Antennas

MultiPort Series

DATA SHEET

HexPort Multi-Band Antenna

HPA65R-BU4A

- Four foot (1.2 m) multiband, six port antenna with a 65° azimuth beamwidth covering 698-896 MHz and 1695-2400 MHz frequencies
- Four wide high band ports covering 1695-2400 MHz and two wide low band ports covering 698-896 MHz in a single antenna
- New enclosure with <12" (305 mm) width, narrowest enclosure in the industry
- Full Spectrum Compliance for WCS and AWS-3 frequencies and upcoming Band 14 Operations
- LTE Optimized FBR and SPR performance, providing for an efficient use of valuable radio capacity
- LTE Optimized Boresight and Sector XPD and USL performance, essential for LTE Performance
- Exceeds minimum PIM performance requirements
- Equipped with new 4.3-10 connector, which is 40% smaller than traditional 7/16 DIN connector
- Ordering options for 2 or 3 field replaceable, integrated AISG 2.0 compliant Remote Electrical Tilt (RET) Controllers (Type 1 External)
- Ordering options for External RET Controllers (Type 1) or Internally Integrated RET Controllers (Type 17)

Overview

The CCI HexPort multiband array is a six port antenna, with four wide high band ports covering 1695-2400 MHz and two wide low band ports covering 698-896 MHz. The CCI HexPort provides the capability to deploy 4x4 Multiple-input Multiple-output (MIMO) in the high band and 2x2 Multiple-input Multiple-output in the low band. The CCI HexPort allows separate tilt control between the low band ports and high band ports. With the use of three RET controllers, the paired high band ports can be tilted independently, enabling maximum flexibility in network deployment.

CCI antennas are designed and produced to ISO 9001 certification standards for reliability and quality in our state-of-the-art manufacturing facilities.

Applications

- 4x4 MIMO for the high band and 2x2 MIMO for the low band
- Ready for Network Standardization on 4.3-10 DIN connectors
- With CCI's multiband antennas, wireless providers can connect multiple platforms to a single antenna, reducing tower load, lease expense, deployment time and installation costs

MultiPort Series

SPECIFICATIONS

HexPort Multi-Band Antenna

HPA65R-BU4A

Electrical

Ports	2 x Low Band Ports for 698-896 MHz	
Frequency Range	698-806 MHz	824-896 MHz
Gain[1]	13.1 dBi	13.4 dBi
Gain (Average)[2]	12.7 dBi	12.9 dBi
Azimuth Beamwidth (-3dB)	69°	68°
Elevation Beamwidth (-3dB)	20.1°	17.9°
Electrical Downtilt	2° to 16°	2° to 16°
Elevation Sidelobes (1st Upper)	< -17 dB	< -18 dB
Front-to-Back Ratio @180°	> 35 dB	> 35 dB
Cross-Polar Discrimination at Peak	> 25 dB	> 25 dB
Cross-Polar Discrimination at Sector[2]	> 9 dB	> 10 dB
Cross-Polar Port-to-Port Isolation	> 25 dB	> 25 dB
Voltage Standing Wave Ratio (VSWR)	< 1.5:1	< 1.5:1
Passive Intermodulation (2x20W)	≤ -150 dBc	≤ -150 dBc
Input Power Continuous Wave (CW)	500 watts	500 watts
Polarization	Dual Linear 45°	Dual Linear 45°
Input Impedance	50 ohms	50 ohms
Lightning Protection	DC Ground	DC Ground

[1]Peak gain across sub-bands.
[2]Electrical specifications follow document "Recommendation on Base Station Antenna Standards" (BASTA) V9.6.

Ports	4 x High Band Ports for 1695-2400 MHz			
Frequency Range	1695-1880 MHz	1850-1990 MHz	1920-2180 MHz	2300-2400 MHz
Gain[1]	16.6 dBi	17.0 dBi	17.2 dBi	17.3 dBi
Gain (Average)[2]	15.9 dBi	16.3 dBi	16.6 dBi	16.6 dBi
Azimuth Beamwidth (-3dB)	64°	65°	64°	61°
Elevation Beamwidth (-3dB)	8.1°	7.2°	6.8°	6.0°
Electrical Downtilt	2° to 10°	2° to 10°	2° to 10°	2° to 10°
Elevation Sidelobes (1st Upper)	< -18 dB	< -19 dB	< -18 dB	< -15 dB
Front-to-Back Ratio @180°	> 35 dB	> 35 dB	> 35 dB	> 35 dB
Cross-Polar Discrimination at Peak	> 18 dB	> 17 dB	> 18 dB	> 20 dB
Cross-Polar Discrimination at Sector[2]	> 7 dB	> 4 dB	> 4 dB	> 7 dB
Cross-Polar Port-to-Port Isolation	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Voltage Standing Wave Ratio (VSWR)	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1
Passive Intermodulation (2x20W)	≤ -150 dBc	≤ -150 dBc	≤ -150 dBc	≤ -150 dBc
Input Power Continuous Wave (CW)	300 watts	300 watts	300 watts	300 watts
Polarization	Dual Linear 45°	Dual Linear 45°	Dual Linear 45°	Dual Linear 45°
Input Impedance	50 ohms	50 ohms	50 ohms	50 ohms
Lightning Protection	DC Ground	DC Ground	DC Ground	DC Ground

[1]Peak gain across sub-bands.
[2]Electrical specifications follow document "Recommendation on Base Station Antenna Standards" (BASTA) V9.6.

SPECIFICATIONS

HexPort Multi-Band Antenna

HPA65R-BU4A

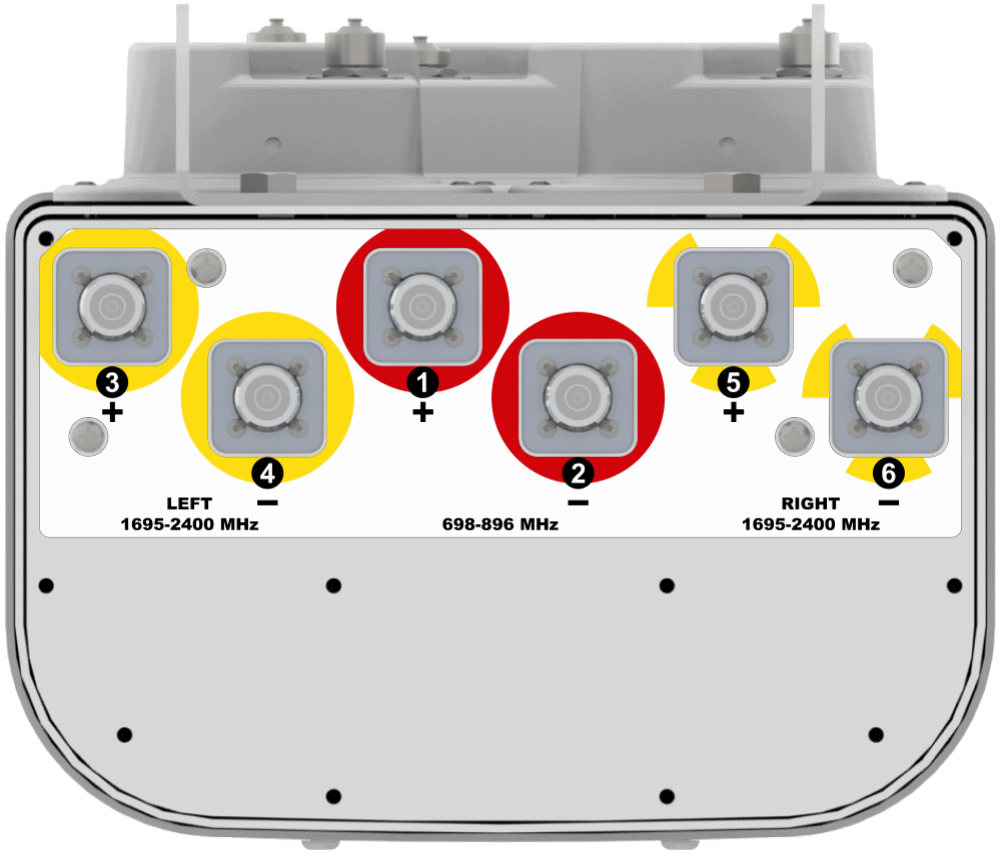
Mechanical

Dimensions (LxWxD)	48.0x11.7x7.7 in (1219x297x196 mm)
Survival Wind Speed	> 150 mph (> 241 kph)
Front Wind Load	127 lbs (564 N) @ 100 mph (161 kph)
Side Wind Load	90 lbs (399 N) @ 100 mph (161 kph)
Equivalent Flat Plate Area	5.0 ft^2 (0.5 m^2)
Weight *	28.7 lbs (13.0 kg)
RET Weight	3.3 lbs (1.5 kg) for two RET's
	5.0 lbs (2.3 kg) for three RET's
Connector	6 x 4.3-10 female
Mounting Pole	2 to 5 in (5 to 12 cm)

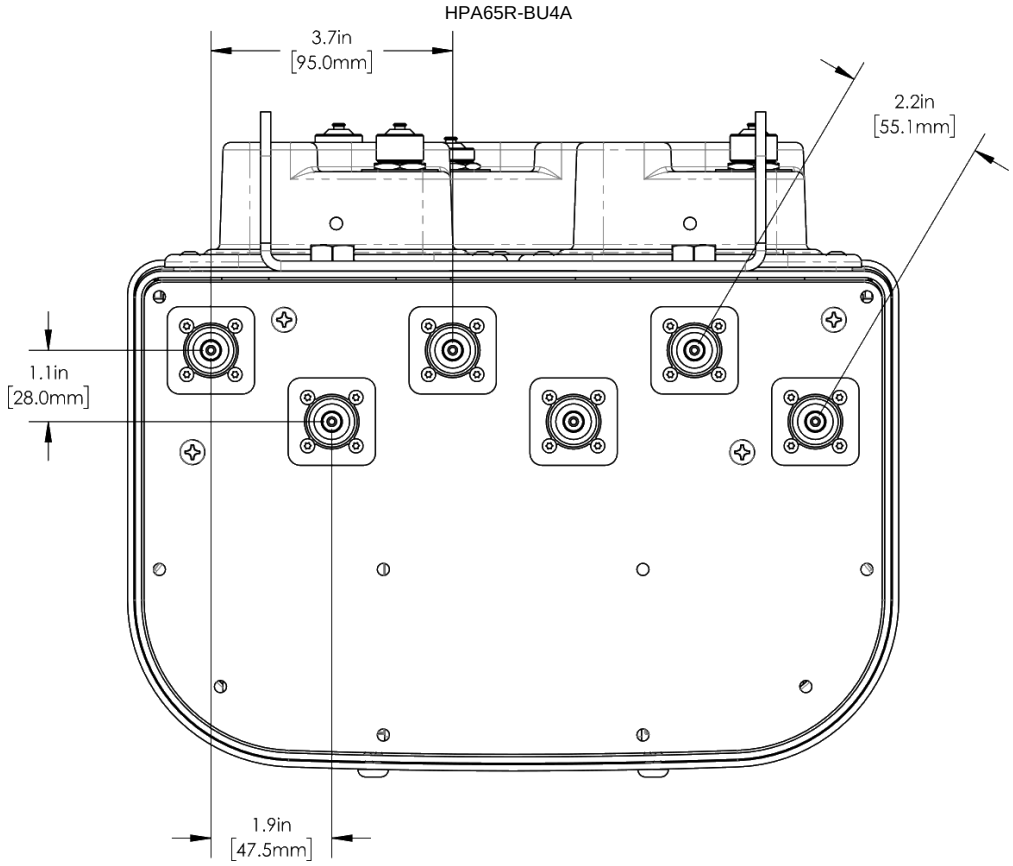
** Weight excludes mounting and RET*

Bottom View

HPA65R-BU4A model



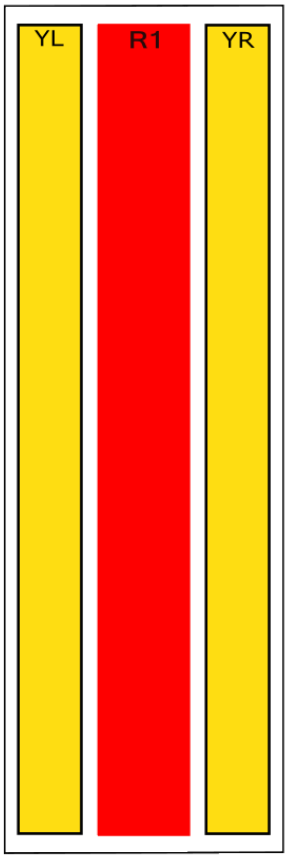
Connection Spacing Diagram



RET to Element Configuration

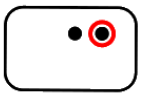
HPA65R-BU4AA Element and RET configuation (Type 1 External RET)

Top of antenna
Viewed from rear



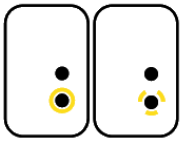
RET placement as view from rear of antenna

Top of antenna



698-896
Ports 1, 2
(R1)

Left
1695-2400
Ports 3, 4
(YL)



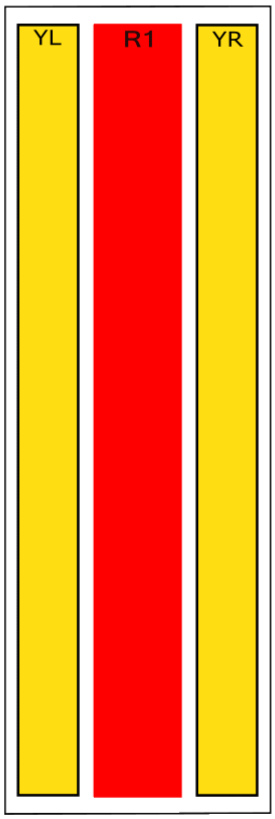
Right
1695-2400
Ports 5, 6
(YR)

Array	Ports	Freq (MHz)	Ports controlled by common RET
R1	1, 2	698-896	1, 2
YL	3, 4	1695-2400	3, 4
YR	5, 6	1695-2400	5, 6

RET to Element Configuration

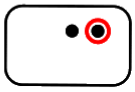
HPA65R-BU4AB Element and RET configuration (Type 1 External RET)

Top of antenna
Viewed from rear

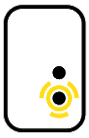


RET placement as view from rear of antenna

Top of antenna



698-896
Ports 1, 2
(R1)

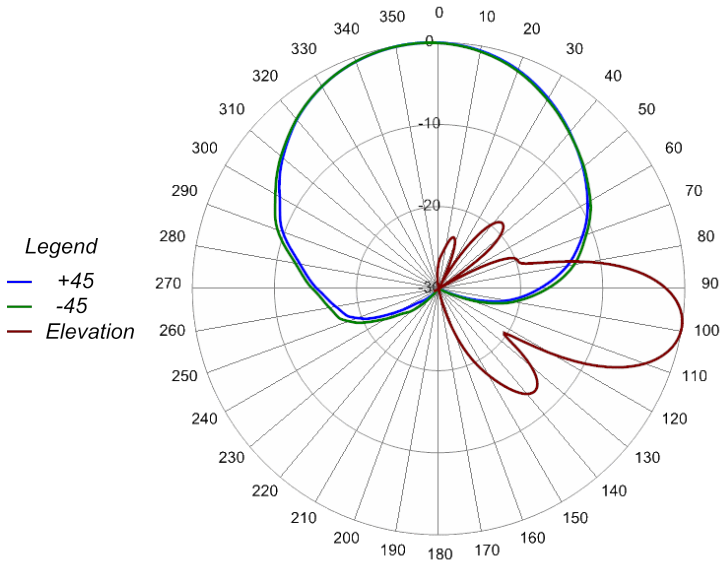


Left & Right
1695-2400
Ports 3, 4, 5, 6
(YL & YR)

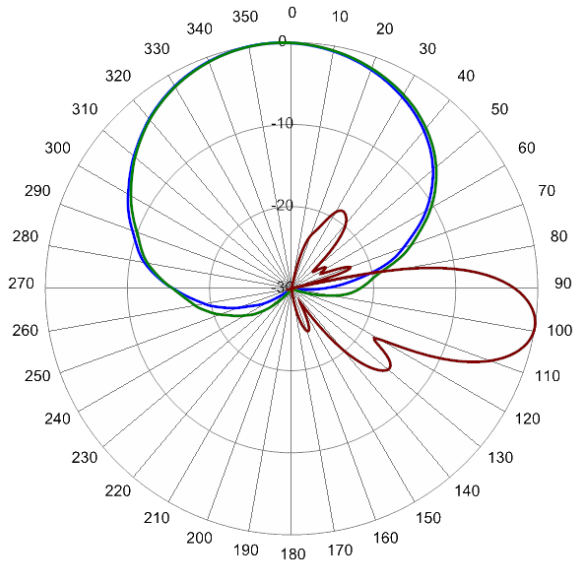
Array	Ports	Freq (MHz)	Ports controlled by common RET
R1	1, 2	698-896	1, 2
YL	3, 4	1695-2400	3, 4, 5, 6
YR	5, 6	1695-2400	

Typical Antenna Patterns

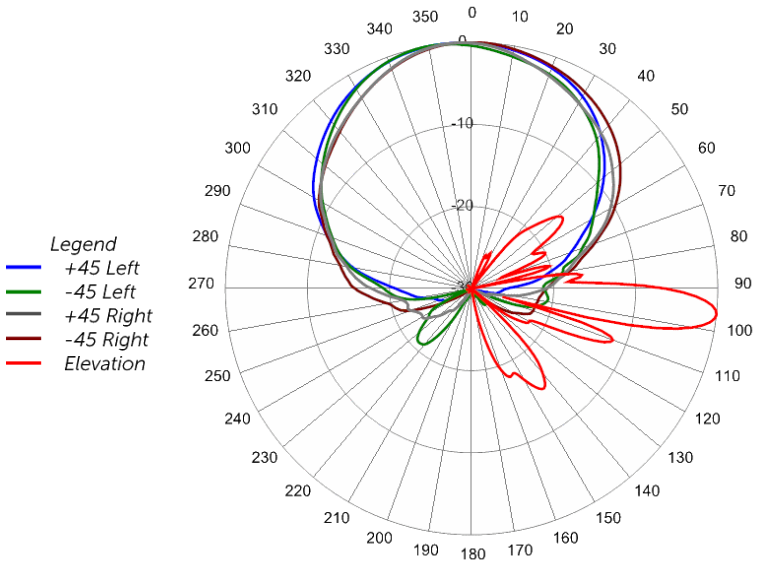
For detailed information on additional antenna patterns, contact customer support at support@cciproducts.com



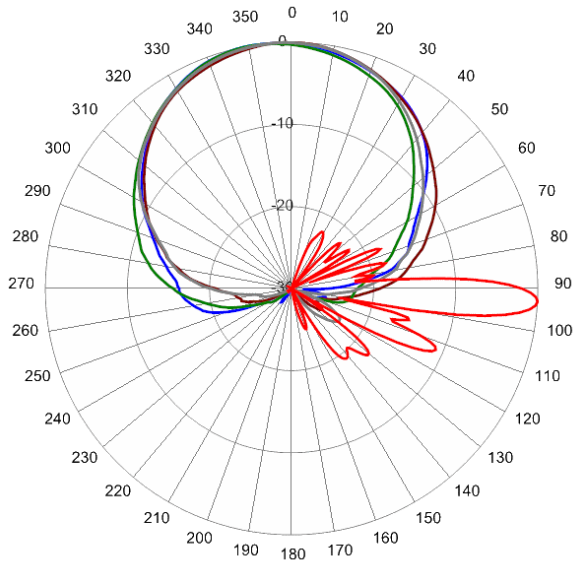
734 MHz Azimuth with Elevation 9°



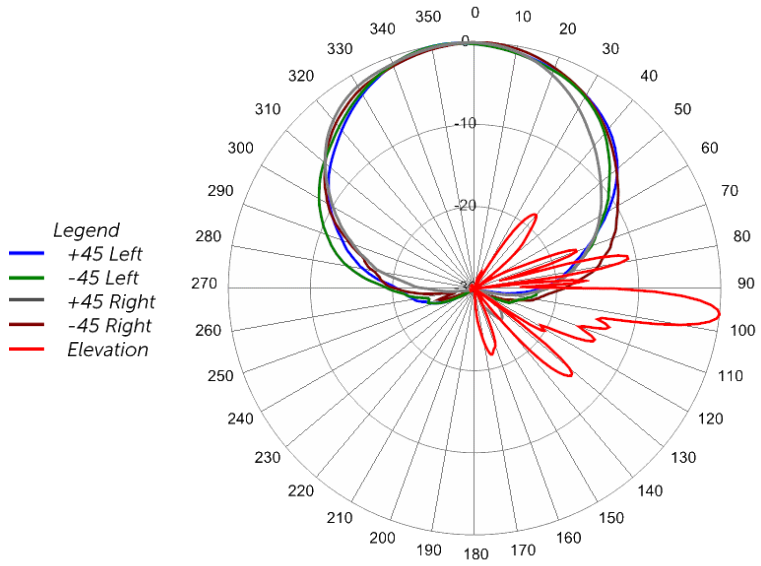
840 MHz Azimuth with Elevation 9°



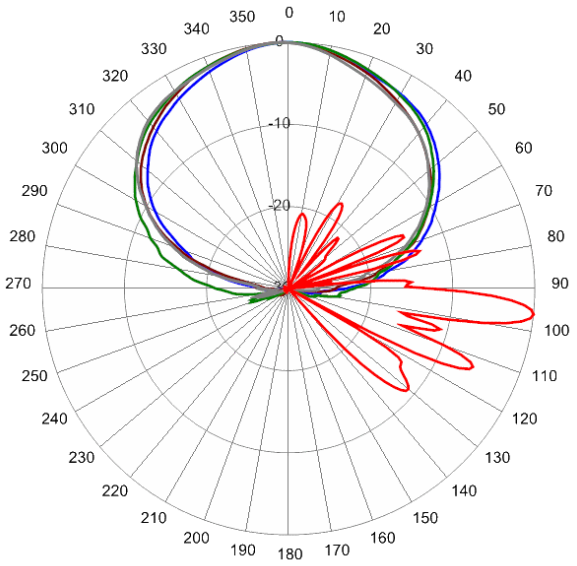
1740 MHz Azimuth with Elevation 6°



1970 MHz Azimuth with Elevation 6°



2155 MHz Azimuth with Elevation 6°



2360 MHz Azimuth with Elevation 6°

Parts & Accessories

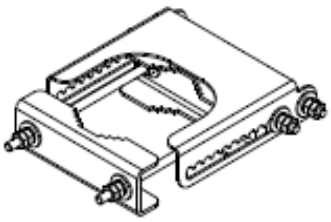
HPA65R-BU4AA-K	Four foot (1.2 m) HexPort antenna with 65° azimuth beamwidth, 4.3-10 female connectors, three factory installed BSA-RET200 RET actuators (Type 1 external) and MBK-02 mounting bracket
HPA65R-BU4AB-K	Four foot (1.2 m) HexPort antenna with 65° azimuth beamwidth, 4.3-10 female connectors, two factory installed BSA-RET200 RET actuators (Type 1 external) and MBK-02 mounting bracket
HPA65R-BU4AC-K	Four foot (1.2 m) HexPort antenna with 65° azimuth beamwidth, 4.3-10 female connectors, 3 factory installed BSA-RET400 RET actuators (Type 17 internal) and MBK-02 mounting bracket
MBK-02	Mounting bracket kit (top and bottom) with 0° to 10° mechanical tilt adjustment
BSA-RET200	Type 1 Remote electrical tilt actuator
BSA-RET400	Type 17 Remote electrical tilt actuator
TPA-CBK-AG-RRU	HexPort antenna with 3 RET to RRU AISG cable kit
DPA-CBK-RA-AG-RRU	HexPort antenna with 3 RET to RRU AISG right angle cable kit
CBK-AG-RRU-002	HexPort antenna with 2 RET to RRU AISG cable kit
CBK-RA-AG-RRU-002	HexPort antenna with 2 RET to RRU AISG right angle cable kit

Mounting Bracket Kit

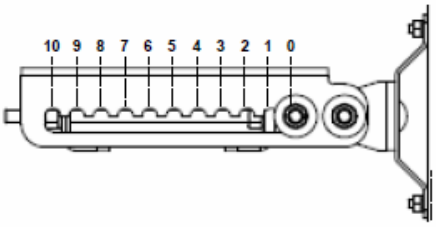
MBK-02

Mechanical

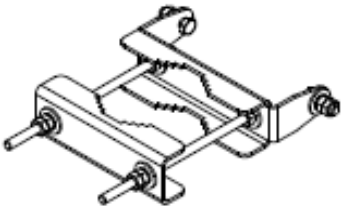
Weight	9.8 lbs (4.4 kg)
Hinge Pitch	31.5 in (800 mm)
Mounting Pole Dimension	2 to 5 in (5 to 12 cm)
Fastener Size	M10
Installation Torque	15 ft·lbs (20 N·m)
Mechanical Tilt Adjustment	0° - 10°



MBK-02 Top Adjustable Bracket



MBK-02 Top Adjustable Bracket Side View



MBK-02 Bottom Fixed Bracket

Remote Electrical Tilt Actuator (RET)

General Specifications

Part Number	BSA-RET200
Protocols	AISG 2.0
RET Type	Type 1
Adjustment Cycles	>10,000 cycles
Tilt Accuracy	±0.1°
Temperature Range	-40° C to 70° C

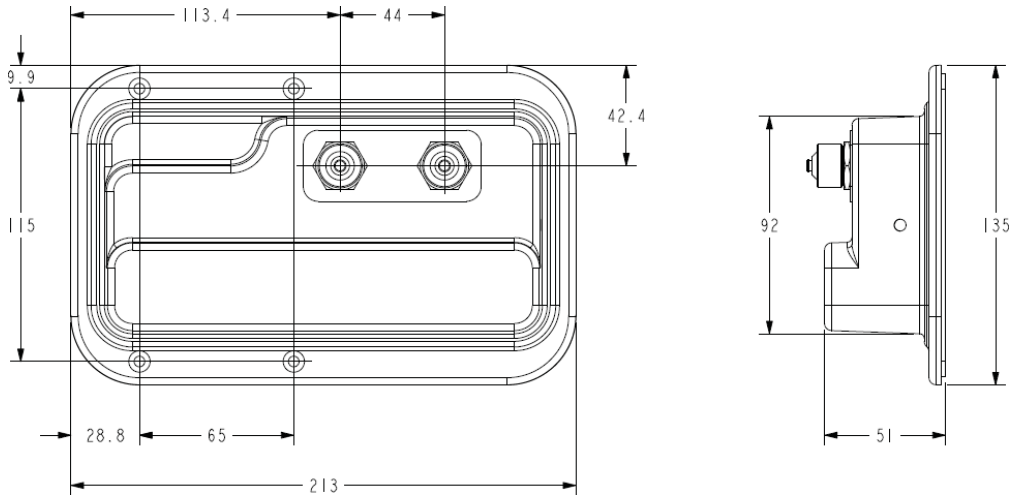
Electrical

Data Interface Signal	DC
Input Voltage	10-30 Vdc
Current Consumption Tilt	120 mA at V_{in}=24
Current Consumption Idle	55 mA at V_{in}=24
Hardware Interface	AISG-RS 485 A/B
Input Connector	Male 1 x 8 pin Daisy Chain
Output Connector	Female 1 x 8 pin Daisy Chain

Mechanical

Dimensions (LxWxD)	8.0x5.0x2.0 in. (213x135x51 mm)
Housing	ASA/ABS/Aluminum
Weight	1.7 lbs (0.75 kg)

ASA= Acrylic Styrene Acrylonitrile
ABS=Acrylanitrile Butadiene Styrene



MultiPort Series

Internal Remote Electrical Tilt (iRET)

BSA-RET400

General Specifications

Part Number	BSA-RET400
Protocols	AISG 2.0
RET Type	Type 17
Adjustment Cycles	>10,000 cycles
Tilt Accuracy	±0.1°
Temperature Range	-40° C to 70° C

Electrical

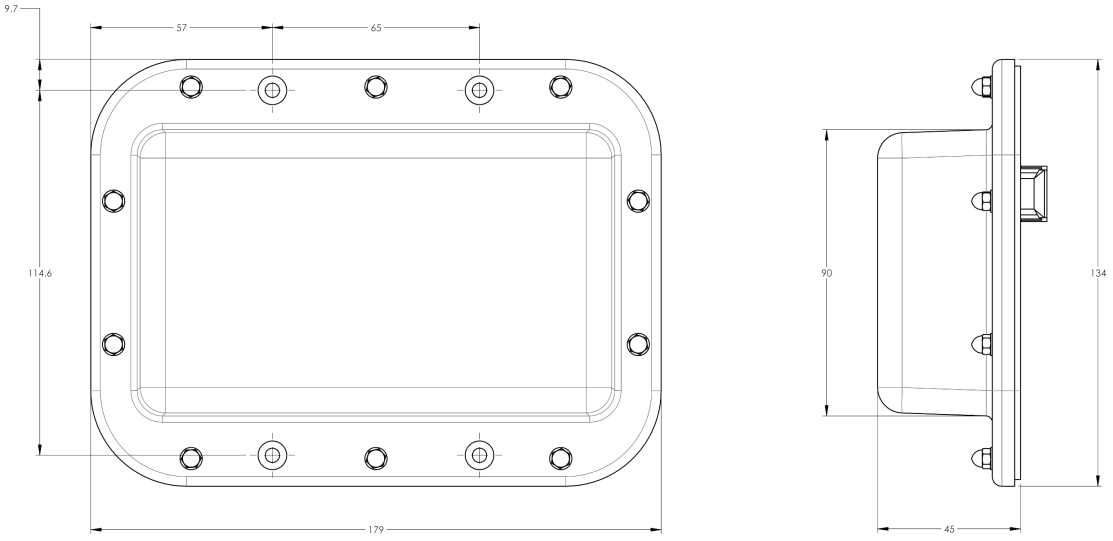
Data Interface Signal	DC
Input Voltage	10-30 Vdc
Current Consumption Tilt	100 mA at V_{in}=24 (500 mA MAX)
Current Consumption Idle	10 mA at V_{in}=24

Mechanical

Dimensions (LxWxD)	7.0x5.3x1.8 in. (179x134x45 mm)
Housing	ASA/ABS/Aluminum
Weight	1.3 lbs (0.6 kg)

ASA= Acrylic Styrene Acrylonitrile

ABS=Acrylanitrile Butadiene Styrene



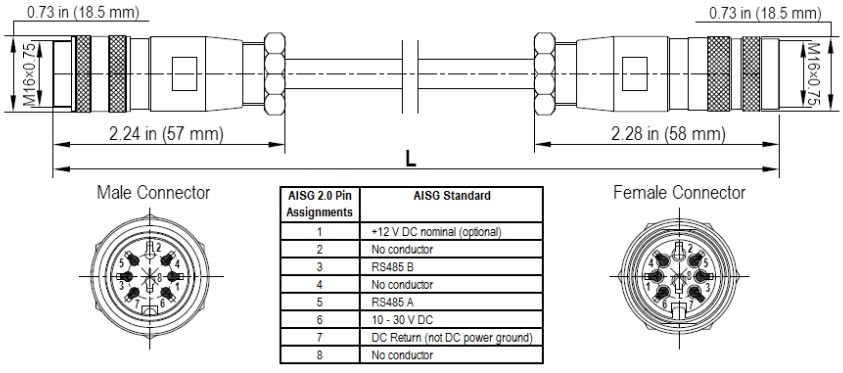
AISG Cable Kit

TPA-CBK-AG-RRU

Electrical/Mechanical/Environmental Specifications

	RET to RET Cables		RRU to Antenna Cables
Individual Cable Part Number	AISGC-M-F-60	AISGC-M-F-27	AISGC-M-F-10FT
Cable style	UL2464		
Protocol	AISG 1.1 and AISG 2.0		
Maximum voltage	300 V		
Rated current	5 A at 104° F (40° C)		
Temperature Range	-40° to 80° C		
Flammability	UL 1581 VW-1		
Ingress Protection	IEC 60529:2001, IP67		
Tightening torque	Hand tighten only ≈ 1.84 ft-lbs (2.5 N·m)		
Construction	Shielded (Tinned Copper Braid)		
Braid coverage	85%		
Jacket Material	Matte Polyurethane (Black)		
Conductors	1 twisted pair - 24 AWG 3 conductors - 19 AWG AWM style 2464		
Cable Diameter	0.307 in (7.8 mm)		
Minimum bend radius	3.9 in (100 mm)		
Connectors	2 x 8 pin IEC 60130-9 Straight male/straight female		
Length	60 in (1525 mm)	27 in (686 mm)	120 in (3048 mm)
Weight	0.44 lbs (0.20 kg)	0.33 lbs (0.15 kg)	0.69 lbs (0.31 kg)
Cables per kit	1	1	2

Mechanical Specifications



AISG 2.0 Pin Assignments	AISG Standard
1	+12 V DC nominal (optional)
2	No conductor
3	RS485 B
4	No conductor
5	RS485 A
6	10 - 30 V DC
7	DC Return (not DC power ground)
8	No conductor

AISG-Male to AISG-Female Jumper Cable

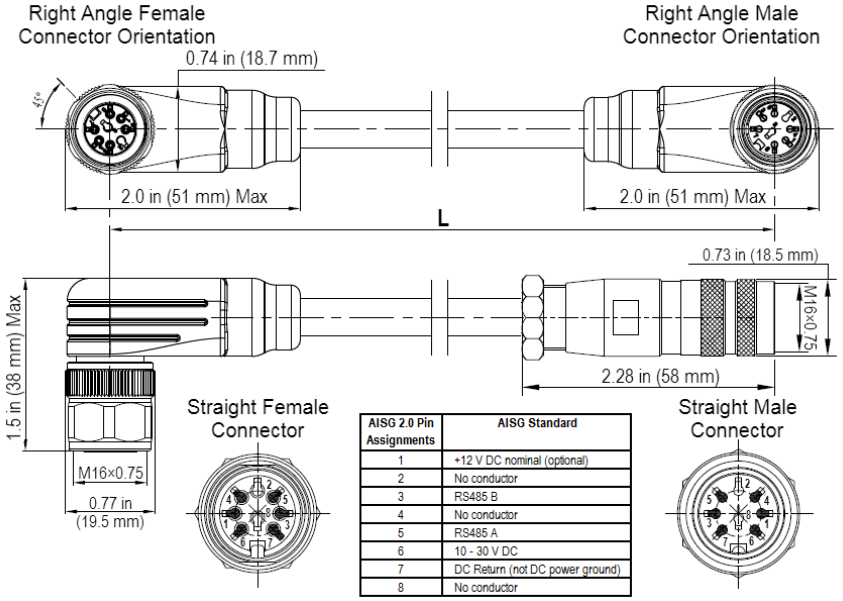
AISG Cable Kit

DPA-CBK-RA-AG-RRU

Electrical/Mechanical/Environmental Specifications

	RET to RET Cables	RRU to Antenna Cables
Individual Cable Part Number	AISGC-MRA-FRA-36	AISGC-M-FRA-10FT
Cable style	UL2464	
Protocol	AISG 1.1 and AISG 2.0	
Maximum voltage	300 V	
Rated current	5 A at 104° F (40° C)	
Temperature Range	-40° to 80° C	
Flammability	UL 1581 VW-1	
Ingress Protection	IEC 60529:2001, IP67	
Tightening torque	Hand tighten only ≈ 1.84 ft-lbs (2.5 N·m)	
Construction	Shielded (Tinned Copper Braid)	
Braid coverage	85%	
Jacket Material	Matte Polyurethane (Black)	
Conductors	1 twisted pair - 24 AWG 3 conductors - 19 AWG AWM style 2464	
Cable Diameter	0.307 in (7.8 mm)	
Minimum bend radius	3.9 in (100 mm)	
Connectors	2 x 8 pin IEC 60130-9 Right angle male/right angle female	2 x 8 pin IEC 60130-9 Straight male/right angle female
Length	36 in (914 mm)	120 in (3048 mm)
Weight	0.23 lbs (0.10 kg)	0.77 lbs (0.35 kg)
Cables per kit	2	2

Mechanical Specifications



AISG 2.0 Pin Assignments	AISG Standard
1	+12 V DC nominal (optional)
2	No conductor
3	RS485 B
4	No conductor
5	RS485 A
6	10 - 30 V DC
7	DC Return (not DC power ground)
8	No conductor

Right Angle to Right Angle and Right Angle to Straight Jumper Cable

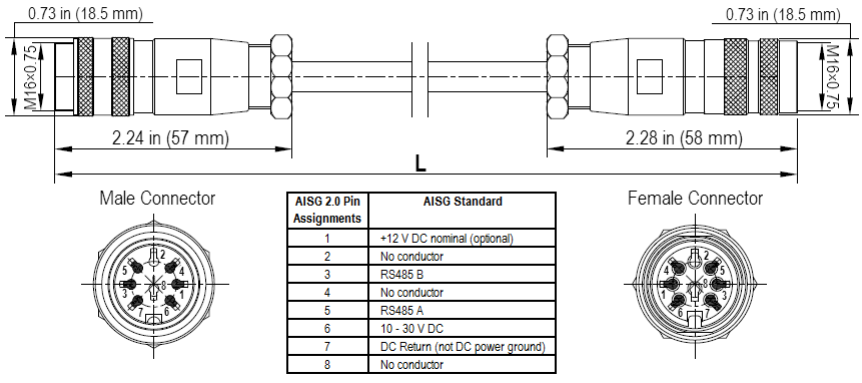
AISG Cable Kit

CBK-AG-RRU-002

Electrical/Mechanical/Environmental Specifications

	RET to RET Cables	RRU to Antenna Cables
Individual Cable Part Number	AISGC-M-F-34	AISGC-M-F-10FT
Cable style	UL2464	
Protocol	AISG 1.1 and AISG 2.0	
Maximum voltage	300 V	
Rated current	5 A at 104° F (40° C)	
Temperature Range	-40° to 80° C	
Flammability	UL 1581 VW-1	
Ingress Protection	IEC 60529:2001, IP67	
Tightening torque	Hand tighten only ≈ 1.84 ft-lbs (2.5 N·m)	
Construction	Shielded (Tinned Copper Braid)	
Braid coverage	85%	
Jacket Material	Matte Polyurethane (Black)	
Conductors	1 twisted pair - 24 AWG 3 conductors - 19 AWG AWM style 2464	
Cable Diameter	0.307 in (7.8 mm)	
Minimum bend radius	3.9 in (100 mm)	
Connectors	2 x 8 pin IEC 60130-9 Straight male/straight female	
Length	34 in (864 mm)	120 in (3048 mm)
Weight	0.33 lbs (0.15 kg)	0.69 lbs (0.31 kg)
Cables per kit	1	2

Mechanical Specifications



AISG 2.0 Pin Assignments	AISG Standard
1	+12 V DC nominal (optional)
2	No conductor
3	RS485 B
4	No conductor
5	RS485 A
6	10 - 30 V DC
7	DC Return (not DC power ground)
8	No conductor

AISG-Male to AISG-Female Jumper Cable

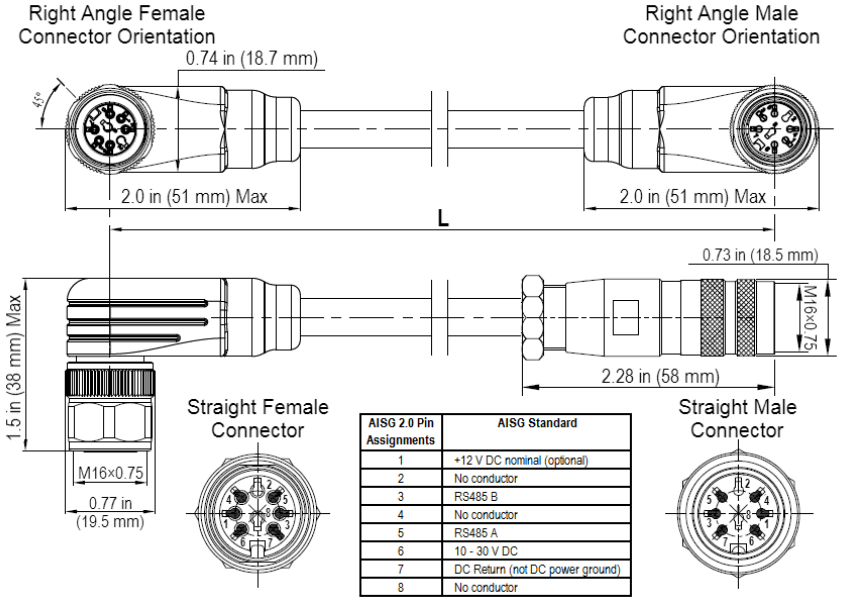
AISG Cable Kit

CBK-RA-AG-RRU-002

Electrical/Mechanical/Environmental Specifications

	RET to RET Cables	RRU to Antenna Cables
Individual Cable Part Number	AISGC-MRA-FRA-31	AISGC-M-FRA-10FT
Cable style	UL2464	
Protocol	AISG 1.1 and AISG 2.0	
Maximum voltage	300 V	
Rated current	5 A at 104° F (40° C)	
Temperature Range	-40° to 80° C	
Flammability	UL 1581 VW-1	
Ingress Protection	IEC 60529:2001, IP67	
Tightening torque	Hand tighten only ≈ 1.84 ft-lbs (2.5 N·m)	
Construction	Shielded (Tinned Copper Braid)	
Braid coverage	85%	
Jacket Material	Matte Polyurethane (Black)	
Conductors	1 twisted pair - 24 AWG 3 conductors - 19 AWG AWM style 2464	
Cable Diameter	0.307 in (7.8 mm)	
Minimum bend radius	3.9 in (100 mm)	
Connectors	2 x 8 pin IEC 60130-9 Right angle male/right angle female	2 x 8 pin IEC 60130-9 Straight male/right angle female
Length	31 in (787 mm)	120 in (3048 mm)
Weight	0.25 lbs (0.11 kg)	0.77 lbs (0.35 kg)
Cables per kit	1	2

Mechanical Specifications



AISG 2.0 Pin Assignments	AISG Standard
1	+12 V DC nominal (optional)
2	No conductor
3	RS485 B
4	No conductor
5	RS485 A
6	10 - 30 V DC
7	DC Return (not DC power ground)
8	No conductor

Right Angle to Right Angle and Right Angle to Straight Jumper Cable

STANDARDS & CERTIFICATIONS

Standards & Compliance

Safety	EN 60950-1, UL 60950-1
Emission	EN 55022
Immunity	EN 55024
Environmental	IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-5, IEC 60068-2-6, IEC-60068-2-11, IEC 60068-2-14, IEC 60068-2-18, IEC 60068-2-27, IEC 60068-2-29, IEC 60068-02-30, IEC 60068-2-52, IEC 60068-2-64, GR-63-CORE 4.3.1, EN 60529, IP 24

Certifications

Antenna Interface Standards Group (AISG), Federal Communication Commission (FCC) Part 15 Class B, CE, CSA US, ISO 9001