



- Four foot (1.2 m) TriBand, twelve port antenna with a 65° azimuth beamwidth covering 694-960 MHz and 1695-2690 MHz frequencies
- Eight wide high band ports covering 1695-2690 MHz and four wide low band ports covering 694-960 MHz in a single antenna enclosure
- Full Spectrum Compliance 694-960 MHz / 1695-2690 MHz
- Array configuration allows for 4T4R (4X4 MIMO) on Low Band
- 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
- Equipped with new 4.3-10 connector, which is 40% smaller than traditional 7/16 DIN connector
- Equipped with 4 field replaceable, integrated AISG 2.0 compliant Remote Electrical Tilt (RET) Controllers (Type 1 External)

### Overview

The CCI 12-Port TriBand array is a twelve port antenna, with eight wide high band ports covering 1695-2690 MHz and four wide low band ports covering 694-960 MHz. The antenna provides the capability to deploy Dual 4x4 Multiple-input Multiple-output (MIMO) in the high band and 4X4 MIMO across low band ports. The CCI 12-Port allows independent tilt control between the low band ports and high band ports and independent tilt control between left and right antenna arrays.

In this four RET configuration, the 1st RET is dedicated for the two Left Low Band ports and the 3rd RET is for the two Right Low Band ports. The 2nd RET is dedicated for the four Left High Band ports and the 4th RET is dedicated for the four Right High Band ports. This RET arrangement allows for complete flexibility in coverage control between left and right antenna arrays.

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

### Applications

- Dual 4x4 MIMO for the High Band and 4X4 MIMO Low Band ports
- Ready for Network Standardization on 4.3-10 DIN 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



SPECIFICATIONS

TriBand Twelve-Port Antenna

TPA65R-KE4B

Electrical

Ports	4 x Low Band Ports for 694-960 MHz			
Frequency Range	694-806 MHz	790-862 MHz	824-896 MHz	880-960 MHz
Gain	13.9 dBi	13.9 dBi	13.9 dBi	13.9 dBi
Azimuth Beamwidth (-3dB)	63°	59°	59°	58°
Elevation Beamwidth (-3dB)	20.2°	18.5°	17.6°	16.5°
Electrical Downtilt	2° to 16°	2° to 16°	2° to 16°	2° to 16°
Elevation Sidelobes (1st Upper)	<-18 dB	<-18 dB	<-18 dB	<-18 dB
Front-to-Back Ratio @180°	> 35 dB	> 35 dB	> 35 dB	> 35 dB
Cross-Polar Discrimination at Peak	> 25 dB	> 25 dB	> 25 dB	> 25 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	694-806 MHz	790-862 MHz	824-896 MHz	880-960 MHz
Frequency Range	694-806 MHz	790-862 MHz	824-896 MHz	880-960 MHz
Gain over all Tilts (dBi)	13.0	13.4	13.4	13.4
Gain over all Tilts Tolerance (dB)	0.5	0.5	0.5	0.5
Gain at Low-Tilt (dBi)	13.2	13.6	13.7	13.6
Gain at Mid-Tilt (dBi)	13.0	13.5	13.5	13.5
Gain at High-Tilt (dBi)	12.8	13.2	13.2	13.0
Azimuth Beamwidth Tolerance (°)	8.1	4.8	3.8	6.3
Elevation Beamwidth Tolerance (°)	1.7	1.2	1.2	0.9
Electrical Downtilt Deviation (°)	1.0	1.2	1.2	1.2
First Upper Sidelobe Suppression (dB)	16.2	16.3	16.8	16.3
Upper Sidelobe Suppression Peak to 20°(dB)	20.0	19.5	18.8	18.6
Front-to-Back Ratio over ±20° (dB)	25.5	26.8	27.2	27.2
Cross-polar Discrimination at ±60° (dB)	10.0	8.1	8.1	9.3

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



TriBand Twelve-Port Antenna

TPA65R-KE4B

SPECIFICATIONS

Ports	8 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	16.8 dBi	17.0 dBi	17.2 dBi	16.9 dBi	17.2 dBi
Azimuth Beamwidth (-3dB)	62°	64°	63°	64°	66°
Elevation Beamwidth (-3dB)	8.1°	7.3°	6.8°	6.0°	5.7°
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	<-16 dB	<-15 dB	<-14 dB
Front-to-Back Ratio @180°	> 35 dB	> 35 dB	> 35 dB	> 35 dB	> 34 dB
Cross-Polar Discrimination at Peak	> 18 dB	> 18 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	1695-1880 MHz	1850-1990 MHz	1920-2180 MHz	2300-2400 MHz	2496-2690 MHz
Frequency Range	1695-1880 MHz	1850-1990 MHz	1920-2180 MHz	2300-2400 MHz	2496-2690 MHz
Gain over all Tilts (dBi)	16.0	16.3	16.5	16.3	15.8
Gain over all Tilts Tolerance (dB)	0.6	0.6	0.6	0.6	0.8
Gain at Low-Tilt (dBi)	16.0	16.2	16.4	16.2	15.7
Gain at Mid-Tilt (dBi)	16.0	16.3	16.6	16.3	16.0
Gain at High-Tilt (dBi)	16.1	16.5	16.7	16.2	15.7
Azimuth Beamwidth Tolerance (°)	6.8	4.7	4.1	6.6	6.6
Elevation Beamwidth Tolerance (°)	0.6	0.5	0.6	0.3	0.3
Electrical Downtilt Deviation (°)	1.4	1.2	1.0	1.1	1.1
First Upper Sidelobes Suppression (dB)	13.5	13.9	13.4	12.1	11.4
Upper Sidelobe Suppression Peak to 20°(dB)	13.5	13.3	12.6	10.5	10.9
Front-to-Back Ratio over ±20° (dB)	25.1	26.7	27.0	26.2	23.6
Cross-polar Discrimination at ±60° (dB)	6.4	5.5	6.2	7.8	6.9

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



SPECIFICATIONS

TriBand Twelve-Port Antenna

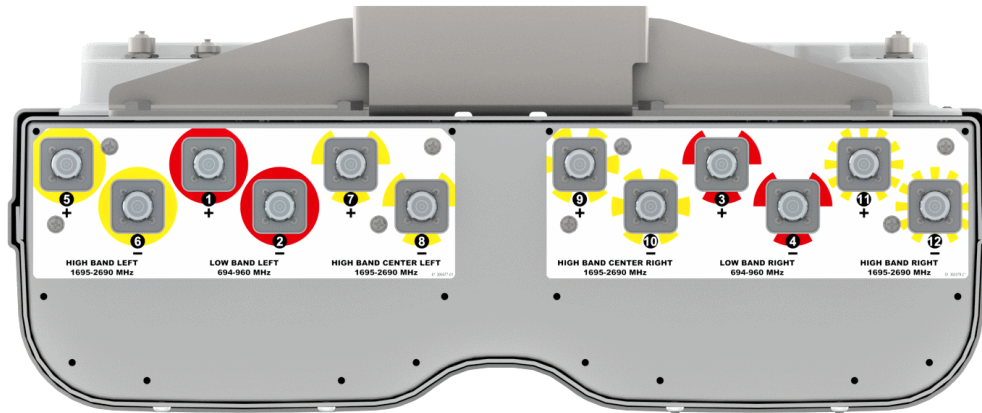
TPA65R-KE4B

Mechanical

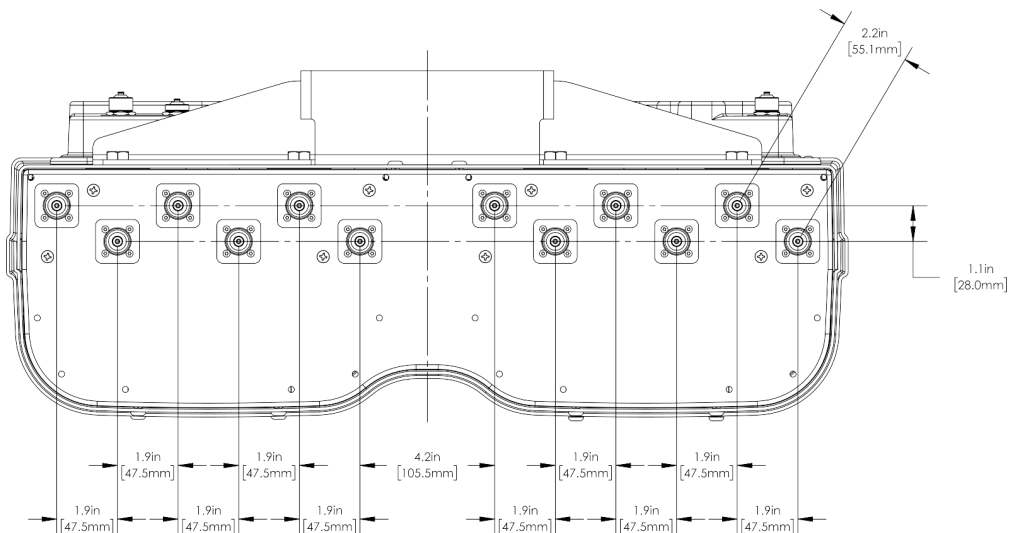
<b>Dimensions (LxWxD)</b>	48.0x25.5x7.6 in (1219x648x194 mm)
<b>Survival Wind Speed</b>	> 150 mph (> 241 kph)
<b>Front Wind Load</b>	261 lbs (1162 N) @ 100 mph (161 kph)
<b>Side Wind Load</b>	89 lbs (397 N) @ 100 mph (161 kph)
<b>Equivalent Flat Plate Area</b>	10.2 ft <sup>2</sup> (0.9 m <sup>2</sup> )
<b>Weight *</b>	61.7 lbs (28.0 kg)
<b>RET Weight</b>	6.6 lbs (3.0 kg)
<b>Connector</b>	12 x 4.3-10 female
<b>Mounting Pole</b>	2 to 5 in (5 to 12 cm)

\* Weight excludes mounting and RET

Bottom View



Connector Spacing



TriBand Twelve-Port Antenna

TPA65R-KE4B

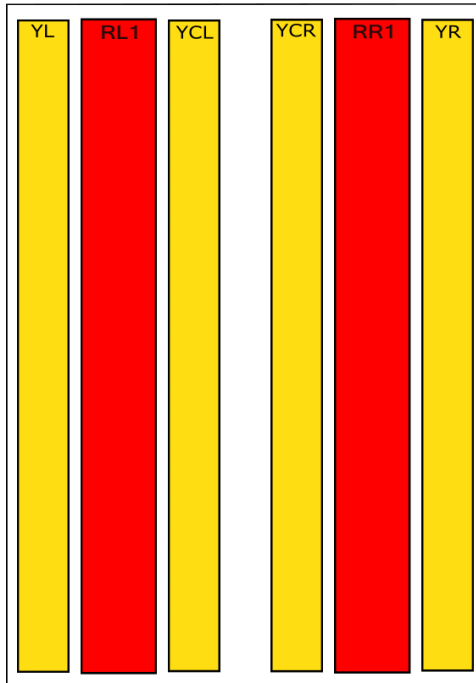
SPECIFICATIONS

Mechanical

RET to Element Configuration

TPA65R-KE4BA Element and RET configuration (Type 1 External RET)

**Top of antenna  
Viewed from rear**



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

Top of antenna



694-960  
Ports 1 & 2  
(RL1)



694-960  
Ports 3 & 4  
(RR1)



1695-2690  
Ports 5, 6, 7 & 8  
(YL & YCL)



1695-2690  
Ports 9, 10, 11 & 12  
(YCR & YR)

Array	Ports	Freq (MHz)	Ports controlled by common RET
<b>RL1</b>	<b>1, 2</b>	<b>694-960</b>	<b>1, 2</b>
<b>RR1</b>	<b>3, 4</b>	<b>694-960</b>	<b>3, 4</b>
<b>YL</b>	<b>5, 6</b>	<b>1695-2690</b>	<b>5, 6, 7, 8</b>
<b>YCL</b>	<b>7, 8</b>	<b>1695-2690</b>	
<b>YCR</b>	<b>9,10</b>	<b>1695-2690</b>	<b>9, 10, 11,12</b>
<b>YR</b>	<b>11,12</b>	<b>1695-2690</b>	



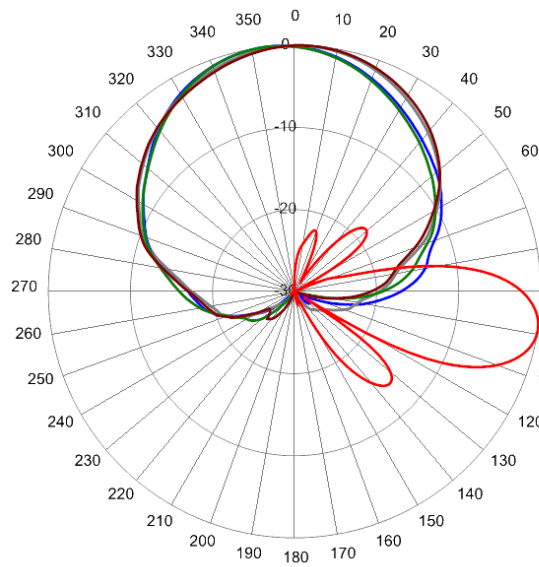
SPECIFICATIONS

TriBand Twelve-Port Antenna

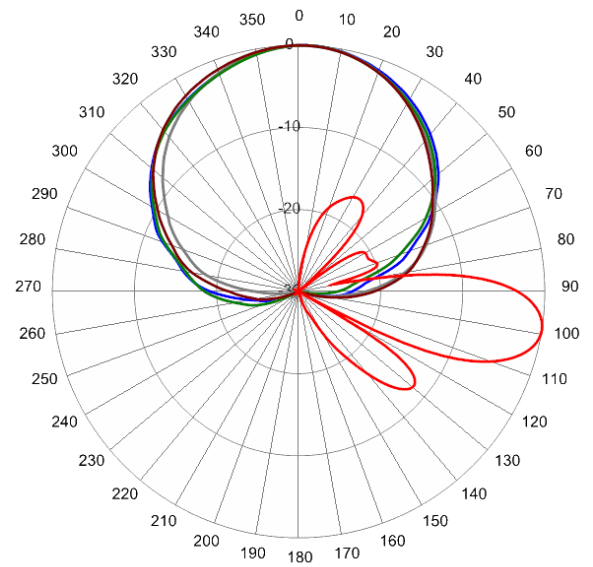
TPA65R-KE4B

Typical Antenna Patterns

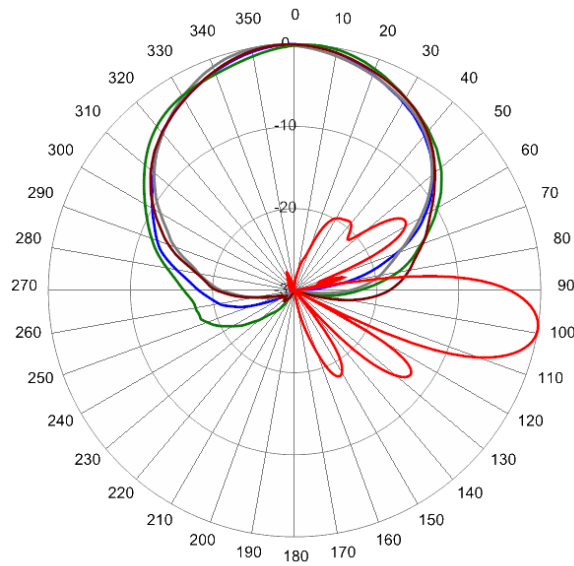
For detailed information on additional antenna patterns, contact customer support at support@cciproducts.com



750 MHz Azimuth with Elevation 9°



880 MHz Azimuth with Elevation 9°

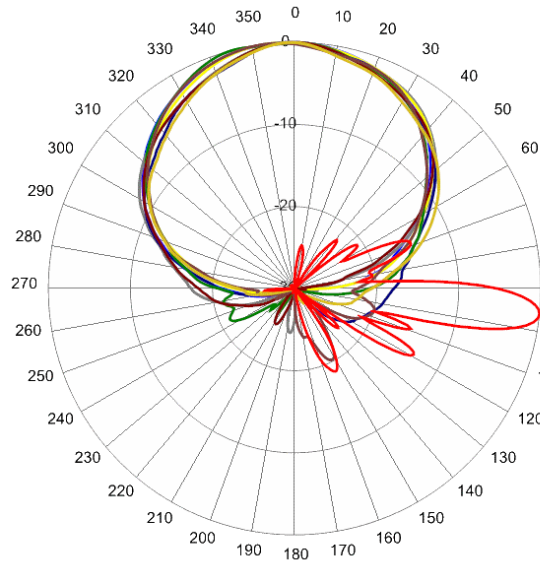


945 MHz Azimuth with Elevation 9°

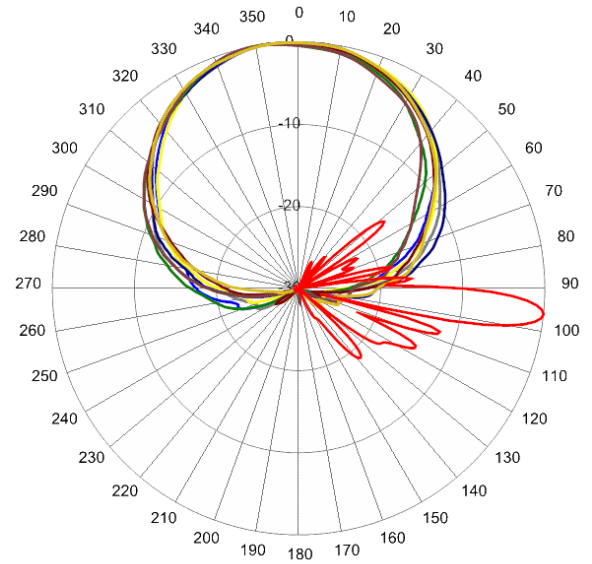


TriBand Twelve-Port Antenna

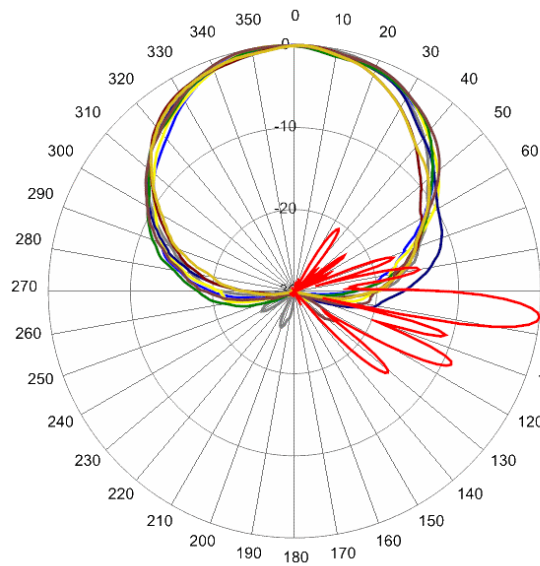
TPA65R-KE4B



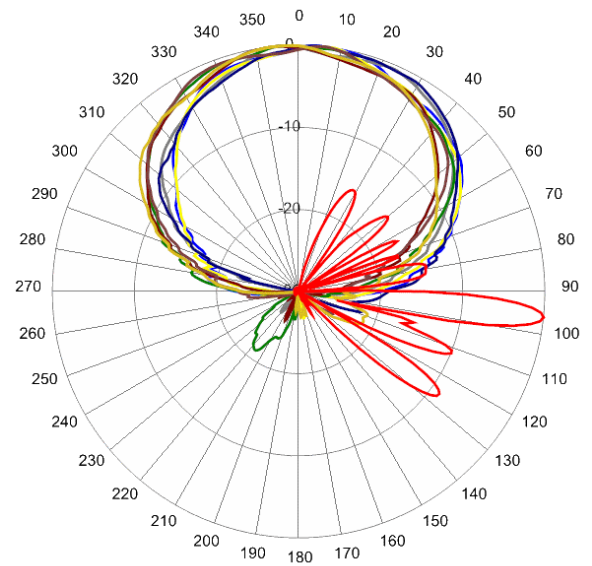
1740 MHz Azimuth with Elevation 6°



1970 MHz Azimuth with Elevation 6°



2155 MHz Azimuth with Elevation 6°



2610 MHz Azimuth with Elevation 6°



ORDERING

TriBand Twelve-Port Antenna

TPA65R-KE4B

Parts & Accessories

<b>TPA65R-KE4BA-K</b>	Four foot (1.2 m) TriBand antenna with 65° azimuth beamwidth, 4.3-10 female connectors, 4 factory installed BSA-RET200 RET actuators and MBK-02 mounting bracket
<b>MBK-02</b>	Mounting bracket kit (top and bottom) with 0° to 10° mechanical tilt adjustment
<b>BSA-RET200</b>	Remote electrical tilt actuator
<b>KUE-CBK-AG-RRU</b>	RRU AISG cable kit for four RET antenna
<b>KUE-CBK-RA-AG-RRU</b>	RRU AISG right angle cable kit for four RET antenna



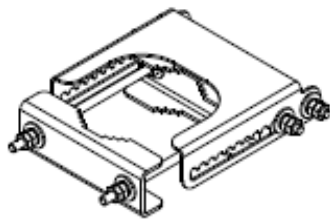


Mounting Bracket Kit

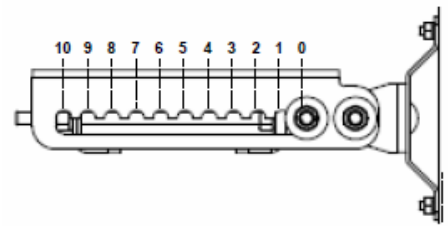
MBK-02

Mechanical

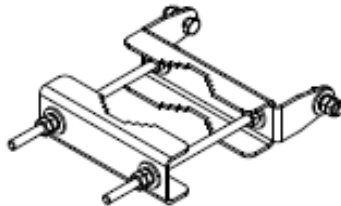
Weight	9.8 lbs (4.4 kg)
Hinge Pitch	31.5 in (800 mm)
Mounting Pole Dimension	2 to 5 in (5 to 12 cm)
Fastener Size	M10
Installation Torque	15 ft-lbs (20 N·m)
Mechanical Tilt Adjustment	0° - 10°



MBK-02 Top Adjustable Bracket



MBK-02 Top Adjustable Bracket Side View



MBK-02 Bottom Fixed Bracket



### 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

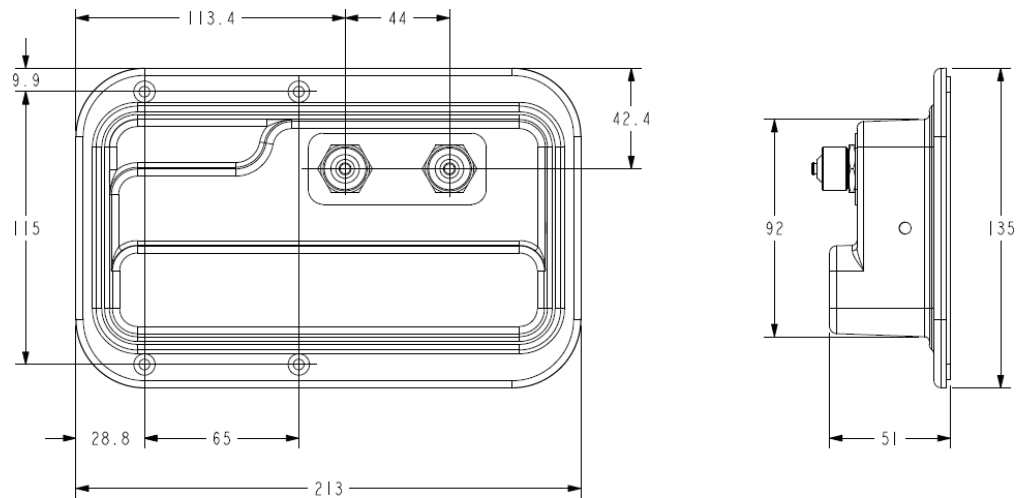
#### Electrical

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



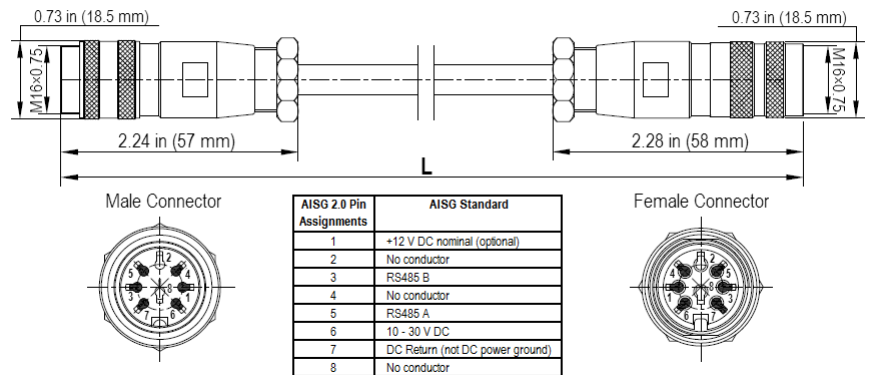


Electrical Specifications

<b>Individual Cable Part Number</b>	AISGC-M-F-34	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-34	AISGC-M-F-10FT
<b>Cables per kit</b>	3	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 ≈ 1.84 ft-lbs (2.5 N-m)	Hand tighten only ≈ 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>	34 in (864 mm)	120 in (3048 mm)
<b>Weight</b>	0.33 lbs (0.15 kg)	0.69 lbs (.31 kg)
<b>Minimum bend radius</b>	3.9 in (100 mm)	3.9 in (100 mm)



AISG-Male to AISG-Female Jumper Cable

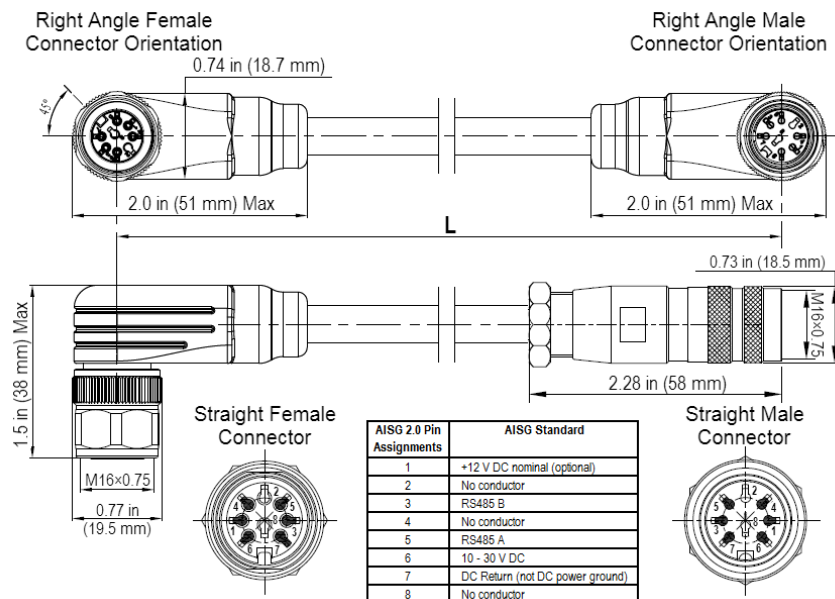
Environmental Specifications

<b>Individual Cable Part Number</b>	AISGC-M-F-34	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-36	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	36 in (914 mm)	120 in (3048 mm)
Weight	0.23 lbs (0.10 kg)	0.77 lbs (0.35 kg)
Cables per kit	3	2

Mechanical Specifications



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



STANDARDS & CERTIFICATIONS

TriBand Twelve-Port Antenna

TPA65R-KE4B

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

