

- Innovative Array Topology allows for higher gain in the MB array, against similar sized competing products
- Five foot (1.5 m) TriBand, twelve port antenna with a 65° azimuth beamwidth covering 698-960 MHz and 1695-2690 MHz frequencies
- Eight wide mid band ports covering 1695-2690 MHz and four wide low band ports covering 698-960 MHz in a single antenna enclosure
- Full Spectrum Compliance 698-960 MHz / 1695-2690 MHz
- Innovative Low and Mid Band Array configuration allows for 4T4R (4x4 MIMO) on Low Band and Dual 4T4R (4x4 MIMO) Mid Band Arrays, using full length arrays (non stacked), all in a 20.7" (525mm) width enclosure, an Industry First
- 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 connectors, which are 40% smaller than traditional 7/16 DIN connectors
- Equipped with 3 field replaceable, integrated AISG 2.0 compliant Remote Electrical Tilt (RET) Controllers (Type 17 Internal)

## Overview

The CCI 12-Port TriBand array is a twelve port antenna, with eight wide mid band ports covering 1695-2690 MHz and four wide low band ports covering 698-960 MHz. The antenna provides the capability to deploy Dual 4x4 Multiple-input Multiple-output (MIMO) in the mid band and 4X4 MIMO across low band ports. The CCI 12-Port mid band ports have independent tilt control between left and right antenna arrays.

In this three RET configuration, the 1st RET is dedicated for the four Low Band ports. The 2nd RET is dedicated for the four Left Mid Band ports and the 3rd RET is dedicated for the four Right Mid Band ports. This RET arrangement allows for complete flexibility in coverage control between left and right mid band 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 Mid 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



TriBand Twelve-Port Antenna

TPA65R-KE5D

SPECIFICATIONS

Electrical

Ports	4 × Low Band Ports for 698-960 MHz			
Frequency Range	698-806 MHz	790-862 MHz	824-896 MHz	880-960 MHz
Gain	13.5 dBi	13.9 dBi	14.0 dBi	14.3 dBi
Azimuth Beamwidth (-3dB)	74°	67°	61°	56°
Elevation Beamwidth (-3dB)	18.7°	16.8°	16.0°	15.1°
Electrical Downtilt	2° to 16°	2° to 16°	2° to 16°	2° to 16°
Elevation Sidelobes (1st Upper)	<-16 dB	<-17 dB	<-17 dB	<-17 dB
Front-to-Back Ratio @180°	> 32 dB	> 31 dB	> 31 dB	> 33 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				
Frequency Range	698-806 MHz	790-862 MHz	824-896 MHz	880-960 MHz
Gain over all Tilts (dBi)	12.6	13.1	13.2	13.4
Gain over all Tilts Tolerance (dB)	0.7	0.5	0.7	0.8
Gain at Low-Tilt (dBi)	12.8	13.3	13.5	13.8
Gain at Mid-Tilt (dBi)	12.6	13.1	13.2	13.5
Gain at High-Tilt (dBi)	12.3	12.8	12.9	12.9
Azimuth Beamwidth Tolerance (°)	10.0	6.7	9.5	6.7
Elevation Beamwidth Tolerance (°)	1.6	1.2	1.1	1.2
Electrical Downtilt Deviation (°)	1.3	0.9	0.9	1.1
First Upper Sidelobe Suppression (dB)	13.3	14.7	14.7	12.4
Upper Sidelobe Suppression Peak to 20°(dB)	20.0	24.4	23.6	18.9
Front-to-Back Ratio over ±20° (dB)	24.4	23.9	22.9	21.7
Cross-polar Discrimination at ±60° (dB)	12.5	10.6	7.1	1.5

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



TriBand Twelve-Port Antenna

TPA65R-KE5D

SPECIFICATIONS

Electrical

Ports	8 x Mid Band Ports for 1695-2690 MHz				
Frequency Range	1695-1880 MHz	1850-1990 MHz	1920-2180 MHz	2300-2400 MHz	2496-2690 MHz
Gain	17.3 dBi	17.7 dBi	18.6 dBi	18.5 dBi	18.6 dBi
Azimuth Beamwidth (-3dB)	69°	66°	63°	57°	62°
Elevation Beamwidth (-3dB)	6.7°	6.1°	5.6°	4.8°	4.5°
Electrical Downtilt	2° to 10°	2° to 10°	2° to 10°	2° to 10°	2° to 10°
Elevation Sidelobes (1st Upper)	<-18 dB	<-18 dB	<-16 dB	<-16 dB	<-16 dB
Front-to-Back Ratio @180°	> 35 dB	> 35 dB	> 35 dB	> 35 dB	> 35 dB
Cross-Polar Discrimination at Peak	> 19 dB	> 20 dB	> 22 dB	> 25 dB	> 22 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)	16.3	17.0	17.5	17.9	17.4
Gain over all Tilts Tolerance (dB)	0.6	0.5	0.6	0.5	1.0
Gain at Low-Tilt (dBi)	16.4	16.9	17.5	18.1	17.9
Gain at Mid-Tilt (dBi)	16.4	17.2	17.7	18.1	17.6
Gain at High-Tilt (dBi)	16.2	16.9	17.3	17.7	16.8
Azimuth Beamwidth Tolerance (°)	6.5	5.9	4.1	3.9	7.9
Elevation Beamwidth Tolerance (°)	0.5	0.4	0.6	0.2	0.2
Electrical Downtilt Deviation (°)	0.6	0.6	0.7	0.7	0.7
First Upper Sidelobes Suppression (dB)	13.6	13.8	12.5	13.3	13.2
Upper Sidelobe Suppression Peak to 20°(dB)	14.3	13.5	12.5	13.3	13.3
Front-to-Back Ratio over ±20° (dB)	27.5	29.1	29.9	30.0	27.9
Cross-polar Discrimination at ±60° (dB)	9.6	9.4	9.0	7.9	7.6

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



SPECIFICATIONS

TriBand Twelve-Port Antenna

TPA65R-KE5D

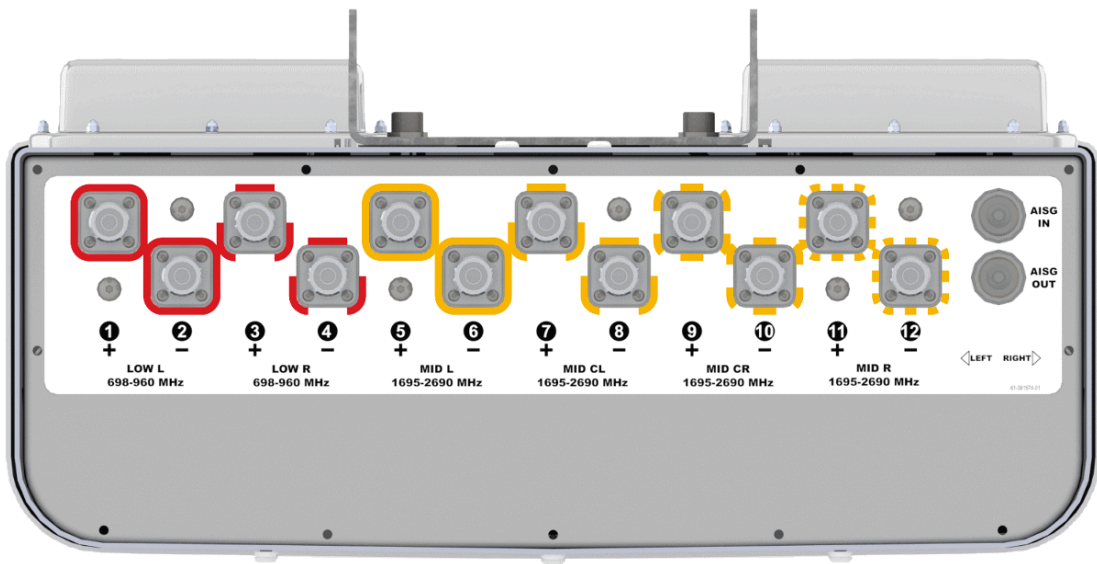
Mechanical

Dimensions (LxWxD)	59.6x20.7x7.7 in (1513x525x197 mm)
Survival Wind Speed	> 150 mph (> 241 kph)
Front Wind Load <sup>1</sup>	200 lbf @ 100 mph 890 N @ 161 kph
Side Wind Load <sup>1</sup>	49 lbf @ 100 mph 219 N @ 161 kph
Effective Projective Area (EPA), Front <sup>1</sup>	7.5 ft <sup>2</sup> (0.7 m <sup>2</sup> )
Weight *	59.5 lbs (27.0 kg)
RF Connector	12 x 4.3-10 female
Mounting Pole	2 to 5 in (5 to 12 cm)

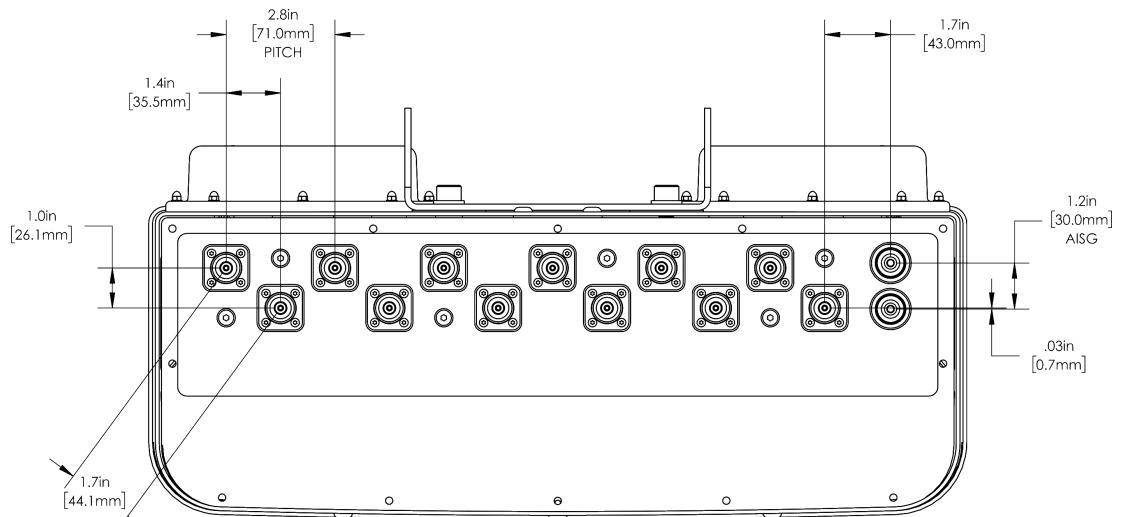
<sup>1</sup>Windload values calculated using CFD analysis  
 \* Weight excludes mounting

Mechanical

Bottom View



Connector Spacing





TriBand Twelve-Port Antenna

TPA65R-KE5D

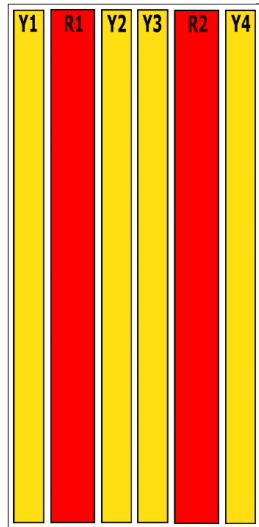
SPECIFICATIONS

Mechanical

RET to Element Configuration

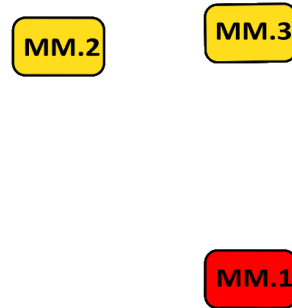
TPA65R-KE5DA Element and RET configuration (Type 17 Internal RET)

**Top of antenna  
Viewed from rear**



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

Top of antenna



Array	Ports	Freq (MHz)	Ports controlled by common RET	AISG RET UID
R1	1, 2	698-960	1, 2, 3, 4	ClxxxxxMM.1
R2	3, 4	698-960		
Y1	5, 6	1695-2690	5, 6, 7, 8	ClxxxxxMM.2
Y2	7, 8	1695-2690		
Y3	9, 10	1695-2690	9, 10, 11, 12	ClxxxxxMM.3
Y4	11, 12	1695-2690		

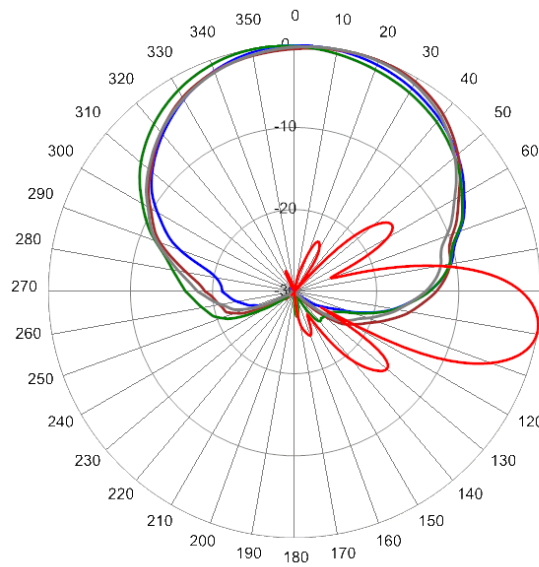


TriBand Twelve-Port Antenna

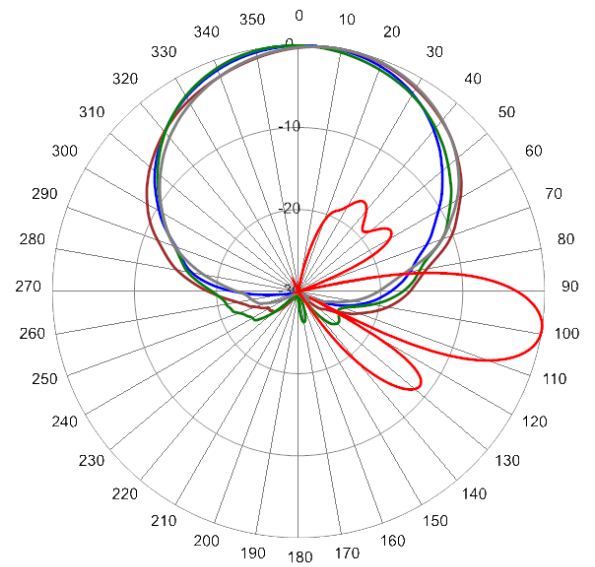
TPA65R-KE5D

Typical Antenna Patterns

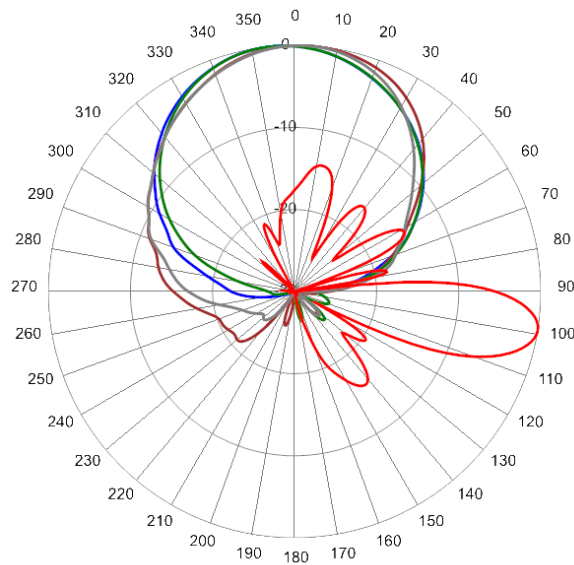
For detailed information on additional antenna patterns, contact customer support at support@cciproducts.com



734 MHz Azimuth with Elevation 7°



824 MHz Azimuth with Elevation 7°



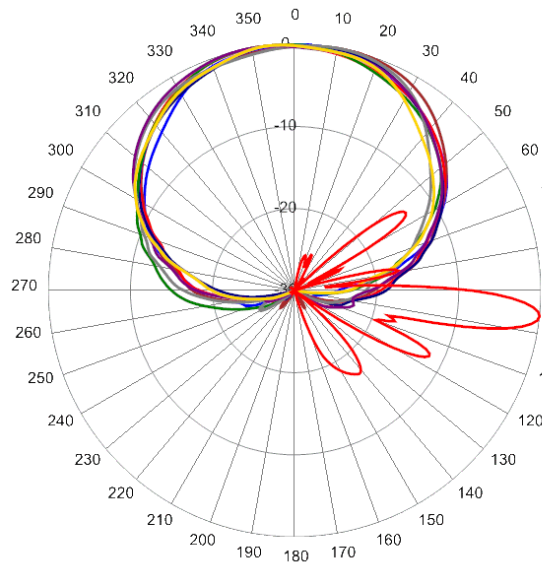
925 MHz Azimuth with Elevation 7°



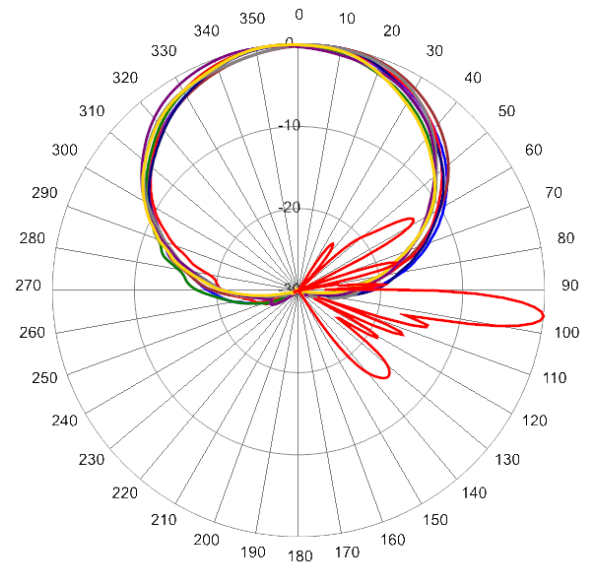
TriBand Twelve-Port Antenna

TPA65R-KE5D

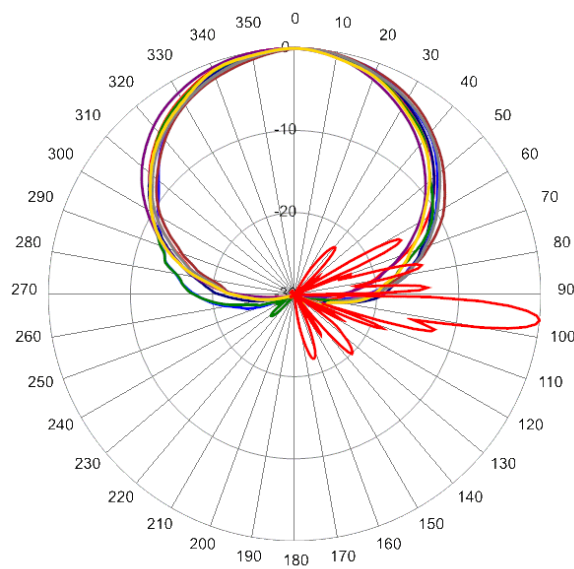
Typical Antenna Patterns



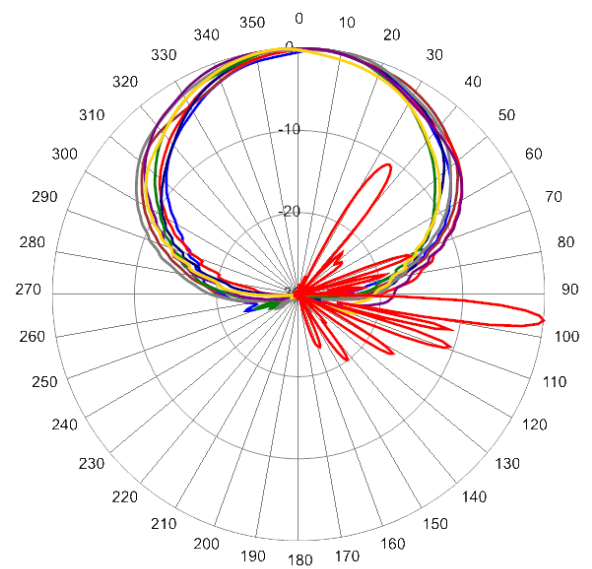
1720 MHz Azimuth with Elevation 4°



1850 MHz Azimuth with Elevation 4°



2110 MHz Azimuth with Elevation 4°



2650 MHz Azimuth with Elevation 4°



ORDERING

TriBand Twelve-Port Antenna

TPA65R-KE5D

Parts & Accessories

<b>TPA65R-KE5DA-K</b>	Five foot (1.5 m) TriBand antenna with 65° azimuth beamwidth, 4.3-10 female connectors, 3 factory installed BSA-RET400 RET actuators and MBK-01 mounting bracket
<b>MBK-01</b>	Mounting bracket kit (top and bottom) with 0° to 10° mechanical tilt adjustment
<b>MBK-16</b>	Mounting bracket kit (top and bottom) with fixed 0° mechanical tilt
<b>BSA-RET400</b>	Type 17 Internal Remote Electrical Tilt System (RET)
<b>AISGC-M-F-10FT</b>	10 Foot (3 M) Male/Female AISG cable
<b>SCU-AISG-P</b>	Portable AISG 2.0 Site Control Unit



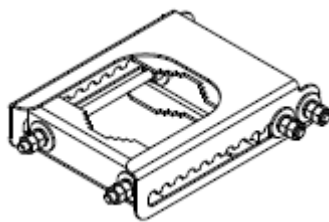


Mounting Bracket Kit

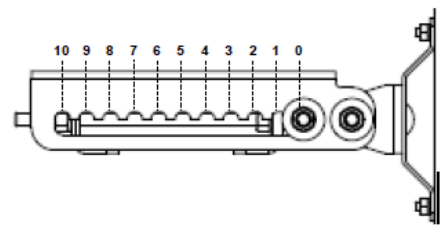
MBK-01

Mechanical

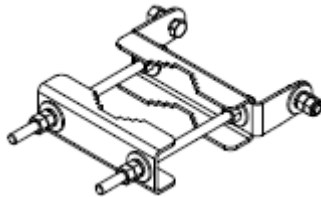
<b>Weight</b>	12.6 lbs (5.7 kg)
<b>Hinge Pitch</b>	47.25 in (1200 mm)
<b>Mounting Pole Dimension</b>	2 to 5 in (5 to 12 cm)
<b>Fastener Size</b>	M12
<b>Installation Torque</b>	40 ft·lb (54 N·m)
<b>Mechanical Tilt Adjustment</b>	0° - 10°



MBK-01 Top Adjustable Bracket



MBK-01 Top Adjustable Bracket Side View



MBK-01 Bottom Fixed Bracket

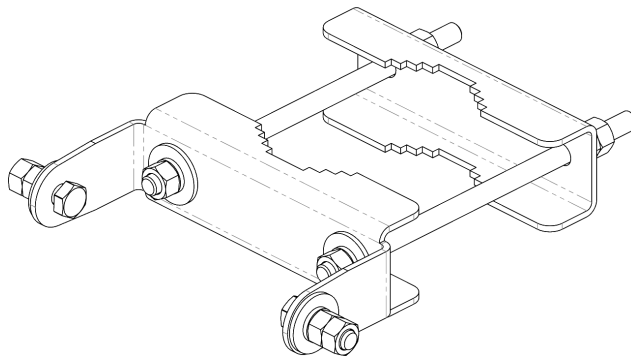
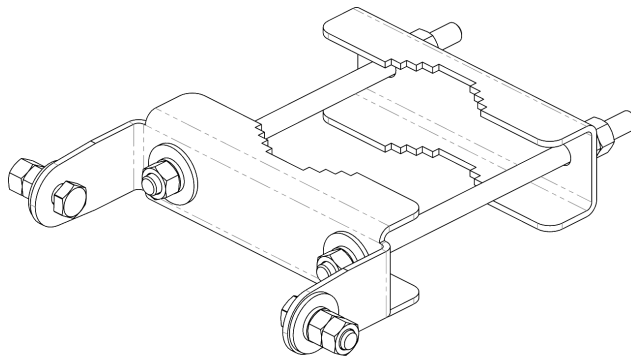


Mounting Bracket Kit

MBK-16

Mechanical

<b>Weight</b>	9.9 lbs (4.5 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·lbs (54 N·m)
<b>Mechanical Tilt</b>	0°



MBK-16 Top and Bottom 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

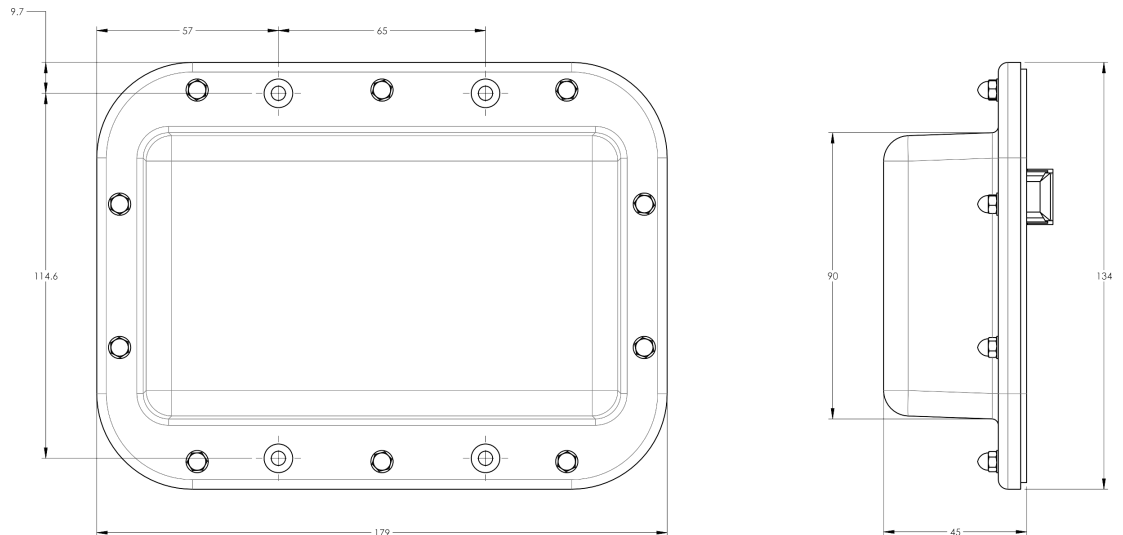
Electrical

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





STANDARDS & CERTIFICATIONS

TriBand Twelve-Port Antenna

TPA65R-KE5D

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

