



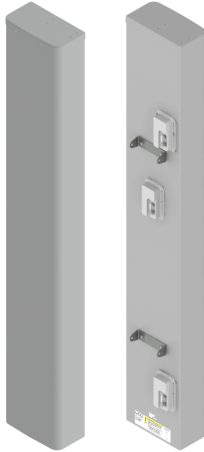
# Antennas

MultiPort  
Series

DATA SHEET

## Twelve Port Multi-Band Antenna

TPA45R-KE8A



- Eight foot (2.5 m) multiband, twelve port antenna with a 45° azimuth beamwidth covering 698-960 MHz and 1695-2690 MHz frequencies
- Eight wide high band ports covering 1695-2690 MHz and four wide low band ports covering 698-960 MHz in a single antenna enclosure
- New Enclosure, allowing for 15.4" (391mm) width. Narrowest Enclosure in the Industry for a 45° Antenna of this configuration
- Full Spectrum Compliance 698-960 MHz / 1695-2690 MHz
- Innovative Low and High Band Array configuration allows for 4T4R (4x4 MIMO) on Low Band and Dual 4T4R (4x4 MIMO) High Band Arrays, all in a 15.4" (391mm) 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 connector, which is 40% smaller than traditional 7/16 DIN connector
- Ordering options for External RET Controllers (Type 1) or Internally Integrated RET Controllers (Type 17)

### Overview

The CCI 12-Port multiband array is a twelve port antenna, with eight wide high 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 high band and 4X4 Multiple-input Multiple-output (MIMO) across low band ports.

The CCI 12-Port allows independent tilt control between the low band ports and high band ports. With the use of two independent RET controllers in the High Band, the Top and Bottom paired high band ports can be tilted independently, enabling maximum flexibility in network deployment.

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 multiband antennas, wireless providers can connect multiple platforms to a single antenna, reducing tower load, lease expense, deployment time and installation costs



SPECIFICATIONS

Twelve Port Multi-Band Antenna

TPA45R-KE8A

Electrical

Ports	4 x Low Band Ports for 698-960 MHz			
Frequency Range	698-806 MHz	790-862 MHz	824-896 MHz	880-960 MHz
Gain	14.9 dBi	15.5 dBi	15.8 dBi	16.3 dBi
Azimuth Beamwidth (-3dB)	51°	49°	47°	44°
Elevation Beamwidth (-3dB)	18.3°	16.0°	15.2°	14.1°
Electrical Downtilt	2° to 16°	2° to 16°	2° to 16°	2° to 16°
Elevation Sidelobes (1st Upper)	< -18 dB	< -18 dB	< -18 dB	< -17 dB
Front-to-Back Ratio @180°	> 30 dB	> 30 dB	> 30 dB	> 30 dB
Cross-Polar Discrimination (at Peak)	> 25 dB	> 25 dB	> 25 dB	> 24 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 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

BASTA Electrical Specifications				
Frequency Range	698-806 MHz	790-862 MHz	824-896 MHz	880-960 MHz
Gain over all Tilts (dBi)	14.4	14.7	15.1	15.4
Gain over all Tilts Tolerance (dB)	0.4	0.5	0.6	0.7
Gain at Low-Tilt (dBi)	14.6	14.9	15.2	15.7
Gain at Mid-Tilt (dBi)	14.4	14.8	15.2	15.6
Gain at High-Tilt (dBi)	14.2	14.6	14.8	14.9
Azimuth Beamwidth Tolerance (°)	1.7	3.4	3.6	2.4
Elevation Beamwidth Tolerance (°)	1.8	1.4	1.3	1.3
Electrical Downtilt Deviation (°)	1.9	2.0	2.0	1.9
First Upper Sidelobe Suppression (dB)	13.1	14.4	14.7	13.8
Upper Sidelobe Suppression Peak to 20°(dB)	19.9	18.6	18.3	17.9
Front-to-Back Ratio over ±20° (dB)	22.4	21.6	21.8	22.8
Cross-polar Discrimination at 3 dB (dB)	18.4	17.1	15.9	15.1

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



SPECIFICATIONS

Twelve Port Multi-Band Antenna

TPA45R-KE8A

Electrical

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 <sup>1</sup>	17.1 dBi	17.7 dBi	18.0 dBi	18.3 dBi	18.8 dBi
Azimuth Beamwidth (-3dB)	43°	43°	42°	41°	35°
Elevation Beamwidth (-3dB)	8.6°	7.8°	7.4°	6.5°	5.7°
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	< -18 dB	< -18 dB	< -16 dB
Front-to-Back Ratio @180°	> 32 dB	> 35 dB	> 35 dB	> 35 dB	> 35 dB
Cross-Polar Discrimination (at Peak)	> 18 dB	> 18 dB	> 18 dB	> 25 dB	> 24 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 Pol 45°	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°	Dual Pol 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

<sup>1</sup>Peak gain across sub-bands.

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)	16.2	16.8	17.1	17.1	17.7
Gain over all Tilts Tolerance (dB)	0.6	0.6	0.5	0.8	0.9
Gain at Low-Tilt (dBi)	16.4	17.0	17.3	17.3	18.1
Gain at Mid-Tilt (dBi)	16.2	16.8	17.3	17.3	17.9
Gain at High-Tilt (dBi)	15.9	16.6	16.8	16.7	17.1
Azimuth Beamwidth Tolerance (°)	4.0	3.5	3.9	5.4	3.6
Elevation Beamwidth Tolerance (°)	0.7	0.4	0.6	0.3	0.5
Electrical Downtilt Deviation (°)	1.1	1.1	1.1	1.1	1.1
First Upper Sidelobe Suppression (dB)	13.6	15.1	14.8	14.0	12.2
Upper Sidelobe Suppression Peak to 20°(dB)	11.6	11.1	10.1	9.5	8.8
Front-to-Back Ratio over ±20° (dB)	20.3	21.8	23.5	26.3	26.9
Cross-polar Discrimination at 3 dB (dB)	12.5	13.7	13.8	14.6	14.9

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

Mechanical

Dimensions (LxWxD)	98.7x15.4x8.2 in (2507x391x208 mm)
Survival Wind Speed	> 150 mph (> 241 kph)
Front Wind Load	371 lbs (1650 N) @ 100 mph (161 kph)
Side Wind Load	225 lbs (1002 N) @ 100 mph (161 kph)
Equivalent Flat Plate Area	14.5 ft <sup>2</sup> (1.3 m <sup>2</sup> )
Weight *	67.6 lbs (30.7 kg)
Connector	12 x 4.3-10 female
Mounting Pole	2 to 5 in (5 to 12 cm)

\* Weight excludes mounting



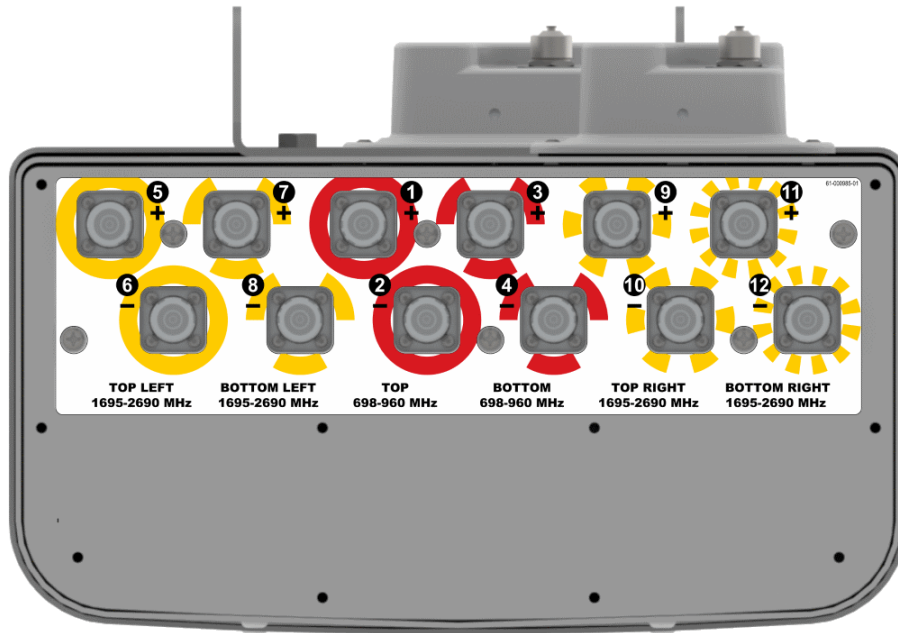
SPECIFICATIONS

Twelve Port Multi-Band Antenna

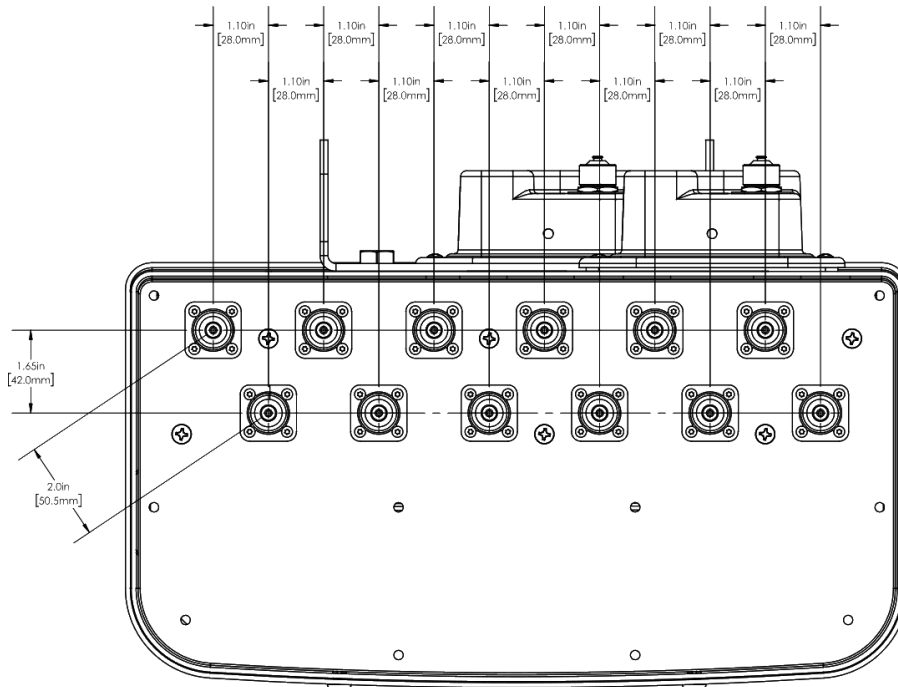
TPA45R-KE8A

Mechanical

Bottom View



Connector Spacing





Twelve Port Multi-Band Antenna

TPA45R-KE8A

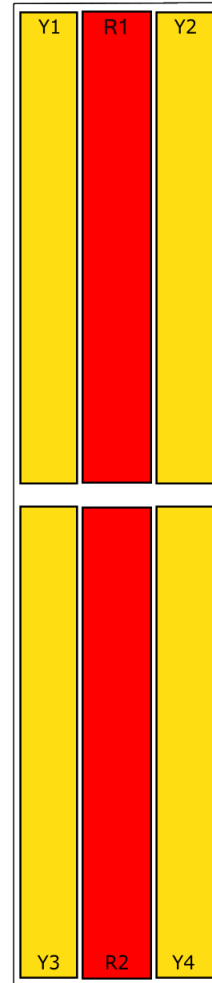
SPECIFICATIONS

Mechanical

RET to Array Configuration

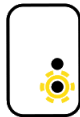
Element arrays as viewed from rear of antenna

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



RET placement as viewed from rear of antenna

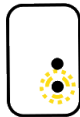
Top of antenna



1695-2690  
Ports 5, 6, 9 & 10  
(Y1 & Y2)



698-960  
Ports 1, 2, 3 & 4  
(R1 & R2)



1695-2690  
Ports 7, 8, 11 & 12  
(Y3 & Y4)



SPECIFICATIONS

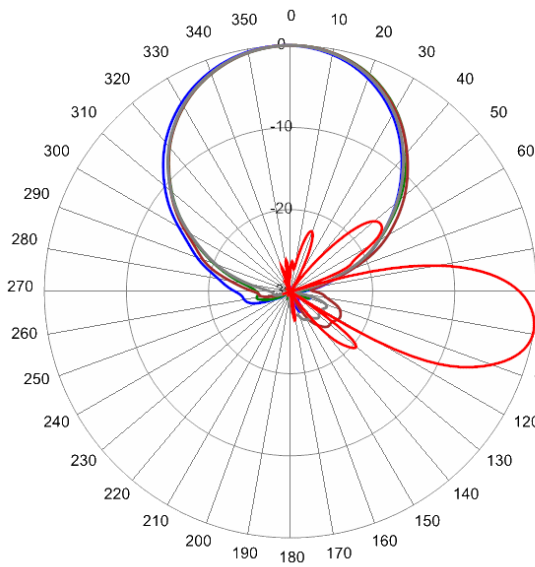
Twelve Port Multi-Band Antenna

TPA45R-KE8A

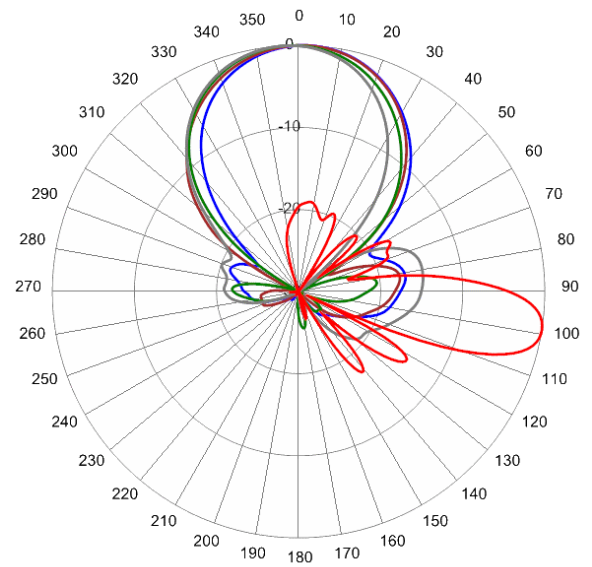
Typical Antenna Patterns

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

All Ports shown in Azimuth

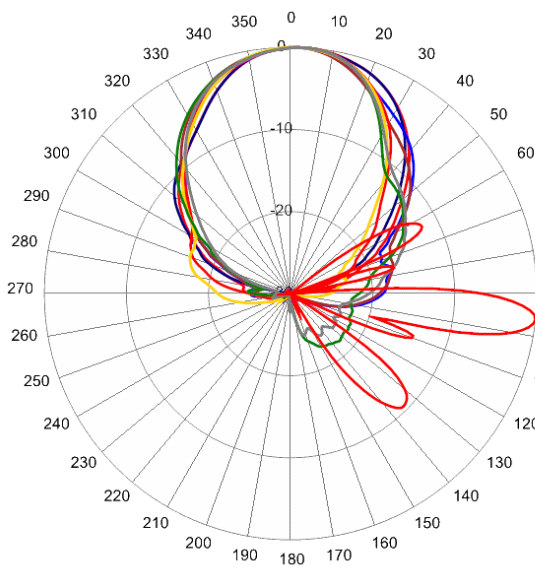


704 MHz Azimuth / Elevation 9°

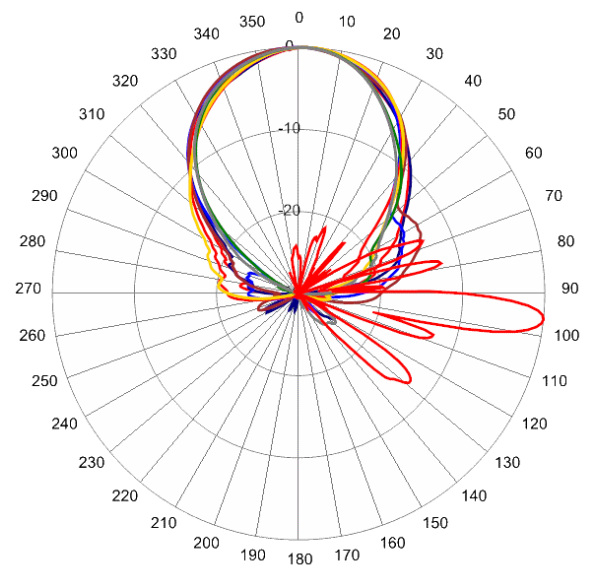


889 MHz Azimuth / Elevation 9°

All Ports shown in Azimuth



1850 MHz Azimuth / Elevation 6°



2110 MHz Azimuth / Elevation 6°

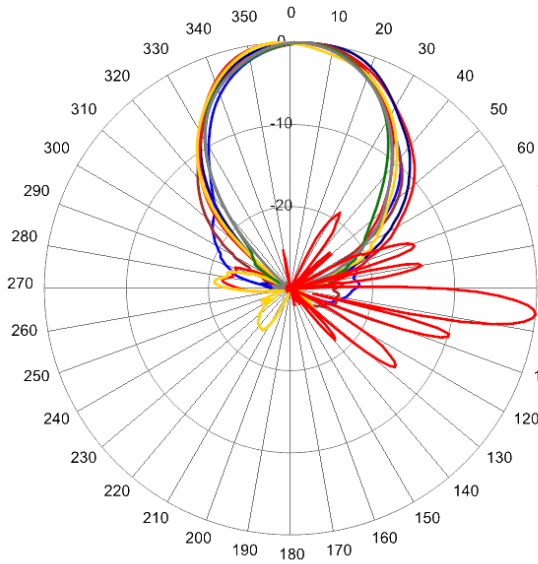


SPECIFICATIONS

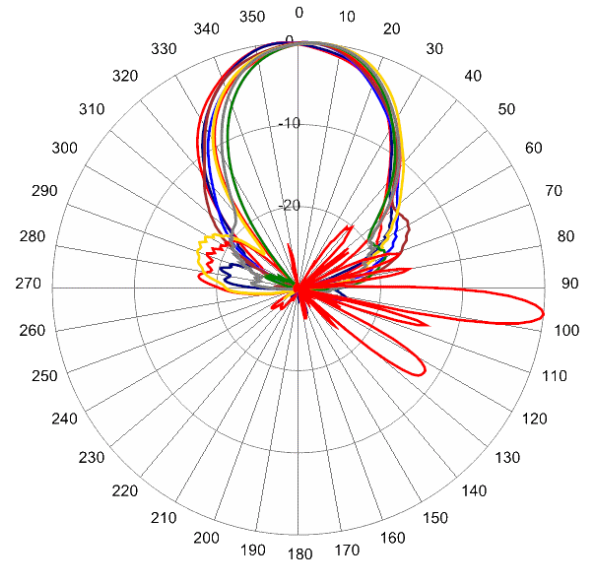
Twelve Port Multi-Band Antenna

TPA45R-KE8A

All Ports shown in Azimuth



2380 MHz Azumth / Elevation 6°



2500 MHz Azumth / Elevation 6°



## Twelve Port Multi-Band Antenna

TPA45R-KE8A

### Parts & Accessories

<b>TPA45R-KE8AA-K</b>	8 foot (2.5 m) Twelve Port antenna with 45° azimuth beamwidth, 4.3-10 female connectors, three factory installed BSA-RET200 RET actuators (Type 1 external) and MBK-01 mounting bracket
<b>TPA45R-KE8AB-K</b>	8 foot (2.5 m) Twelve Port antenna with 45° azimuth beamwidth, 4.3-10 female connectors, three 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>MBK-16</b>	Mounting bracket kit (top and bottom) with fixed 0° mechanical tilt
<b>DM-02</b>	Dual mount mast bracket for side by side antenna mounting
<b>TM-01</b>	Triple antenna pole mounting mast bracket
<b>BSA-RET200</b>	Type 1 remote electrical tilt actuator
<b>BSA-RET400</b>	Type 17 remote electrical tilt actuator
<b>TPA-CBK-AG-RRU</b>	Three RET antenna to RRU AISG cable kit
<b>TPA-CBK-RA-AG-RRU</b>	Three RET antenna to RRU AISG right angle cable kit
<b>AISGC-M-F-10FT</b>	0 Ft (3 m) Male/Female RRU to Antenna AISG cable



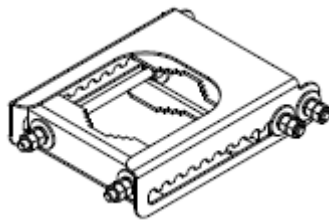


Mounting Bracket Kit

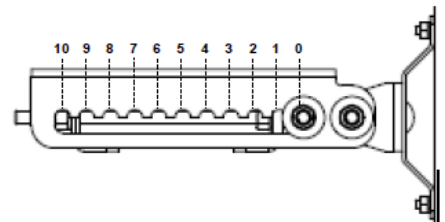
MBK-01

Mechanical

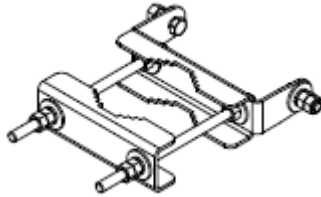
<b>Weight</b>	12.6 lbs (5.7 kg)
<b>Hinge Pitch</b>	47.25 in (1200 mm)
<b>Mounting Pole Dimension</b>	2 to 5 in (5 to 12 cm)
<b>Fastener Size</b>	M12
<b>Installation Torque</b>	40 ft·lb (54 N·m)
<b>Mechanical Tilt Adjustment</b>	0° - 10°



MBK-01 Top Adjustable Bracket



MBK-01 Top Adjustable Bracket Side View



MBK-01 Bottom Fixed Bracket

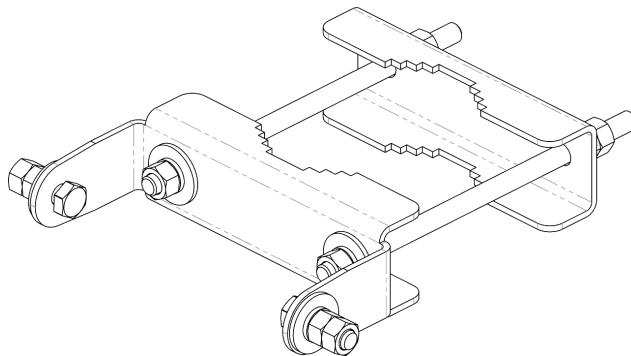
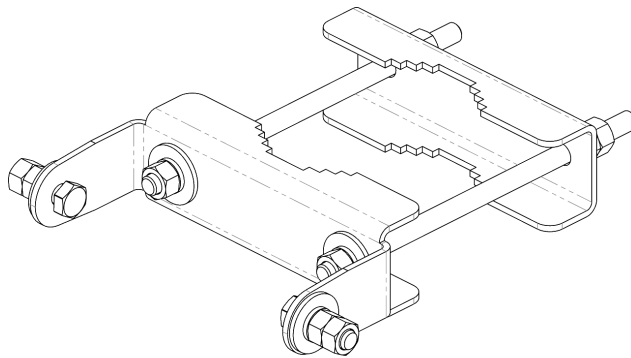


Mounting Bracket Kit

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

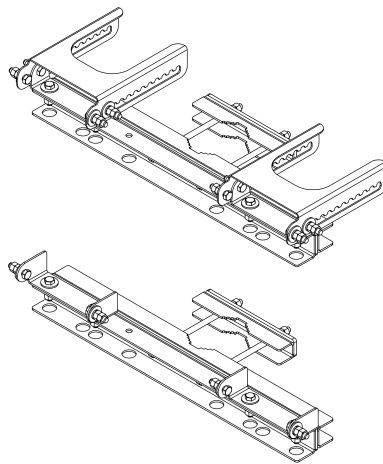


Dual Mount Mast Bracket

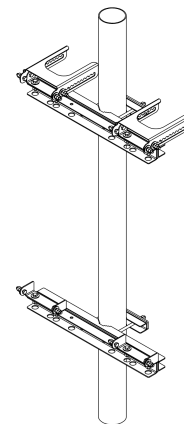
DM-02

Mechanical

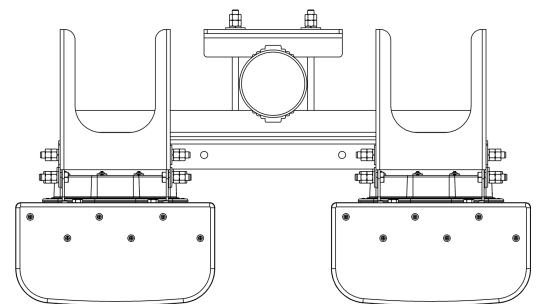
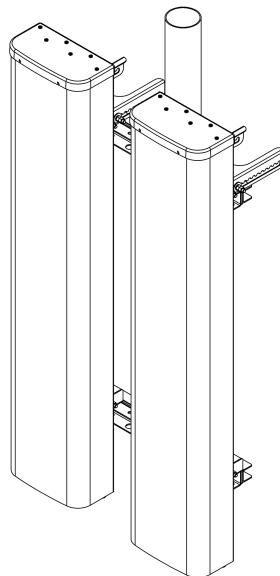
<b>Weight</b>	70.5 lbs (32.0 kg)
<b>Hinge Pitch (Vertical)</b>	47.25 in (1200 mm)
<b>Antenna Spacing (Horizontal)</b>	15.6 in (396 mm) or 23.4 in (594 mm)
<b>Fastener Size</b>	M12
<b>Installation Torque</b>	40 ft-lb (54 N·m)
<b>Mechanical Tilt Adjustment</b>	0° - 10°



DM-02 Bracket



DM-02 Mounting Brackets (on Pole)



Two - 65° Antennas Mounted on Pole using DM-02 Brackets (Iso and Top Views)

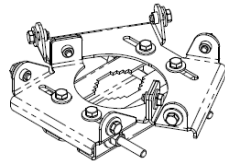


Triple Mount Cluster Bracket

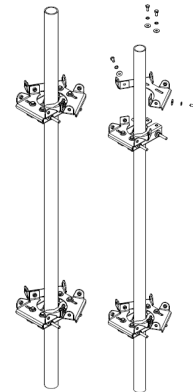
TM-01

Mechanical

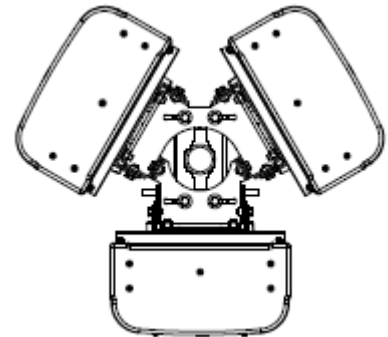
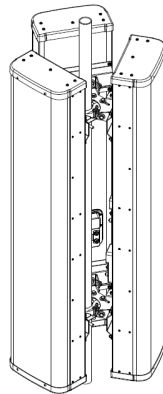
<b>Weight</b>	21.6 lbs (9.8 kg)
<b>Fastener Size</b>	M10
<b>Installation Torque</b>	40 ft-lb (54 N-m)
<b>Hinge Pitch (Vertical)</b>	13.0 in (330 mm) or 31.5 in (800 mm) or 47.2 in (1200 mm)
<b>Mechanical Tilt Adjustment</b>	None



TM-01 Bracket



TM-01 Mounting Brackets (on Pole)



3 - 65° Antennas Mounted on Pole using TM-01 Brackets (Iso and Top Views)



### 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

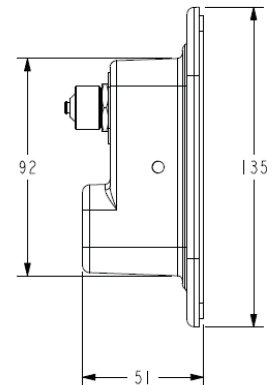
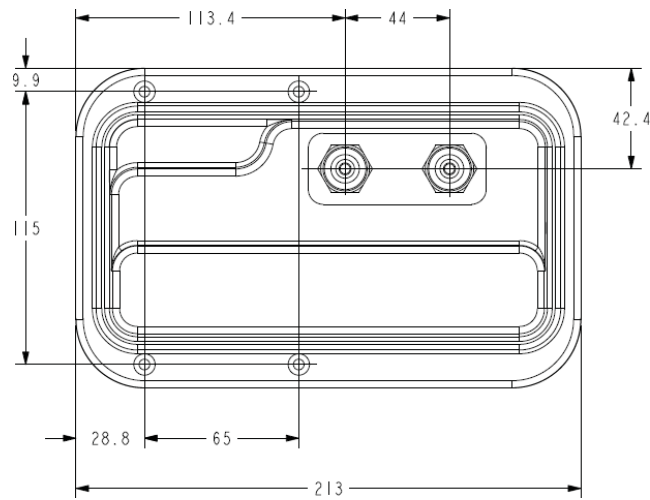
#### Electrical

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





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

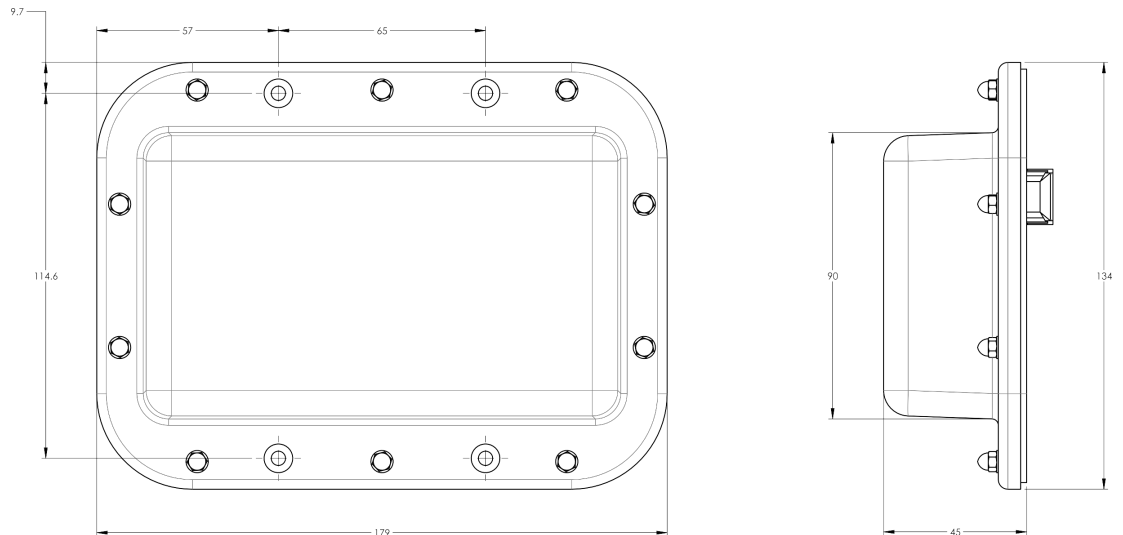
Electrical

Data Interface Signal	DC
Input Voltage	10-30 Vdc
Current Consumption Tilt	100 mA at V <sub>in</sub> =24 (500 mA MAX)
Current Consumption Idle	10 mA at V <sub>in</sub> =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

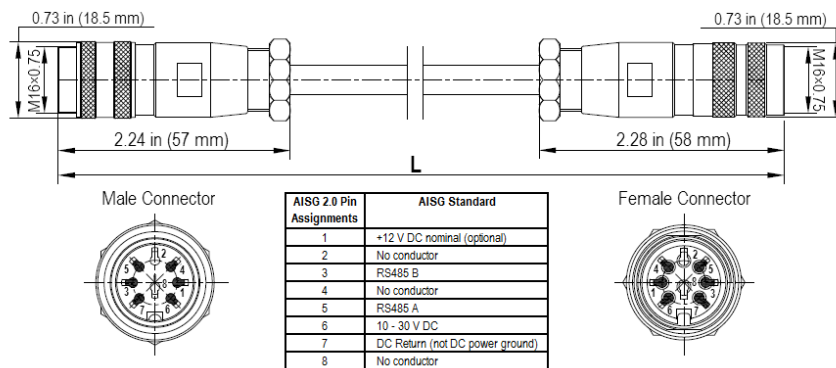




Electrical/Mechanical/Environmental Specifications

	RET to RET Cables		RRU to Antenna Cables
Individual Cable Part Number	AISGC-M-F-60	AISGC-M-F-27	AISGC-M-F-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 Straight male/straight female		
Length	60 in (1525 mm)	27 in (686 mm)	120 in (3048 mm)
Weight	0.44 lbs (0.20 kg)	0.33 lbs (0.15 kg)	0.69 lbs (0.31 kg)
Cables per kit	1	1	2

Mechanical Specifications



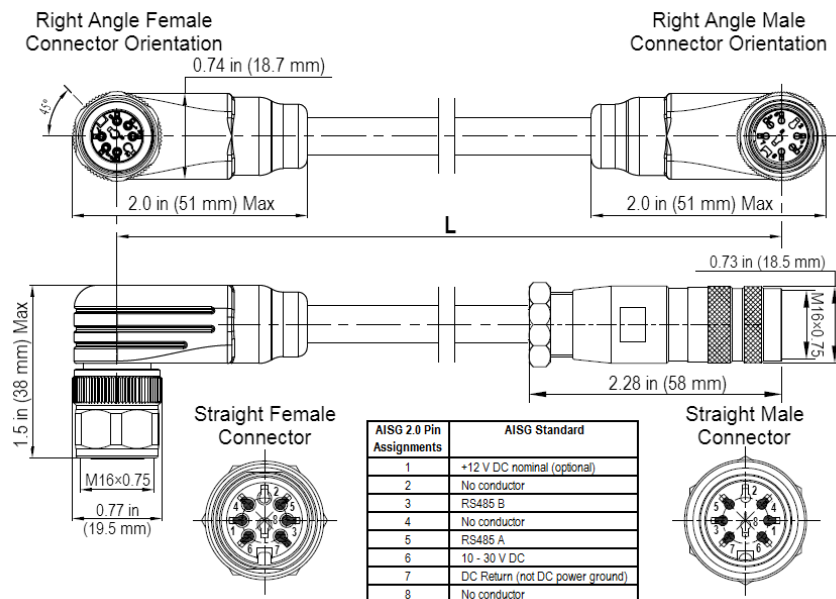
AISG-Male to AISG-Female Jumper Cable



Electrical/Mechanical/Environmental Specifications

	RET to RET Cables		RRU to Antenna Cables
<b>Individual Cable Part Number</b>	AISGC-MRA-FRA-66	AISGC-MRA-FRA-36	AISGC-M-FRA-10FT
<b>Cable style</b>	UL2464		
<b>Protocol</b>	AISG 1.1 and AISG 2.0		
<b>Maximum voltage</b>	300 V		
<b>Rated current</b>	5 A at 104° F (40° C)		
<b>Temperature Range</b>	-40° to 80° C		
<b>Flammability</b>	UL 1581 VW-1		
<b>Ingress Protection</b>	IEC 60529:2001, IP67		
<b>Tightening torque</b>	Hand tighten only ≈ 1.84 ft-lbs (2.5 N·m)		
<b>Construction</b>	Shielded (Tinned Copper Braid)		
<b>Braid coverage</b>	85%		
<b>Jacket Material</b>	Matte Polyurethane (Black)		
<b>Conductors</b>	1 twisted pair - 24 AWG 3 conductors - 19 AWG AWM style 2464		
<b>Cable Diameter</b>	0.307 in (7.8 mm)		
<b>Minimum bend radius</b>	3.9 in (100 mm)		
<b>Connectors</b>	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
<b>Length</b>	66 in (1675 mm)	36 in (914 mm)	120 in (3048 mm)
<b>Weight</b>	0.44 lbs (0.20 kg)	0.23 lbs (0.10 kg)	0.77 lbs (0.35 kg)
<b>Cables per kit</b>	1	1	2

Mechanical Specifications



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





STANDARDS & CERTIFICATIONS

Twelve Port Multi-Band Antenna

TPA45R-KE8A

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

