



# Antennas

MultiPort

Series

DATA SHEET

## TriBand Antenna

HPA33R-KE6C



- Six foot (1.8 m), TriBand, six port antenna with a 33° azimuth beamwidth covering 698-960 MHz and 1695-2690 MHz frequencies
- Four wide high band ports covering 1695-2690 MHz and two wide low band ports covering 698-960 MHz in a single antenna
- Full Spectrum Compliance 698-960 MHz / 1695-2690 MHz
- 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
- Comes with 4.3-10 connector, which is 40% smaller than traditional 7/16 DIN connector

### Overview

The CCI TriBand Antenna is a six port antenna, with four wide high band ports covering 1695-2690 MHz and two wide low band ports covering 698-960 MHz. The CCI TriBand Antenna 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 TriBand antenna allows separate tilt control between the low band ports and high band ports.

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 connectors
- With CCI's TriBand antennas, wireless providers can connect multiple platforms to a single antenna, reducing tower load, lease expense, deployment time and installation costs



TriBand Antenna

HPA33R-KE6C

SPECIFICATIONS

Electrical

Ports	2 x Low Band Ports for 698-960 MHz			
Frequency Range	698-806 MHz	790-862 MHz	824-896 MHz	880-960 MHz
Gain	17.2 dBi	17.7 dBi	18.0 dBi	18.1 dBi
Azimuth Beamwidth (-3dB)	33°	33°	31°	30°
Elevation Beamwidth (-3dB)	13.1°	11.9°	11.3°	10.6°
Electrical Downtilt	2° to 12°	2° to 12°	2° to 12°	2° to 12°
Elevation Sidelobes (1st Upper)	<-20 dB	<-18 dB	<-18 dB	<-18 dB
Front-to-Back Ratio @180°	> 30 dB	> 30 dB	> 32 dB	> 32 dB
Cross-Polar Discrimination at Peak	> 25 dB	> 25 dB	> 25 dB	> 22 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)	≤ -153 dBc	≤ -153 dBc	≤ -153 dBc	≤ -153 dBc
Input Power Continuous Wave (CW)	500 watts	500 watts	500 watts	500 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

BASTA Electrical Specifications*				
Frequency Range	698-806 MHz	790-862 MHz	824-896 MHz	880-960 MHz
Gain over all Tilts (dBi)	16.7	17.1	17.4	17.6
Gain over all Tilts Tolerance (dB)	0.4	0.4	0.4	0.5
Gain at Low-Tilt (dBi)	16.8	17.2	17.5	17.7
Gain at Mid-Tilt (dBi)	16.8	17.3	17.6	17.8
Gain at High-Tilt (dBi)	16.5	17.0	17.2	17.4
Azimuth Beamwidth Tolerance (°)	0.5	0.8	2.5	1.9
Elevation Beamwidth Tolerance (°)	1.0	0.6	0.7	0.7
Electrical Downtilt Deviation (°)	0.7	0.8	0.8	0.8
First Upper Sidelobe Suppression (dB)	17.9	17.4	16.4	14.6
Upper Sidelobe Suppression Peak to 20° (dB)	18.3	17.4	16.6	15.0
Front-to-Back Ratio over ±20° (dB)	24.6	28.7	28.0	26.9
Cross-polar Discrimination at 3 dB (dB)	23.7	24.0	17.4	14.7

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



TriBand Antenna

HPA33R-KE6C

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	19.7 dBi	20.3 dBi	20.4 dBi	20.5 dBi	21.2 dBi
Azimuth Beamwidth (-3dB)	36°	35°	35°	32°	32°
Elevation Beamwidth (-3dB)	5.4°	4.9°	4.6°	3.8°	3.6°
Electrical Downtilt	2° to 10°	2° to 10°	2° to 10°	2° to 10°	2° to 10°
Elevation Sidelobes (1st Upper)	< -16 dB	< -16 dB	< -15 dB	< -15 dB	< -15 dB
Front-to-Back Ratio @180°	> 35 dB	> 35 dB	> 35 dB	> 35 dB	> 35 dB
Cross-Polar Discrimination at Peak	> 19 dB	> 17 dB	> 18 dB	> 18 dB	> 18 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)	≤ -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 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

BASTA Electrical Specifications*					
Frequency Range	1695-1880 MHz	1850-1990 MHz	1920-2180 MHz	2300-2400 MHz	2496-2690 MHz
Gain over all Tilts (dBi)	18.6	19.3	19.6	20.1	19.7
Gain over all Tilts Tolerance (dB)	0.9	0.5	0.6	0.4	0.9
Gain at Low-Tilt (dBi)	18.6	19.1	19.3	19.8	19.9
Gain at Mid-Tilt (dBi)	18.7	19.4	19.8	20.3	20.1
Gain at High-Tilt (dBi)	18.6	19.4	19.6	20.1	19.1
Azimuth Beamwidth Tolerance (°)	3.6	3.5	3.1	1.8	2.9
Elevation Beamwidth Tolerance (°)	0.6	0.3	0.4	0.2	0.3
Electrical Downtilt Deviation (°)	0.6	0.5	0.5	0.6	0.6
First Upper Sidelobes Suppression (dB)	12.6	13.5	12.8	12.3	12.4
Upper Sidelobe Suppression Peak to 20° (dB)	12.1	13.4	12.1	12.2	11.3
Front-to-Back Ratio over ±20° (dB)	28.0	29.3	29.6	29.1	28.1
Cross-polar Discrimination at 3 dB (dB)	13.1	12.4	12.8	14.0	14.4

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



TriBand Antenna

HPA33R-KE6C

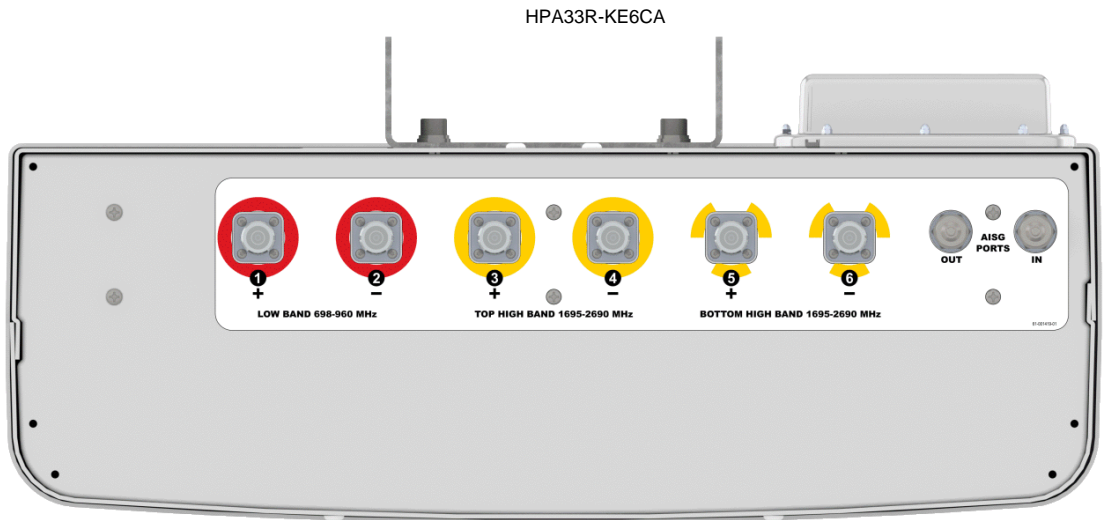
SPECIFICATIONS

Mechanical

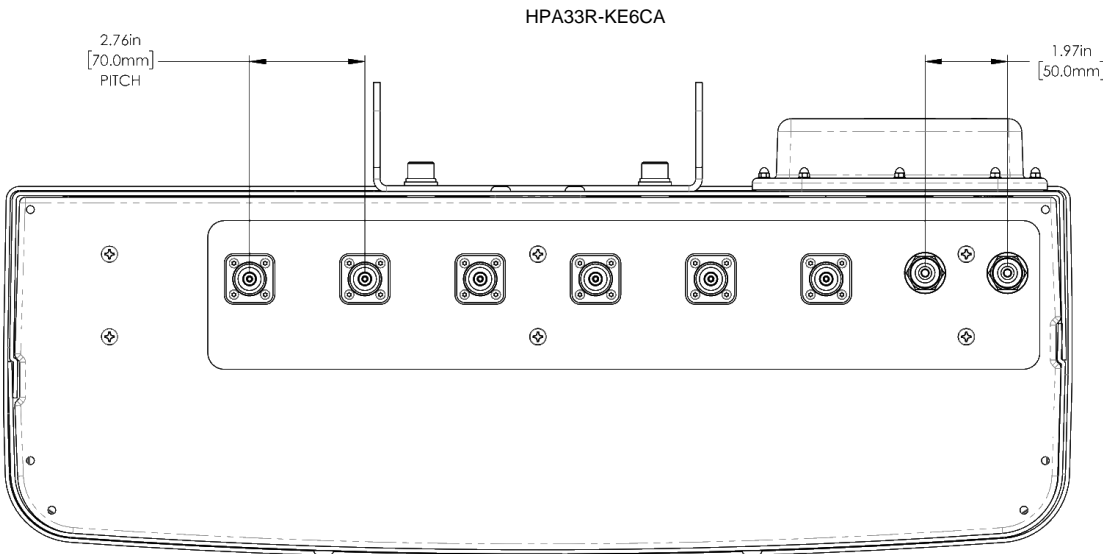
<b>Dimensions (LxWxD)</b>	72.0x25.0x8.8 in (1830x636x224 mm)
<b>Survival Wind Speed</b>	> 150 mph (> 241 kph)
<b>Front Wind Load</b>	390 lbs (1736 N) @ 100 mph (161 kph)
<b>Side Wind Load</b>	163 lbs (723 N) @ 100 mph (161 kph)
<b>Equivalent Flat Plate Area</b>	15.20 ft <sup>2</sup> (1.4 m <sup>2</sup> )
<b>Weight *</b>	88.4 lbs (40.1 kg)
<b>Connector</b>	6 x 4.3-10 female
<b>Mounting Pole</b>	2 to 5 in (5 to 12 cm)

\* Weight excludes mounting

Bottom View



Connector Spacing Diagram





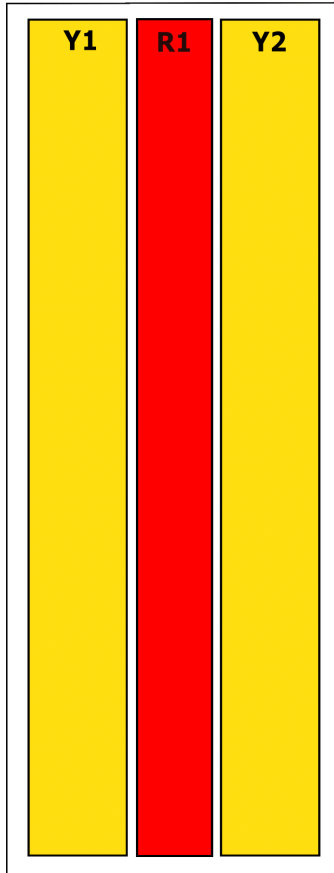
SPECIFICATIONS

Mechanical

RET to Element Configuration

HPA33R-KE6CA Element and RET configuration

Top of antenna Viewed from rear



RET placement as view from rear of antenna



Array	Ports	Freq (MHz)	Ports controlled by common RET	AISG RET UID
R1	1, 2	689-960	1, 2	C1xxxxxxxMM.1
Y1	3, 4	1695-2690	3, 4, 5, 6	C1xxxxxxxMM.2
Y2	5, 6	1695-2690		



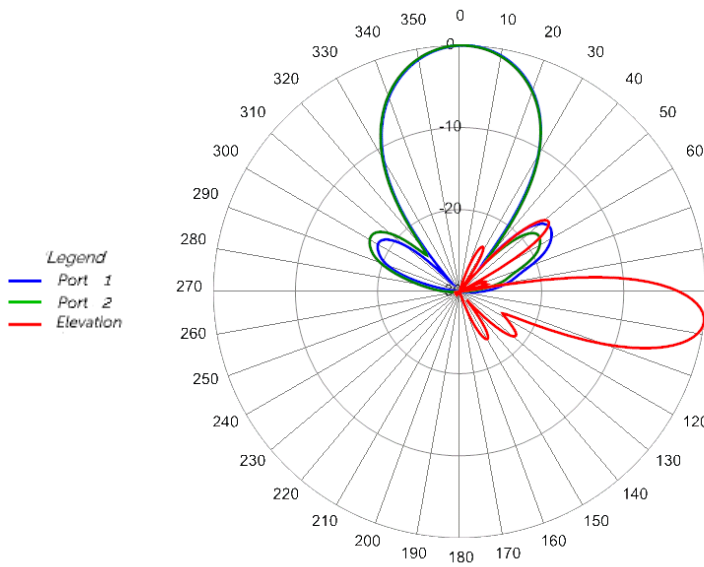
SPECIFICATIONS

TriBand Antenna

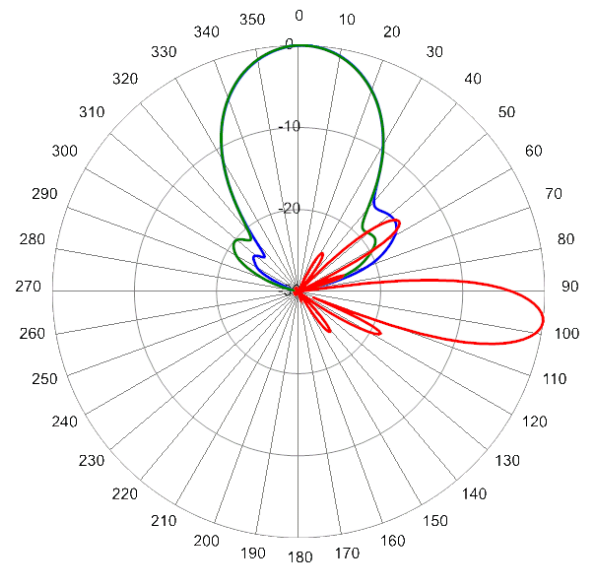
HPA33R-KE6C

Typical Antenna Patterns

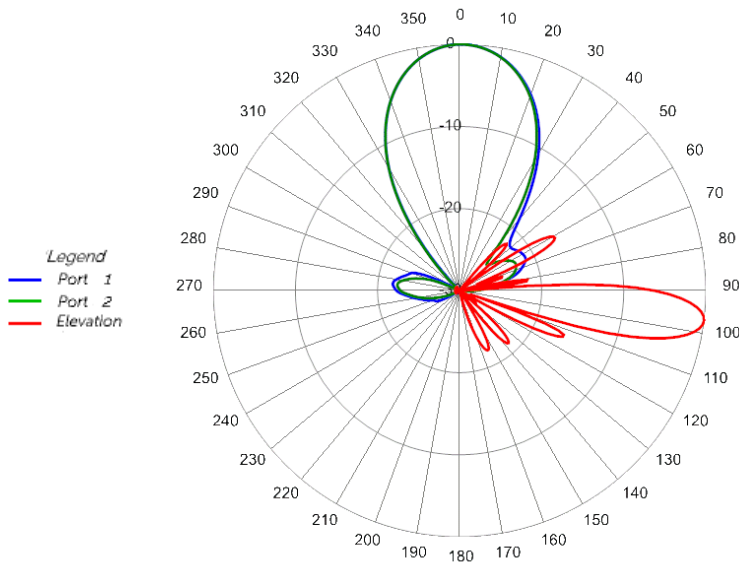
For detailed information on additional antenna patterns, contact customer support at support@cciproducts.com



734 MHz Azimuth with Elevation 7°



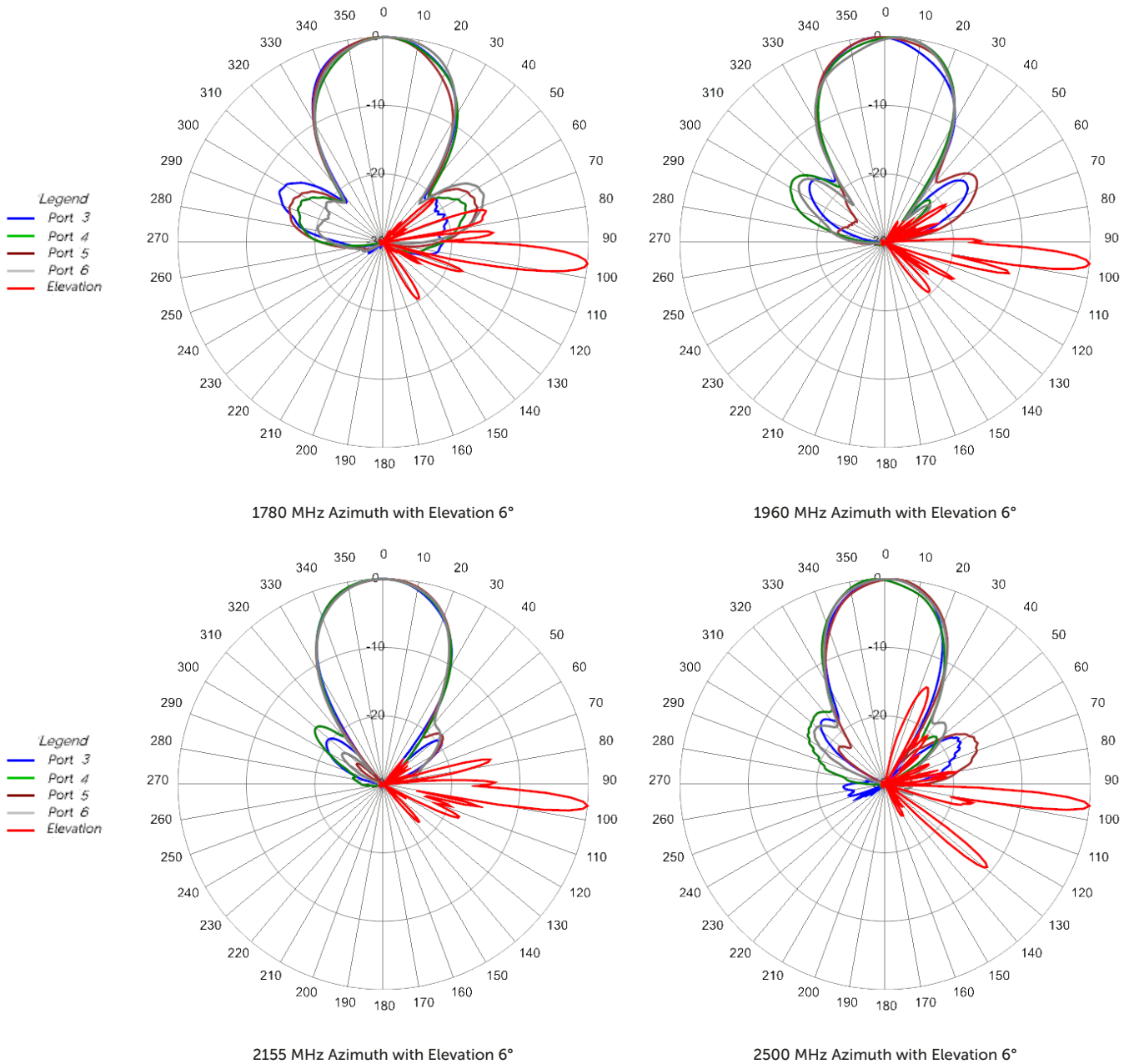
806 MHz Azimuth with Elevation 7°



925 MHz Azimuth with Elevation 7°



Typical Antenna Patterns





ORDERING

TriBand Antenna

HPA33R-KE6C

Parts & Accessories

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<b>HPA33R-KE6CA-K</b>	Six foot (1.8 m) TriBand antenna with 33° azimuth beamwidth, 4.3-10 female connectors, 2 factory installed BSA-RET400 RET actuators (Type 17 Internal) and MBK-01 mounting bracket
<b>MBK-01</b>	Mounting bracket kit (top and bottom) with 0° to 10° mechanical tilt adjustment
<b>BSA-RET400</b>	Type 17 remote electrical tilt actuator
<b>AISGC-M-F-10FT</b>	10 Ft (3 m) Male/Female RRU to Antenna AISG cable

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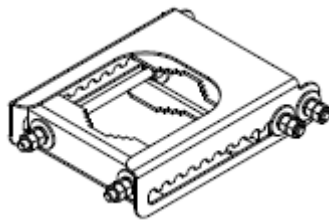


Mounting Bracket Kit

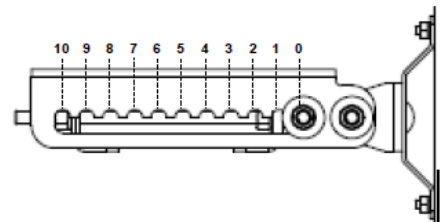
MBK-01

Mechanical

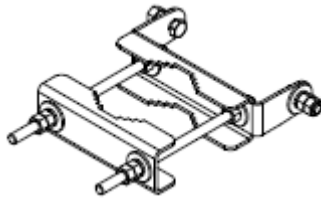
<b>Weight</b>	12.6 lbs (5.7 kg)
<b>Hinge Pitch</b>	47.25 in (1200 mm)
<b>Mounting Pole Dimension</b>	2 to 5 in (5 to 12 cm)
<b>Fastener Size</b>	M12
<b>Installation Torque</b>	40 ft·lb (54 N·m)
<b>Mechanical Tilt Adjustment</b>	0° - 10°



MBK-01 Top Adjustable Bracket



MBK-01 Top Adjustable Bracket Side View



MBK-01 Bottom Fixed Bracket



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

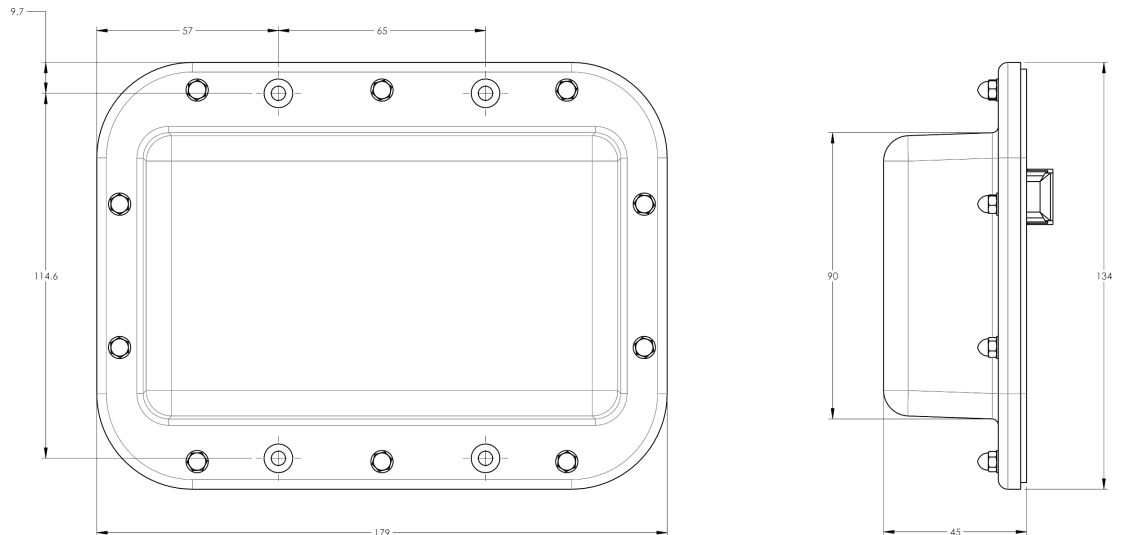
Electrical

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





AISG Cable

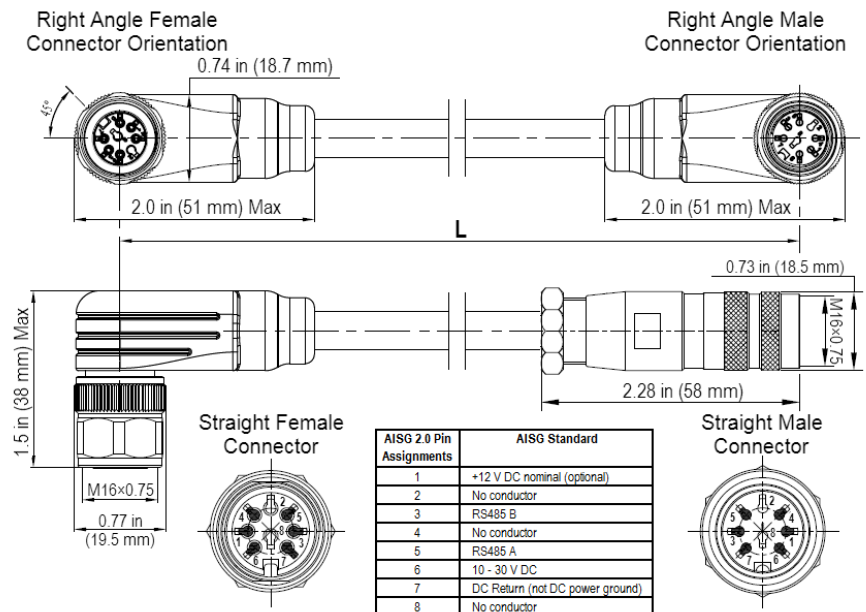
AISGC-M-F-xFT

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 $\approx$ 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-Male to AISG-Female Jumper Cable



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

TriBand Antenna

HPA33R-KE6C

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

