DATA SHEET

Bi-Sector™ Antenna

BSA-M65R-DU-H6

- Patented twin asymmetric beam 33° Bi-Sector™ array phased arrays over a frequency range of (790-960 MHz) and (1710-2360 MHz), optimized to match existing cloverleaf (65°) deployments.
- 4 low band and 4 high band ports.
- Single panel design supporting 2 beams.
- Optimized beam shape for maximum LTE data throughput.Independent low-band and high-band remote electrical tilt for each beam provides unmatched optimization flexibility.
- 3GPP/AISG 2.0 compliant.
- Daisy chaining capability.
- Software upgradeable.
- Rugged, weather resistant and highly reliable internal design.

Overview

The CCI Multi-Band Bi-Sector™ Antenna is an LTE optimized phased array that provides a total of four low band ports covering the 800 MHz thru 900 MHz bands and four high band ports covering the DCS 1800 and UMTS 2100 bands in a single, compact enclosure. Our patented bi-sector technology enables the creation of two asymmetric 33° beams, each containing two low band and two high band ports. The antenna is capable of 2x2 MIMO in both low and high bands. The beam shapes have been optimized for minimum overlap and crossover in order to minimize interference across sectors and lower soft handover losses. As such, the antenna array enables maximized data throughput for EVDO, UMTS and LTE networks.

The remote electrical tilt (RET) Series Multi-Band Bi-Sector™ Antenna enables operators to remotely control the electrical down-tilt of the antenna in the field with sealed AISG compliant RET actuators. The CCI RET system is designed to meet the reliability, flexibility and efficiency requirements in a wide range of environments. The RET actuators are fully AISG compliant, software upgradeable, daisy chaining capable and fully weather resistant. The remote electrical capability allows independent adjustment of the low band ports and high band ports of each sub-beam for easier optimization. This antenna is also available as a variable electrical tilt (VET) model.

The single panel design of the antenna array offers the opportunity to reduce antenna count and directly replaces the footprint of an existing 65° antenna. The new coverage that matches the existing footprint minimizes the need for optimization and adjacent site changes, and allows for significant CAPEX and OPEX cost savings.

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

Applications

- Upgrade of data-throughput or capacity constrained sites.
- Spectrum limited markets.
- Deferral of new site builds or carrier adds.

SPECIFICATIONS

Bi-Sector™ Antenna

BSA-M65R-DU-H6

Electrical

Ports	4 x Low Band Ports for 790-960 MHz		4 x High Band Ports for 1710-2360 MHz		
Frequency Range	790-862 MHz	880-960 MHz	1710-1880 MHz	1920-2170 MHz	2300-2360 MHz
Gain	17.1 dBi	17.5 dBi	17.5 dBi	18.4 dBi	18.5 dBi
Azimuth Beamwidth (-3dB)	32°	30°	32°	29°	25°
Elevation Beamwidth (-3dB)	10.8°	9.7°	6.9°	6.0°	5.5°
Electrical Downtilt	2° to 12°	2° to 12°	0° to 9°	0° to 9°	0° to 9°
Elevation Sidelobes (1st Upper)	< -18 dB	< -18 dB	< -18 dB	< -18 dB	< -18 dB
Front-to-Back Ratio @180°	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB
Front-to-Back Ratio over ± 20°	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 28 dB
Cross-Polar Port-to-Port Isolation	> 25 dB	> 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	< 1.5:1
Passive Intermodulation (2x20W)	≤ -150 dBc	≤ -150 dBc	≤ -150 dBc	≤ -150 dBc	≤ -150 dBc
Input Power Continuous Wave (CW)	500 watts	500 watts	300 watts	300 watts	300 watts
Polarization	Dual Linear 45°	Dual Linear 45°	Dual Linear 45°	Dual Linear 45°	Dual Linear 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

Mechanical

Dimensions (LxWxD)	72.0x28.5x9.7 in (1828x723x245 mm)
Survival Wind Speed	> 150 mph (> 240 kph)
Front Wind Load	438 lbs (1947N) @ 100 mph (161 kph)
Side Wind Load	175 lbs (778N) @ 100 mph (161 kph)
Equivalent Flat Plate Area	17.1 ft^2 (1.6 m^2)
Weight *	96.3 lbs (43.7 kg)
RET System Weight	6.6 lbs (3.0 kg)
Connector	8 x 7-16 DIN female long neck
Mounting Pole	2 to 5 in (5 to 12 cm)

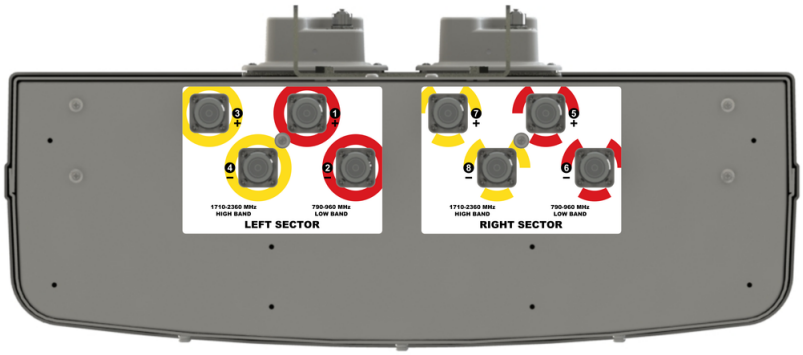
** Weight excludes mounting and RET*

SPECIFICATIONS

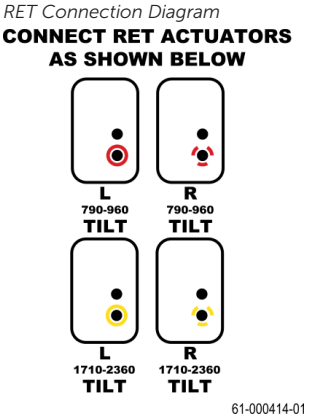
Bi-Sector™ Antenna

BSA-M65R-DU-H6

Bottom View

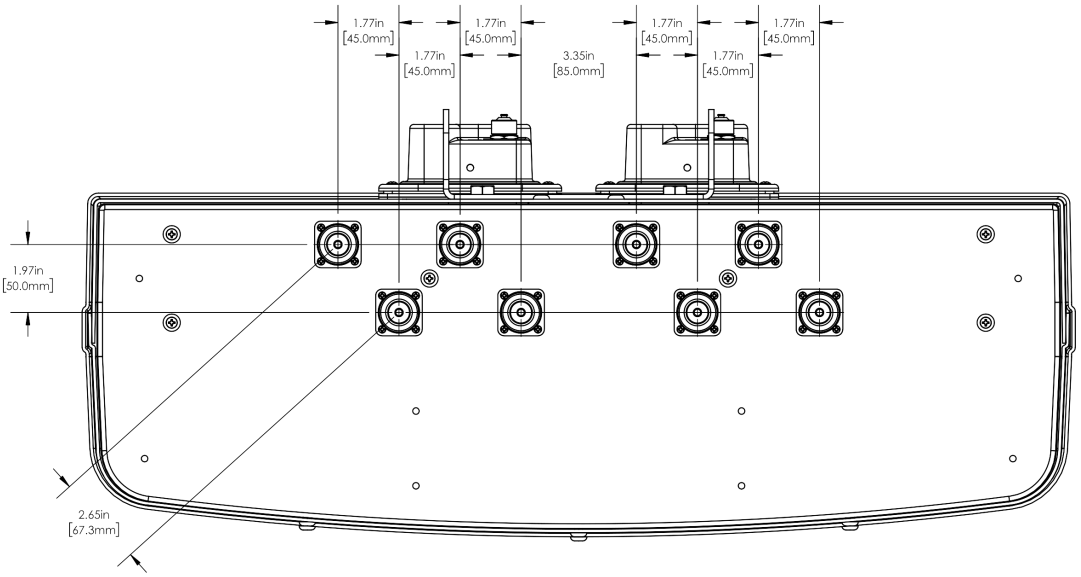


RET Connection Diagram



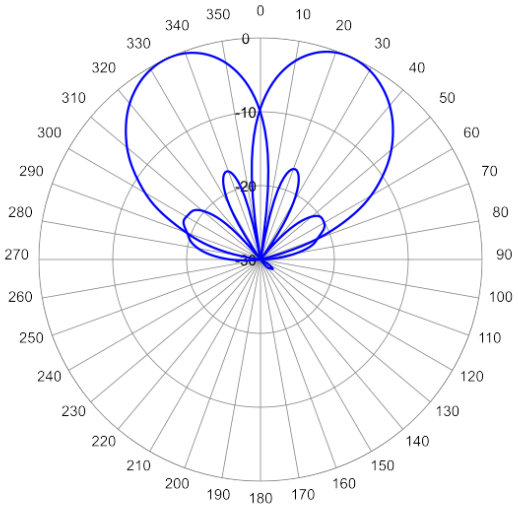
Mechanical

Connector Spacing

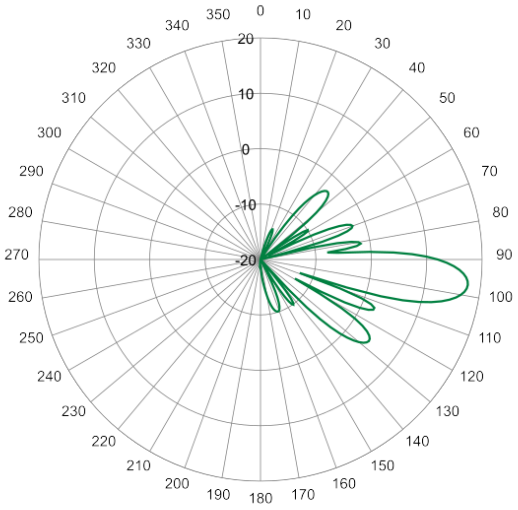


Typical Antenna Patterns

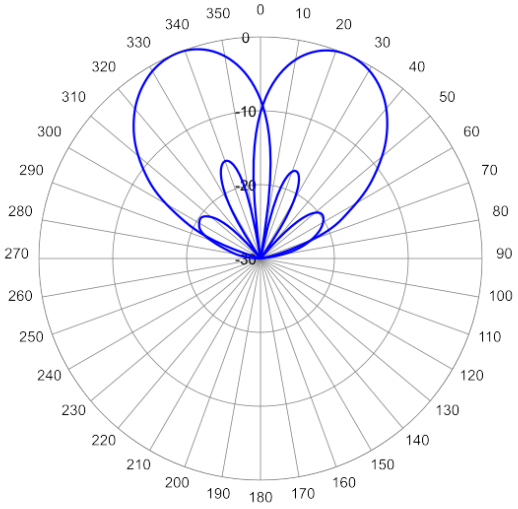
For detailed information on additional antenna patterns, contact customer support at support@cciproducts.com



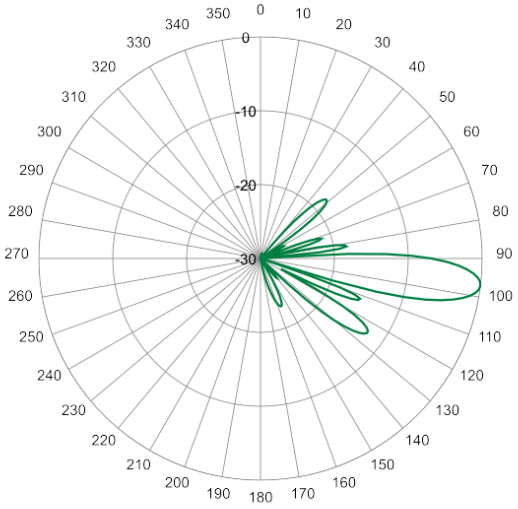
849 MHz Azimuth



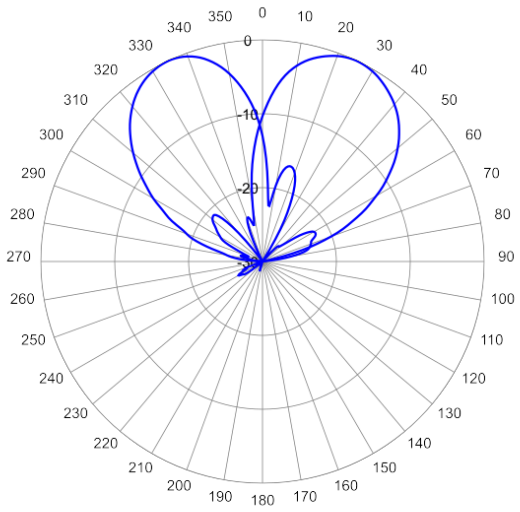
849 MHz Elevation 7°



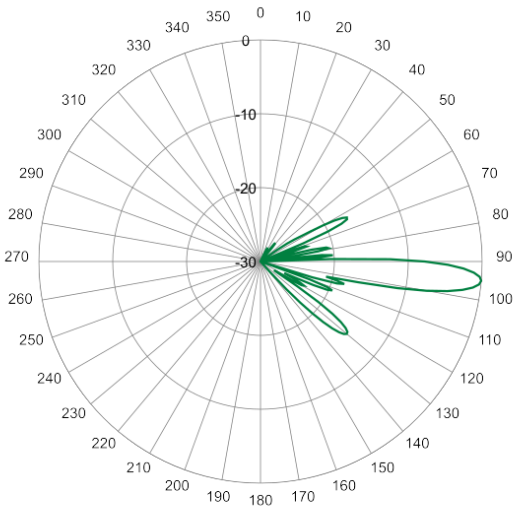
915 MHz Azimuth



915 MHz Elevation 7°



1910 MHz Azimuth



1910 MHz Elevation 5°

ORDERING

Bi-Sector™ Antenna

BSA-M65R-DU-H6

Parts & Accessories

BSA-M65R-DU-H6	6 Foot (1.8 m) Bi-Sector™ Array, Multi-Band Antenna with 4 factory installed RET Actuators
BSA-M65V-DU-H6	6 Foot (1.8 m) Bi-Sector™ Array, Multi-Band Antenna, Variable Electrical Tilt with 4 factory installed knobs
BSA-M65R-DU-H6-K	Complete Kit with Antenna, Factory Installed Actuators (4) and MBK-01 Mounting Bracket
BSA-M65V-DU-H6-K	Complete Kit with Antenna, manual Variable Electrical Tilt (4) and MBK-01 Mounting Bracket
MBK-01	Mounting bracket kit (top and bottom) with 0° to 10° mechanical tilt adjustment
BSA-RET200	Remote electrical tilt actuator
OPA-CBK-AG-RRU	4 RET antenna to RRU AISG cable kit
OPA-CBK-RA-AG-RRU	4 RET antenna to RRU AISG right angle cable kit

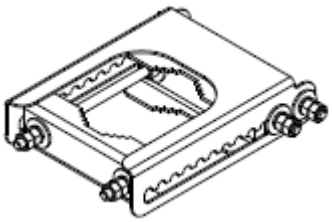
ACCESSORIES

Mounting Bracket Kit

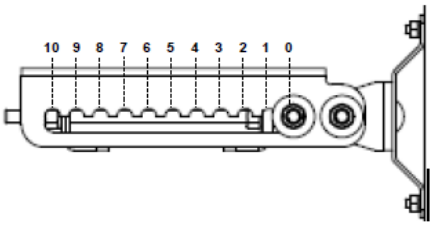
MBK-01

Mechanical

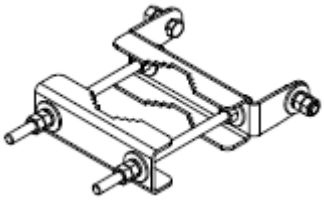
Weight	12.6 lbs (5.7 kg)
Hinge Pitch	47.25 in (1200 mm)
Mounting Pole Dimension	2 to 5 in (5 to 12 cm)
Fastener Size	M12
Installation Torque	40 ft·lb (54 N·m)
Mechanical Tilt Adjustment	0° - 10°



MBK-01 Top Adjustable Bracket



MBK-01 Top Adjustable Bracket Side View



MBK-01 Bottom Fixed Bracket

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

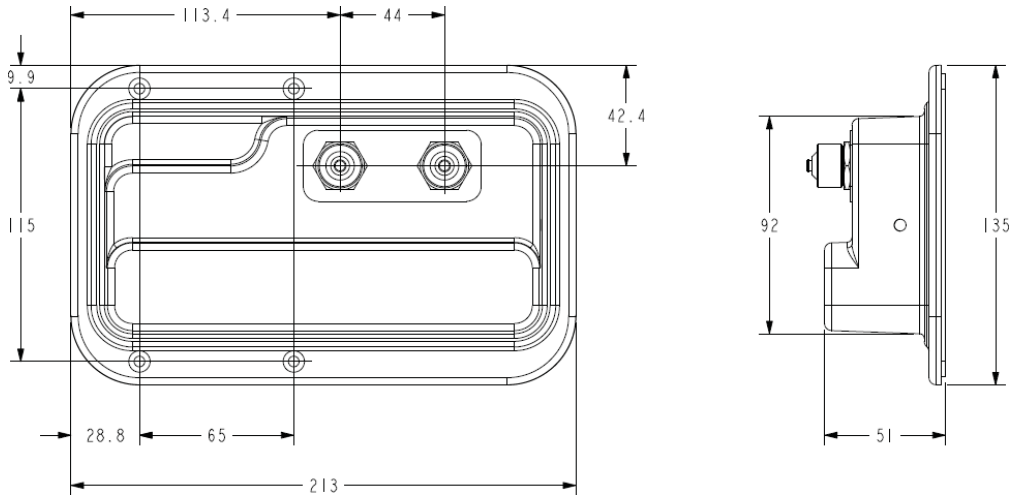
Electrical

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 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



AISG Cable Kit

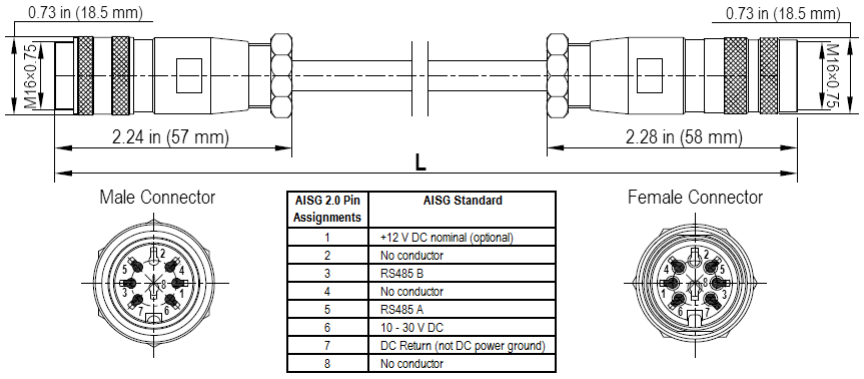
OPA-CBK-AG-RRU

Electrical Specifications

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

Mechanical Specifications

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

Environmental Specifications

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

AISG Cable Kit

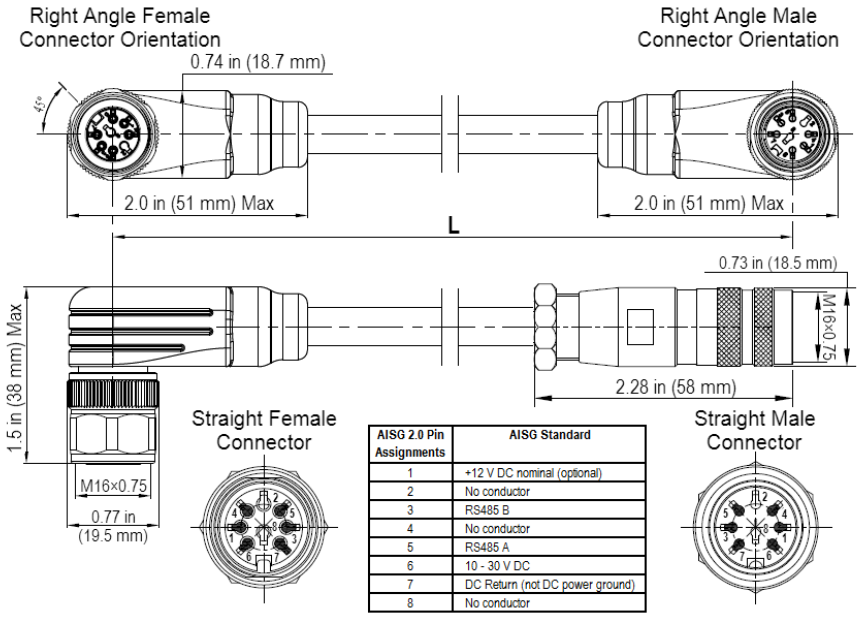
OPA-CBK-RA-AG-RRU

Electrical Specifications

Individual Cable Part Number	AISGC-MRA-FRA-20	AISGC-M-FRA-10FT
Cable style	UL2464	UL2464
Protocol	AISG 1.1 and AISG 2.0	AISG 1.1 and AISG 2.0
Maximum voltage	300 V	300 V
Rated current	5 A at 104° F (40° C)	5 A at 104° F (40° C)

Mechanical Specifications

Individual Cable Part Number	AISGC-MRA-FRA-20	AISGC-M-FRA-10FT
Cables per kit	3	2
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
Tightening torque	Hand tighten only ≈ 1.84 ft-lbs (2.5 N·m)	Hand tighten only ≈ 1.84 ft-lbs (2.5 N·m)
Construction	Shielded (Tinned Copper Braid)	Shielded (Tinned Copper Braid)
Braid coverage	85%	85%
Jacket Material	Matte Polyurethane (Black)	Matte Polyurethane (Black)
Conductors	1 twisted pair - 24 AWG 3 conductors - 19 AWG AWM style 2464	1 twisted pair - 24 AWG 3 conductors - 19 AWG AWM style 2464
Cable Diameter	0.307 in (7.8 mm)	0.307 in (7.8 mm)
Length	20 in (508 mm)	120 in (3048 mm)
Weight	0.23 lbs (0.10 kg)	0.77 lbs (0.35 kg)
Minimum bend radius	3.9 in (100 mm)	3.9 in (100 mm)



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

ACCESSORIES

AISG Cable Kit

OPA-CBK-RA-AG-RRU

Environmental Specifications

Individual Cable Part Number	AISGC-MRA-FRA-20	AISGC-M-FRA-10FT
Temperature Range	-40° to 80° C	-40° to 80° C
Flammability	UL 1581 VW-1	UL 1581 VW-1
Ingress Protection	IEC 60529:2001, IP67	IEC 60529:2001, IP67

STANDARDS & CERTIFICATIONS

Bi-Sector™ Antenna

BSA-M65R-DU-H6

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