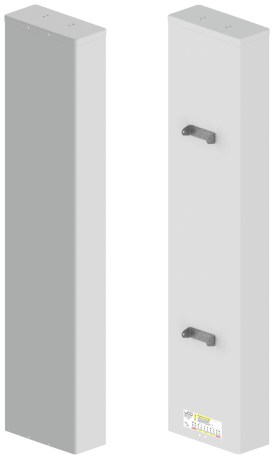
DATA SHEET

Two/Three Beam Macro Antenna

HTSBD5R-BU8A



- Dual Band Multibeam Antenna, with three (3) Independent 4x4 MIMO Mid-Band (MB) Beams (or six (6) 2x2 MIMO MB beams) and two (2) Independent 4x4 MIMO Low-Band (LB) Beams (or four (4) 2x2 MIMO LB beams) for high capacity and data throughput, in a macro deployments scenario
- Each Beam has independent RET control
- CCI's Innovative Array Compensated Butler Matrices, allows for Near Zero dispersion in both Az/El Peak and Az/El BW across 1695-2360 MHz
- CCI's Innovative Array Compensated Butler Matrices provide stabilized 8 dB Beam Crossover, across 1695-2360 MHz
- Coupled with Near Zero Az Peak/BW Dispersion and stable 8 dB Beam Crossover, the solution is ideal for Carrier Aggregation (CA), providing for excellent traffic loading decisions over traditional Blass Matrices and large Luneburg lens based multibeam products
- CCI's Innovative Array Compensated Butler Matrices solution provides superior Az SLL Suppression (improved CINR), which greatly enhances Data Throughput speeds over traditional Blass Matrices and large Luneburg lens based multibeam products
- Twenty Dual-Pol +45°/-45° ports (Two or Four ports per Beam) covering 698-896 / 1695-2360 MHz in a single antenna
- Full Spectrum Compliance for 698-896 and 1695-2360 MHz Frequencies
- Exceeds minimum PIM performance requirements

Overview

This CCI Dual Band low dispersion Multibeam Antenna contains three Independent Mid Band LTE Optimized Beams with 4x4 MIMO capability or six Independent LTE Optimized Beams with 2x2 MIMO capability covering 1695-2360 MHz frequencies and two Independent Low Band LTE Optimized Beams with 4x4 MIMO capability or four Independent LTE Optimized Beams with 2x2 MIMO capability covering 698-896 MHz. This Dual Band low dispersion Multibeam Antenna is intended for Macro deployment, where offload for data hotspots and other congested locals is critical.

This Dual Band low dispersion Multibeam Antenna enables maximum spectrum re-use by sectorization, greatly increasing network capacity. With deployment of low dispersion 4x4 MIMO (on any of the beams available), capacity and data throughput is greatly enhanced, over a conventional 2x2 MIMO beam deployment. Our LTE Optimized Beam Design approach provides fast roll off between beams, minimizing interference between sectors thus increasing the carrier to interference plus noise (CINR) ratio and lowering soft handover losses in LTE networks. Such an approach enhances data transfer rates within LTE network sectors and addresses "hotspots" in mobile wireless operator networks.

The single panel design of the CCI Dual Band low dispersion Multibeam Macro Antenna offers the opportunity to reduce antenna count and directly replaces multiple narrow beam antennas. The antenna minimizes the need for optimization as each beam is spaced optimally for maximum throughput thus providing 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 and capacity, through the use of our low dispersion technology and 4x4 MIMO deployment
- Antenna intended for use where data throughput and capacity needs are paramount
- Ready for Network Standardization on 4.3-10 connectors

SPECIFICATIONS

Two/Three Beam Macro Antenna

HTSBD5R-BU8A

Electrical

Ports	8 x Low Band Ports for 698-896 MHz	
Frequency Range	698-806 MHz	824-896 MHz
Gain (Peak)	14.3 dBi	14.8 dBi
Azimuth Beamwidth (-3dB)	41°	36°
Azimuth Beam Crossover	8.0°	8.0°
Elevation Beamwidth (-3dB)	25.6°	22.9°
Electrical Downtilt	4° to 12°	4° to 12°
Azimuth Sidelobe	< -16 dB	< -15 dB
Elevation Sidelobes (1st Upper)	< -18 dB	< -16 dB
Front-to-Back Ratio @180°	> 32 dB	> 32 dB
Cross-Polar Discrimination (at Peak)	> 24 dB	> 24 dB
Cross-Polar Port-to-Port Isolation	> 25 dB	> 25 dB
Interbeam Co-Pol Isolation (Non-Adjacent Beams) (Worst Case)	> 15 dB	> 15 dB
Voltage Standing Wave Ratio (VSWR)	< 1.5:1	< 1.5:1
Passive Intermodulation (2x20W)	≤ -153 dBc	≤ -153 dBc
Input Power Continuous Wave (CW)	200 watts	200 watts
Polarization	Dual Pol 45°	Dual Pol 45°
Input Impedance	50 ohms	50 ohms
Lightning Protection	DC Ground	DC Ground

All specifications are subject to change without notice.

Dispersion related Electrical Specifications Averaging*		
Frequency Range	698-806 MHz	824-896 MHz
Gain over all Tilts[1] (dBi)	13.5	14.0
Gain over all Tilts Tolerance (Worse Case) (dB)	0.5	0.4
Azimuth Beamwidth Tolerance at 3 dB (°)	2.6	1.1
Elevation Beamwidth Tolerance at 3 dB (°)	1.5	0.9
Azimuth Beam Peak Tolerance (Worse Case) (°)	1.6	1.8
Azimuth Beam Crossover Tolerance average across all Beams (dB)	1.2	0.8
Front-to-Back Ratio, Total Power, ±20°[1] (dB)	20.5	22.7

** No Dispersion Control in Low Band*
[1] Electrical specifications follow document "Recommendation on Base Station Antenna Standards" (BASTA) V11.1.
All specifications are subject to change without notice.

SPECIFICATIONS

Two/Three Beam Macro Antenna

HTSBD5R-BU8A

Electrical

Ports	12 x High Band Ports for 1695-1780 MHz, 1850-1995 MHz & 2110-2360 MHz bands only			
Frequency Range	1695-1780 MHz	1850-1995 MHz	2110-2200 MHz	2300-2360 MHz
Gain (Peak)	17.4 dBi	16.9 dBi	16.1 dBi	16.4 dBi
Azimuth Beamwidth (-3dB)	21°	21°	21°	20°
Azimuth Beam Crossover	8.0°	8.0°	8.0°	8.0°
Elevation Beamwidth (-3dB)	20.9°	19.9°	21.7°	20.3°
Electrical Downtilt	4° to 12°	4° to 12°	4° to 12°	4° to 12°
Azimuth Sidelobe	< -18 dB	< -17 dB	< -17 dB	< -19 dB
Elevation Sidelobes (1st Upper)	< -22 dB	< -17 dB	< -17 dB	< -15 dB
Front-to-Back Ratio @180°	> 34 dB	> 34 dB	> 33 dB	> 32 dB
Cross-Polar Discrimination (at Peak)	> 15 dB	> 16 dB	> 17 dB	> 18 dB
Cross-Polar Port-to-Port Isolation	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Interbeam Co-Pol Isolation (Adjacent Beams)	> 20 dB	> 20 dB	> 20 dB	> 20 dB
Interbeam Co-Pol Isolation (Non-Adjacent Beams) (Worst Case)	> 15 dB	> 15 dB	> 15 dB	> 15 dB
Voltage Standing Wave Ratio (VSWR)	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1
Passive Intermodulation (2x20W)	≤ -153 dBc	≤ -153 dBc	≤ -153 dBc	≤ -153 dBc
Input Power Continuous Wave (CW)	100 watts	100 watts	100 watts	100 watts
Polarization	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°
Input Impedance	50 ohms	50 ohms	50 ohms	50 ohms
Lightning Protection	DC Ground	DC Ground	DC Ground	DC Ground

All specifications are subject to change without notice.

Dispersion related Electrical Specifications Averaging				
Frequency Range	1695-1780 MHz	1850-1995 MHz	2110-2200 MHz	2300-2360 MHz
Gain over all Tilts[1] (dBi)	16.3	15.4	15.0	15.7
Gain over all Tilts Tolerance (Worse Case) (dB)	0.3	0.4	0.4	0.2
Azimuth Beamwidth Tolerance at 3 dB (°)	0.4	0.5	0.4	0.5
Elevation Beamwidth Tolerance at 3 dB (°)	0.5	1.0	0.9	0.4
Azimuth Beam Peak Tolerance (Worse Case) (°)	0.7	0.5	0.8	0.3
Azimuth Beam Crossover Tolerance average across all Beams (dB)	0.4	0.4	0.4	0.4
Front-to-Back Ratio, Total Power, ±20°[1] (dB)	23.0	23.0	21.5	21.4

[1] Electrical specifications follow document "Recommendation on Base Station Antenna Standards" (BASTA) V11.1.
All specifications are subject to change without notice.

SPECIFICATIONS

Two/Three Beam Macro Antenna

HTSBD5R-BU8A

Mechanical

Dimensions (L×W×D)	97.0×22.2×10.0 in (2464×565×254 mm)
Survival Wind Speed	> 150 mph (> 241 kph)
Front Wind Load[1]	454 lbf @ 100 mph 2019 N @ 161 kph
Side Wind Load[1]	58 lbf @ 100 mph 259 N @ 161 kph
Effective Projective Area (EPA), Front[1]	18.0 ft^2 (2.0 m^2)
Weight *	127.9 lbs (58.0 kg)
RF Connector	20 x 4.3-10 female
Mounting Pole	2 to 5 in (5 to 12 cm)

[1]Windload values calculated using CFD analysis
** Weight excludes mounting*

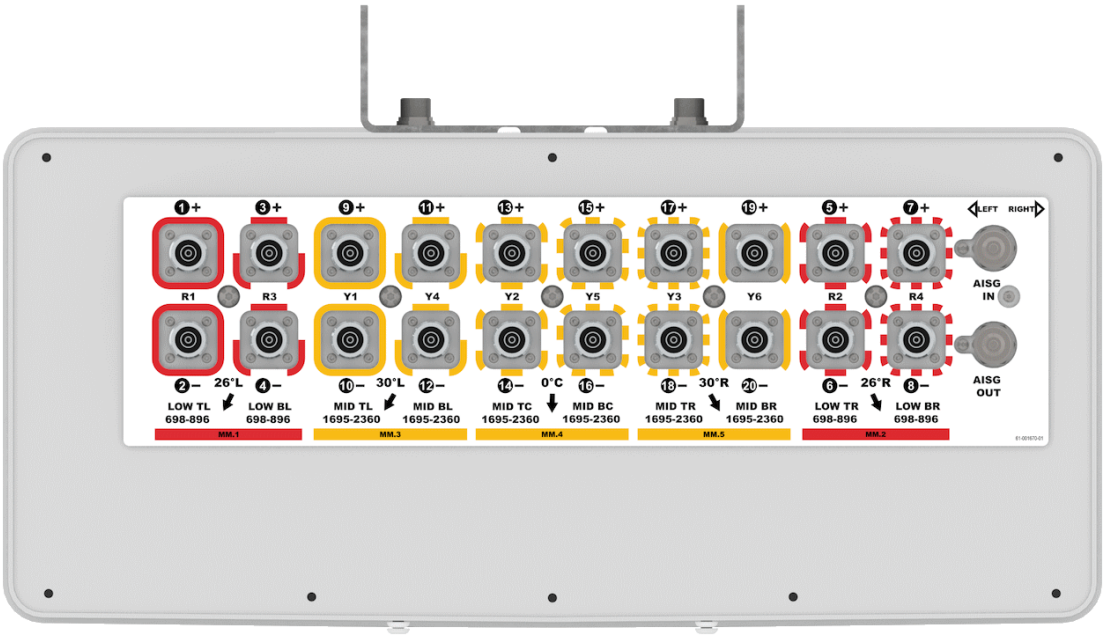
SPECIFICATIONS

Two/Three Beam Macro Antenna

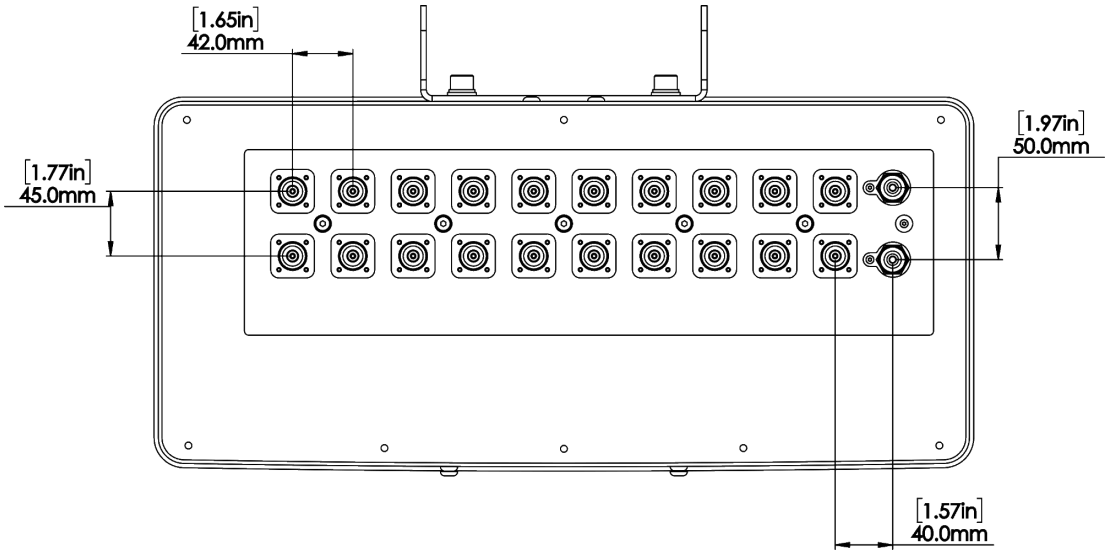
HTSBD5R-BU8A

Mechanical

Bottom View



Connector Spacing

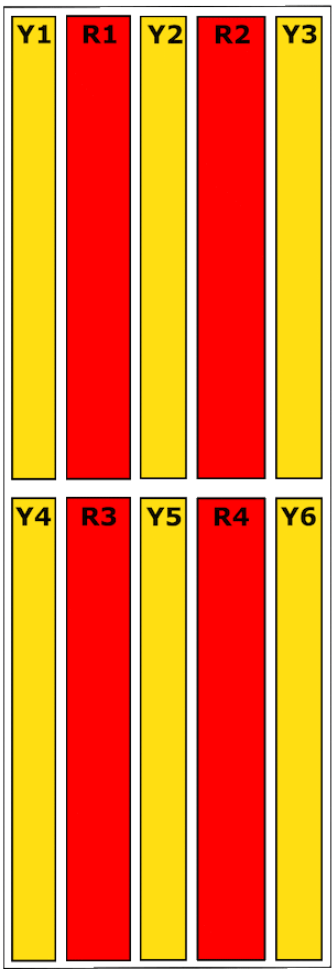


Mechanical

RET to Element Configuration

HTSBD5R-BU8AB Array and RET configuration (Type T17iG3-M Internal RET)

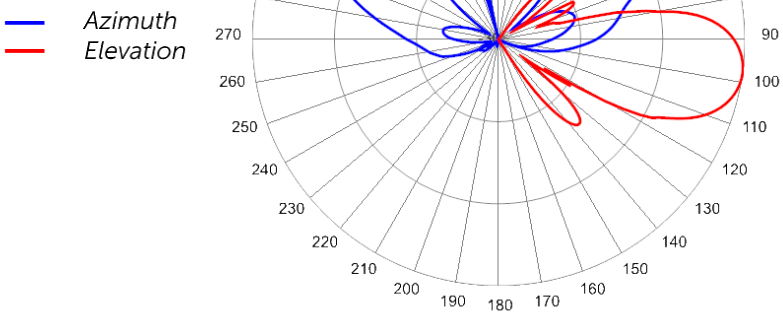
Top of antenna
Viewed from rear



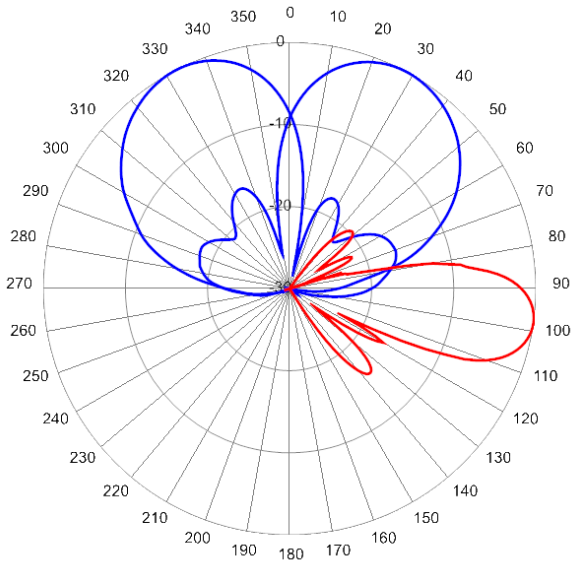
Array	Ports	Freq (MHz)	Ports controlled by dedicated RET	AISG RET UID
R1	1, 2	698-896	1, 2, 3, 4	CIxxxxxxMM.1
R3	3, 4	698-896		
R2	5, 6	698-896	5, 6, 7, 8	CIxxxxxxMM.2
R4	7, 8	698-896		
Y1	9, 10	1695-1780 1850-1995 2110-2360	9, 10, 11, 12	CIxxxxxxMM.3
Y4	11, 12			
Y2	13, 14	1695-1780 1850-1995 2110-2360	13, 14, 15, 16	CIxxxxxxMM.4
Y5	15, 16			
Y3	17, 18	1695-1780 1850-1995 2110-2360	17, 18, 19, 20	CIxxxxxxMM.5
Y6	19, 20			

Typical Antenna Patterns

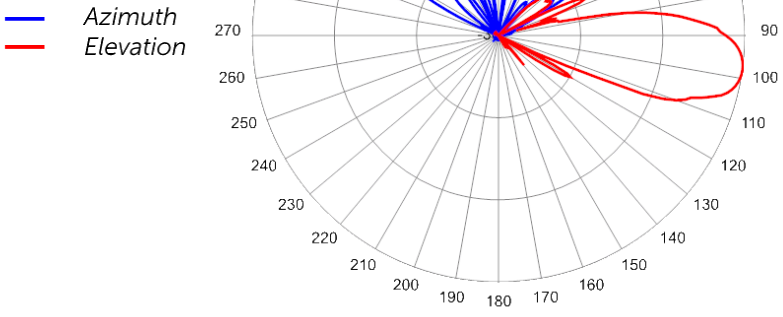
For detailed information on additional antenna patterns, contact customer support at support@cciproducts.com



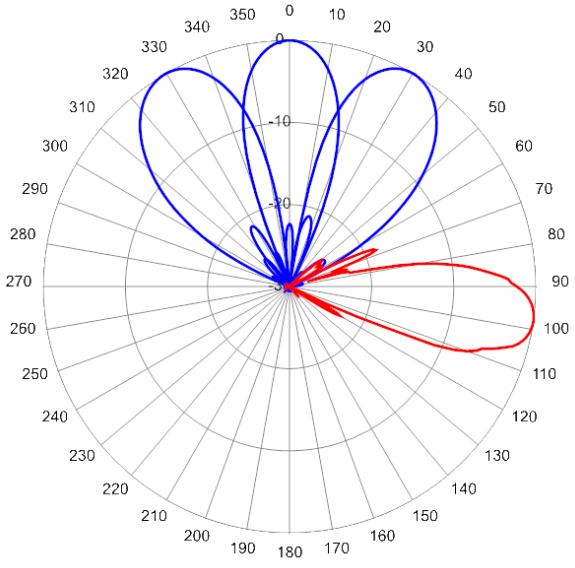
758 MHz Azimuth with Elevation 8°



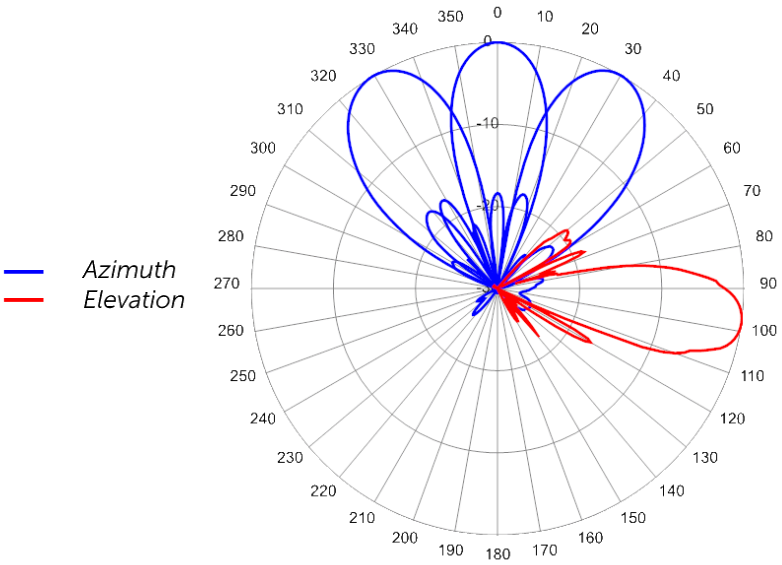
824 MHz Azimuth with Elevation 6°



1740 MHz Azimuths with Elevation 8°



1930 MHz Azimuths with Elevation 8°



2115 MHz Azimuths with Elevation 8°

ORDERING

Two/Three Beam Macro Antenna

HTSBD5R-BU8A

Parts & Accessories

HTSBD5R-BU8AB-K	Eight foot (2.3 m) MultiBeam DualBand antenna with 4.3-10 female connectors, 5 factory RET-T17iG3-M actuators and MBK-16 mounting kit
MBK-01	Mounting bracket kit (top and bottom) with 0° to 10° mechanical tilt adjustment
MBK-16	Mounting bracket kit (top and bottom) with fixed 0° mechanical tilt
AISGC-M-F-10FT	10 Ft (3 m) Male/Female RRU to Antenna AISG cable

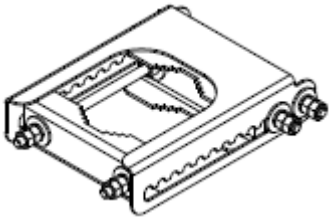
ACCESSORIES

Mounting Bracket Kit

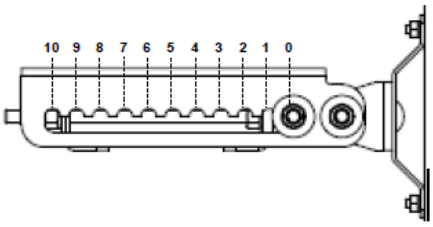
MBK-01

Mechanical

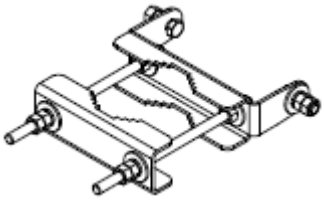
Weight	12.6 lbs (5.7 kg)
Hinge Pitch	47.25 in (1200 mm)
Mounting Pole Dimension	2 to 5 in (5 to 12 cm)
Fastener Size	M12
Installation Torque	40 ft·lb (54 N·m)
Mechanical Tilt Adjustment	0° - 10°



MBK-01 Top Adjustable Bracket



MBK-01 Top Adjustable Bracket Side View



MBK-01 Bottom Fixed Bracket

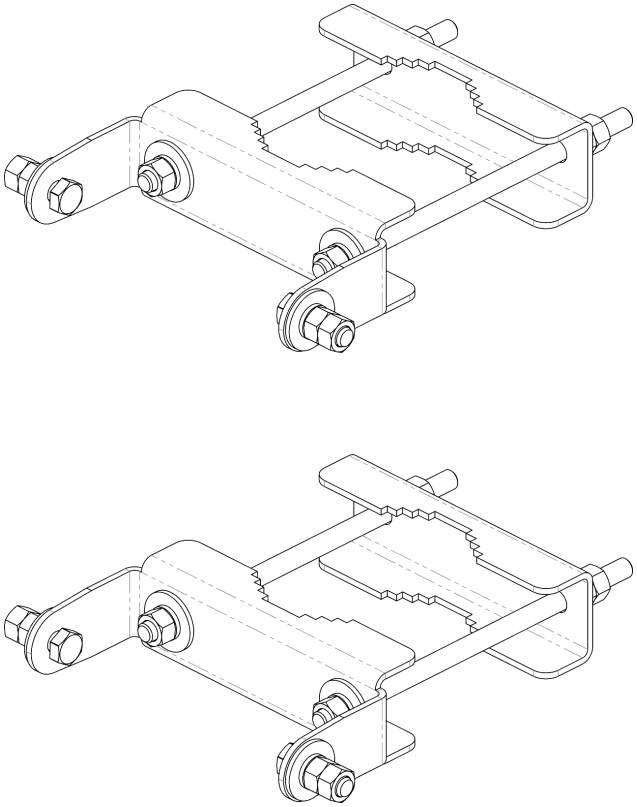
ACCESSORIES

Mounting Bracket Kit

MBK-16

Mechanical

Weight	9.9 lbs (4.5 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·lbs (54 N·m)
Mechanical Tilt	0°



MBK-16 Top and Bottom Bracket

AISG Cable

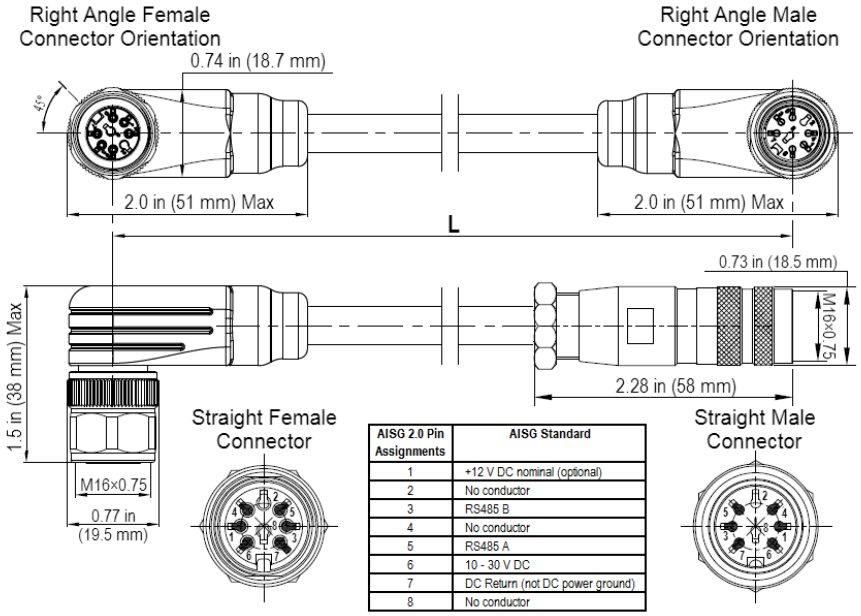
AISGC-M-F-xFT

Electrical Specifications

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

Mechanical Specifications

Individual Cable Part Number	AISGC-M-F-x(FT)
Cables per kit	1
Connectors	2 x 8 pin IEC 60130-9 Straight male/straight female
Tightening torque	Hand tighten only ≈ 1.84 ft-lbs (2.5 Nm)
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)
Length	See order details
Minimum bend radius	3.15 in (80 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

AISG Cable

AISGC-M-F-xFT

Environmental Specifications

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

STANDARDS & CERTIFICATIONS

Two/Three Beam Macro Antenna

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