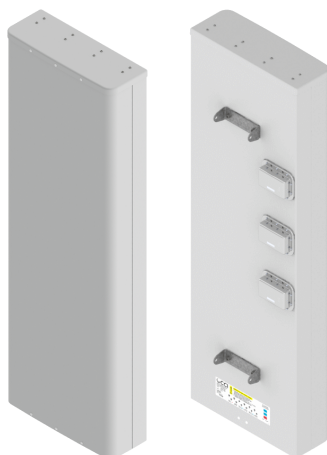




## DATA SHEET

## DualBand Twelve-Port Antenna

TPA45R-BW6B



- Patented LEGO Complimentary Array Topology allows for significantly reduced width in the Low Band (LB) and Mid Band (MB) arrays, with higher gain against similar sized competing products
- Patented LEGO Complimentary Array Topology configuration allows for 4T4R (4x4 MIMO) on LB and Dual 4T4R (4x4 MIMO) MB Arrays, using full length arrays (non stacked), all in a 23.8" (606 mm) width enclosure, an Industry First
- Six foot (1.8 m) DualBand, twelve port antenna with a 45° azimuth beamwidth covering 698-896 MHz and 1695-2180 MHz frequencies
- Eight wide mid band ports covering 1695-2180 MHz and four wide low band ports covering 698-896 MHz in a single antenna enclosure
- Full Spectrum Compliance 698-896 MHz / 1695-2180 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
- Equipped with 4.3-10 connectors
- Equipped with 3 field replaceable, integrated AISG 2.0 compliant Remote Electrical Tilt (RET) Controllers (Type 17 Internal)

## Overview

The CCI 12-Port 45° DualBand array is a twelve port antenna, with eight wide mid band ports covering 1695-2180 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 MB and 4X4 MIMO across low band ports. The CCI 12-Port 45° MB ports have independent tilt control between first and second set of 4X4 MIMO MB antenna arrays.

In this three RET configuration, the 1st RET is dedicated for the four LB ports. The 2nd RET is dedicated to the first 4X4 MIMO MB ports and the 3rd RET is dedicated to the second 4X4 MIMO MB ports. This RET arrangement allows for complete flexibility in coverage control between first and second 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

## Applications

- Dual 4x4 MIMO for the MB and 4X4 MIMO LB ports
- Ready for Network Standardization on 4.3-10 DIN connectors
- With CCI's DualBand antennas, wireless providers can connect multiple platforms to a single antenna, reducing tower load, lease expense, deployment time and installation costs



## SPECIFICATIONS

## DualBand Twelve-Port Antenna

TPA45R-BW6B

## Electrical

| Ports                              | 4 x Low Band Ports for 698-896 MHz |                 |
|------------------------------------|------------------------------------|-----------------|
| Frequency Range                    | 698-806 MHz                        | 824-896 MHz     |
| Gain <sup>i</sup>                  | 16.0 dBi                           | 16.7 dBi        |
| Gain (Average)*                    | 15.1 dBi                           | 16.0 dBi        |
| Azimuth Beamwidth (-3dB)           | 44°                                | 39°             |
| Elevation Beamwidth (-3dB)         | 11.3°                              | 10.1°           |
| Electrical Downtilt                | 2° to 12°                          | 2° to 12°       |
| Elevation Sidelobes (1st Upper)    | < -19 dB                           | < -19 dB        |
| Front-to-Back Ratio @180°          | > 32 dB                            | > 35 dB         |
| Cross-Polar Discrimination at Peak | > 25 dB                            | > 25 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       |

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

| Ports                              | 8 x Mid Band Ports for 1695-2180 MHz |                 |                 |
|------------------------------------|--------------------------------------|-----------------|-----------------|
| Frequency Range                    | 1695-1880 MHz                        | 1850-1990 MHz   | 1920-2180 MHz   |
| Gain <sup>i</sup>                  | 18.7 dBi                             | 19.2 dBi        | 19.7 dBi        |
| Gain (Average)*                    | 17.3 dBi                             | 18.1 dBi        | 18.5 dBi        |
| Azimuth Beamwidth (-3dB)           | 50°                                  | 47°             | 46°             |
| Elevation Beamwidth (-3dB)         | 5.7°                                 | 5.2°            | 4.9°            |
| Electrical Downtilt                | 2° to 10°                            | 2° to 10°       | 2° to 10°       |
| Elevation Sidelobes (1st Upper)    | < -18 dB                             | < -18 dB        | < -18 dB        |
| Front-to-Back Ratio @180°          | > 32 dB                              | > 35 dB         | > 35 dB         |
| Cross-Polar Discrimination at Peak | > 19 dB                              | > 19 dB         | > 24 dB         |
| Cross-Polar Port-to-Port Isolation | > 25 dB                              | > 25 dB         | > 25 dB         |
| Voltage Standing Wave Ratio (VSWR) | < 1.5:1                              | < 1.5:1         | < 1.5:1         |
| Passive Intermodulation (2x20W)    | ≤ -153 dBc                           | ≤ -153 dBc      | ≤ -153 dBc      |
| Input Power Continuous Wave (CW)   | 300 watts                            | 300 watts       | 300 watts       |
| Polarization                       | Dual Linear 45°                      | Dual Linear 45° | Dual Linear 45° |
| Input Impedance                    | 50 ohms                              | 50 ohms         | 50 ohms         |
| Lightning Protection               | DC Ground                            | DC Ground       | DC Ground       |

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



## SPECIFICATIONS

### DualBand Twelve-Port Antenna

TPA45R-BW6B

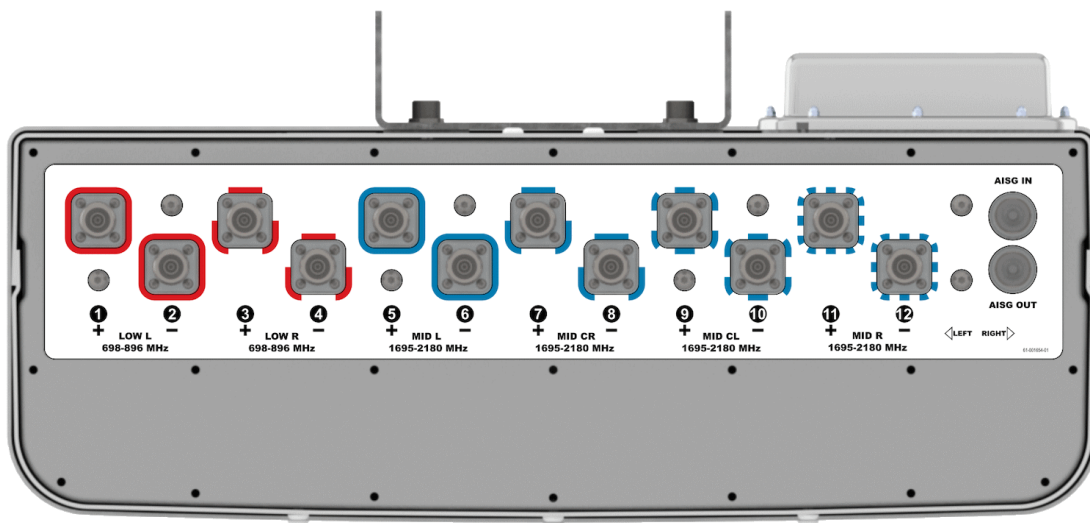
#### Mechanical

|                                                     |                                            |
|-----------------------------------------------------|--------------------------------------------|
| Dimensions (LxWxD)                                  | 72.0x23.8x8.4 in (1830x606x214 mm)         |
| Survival Wind Speed                                 | > 150 mph (> 241 kph)                      |
| Front Wind Load <sup>1</sup>                        | 280 lbf @ 100 mph    1245 N @ 161 kph      |
| Side Wind Load <sup>1</sup>                         | 45 lbf @ 100 mph    202 N @ 161 kph        |
| Effective Projective Area (EPA), Front <sup>1</sup> | 10.8 ft <sup>2</sup> (1.0 m <sup>2</sup> ) |
| Weight *                                            | 85.3 lbs (38.7 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

Bottom View



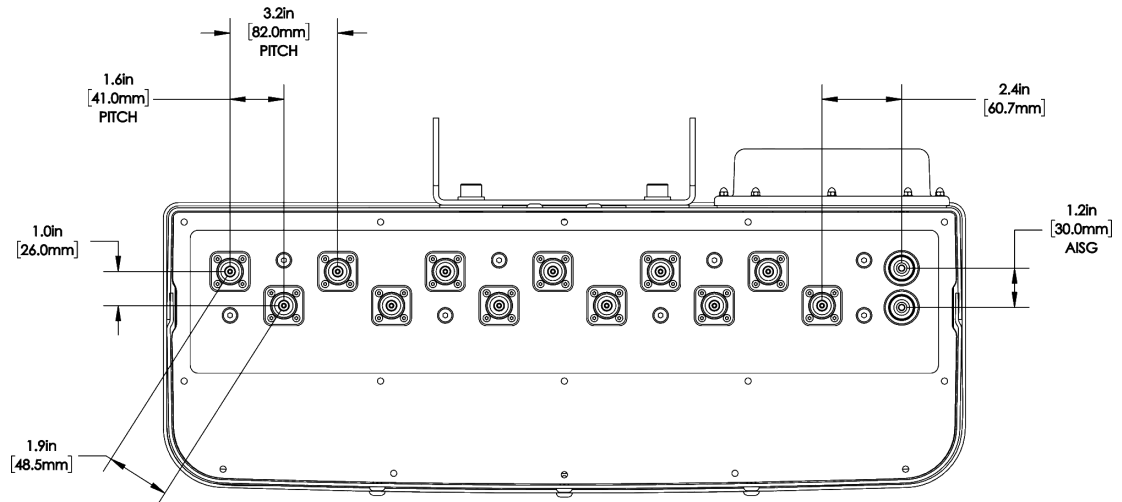
## SPECIFICATIONS

### DualBand Twelve-Port Antenna

TPA45R-BW6B

#### Mechanical

Connector Spacing

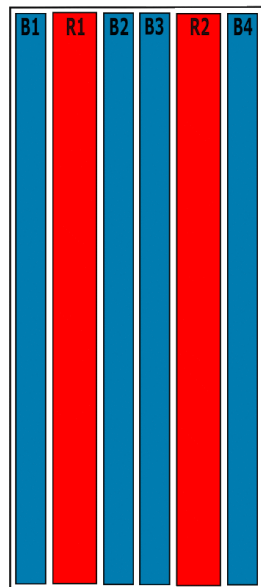


RET to Element Configuration

TPA45R-BW6BA Element and RET configuration (Type 17 Internal RET)

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

#### Top of antenna Viewed from rear



#### Top of antenna

MM.2

MM.3

MM.1

| Array | Ports  | Freq (MHz) | Ports controlled by common RET | AISG RET UID |
|-------|--------|------------|--------------------------------|--------------|
| R1    | 1, 2   | 698-896    | 1, 2, 3, 4                     | ClxxxxxMM.1  |
| R2    | 3, 4   | 698-896    |                                |              |
| B1    | 5, 6   | 1695-2180  | 5, 6, 7, 8                     | ClxxxxxMM.2  |
| B3    | 7, 8   | 1695-2180  |                                |              |
| B2    | 9, 10  | 1695-2180  | 9, 10, 11, 12                  | ClxxxxxMM.3  |
| B4    | 11, 12 | 1695-2180  |                                |              |



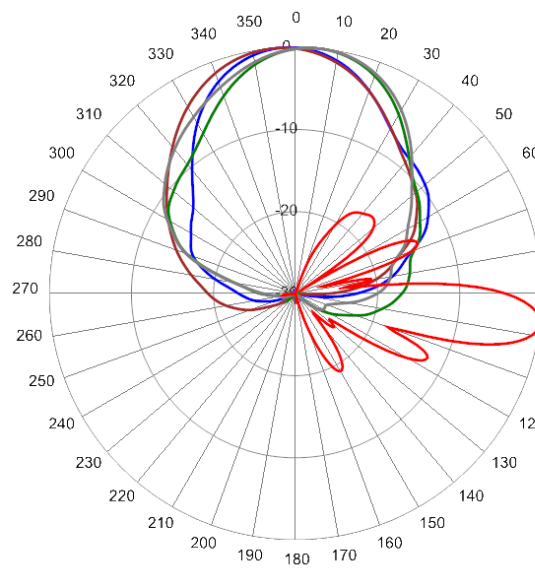
SPECIFICATIONS

DualBand Twelve-Port Antenna

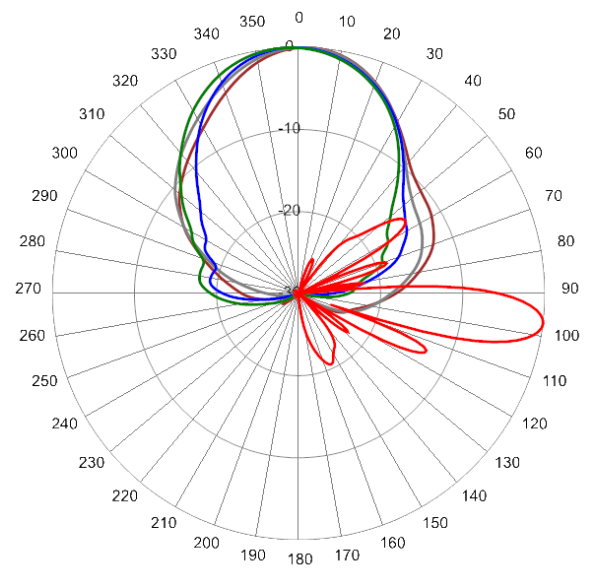
TPA45R-BW6B

Typical Antenna Patterns

For detailed information on additional antenna patterns, contact customer support at [support@cciprducts.com](mailto:support@cciprducts.com)



734 MHz Azimuth with Elevation 7°



824 MHz Azimuth with Elevation 7°

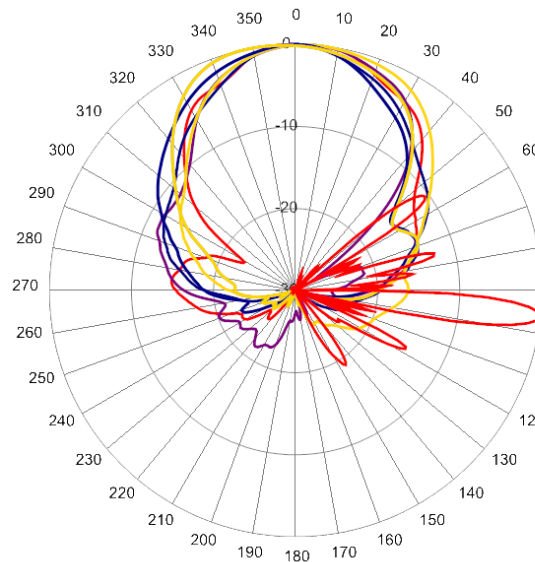


SPECIFICATIONS

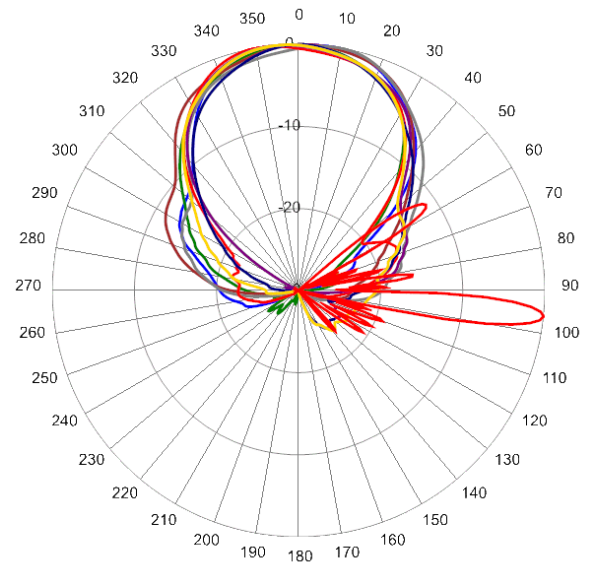
DualBand Twelve-Port Antenna

TPA45R-BW6B

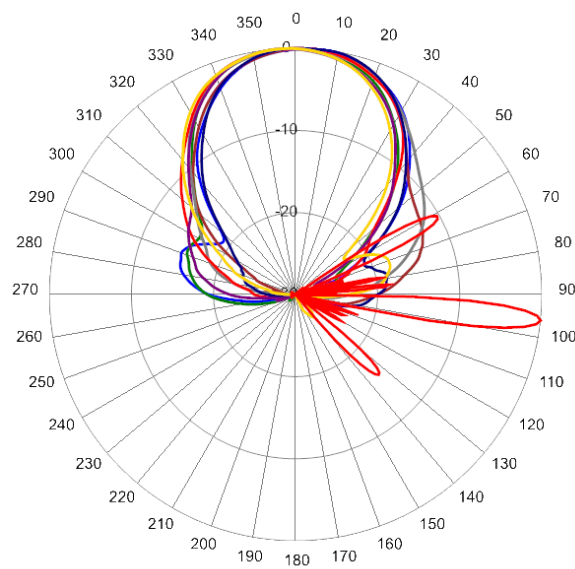
Typical Antenna Patterns



1755 MHz Azimuth with Elevation 6°



1850 MHz Azimuth with Elevation 6°



2110 MHz Azimuth with Elevation 6°



ORDERING

DualBand Twelve-Port Antenna

TPA45R-BW6B

Parts & Accessories

|                       |                                                                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TPA45R-BW6BA-K</b> | Six foot (1.8 m) DualBand antenna with 45° 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 Ft (3 m) Male/Female RRU to Antenna AISG cable                                                                                                                |



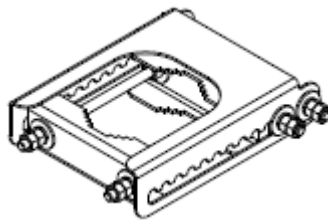
ACCESSORIES

Mounting Bracket Kit

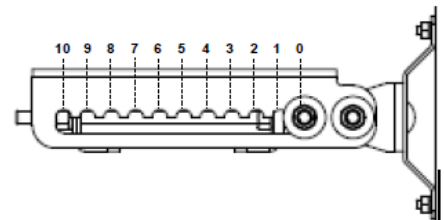
MBK-01

Mechanical

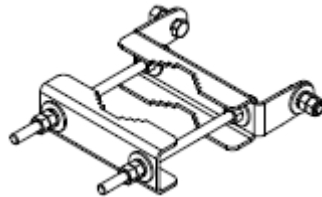
|                            |                        |
|----------------------------|------------------------|
| Weight                     | 12.6 lbs (5.7 kg)      |
| Hinge Pitch                | 47.25 in (1200 mm)     |
| Mounting Pole Dimension    | 2 to 5 in (5 to 12 cm) |
| Fastener Size              | 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





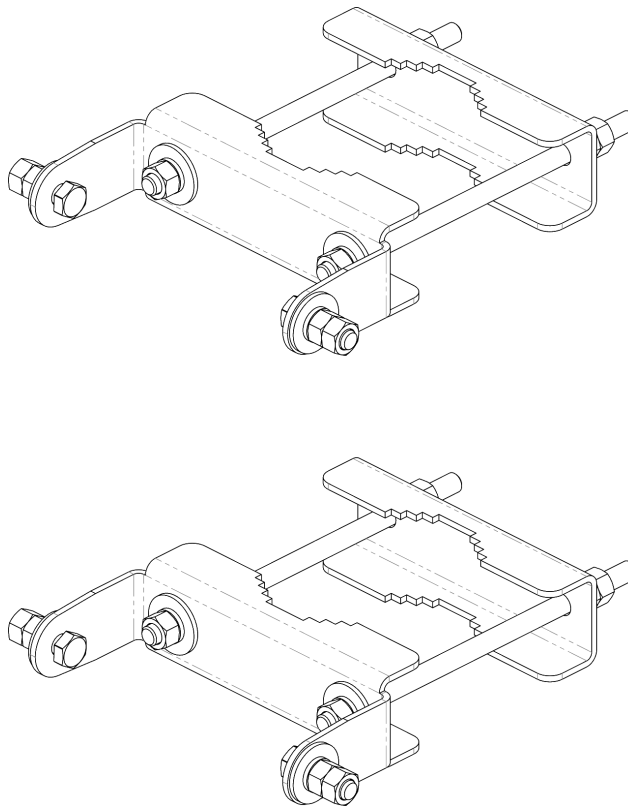
ACCESSORIES

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



ACCESSORIES

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     | $\pm 0.1^\circ$ |
| Temperature Range | -40° C to 70° C |

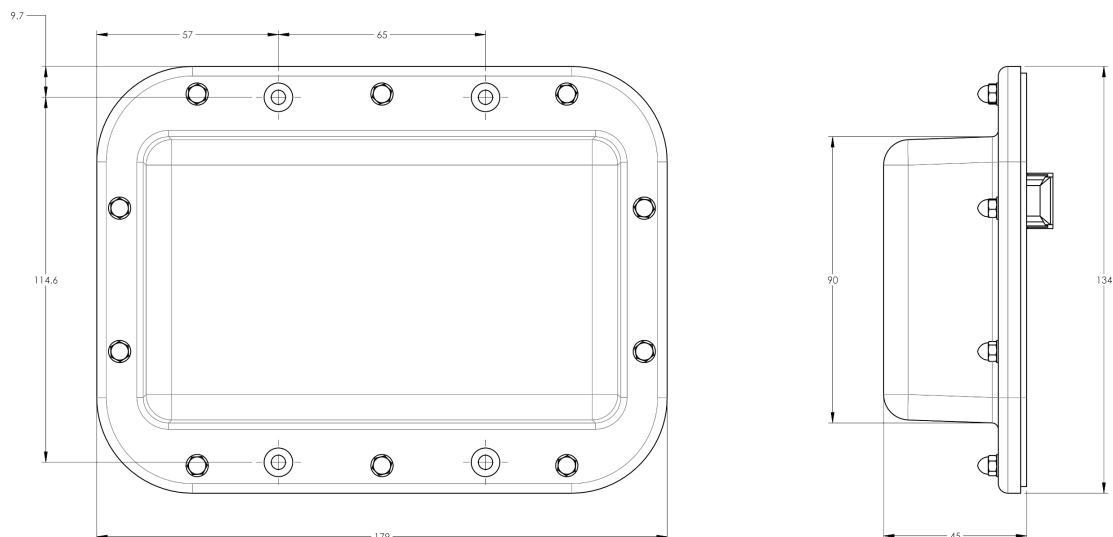
Electrical

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





ACCESSORIES

AISG Cable

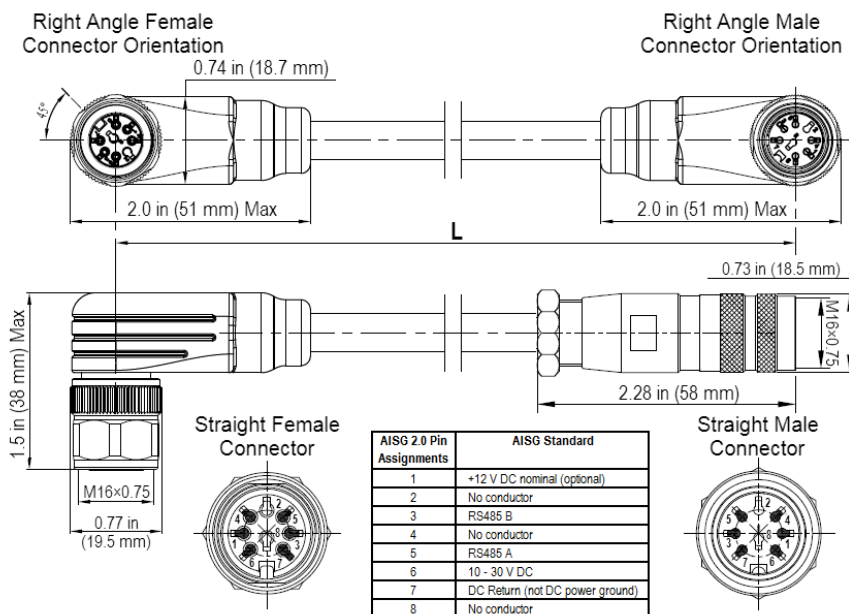
AISGC-M-F-xFT

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<br>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<br>3 conductors - 19 AWG<br>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

### DualBand Twelve-Port Antenna

TPA45R-BW6B

#### 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,<br>IEC 60068-2-6, IEC-60068-2-11, IEC 60068-2-14,<br>IEC 60068-2-18, IEC 60068-2-27, IEC 60068-2-29,<br>IEC 60068-02-30, IEC 60068-2-52, IEC 60068-2-64,<br>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



**CCI** Communication Components Inc.  
EXTENDING WIRELESS PERFORMANCE