



- Nine foot (2.7 m) MultiBand, twelve port antenna with a 65° azimuth beamwidth covering 698-896 MHz and 1695-2400 MHz frequencies
- Eight wide Mid Band ports covering 1695-2400 MHz and four wide Low Band ports covering 698-896 MHz in a single antenna enclosure
- Full Spectrum Compliance 698-896 MHz / 1695-2400 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" (525 mm) 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
- Equipped with 3 field replaceable, integrated AISG 2.0 compliant Remote Electrical Tilt (RET) Controllers (Type 17 Internal)

Overview

The CCI 12-Port DualBand array is a twelve port antenna, with eight wide Mid Band ports covering 1695-2400 MHz and four wide Low Band ports covering 698-896 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



SPECIFICATIONS

Multi-Band Twelve-Port Antenna

TPA65R-BU9D

Electrical

| Ports | 4 x Low Band Ports for 698-896 MHz | |
|------------------------------------|------------------------------------|-----------------|
| Frequency Range | 698-806 MHz | 824-896 MHz |
| Gain | 16.2 dBi | 17.0 dBi |
| Azimuth Beamwidth (-3dB) | 72° | 63° |
| Elevation Beamwidth (-3dB) | 8.2° | 6.9° |
| Electrical Downtilt | 2° to 11° | 2° to 11° |
| Elevation Sidelobes (1st Upper) | < -18 dB | < -17 dB |
| Front-to-Back Ratio @180° | > 32 dB | > 35 dB |
| Cross-Polar Discrimination at Peak | > 28 dB | > 28 dB |
| Cross-Polar Port-to-Port Isolation | > 25 dB | > 25 dB |
| Voltage Standing Wave Ratio (VSWR) | < 1.5:1 | < 1.5:1 |
| Passive Intermodulation (2x20W) | ≤ -153 dBc | ≤ -153 dBc |
| Input Power Continuous Wave (CW) | 500 watts | 500 watts |
| Polarization | Dual Linear 45° | Dual Linear 45° |
| Input Impedance | 50 ohms | 50 ohms |
| Lightning Protection | DC Ground | DC Ground |

| BASTA Electrical Specifications | | |
|--|-------------|-------------|
| Frequency Range | 698-806 MHz | 824-896 MHz |
| Gain over all Tilts (dBi) | 15.3 | 16.2 |
| Gain over all Tilts Tolerance (dB) | 0.6 | 0.7 |
| Gain at Low-Tilt (dBi) | 15.4 | 16.5 |
| Gain at Mid-Tilt (dBi) | 15.4 | 16.3 |
| Gain at High-Tilt (dBi) | 15.1 | 15.7 |
| Azimuth Beamwidth Tolerance (°) | 9.2 | 6.6 |
| Elevation Beamwidth Tolerance (°) | 0.9 | 0.6 |
| Electrical Downtilt Deviation (°) | 0.9 | 0.9 |
| First Upper Sidelobe Suppression (dB) | 15.1 | 13.9 |
| Upper Sidelobe Suppression Peak to 20°(dB) | 15.1 | 14.3 |
| Front-to-Back Ratio over ±20° (dB) | 24.2 | 27.6 |
| Cross-polar Discrimination at ±60° (dB) | 11.2 | 8.9 |

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



Multi-Band Twelve-Port Antenna

TPA65R-BU9D

SPECIFICATIONS

Electrical

| Ports | 8 x Mid Band Ports for 1695-2400 MHz | | | |
|------------------------------------|--------------------------------------|-----------------|-----------------|-----------------|
| Frequency Range | 1695-1880 MHz | 1850-1990 MHz | 1920-2180 MHz | 2300-2400 MHz |
| Gain | 17.9 dBi | 18.4 dBi | 18.6 dBi | 18.6 dBi |
| Azimuth Beamwidth (-3dB) | 68° | 62° | 61° | 53° |
| Elevation Beamwidth (-3dB) | 5.4° | 4.9° | 4.6° | 3.9° |
| Electrical Downtilt | 0° to 8° | 0° to 8° | 0° to 8° | 0° to 8° |
| Elevation Sidelobes (1st Upper) | <-18 dB | <-17 dB | <-16 dB | <-15 dB |
| Front-to-Back Ratio @180° | > 35 dB | > 35 dB | > 35 dB | > 35 dB |
| Cross-Polar Discrimination at Peak | > 19 dB | > 18 dB | > 20 dB | > 23 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) | 300 watts | 300 watts | 300 watts | 300 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 | 1695-1880 MHz | 1850-1990 MHz | 1920-2180 MHz | 2300-2400 MHz |
| Gain over all Tilts (dBi) | 16.9 | 17.3 | 17.7 | 17.7 |
| Gain over all Tilts Tolerance (dB) | 0.5 | 0.8 | 0.7 | 0.7 |
| Gain at Low-Tilt (dBi) | 16.9 | 17.0 | 17.5 | 17.3 |
| Gain at Mid-Tilt (dBi) | 17.0 | 17.5 | 18.0 | 17.9 |
| Gain at High-Tilt (dBi) | 16.9 | 17.4 | 17.8 | 17.9 |
| Azimuth Beamwidth Tolerance (°) | 7.0 | 5.8 | 4.5 | 4.4 |
| Elevation Beamwidth Tolerance (°) | 0.4 | 0.3 | 0.4 | 0.2 |
| Electrical Downtilt Deviation (°) | 0.7 | 0.7 | 0.7 | 0.8 |
| First Upper Sidelobes Suppression (dB) | 14.6 | 14.3 | 13.7 | 14.4 |
| Upper Sidelobe Suppression Peak to 20°(dB) | 14.6 | 14.5 | 13.6 | 14.4 |
| Front-to-Back Ratio over ±20° (dB) | 29.4 | 29.6 | 30.2 | 31.2 |
| Cross-polar Discrimination at ±60° (dB) | 8.9 | 8.3 | 8.7 | 8.9 |

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

Mechanical

| | |
|----------------------------|--|
| Dimensions (LxWxD) | 106.2x20.7x7.7 in (2698x525x197 mm) |
| Survival Wind Speed | > 150 mph (> 241 kph) |
| Front Wind Load | 514 lbs (2289 N) @ 100 mph (161 kph) |
| Side Wind Load | 238 lbs (1057 N) @ 100 mph (161 kph) |
| Equivalent Flat Plate Area | 20.1 ft ² (1.9 m ²) |
| Weight * | 101.9 lbs (46.2 kg) |
| Connector | 12 x 4.3-10 female |
| Mounting Pole | 2 to 5 in (5 to 12 cm) |

* Weight excludes mounting



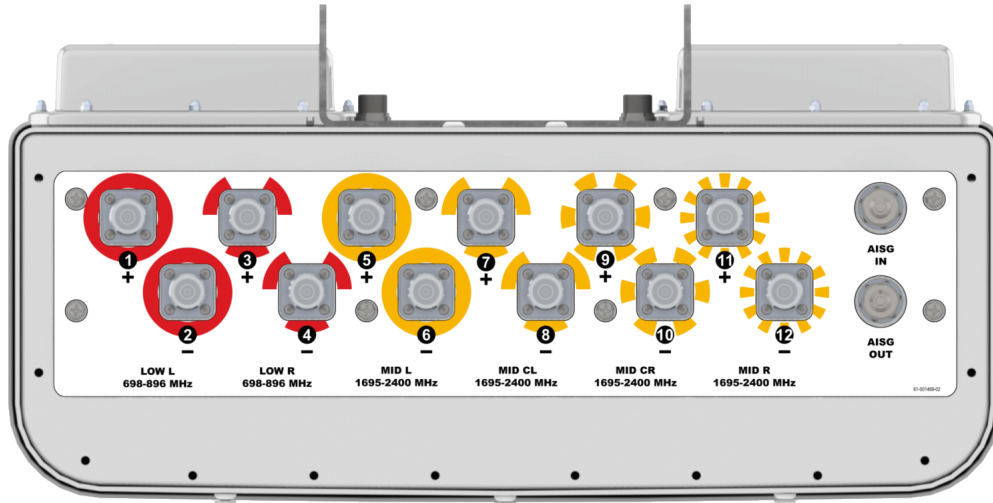
SPECIFICATIONS

Multi-Band Twelve-Port Antenna

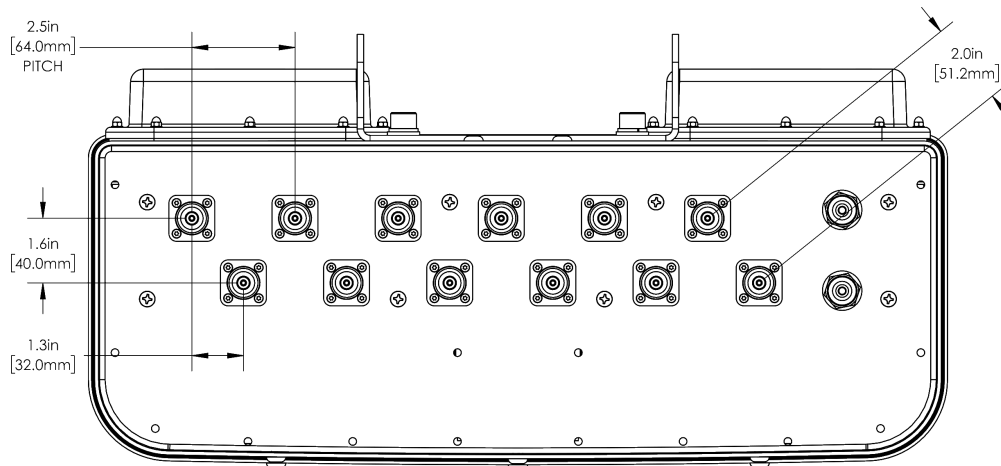
TPA65R-BU9D

Mechanical

Bottom View



Connector Spacing

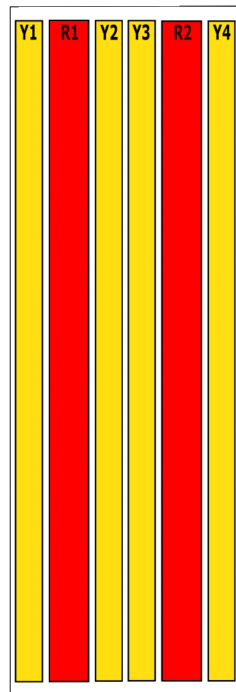


Mechanical

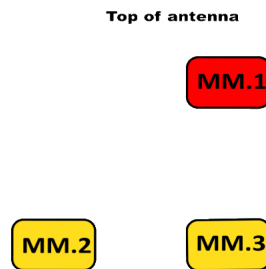
RET to Element Configuration

TPA65R-BU9DB Element and RET configuration (Type 17 Internal RET)

**Top of antenna
Viewed from rear**



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



| Array | Ports | Freq (MHz) | Ports controlled by common RET | AISG RET UID |
|-------|--------|------------|--------------------------------|--------------|
| R1 | 1, 2 | 698-896 | 1, 2, 3, 4 | CxxxxxxMM.1 |
| R2 | 3, 4 | 698-896 | | |
| Y1 | 5, 6 | 1695-2400 | 5, 6, 7, 8 | CxxxxxxMM.2 |
| Y2 | 7, 8 | 1695-2400 | | |
| Y3 | 9, 10 | 1695-2400 | | |
| Y4 | 11, 12 | 1695-2400 | 9, 10, 11, 12 | CxxxxxxMM.3 |

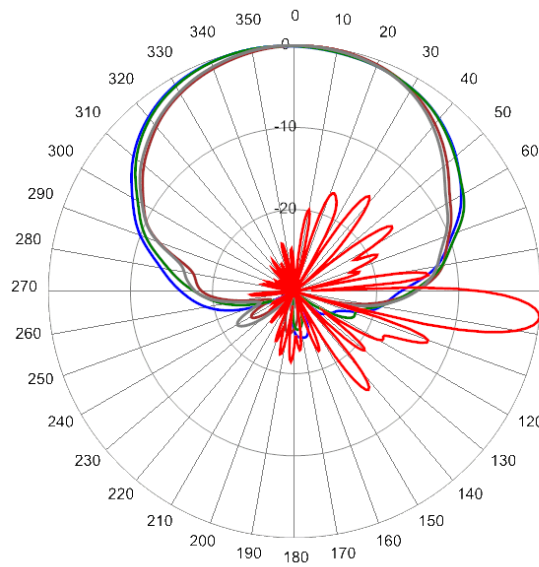


Multi-Band Twelve-Port Antenna

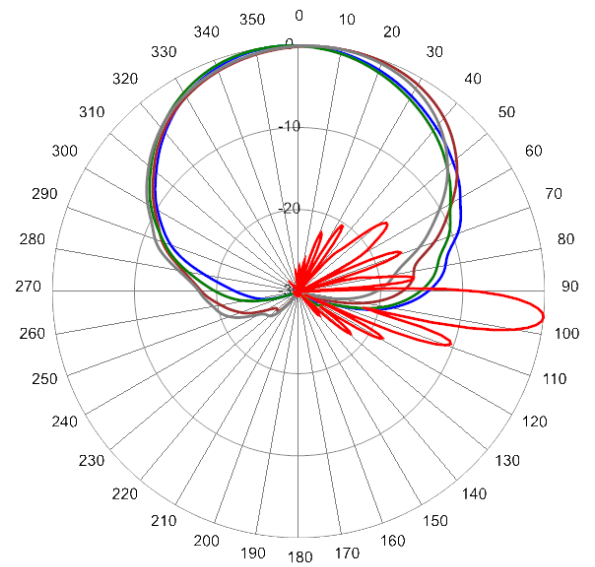
TPA65R-BU9D

Typical Antenna Patterns

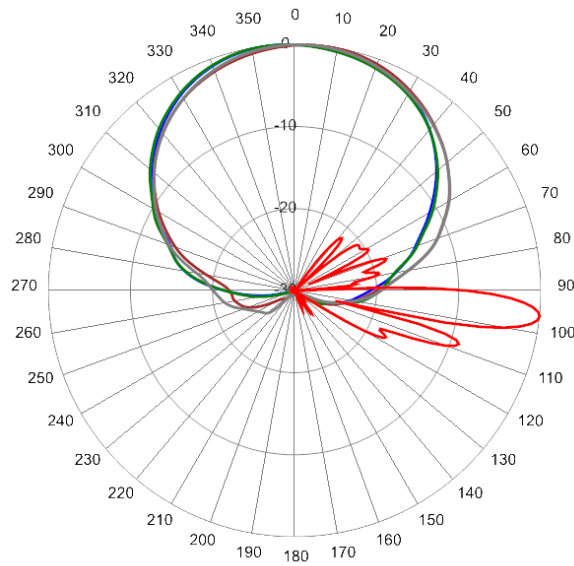
For detailed information on additional antenna patterns, contact customer support at support@cciproducts.com



698 MHz Azimuth with Elevation 6°



758 MHz Azimuth with Elevation 6°



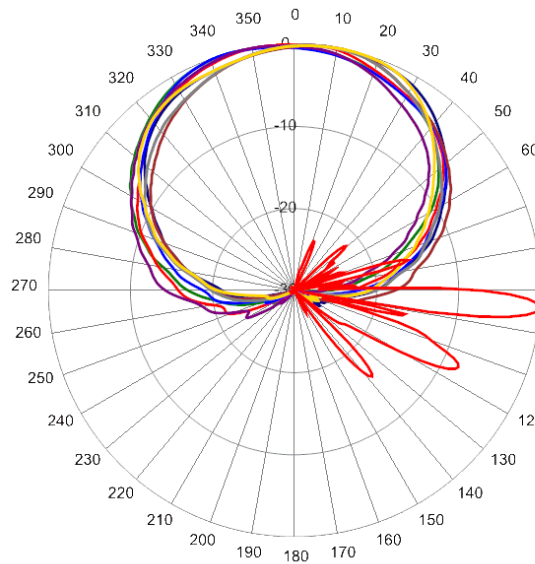
824 MHz Azimuth with Elevation 6°



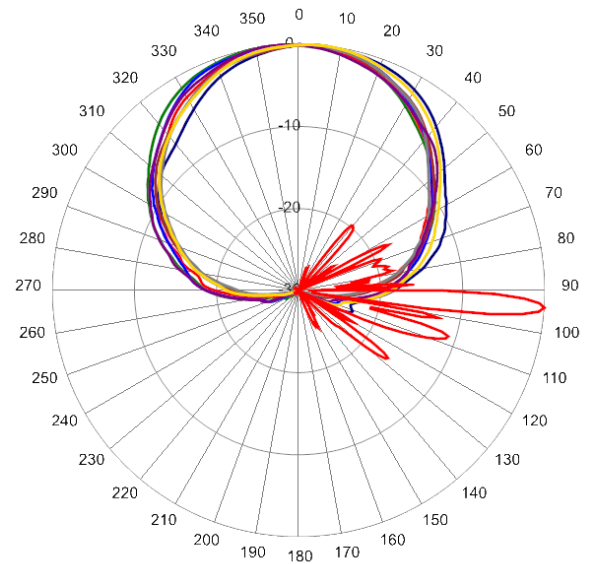
Multi-Band Twelve-Port Antenna

TPA65R-BU9D

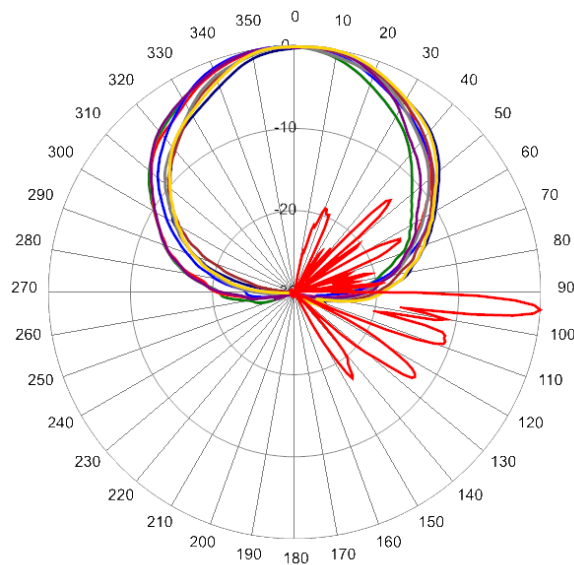
Typical Antenna Patterns



1720 MHz Azimuth with Elevation 4°



2155 MHz Azimuth with Elevation 4°



2360 MHz Azimuth with Elevation 4°



ORDERING

Multi-Band Twelve-Port Antenna

TPA65R-BU9D

Parts & Accessories

| | |
|-----------------------|--|
| TPA65R-BU9DB-K | Nine foot (2.7 m) antenna with 65° azimuth beamwidth, 4.3-10 female connectors, 3 factory installed BSA-RET400 RET actuators and MBK-16 mounting bracket |
| MBK-01 | MBK-01 Mounting Kit with 0° - 10° mechanical tilt |
| MBK-16 | MBK-16 Mounting Kit with fixed 0° mechanical tilt |
| BSA-RET400 | Type 17 Internal remote electrical tilt actuator |
| AISGC-M-F-10FT | 10 Ft (3 m) Male/Female RRU to Antenna AISG cable |

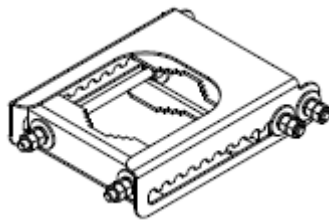


Mounting Bracket Kit

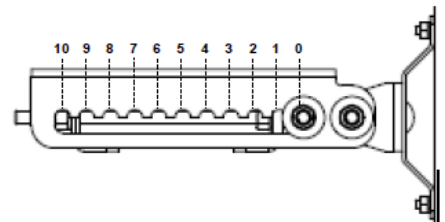
MBK-01

Mechanical

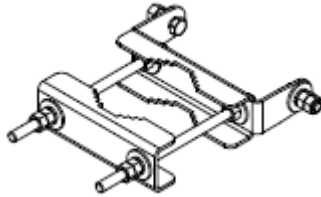
| | |
|-----------------------------------|------------------------|
| Weight | 12.6 lbs (5.7 kg) |
| Hinge Pitch | 47.25 in (1200 mm) |
| Mounting Pole Dimension | 2 to 5 in (5 to 12 cm) |
| Fastener Size | M12 |
| Installation Torque | 40 ft·lb (54 N·m) |
| Mechanical Tilt Adjustment | 0° - 10° |



MBK-01 Top Adjustable Bracket



MBK-01 Top Adjustable Bracket Side View



MBK-01 Bottom Fixed Bracket

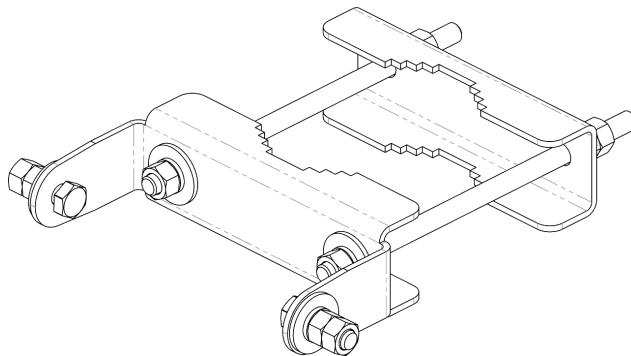
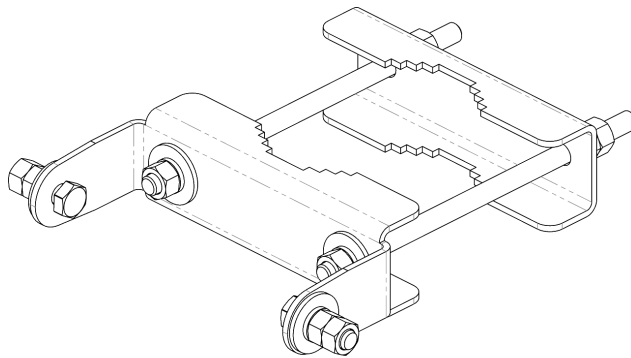


Mounting Bracket Kit

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



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 |

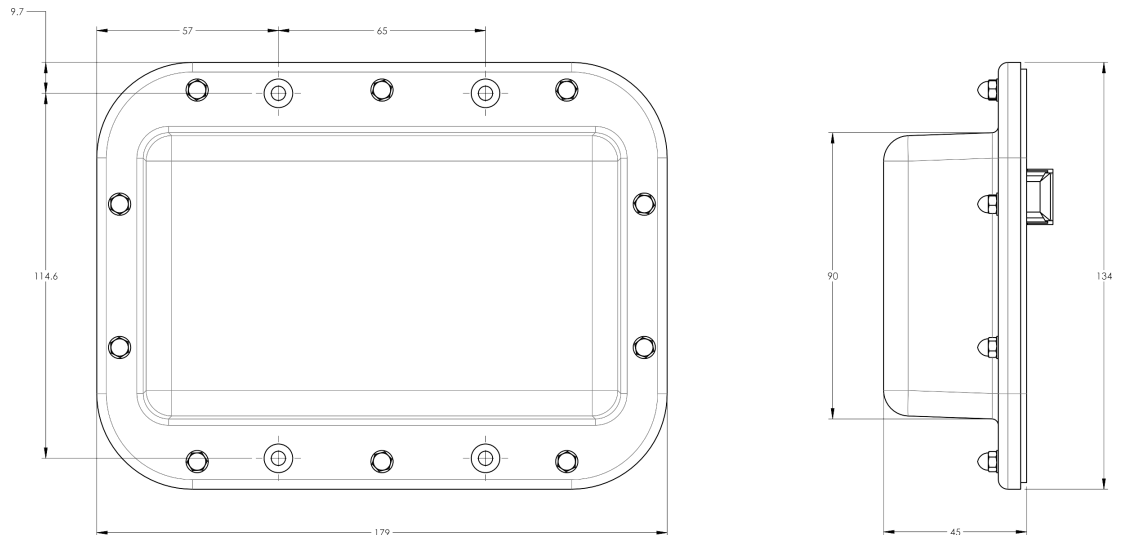
Electrical

| | |
|--------------------------|------------------------------------|
| 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

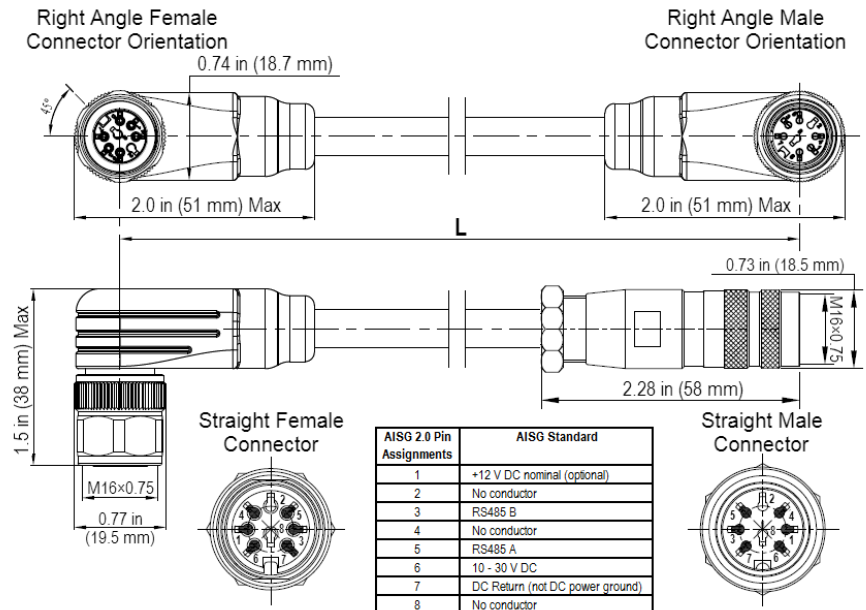
AISGC-M-F-xFT

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

Multi-Band Twelve-Port Antenna

TPA65R-BU9D

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

