

# ALLIANCE Multi-Operator DAS

## High Power Mid-Band Remote Unit (HROU\_4000)

### Product Specifications / Parts List



The ALLIANCE platform 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.

The High Power Mid-Band Remote Optic Unit (HROU\_4000) supports 5G mid-band spectrum in SISO and MIMO configurations within a single chassis.

The Mid-Band HROU\_4000 features:

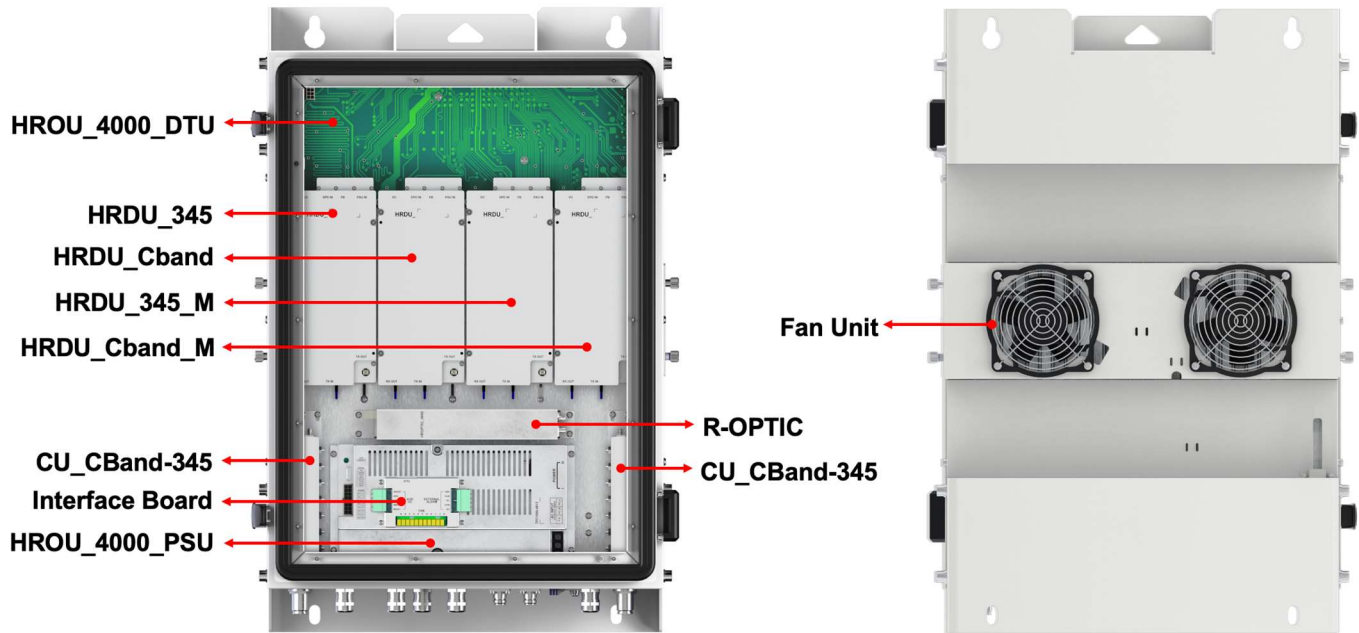
- Combiners support one or two antenna ports
- Rugged construction: UL Type 4X certified.
- Currently supports C-Band MIMO (3700MHz-3980MHz) and 3450 MIMO (3450MHz-3550MHz) over one fiber

**Overview**

This highly efficient, small footprint unit currently supports C-Band (3700MHz-3980MHz) and 3450 (3450MHz-3550MHz) bands in SISO or MIMO configurations within a single chassis.

The enclosure incorporates a rugged, yet compact UL Type 4x design. Units can be wall or rack mounted, indoors or outdoors. A dry contact relay can be used for input alarms from external units, like battery backup. A dual fan unit is attached at the rear of the unit as standard equipment.

The HROU\_4000 must be deployed on a dedicated iBIU headend, that is, not mixed with other ALLIANCE remotes that are not running mid-band (>3GHz) services. However, the HROU\_4000 and the mid-band edgeHUB / edgeROUs can be deployed together on the same iBIU headend unit.



| Unit Name  | Unit Description   |
|--|--|
| High Power Mid-Band Remote Optic Unit (HROU_4000)                      | Enclosure including DTU (RCPU), RPSU_AC or DC, Multiplexer, R-Optic, Fan   |
| Remote Power Supply Unit (PSU) AC or DC                                | AC Version: Input power 100 to 240V<br>DC Version: Input power -48 VDC (-42 ~ -56V)<br>Both: Output power: +50.2VDC, +12VDC  |
| Remote Central Processor & Digital signal processor Unit (CPU and DTU) | Controls signal of each unit<br>Monitors iBIU/iODU/iOEU status through FSK modem communication<br>Performs DPD to improve the PAU efficiency<br>Acquires synchronization for 5G NR TDD signals |
| High Power Remote Drive Unit (HRDU)                                    | Filters and amplifies downlink / uplink signals  |
| Remote Optic Module (R-Optic)  | Converts downlink optical signals to RF and uplink RF signals to optical   |
| CU_Cband-345   | Combine C-band with 3450 in a MIMO configuration using two combiners   |
| Interface Board  | External Alarm Interface. Fan interface  |
| Fan Unit   | Rear fan unit included.  |

**Specifications**

| Frequency Bands, MHz |             |                            |
|----------------------|-------------|----------------------------|
| Band                 | Frequency   | Maximum Occupied Bandwidth |
| C-Band               | 3700 - 3980 | 280                        |
| 3450                 | 3450 – 3550 | 100                        |

| RF Parameters      |    | All Bands  |
|--------------------|----|--|
| Input Power        | TX | LPOI: -10 to +20 dBm. HPOI: +15 to +43 dBm each port   |
|                    | RX | HROU: -50 dBm max  |
| Output Power       | TX | C-Band: 32 Watts (+45 dBm)<br>3450: 16 Watts (+42 dBm)   |
|                    | RX | -23 dBm ± 1 dB   |
| System Gain        | TX | C-Band: 65 dB max<br>3450: 62 dB max   |
|                    | RX | 30 dB max; 25 dB gain control at remote for all bands  |
| Spurious Emissions |    | Maximum Intermodulation Distortion.<br>For SISO System: TX: ≤ -13 dBm @ 9kHz to 5GHz<br>For MIMO system: ≤ -13 dBm @ summing emissions** |
| Nominal Impedance  |    | 50 Ohm   |
| System Ripple      |    | < 5 dB   |
| VSWR               |    | 1.69:1 typical, 1.80:1 max.  |

**NOTES:** TX Input power refers to the DAS headend. TX Output power is measured at the antenna port. Additional gain control available at head end including uplink gain control.

\*\* Summing emissions: The FCC's emission limit applies to the total emissions from all outputs of the transmitter of composite system transmitters. Thus, emission measurements from the transmitter outputs must be summed before comparing measured emissions to the emission limit. (KDB 662911)

| RF Parameters              | C-Band  | 3450    |
|----------------------------|---------|---------|
| NF (typical)               | 5.5 dB  | 5.5 dB  |
| NF (max)                   | 6 dB    | 6 dB    |
| IIP <sub>3</sub> (typical) | -22 dBm | -22 dBm |
| IIP <sub>3</sub> (max)     | -22 dBm | -22 dBm |
| EVM (typical)              | 2.5%    | 2.5%    |
| EVM (max)                  | 3.5%    | 3.5%    |

| Mechanical               | Specification   |
|--------------------------|---|
| Mounting Type            | Wall or rack (fits standard 19" rack with bracket). Vertical mounting only. |
| Antenna Connectors       | 4.3-10 Female (1 or 2)  |
| External Alarm Interface | 5-Pin connector on bottom panel   |
| Optical Connector        | SC / APC, step ferrule, waterproof, single mode fiber                       |
| Monitor Port             | - 40 dB (±3 dB), SMA female, TX output only, located on combiner unit       |
| Craft Port               | Serial interface RS-232 9-pin D-sub, male                                   |
| Dimensions (HxWxD)       | 28.5" x 19.7" x 9.5" (725 x 500 x 240 mm) including wall mount bracket      |
| Weight                   | 88 lbs. (40 kg) max (fully loaded)  |
| Ingress Protection       | UL Type 4X  |
| Sealing (Remote Unit)    | IEC 60 529 EN 60 529 (IP66 Compliant)                                       |
| Operating Environment    | Temp: -13° to 131°F / -25 to +55°C. Humidity: 0% to 90% non-condensing      |

| Power Consumption | Specification (Typical Power Consumption)   |
|-------------------|---|
| HRDU Modules      | 103W per module (@ 42 dBm output power).<br>151W per module (@ 45 dBm output power) |
| HROU_4000 Chassis | 211W, includes Power Supply Unit, R-Optic, and DPD Board (including RCPUs)          |

| Optical    | Specification   |
|------------|---|
| Wavelength | Tx: 1550 nm; Rx: 1310, 1330 nm                                    |
| Loss       | 4-port optic module: 5 dBo max.; 1-port optic module: 10 dBo max. |

| Regulatory    | Specification  |
|---------------|--|
| Type Approval | FCC Part 15 Subpart B, Class A   |
| Safety        | NRTL Certified   |
| FDA/CDRH      | This equipment uses a Class 1 LASER according to FDA/CDRH Rules. This product conforms to all applicable standards of 21 CFR Chapter 1, Subchapter J, Part 1040. |

**Parts List**

| Part Number    | HROU_4000 / HRDU   |
|----------------|--|
| HROU_C_4000_AC | High Power Mid-Band Remote Optical Unit Chassis, AC Power, includes Optics and CPU |
| HROU_C_4000_DC | High Power Mid-Band Remote Optical Unit Chassis, DC Power, includes Optics and CPU |
| HRDU_Cband     | High Power Amplifier Module, 3700~3980MHz, TDD                                     |
| HRDU_Cband_M   | High Power Amplifier Module, 3700~3980MHz, TDD, MIMO                               |
| HRDU_345       | High Power Amplifier Module, 3450~3550MHz, TDD                                     |
| HRDU_345_M     | High Power Amplifier Module, 3450~3550MHz, TDD, MIMO                               |



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