The Motorola 1 GHz Modular Pedestal Node (MPN100) provides operators with a high degree of performance, reliability and flexibility within a street cabinet style form factor. The MPN100 leverages the SG4000 advanced modules to provide solutions for large Multiple Dwelling Units (MDU), Fiber-to-the-last-Active (FTTLA) and pedestal installations.

Overview

The versatility of the MPN100 allows operators to deploy custom blends of Hybrid Fiber Coaxial (HFC) plant segmentation, perform Node-to-Hub migrations, launch RF over Glass (RFoG) overlays or extend profitable Commercial Services offerings. The MPN100 accommodates up to four RF outputs, each powered by an independent RF module with Gallium Nitride (GaN) technology. The MPN100 accepts up to six optics modules for migration to redundant and segmented configurations. The housing base router board accepts up to four configuration boards that direct signal flow in the forward and return path. The MPN100 can be configured with redundant network power supplies, features a dedicated AC powering port and Fast Transfer Electronic Clamp (FTEC) surge protection for added reliability. Optional return path Ingress Control Switches (ICS) and local receiver A/B switching are controlled by the Embedded Plug-In Module (EPIM) that also serves as the communications link to Motorola's DOCSIS or Euro-DOCSIS status monitor transponders for remote monitoring and control of the node.

FEATURES

1 GHz GaN performance

Up to four active RF outputs

Up to two optical receivers

Up to four return transmitters

Dedicated powering port

Multi-wavelength solutions

FORWARD PATH

The standard MPN100 HFC node configuration features a single high-output SG4-R-100 optical receiver that delivers downstream content to a single forward split configuration board. The two-stage receiver features an optical power DC voltage test point, wavelength selection jumper, -20 dB RF test point, JXP style inter-stage pad location, and utilizes a Linear Mid-Stage Equalizer (LME) to develop a portion of the overall node output slope.
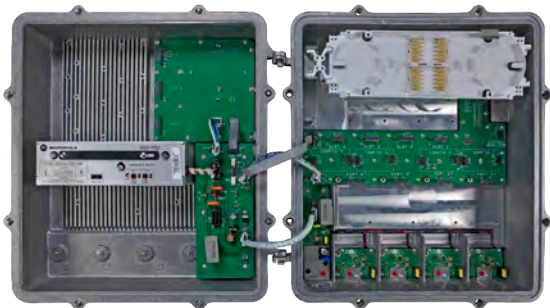
The forward split board, in turn, splits the signal and delivers it to up to four individual RF modules. The RF modules contain all forward and return RF diplexing circuitry for each port, thereby providing superior port-to-port isolation performance. Station reliability is further increased since each RF port is an independent module and immune from the single point of failure common in traditional one-piece RF motherboard designs. The RF modules feature forward and return JXP pad locations, with the common forward test points being accessible through the housing lid for convenient level verification. The AC power-passing circuitry has been removed from the RF modules and is located in the housing port entry platforms for further dependability. A second receiver and a forward split redundant configuration board can be added to provide forward path redundancy to all four ports. Redundant configurations require the use of the Embedded Plug-In Module (EPIM) and/or status monitor transponder. Likewise, you can use a second receiver in conjunction with two forward segment boards to segment the forward path so that each receiver provides unique content to a pair of RF outputs.

RETURN PATH

The standard MPN100 HFC node return path configuration combines all four RF returns using a return combined redundant configuration board to drive a single analog 1310 or CWDM Distributed Feedback (DFBT) transmitter. All of the Motorola transmitters have an integrated RF amplifier and the necessary active circuitry required to drive the laser at optimal performance while minimizing set-up time. The transmitters feature 5-85 MHz RF bandwidth, JXP pad location, DC optical power test point, and RF input test points. An additional transmitter can be added to provide return path link redundancy, whereby the combined RF signals are input to each transmitter and the transmitters return to the Headend on separate fiber links. Segmentation can be achieved by using two split return 2X configuration boards that place one pair of RF returns onto each transmitter. The transmitters can utilize separate fibers or, if CWDM is chosen, then the transmitters can be optically combined onto a single fiber using ruggedized optical passives. To achieve full 4X return segmentation, two return segment 4X configuration boards and four analog transmitters can be configured to provide each RF return with a unique transmitter or wavelength.

When link distances or aggregation requirements exceed CWDM, any two analog transmitters can be replaced by a single Motorola high speed 5-65 MHz 2X digital return transmitter. These transmitters Time Domain Multiplex (TDM) two RF returns and digitize them into a high-speed data stream that drives a +8 dBm laser based on the International Telecommunications Union (ITU) frequency grid plan spaced at 200 GHz. At the receive location, the GX2-DRR-2X receives the optical signal and reconstructs the RF outputs. The system is compatible with Motorola Erbium Doped Fiber Amplifiers (EDFA) and provides excellent Noise Power Ration (NPR) link performance.

Order Information

Part Number	Model	Description
MPN100		
960000-020-00	MPN100-SAG-SNB-29-ENS	MPN100 1003 MHz Node, 5-65 MHz, GaN, SC/APC, NO RX, four RF modules, split return 2X, DRT-2X CH29 ITU, EPIM & ICS, single power supply
583321-001-00	MPN-HSG-LID	MPN-HSG-LID,SPARE HSG LID
583322-001-00	MPN-HSG-BASE	MPN-HSG-BASE,SPARE HSG BASE
583323-001-00	MPN-HSG-SPARE-R	MPN-HSG-SPARE,SPARE HSG BASE & LID
HFC RF Modules		
525407-001-00	SG4-RF-100-S-R	RF MODULE, 1 GHZ, STD TILT, 5-40/52-1003 MHZ
525407-002-00	SG4-RF-100-J-R	RF MODULE, 1 GHZ, STD TILT, 5-55/65-1003 MHZ
525407-003-00	SG4-RF-100-A-R	RF MODULE, 1 GHZ, STD TILT, 5-65/85-1003 MHZ
525407-004-00	SG4-RF-100-K-R	RF MODULE, 1 GHZ, STD TILT, 5-42/54-1003 MHZ
525407-006-00	SG4-RF-100-N-R	RF MODULE, 1 GHZ, STD TILT, 5-85/104-1003 MHZ
525407-007-00	SG4-RF-100-A-G-R	SG4-RF-100-A-G, SPARE RF MODULE, A SPLIT, GAN
525407-008-00	SG4-RF-100-N-G-R	SG4-RF-100-N-G, SPARE RF MODULE, N SPLIT, GAN
HFC Transmitter Modules		
531915-001-00	SG4-DFBT/SC-R	SG4-DFBT/SC-R, DISTRIBUTED FEEDBACK 1.0 MW
531916-001-00	SG4-DFBT3/SC-R	SG4-DFBT3/SC-R, DISTRIBUTED FEEDBACK 2.0 MW
531917-TAB-00	SG4-DFBT3-*-CWDM/*	SG4-DFBT3-*-CWDM/SC-R, 2.0 MW, 8 CWDM
536245-TAB-00	SG4-DRT-2X-CHXX-R	SG4-DRT-2X-CH-XX-R/SC, 2X TDM 5-65 MHZ, DWDM
553861-TAB-00	SG4-ITU-CHXX-R	SG4-ITU-CHXX-R, TRANSMITTER, 5-200MHz, ITU
HFC Receiver Modules		
525408-001-00	SG4-R-100/SC-R	SG4-R-100/SC, OPTICAL RECEIVER, 1 GHZ
Optical Connectors		
486438-001-00	SC/E2000	OPTICAL BULKHEAD ADAPTOR CONVERT SC TO E2000
HFC Power Supplies		
555688-001-00	MPN-PS	MPN 60/90 V PS FOR REDUNDANCY, ROHS, FG
HFC Configuration Boards		
503855-011-00	SG4-100-FS-R	FORWARD SPLIT, SINGLE RX TO 4 RF OUTPUTS
503855-012-00	SG4-100-FRS-R	FORWARD REDUND. SPLIT, TWO RED. RX TO 4 RF
503855-013-00	SG4-100-FWD-2X-R	FORWARD 2X SEGMENT, SINGLE RX TO SUPPLY 2 RF
503855-016-00	SG4-100-RET-COMB-RED-R	RETURN COMBINED REDUNDANT, COMBINES UP TO 4 RETURNS
503855-017-00	SG4-100-RET-2X-RED-R	RETURN 2X REDUNDANT, COMBINES TWO RETURNS
579535-001-00	MPN100 RF CABLE KIT	ACCESSORY CABLES FOR RF CONFIGURATIONS

Order Information (continued)

Part Number	Model	Description
Element Management Components		
532239-001-00	SG4-EPIM-R	REQ. FOR REDUNDANCY, ICS AND TRNSPNDR
548568-003-00	NODE-EURO-DOCSIS	EURO-DOCSIS 2.0 TRANSPONDER, EURO-DOCSIS
548568-004-00	NODE-DOCSIS	DOCSIS 2.0 TRANSPONDER, DOCSIS
HUB Components		
537693-001-00	SG4-OSW-R	SG4-OSW-R, OPTICAL SWITCH, 1310 & 1550NM
534226-001-00	SG4-OA13-R	SG4-OA13-R, EDFA, 13DBM SINGLE OUTPUT, DWDM
534226-002-00	SG4-OA16-R	SG4-OA16-R, EDFA, 16DBM SINGLE OUTPUT, DWDM
534226-003-00	SG4-OA19-R	SG4-OA19-R, EDFA, 19DBM SINGLE OUTPUT, DWDM
RFoG Components		
568847-002-00	SG4-RET-RX-2/SC-R	SG4-RET-RX-2/SC-R, RFoG DUAL RETURN RECEIVER

Specifications

OPTICAL

Optical Received Wavelength	1290 to 1580 nm
Optical Input Power Range	–3.0 to +2.0 dBm
Optical Connector Type	SC/APC
Optical Input Return Loss	45 dB min.

RF

Forward Bandwidth	54-1003 MHz depending on diplex
Flatness	± 0.75 dB
Output Slope	14.5 dB standard
Gain Stability	± 1.5 dB
RF Output Test Points	–20 dB
RF Output Return Loss	16 dB min.
Return Bandwidth	5-200 MHz depending on diplex

STATION PERFORMANCE

Output Level	+55 dBmV @ 1003 MHz w/ –3 dBm input
Power Consumption	104 W max.
Hum Modulation	–60 dBc
AC Bypass Current	15 A Max.
Isolation	–70 dBc 52-550 MHz –65 dBc 550 - 1 GHz

NTSC

Measured with 79 channels at 48 dBmV @ 547.25 MHz with digital loading 6 dB below analog, 14.5 dB output tilt, 20 km optical link, 0 dBm optical input power, 4% OMI, GX2 transmitter

Composite Triple Beat (CTB)	–65 dBc
Composite Second Order (CSO)	–62 dBc
Carrier to Composite Noise (CCN)	50 dB

MER

48 dBmV output level @750 MHz with –4dBm optical power using an EA1000 in preset mode. Transmitter input of +15 dBmV per channel for 82 channels (111 to 750 MHz) with an 8 MHz channel bandwidth; 256 QAM per ITU J.83, Annex-A.

MER	40 dB Typical

MECHANICAL/ENVIRONMENTAL

Dimensions	400 mm x 450 mm x 197 mm
Weight	17 kgs
Mounting	Pedestal
RF Connector	SCTE-compliant 5/8" housing, accepts 1.6" stinger
Operating Temperature Range	–40 °C to +60 °C
Weather Rating	IP 68

Specifications are subject to change without notice.

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