



Optical Transmission



FTTB Fiber Node DOCSIS 3.1 – OFN80-FRx-yyyy-zz-dd

Features:

- Die-cast housing Docsis 3.1 fiber node for FTTB,
- Versions:
 - with separate forward and return fiber / with and without GPON block in forward path
 - WDM version – 1 Fiber for forward and return path
- Automatic Gain Control (AGC) / LED indication for optical input power
- Attenuation with PAD in forward path and reverse path
- Slope adjustment selectable with Jumpers 0dB / 2dB / 4dB / 6dB
- Return Path continuous or burst mode selected with Jumper
- CWDM return path wavelength available
- Attenuation in return path with PADs
- Ingress noise test/filter with Jumpers (0dB / 6dB / 40dB)
- 3 different versions of pluggable diplexers available: 65/85, 85/104 or 204/258
- Forward Frequency: 1218 MHz
- Build-in power supply 230VAC
- Fiber Tray front end optional for cable/connector access protection



Applications:

- Deep fiber CATV & RFOG HFC Networks
- Bi-directional Networks for TV broadcasting / Cable Modem Application based on DOCSIS 3.0 or DOCSIS 3.1 standard

TECHNICAL DATA

Naming convention:

Type coding	Code	Possible code values
OFN80-FR x -yyyy-zz-dd	FR x yyyy zz dd	F : Forward path / R : Return Path / x : L-low Power, H : high power Reverse Transmitter wavelength (details see below: e.g 1310/1610 etc) Feature field: 00 : no feature (2 fiber version) WF : GPON block filter in forward path (2 fiber version) 1F : WDM for forward and return path (1 fiber version) Diplexer f: 65 : 65/85MHz 85 : 85/104MHz 04 : 204/258MHz

Optical Characteristics forward path

Parameter	Unit	Value
Optical Input Wavelength	nm	OFN80-FRx-yyyy- WF -dd: 1545 .. 1565 OFN80-FRx-yyyy- 00 -dd: 1100 .. 1600 OFN80-FRx-yyyy- 1F -dd: 1545 .. 1565
Optical Input Power (max. range)	dBm	-10 .. +3 (beyond AGC range, RF output level will change with 2dB per 1dB optical level change / higher optical powers will destroy receiver PIN)
AGC range	dBm	-8... +2
LED forward path level indication	--	green: -8.0 .. +2.0dBm yellow: < -8.0dBm red: > +2.0 dBm
Equivalent noise current typ.	pA \sqrt /Hz	≤ 5
Optical return loss	dB	≥ 45

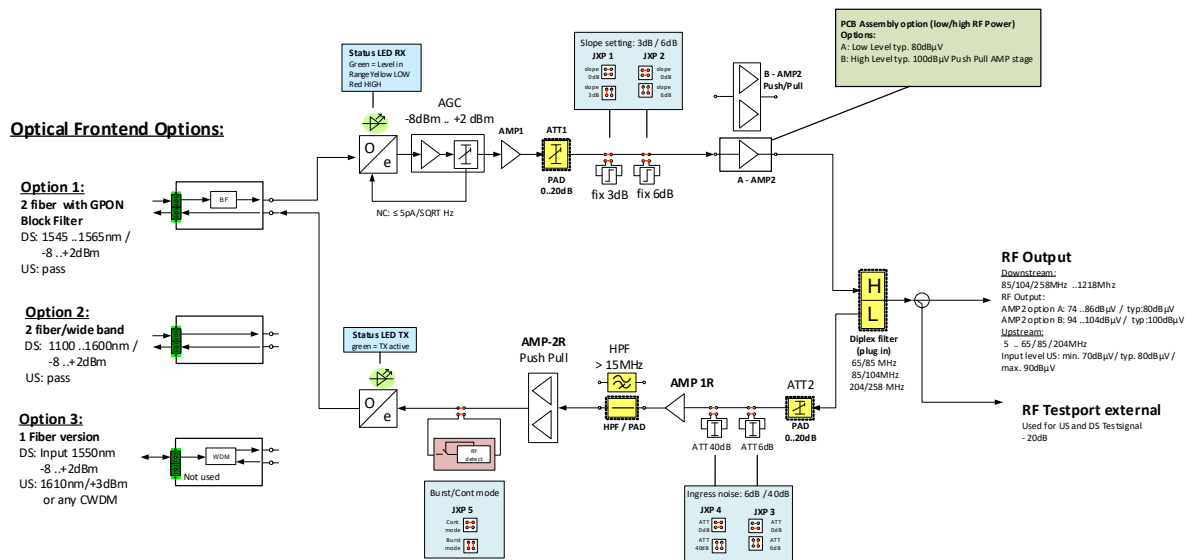
RF Characteristics forward path		
Parameter	Unit	Value
Diplex Filter configuration	MHz	65/85, 85/104, 204/258 (dd- code field)
Forward Frequency Range	MHz	85/104/258 – 1218 (dd- code field)
Flatness	dB	± 1.5
RF Level max. acc. EN 60728-3, 119 Channels, QAM 256: BER < 1E-9:	dBµV	OFN80-FRL-yyyy-zz-dd: 82 OFN80-FRH-yyyy-zz-dd: 100 (adjustment with PADs 0 ... 20dB)
Attenuation forward path	PADs	0 ..20dB Plugin PADs
Equalizer / Slope setting	dB	0 / 2 / 4 / 6 (fix adjustment with 2 Jumpers)
Return Loss	dB	≥ 18, > 40 MHz -1,5 dB / Oct.
Output Impedance	Ω	75
Test port	dB	-20 ± 1.0

Optical Characteristics return path		
Parameter	Unit	Value
Optical Wavelength (yyyy-code field)	nm	OFN80-FRx-yyyy- 00 -dd: yyyy=1270/1290 ... 1610 ± 3nm OFN80-FRx-yyyy- WF -dd: yyyy=1270/1290 ... 1610 ± 3nm OFN80-FRx-yyyy- 1F -dd: yyyy=1270/1290 ... 1490/1510/1590/1610 ± 3nm (1550±40nm not usable)
Optical Power	dBm	+3.0 ± 0,7 (DFB Laser)

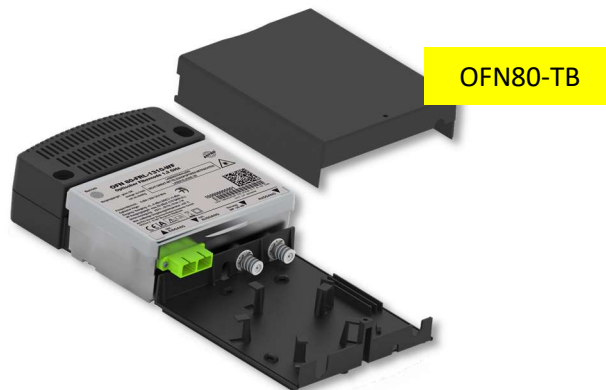
RF Characteristics return path		
Parameter	Unit	Value
Nominal RF upstream level acc. EN 60728-3 24 Channels, QAM 256, BER < 1E-9	dBµV	70 ... 90 (adjustment with PADs ATT2: 0 ... 20dB, if higher RF reverse input, use PAD ATT3 additional)
Frequency range upstream	MHz	5-65 / 5-85 / 5-204 (dd- code field)
Upstream PADs	dB	ATT2: first stage ATT PAD 0..20dB plugin socket ATT3: second stage ATT PAD 0 .. 10dB plugin socket or filter
Ingress noise blocking/testing	dB	0 / 6 / 40 (fix setting with Jumpers)
Mode of return laser	---	continuous or burst mode (selectable with Jumper)
Burst mode parameters / SCTE174_2010 7.1.3 FIGURE 4		
Laser turn on time	µs	≤ 1.3
Laser turn off time	µs	≤ 1.6
Laser turn on level	dBµV	67
Laser turn off level	dBµV	58
Remaining optical power laser off	dBm	≤ -30

General Characteristics		
Parameter	Unit	Value
Optical connector type	---	SC/APC duplex for 2 fiber type. If single fiber node: either duplex left coupler is used (right coupler no without function) or single coupler.
Fiber type	---	Single mode fiber 9/125
Power Supply	VAC/Hz	230 / 50
Power Consumption	W	≤ 7,5
IP Protection class	---	IP 20
Output connector / RF Test Port	---	F female
Operating Temperature Range	°C	-20...+55
Dimension (L x W x H)	mm	122 x 155 x 55

Block diagram



Accessories:



Fiber Termination BOX **OFN80-TB** for cable and port access protection. Including splice holders and overlength storage for fibers. Can be locked with sealing screw.