ALLIANCE Multi-Operator DAS
Low-power 2W Remote Optic Unit (L2ROU)
Product Specification / Parts List

ALLIANCE is SOLiD's multi-operator, neutral host Distributed Antenna System (DAS) that efficiently delivers wireless RF signals into any indoor or outdoor location difficult to cover with traditional macro networks.

Modular design means lower operational costs and unparalleled RF performance, cost efficiency and flexibility.

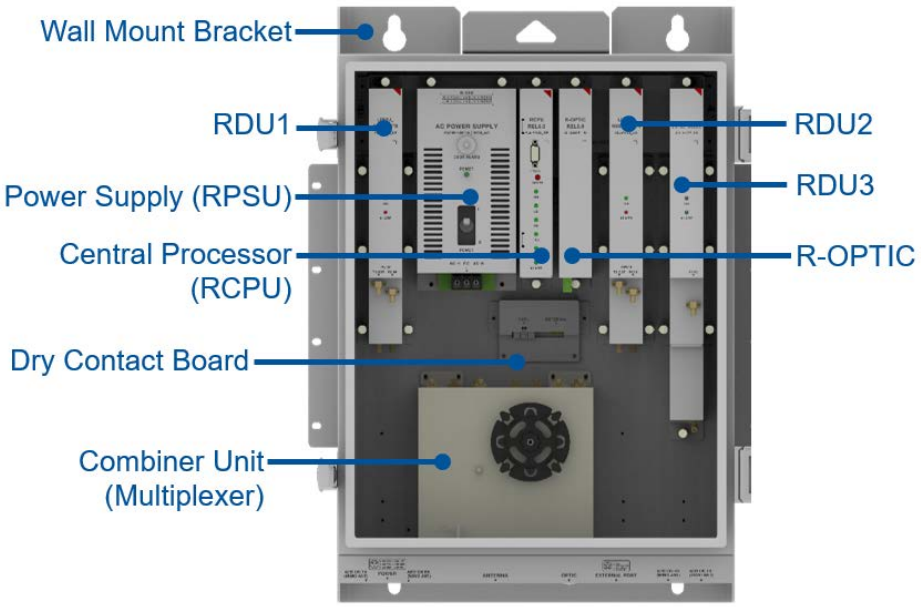
Rugged construction meets the latest fire codes and requirements for harsh environmental conditions.

The Low-power 2W Remote Optic Unit features:

- Guaranteed RF power control
- 4G certified
- 7 bands on a single fiber
- NFPA 72 compliant, NEMA 4 certified, UL labeled
- Quality checked and fully bench tested
- Simplified installation, commissioning, management
- Rack or wall, indoor or outdoor mounting Convection cooled. Optional fan unit available

Operation

SOLiD's Low-power 2W Remote Optic Unit (L2ROU) is designed for the ALLIANCE DAS and can be mixed with other ALLIANCE remote units (1W, 5W, and 20W) in a single system all driven by a common head end.



The 2W remote unit delivers 33dBm output power per band at the antenna port for the 700LTE, 800 (Sprint), 850C, 1900P, 2100AWS bands. For 2.5TDD band, output power is 32dBm, and for UHF/VHF bands output power is 24dBm.

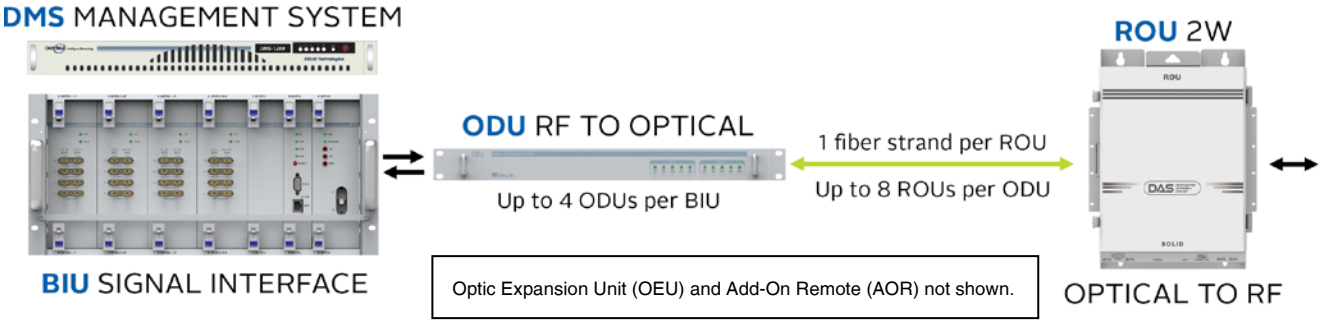
This highly efficient, small footprint unit can support up to six bands simultaneously. An Add-on Remote unit (AOR) can also be connected to the L2ROU to support additional RF services, like VHF/UHF.

The L2ROU enclosure incorporates a rugged, yet compact NEMA 4 design. The unit can be rack or wall mounted, indoors or outdoors. A Dry Contact Relay can be used for input alarms from external units, like battery backup systems, which is becoming a requirement for many deployments.

Unit Name	Unit Description
2W Remote Optic Unit (L2ROU)	Enclosure with RCPU, AC or DC power supply, and multiplexer
Add-on Remote (AOR)	Optional add-on enclosure (not shown in figure above), AC or DC power. Holds one RDU module, For the 2W L2ROU, the AOR can support VHF+UHF, 2300MHz or 2500MHz TDD.
Remote Drive Unit (RDU)	Amplifies down / uplink signals (up to 3 single or dual-band RDUs)
R Optic Unit	RF to Optic / Optic to RF conversion
Power Supply (RPSU)	AC: 120V, Output 27V, 9V, 6V DC: -48V (-42 to-56V), Output 27V, 9V, 6V
Central Processor Unit (RCPU)	Controls and monitors signal of each unit RS232 port for connecting management PC
Multiplexer	To utilize common antenna output, the multiplexer combines Tx signals from the RDUs and distributes Rx signals to the RDUs.
Dry Contact Relay Sub Board	Used for input alarms from external units, like battery backup systems
External Fan Unit (Optional)	Turns on/off automatically based on operator-defined temperature settings.

For the downlink signal path, the ROU receives optical signals from the ODU (or OEU) and converts them to RF signals in the Remote Optic (R-Optic) module. The signals move to the Remote Drive Units (RDUs) where they are amplified and filtered to remove out-of-band signals. A multiplexer in the remote unit combines RF signals from multiple RDUs and then delivers them to a single antenna port. The process is reversed for the uplink path.

With the DMS-1200, the technician can monitor and control the operation of each L2ROU



Slot Configurations

Recommended configurations have been tested for thermal and RF performance.

2W L2ROU	Recommended Configurations
RDU1 (Left most)	1900_AWS13 or 8085_700FB
RDU2 (Middle)	1900_AWS13 or 8085_700FB
RDU3 (Right most)	2500 or 2300 or 1900_AWS13 or 8085_700FB
Add on Remote	VHF/UHF or 2300 or 2500.

Specifications

Frequency Band	Downlink (Tx)		Uplink (Rx)	
	Frequency (MHz)	Bandwidth (MHz)	Frequency (MHz)	Bandwidth (MHz)
700LTE	729-756	28	699-716 / 777-787	18 / 10
800 Sprint + 850C	862-894	32	817-849	32
1900PCS	1930-1995	65	1850-1915	65
AWS 1+3	2110-2180	70	1710-1780	70
2300 WCS	2350-2360	10	2305-2315	10
2500TDD	2496-2690	Lower Band 68 (67.6) Mid Band 38 (37.8) Upper Band 68 (67.6)	2496-2690	Lower Band 68 (67.6) Mid Band 38 (37.8) Upper Band 68 (67.6)
2600 FDD	2620-2690	70	2500-2570MHz	70
VHF	136-174	38	136-174	38
UHF	B1: 380-434 B2: 396-450 B3: 450-512	54 54 62	B1: 380-434 B2: 396-450 B3: 450-512	54 54 62
NOTES: For 2500 services and UHF, operator can select band using management software. VHF/UHF services require the Add-On Remote (AOR).				

RF Parameters		VHF / UHF (BIU only)	700LTEF	800 Sprint / 850C	1900P
Input Power at BIU/eBIU	Tx (BIU)	-15dBm to +10dBm	-20dBm to +10dBm		
	Tx (eBIU)	NA	+15dBm to +43dBm (HPOI) / -10dBm to +20dBm (LPOI)		
	Rx	≤ -54dBm	-50dBm max		
Output Power	Tx	24dBm	33dBm		
	Rx (BIU)	BIU: -4dBm	BIU: 0dBm		
	Rx (eBIU)	NA	eBIU: -3dBm		
System Gain	Tx	39dB	53dB		
	Rx	34 to 50dB	30 to 50dB		
Gain Control	Tx	Gain Control Range: For the remote unit TX: 30 dB/step 0.5dB			
System Delay	Tx	< 2µs	< 8µs	< 8µs	< 8µs
	Rx	< 2µs	< 8µs	< 8µs	< 8µs
EVM	(Tx %)	NA	3%		
Noise Figure	Rx	7dB Max	6dB Max		
VSWR		1.8:1 max at each band In / Out ports			
Spurious	Tx	Spurious Emissions: ≤ -13dBm @ 9kHz to 5GHz			
Nominal Impedance		50 ohm			

		2100 AWS 1+3	2300 WCS	2500TDD	2600FDD
Input Power at BIU/eBIU	Tx (BIU)	-20dBm to +10dBm			
	Tx (eBIU)	+15dBm to +43dBm (HPOI) / -10dBm to +20dBm (LPOI)			
	Rx	-50dBm max			
Output Power	Tx	33dBm		32dBm	33dBm
	Rx (BIU)	0dBm		-20dBm	
	Rx (eBIU)	-3dBm		-23dBm	
System Gain	Tx	53dB		52dB	53dB
	Rx	30 to 50dB		10 to 30dB	
Gain Control	Tx	Gain Control Range: For the remote unit TX: 30 dB/step 0.5dB			
System Delay	Tx	< 8µs	< 1µs	< 0.5µs	< 1µs
	Rx	< 8µs	< 4µs	< 1.5µs	< 3µs
EVM	(Tx %)	3%	2%	5%	3%
Noise Figure	Rx	6dB Max			
VSWR		1.8:1 max at each band In / Out ports			
Spurious	Tx	Spurious Emissions: ≤ -13dBm @ 9kHz to 5GHz			
Nominal Impedance		50 ohm			

NOTES
TX Input power refers to the DAS headend.
TX Output power is measured at the antenna port.
TX and RX Output power is ± 0.5dB.
Noise figure represents system noise and tested with one remote connected.
Add 2dB to Noise figure when using Optic Expansion Unit (OEU) or 1-port Donor Optic Modules (DOUs).
System delay excludes fiber optic delay.
Additional gain control available at head end including uplink gain control.
TX system gain for VHF/UHF is 39dB when input power is -15dBm.
eBIU does not support VHF/UHF input at this time.

Specifications (continued)

Optical	Specification	
Connector at R-Optic Module	RF	SMA FEMALE / 50ohm SMA PUSH MALE / 50ohm
	Optic	SC / APC (Step Ferrule)
	Power/Signal	D-SUB 3 row 15PIN MALE
Laser Diode	1550nm (Coaxial Type)	
Photo Diode	1310nm	
Optic Loss	Max 5dBo (4-port Donor Optic Module); Max 10dBo (1-port Donor Optic Module)	

Mechanical	Specification
Mounting Type	Wall or Rack Mounting (fits standard 19” rack. 14U height)
Connectors	Antenna port type: 4.3-10 DIN. Fiber Connectors: SC/APC for connection to ODU or OEU
Craft Port	Serial interface RS232 9-pin D-sub Male for connecting management PC (on CPU)
In / Output Port Type	N Female for connecting AOR add-on unit
Power Consumption	240W (using these bands: 700LTE, 850IC, 1900P, AWS13 and 2500TDD)
Dimensions	19”W x 24.87"H (14U) x 10.57”D (482.6mm x 630mm x 268.5mm) Includes wall mount bracket, which can be removed as needed.
Weight	~45kg

Environmental	Specification
Environmental & IP Rating	IP65 Compliant, NEMA 4
Operating Temperature (°C)	-10° to 50°C
Operating Humidity	5 to 90% non-condensing

Regulatory	Specification
Type Approval & Certification	UL (UL60950-1), FCC
EMC	FCC Part15 compliant

Part Numbers

Note: This table only lists parts specific to the 2W L2ROU and AOR, but not all parts available for ALLIANCE DAS.

2W L2ROU, RDU Amplifiers, AOR Add-On Remote	Part Number
2 WATT Remote Optical Unit Chassis - AC Power	L2ROU_C_AC
2 WATT Remote Optical Unit Chassis - DC Power	L2ROU_C_DC
Add-on cabinet for ROU - AC Power	ROU_Add-on_AC
Add-on cabinet for ROU - DC Power	ROU_Add-on_DC
2 WATT 1900MHz & 2100/1700Mhz AWS Amplifier Module	L2RDU_1900P_AWS13
2 WATT 800MHz Sprint, 850MHz Cellular & 700MHz Full Band Amplifier Module	L2RDU_8085_700FB
2 WATT 2300MHz Amplifier Module	L2RDU_2300_WCS
2 WATT 2500 MHz TDD Amplifier module; 60MHz contiguous bandwidth	L2RDU_2500_60TDD
2 WATT 2600 MHz FDD Amplifier Module	L2RDU_2600_FDD
Blank Amplifier Module for 2W MROU	L2ROU_B
150MHz VHF & 450MHz UHF Amplifier Module	RDU_150_450
1W/2W Alarm Cable ROU-to-AOR cable with external alarm input pigtail	CBL_AOR_ALM
1W/2W Alarm Cable ROU cable with external alarm input pigtail	CBL_ROU_ALM

SOLiD Gear, Inc.
800 Klein Road, Suite 200
Plano, TX 75074
PHONE: 888.409.9997
EMAIL: sales@solid.com
WEB: www.solid.com

TL9000 H,V: R5.5/R5.0 ISO9001 CERTIFIED ISO14001