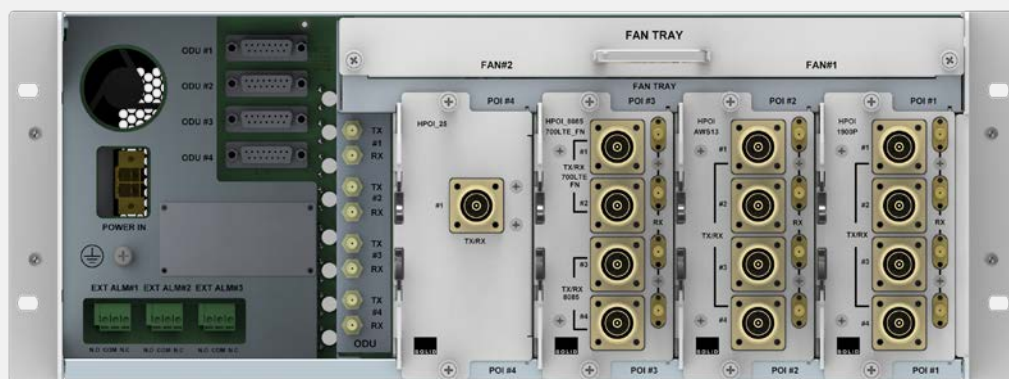
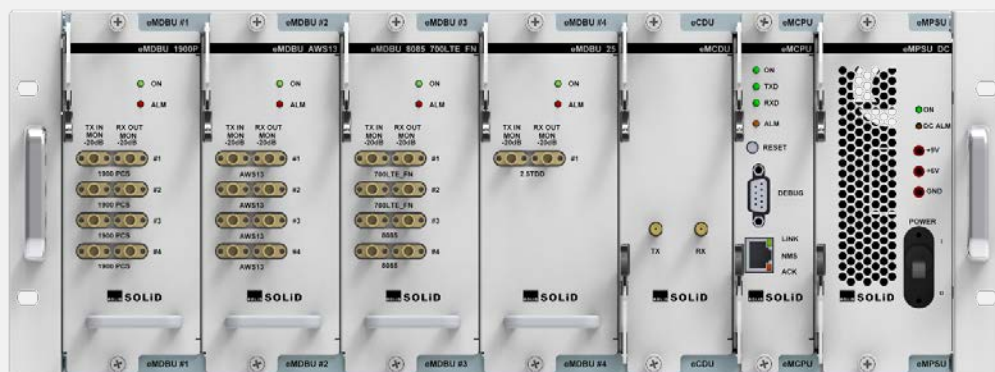


Multi-Operator DAS Enhanced BTS Interface Unit (eBIU) Product Specifications / Parts List



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 and rugged construction means lower operational costs and unparalleled RF performance, cost efficiency and flexibility.

The Enhanced Base Station Unit (eBIU) features:

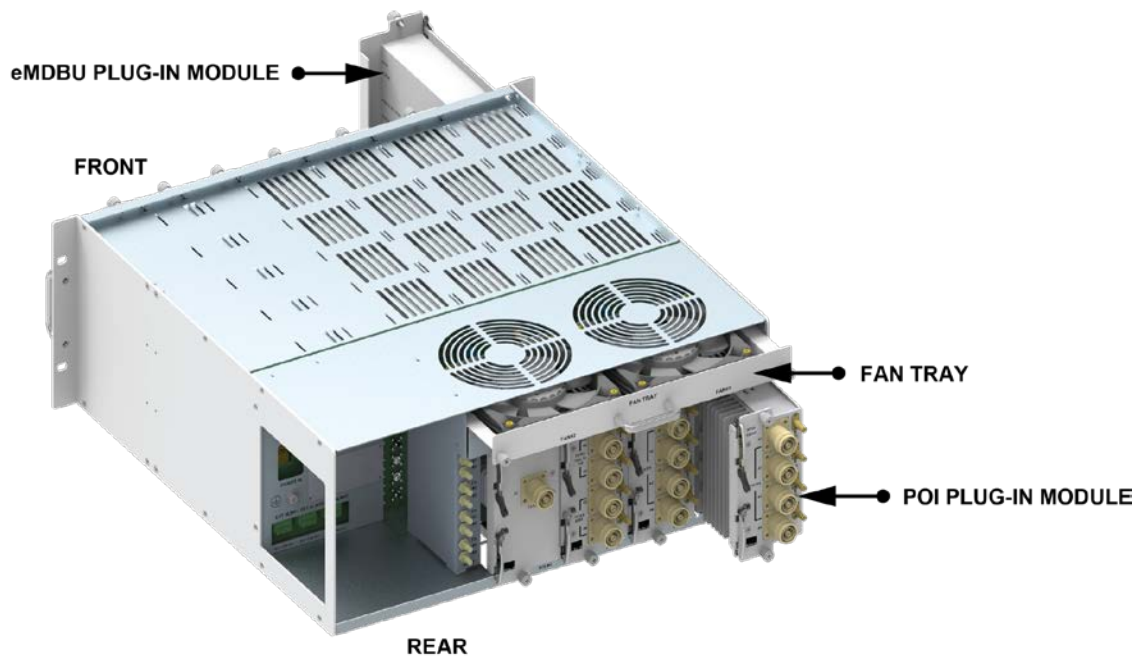
- Integrated low- and high-power Point of Interface (POI) modules
- Accepts simplex or duplex feeds from carrier equipment
- 4.3-10 connectors on high-power duplex ports
- Reduced footprint: 16 services in 4RU
- Integrated AC or DC power supply module
- Auto Level Control (ALC) uplink and downlink for each service

Operation

The Enhanced BIU (eBIU) with integrated POI modules is the central input point for all source signals sent and received over the DAS. The eBIU is compatible with all of SOLiD's low, medium and high power remote units.

The eBIU receives downlink signals from the base station (BTS) or bi-directional amplifier (BDA). Each signal is then independently monitored, filtered and controlled automatically in the eBIU and transmitted to the system's ODUs (Optic Distribution Units). The ODU converts the RF signals to optical signals and transmits them via fiber to the remote units (ROUs).

At the ROU, signals are amplified and sent via coax to the remote antennas placed throughout the building or campus. For the uplink path, the process is reversed allowing the eBIU to route each frequency to the proper operator.



The eBIU can be configured with band-specific, high power (20W) or low power (100mW) Point of Interface (POI) modules for conditioning downlink and uplink signals. High and low modules can be mixed in the same chassis. The high-power POI (HPOI) has an input range from +15dBm to +43dBm and the low-power module (LPOI) from -10dBm to +20dBm. Band-specific high- and low-power POI modules offer both duplex and simplex ports for connectivity with carrier equipment. Two additional LPOIs are available which support all bands: the LPOI_SPLX and LPOI_EB. These units only support simplex input.

A fan tray draws air across cooling fins on the modules when using high-power POIs. SOLiD recommends leaving 1U of space above and below the unit to dissipate heat when using the-high power POIs.

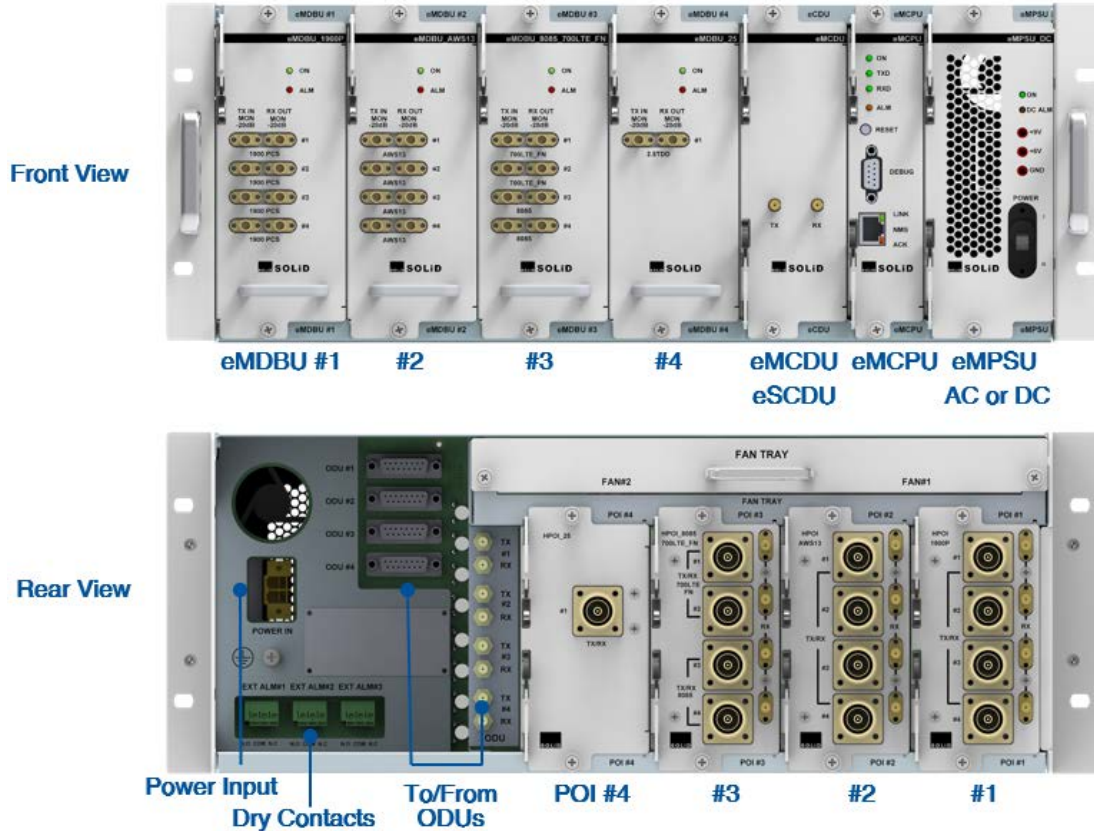
For deployments requiring more than 16 services per sector, a second eBIU, configured as a slave unit, can be connected to the master eBIU via the eMCDU module.

The eBIU mounts in a 19-inch equipment rack and is powered by an internal AC or DC power supply. Supported bands include: 700MHz, 800MHz, 850MHz, 1900MHz, 2100MHz (AWS 1+3), 2300MHz WCS, 2500MHz TDD, and 2600MHz FDD.

The eBIU is compatible with all current ALLIANCE DAS components including low (1W, 2W), medium (5W) and high power (20W) remote units. However, the ALLIANCE DAS must be operating at REL6 version firmware.

Components

Enhanced Base Station Interface Unit (eBIU) Product Data Sheet





| eBIU Components | Description |
|--------------------------------------|---|
| Enhanced Base Station Interface Unit | eBIU chassis includes eMCDU (or eSCDU), eMPCU, eMPSU |
| Main Combiner Divider Unit (eMCDU) | Provides combining/splitting to support 4 eMDBU modules and 4 ODU connections. eMCDU includes interface for secondary eBIU. . |
| Slave Combiner Divider Unit (eSCDU) | Used in slave unit to connect to eMCDU in master unit |
| Main Central Processor Unit (eMPCU) | Controls and monitor system status. RJ45 and RS232 ports provide connection for management PC |
| Main Power Supply Unit (eMPSU) | DC Input power: DC -48V, Output power: 9V, 6V AC Input power: AC 110/220V, Output power: 9V, 6V |
| Main Drive BTS Unit (eMDBU) | Amplifies and adjusts downlink and uplink RF signal Max 4 eMDBUs per eBIU. |
| Point of Interface (POI) Module | Low Power POI (LPOI) for typical Small Cell Interface: up to 100mW High Power POI (HPOI) for typical BTS Interface: up to 20W Conditions RF signals from /to carrier equipment. |
| LPOI Simplex Interface Module | Simplex input, all bands 136MHz to 2700MHz, 10dB attenuation. |
| LPOI Extender Board | Simplex input, all bands 136MHz to 2700MHz, no attenuation |
| Fan Tray | Draws air across cooling fins on POI modules |
| Dry Contact Relays | Used to accept input alarms from external equipment or send output alarms to NOCs or fire safety panels. |

POI Modules and Attenuator Pads

The eBIU can be configured with high-power (20W) or low-power (100mW) Point of Interface (POI) modules or high/low modules can be mixed in the same chassis.

| POI type | TX Input Power Range | RX Attenuation | Remark |
|-----------|----------------------|----------------------------|---|
| HPOI | +15dBm to +43dBm | 45dB (35dB for 2500TDD) | HPOI must match corresponding eMDBU. Accepts duplexed and simplex RF signal input. |
| LPOI | -10dBm to +20dBm | 35dB | LPOI must match corresponding eMDBU. Accepts duplexed and simplex RF signal input. |
| LPOI_SPLX | -10dBm to +20dBm | 10dB | Simplex input only. Supports all bands in the range 136-2700MHz TRX - For additional attenuation, use the external pads (see below). |
| LPOI_EB | -20dBm to +10dBm | No attenuation | Simplex input only. Supports all bands in the range 136-2700MHz TRX One LPOI_EB (extender board) ships with each eBIU. It is used for testing input signal and can also be used when replacing legacy BIU with eBIU. |

For additional attenuation, SOLiD offers a 10dB attenuator for the downlink (TX) path and a 25dB attenuator for the uplink (RX) path. These attenuator pads can be added directly to QMA TX and RX ports on the LPOI_SPLX to improve the power handling in the downlink path and offer additional noise suppression in the uplink. Applying the 10dB attenuator pad to the TX port of the LPOI_SPLX will increase the maximum input power from the signal source to +30dBm.

| SOLiD Part Number | Attenuation | Color | Type | Image |
|-------------------------------------|-------------|-------|------------------------------|---|
| ATTN_10dB_2W_QMAM_QMAF (TX only) | 10dB | Red | QMA(Female) to QMA (Male) |  |
| ATTN_25dB_1W_QMAM_QMAF (RX only) | 25dB | Blue | QMA(Female) to QMA (Male) |  |

Accessories

The following items ship with the unit.

| Item | Description | Remark |
|--|--|--------|
| Rear support brackets | Heavy duty brackets to support rear or side of chassis when mounted in rack. Can be used in 2-post or 4-post rack. | Qty 2 |
| M6 ground screw | For ground connection, use with AWG #10 ~ 12 cable with M6 lugged end. Cable is not included with unit. | Qty 1 |
| Power cable (SOLiD will supply AC or DC cable to match power unit ordered.) | DC: AWG #12x2C -48VDC input with two lug terminals. 2000mm (6.5ft) | Qty 1 |
| | AC: 120VAC/220VAC (100-240VAC) input cable | Qty 1 |

Supported Bands / eMDBU Configurations

| SOLiD Part Number / Frequency Bands | Service Band | Port # | Downlink (TX) | | Uplink (RX) | |
|---|------------------------------|--------|-----------------|----------------------------------|-----------------|----------------------------------|
| | | | Frequency (MHz) | Bandwidth (MHz) | Frequency (MHz) | Bandwidth (MHz) |
| eMDBU_8085_700LTE_FN / 800MHz (Sprint only) & 850MHz & 700MHz LTE Full Band + FirstNet | 700LTE_FN | 1 | 729-768 | 39 | 699-716 | 17 |
| | 700LTE_FN | 2 | | | 777-798 | 21 |
| | 8085 | 3 | 862-894 | 32 | 817-849 | 32 |
| | 8085 | 4 | | | | |
| eMDBU_1900P / 1900PCS | 1900PCS | 1 | 1930-1995 | 65 | 1850-1915 | 65 |
| | | 2 | | | | |
| | | 3 | | | | |
| | | 4 | | | | |
| eMDBU_1900P_M 1900MHz; B Path for MIMO / 1900MHz; B Path for MIMO | 1900 MIMO | 1 | 1930-1995 | 65 | 1850-1915 | 65 |
| | | 2 | | | | |
| | | 3 | | | | |
| | | 4 | | | | |
| eMDBU_AWS13 / 2100 AWS 1+3 | AWS 1+3 | 1 | 2110-2180 | 70 | 1710-1780 | 70 |
| | | 2 | | | | |
| | | 3 | | | | |
| | | 4 | | | | |
| eMDBU_25 / 2500 TDD LTE | 2500 TDD LTE | 1 | 2496-2690 | LB: 71.2 MB: 37.8 UB: 71.2 | 2496-2690 | LB: 71.2 MB: 37.8 UB: 71.2 |
| eMDBU_23_25 / 2500MHz TDD & 2300MHz | 2300Mhz | 1 | 2350-2360 | 10 | 2305-2315 | 10 |
| | | 2 | | | | |
| | 2500TDD | 3 | 2496-2690 | LB: 71.2 MB: 37.8 UB: 71.2 | 2496-2690 | LB: 71.2 MB: 37.8 UB: 71.2 |
| | | 4 | | | | |
| eMDBU_25_26_S/M / 2500MHz TDD & 2600MHz FDD | 2500 SISO or 2600 SISO | 1 | 2496-2690 | LB: 71.2 MB: 37.8 UB: 71.2 | 2496-2690 | LB: 71.2 MB: 37.8 UB: 71.2 |
| | | 2 | 2500-2570 | 70 | 2620-2690 | 70 |
| | 2500 MIMO or 2600 MIMO | 3 | 2496-2690 | LB: 71.2 MB: 37.8 UB: 71.2 | 2496-2690 | LB: 71.2 MB: 37.8 UB: 71.2 |
| | | 4 | 2500-2570 | 70 | 2620-2690 | 70 |
| <p>Notes: For 2500 services, operator can select the band – lower band, mid band and upper band – using the management software. For 2500 TDD ports on eMDBU modules only duplexed input types are supported. The Tx port (SMA type) is used for both Tx and Rx inputs/outputs.</p> <p>For the eMDBU_25_26_S/M module, the operator can select 2500TDD mode or 2600FDD mode in the management software. Ports #1 & #2 are used for SISO channel. Ports #3 & #4 for MIMO channel.</p> | | | | | | |

Specifications

| RF Parameters | | |
|-----------------------------|-----------------|-------------------|
| Frequency Band | Downlink (Tx) | Uplink (Rx) |
| | Frequency (MHz) | Frequency (MHz) |
| 700LTE + D Block (FirstNet) | 729-768 | 699-716 / 777-798 |
| Extended 850C band | 862-894 | 817-849 |
| 1900PCS | 1930-1995 | 1850-1915 |
| 2100 AWS 1+3 | 2110-2180 | 1710-1780 |
| 2300 WCS | 2345-2360 | 2305-2320 |
| 2500TDD LTE | 2496-2690 | 2496-2690 |
| 2600FDD | 2500-2570 | 2620-2690 |

| Electrical Specifications | | |
|--|----------|---|
| Downlink Input Power | LPOI | -10dBm to +20dBm |
| | HPOI | +15dBm to +43dBm each port, -153dBc PIM |
| Uplink Gain Range (per port) | | +5dB to -15dB using HPOI; +15dB to -5dB using LPOI & 2.5TDD HPOI |
| Total Attenuation per port eMDBU + POI | Downlink | Management Software: 30dB variable in 0.5dB increments Fixed POI values all bands: HPOI 35dB. LPOI 10dB |
| | Uplink | Management Software: 30dB configurable in 0.5dB increments. (Note: this attenuator is shared with the ALC feature. Any hard-coded attenuation will reduce the ALC action by the amount of the hard-coded attenuation.) Fixed POI values: 45dB (HPOI) (35dB for 2500TDD HPOI) and 35dB (LPOI) |
| LPOI Simplex Board | | Simplex input only, 136MHz to 2700MHz. 10dB attenuation for TX and RX. |
| LPOI Extender Board | | Simplex input only, 136MHz to 2700Mhz. No attenuation applied to TX or RX. |
| ALC per port | | 30dB Downlink / 30dB Uplink |
| Nominal Impedance | | 50 ohm |
| Power Supply Range | | AC 110/220V (AC: 110 – 240V). DC: -48V (DC: -42V to -56V) |
| VSWR | | 1.5:1 at all in/out ports |
| Monitoring level at eMDBU | | TX: -20dB, RX: -20dB per port at interface between eMDBU and POI |
| Power Consumption | Master | 235W (AC version) Fully loaded (4 eMDBUs) covering bands: 700/800/850/1900/2100/2500 and powering 4 fully loaded ODUs (2 DOUs per ODU). Total power consumption will vary depending on configuration. |
| | Slave | 115W (AC version) with 4 eMDBUs |
| Front Panel LED Indicator | eMDBU | Power on: Green, Alarm: Red |
| | eMCPUI | Power on: Green, Alarm: Red, LINK: Green flickering (Comm Status) |
| | eMPSU | Power on: Green, Alarm: Red |

| Mechanical/Environmental | |
|--|--|
| Total Maximum Weight | Approximately. 23kg (50lbs) at full load with 4 eMDBUs |
| HPOI BTS Interface | T/RX Duplexed Port: 4.3-10 (Female), Simplex RX Port: QMA (Female) |
| LPOI Small Cell Interface | T/RX Duplexed Port: QMA (Female) Simplex RX Port: QMA (Female) |
| LPOI Simplex Interface Card (LPOI_SPLX) LPOI Extender Board (LPOI_EB) | TX and RX Port: Simplex: QMA (Female) |
| eMDBU UL & DL Test Ports (-20dB) | QMA (Female) |
| Mounting Type | 19" rack mount (support brackets included and recommended) |
| Operating Temperature | 14 to 122°F (-10 to +50°C) ambient temperature |
| Dimensions | 19" W x 7" H x 18" D (4RU rack height) |
| Serial Interface Connector | RS232 9-pin D-sub, female (for connecting management PC) |
| Dry Contact Alarm Interface | 3 Contacts. Configurable in management software and set up for either input/output alarms. |

| Standards / Certifications | |
|-------------------------------|--|
| EMC | EN 301 489-01, EN 301-489-8, EN 301-489-23 |
| Type Approval & Certification | EN60950-1 |

Ordering Information / Part Numbers

Order POI's to match desired carrier equipment power levels. POI frequency band must match associated eMDBU frequency band.

| Product Description | Part Number |
|--|----------------------|
| Blank eBIU Module | eBIU_B (eBIU BLANK) |
| Master eBIU, AC Version (Includes: eMCPU, eMPSU_AC, eMCDU) | eMBIU_C_AC |
| Master eBIU, DC Version (Includes: eMCPU, eMPSU_DC, eMCDU) | eMBIU_C_DC |
| 1900 MHz Input Module for the eBIU | eMDBU_1900P |
| 1900 MHz Input Module for the eBIU, Channel B for MIMO Applications | eMDBU_1900P_M |
| 2300 WCS, 2500MHz TDD Input Module for eBIU | eMDBU_23_25 |
| 2500MHz TDD Input Module for eBIU | eMDBU_25 |
| 817-849/862-869 MHz Cellular, 700MHz Full Band Input Module for the eBIU. Includes Extended 700 band for FirstNet | eMDBU_8085_700LTE_FN |
| 2100MHz (AWS 1+3) Input Module for the eBIU | eMDBU_AWS13 |
| 2500TDD or 2600FDD for SISO (Ports 1, 2) or MIMO (Ports 3, 4) **Q2 2017 | eMDBU_25_26_S/M |
| Slave eBIU, AC Version (Includes: eMCPU, eMPSU_AC, eSCDU) | eSBIU_C_AC |
| Slave eBIU, DC Version (Includes: eMCPU, eMPSU_DC, eSCDU) | eSBIU_C_DC |

Continued next page

| Product Description | Part Number |
|---|------------------------|
| High Power POI Module (20W), 1900MHz PCS, 4 Ports | HPOI_1900P |
| High Power POI Module (20W), 2300MHz WCS, 2500MHz TDD, 3 Ports | HPOI_23_25 |
| High Power POI Module (20W), 2500MHz TDD, 1 Port | HPOI_25 |
| High Power POI Module (20W), 800MHz Sprint, 850MHz Cellular, 700LTE + FirstNet, 4 Ports | HPOI_8085_700LTE_FN |
| High Power POI Module (20W), 2100MHz (AWS 1+3), 4 Ports | HPOI_AWS13 |
| High Power POI Module (20W), 2500TDD or 2600FDD, 4 Ports (SISO 2 Ports of 25 or 26, MIMO 2 Ports of 25 or 26). ** Q2 2017 | HPOI_25_26_S/M |
| Low Power POI Module (100mW), 1900MHz PCS, 4 Ports | LPOI_1900P |
| Low Power POI Module (100mW), 2300MHz WCS, 2500MHz TDD, 4 Ports | LPOI_23_25 |
| Low Power POI Module (100mW), 800MHz Sprint, 850MHz Cellular, 700LTE + FirstNet, 4 Ports | LPOI_8085_700LTE_FN |
| Low Power POI Module (100mW), 2100MHz (AWS 1+3), 4 Ports | LPOI_AWS13 |
| Low Power POI Module (100mW), Simplex Interface Card, 136MHz to 2700MHz | LPOI_SPLX |
| Low Power Extender Board, +10dBm max power rating, Simplex only, 136-2700Mhz | LPOI_EB |
| ALLIANCE Power Supply - 48 VDC / 480 W | RMP_480 |
| RF Attenuator, 10dB, 2Watt max power, QMA-male to QMA-female connectors | ATTN_10dB_2W_QMAM_QMAF |
| RF Attenuator, 25dB, 1Watt max power, QMA-male to QMA-female connectors | ATTN_25dB_1W_QMAM_QMAF |



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