

# ES10XL / ES10L

**OPTICAL TRANSMITTER 1550 NM**

## Application



- ▶ Externally modulated 1550 nm DFB laser transmitter for electrical to optical conversion of multichannel CATV signals like AM-VSB, FM and QAM signals
- ▶ Enables the usage of optical amplifiers (EDFAs) as boosters or repeaters in order to realize large scale HFC networks
- ▶ Excellent performance in order to realize links exceeding 100 km

## Features

- ▶ Low noise, narrow linewidth CW-DFB laser
- ▶ ITU-Grid wavelength (XL-Version)
- ▶ Wavelength adjustable +/- 100 GHz (XL-Version)
- ▶ Electrooptical modulator with 2 optical outputs
- ▶ Automatic RF gain control: CW, video, manual mode
- ▶ > 2 x 10 dBm output power (XL-100-Version)
- ▶ Adjustable SBS threshold up to 19 dBm to increase transmission distance (XL-Version)
- ▶ Front panel RF test point -20 dB
- ▶ Dual, hot-plug-in power supply modules for 100.. 240 VAC, -48 VDC, +24 VDC
- ▶ Web and SNMP Interface (a-version)
- ▶ RS485/232 interface (b-version)
- ▶ LC display and LED status indication
- ▶ General purpose I/O interface for remote functions
- ▶ Very thin, only 1 RU design for mounting into 19", ETSI or JIS racks

## Technical Data

### General ES10

Wavelength	[nm]	1548 ... 1560
Side mode suppression	[dB]	>30
Relative intensity noise (opt. return loss < -40 dB)	[dBc/Hz]	<-158 typ. <-160
Opt. Connector		any type of high return loss connectors front or rear side mounted
Optical fibre		standard single mode 9/125 $\mu$ m
Nom. Input level per TV channel	[dB $\mu$ V]	80
RF monitor output level	[dB]	-20 dB ( +0.2 ... -0.8 dB @ 862 MHz, -1.3 dB @ 1 GHz)
dynamic range of AGC	[dB]	+3 ... -6
RF-connector/ impedance		F-female, 75 $\Omega$ , front or rear side mounted
return loss	[dB]	> 20 (47 MHz) – 1,5 dB/oct., min. > 15
Control interface		a-version: Ethernet 10/100 interface:, b-version: RS485/232 interface
Climatic Specification		
Operation		ETS 300 019, class 3.1
Storage		ETS 300 019, class 1.2
EMI		EN50083-2 (April 1996), EN50083-2 /A1 (February 1998)
Power Supply		100...240 VAC
Dual redundant, hot pluggable		36...72 VDC or 23.5...24.5 VDC
Power Consumption	[W]	$\leq$ 60
Enlosure		19" / 1 RU (optionally compatible to ETSI or JIS standards)
Weight	[kg]	9.7

### ES10XL

#### Optical Properties

Wavelength		1548 ... 1560 nm or ITU-grid (CH23... CH37)
Wavelength adjustment range	[GHz]	+/- 100 in steps of 50
Optical power, ES10-XL-85	[dBm]	2 x 8.5 min.
Optical power, ES10-XL-100	[dBm]	2 x 10.0 min.
SBS-Suppression	[dBm]	Threshold adjustable between +13 and +19 dBm
Laser linewidth (typ.)	[MHz]	0.3

**Electrical Properties**

RF-Frequency Range	[MHz]	47 –1000		
Flatness	[dB]	<±0.75 (47...860 MHz) <±1.5 (860 MHz...1 GHz)		
Version		<b>C42</b>	<b>D84</b>	<b>N77</b>
Channel plan		CENELEC 42	PAL-D 84	NTSC 77
number of channels TV / FM (-4dB) / QAM64 (-10dB)		42 / 0 / 0	84 / 0 / 0	77 / 0 / 0
Noise bandwidth	[MHz]	5	5	4
CNR Tx/Rx	[dB]	55.5	52.5	53.5
CNR Link 1	[dB]	55.0	52.0	53.0
CNR Link 2	[dB]	53.0	50.5	52.0
CNR Link 3	[dB]	50.5	49.0	50.0
CSO Tx/Rx and Link 1	[dBc]	64	65	65
CSO Link 2	[dBc]	63	65	65
CSO Link 3 at output #1	[dB]	62	63	65
CTB	[dBc]	65	65	65

**ES10L**
**Optical Properties**

Wavelength	[nm]	1548.....1560
Optical power, ES10-L-70	[dBm]	2 x 7 min.
SBS-Suppression	[dBm]	Fixed threshold +16.5 dBm
Laser linewidth (typ.)	[MHz]	0.65

**Electrical Properties**

RF-Frequency Range	[MHz]	47 –862
Flatness	[dB]	<±0.75
Version		<b>D84</b>
Channel plan		PAL-D 84
number of channels TV / FM (-4dB) / QAM64 (-10dB)		84 / 0 / 0
Noise bandwidth	[MHz]	5
CNR Tx/Rx	[dB]	52.5
CNR Link 1		51.5
CNR Link 2	[dB]	49.0
CNR Link 3	[dB]	46.5
CSO Tx/Rx and Link 1	[dBc]	65
CSO Link 2	[dBc]	65
CSO Link 3 at output #1	[dB]	63
CTB	[dBc]	65

