

SOLiD BARS™ System Overview

Version 1.0.0

SOLiD BARS™ is an advanced solution for enhancing cellular signals within buildings. It provides reliable multi-carrier coverage from up to three carriers and is FCC Part 20 compliant, eliminating the need for retransmission agreements. The system supports up to forty (40) remote units through a single head-end, utilizing up to four (4) hubs. With an adaptive Interference Cancellation System (ICS), SOLiD BARS™ ensures optimal coverage. The cloud-based Equipment Management System (EMS) and user-friendly web interface simplify network management.

Features and Benefits

- **Low Total Cost**
 - Off-air signal source provides service immediately while eliminating costly carrier fees
 - Use of Ethernet cabling, decreasing complexity and commissioning time
 - Head-end and hubs support up to eight (8) remote units each, reducing the need for additional, costly head-end and donor equipment
- **Easy Setup (Installation & Commissioning)**
 - One (1) Ethernet cable per remote unit, conserving conduit space
 - Power-over-Ethernet (PoE) support, providing flexibility in remote placement
 - Auto commissioning features reduce common errors and site visits
 - Interference Cancellation System (ICS) eliminates oscillation
- **Multi-MNOs & Multi-Bands**
 - Up to three carriers supported in a single system
 - Supports three bands per carrier in remote areas where a broader band selection is often needed
 - Each carrier donor antenna is amplified individually, reducing the need to isolate a single carrier to increase power for the others
- **Web-based System**
 - Web user interface provided for ease of commissioning
 - Robust web-based Equipment Management System (EMS) developed for ongoing monitoring and optimization

Ordering Information

#	Part Number	Description	Regional Availability
1	SOLiD_BARS_HE	The SOLiD BARS™ head-end unit includes a wall-mount bracket, a SIM card, and a Wi-Fi antenna, and it supports AC power.	USA
2	SOLiD_BARS_HUB	The SOLiD BARS™ hub unit includes a wall-mount bracket and supports AC power.	
3	SOLiD_BARS_RU	The SOLiD BARS™ remote unit includes a wall & ceiling-mount bracket, a DAS antenna, and supports PoE.	

Channels/Bands Configurations

Band Configuration	Frequency	Full Bandwidth (MHz)	Max. Channel Bandwidth (MHz)	Verizon				AT&T				T-Mobile			
				1	2	3	4	1	2	3	4	1	2	3	4
Band 4 (AWS -1)	2110–2155	45	20		●	●	●		●	●	●		●	●	●
	1710–1755														
Band 5 (Cellular)	869–894	25	10	●	●		●	●	●		●	●	●		●
	824–849														
Band 12 (700 Lower)	729–746	17	10					●	●	●		●	●	●	
	699–716														
Band 13 (700 Upper)	746–756	10	10	●	●	●									
	777–787														
Band 25 (PCS)	1930–1995	65	20	●		●	●	●		●	●	●		●	●
	1850–1915														

System Specifications

Parameter		Unit	Band 4 (AWS -1)	Band 5 (Cellular)	Band 12 (700 Lower)	Band 13 (700 Upper)	Band 25 (PCS)
Frequency	DL	MHz	2110–2155	869–894	729–746	746–756	1930–1995
	UL	MHz	1710–1755	824–849	699–716	777–787	1850–1915
Total Bandwidth	DL/UL	MHz	45	25	17	10	65
Max Channel Bandwidth	DL/UL	MHz	20	10	10	10	20
No. of MNOs	DL/UL	MNOs	3				
No. of Bands per MNO	DL/UL	Bands	3				
Output Power	DL	dBm	Maximum RF Output Power: ≤17 dBm EIRP (composite per band), ≤10 dBm per channel				
	UL	dBm	22 ± 2 dBm per band/MNO				
Input Power	DL	dBm	RSRP Range: -120 dBm to -40 dBm				
System Gain	DL/UL	dB	Maximum: ≤ 100 dB				
EVM	DL	%	≤ 8% at 64-QAM				
	UL	%	≤ 8% at 16-QAM				
Interference Cancellation	DL/UL	dB	Maximum: 30				
Noise Figure	DL/UL	dB	Typ. 5.0 dB (± 2.0 dB)				



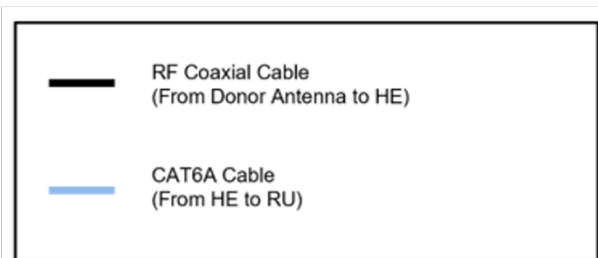
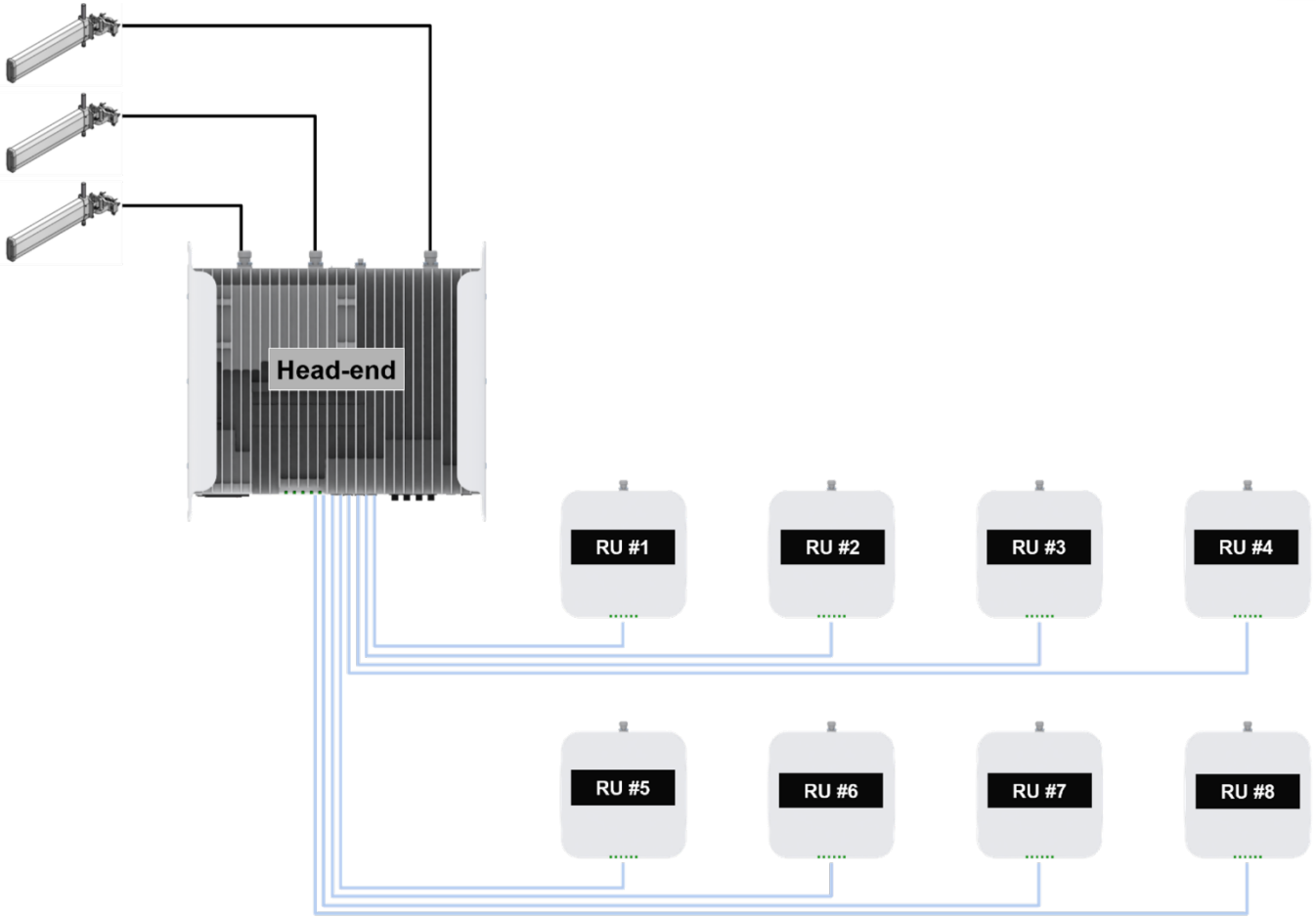
Regulatory Compliance / Certifications

Compliance	Part Number	Description
FCC	Part 15	EMI (Subpart B)
	Part 20	Signal Booster (20.21 B2P)
	Part 22	RF-Band 5
	Part 24	RF-Band 4/Band 12/Band 13
	Part 27	RF-Band 25
UL	UL 62368-1	Safety
	UL 2043	Fire Test



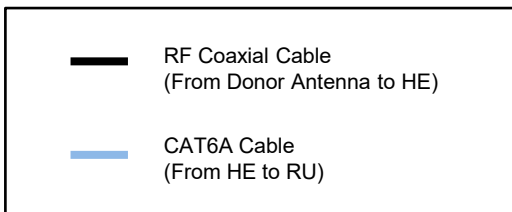
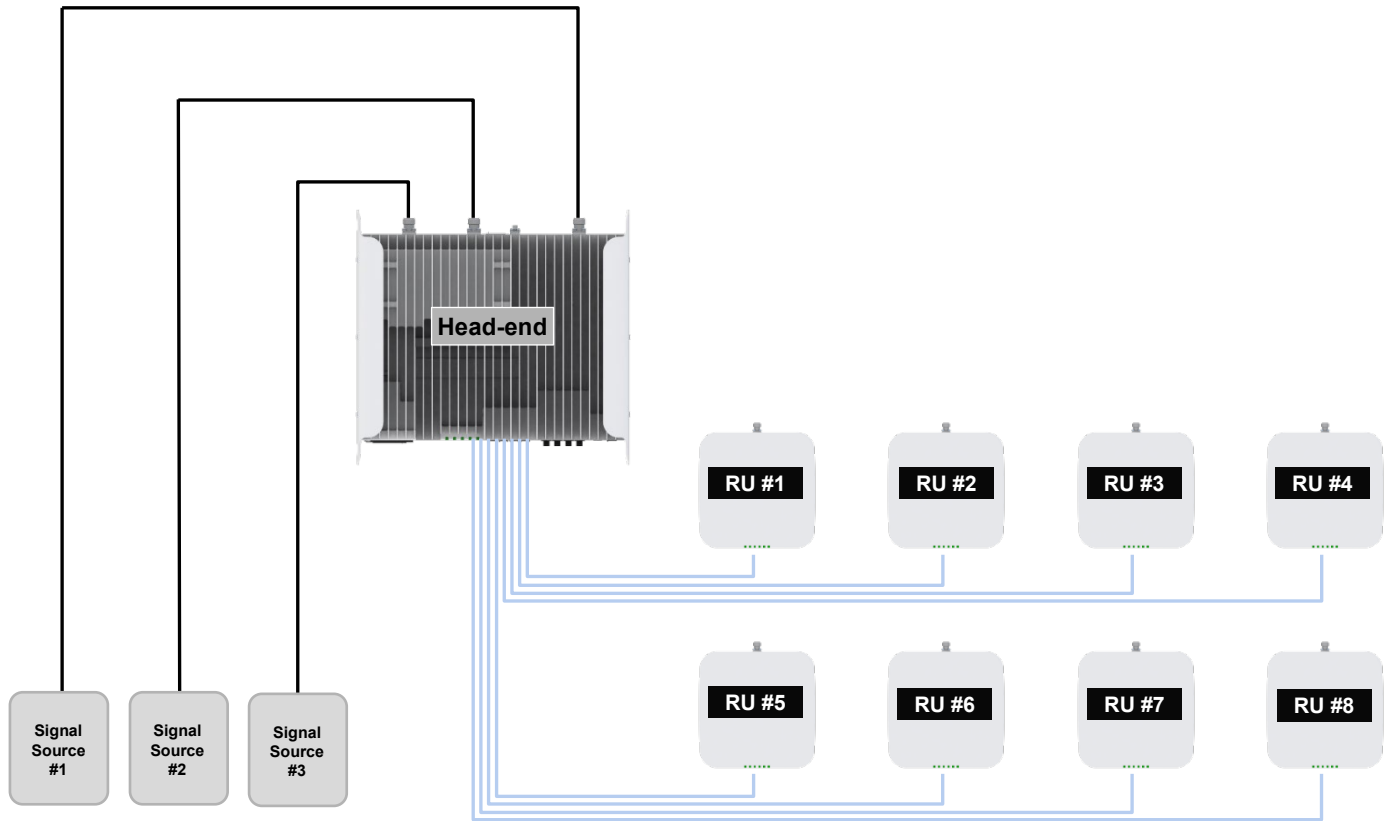
Example Diagram #1: Off-air, 1 (HE) and 8 (RUs)

The diagram below shows a simple setup with one head-end (HE) and eight remote units (RUs) for receiving off-air signals.



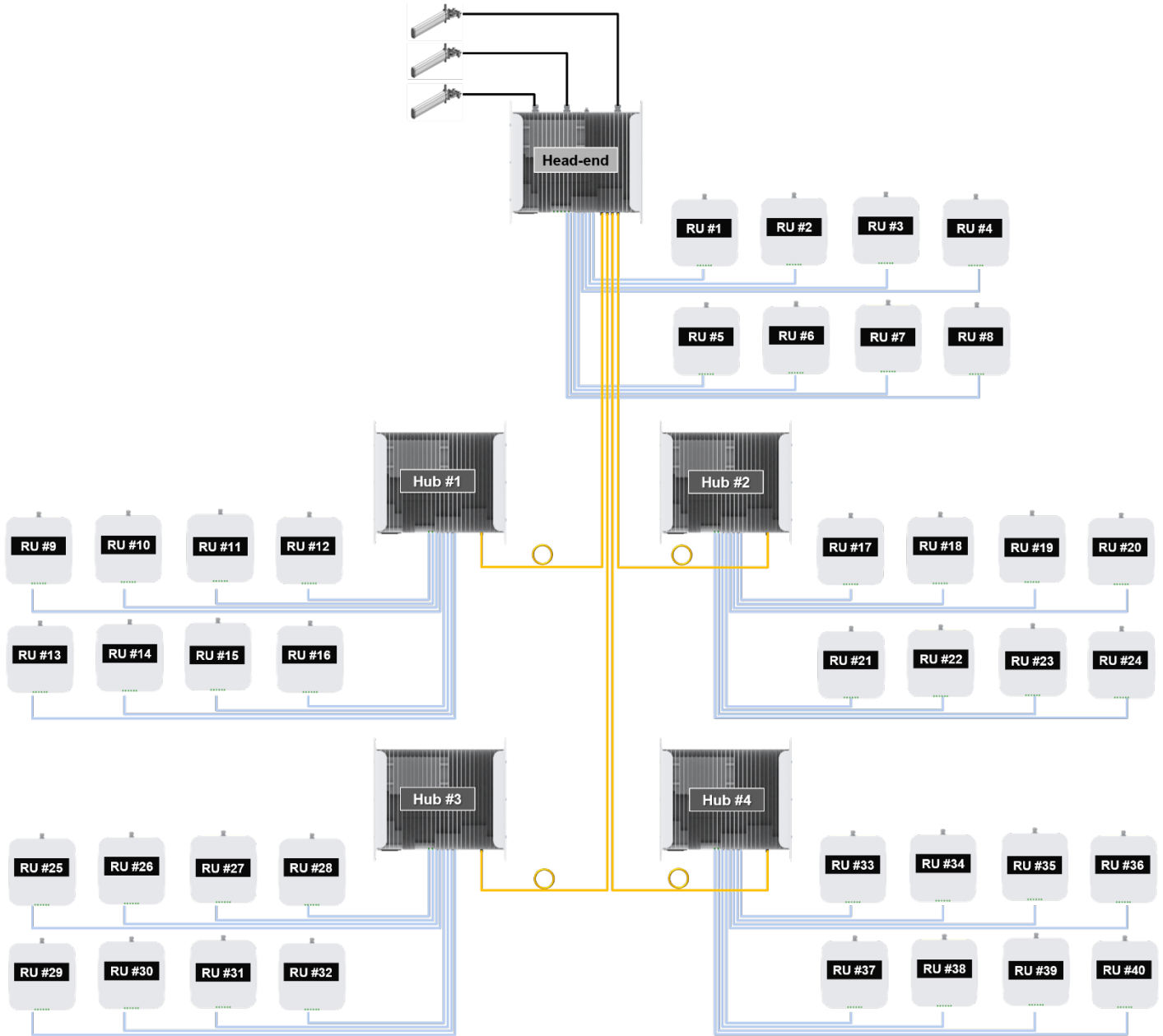
Example Diagram #2: Hybrid, 1 (HE) and 8 (RUs)




The diagram below shows a simple setup with one head-end (HE) and eight remote units (RUs) using signal sources.

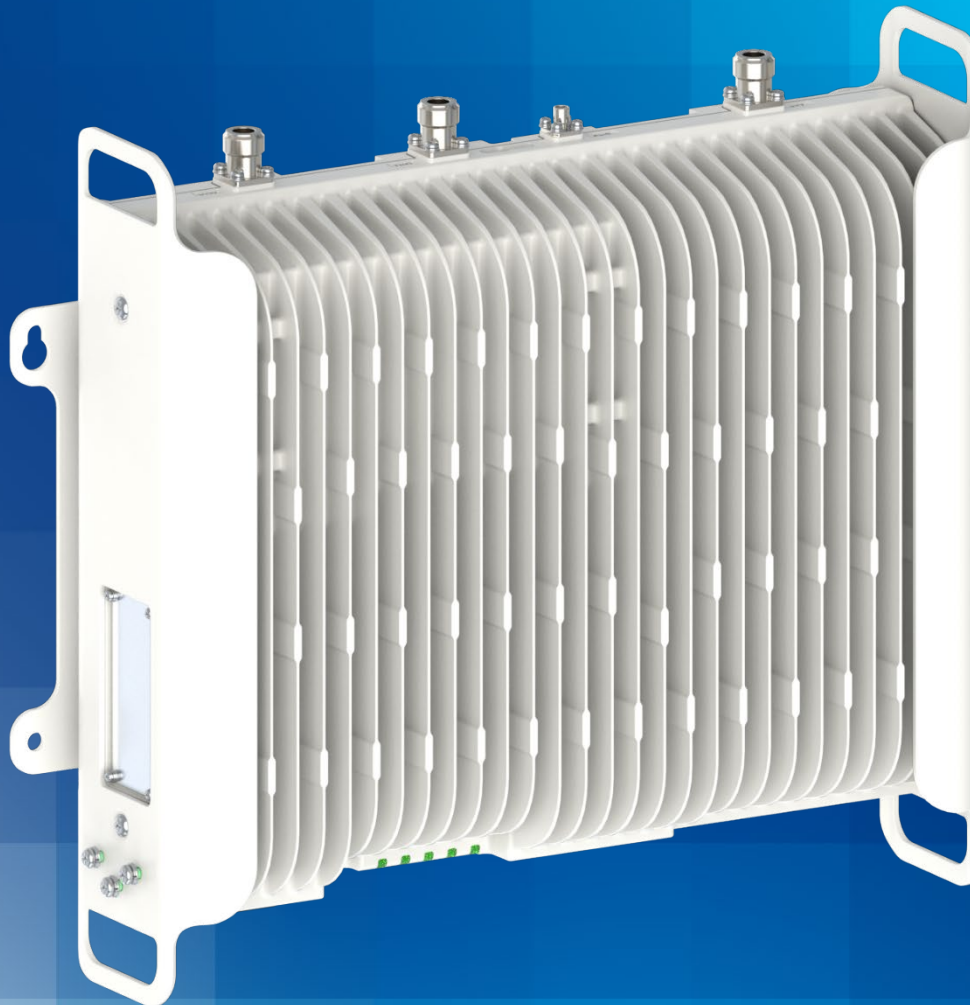


Example Diagram #4: Off-Air, 1 (HE), 4 (HUBs) and 40 (RUs)

The diagram below shows a full setup with one head-end (HE), four hubs, and forty remote units (RUs) for receiving off-air signals.



	RF Coaxial Cable (From Donor Antenna to HE)
	CAT6A Cable (From HE to RU)
	Optical Fiber (From HE to HUB)



Head-end Unit (HE)

Version 1.0.0

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.

Specifications of HE

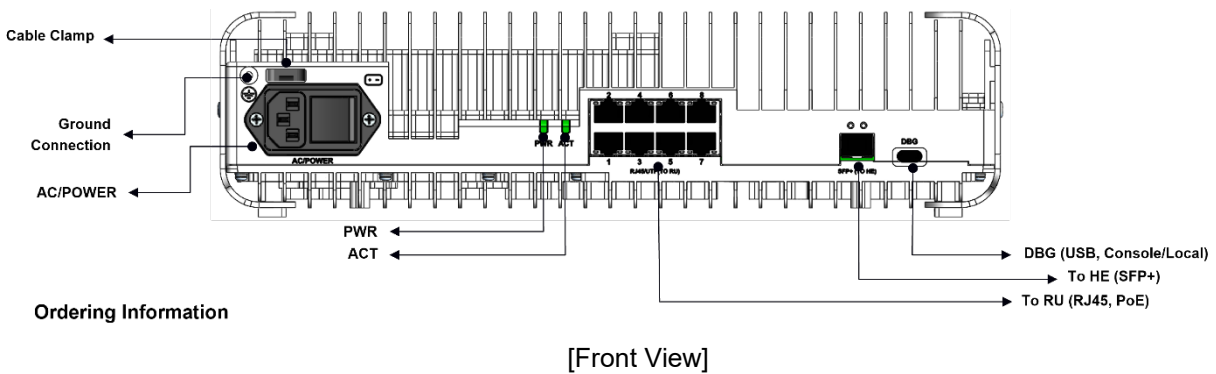
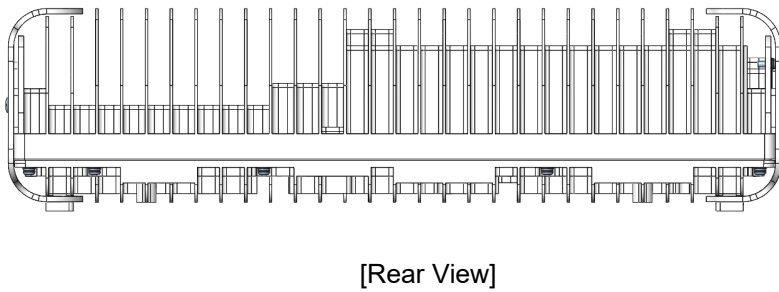
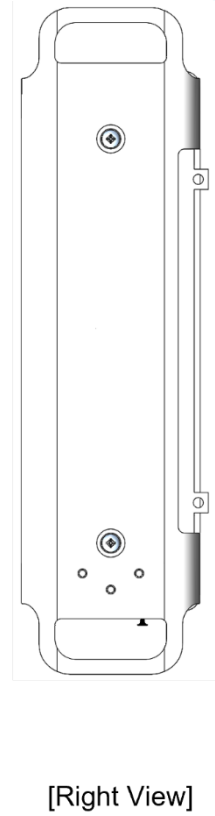
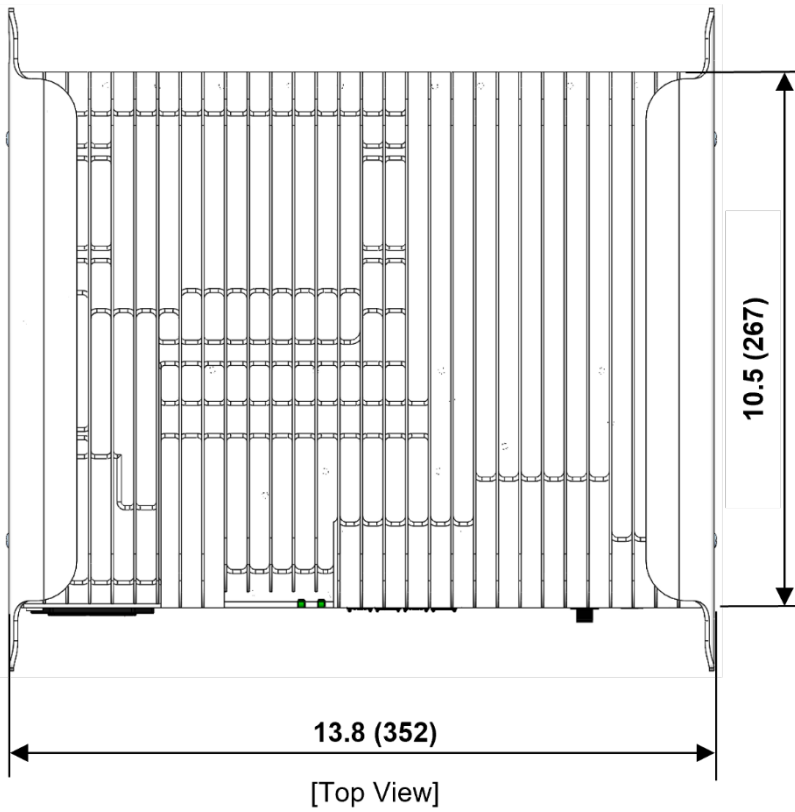
Parameters	Specifications	Remarks
Size (W x D x H)	352 x 267 x 88 (2U) (mm), without bracket	
Volume	8.3 L	
Weight	≤ 7.9 kg (excluding wall mount bracket, tolerance: ± 0.2 kg)	
Color	Jevisco PP#4636 X-Texture Semi-Gloss White Powder Coating	
Power	AC 90–264 V, 47–63 Hz	
Power Consumption	< 500 W	8 RUs with 100 m PoE cables
Cable Distance	Up to 10 km	Optical Fiber: • HE–HUB
	Up to 100 m	CAT6A: • HE–RU
	Up to 200 m	CAT6A: • HE–Extender–RU
Port Information	Top <ul style="list-style-type: none"> • N-type (f) for donor antenna, 3 ea • Reverse SMA-type (f) for Wi-Fi antenna, 1 ea • SIM card slot for EMS modem, 1 ea 	[SIM Card Information] <ul style="list-style-type: none"> • Type: 4FF–Nano SIM • Height: 12.3 mm • Width: 8.8 mm • Thickness: 0.67 mm
	Bottom <ul style="list-style-type: none"> • RJ45 for RU, 8 ea with PoE • RJ45 for LAN, 1 ea • USB-C for console/local, 1 ea • SFP+ for HUB, 4 ea • AC/power port, 1 ea • GND, 1 ea 	
LED	LED (2 Color Green/RED): 5 ea	
Mounting Type	<ul style="list-style-type: none"> • Wall mount (vertical only) • Rack mount (horizontal only) 	
Ingress Protection	IP40	
Cooling	Natural Convection	
Operating Temperature	<ul style="list-style-type: none"> • -5 to +40 °C (for rack mount) • -5 to +40 °C (for wall mount) 	
Storage Temperature	-40 to +70 °C	



SOLiD BARS™ HUB Unit

Version 1.0.0

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).



Ordering Information

Part Number	Description
SOLiD_BARS_HUB	The SOLiD BARS™ hub unit includes a wall-mount bracket and supports AC power.

Specifications of HUB

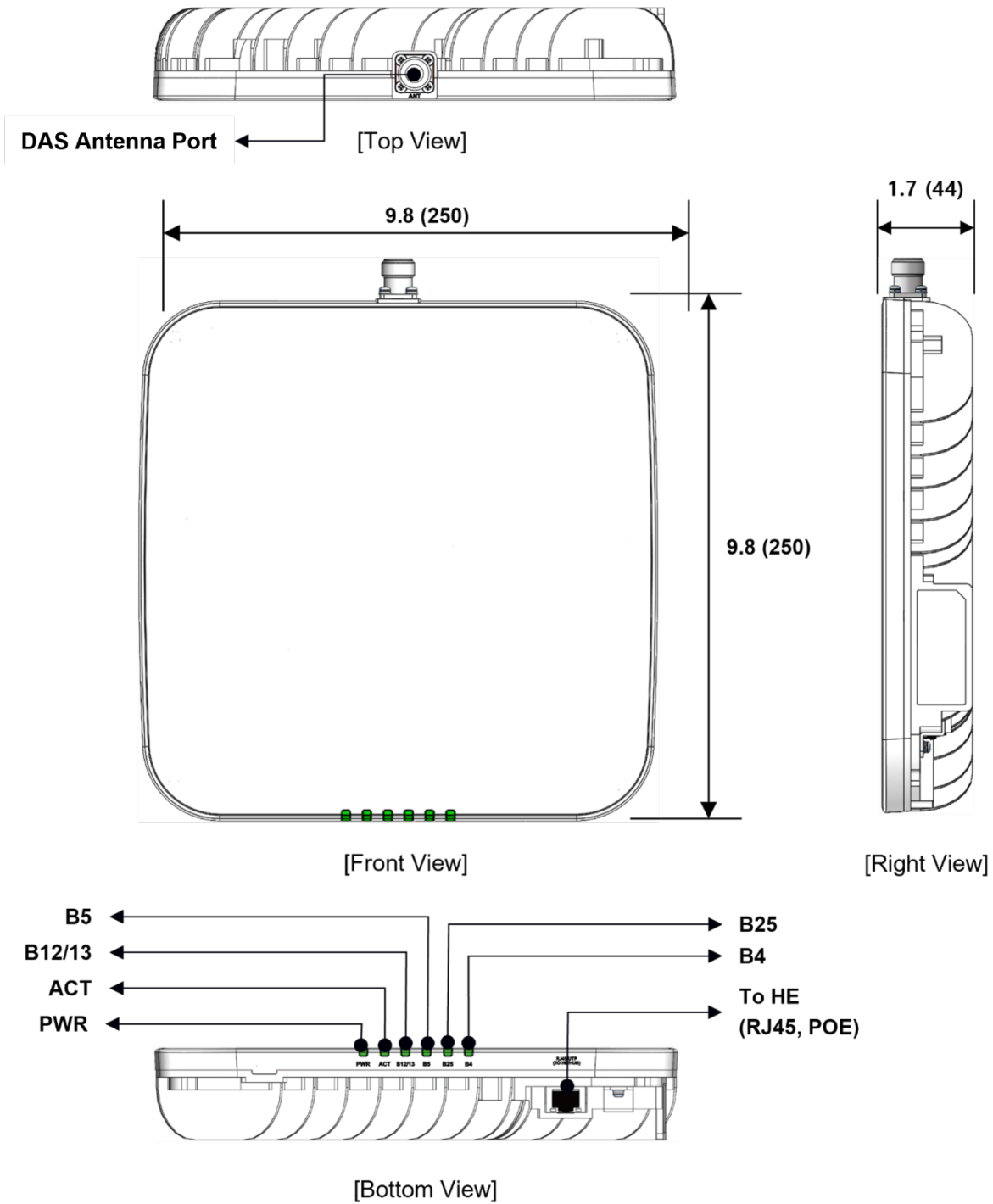
Parameters	Specifications	Remarks		
Size (W x D x H)	352 x 267 x 88 (2U) (mm), without bracket			
Volume	8.3 L			
Weight	≤ 7.2 kg (excluding wall mount bracket, tolerance: ± 0.2 kg)			
Color	Jevisco PP#4636 X-Texture Semi-Gloss White Powder Coating			
Power	AC 90–264 V, 47–63 Hz			
Power Consumption	< 500 W	8 RUs with 100 m PoE cables		
Cable Distance	Up to 10 km	Optical Fiber: • HE–HUB		
	Up to 100 m	CAT6A: • HUB–RU		
	Up to 200 m	CAT6A: • HUB–Extender–RU		
Port Information	<table border="1"> <tr> <td>Bottom</td> <td> <ul style="list-style-type: none"> • RJ45 for RU, 8 ea with PoE • USB-C for console/local, 1 ea • SFP+ for HUB, 1 ea • AC/power port, 1 ea • GND, 1 ea </td> </tr> </table>	Bottom	<ul style="list-style-type: none"> • RJ45 for RU, 8 ea with PoE • USB-C for console/local, 1 ea • SFP+ for HUB, 1 ea • AC/power port, 1 ea • GND, 1 ea 	
Bottom	<ul style="list-style-type: none"> • RJ45 for RU, 8 ea with PoE • USB-C for console/local, 1 ea • SFP+ for HUB, 1 ea • AC/power port, 1 ea • GND, 1 ea 			
LED	LED (2 Color Green/RED): 2 ea			
Mounting Type	<ul style="list-style-type: none"> • Wall mount (vertical only) • Rack mount (horizontal only) 			
Ingress Protection	IP40			
Cooling	Natural Convection			
Operating Temperature	<ul style="list-style-type: none"> • -5 to +40 °C (For rack mount) • -5 to +40 °C (For wall mount) 			
Storage Temperature	-40 to +70 °C			



SOLiD BARS™ Remote Unit

Version 1.0.0

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.



Ordering Information

Part Number	Description
SOLiD_BARS_RU	The SOLiD BARS™ remote unit includes a wall & ceiling-mount bracket, a DAS antenna, and supports PoE.

Specifications of RU

Parameters	Specifications	Remarks
Size (W x D x H)	250 x 250 x 44 (mm), without bracket	
Volume	2.75 L	
Weight	≤ 2.4 kg (excluding wall mount bracket, tolerance: ± 0.2 kg)	
Color	Jevisco PP#4636 X-Texture Semi-Gloss White Powder Coating	
Power	-57 VDC to -41.1 VDC at PoE from the HE and HUB	
Power Consumption	< 40 W	
Distance	Up to 100 m	CAT6A: • HE–RU • HUB–RU
	Up to 200 m	CAT6A: • HE–Extender–RU • HUB–Extender–RU
Port Information	<ul style="list-style-type: none"> • N-type (f) for DAS antenna, 1 ea • RJ45 with PoE, 1 ea 	
LED	LED (2 Color Green/RED): 6 ea	
Mounting Type	<ul style="list-style-type: none"> • Wall mount • Ceiling mount 	
Ingress Protection	IP40	
Cooling	Natural Convection	
Operating Temperature	<ul style="list-style-type: none"> • -5 to +45 °C (For wall mount) • -5 to +40 °C (For ceiling mount) 	
Storage Temperature	-40 to +70 °C	



Optional Accessories

Unit Mounting Kit

- HE/HUB 19" Rack Mount Bracket
- RU Suspended Ceiling Tile Mount Bracket

Antenna Mounting Kit

- Donor Antenna Wall, Ceiling, and Pole Bracket
- Donor Antenna Pole Bracket

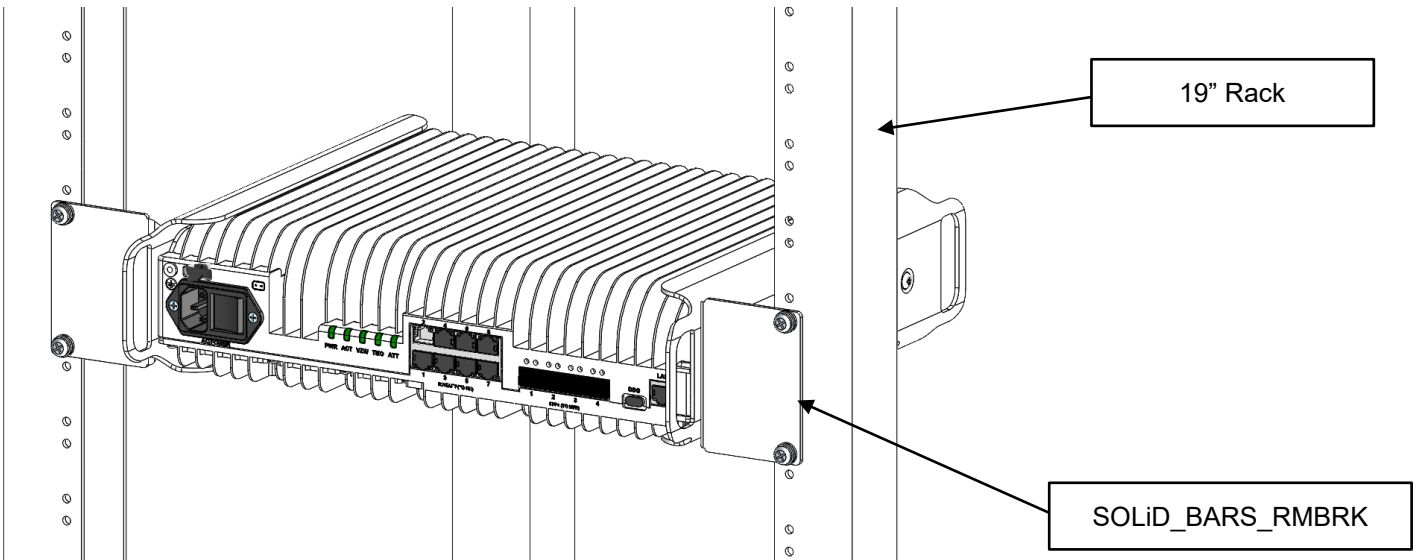
Networking Accessories

- PoE Range Extender

SOLiD BARS™ | Product Datasheet

SOLiD BARS HE/HUB 19" Rack Mount Bracket

The HE or HUB can be installed in a standard 19-inch rack using the SOLiD_BARS_RMBRK.

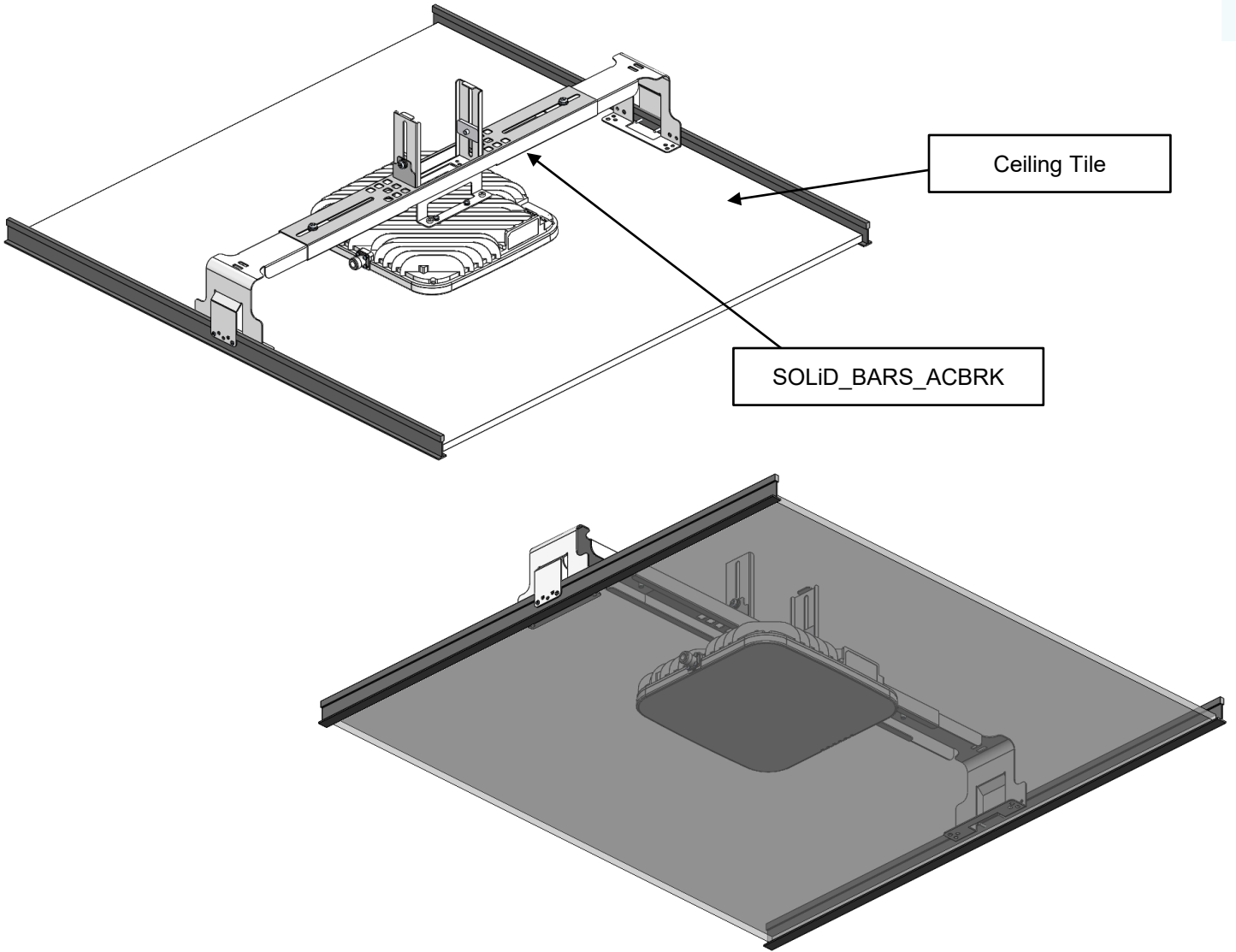


Ordering Information

Part Number	Description
SOLiD_BARS_RMBRK	Supports 19-inch rack installation of BARS HE/HUB.

SOLiD BARS RU Suspended Ceiling Tile Mount Bracket

The RU can be installed on a suspended ceiling tile using the SOLiD_BARS_ACBRK.

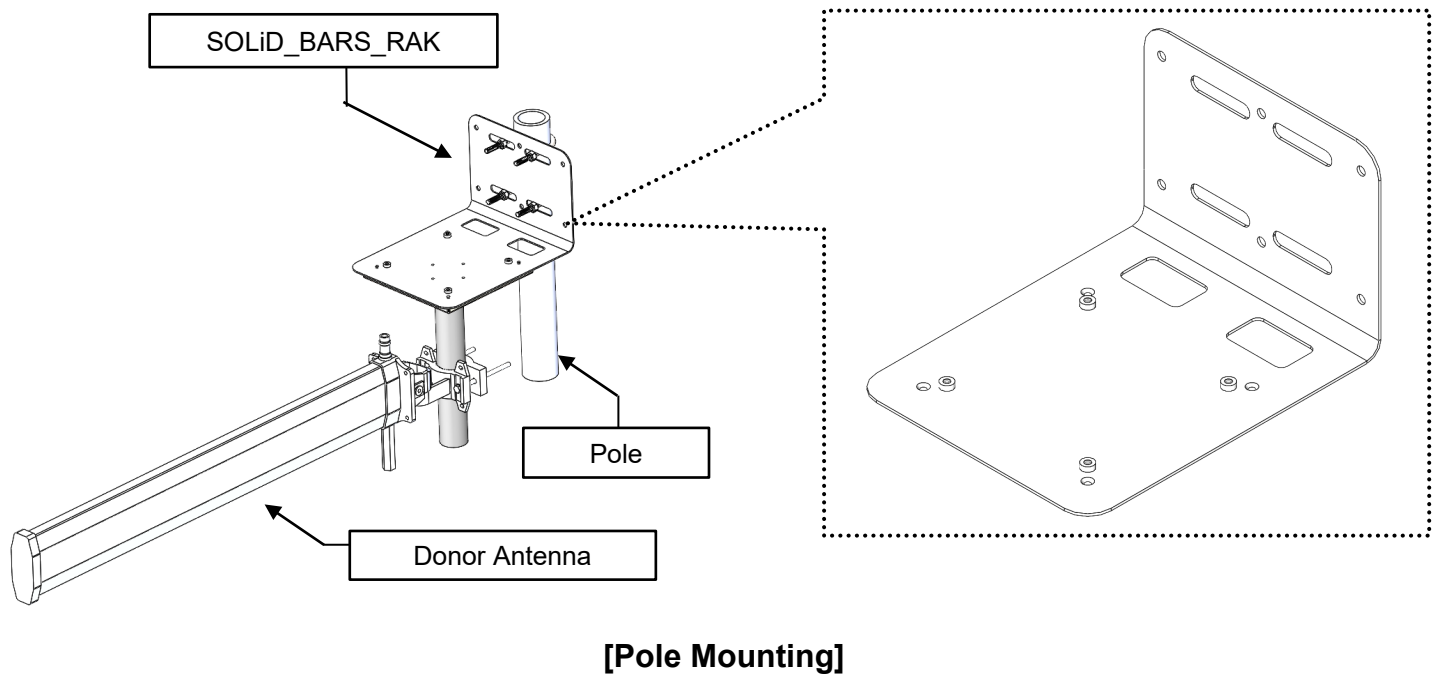
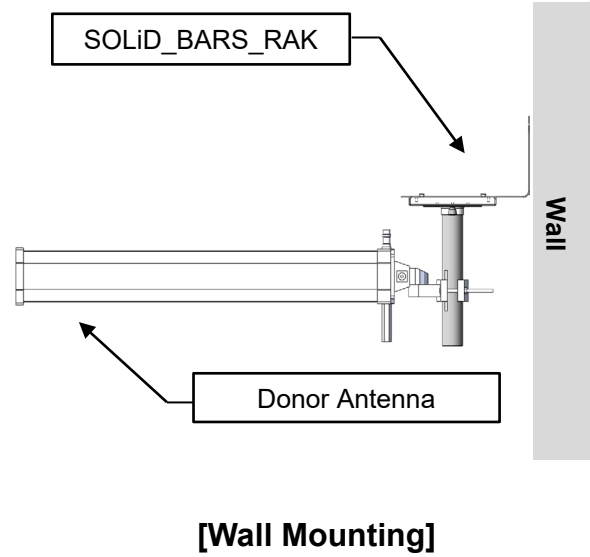
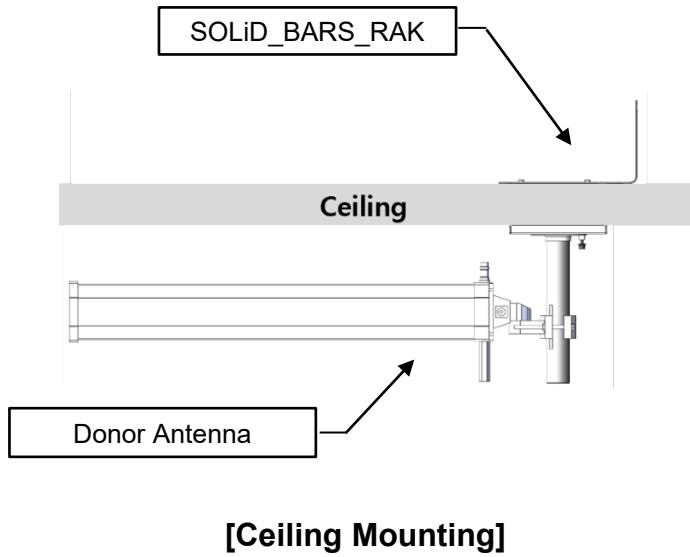


Ordering Information

Part Number	Description
SOLiD_BARS_ACBRK	Supports suspended ceiling tile installation of BARS RU.

SOLiD BARS Donor Antenna Wall, Ceiling, and Pole Bracket

The SOLiD_BARS_RAK is designed for mounting the donor antenna on a wall, ceiling, or pole to ensure optimal installation performance.

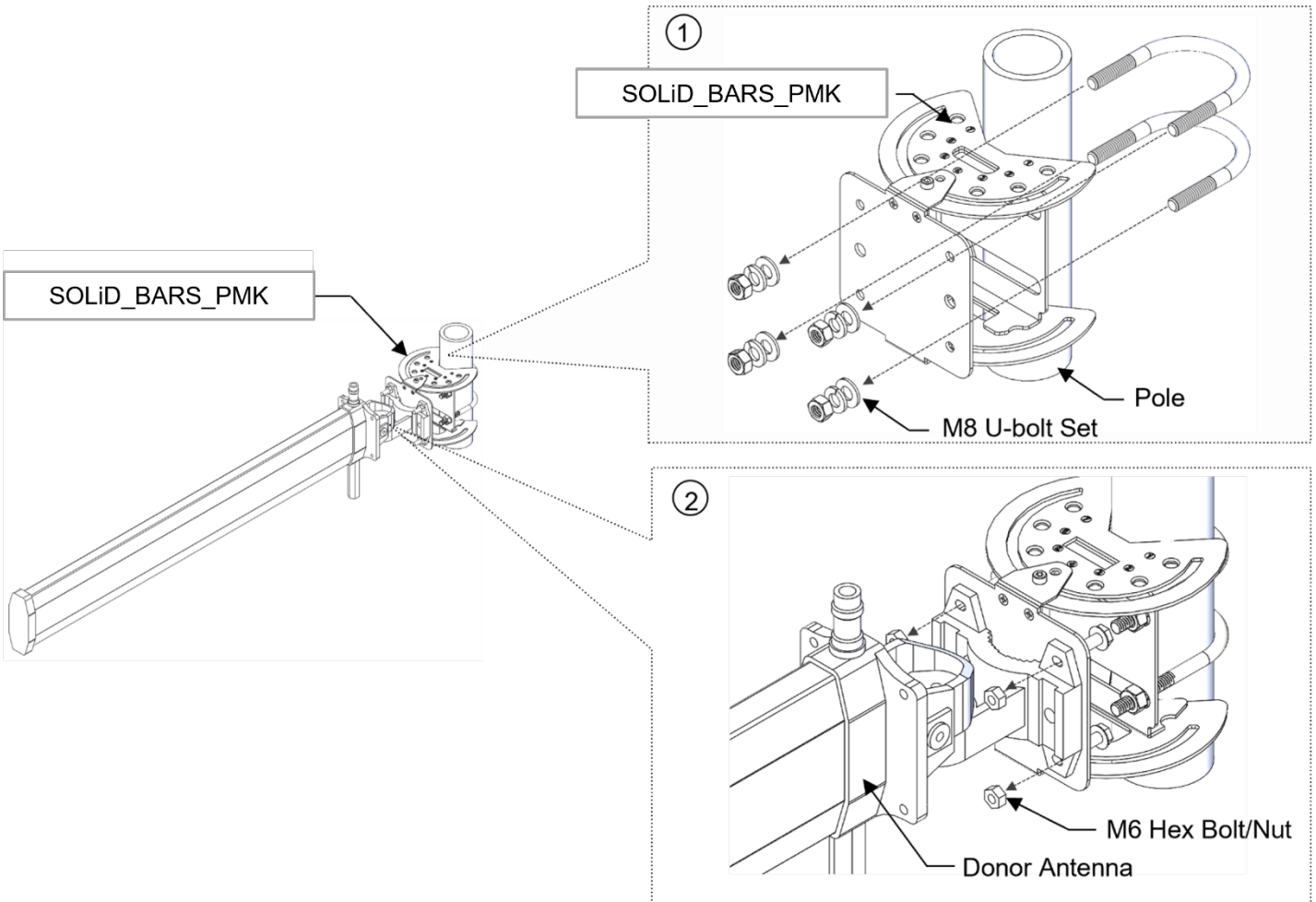


Ordering Information

Part Number	Description
SOLiD_BARS_RAK	Supports wall, pole, and ceiling installations, allowing the donor antenna to be rotated to the optimal position.

SOLiD BARS Donor Antenna Pole Bracket

The SOLiD_BARS_PMK is designed for mounting the donor antenna on a pole to ensure optimal installation performance.

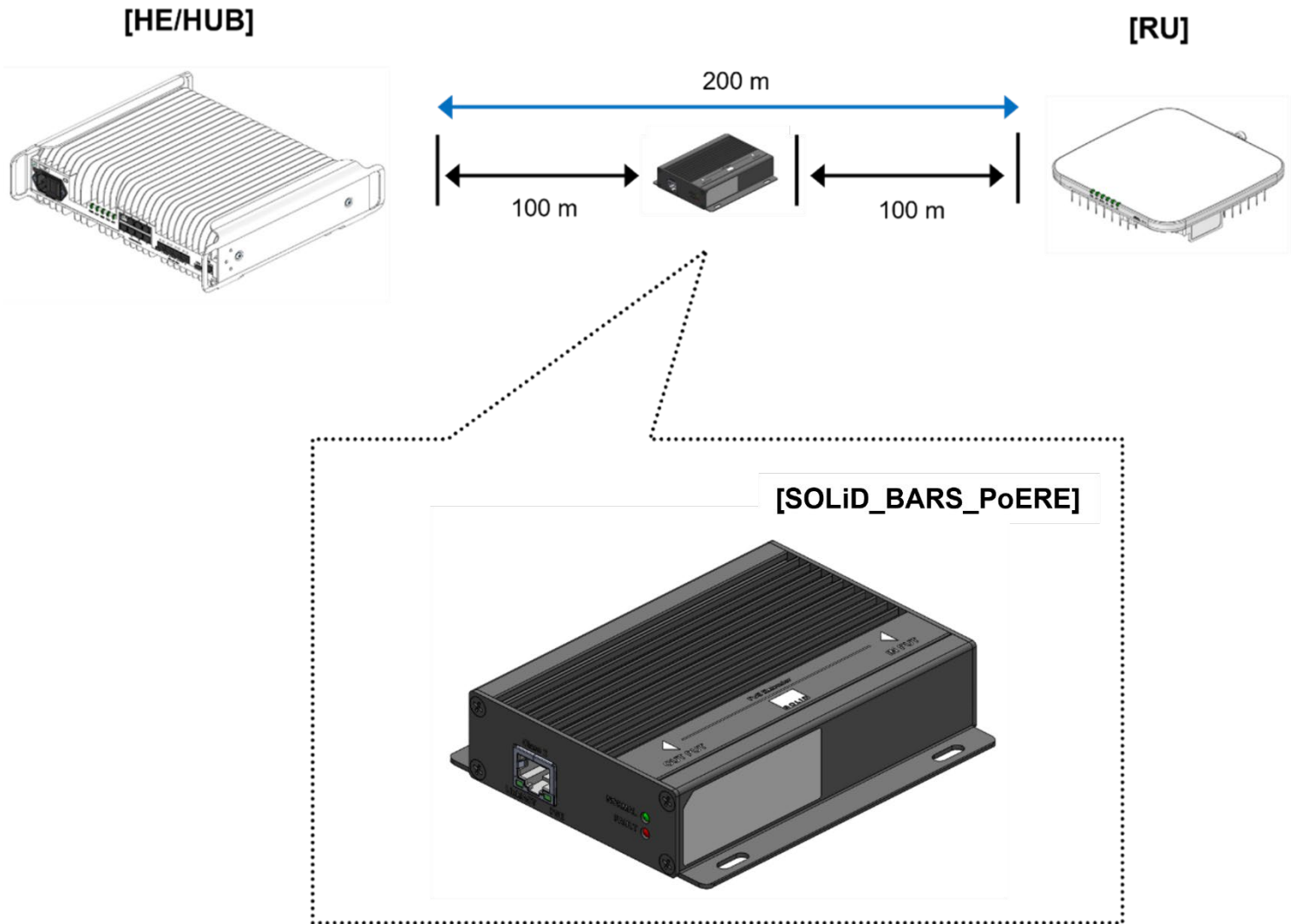


Ordering Information

Part Number	Description
SOLiD_BARS_PMK	Supports pole installation, allowing the donor antenna to be swiveled to the optimal position.

SOLiD BARS PoE Range Extender

The SOLiD BARS Range Extender is a device that extends the connection from the HE/HUB to the RU up to 200 meters using Cat6A cable, doubling the standard 100-meter limit.



Ordering Information

Part Number	Description
SOLiD_BARS_PoERE	Extends the link between HE/HUB and RU up to 200 meters using a Cat6A cable.

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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