

SOLID

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.

- 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

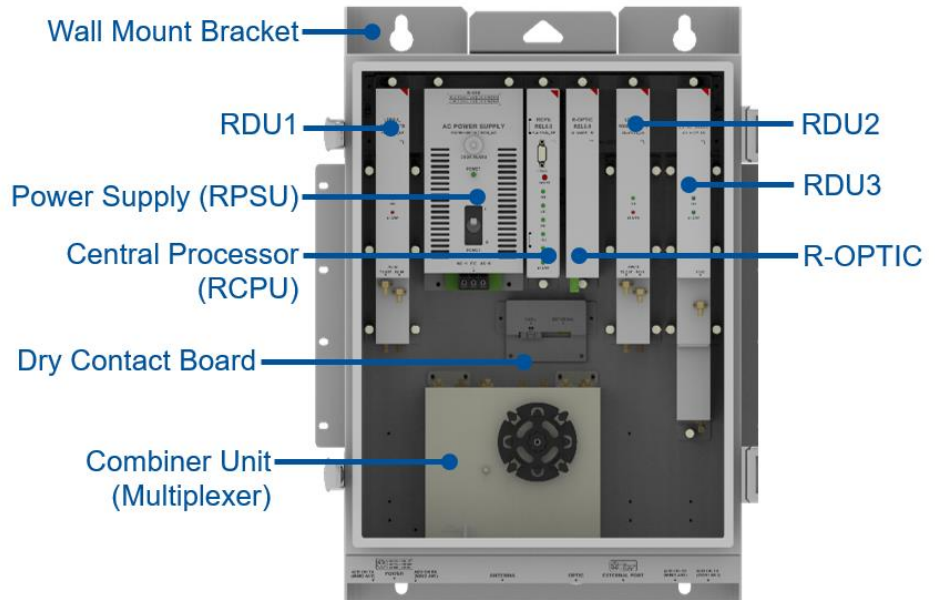
Operation

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.

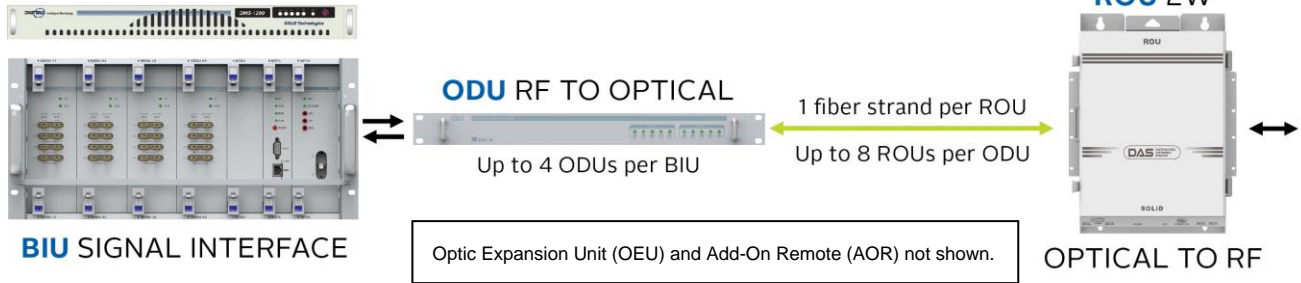


| Unit Name | Unit Description |
|--------------------------------|---|
| 2W Remote Optic Unit (L2ROU) | Enclosure with RCPUs, AC or DC power supply, and multiplexer |
| Add-on Remote (AOR) | Optional add-on enclosure (not shown in figure above), AC or DC power. Holds one RDU module. For the 2W L2ROU, 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 (RCPUs) | 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

DMS MANAGEMENT SYSTEM



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 LTE | 2496.8-2690 | Lower Band: 71.2 Middle Band: 37.8 Upper Band: 71.2 | 2496.8-2690 | Lower Band: 71.2 Middle Band: 37.8 Upper Band: 71.2 |
| 2600 FDD | 2620-2690 | 70 | 2500-2570MHz | 70 |
| VHF | 136-174 | 38 | 136-174 | 38 |
| UHF | B1: 380-434 | 54 | B1: 380-434 | 54 |
| | B2: 396-450 | 54 | B2: 396-450 | 54 |
| | B3: 450-512 | 62 | B3: 450-512 | 62 |

NOTES:
 For 2500 services and UHF, operator can select band using management software.
 VHF/UHF may require AOR depending on configuration.

| 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 | 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 Output power for VHF/UHF module is 24dBm per band. | | | | | |
| 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 |

Ordering Information / Part Numbers

| 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 (UHF Sub-band: B2, B3)* | RDU_150_450 |
| 380MHz VHF & UHF Amplifier Module (Military Band) (UHF Sub-band: B1, B3)* | RDU_E_VHF_UHF |
| Fan Tray Kit for LROU and L2ROU | FAN_TRAY |
| 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 |
| NOTES: This table only lists parts specific to the LROU and AOR but not all parts available for ALLIANCE DAS. *Refer to Specifications table above for details on UHF sub-band B1, B2, & B3. | |



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