

## MO1004 2x2 SEGMENTABLE MODULAR OPTICAL NODE WITH REDUNDANCY OPTION



- Downstream frequency range up to 1006 MHz
- Upstream frequency range up to 204 MHz
- Optional connection to Monitoring System
- GaN output stage
- Optional CWDM return path
- Automatic optical gain control
- Automatic ingress management by the RSW module
- Redundancy option

### GENERAL DESCRIPTION

The MO1004 optical node can contain 2 receiver and 2 transmitter modules and allows several configurations depending on the used CM module. First configuration is 2 fully independent nodes in a common housing with common powering and management to achieve cost-effective work in case of segmenting both signal directions. Second configuration offers redundant work in both signal directions. Partial segmentation can be realized with 1 receiver and 2 transmitter modules, while the fourth configuration is a standard node with 1 receiver and 1 transmitter. By changing the CM module the configuration of the device can be modified without high expenses. The MO1004 node is available with either for HFC or for Fiber Deep network optimized circuitry.

### TECHNICAL SPECIFICATIONS

Forward path parameters	MO1004DH	MO1004DF
Wavelength [nm]		1100...1650
Input optical power [dBm]	-5...+3	-8...+3
Equivalent input noise current [pA/√Hz]		6
Frequency range [MHz]		47...1006
Equalizer breakpoint frequency [MHz]		862, 1006 <sup>(1)</sup>
Gain limited output RF level at 4% OMI/channel [dBμV]	118±1	115±1 @ 47MHz 125±1 @ 1006MHz <sup>(2)</sup>
Nominal slope [dB]	0	10 <sup>(2)</sup>
Flatness [dB]		±0.7
Output return loss (40MHz -1.5dB/octave) [dB]		>18
Input RF testpoint level at 4% OMI/channel [dBμV]	79±1	76±1 @ 47MHz 86±1 @ 1006MHz <sup>(2)</sup>
Output RF testpoint attenuation [dB]		30±1
CTB [dB]		-70 <sup>(3)</sup>
CSO [dB]		-68 <sup>(3)</sup>
Noise-to-power ratio (NPR) maximum / Dynamic range of NPR > 42 [dB]		>46 / 36 <sup>(4) (5)</sup>
Isolation between segments [dB]		>65

Specifications are subject to change without notice!

**Reverse path parameters**

Output optical power [mW]	2, 4 (3, 6 dBm) <sup>(6)</sup>
Wavelength [nm]	1310 DFB, 1270...1610 CWDM
Frequency range [MHz]	5...204
Diplex filter [MHz]	65/85, 85/105, 204/258
RF input level (10% OMI/channel) [dBμV]	78±1
Flatness [dB]	±0.5
Input return loss (40MHz -1.5dB/octave) [dB]	>18
Reverse path RF testpoint level [dBμV]	70+1/-2 <sup>(7)</sup>
Ingress control switch (RSW) states	0dB/-6dB/-50dB, 0dB/-6dB/-50dB/HPF20
Noise-to-power ratio (NPR) maximum / Dynamic range of NPR > 36 [dB]	45 / 9 <sup>(8)</sup>
Isolation between segments [dB]	>75

**General parameters**

RF connector	5/8"
Optical connector	SC/APC, EURO2000
Power supply voltage [VAC]	~ 30...65; □ 35...90
Maximum power consumption [W]	49
Maximum current feed-through [A]	10
Hum modulation [dB]	70
Screening factor [dB]	80
Degree of protection	IP65
Temperature range [°C]	-20...+50
Dimensions [mm]	275x200x175
Weight [kg]	5.2

(1) Defined by pluggable alignment modules

(2) Slope breakpoint frequency is adjustable via jumper (862 MHz or 1006 MHz)

(3) 60 dBmV at 1000 MHz, 22 dB extrapolated tilt, 79 analog + 75 digital channels (-6 dB offset)

(4) Measured with flat full spectrum load between 47 and 1006 MHz, 1.8% OMI/ch, received power -2 dBm

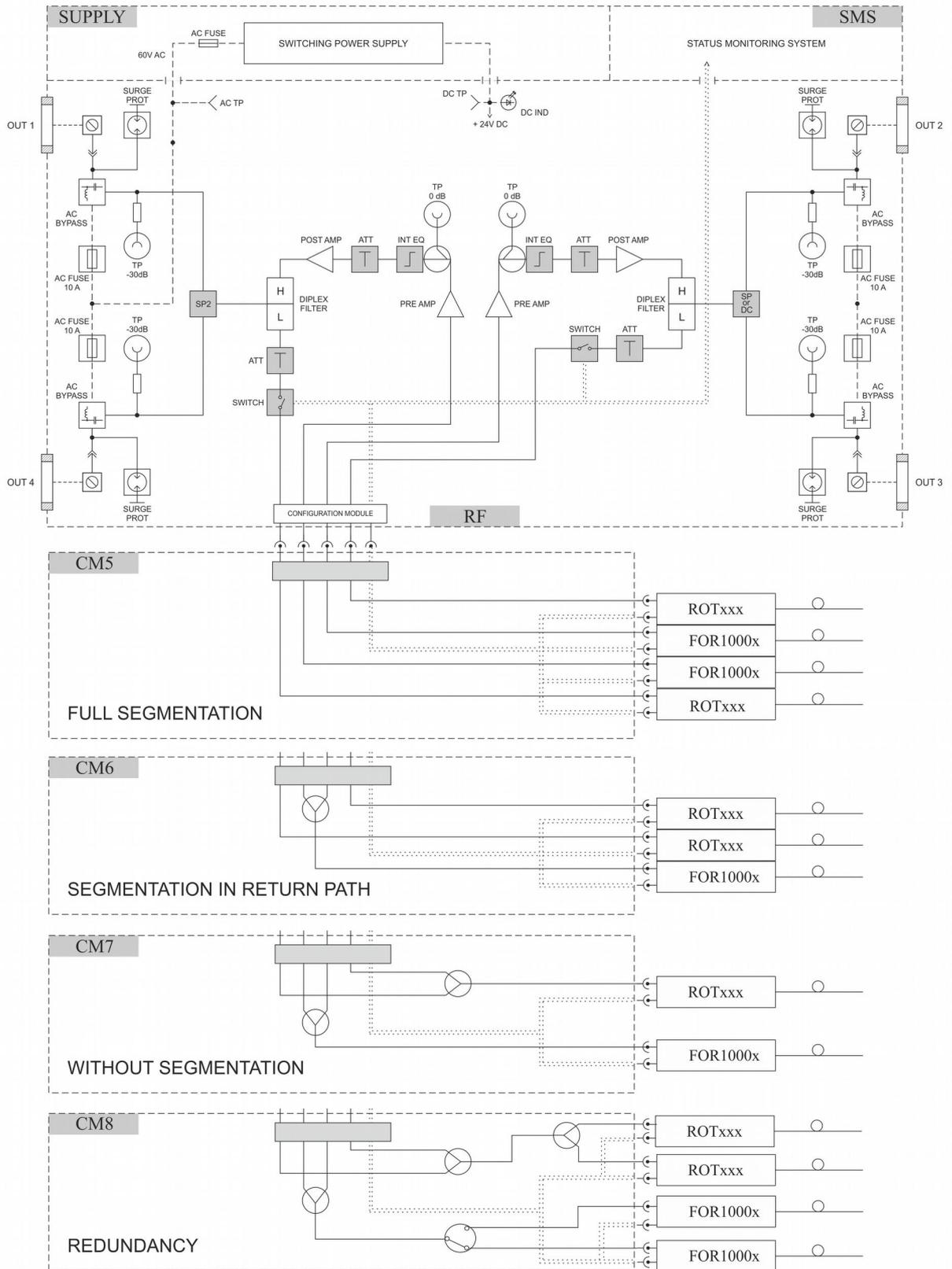
(5) NPR<sub>max</sub> at output level of 40 dBmV/ch

(6) 4 mW (6 dBm) output optical power is available only in case of CWDM reverse path lasers

(7) Value measured at 10% OMI/ch

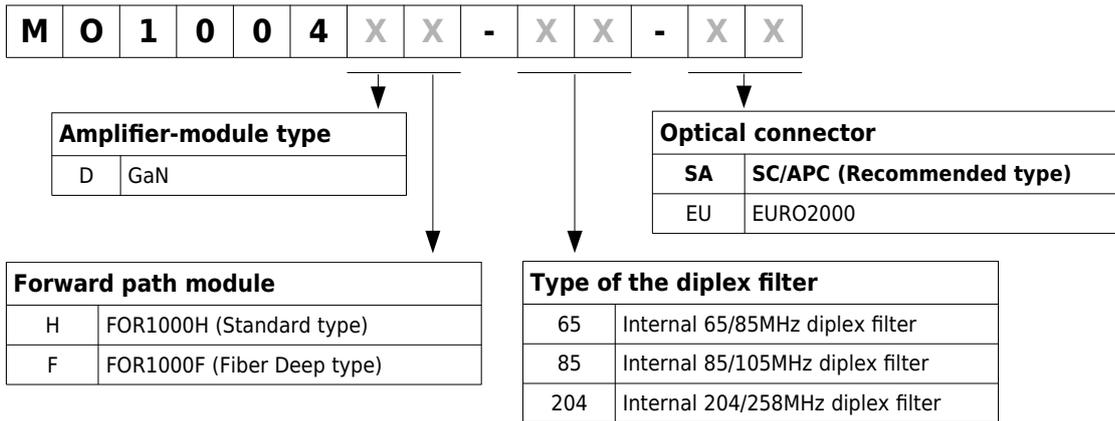
(8) Measured with flat full spectrum load between 5 and 204 MHz, received power -6 dBm

BLOCK DIAGRAM



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ORDERING INFORMATION



Option	Required modules	Ordering codes
Monitoring option	1pc NMT-FE, 2pcs RSW2-A or 2pcs RSW2-H20	NMT-FE, RSW2-A, RSW2-H20
Wall mount kit	1pc WMK-1 (double)	WMK-1
ONU manhole assembly	1pc ONU-M	ONU-M

CONFIGURATION POSSIBILITIES

Segmentation in forward and return path	Required modules	Ordering codes
Configuration module	1pc CM5 configuration module	CM5
Return path optical transmitter(s)	2pcs ROTxx2D, ROTxxxC	ROTxxx-xxxx-xx
Forward path optical receiver(s)	2pcs FOR1000x (one is contained)	FOR1000x-xx
Segmentation in return path	Required modules	Ordering codes
Configuration module	1pc CM6 configuration module	CM6
Return path optical transmitter(s)	2pcs ROTxx2D, ROTxxxC	ROTxxx-xxxx-xx
Forward path optical receiver	1pc FOR1000x (contained)	FOR1000x-xx
No segmentation	Required modules	Ordering codes
Configuration module	1pc CM7 configuration module	CM7
Return path optical transmitter(s)	1pc ROTxx2D, ROTxxxC	ROTxxx-xxxx-xx
Forward path optical receiver	1pc FOR1000x (contained)	FOR1000x-xx
Redundancy in forward and return path	Required modules	Ordering codes
Configuration module	1pc CM8 configuration module	CM8
Return path optical transmitter(s)	2pcs ROTxx2D, ROTx0xC	ROTxxx-xxxx-xx
Forward path optical receiver(s)	2pcs FOR1000x (one is contained)	FOR1000x-xx

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