

# RF over Glass (RFoG)

## CP85x4U/6U/7U/8U-00

### RFoG MDU R-ONU Family with 42/54, 65/85, and 85/102 MHz Options

## FEATURES

- Supports multi-subscriber applications while conforming to key elements of the SCTE174 RFoG Standard
- 1550/1610 nm or 1550/1310 nm optical channel plans supported
- High RF output levels support Multi-Dwelling Unit (MDU) or multiple subscriber applications
- Optical automatic level control (ALC) maintains RF output levels over a wide range of optical inputs
- 5-42, 5-65, or 5-85 MHz return options on 1610 nm or 1310 nm
- 54 to 1002, 85 to 1002, or 102 to 1002 MHz forward options on 1550 nm
- PON pass-through and no PON pass-through options
- RF test point facilitates ease of installation and troubleshooting
- DC power supported via RF port or dedicated power port
- Indoor and outdoor mounting options



## PRODUCT OVERVIEW

To support MSOs in the deployment of Fiber to the Premises (FTTP) networks, ARRIS offers a family of RFoG Optical Network Unit (R-ONU) CPEs as part of complete end-to-end RFoG solutions, including the ARRIS chassis-based OR3144H Quad Diplexer/Return Receiver (with enhanced return path performance for DOCSIS® 3.0), VHub™-based OR4148H Quad Diplexer/Return Receiver (for extended reach applications), as well as AgileMax® platform solutions. The CP85x4U/6U/7U/8U MDU R-ONUs are available with three bandwidth options: 5-42 MHz return with 54-1002 MHz forward, 5-65 MHz return with 85-1002 MHz forward, or 5-85 MHz return with 102-1002 MHz forward, all using 1550 nm downstream and 1610 nm upstream wavelengths.

The CP85x4U/6U/7U/8U MDU RONU is a 1 GHz RFoG Optical Network Unit that converts optical signals to RF signals at the customer premises. Internal optical filtering ensures the R-ONU can be safely deployed in a system with 1 GE (1490 nm) or 10 GE (1577 nm) PON downstream signals overlaid onto the same fiber without the need for any additional filtering, allowing operators to deploy advanced services as required. The CP85x4U/6U/7U/8U devices incorporate thermally stable DFB laser technology for optimal upstream digital return performance; local powering adapter or UPS solutions; rugged construction; plus weatherproof outdoor enclosures and indoor mounting solutions. 1610 nm MDU R-ONUs with a PON pass-through feature are also available: CP85x6U-00 (1GE) and CP85x8U-00 (10GE/1GE), to directly support compatible PON equipped subscriber premise equipment.

Combined with the ARRIS portfolio of multiwavelength transmitters, a wide selection of optical passives, VHub™, low noise return receivers, and AgileMax® solutions, the CP85x4U/6U/7U/8U RONUs leverage existing HFC infrastructures and back office systems to provide cable operators with the ability to extend their fiber networks easily, incrementally, and economically.

## SPECIFICATIONS

Characteristics	Specification
<b>Physical</b>	
Dimensions	6.4" W x 4.1" H x 1.5" D (16.3 cm x 10.4 cm x 3.8 cm)
Weight	1.0 lb (0.45 kg)
<b>Environmental</b>	
Operating temperature range	-40° to +65°C (-40° to 149°F)
Storage temperature range	-40° to +85°C (-40° to 185°F)
Humidity	5% to 95% non-condensing
<b>Power Requirement</b>	
Input voltage range	10 to 18 V <sub>DC</sub> (from wall adapter or UPS, see Ordering Information)
Power consumption, typical	6.0 W
<b>Connectors</b>	
Optical interface (RF)	IEC 61754-4 compliant SC/APC recessed female fiber connector for 1550/1610 nm RF
Optical interface (PON pass-through models only)	IEC 61754-4 compliant SC/APC recessed female fiber connector for 1490/1310 nm or 1577/1270 nm GE PON
Combined RF and DC interface	75 ohm coax "F-female" connector
Pass-through V <sub>DC</sub> power port	75 ohm coax "F-female" connector
Forward path RF -20 dB test point	75 ohm coax "F-female" connector
<b>Downstream</b>	
<b>Optical Receiver</b>	
Input wavelength	1525–1565 nm
Input power range <sup>9</sup>	+1 to -5 dBm
<b>RF Performance</b>	
RF passband	54 to 1002 MHz (CP8514U/6U/7U/8U); 85 to 1002 MHz (CP854U/6U/7U/8U); 102 to 1002 MHz (CP8598U)
Channel loading	74 NTSC (up to 550 MHz) +75, 256 QAM at -6 dBc (550-1002 MHz); 149, 256 QAM channels (102-1002 MHz)
RF output level @ 1002 MHz <sup>1</sup>	36 dBmV
Gain Slope <sup>2</sup>	5 ±2 dB
Flatness, max <sup>3</sup>	± 1.5 dB
Output level stability	± 2.0 dB (over optical input power range)
Link performance <sup>4</sup>	
CCNR <sup>5</sup>	> 48 dB
CSO	< -60 dBc
CTB	< -60 dBc
Link performance <sup>5</sup>	
MER	> 38 dB
BER (Pre-FEC)	< 1x10 <sup>-6</sup>
<b>Upstream-Return Path</b>	
<b>Optical Transmitter</b>	
Transmission wavelength	1610 nm ± 10 nm (CP85x6U/7U/8U); 1310 nm ± 50 nm (CP85x4U)
Output power	3.0 ± 1.0 dBm
<b>RF Performance</b>	
Passband	5–42 MHz (CP8514U/6U/7U/8U); 5–65 MHz (CP8544U/6U/7U/8U); 5–85 MHz (CP8598U)
RF input range	7–21 dBmV/ch
Transmitter OMI <sup>7</sup>	30%
Squelch threshold	5 dBmV ± 1.0 dB
Dynamic range @ 30 dB NPR <sup>8</sup>	15 dB

## SPECIFICATIONS CONTINUED

Characteristics	Specification
<b>PON Performance</b>	CP85x6U and CP85x8U Only
Receive input wavelengths	1575 – 1580 nm (10 Gbps) and 1480 – 1500 nm (1 Gbps); (CP85x6U limited to 1480 – 1500 nm 1 Gbps only)
Transmit wavelengths	1260 – 1280 nm (10 Gbps) and 1260 – 1360 nm (1 Gbps); (CP85x6U limited to 1260 – 1360 nm 1 Gbps only)
Isolation – 1550 nm to PON, min	-50 dB
Isolation – 1610 nm to PON, min	-15 dB
Isolation – 1577/1490 PON to RFoG	-50 dB
Isolation – 1310/1270 PON to RFoG	-25 dB
<b>Status Indicator LED</b>	
Green = optical input power	≥ -12 dBm (± 1 dB)
Red = optical input power	< -13 dBm (± 1 dB)
<b>Standards and Certifications</b>	
EMI/EMC complies with FCC Class B and ANSI/SCTE 174 2010	
CE mark certified	
US/C 60950-1, IEC/EN 60950-1	
Class 1 laser product per IEC 60825-1 and FDA 21 CFR 1040.10/11	
Compliant with surge requirements of ANSI/SCTE 174 2010	

**NOTES:**

- Optical Input from -5 to +1 dBm and 3.1% OMI. For other OMI values, use the following equation to determine the typical output level: 36 dBmV + 20 Log (New OMI%/3.1).
- Measured from Low Frequency to High Frequency using a best fit slope approximation.
- Measured with respect to the gain slope.
- Analog channels occupying the 102 to 550 MHz frequency range with digitally compressed channels or equivalent broadband noise to 1002 MHz at levels 6 dB below equivalent video channels.
- Measured with an optical input of -5.0 dBm, 3.1% OMI, over 20 km of fiber with an AT3553 downstream transmitter.
- Measured with 149, 256 QAM channels from 102-1002 MHz across the optical input range of the R-ONU.
- Measured with a single, 27 dBmV CW signal. Tolerance is ± 3 dB. Once the laser is "On", the input RF level must fall below the Laser Turn off level for the laser to turn off.
- Measured using a receiver with an equivalent input noise of < 1.5 pA/Hz<sup>0.5</sup> with a link budget of 23 dB (20 km fiber + passive loss). NPR test performed with 80 MHz noise loading using the OR3144H receiver.
- Additional loss of PON pass through filter for CP8598 should be taken into account for optical input range. Additional loss will be less than 1 dB.

## ORDERING INFORMATION

Forward Path (MHz) Reverse Path (MHz)	54 – 1002 5 – 42	85 – 1002 5 – 65	102 – 1002 5 - 85
RF + 1 Gbps PON Pass-through	CP8516U-00-10	CP8546U-00-10	N/A
RF + 10/1 Gbps PON Pass-through	CP8518U-00-10	CP8548U-00-10	CP8598U-00-10
RF Only (no PON Pass-through)	CP8517U-00-10	CP8547U-00-10	N/A
RF Only (1310 nm, no PON Pass-through)	CP8514U-00-10	CP8544U-00-10	N/A

One PS1000 Power Inserter is included with each RONU ordered. Power Supply Units must be ordered separately.

## RELATED PRODUCTS

OR3144H Quad Diplexer/Return Receiver	OR4168H Diplexer/Return Receiver
PS1911/12/13/14 Power Adapter	PS1921W-10 Power Adapter (meets USA DOE Class VI efficiency requirements, and features screw-support mount for USA version and F-type DC connector)

## 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.

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