



Antennas

DATA SHEET

Wideband Bi-Sector™ Antenna

BSA33R-E5A



- Five foot (1.5 m), Wideband, four port Bi-Sector™ Antenna. Deploying a high performing pair of CCI's Patented Asymmetrical 33° Shaped Beams covering 1695-2690 MHz frequencies
- Four wide High Band ports (2 ports per beam) covering 1695-2690 MHz and in a single antenna
- Full Spectrum Compliance for 1695-2690 MHz Operations
- LTE Optimized Asymmetric Shaped Beams for improved LTE data throughput by minimizing beam crossover, providing for an efficient use of valuable radio capacity and frequency spectrum
- LTE Optimized FBR, SPR and Boresight/Sector XPD Performance, essential for today's LTE Data Networks
- Exceeds minimum PIM performance requirements
- Equipped with new 4.3-10 connector, which is 40% smaller than traditional 7/16 DIN connector
- Equipped with Two Field Replaceable, integrated AISG 2.0 compliant Remote Electrical Tilt (RET)
- Ordering options for External RET Controllers (Type 1) or Internally Integrated RET Controllers (Type 17) or VET manual knobs

Overview

This version of the CCI Bi-Sector™ Wideband Array is a four port antenna, with four wide High Band ports (two per beam) covering 1695-2690 MHz. The CCI Bi-Sector™ array uses a pair of CCI's High Performing Patented Asymmetric 33° Shaped Beams in the High Band frequencies. The CCI Bi-Sector™ Array thus provides the capability to deploy Dual (over split beams) 2x2 Multiple-input Multiple-output (MIMO) in the High Band. The CCI Bi-Sector™ Array utilizes two RET controllers, with a separate RET controller for each of CCI's Patented Asymmetric 33° Shaped Beams.

The CCI Bi-Sector™ Wideband Array, allow operators to reduce antenna count and replace existing 65° networks, while increasing cell site capacity and LTE data throughput by minimizing overlap between CCI's Patented Asymmetric 33° Shaped Beams. This design approach lowers interference between sectors. All of this is achieved through a single panel array, producing significant CAPEX and OPEX cost savings for the operator.

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

Applications

- With CCI's Bi-Sector™ Wideband Antenna, wireless operators can connect multiple platforms to a single antenna, reducing tower load, lease expense, deployment time and installation cost
- Ideal Antenna Solution for structurally constrained sites, where data throughput, capacity and limited spectrum is a concern
- Dual (over split beams) 2x2 MIMO in High Band
- Ready for Network Standardization on 4.3-10 connectors



Antennas

Wideband Bi-Sector™ Antenna

BSA33R-E5A

SPECIFICATIONS

Electrical

Ports	4 x High Band Ports for 1695-2690 MHz				
Frequency Range	1695-1880 MHz	1850-1990 MHz	1920-2180 MHz	2300-2400 MHz	2496-2690 MHz
Gain ¹	19.5 dBi	19.7 dBi	20.4 dBi	20.9 dBi	21.5 dBi
Gain (Average) ²	18.1 dBi	19.0 dBi	19.2 dBi	20.3 dBi	20.5 dBi
Azimuth Beamwidth (-3 dB)	36°	34°	32°	29°	26°
Azimuth Peak Offset	32°	30°	28°	25°	23°
Elevation Beamwidth (-3 dB)	6.5°	6.0°	5.6°	4.6°	4.4°
Electrical Downtilt	0° to 10°	0° to 10°	0° to 10°	0° to 10°	0° to 10°
Elevation Sidelobes (1st Upper)	< -18 dB	< -18 dB	< -18 dB	< -18 dB	< -19 dB
Front-to-Back Ratio @180°	> 35 dB	> 35 dB	> 35 dB	> 35 dB	> 35 dB
Front-to-Back Ratio over ± 20°	> 35 dB	> 35 dB	> 35 dB	> 35 dB	> 35 dB
Cross-Polar Discrimination (at Peak)	> 25 dB	> 25 dB	> 25 dB	> 22 dB	> 23 dB
Cross-Polar Discrimination (at 3 dB) ²	17.6 dB	17.0 dB	16.5 dB	14.0 dB	15.6 dB
Beam to Beam Isolation (Average)	> 26 dB	> 27 dB	> 26 dB	> 28 dB	> 28 dB
Cross-Polar Port-to-Port Isolation	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB
Voltage Standing Wave Ratio(VSWR)	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1
Passive Intermodulation (2x20W)	≤ -153 dBc	≤ -153 dBc	≤ -153 dBc	≤ -153 dBc	≤ -153 dBc
Input Power Continuous Wave (CW)	300 watts	300 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

¹Peak gain across sub-bands.

²Electrical specifications follow document "Recommendation on Base Station Antenna Standards" (BASTA) V9.6.

Mechanical

Dimensions (LxWxD)	59.0x13.8x6.3 in (1498x350x159 mm)
Survival Wind Speed	> 150 mph (> 241 kph)
Front Wind Load	185 lbs (822 N) @ 100 mph (161 kph)
Side Wind Load	97 lbs (432 N) @ 100 mph (161 kph)
Equivalent Flat Plate Area	7.2 ft ² (0.7 m ²)
Weight (RET Model)*	41.2 lbs (18.7 kg)
Weight (VET model)*	39.2 lbs (17.8 kg)
Connector	4 x 4.3-10 female
Mounting Pole	2 to 5 in (5 to 12 cm)

* Weight excludes mounting



Antennas

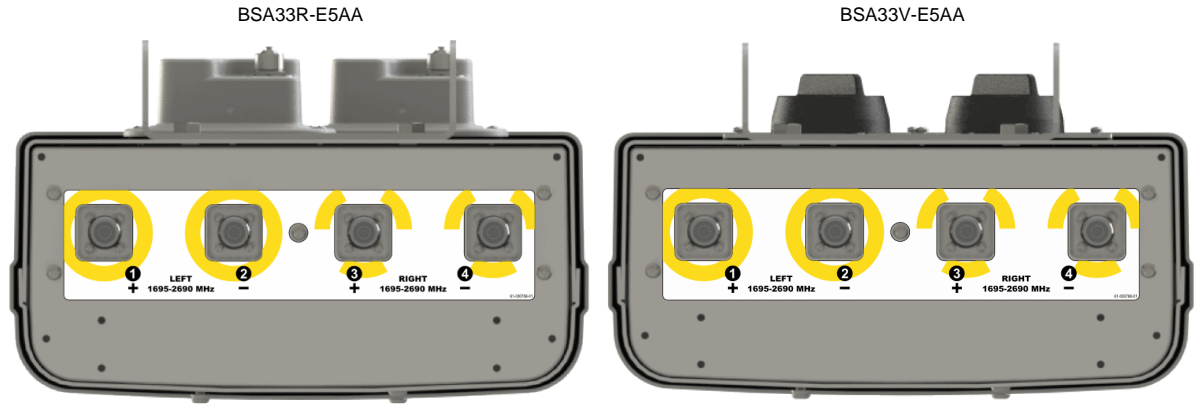
SPECIFICATIONS

Wideband Bi-Sector™ Antenna

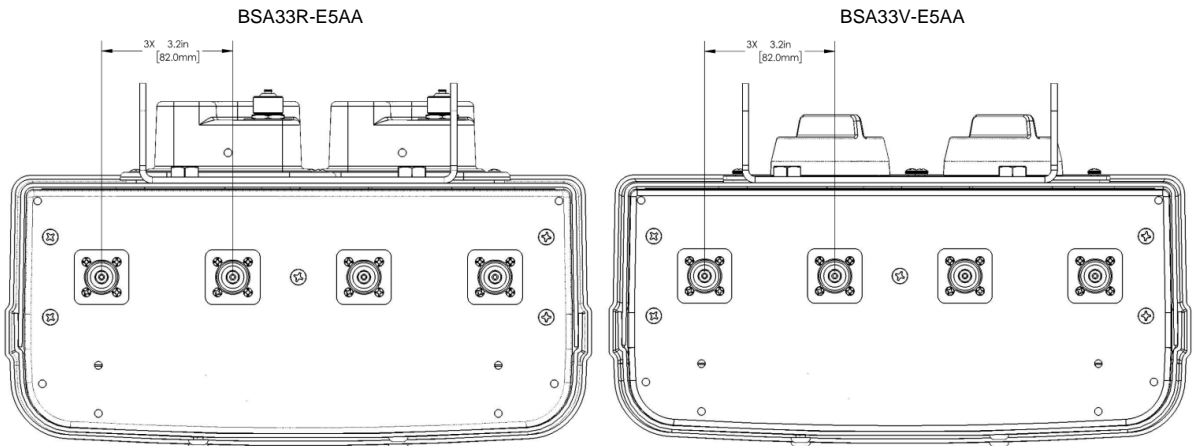
BSA33R-E5A

Mechanical

Bottom View



Connector Spacing





Antennas

SPECIFICATIONS

Wideband Bi-Sector™ Antenna

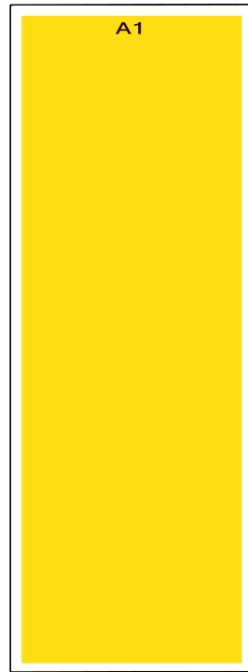
BSA33R-E5A

Mechanical

Element and RET Configuration

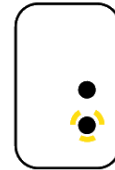
BSA33R-E5AA

**Top of antenna
Viewed from rear**

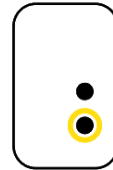


**RET placement
as view from rear
of antenna**

Top of antenna



RIGHT
1695-2690
A1
Ports 3 & 4



LEFT
1695-2690
A1
Ports 1 & 2

Array	Ports	Freq (MHz)	Beam	Ports controlled by common RET
A1	1, 2	1695-2690	Left	1, 2
A1	3, 4	1695-2690	Right	3, 4



Antennas

Wideband Bi-Sector™ Antenna

BSA33R-E5A

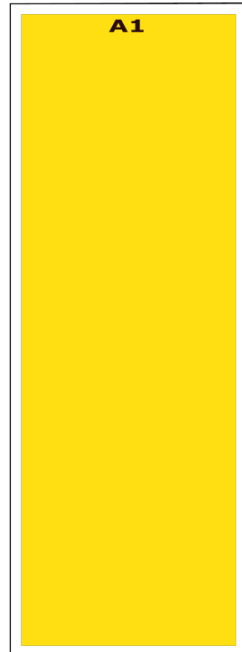
SPECIFICATIONS

Mechanical

BSA33V-E5AA

Element and VET Configuration

Top of antenna Viewed from rear



VET placement as view from rear of antenna

Top of antenna



RIGHT
1695-2690
A1
Ports 3 & 4



LEFT
1695-2690
A1
Ports 1 & 2

Array	Ports	Freq (MHz)	Beam	Ports controlled by VET knob
A1	1, 2	1695-2690	Left	1, 2
A1	3, 4	1695-2690	Right	3, 4



Antennas

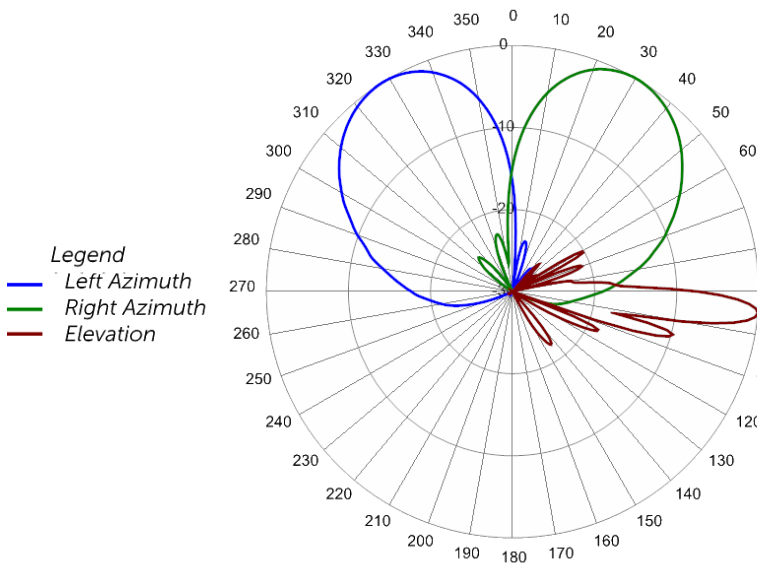
SPECIFICATIONS

Wideband Bi-Sector™ Antenna

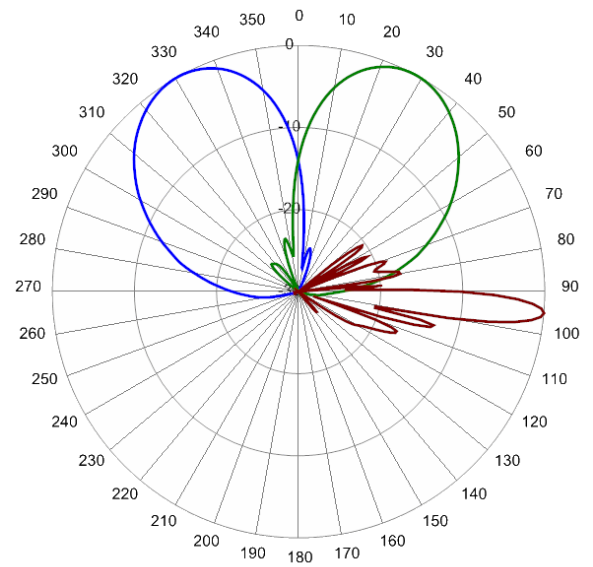
BSA33R-E5A

Typical Antenna Patterns

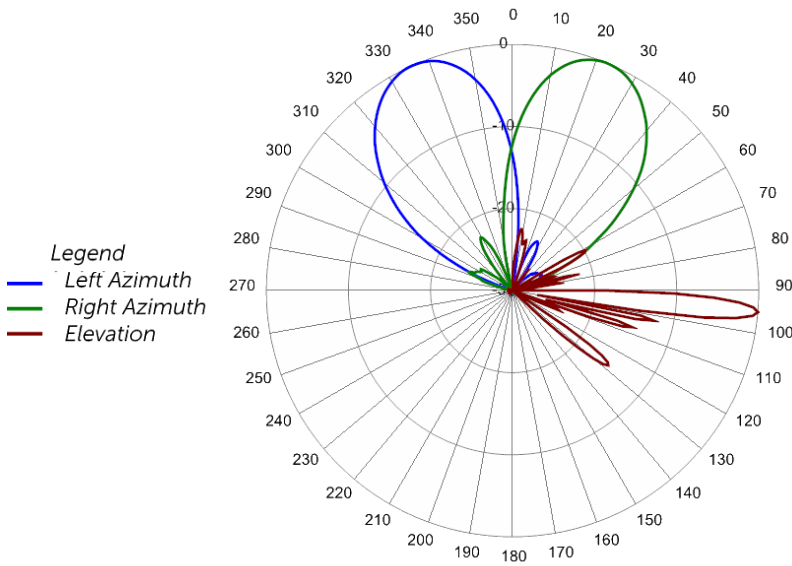
For detailed information on additional antenna patterns, contact customer support at support@cciproducts.com



1850 MHz Azimuth Elevation 5°



1995 MHz Azimuth Elevation 5°



2610 MHz Azimuth Elevation 5°



Antennas

ORDERING

Wideband Bi-Sector™ Antenna

BSA33R-E5A

Parts & Accessories

BSA33R-E5AA-K	Five foot (1.5 m), four port, Bi-Sector™ antenna with left and right azimuth beams covering 1695-2690 MHz. with 4.3-10 female connectors, 2 factor installed BSA-RET200 RET actuators (Type 1 external) and MBK-02 mounting bracket
BSA33R-E5AB-K	Five foot (1.5 m), four port, Bi-Sector™ antenna with left and right azimuth beams covering 1695-2690 MHz. with 4.3-10 female connectors, 2 factor installed BSA-RET400 RET actuators (Type 17 internal) and MBK-02 mounting bracket
BSA33V-E5AA-K	Five foot (1.5 m), four port, Bi-Sector™ antenna with left and right azimuth beams covering 1695-2690 MHz. with 4.3-10 female connectors, 2 factor installed manual knobs 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
QPA-CBK-AG-RRU	Two RET antenna to RRU AISG cable kit
QPA-CBK-RA-AG-RRU	Two RET antenna to RRU AISG right angle cable kit



Antennas

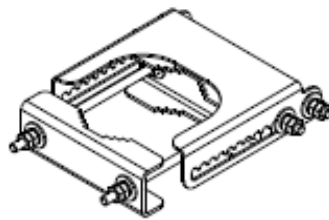
ACCESSORIES

Mounting Bracket Kit

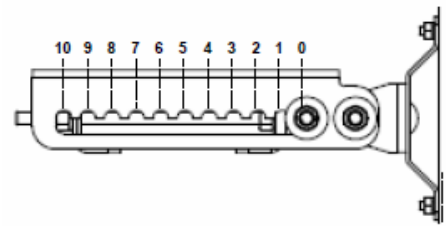
MBK-02

Mechanical

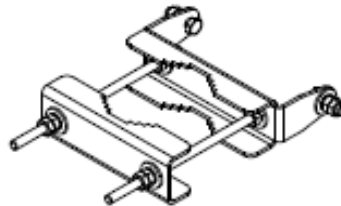
Weight	9.8 lbs (4.4 kg)
Hinge Pitch	31.5 in (800 mm)
Mounting Pole Dimension	2 to 5 in (5 to 12 cm)
Fastener Size	M10
Installation Torque	15 ft·lbs (20 N·m)
Mechanical Tilt Adjustment	0° - 10°



MBK-02 Top Adjustable Bracket



MBK-02 Top Adjustable Bracket Side View



MBK-02 Bottom Fixed Bracket



Antennas

ACCESSORIES

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

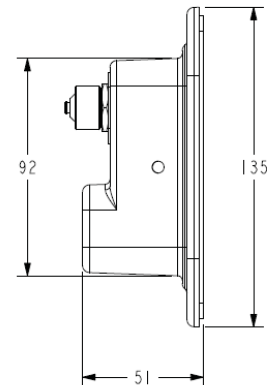
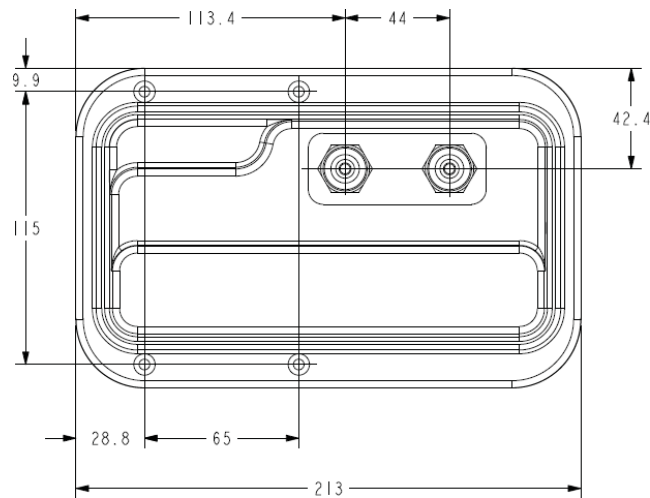
Electrical

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





Antennas

ACCESSORIES

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

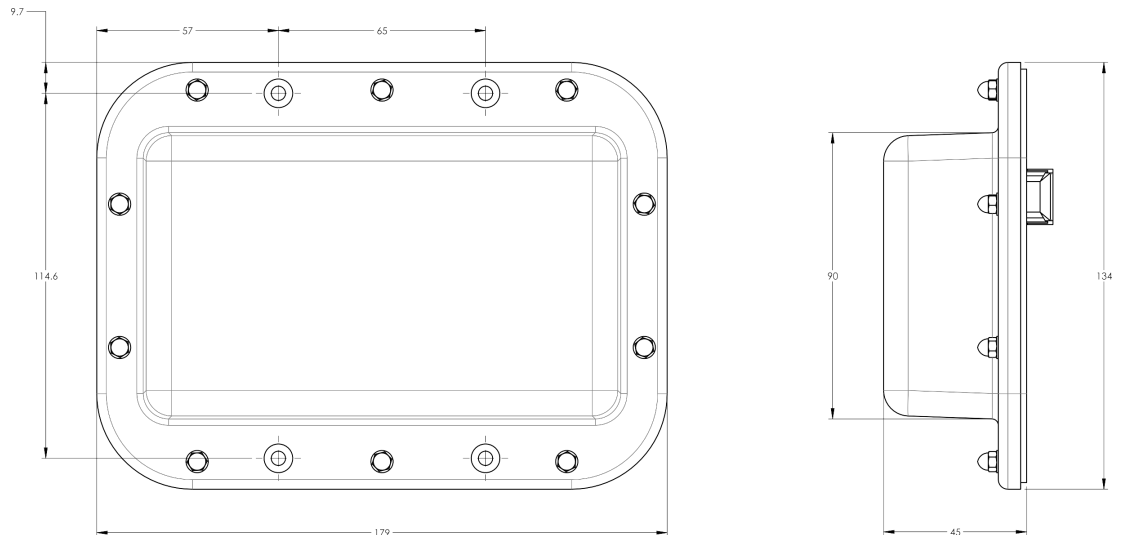
Electrical

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=Acrylonitrile Butadiene Styrene





Antennas

ACCESSORIES

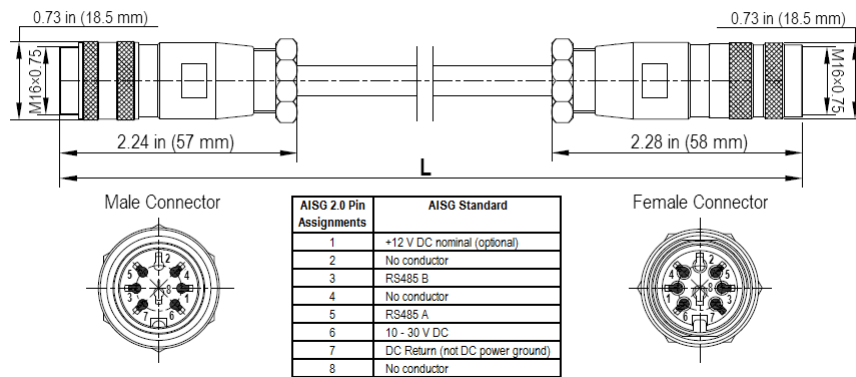
Quad Port AISG Cable Kit

QPA-CBK-AG-RRU

Electrical/Mechanical/Environmental Specifications

	RET to RET Cables	RRU to Antenna Cables
Individual Cable Part Number	AISGC-M-F-18	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	18-20 in (457-508)	120 in (3048 mm)
Weight	0.27 lbs (0.12 kg)	0.69 lbs (0.31 kg)
Cables per kit	1	2

Mechanical Specifications



AISG-Male to AISG-Female Jumper Cable



Antennas

ACCESSORIES

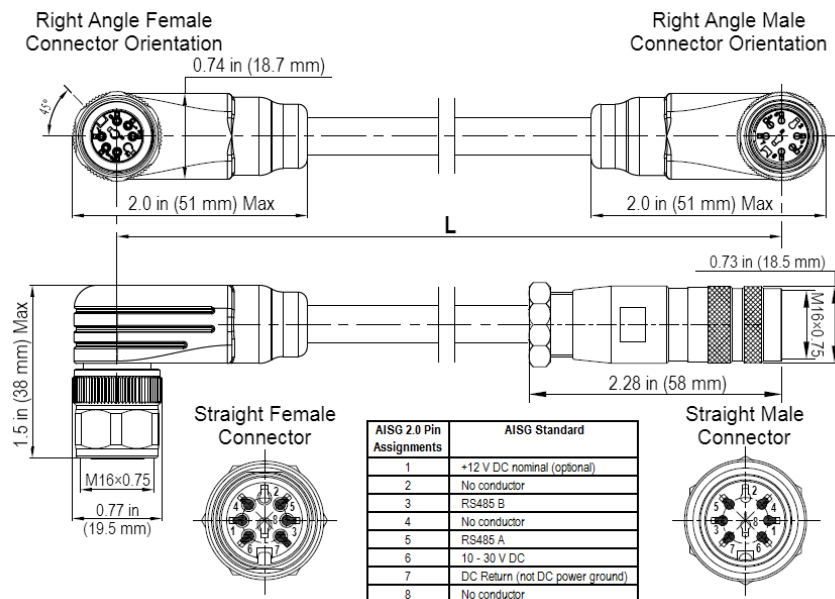
Quad Port AISG Cable Kit

QPA-CBK-RA-AG-RRU

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 \approx 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	1	2

Mechanical Specifications



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



Antennas

STANDARDS & CERTIFICATIONS

Wideband Bi-Sector™ Antenna

BSA33R-E5A

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

