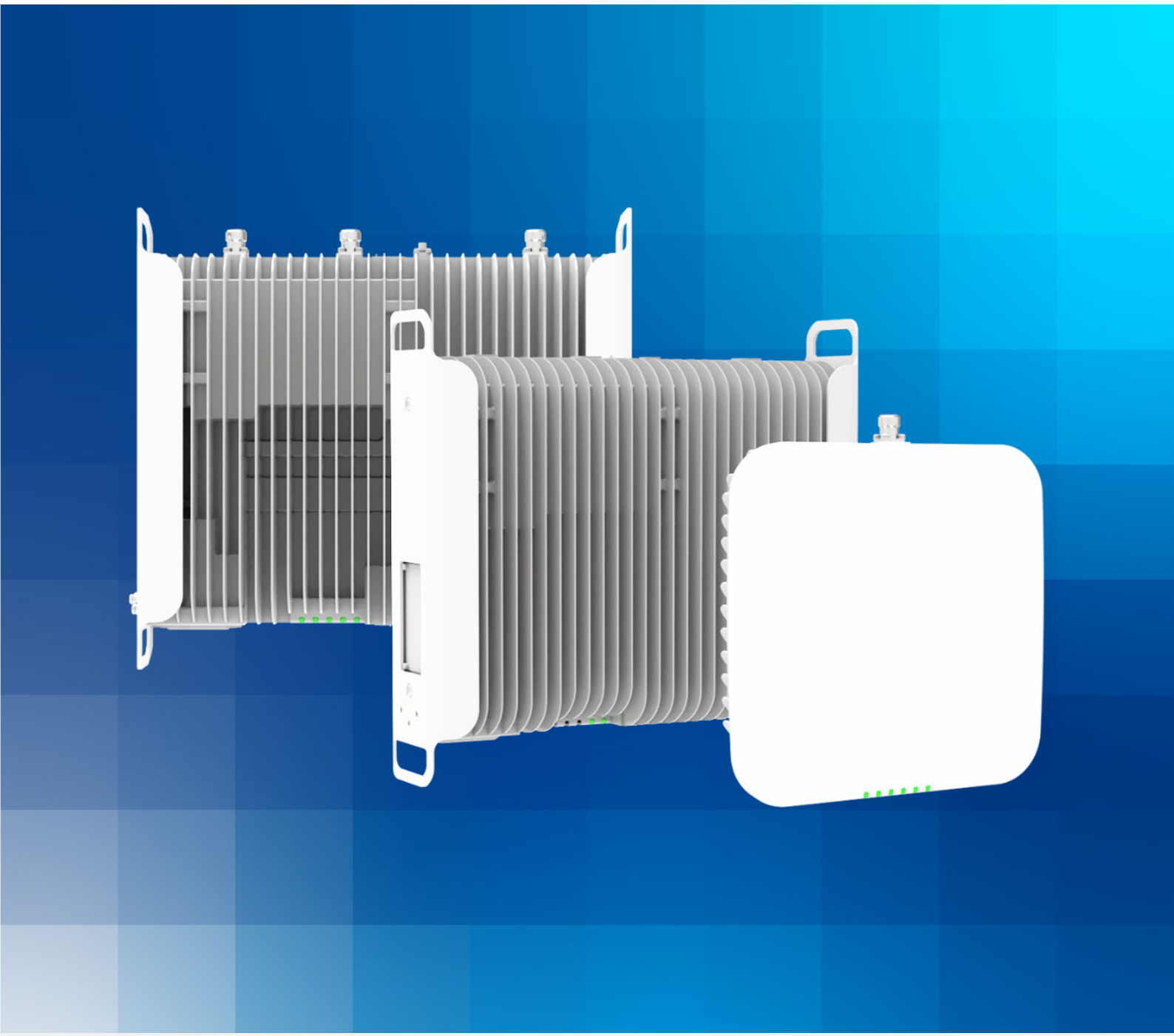
SOLiD BARS™



SOLiD BARS™ System Overview

Version 1.2

SOLiD BARS™ is an advanced in-building solution that enhances cellular signals and provides reliable multi-carrier coverage for up to three carriers. It is compliant with FCC Part 20, eliminating the need for retransmission agreements, and supports up to forty (40) remote units from a single head-end using up to four (4) hubs. The system includes an Echo Cancellation System (ECS) for stable performance and is managed through the SOLiD BARS™ EMS Portal, with on-site access via the LocalGUI.

Features and Benefits

Low Total Cost

- Off-air signal sources enable immediate service without requiring costly carrier fees.
- Ethernet cabling reduces installation complexity and commissioning time.
- The head-end and hubs each support up to eight (8) remote units, reducing the need for additional head-end and donor equipment.

Easy Setup (Installation & Commissioning)

- A single Ethernet cable per remote unit reduces cabling requirements.
- Power-over-Ethernet (PoE) supports flexible remote unit placement.
- Automatic commissioning reduces configuration errors and on-site visits.
- Echo Cancellation System (ECS) prevents signal oscillation.
- Donor antenna positioning can be verified over Wi-Fi for simplified alignment.
- Uplink inactive (sleep) mode supports compliance with FCC Part 20 requirements.

Multi-MNOs & Multi-Bands

- Supports up to three carriers in a single system.
- Supports multiple frequency bands per carrier to accommodate diverse deployment environments.
- Each carrier is processed independently to improve isolation and overall system performance.

Web-based System

- Provides a web-based interface for simplified commissioning.
- The SOLiD BARS™ EMS Portal enables continuous monitoring and system optimization.

Advanced Network Management

- Supports SNMP v2c/v3 for monitoring and alarm reporting.
- Enables integration with external network management systems (NMS).

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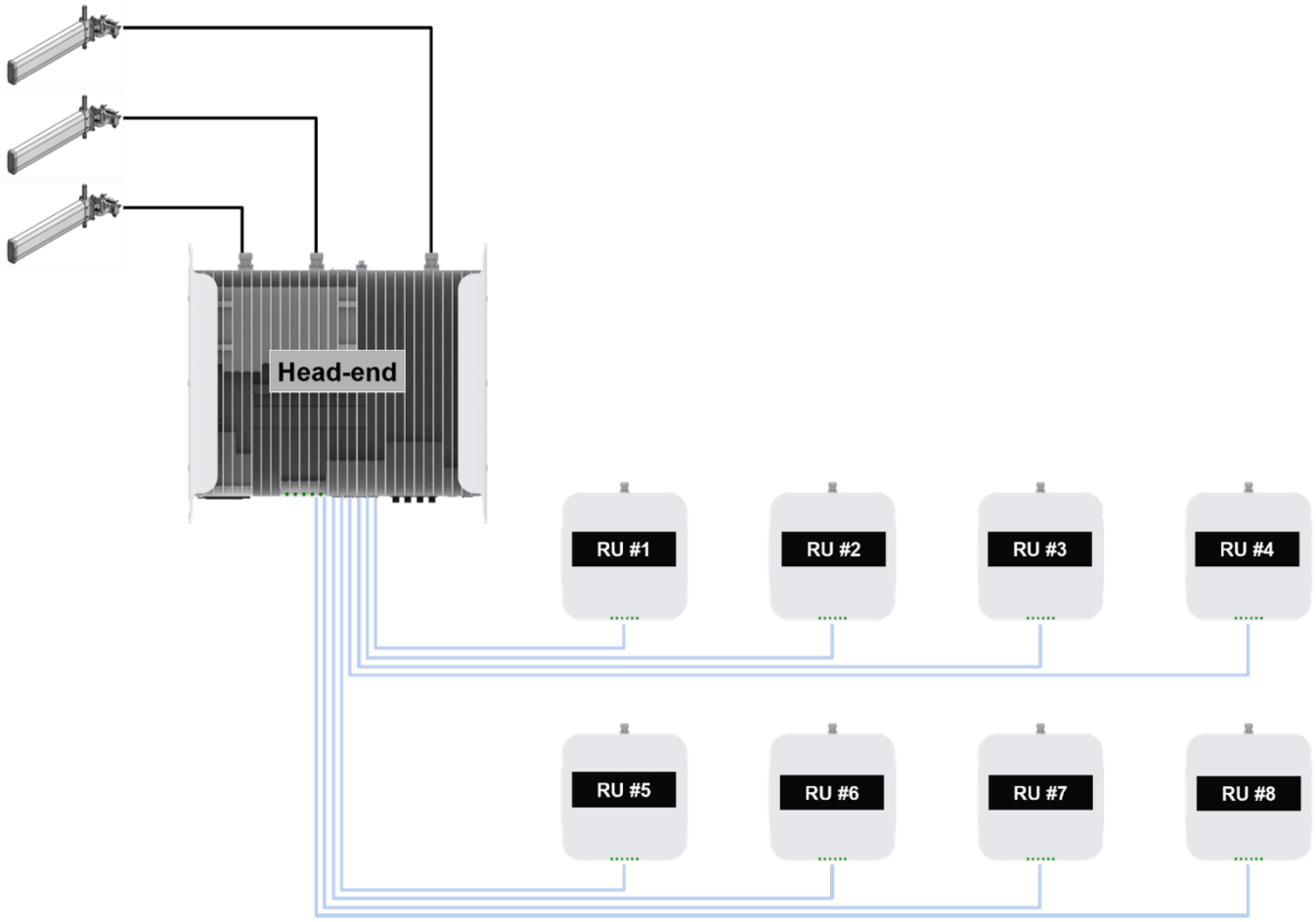
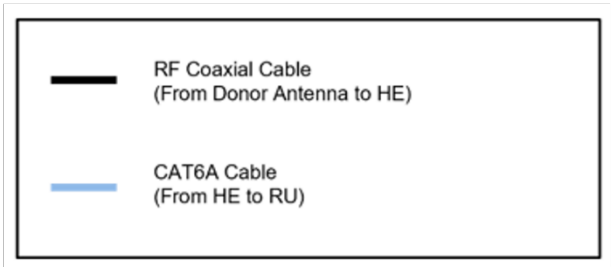
Example Diagram #1

Off-air, 1 (HE) and 8 (RUs)





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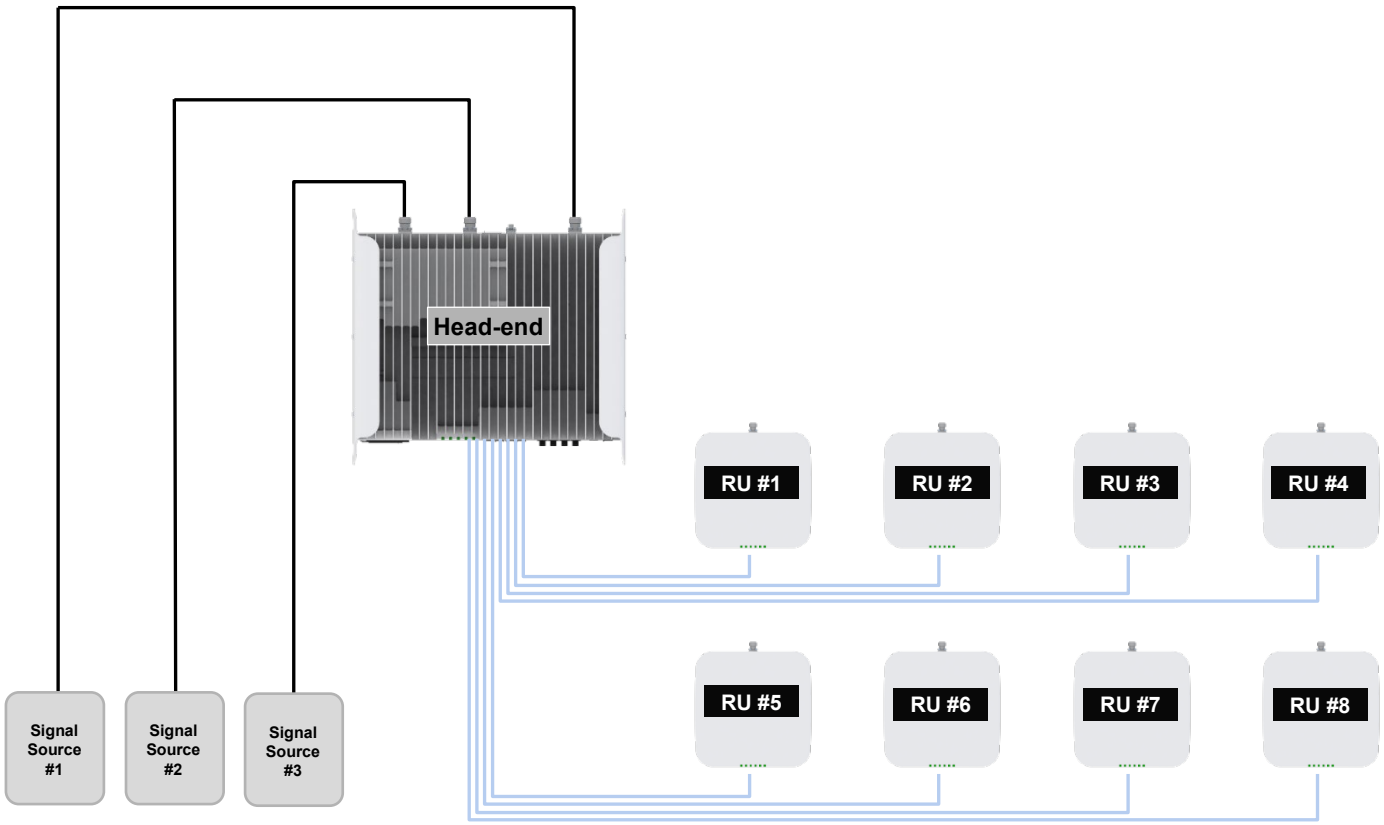
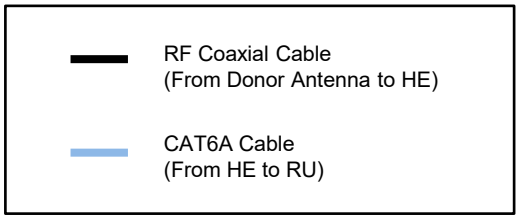
Example Diagram #2

Hybrid, 1 (HE) and 8 (RUs)





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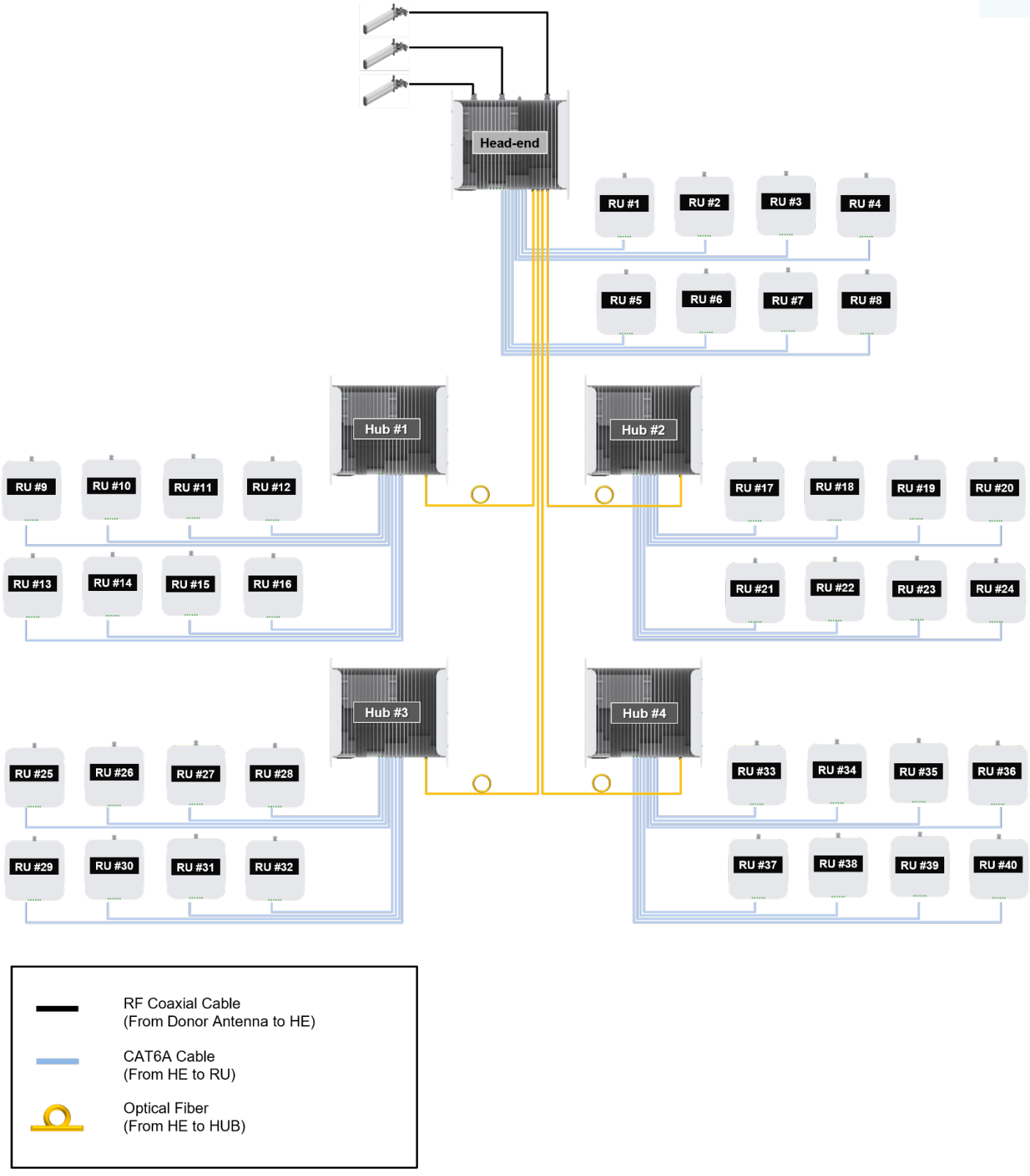
Example Diagram #3

Off-Air, 1 (HE), 4 (HUBs) and 40 (RUs)



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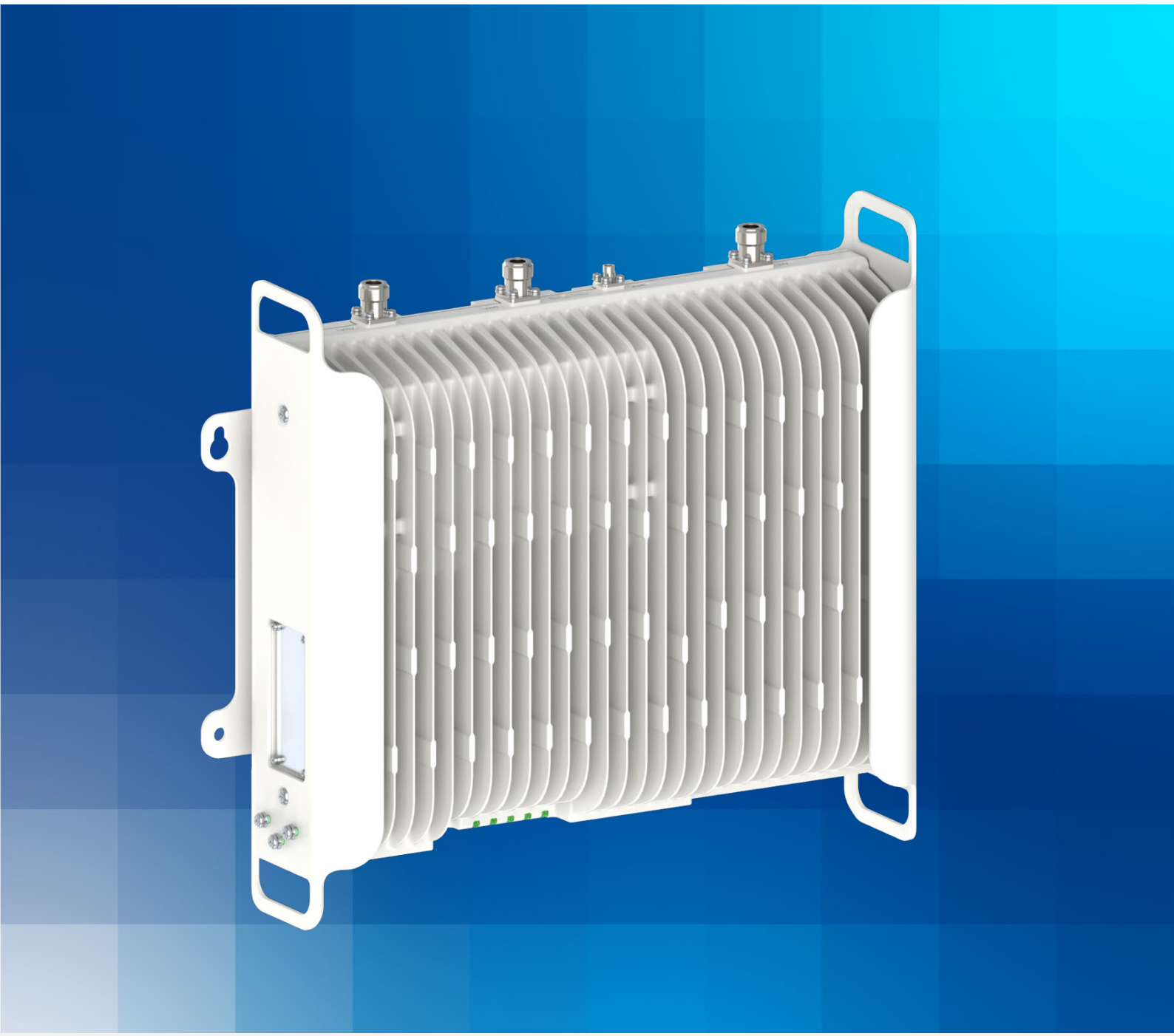
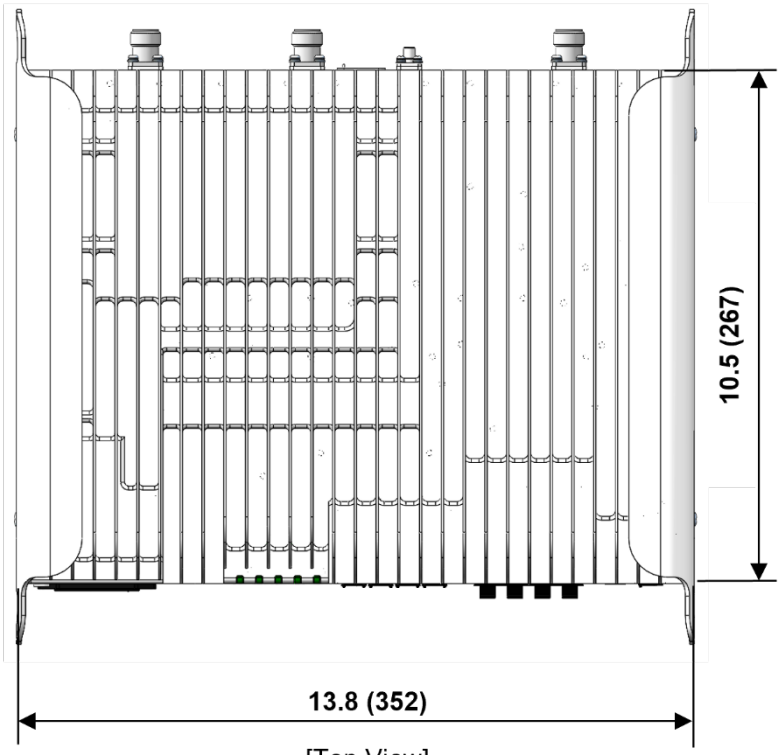


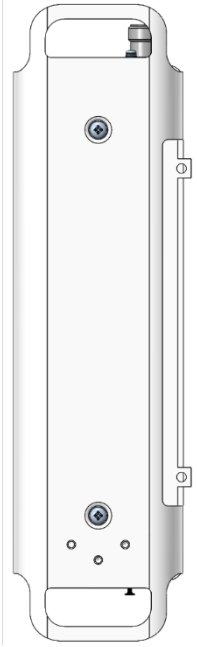
Head-end Unit (HE)

The BARS head-end unit (HE) is the core of the system. It receives and digitizes signals from up to three mobile operators, then delivers data and power to remote units (RUs) via dedicated Ethernet cables. The HE extends its coverage by supporting up to 40 RUs simultaneously.

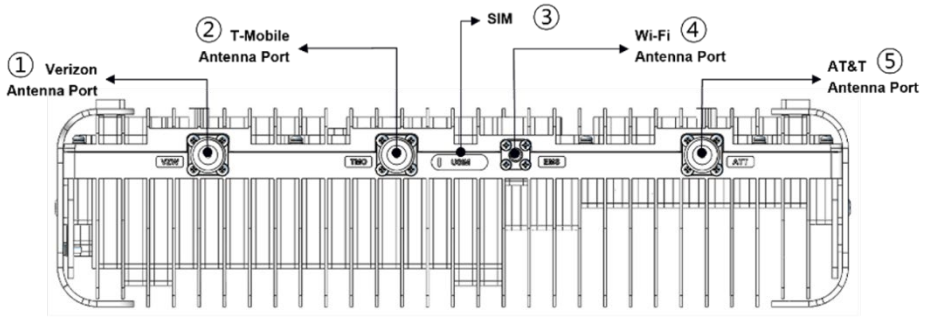
HE Mechanical Overview



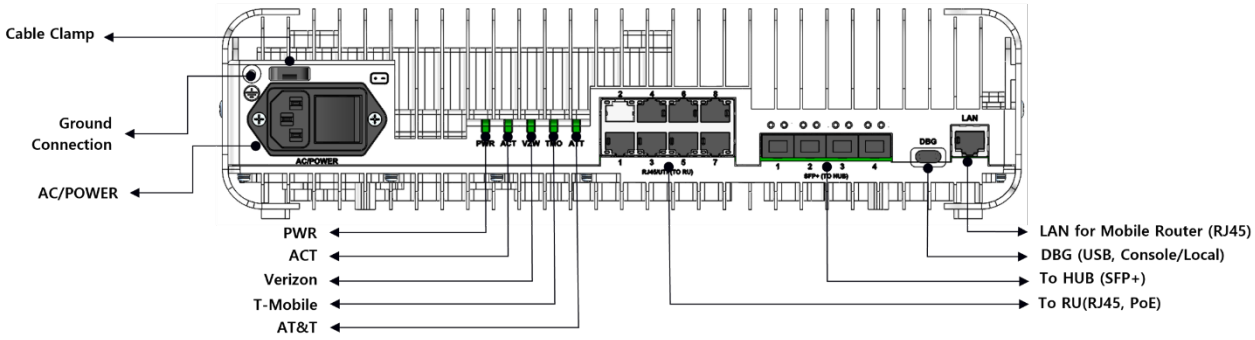
[Top View]



[Right View]



[Rear View]



[Front View]

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HE Hardware Specifications

Category	Parameter	Specification	Remarks
Physical	Dimensions (W × D × H)	352 × 267 × 88 mm (2U)	Without mounting bracket
	Volume	8.3 L	
	Weight	≤ 7.9 kg	Excluding wall-mount bracket; tolerance ±0.2 kg
	Color / Finish	Jevisco PP#4636 X-Texture, semi-gloss white powder coating	
Power	Power Input	AC 90–264 V, 47–63 Hz	
	Power Consumption	< 500 W	With 8 RUs connected via 100 m PoE cables
Connectivity & Cabling	Optical Fiber Distance	Up to 10 km	HE–HUB
	Ethernet Cable Distance (CAT6A)	Up to 100 m	HE–RU
	Ethernet Cable Distance (CAT6A)	Up to 200 m	HE–Extender–RU
Ports – Top	RF Port	N-type (female), 3 ports	Donor antenna
	Wi-Fi Antenna Port	Reverse SMA-type (female), 1 port	Installer-accessible
	SIM Card Slot	1 slot	For EMS modem
Ports – Bottom	RU Interface	RJ45 with PoE, 8 ports	
	LAN Interface	RJ45, 1 port	
	Console / Local Interface	USB Type-C, 1 port	
	HUB Interface	SFP+, 4 ports	
	Power Input	AC power port, 1 port	
	Ground	GND terminal, 1	
Indicators	Status LEDs	5 LEDs (bi-color: Green / Red)	
Installation	Mounting Options	Wall mount (vertical only)	
		Rack mount (horizontal only)	
Environmental	Ingress Protection	IP40	
	Cooling	Natural convection	Fanless
	Operating Temperature	–5 °C to +40 °C	Rack or wall mount
	Storage Temperature	–40 °C to +70 °C	

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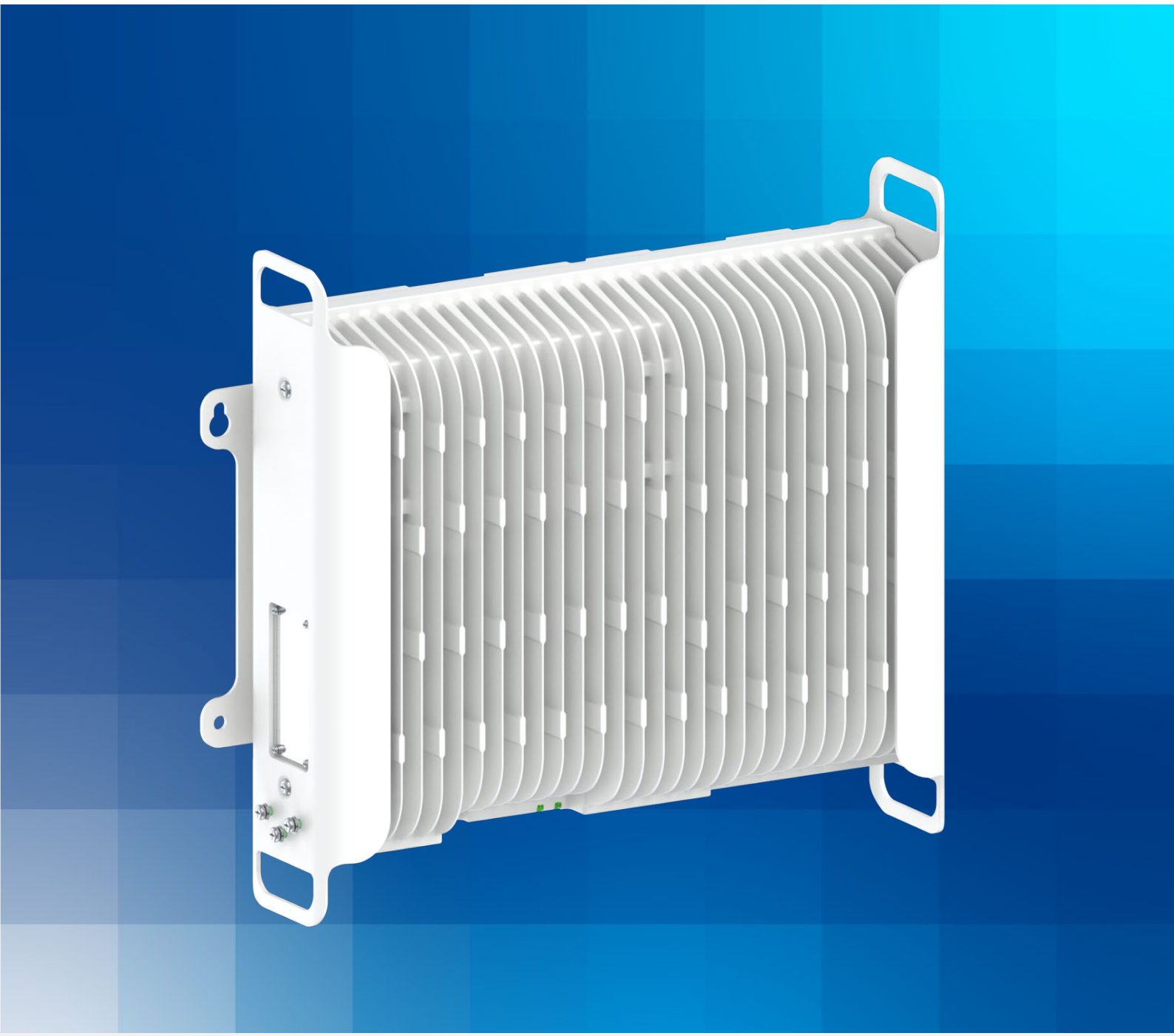
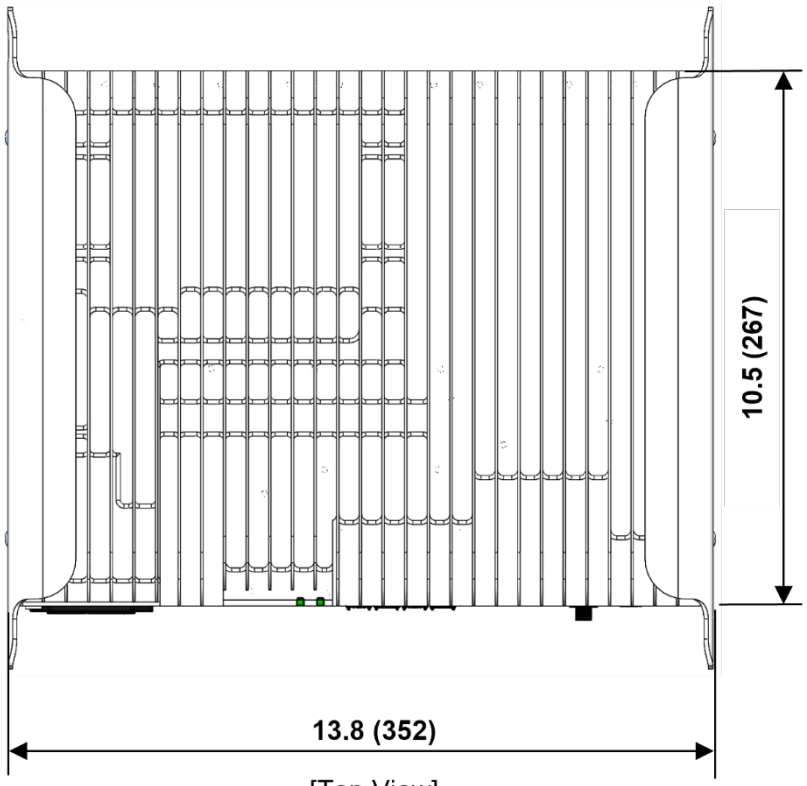


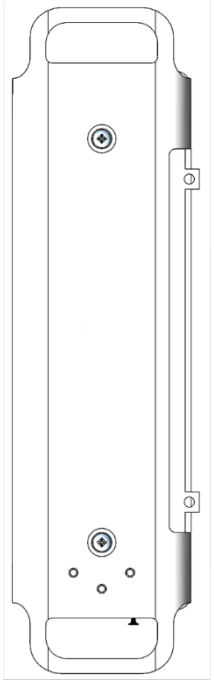
SOLiD BARS™ HUB Unit

The HUB unit serves as a distribution component within the BARS system. It transmits data from the HE up to 10 km using an SFP module and connects to up to eight remote units (RUs).

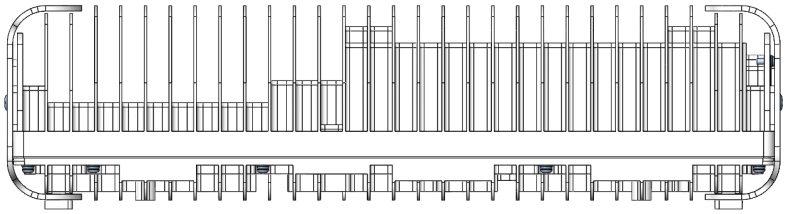
HUB Mechanical Overview



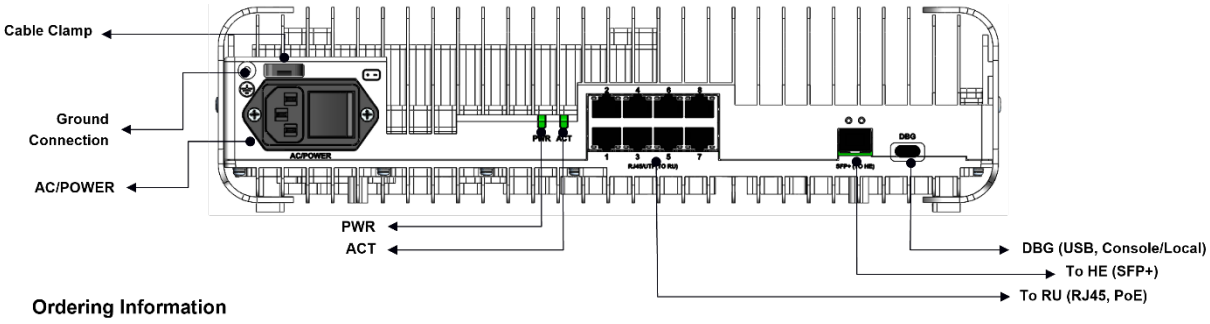
[Top View]



[Right View]



[Rear View]



[Front View]

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HUB Hardware Specifications

Category	Parameter	Specification	Remarks
Physical	Dimensions (W × D × H)	352 × 267 × 88 mm (2U)	Without mounting bracket
	Volume	8.3 L	
	Weight	≤ 7.2 kg	Excluding wall-mount bracket; tolerance ±0.2 kg
	Color / Finish	Jevisco PP#4636 X-Texture, semi-gloss white powder coating	
Power	Power Input	AC 90–264 V, 47–63 Hz	With 8 RUs connected via 100 m PoE cables
	Power Consumption	< 500 W	
Connectivity & Cabling	Optical Fiber Distance	Up to 10 km	HE–HUB
	Ethernet Cable Distance (CAT6A)	Up to 100 m	HUB–RU
	Ethernet Cable Distance (CAT6A)	Up to 200 m	HUB–Extender–RU
Ports – Bottom	RU Interface	RJ45 with PoE, 8 ports	
	Console / Local Interface	USB Type-C, 1 port	
	HE Interface	SFP+, 1 port	
	Power Input	AC power port, 1 port	
	Ground	GND terminal, 1	
Indicators	Status LEDs	2 LEDs (bi-color: Green / Red)	
Installation	Mounting Options	Wall mount (vertical only)	
		Rack mount (horizontal only)	
Environmental	Ingress Protection	IP40	
	Cooling	Natural convection	Fanless
	Operating Temperature	–5 °C to +40 °C	Rack or wall mount
	Storage Temperature	–40 °C to +70 °C	

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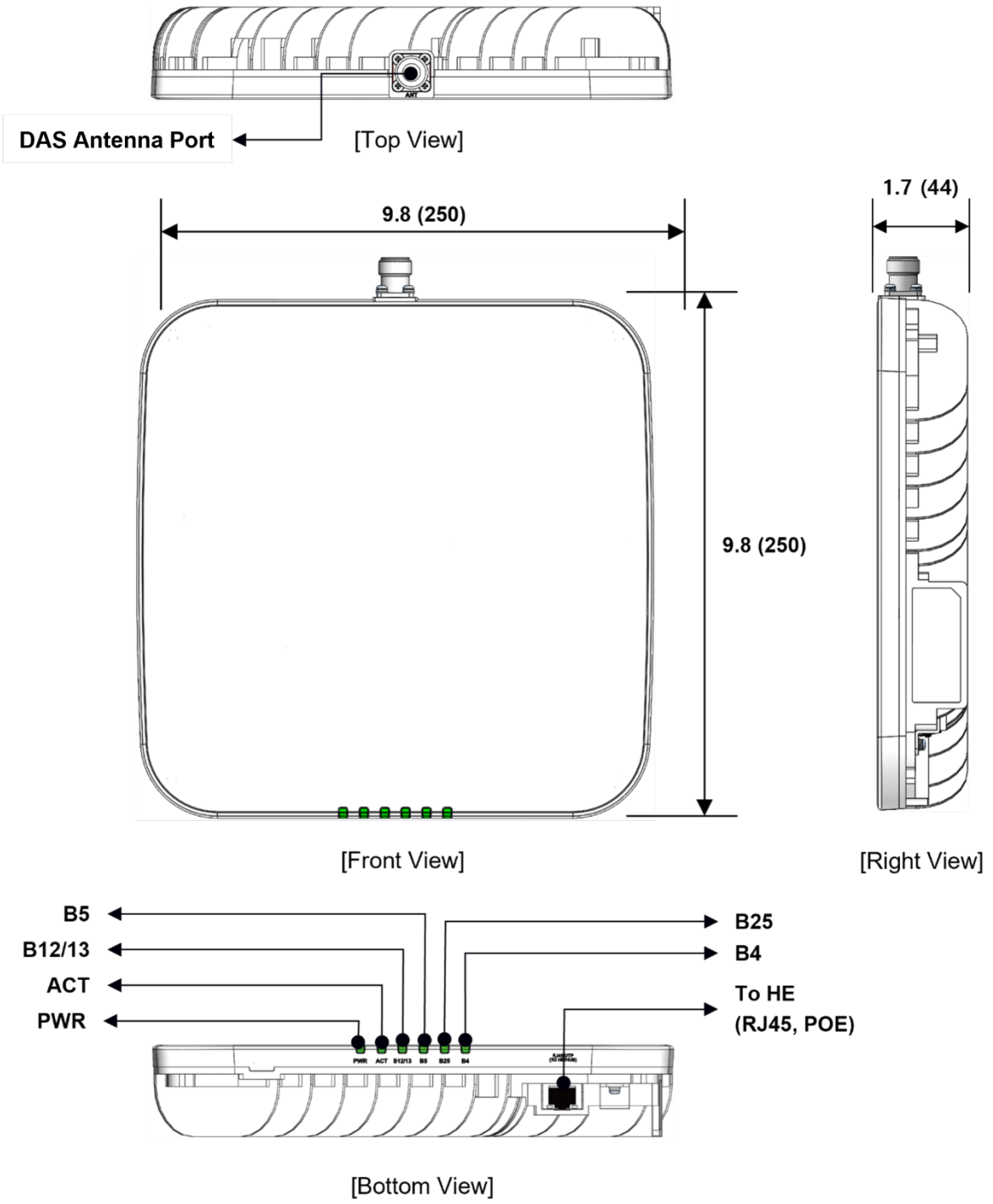
SOLiD BARS™

SOLiD BARS™ Remote Unit

The BARS Remote Unit (RU) extends the limited coverage of the head-end unit (HE). It receives cellular signals directly from the HE or through a HUB, converts them into RF (radio frequency) signals, amplifies them, and transmits them through its RF port.

RU Mechanical Overview



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RU Hardware Specifications

Category	Parameter	Specification	Remarks
Physical	Dimensions (W × D × H)	250 × 250 × 44 mm	Without mounting bracket
	Volume	2.75 L	
	Weight	≤ 2.4 kg	Excluding wall-mount bracket; tolerance ±0.2 kg
	Color / Finish	Semi-gloss white powder coating (Jevisco PP#4636 X-Texture)	
Power	Power Input	–57 VDC to –41.1 VDC	PoE supplied from HE or HUB
	Power Consumption	< 40 W	
Connectivity & Cabling	Ethernet Cable Distance (CAT6A)	Up to 100 m	HE–RU or HUB–RU
		Up to 200 m	HE–Extender–RU or HUB–Extender–RU
Ports	RF Port	N-type (female), 1 port	DAS antenna
	Ethernet / Power	RJ45 with PoE, 1 port	
Indicators	Status LEDs	6 LEDs (bi-color: Green / Red)	
Installation	Mounting Options	Wall mount	
		Ceiling mount	
Environmental	Ingress Protection	IP40	
	Cooling	Natural convection (fanless)	
	Operating Temperature	–5 °C to +45 °C	Wall mount
		–5 °C to +40 °C	Ceiling mount
	Storage Temperature	–40 °C to +70 °C	

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System Specifications

Channel and Band Configuration

Band	DL Frequency (MHz)	UL Frequency (MHz)	Full Bandwidth (MHz)	Max. Channel Bandwidth (MHz)	Carrier Support
Band 4 (AWS-1)	2110–2155	1710–1755	45	20	Verizon / AT&T / T-Mobile
Band 5 (Cellular)	869–894	824–849	25	10	Verizon / AT&T / T-Mobile
Band 12 (700 Lower)	729–746	699–716	17	10	AT&T / T-Mobile
Band 13 (700 Upper)	746–756	777–787	10	10	Verizon
Band 25 (PCS)	1930–1995	1850–1915	65	20	Verizon / AT&T / T-Mobile

Note: Supported carrier configurations depend on regional and operator deployment requirements.

System RF Performance

Parameter	Direction	Unit	Specification
Total Bandwidth	DL / UL	MHz	See band configuration
Max. Channel Bandwidth	DL / UL	MHz	See band configuration
Number of MNOs	DL / UL	MNOs	Up to 3
Number of Bands per MNO	DL / UL	Bands	Up to 3
Output Power	DL	dBm	≤ 17 dBm EIRP (composite per band), ≤ 10 dBm per channel
	UL	dBm	22 ± 2 dBm per band / MNO
Input Power (RSRP)	DL	dBm	–120 dBm to –40 dBm
System Gain	DL / UL	dB	Maximum ≤ 100 dB
EVM	DL	%	≤ 8% (64-QAM)
	UL	%	≤ 8% (16-QAM)
Interference Cancellation	DL / UL	dB	Maximum 30
Noise Figure	DL / UL	dB	Typical 5.0 dB (± 2.0 dB)

Compliance

Category	Parameter	Specification
Regulatory	FCC	Complies with FCC Part 15 and Part 20
	UL	Certified to UL 62368-1
	Installation	Intended for fixed, in-building use only
	RF Exposure	Minimum separation distance: 41 cm (16 inches) for donor antennas, 20 cm (8 inches) for DAS antennas

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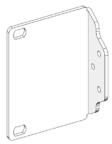
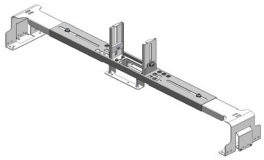
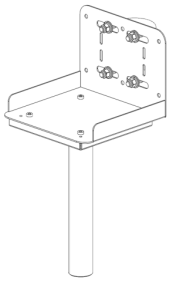
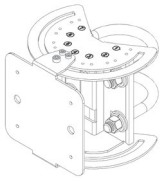
Ordering Information

Main Units

Part Number	Description	Regional Availability
SOLiD_BARS_HE	Head-End unit for system control and signal distribution	USA
SOLiD_BARS_HUB	Hub unit for RU distribution and signal aggregation	
SOLiD_BARS_RU	Remote unit for RF signal amplification and coverage extension	

Optional Accessories (*Sold Separately*)

Part Number	Image	Specification
SOLiD_BARS_RMBRK		• 19-inch rack mounting bracket for HE and HUB installation • Includes mounting hardware: - M4 × L12 screws (bracket) - M6 × L16 screws (rack)
SOLiD_BARS_ACBRK		• Suspended ceiling mounting bracket for RU installation • Includes mounting hardware: - M4 × L10 screws (bracket) - M4 × L15 tapping screws (ceiling tile)
SOLiD_BARS_RAK		• Wall, ceiling, and pole mounting bracket for donor antenna installation • Includes mounting hardware: <u>For wall / ceiling installation:</u> - 8 mm × 40 mm plastic anchor plugs - M6 × L30 tapping screws <u>For pole installation:</u> - U-bolt (3/8 × 1-1/2) - 3/8 hex nuts with M10 plain and spring washers
SOLiD_BARS_PMK		• Pole mounting bracket for donor antenna installation • Includes mounting hardware: - U-bolt (3/8 × 1-1/2) - 3/8 hex nuts with M10 plain and spring washers
SOLiD_BARS_PoERE		• PoE Standard: IEEE 802.3bt • Maximum Distance: Up to 200 m total (100 m per link) • Interface: RJ45 (PoE In / PoE Out, Cat6A) • Data Rate: Up to 5 Gbps • Nominal Voltage: 54 V • Dimensions (W × H × D): 120 × 104 × 28.3 mm • Weight: 260 g • Power Consumption: < 10 W • Ingress Protection: IP40

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SOLiD Contact & Support

For Technical Support

For all technical support or product return requests, please ensure you have the SOLiD product identification and serial number available. The information can be found on the back of the unit. The site and customer name should also be included in all communications. All faulty units must be returned in their original or suitable protective packaging.

- Please visit our website at https://solid.com for more information.
- For further inquiries, please contact our local customer support team at support@solid.com.

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