



- Eight foot (2.4 m), six port antenna with a 65° azimuth beamwidth covering 698-896 MHz and 1695-2180 MHz
- Four high band and two low band ports in a single antenna
- Sharp elevation beamwidth aids in network planning
- Optimal elevation sidelobe performance
- Enhanced array spacing ensures optimal MIMO performance
- Exceeds minimum PIM performance requirements
- Multi-network solution in one radome with six ports
- Reduces tower load and increases space for tower mounted remote radio heads
- Multi-band design improves site radio resource management
- Field replaceable, AISG 2.0 compliant Remote Electrical Tilt (RET) system with independent tilt control for each paired port

## Overview

The CCI HexPort multi-band array is a six port antenna with full Advanced Wireless Service (AWS) band coverage. With four high band ports covering 1695-2180 MHz and two low band ports covering 698-896 MHz, this eight foot (2.4 m) CCI HexPort provides the capability to deploy 4x4 Multiple-input Multiple-output (MIMO) in the high band. The HexPort allows separate tilt control for each pair of ports enabling maximum flexibility in network deployment.

CCI has engineered its antennas using new and innovative design techniques to provide optimal sidelobe performance, sharp elevation beams, and high front to back ratio.

Multiple technologies can now be connected to a single antenna, reducing tower load, lease expense, deployment time and installation cost.

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
- Increase capacity without adding antennas
- Cosite current, and next-generation basestation technologies on the same antenna



HexPort Multi-Band Antenna

HPA-65R-BWW-H8

SPECIFICATIONS

Electrical

Ports	2 × Low Band Ports for 698-896 MHz		4 × High Band Ports for 1695-2180 MHz		
Frequency Range	698-806 MHz	824-896 MHz	1850-1990 MHz	1695-1755/2110-2180 MHz	
Gain (dBi)	15.3	16.2	17.0	16.4	17.5
Azimuth Beamwidth (-3dB) (°)	65	61	62	67	64
Elevation Beamwidth (-3dB) (°)	10.0	8.4	5.6	6.2	5.1
Electrical Downtilt (°)	2 to 10	2 to 10	0 to 8	0 to 8	0 to 8
Elevation Sidelobes (1st Upper) (dB)	< -17	< -17	< -24	< -22	< -24
Front-to-Back Ratio @180° (dB)	> 25	> 25	> 30	> 30	> 30
Cross-Polar Discrimination (at Peak) (dB)	> 22	> 20	> 25	> 25	> 25
Cross-Polar Port-to-Port Isolation (dB)	> 25	> 25	> 25	> 25	> 25
Voltage Standing Wave Ratio (VSWR)	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1
Passive Intermodulation (2×20W) (dBc)	≤ -153	≤ -153	≤ -153	≤ -153	≤ -153
Input Power Continuous Wave (CW)	500 watts	500 watts	300 watts	300 watts	300 watts
Polarization	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°
Input Impedance	50 ohms	50 ohms	50 ohms	50 ohms	50 ohms
Lightning Protection	DC Ground	DC Ground	DC Ground	DC Ground	DC Ground

BASTA Electrical Specifications\*

	698-806 MHz	824-896 MHz	1850-1990 MHz	1695-1755/2110-2180 MHz	
Frequency Range	698-806 MHz	824-896 MHz	1850-1990 MHz	1695-1755/2110-2180 MHz	
Gain over all Tilts (dBi)	15.3	16.2	17.0	16.4	17.5
Gain over all Tilts Tolerance (dB)	0.6	0.5	0.3	0.2	0.3
Gain at Low-tilt (dBi)	15.5	16.3	16.9	16.5	17.5
Gain at Mid-tilt (dBi)	15.4	16.3	17.1	16.5	17.6
Gain at High-tilt (dBi)	15.2	16.1	17.1	16.4	17.4
Azimuth Beamwidth Tolerance (°)	2.0	3.6	2.5	2.9	4.2
Elevation Beamwidth Tolerance (°)	1.1	0.5	0.3	0.2	0.2
Electrical Downtilt Deviation (°)	1.0	1.0	1.0	0.9	0.9
Front-to-Back Ratio over ± 20° (dB)	21.5	20.6	21.9	21.2	22.2
First Upper Sidelobe Suppression (dB)	16.0	16.8	22.0	19.7	21.5
Upper Sidelobe Suppression peak to 20°(dB)	17.2	16.5	19.7	19.1	19.7

\* Electrical specifications follow document "Recommendation on Base Station Antenna Standards" (BASTA) V9.6. All specifications are subject to change without notice.

Mechanical

Dimensions (LxWxD)	92.8x14.4x7.3 in (2358x366x185 mm)
Survival Wind Speed	> 150 mph (> 241 kph)
Front Wind Load	327 lbs (1455 N) @ 100 mph (161 kph)
Side Wind Load	191 lbs (849 N) @ 100 mph (161 kph)
Equivalent Flat Plate Area	12.8 ft <sup>2</sup> (1.2 m <sup>2</sup> )
Weight *	53.0 lbs (24.1 kg)
RET System Weight	5.0 lbs (2.3 kg)
Connector	6 × 7-16 DIN female long neck
Mounting Pole	2 to 5 in (5 to 12 cm)

\* Weight excludes mounting and RET

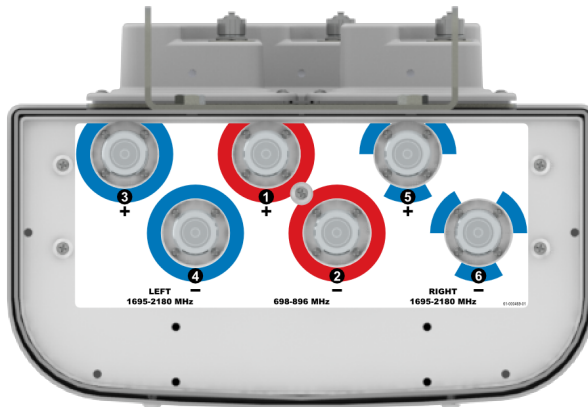
HexPort Multi-Band Antenna

HPA-65R-BWW-H8

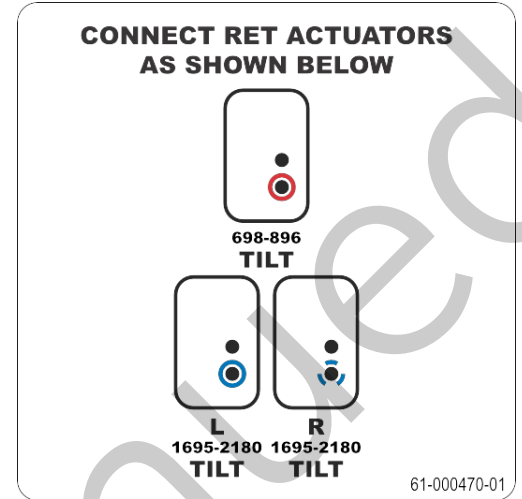
SPECIFICATIONS

Mechanical

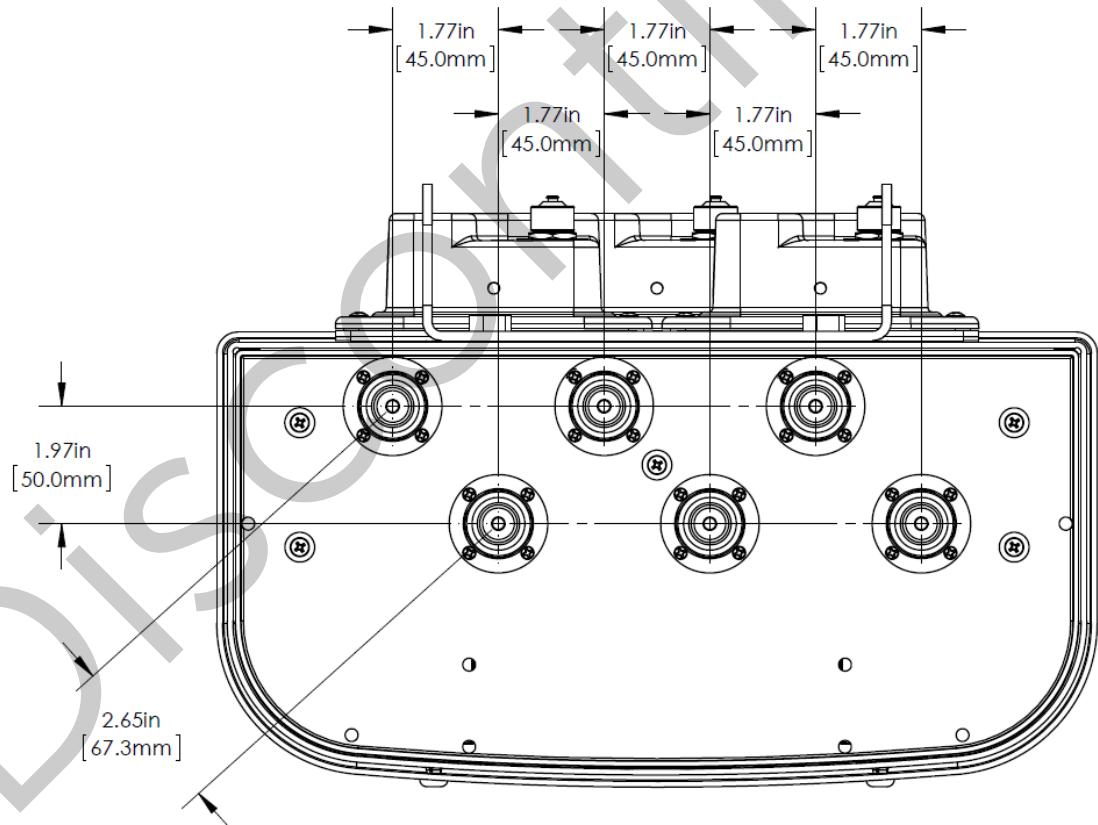
Bottom View



RET Connection Diagram



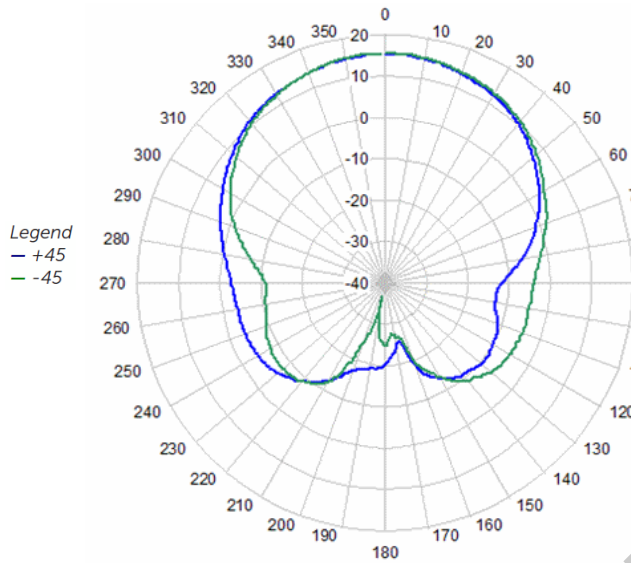
Connector Spacing



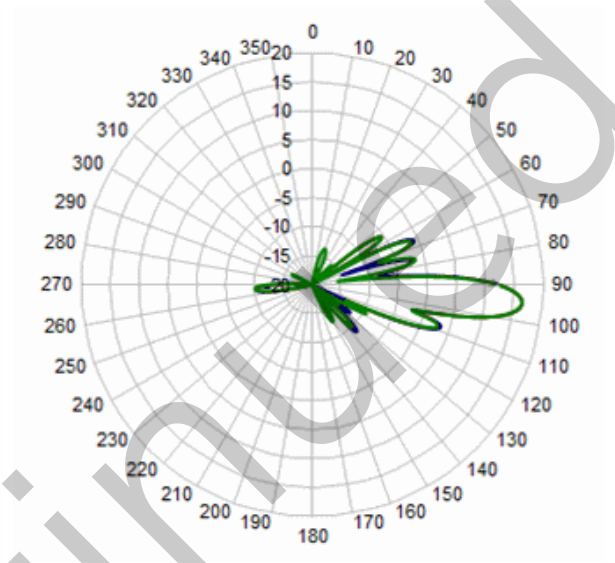


Typical Antenna Patterns

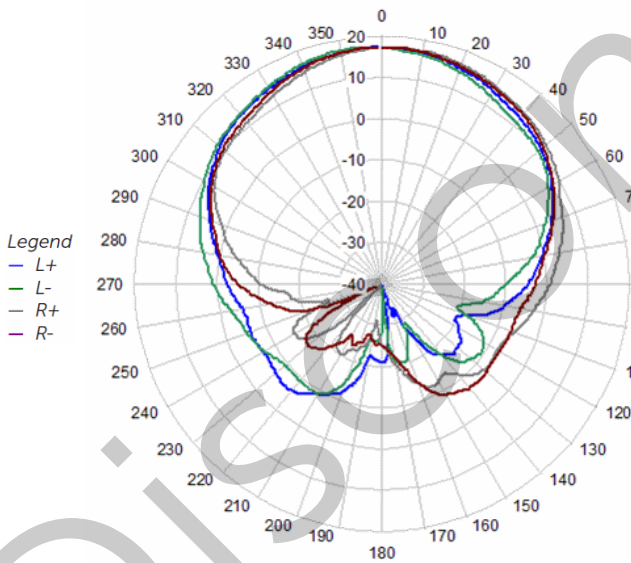
For detailed information on additional antenna patterns, contact customer support at support@cciproducts.com



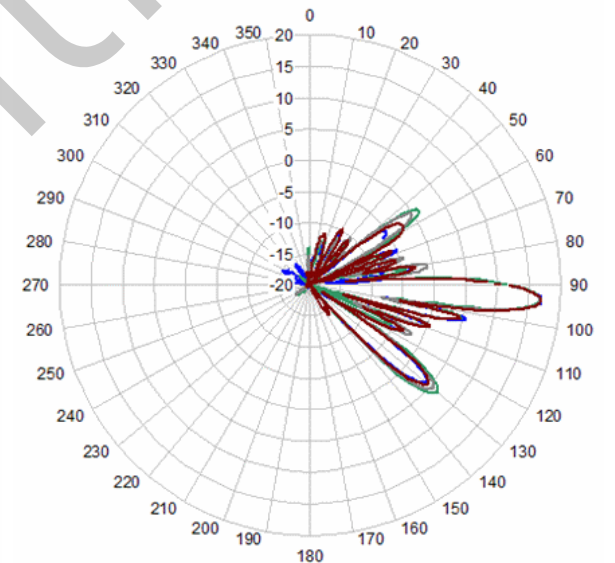
894 MHz Azimuth



894 MHz Elevation 6°



1920 MHz Azimuth



1920 MHz Elevation 4°



ORDERING

HexPort Multi-Band Antenna

HPA-65R-BWW-H8

Parts & Accessories

<b>HPA-65R-BWW-H8</b>	Eight foot (2.4 m) HexPort antenna with 65° azimuth beamwidth and 3 factory installed BSA-RET200 RET actuators, and MBK-01 mounting bracket
<b>MBK-01</b>	Mounting bracket kit (top and bottom) with 0° to 10° mechanical tilt adjustment
<b>TM-01</b>	Optional triple mount mast bracket for mounting up to three 65° antennas on a pole (or mast).
<b>BSA-RET200</b>	Remote electrical tilt actuator
<b>HPA-CBK-AG-RRU</b>	HexPort antenna to RRU AISG cable kit
<b>HPA-CBK-RA-AG-RRU</b>	HexPort antenna to RRU AISG right angle cable kit

Discontinued

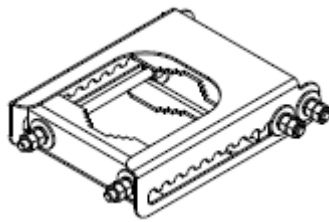


Mounting Bracket Kit

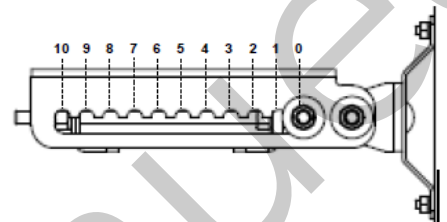
MBK-01

Mechanical

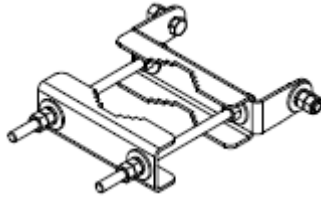
<b>Weight</b>	12.6 lbs (5.7 kg)
<b>Hinge Pitch</b>	47.25 in (1200 mm)
<b>Mounting Pole Dimension</b>	2 to 5 in (5 to 12 cm)
<b>Fastener Size</b>	M12
<b>Installation Torque</b>	40 ft·lb (54 N·m)
<b>Mechanical Tilt Adjustment</b>	0° - 10°



MBK-01 Top Adjustable Bracket



MBK-01 Top Adjustable Bracket Side View



MBK-01 Bottom Fixed Bracket

Discontinued

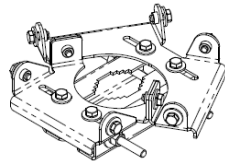


Triple Mount Cluster Bracket

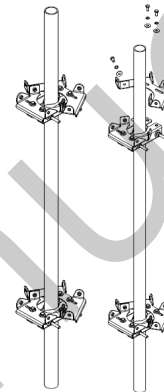
TM-01

Mechanical

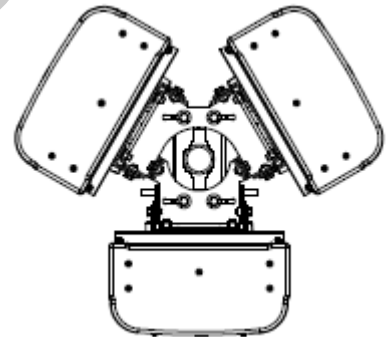
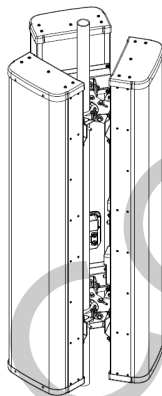
<b>Weight</b>	21.6 lbs (9.8 kg)
<b>Fastener Size</b>	M10
<b>Installation Torque</b>	40 ft-lb (54 N-m)
<b>Hinge Pitch (Vertical)</b>	13.0 in (330 mm) or 31.5 in (800 mm) or 47.2 in (1200 mm)
<b>Mechanical Tilt Adjustment</b>	None



TM-01 Bracket



TM-01 Mounting Brackets (on Pole)



3 - 65° Antennas Mounted on Pole using TM-01 Brackets (Iso and Top Views)



Remote Electrical Tilt Actuator (RET)

BSA-RET200

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

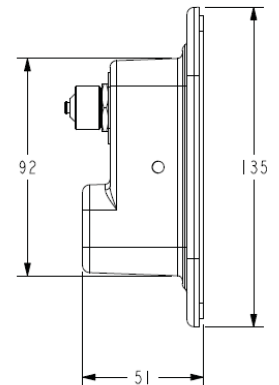
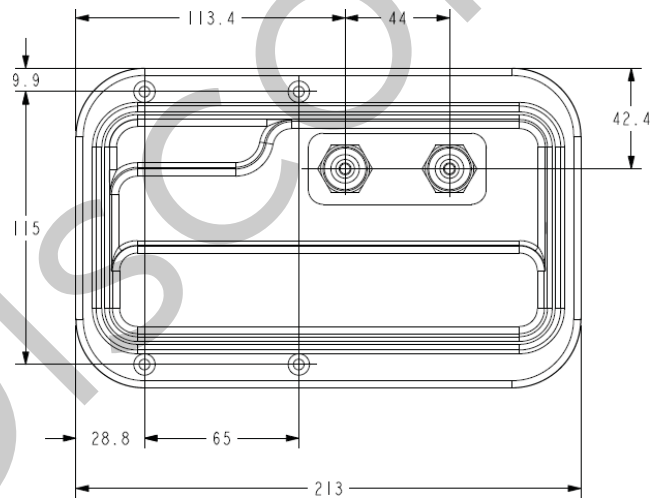
Electrical

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 × 8 pin Daisy Chain
Output Connector	Female 1 × 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=Acrylonitrile Butadiene Styrene



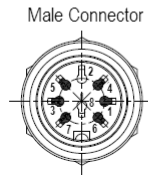
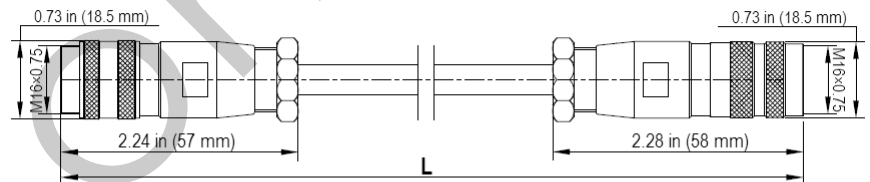


Electrical Specifications

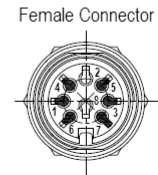
<b>Individual Cable Part Number</b>	AISGC-M-F-18	AISGC-M-F-10FT
<b>Cable style</b>	UL2464	UL2464
<b>Protocol</b>	AISG 1.1 and AISG 2.0	AISG 1.1 and AISG 2.0
<b>Maximum voltage</b>	300 V	300 V
<b>Rated current</b>	5 A at 104° F (40° C)	5 A at 104° F (40° C)

Mechanical Specifications

<b>Individual Cable Part Number</b>	AISGC-M-F-18	AISGC-M-F-10FT
<b>Cables per kit</b>	2	2
<b>Connectors</b>	2 x 8 pin IEC 60130-9 Straight male/straight female	2 x 8 pin IEC 60130-9 Straight male/straight female
<b>Tightening torque</b>	Hand tighten only $\approx$ 1.84 ft-lbs (2.5 N-m)	Hand tighten only $\approx$ 1.84 ft-lbs (2.5 N-m)
<b>Construction</b>	Shielded (Tinned Copper Braid)	Shielded (Tinned Copper Braid)
<b>Braid coverage</b>	85%	85%
<b>Jacket Material</b>	Matte Polyurethane (Black)	Matte Polyurethane (Black)
<b>Conductors</b>	1 twisted pair - 24 AWG 3 conductors - 19 AWG AWM style 2464	1 twisted pair - 24 AWG 3 conductors - 19 AWG AWM style 2464
<b>Cable Diameter</b>	0.307 in (7.8 mm)	0.307 in (7.8 mm)
<b>Length</b>	18 - 20 in (457 - 508 mm)	120 in (3048 mm)
<b>Weight</b>	0.27 lbs (0.12 kg)	0.69 lbs (.31 kg)
<b>Minimum bend radius</b>	3.9 in (100 mm)	3.9 in (100 mm)



AISG 2.0 Pin Assignments	AISG Standard
1	+12 V DC nominal (optional)
2	No conductor
3	RS485 B
4	RS 485 Ground
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

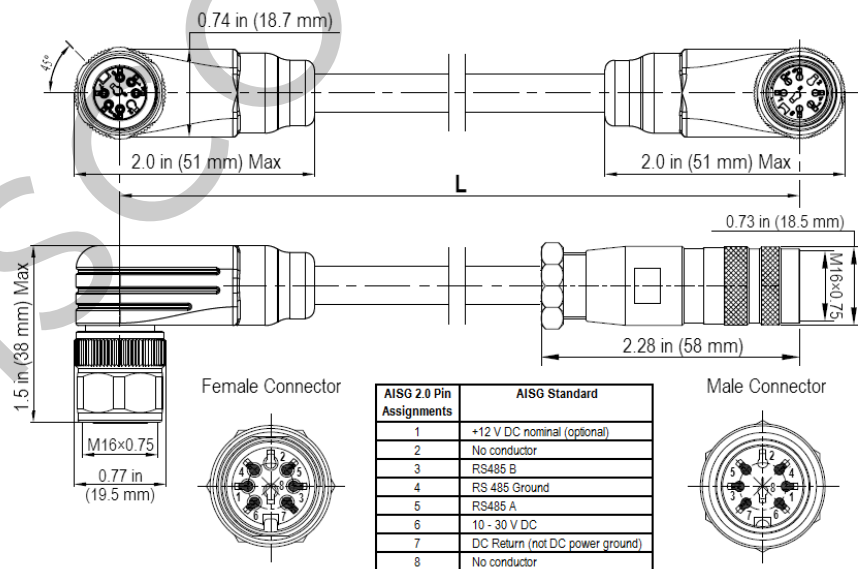
Environmental Specifications

<b>Individual Cable Part Number</b>	AISGC-M-F-18	AISGC-M-F-10FT
<b>Temperature Range</b>	-40° to 80° C	-40° to 80° C
<b>Flammability</b>	UL 1581 VW-1	UL 1581 VW-1
<b>Ingress Protection</b>	IEC 60529:2001, IP67	IEC 60529:2001, IP67

Electrical/Mechanical/Environmental Specifications

	RET to RET Cables	RRU to Antenna Cables
Individual Cable Part Number	AISGC-MRA-FRA-20	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	20 in (508 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



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



STANDARDS & CERTIFICATIONS

HexPort Multi-Band Antenna

HPA-65R-BWW-H8

Standards & Compliance

<b>Safety</b>	EN 60950-1, UL 60950-1
<b>Emission</b>	EN 55022
<b>Immunity</b>	EN 55024
<b>Environmental</b>	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



DISCONTINUED