CHP Max Headend Optics Platform

CHP-DFRX* and CHP-SFRX*

1.2 GHz Redundant Forward Path Receivers

FEATURES

- 1.2 GHz bandwidth meeting DOCSIS® 3.1 requirements
- Optimize headend and hub efficiencies with industry leading density and low power consumption of 20 receivers per 2RU chassis
- Optional optical path resiliency and hardware redundancy for increased network availability
- Hot-swappable capability reduces system downtime
- Front or rear fiber connector options simplify installation and cable management
- Configure, monitor, and manage with CORView™ Element Management System
- Dual or Single Density options available

PRODUCT OVERVIEW

Designed to accept an optical forward path signal from a CHP Forward Path Transmitter, ARRIS CHP Max5000® 1.2 GHz Redundant Forward Receivers are an integral part of the CHP Max5000 platform. CHP Max5000 converges headend, hub, and digital transport onto one scalable 2RU system, allowing service providers to accelerate deployment of video on demand, high speed data, telephony and other advanced services. 1.2 GHz Redundant Receivers are available in front fiber (CHP-DFRXF) and rear fiber (CHP-DFRXR) options as well single or dual density.

The CHP Max5000® 1.2 GHz Redundant Forward Receiver can operate as either a standalone receiver, or operators can configure it as a redundant receiver with the addition of a second module and a Redundant Communications Link Cable (RCL2). The latter configuration provides optical path resiliency and hardware redundancy to maintain uninterrupted service availability in the event of optical path or hardware failure. If the optical path or a hardware component does fail, the automatic switchover time is approximately 50 ms. In addition, the CHP Max5000 platform allows operators to set the optical input and RF output thresholds for switching to the redundant module. Operators can locate redundant modules in the same CHP chassis or in a different rack located within the maximum RCL2 length of 6 meters (20 feet). The system generates a major alarm if either the optical input power or RF output power exceeds a user-defined major high limit or drops below a user-defined major low limit.

The CHP Max5000 1.2 GHz Redundant Forward Receiver is designed for both O-Band and C-Band network architectures and has an input power range from –10 to 4 dBm. It provides a high RF output of up to 1218 MHz with a noise contribution of less than 4.5 pA/Hz^0.5, which eliminates the need for additional RF amplification when combining multiple circuits.

The receiver's front panel includes module and channel status LEDs and module monitor and RX select buttons, which can be locked out by the local Craft Management Graphical User Interface for security purposes.

Features

- Optical input range of –10 to 4 dBm at the receiver
- RF output level adjustment per channel via CMM or SMM
- High RF output of 40 dBmV/channel with 0 dBm input reduces the need for an external RF amplifier
- Front-panel RF test point for convenient monitoring
- Local or remote monitoring
- Downloadable firmware upgrades

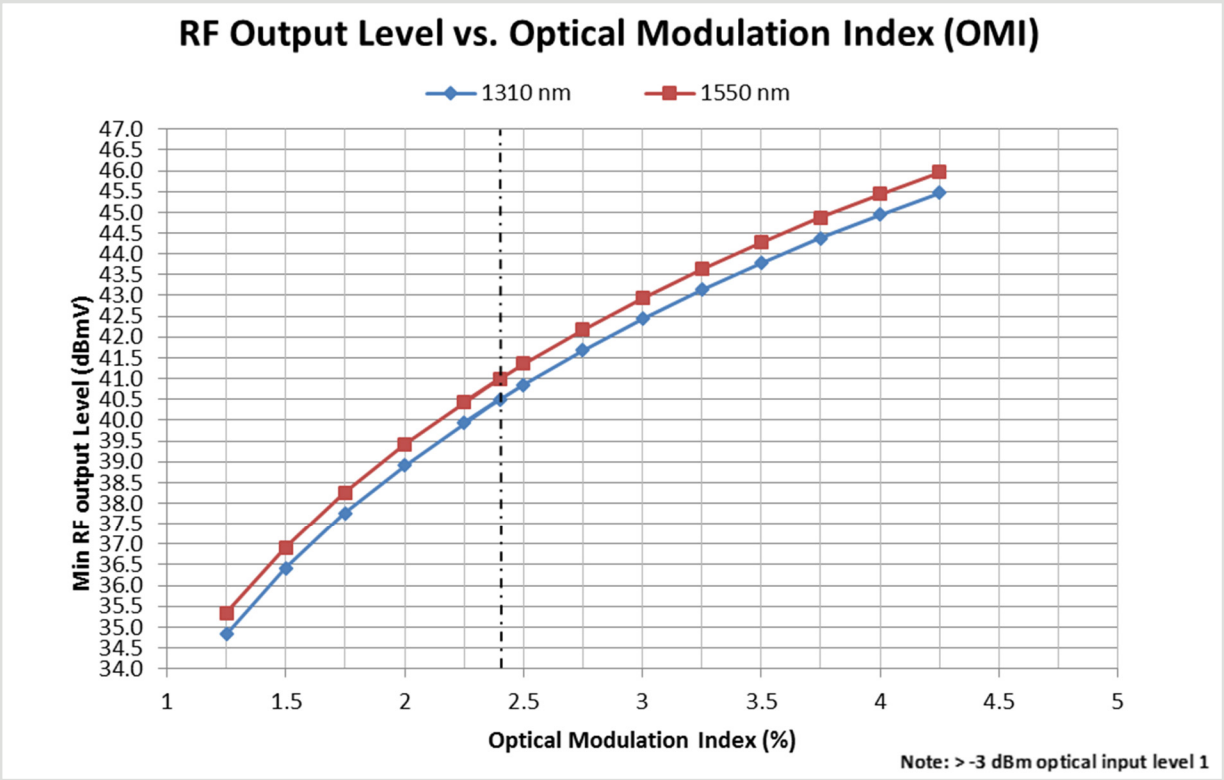
RELATED PRODUCTS	
CHP Chassis	Optical Patch Cords
Power Supplies	Optical Passives
CORView™ Element Management System	

SPECIFICATIONS

Optical	
Input Wavelength Range	1200 – 1600 nm
Input Power Range	–10 to +4 dBm
Input to Terminated RF Output Isolation	> 70 dBc (42 MHz to 1218 MHz, referenced to RF Output Level)
Test Point Monitor	1.0 ± 10% mW/V (accuracy verified by Craft Software)
RF	
Passband	42 to 1218 MHz
Output Level, Min	40 dBmV/channel at 1218 MHz with minimum attenuation under all slope settings (Note 1)
Output Stability	± 1.0 dB (referenced to +25°C)
Output Return Loss	≥ 16 dB (both "On" and "Terminated" States)
Test Point Accuracy	–20 ± 0.75 dB (referenced to RF Output)
Gain Slope	± 1.0 dB (42 MHz to 1218 MHz using a least squares curve fit)
Attenuator Adjustment Range	0 to 16 dB (in 0.25 dB steps)
Performance	
Equivalent Input Noise	< = 4.5pA/sqrt (Hz)
Channel-to-Channel Isolation	≥ 65 dB dBc (42 MHz to 1218 MHz, referenced to RF Output Level)
Spurious Signals	≤ –65 dBc (referenced to RF Output Level)
Optional Plug-In Slope Adjustment (1 dB step values)	0 to 7 dB (42 MHz to 1218 MHz using a least squares curve fit)
Flatness	± 1.0 dB (with respect to Slope Adjustment)
Redundant Switching Time	≤ 50 ms
79 NTSC Channels + 450 MHz Digital Loading at –6 dBc	Input: > –3 dBm to 0 dBm output @ 40 dBmV (see Note 3)
CTB	< –67 dBc (see Note 2, 4), typical
CSO	< –63 dBc (see Note 2, 4), typical
1164 MHz Digital Loading (54-1218 MHz) MER	Input: > –3 dBm to 0 dBm output @ 37 dBmV 41 dB (see Note 2, 6)
BER (Pre-FEC)	1E-10 (see Note 6)
Power Consumption, maximum	16 W Dual (8 W per receiver), 10 W Single
Mechanical	
Optical Connector	SC/APC
Dimensions	1.25 x 3.4 x 18.5 in (3.2 x 8.7 x 47.0 cm)
Weight	3.0 lb (1.4 kg)
Environmental	
Operating Temperature Range	32°F to +122°F (0°C to +50°C)
Operating Humidity, noncondensing	10 to 90%

NOTES:

1. The graph below shows the minimum forward receiver output level for the stated transmitter optical modulation index per RF channel, with the receiver optical input set to –3 dBm and internal attenuator set to 0 dB. To determine the RF output levels at other optical input power levels, subtract (or add) 2 dB of RF level for every 1 dB decrease (or increase) in optical input power. The output level at 1550 nm is approximately 0.5 dB higher than at 1310 nm for the same OMI and input power level.
2. Performance listed indicates "receiver only" non-linear distortion performance. This performance is back calculated using transmitter specifications and actual performance relative to a reference optical receiver. Reference DVT test procedure (ARRIS Document # 1501302) for test methodology. Reference test procedure ANSI/SCTE 06 2009 for CTB and CSO measurement standards.
3. 79 NTSC channels loaded from 55.25 MHz to 547.25 MHz plus 75 channels of 256QAM from 555-999 MHz at ¬6 dBc below equivalent analog channels. Maximum composite receiver output power is 60 dBmV.
4. Minimum 40 dBmV/Channel at 547.25 MHz and 34 dBmV/channel digital loading from 552 MHz to 1002 MHz with 0 dB attenuation and slope.
5. CIN (Composite Intermodulation Noise) is defined as the ratio of the carrier to the noise-like signals generated by the non-linearity of a broadband transmission system carrying a combination of analog and digital signals. These distortion products are analogous to the CSO and CTB products generated by the analog carriers, but due to the pseudo-random nature of the digital modulation signals, appear as noise like interference. Reference test procedure ANSI/SCTE 17 2001 (Test procedure for Carrier to Noise) for CIN measurement standards.
6. ITU-T J.83 Annex B QAM 256 Channels, 54-1218 MHz.



ORDERING INFORMATION

1.2 GHz Redundant Forward Path Receiver

				1	2	3	4	5		6	7		8
C	H	P	-	x	F	R	X	x	-	1	2	-	S

1-4	Module Type
DFRX	Redundant dual channel 1.2 GHz forward path receiver
SFRX	Single channel 1.2 GHz forward path receiver
5	**Fiber Orientation**
x	F = Front R=Rear
6-7	**Bandwidth**
12	1.2 GHz
8	**Connector Type**
S	SC/APC

Customer Care

Contact Customer Care for product information and sales:

- United States: 866-36-ARRIS
- International: +1-678-473-5656

Note: Specifications are subject to change without notice.

CHP_DFRX-SFRX_DS_22SEP16

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