5         32APSK-91           32APSK-91         - 16.1         16.1		11.4	11.1	
16APSK-34         10.9         10.5           16APSK-45         11.6         11.5           16APSK-56         12.4         12.1           16APSK-69         13.6         13.3           16APSK-89         13.6         13.3           2APSK-89         -         13.6           32APSK-89         -         13.6           32APSK-89         -         14.9           32APSK-89         -         14.9           32APSK-89         -         16.1		-		
16APSK- 4/5 11.6 11.5 16APSK- 8/9 13.6 13.3 16APSK- 9/10 - 13.6 32APSK- 9/10 - 13.6 32APSK-4/5 - 14.5 32APSK-5/6 - 14.9 32APSK-5/6 - 16.1	16APSK- 2/3	9.9	9.6	
16APSK-5/6 12.4 12.1 16APSK-8/9 13.6 13.3 16APSK-9/10 - 13.6 32APSK-3/4 - 13.6 32APSK-4/5 - 14.5 32APSK-5/6 - 14.9 32APSK-5/6 - 16.1	16APSK- 3/4	10.9	10.5	
16APSK-8/9 13.6 13.3 16APSK-9/10 - 13.6 32APSK-8/4 - 13.6 32APSK-4/5 - 14.5 32APSK-5/6 - 14.9 32APSK-8/9 - 16.1	16APSK- 4/5	11.6		
16APSK- 9/10 - 13.6 32APSK-3/4 - 13.6 32APSK-4/5 - 14.5 32APSK-5/6 - 14.9 32APSK-8/9 - 16.1				
32APSK-3/4 - 13.6 32APSK-4/5 - 14.5 32APSK-5/6 - 14.9 32APSK-8/9 - 16.1		13.6	13.3	
32APSK-4/5 - 14.5 32APSK-5/6 - 14.9 32APSK-8/9 - 16.1	16APSK- 9/10	-	13.6	
32APSK-5/6 - 14.9 32APSK-8/9 - 16.1		-	13.6	
32APSK-8/9 - 16.1		-	14.5	
	32APSK-5/6	-	14.9	
32APSK-0/10 - 16.5	32APSK-8/9	-	16.1	
32AL3K3/10   10.3	32APSK-9/10	-	16.5	

	< 20 Mbaud	> 20 Mbaud
Config	Es/No	Es/No
QPSK- 1/2	3.9	3.9
QPSK- 2/3	4.4	4.5
QPSK- 3/4	4.9	5.1
QPSK- 5/6	5.4	5.8
QPSK- 7/8	5.8	6.4
8PSK- 2/3	6.3	6.5
8PSK- 5/6	8.3	8.8
8PSK- 8/9	8.8	9.8
16QAM - 3/4	8.4	8.6
16 OAM- 7/8	10.1	11.1

#### Supported frame length

- DVB-S/DSNG 188 byte
- DVB-S2 Short Frames 16200 bit
- DVB-S2 Normal Frames 64800 bit

# **Data Processing**

- Maximum rate: 154 Mbit/s or 200,000 packets per second
- Supported data encapsulation protocol:
   Multi Protocol Encapsulation (MPE) (EN 301 192 V1.2.1).
   Extended Performance Encapsulation (XPE)
  - Newtec's highly efficient encapsulation protocol for theencapsulation of Ethernet/IP frames in DVB-S2 Base-Band frames
- Data filtering:
- 1 stream in DVB-S2 Multistream
- up to 256 configurable PID filters
- one air MAC address filter

# **Output interface**

#### **Ethernet interface**

• Auto-switching 10/100/1000 Base-T Ethernet interface

#### Generic

#### **Monitor & Control**

- Web based GUI
- Management via IP interface over Ethernet (UDP and TCP supported)
- Key monitor parameters available locally on front panel
- Device setup available through the front panel
- Real time clock
- Persistent memory for configuration storage

# **Physical**

- Very compact: 1RU, width: 19", depth: 15,3", 6kg
- Power supply: 90-130 & 180-260 Vac, 60VA
- Temperature: Operational: 5 to 35°C
  - Storage: -40 to +70°C
- Humidity: 5% to 85% non-condensing
- CE label

# **Ordering information**

EL940 IP SATELLITE R	Order n°	
Default configuration		
decapsulator, Multi	DVB-S2 IP receiver with GbE interface, MPE & XPE stream, VCM, L-band (950 - 2150 MHz) input, SNMP rate: DVB-S/DSNG/DVB-S2 Q/8PSK-16APSK-16QAM 45Mbaud	EL940
Configuration option Category	Max. 1 option per category	
Modulation & Baud rate	QPSK-8PSK-16APSK-16QAM 45Mbaud	
	Q/8PSK-16APSK-16QAM 45Mbaud, 32APSK 30Mbaud *	
Additional options Category Ma	x. 1 option per category	
Rack mount assembly Sliding rails		GM-01
Services Category		
Assistance	Care Pack Basic	GA-06
	Care Pack Extended	GA-07

<sup>°</sup>upgradeable via license key