

ETN10XL-FA

OPTICAL TRANSMITTER 1550 NM

Application

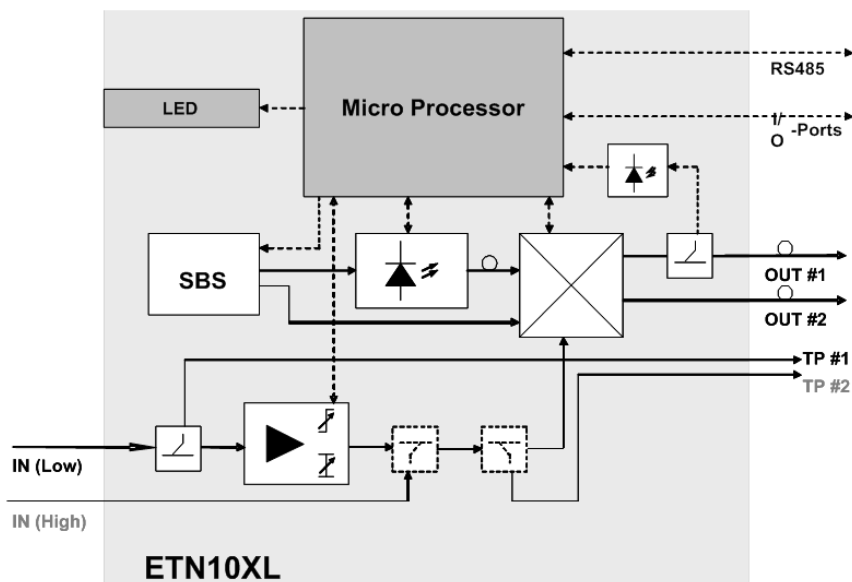
- ▶ External modulated 1550 nm DFB laser transmitter for electrical to optical conversion of multichannel CATV signals like AM-VSB, FM and QAM signals
- ▶ Enables the usage of optical amplifiers (EDFAs) as boosters or repeaters in order to realize large scale HFC networks
- ▶ Excellent performance in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

Features

- ▶ Front access RF input and optical output
- ▶ Low noise, narrow linewidth CW-DFB laser
- ▶ ITU-Grid wavelength
- ▶ Wavelength adjustable +/- 100 GHz
- ▶ Electrooptical modulator with 2 optical outputs
- ▶ Automatic load control (ALC)
- ▶ Adjustable RF slope
- ▶ > 2 x 10 dBm output power (ETN10XL-FA-100)
- ▶ Adjustable SBS threshold up to 19 dBm to increase transmission distance
- ▶ Dual RF inputs: low and high level inputs with high isolation
- ▶ RS485 remote supervision and control interface
- ▶ Front panel RF test points -20 dB



Block Diagram



Specifications subject to change without notice - DB_e_ETN10XL-FA_20160630

General Technical Data

Optical connector	Any type of high return loss connectors, front side mounted	
Optical fiber	Standard single mode 9/125 μm	
RF connector	F female, front side mounted	
Control interface	RS485 interface	
(Real) Power consumption	[W]	< 40
Enclosure	Module with 4 slots for 2G6 chassis	
Weight	[kg]	\approx 4.7
Safety	EN 60950, Laser class 1M according IEC 60 825-1 (eyesafe for normal viewing)	
EMC	EN50083-2	
Climatic specification		
Operation	ETS 300 019, class 3.1	
Storage	ETS 300 019, class 1.2	

Optical Properties

		ETN10XL-FA-85	ETN10XL-FA-100
Wavelength	[nm]	1548...1560 or ITU grid ch 21...37	
Side mode suppression	[dB]	> 30	
Wavelength adjustment range	[GHz]	-100, -50, 0, 50, 100	
Optical power	[dBm]	2x 8.5 min.	2x 10.0 min.
Relative intensity noise for CATV (for optical fiber return loss > 40 dB)	[dBc/Hz]	< -158 (typ. < -160)	
SBS-Suppression	[dBm]	Threshold adjustable between +13 and +19 dBm	
Laser linewidth (typical)	[MHz]	0.3	

Electrical Properties

RF frequency range	[MHz]	47 ... 1006	
Flatness	[dB]	< ± 0.75 (47 MHz...860 MHz)	< ± 1.5 (860 MHz...1006 MHz)
Nom. Input level per TV channel	[dB μV]	80	
Input level range (per carrier)	[dB μV]	78 ... 96 (for OMI= 5% per CATV carrier)	
True RMS input level range	[dBm]	-16 ... +2 (for ALC correctly working)	
Slope range	[dB]	-2 (cable equivalent) ... +8 (cable equalization)	
RF impedance	[Ω]	75	
Return loss	[dB]	> 20 (@ 47 MHz) – 1.5 dB/octave, minimum > 15	
Isolation between BC _{IN} and NC _{IN}	[dB]	> 50	
RF monitor output level	[dB]	-20 (+0.2 ... -0.8 dB @ 862 MHz, -1.3 dB @ 1 GHz)	

Performance Characteristics

Transmitter version		C42	D84	N77
Channel allocation plan for test		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]	65	65	65
CSO Link 2	[dBc]	63	65	65
CSO Link 3 at output #1	[dB]	62	63	65
CTB	[dBc]	65	65	65

Test Conditions

	Booster EDFA	1 st Fibre Length	In-Line EDFA	2 nd Fibre Length	RX
Tx/Rx	no	no	no	no	0 dBm
Link 1	no	35 km	no	no	0 dBm
Link 2	16 dBm	65 km	no	no	0 dBm
Link 3	13 dBm	52 km	13 dBm	52 km	0 dBm

RX with 7 pA/√Hz input noise current density
 EDFAs with 5dB noise figure
 RF input level at 80 dBuV / TV channel

Available ITU Grid Wavelengths

ITU Grid Ch. No.	DWDM Wavelength	ITU Grid Ch. No.	DWDM Wavelength
21	1558.98 nm	30	1553.33 nm
23	1558.98 nm	31	1552.52 nm
24	1558.17 nm	32	1551.72 nm
25	1557.36 nm	33	1550.92 nm
26	1556.55 nm	34	1550.12 nm
27	1555.75 nm	35	1549.32 nm
28	1554.94 nm	36	1548.51 nm
29	1554.13 nm	37	1547.72 nm

Other wavelengths on request!