OX3 COMPACT OPTICAL NODE 1.2 GHz

OX3 is a compact 1.2 GHz optical node for deep, single-fibre networks. It uses a WDM to separate the RX from the CWDM TX wavelengths. The forward path uses Optical Level Control (OLC) and a high RF output amplifier stage. The power consumption is nevertheless low. The optical receiver and transmitter are integrated. Different split options are possible with the OX3K kit.

The OX3 is also available in a two-fibre configuration as the S4 model. This model allows receiving of the full 1270…1610 nm wavelength band while also being able to transmit any of the upstream wavelengths without limitation.

The upstream path can operate in either burst or continuous mode. In burst mode, the node utilises RFOG technology to effectively avoid the convergence noise in the return path of the CMTS according to SCTE-174-2010 standard. Adjustments are done with electrical circuits that are controlled with push buttons.

The OX3R can be remotely powered either via a dedicated F-connector at the side, or via an unused RF Out port. This allows the use of the existing coaxial network for remote powering when migrating to a fibre network. The node can also be used for remote powering of the network connected to the RF Out ports.

Features

- Built-in WDM, 2 wavelengths for single fibre
- Burst and continuous operational mode
- Downstream 1550 nm and 1310 nm models available
- Upstream CWDM
- 1218 MHz downstream and 204 MHz upstream supported
- Diplexer at output and plugin filters at forward and return paths
- Push buttons and LED indication for adjustments
- Excellent surge and ESD protection
- Optional two-fibre solution available (S4 model)
- 1 (CMX1) or 2 outputs (CMX4)

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Technical specifications

Optical (built-in WDM)			1)
Optical return loss		> 40 dB	
WDM wavelengths	Downstream	1550 ± 10 nm (S1) 1310 ± 10 nm (S2) 1310 ± 10 nm and 1550 ± 10 nm (S3) 1270…1610 nm ± 10 nm (S4)	
	Upstream	1270/1290/1310/1330/1350/ 1370/1390/1410/1430/1450/ 1470/1490/1510/1530/1550/ 1570/1590/1610 nm ± 5 nm	2)
WDM insertion loss		< 0.7 dB	
Downstream signal path			1)
Receiving wavelength		1550 ± 10 nm (S1) 1310 ± 10 nm (S2) 1310 ± 10 nm and 1550 ± 10 nm (S3) 1270…1610 nm ± 10 nm (S4)	
PIN tube responsivity		> 0.8 mA/mW	
Optical receiving power		-8…0 dBm	
OLC range		-5/-6/-7/-8…0 dBm adjustable	
Frequency range		85/105/258…1218 MHz	3)
Flatness		± 1 dB	
Return loss		> 18 dB	4)
Interstage attenuator		0…18, 1dB step	
Interstage slope		0…15, 1dB step	
Equivalent noise current		<6 pA/√Hz	
U_{max}		107 dBµV 110 dBµV (S4)	5)
C/CTB		≥ 62 dB	6)
C/CSO		≥ 60 dB	6)
Upstream signal path			1)
Output wavelength CWDM		1270/1290/1310/1330/1350/ 1370/1390/1410/1430/1450/ 1470/1490/1510/1530/1550/ 1570/1590/1610 ± 5 nm	2)
Laser mode		DFB, burst/continuous	7)
Optical output power		+3 dBm	
Frequency range		5 …65/85/204 MHz	
Flatness		± 0.75 dB	
Return loss		> 16 dB	
Adjustable attenuator		0…18, 1dB step	
RF input level		68…85 dBµV	8)
NPR dynamic range		5…65 MHz, 40 dB: 22 dB 5…65 MHz, 48 dB: 13 dB 5…204 MHz, 40 dB: 15 dB 5…204 MHz, 48 dB: 5 dB	8)
General			1)
Impedance		75 ohms	
Power consumption		16.5 W 18 W (S4)	9)
Supply voltage		OX3L: 180…255 VAC OX3R: 30…90 VAC	
Downstream test point (DS TP)		20 ± 1.5 dB	
Test point connectors		F-female	

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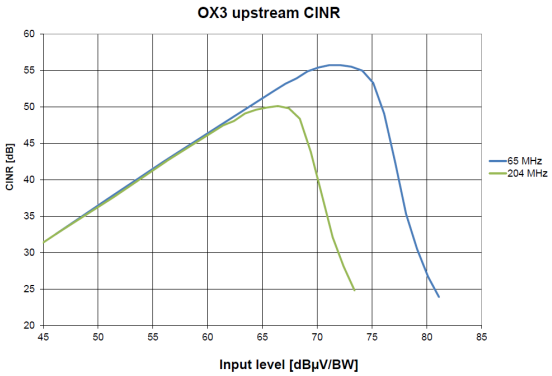
Optical connector	SC/APC8	
RF ports	5/8”	10)
Remote power at the side (OX3R)	5/8”	10)
Remote power bus (OX3R)	Max. 7 A	10)
Dimensions	220 x 210 x 80 mm (H x W x D)	
Weight	2 kg	
Operating temp	-20...+55 °C	
Humidity	Maximum 95% non-condensing	
Class of enclosure	IP50	
ESD	4 kV	
Surge	6 kV RF port 2 kV AC port	

Notes

1) Typical performance.
2) Technically possible wavelengths. Due to the WDM, 1550 nm cannot be used in upstream for S1. Note that 1530 nm and 1570 nm are dedicated S1 narrow-band models. For S2, 1310 nm cannot be used in upstream, and 1290 nm and 1330 nm are S2 narrow band models. Ask for availability of the narrow-band models before ordering.
3) Set by plugin diplexer and filters. Other frequencies and applications on request.
4) The limiting curve is defined at 40 MHz -1.5 dB/oct.
5) Based on OX3L with 1 output (CXM1). AGC -6…0 dBm, OMI 2.6%/ch, payload 112 chs 256QAM, 12 dB tilt between 258…1218 MHz, BER < 1.0E-09. In case of remote powering at the outputs (OX3R), output level will decrease with typical 1 dB. On request, OX3R can also be delivered without remote powering at the outputs.

   S4 performance based on OX3L with 1 output (CXM1). AGC -6…0 dBm, OMI 2.6%/ch, payload 138 chs 256QAM, 12 dB tilt between 258…1218 MHz, BER < 1.0E-9.
6) Based on OX3L with 1 output (CXM1). CENELEC 41, output level: 108 dBµV, EQ 6dB, AGC: -6…0 dBm, optical input power -5 dBm. Not applicable to S4.
7) Continuous wave versus burst mode is a selectable option in the software.
8) The 65 MHz loading is 6 x 256 QAM and 204 MHz loading is 23 x 256 QAM (6.9 Msymb/s).



9) FSK receiver increases power consumption by ≤ 0.5 W. The S4 model power consumption is about 1.5 W higher due to increased output level performance.
10) F-connectors can be used for feeding the node only, as current is limited. In case of higher currents via the RF-ports, it is advised to use different type of connectors (like IEC/M14).

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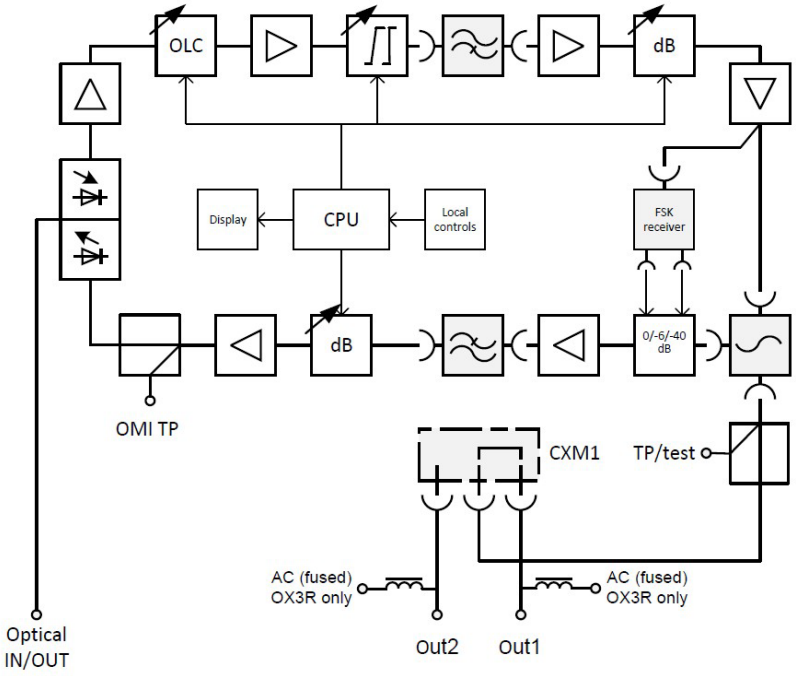
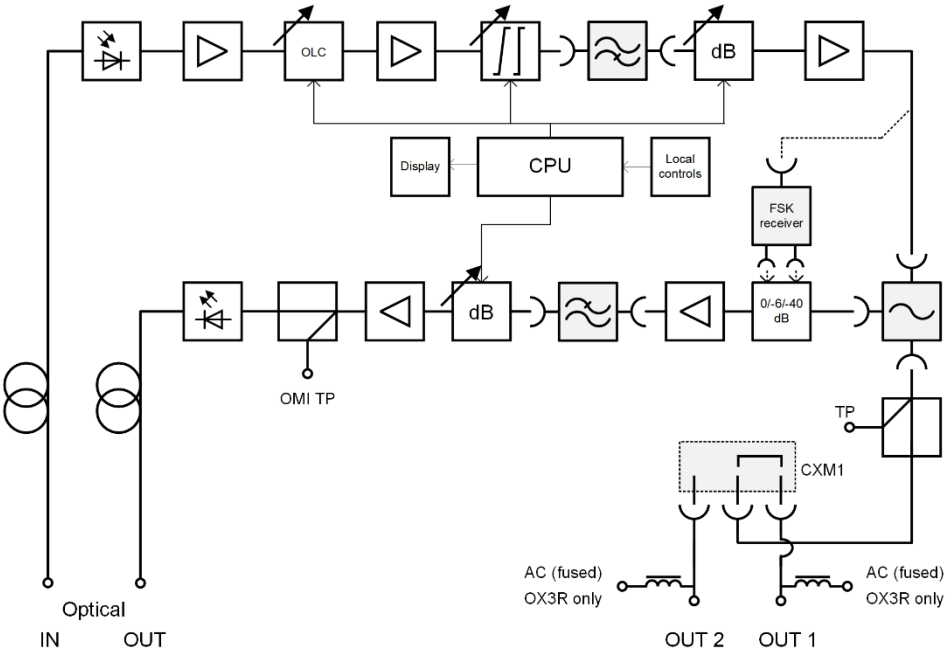
Block diagram

Models S1, S2 and S3:



Model S4:



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Ordering information

OX3vxxx-yyS1, single-fibre compact node, 1550 nm downstream

OX3L: 230 VAC cable at the side
OX3R: 65 VAC with F-female adapter at the side, no fuses — 1

- Upstream bandwidth xxx (065/085/204) — 1
- Upstream integrated CWDM transmitter, wavelength 1yy0 nm — 1
- One output (CXM1 output module) with F-female adapter — 1

OX3vxxx-yyS2, similar to S1 but with 1310 nm downstream

OX3vxxx-yyS3, similar to S1 with both 1310 nm and 1550 nm downstream windows

OX3vxxx-yyS4, dual-fibre compact node with 1270…1610 nm downstream window

Optional accessories

OX3K065	Diplexer/filter kit (65 MHz upstream)
OX3K085	Diplexer/filter kit (85 MHz upstream)
OX3K204	Diplexer/filter kit (204 MHz upstream)
CXM4	Two-way splitter module for 2 outputs
AD-012B	F-female adapter
CXT001	FSK receiver for Remote Ingress Switching
CXT002	Manual Ingress Switch

No mounting accessories included.

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