

- Four foot (1.2 m) internally multiplexed MultiBand, fourteen 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, two wide low band ports covering 698-896 MHz and four frequency specific low band ports covering 717-728 MHz and 758-798 MHz (over distributed duplexing) in a single antenna enclosure
- Innovative Low and Mid Band Array configuration allows for independent 2T2R (2x2 MIMO) on B29 Low Band Array and 4T4R (4x4 MIMO) on B14/B12 Low Band Arrays and Dual 4T4R (4x4 MIMO) Mid Band Array, using full length arrays, all in a 20.7" (525 mm) width enclosure
- Industry leading antenna topology and RET shielding techniques drastically mitigate PIM propagation from B12/B14/B29 operations, allowing for superior Network performance
- Full Spectrum Compliance for 698-896 MHz / 1695-2400 MHz operations
- 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
- Internally Integrated RET Controllers (Type 17)
- Equipped with new 4.3-10 connector, which is 40% smaller than traditional 7/16 DIN connector

### Overview

The CCI internally multiplexed MultiBand array is a fourteen port antenna, with eight wide mid band ports covering 1695-2400 MHz, two wide low band ports covering 698-896 MHz and four frequency specific low band ports covering 717-728 MHz and 758-798 MHz (over distributed duplexing).

The antenna provides the capability to deploy 4T4R (4x4 MIMO) in the Mid Band, with a separate RET control. The antenna also provides the capability to provide independent RET control for B29 and B14/B12 operations.

CCI antennas are designed and produced to ISO 9001:2008 certification standards for reliability and quality in our state-of-the-art manufacturing facilities.

### Applications

- Dual 4x4 MIMO for the Mid band ports and 2x2 MIMO on B29 ports and 4x4 MIMO on B14/B12 ports
- Ready for Network Standardization on 4.3-10 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

Multi-Band Fourteen-Port Antenna

FPA65R-BU4D

Electrical

Ports	2 x Low Band Ports for 717-728 MHz	2 x Low Band Ports for 758-798 MHz	2 x Low Band Ports for 698-896 MHz	
Frequency Range	717-728 MHz	758-798 MHz	698-806 MHz	824-896 MHz
Gain <sup>1</sup>	11.7 dBi	12.6 dBi	13.1 dBi	13.1 dBi
Gain (Average) <sup>2</sup>	11.5 dBi	12.0 dBi	12.2 dBi	12.7 dBi
Azimuth Beamwidth (-3dB)	78°	74°	72°	66°
Elevation Beamwidth (-3dB)	20.4°	19.4°	20.2°	18.0°
Electrical Downtilt	2° to 16°	2° to 16°	2° to 16°	2° to 16°
Elevation Sidelobes (1st Upper)	< -13 dB	< -13 dB	< -17 dB	< -16 dB
Front-to-Back Ratio @180°	> 27 dB	> 30 dB	> 34 dB	> 35 dB
Front-to-Back Ratio ±20°	> 26 dB	> 29 dB	> 29 dB	> 32 dB
Cross-Polar Discrimination at Peak	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Cross-Polar Discrimination at Sector <sup>2</sup>	4.9 dB	5.3 dB	9.0 dB	4.5 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

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

<sup>2</sup>Electrical specifications follow document "Recommendation on Base Station Antenna Standards" (BASTA) V11.1.

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 <sup>1</sup>	16.6 dBi	16.8 dBi	17.2 dBi	17.3 dBi
Gain (Average) <sup>2</sup>	15.3 dBi	15.8 dBi	16.1 dBi	16.3 dBi
Azimuth Beamwidth (-3dB)	70°	67°	67°	61°
Elevation Beamwidth (-3dB)	8.4°	7.4°	6.9°	5.9°
Electrical Downtilt	2° to 10°	2° to 10°	2° to 10°	2° to 10°
Elevation Sidelobes (1st Upper)	< -15 dB	< -14 dB	< -14 dB	< -14 dB
Front-to-Back Ratio @180°	> 35 dB	> 35 dB	> 35 dB	> 35 dB
Front-to-Back Ratio ±20°	> 32 dB	> 32 dB	> 32 dB	> 32 dB
Cross-Polar Discrimination at Peak	> 21 dB	> 19 dB	> 20 dB	> 24 dB
Cross-Polar Discrimination at Sector <sup>2</sup>	7.3 dB	4.4 dB	5.5 dB	5.8 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

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

<sup>2</sup>Electrical specifications follow document "Recommendation on Base Station Antenna Standards" (BASTA) V11.1.



SPECIFICATIONS

Multi-Band Fourteen-Port Antenna

FPA65R-BU4D

Mechanical

<b>Dimensions (LxWxD)</b>	48.0x20.7x9.7 in (1220x525x247 mm)
<b>Survival Wind Speed</b>	> 150 mph (> 241 kph)
<b>Front Wind Load<sup>1</sup></b>	138 lbf @ 100 mph    613 N @ 161 kph
<b>Side Wind Load<sup>1</sup></b>	45 lbf @ 100 mph    202 N @ 161 kph
<b>Effective Projective Area (EPA), Front<sup>1</sup></b>	5.5 ft <sup>2</sup> (0.5 m <sup>2</sup> )
<b>Weight*</b>	64.2 lbs (29.1 kg)
<b>Connector</b>	14 x 4.3-10 female
<b>Mounting Pole</b>	2 to 5 in (5 to 12 cm)

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



SPECIFICATIONS

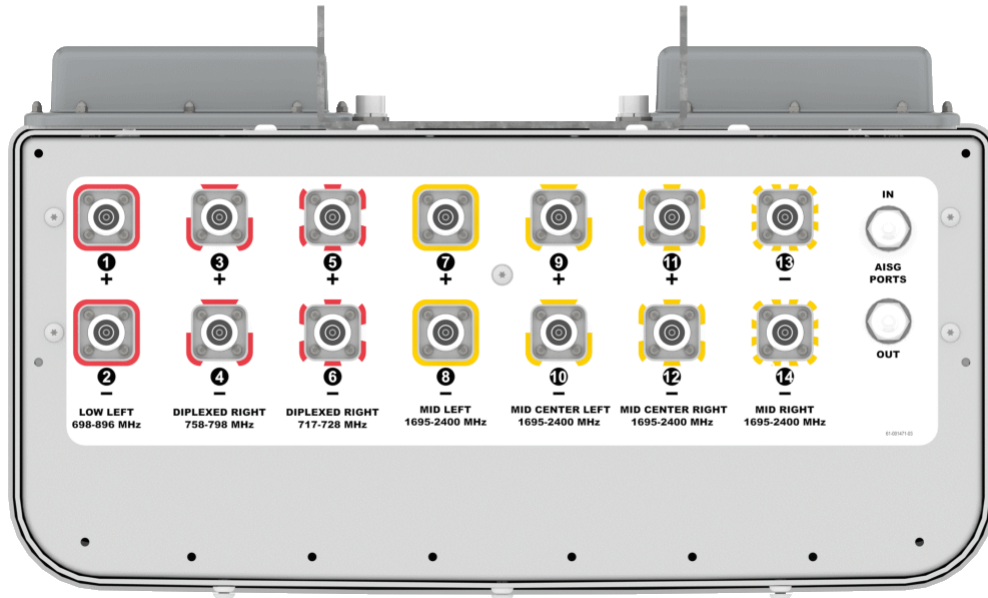
Multi-Band Fourteen-Port Antenna

FPA65R-BU4D

Mechanical

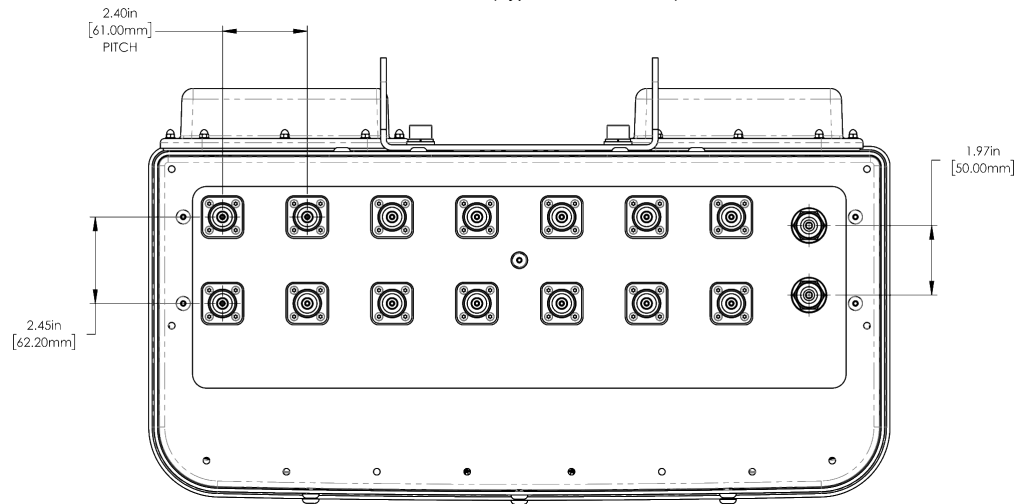
Bottom View

FPA65R-BU4DB



Connector Spacing

FPA65R-BU4DB (Type 17 Internal RET)



SPECIFICATIONS

Multi-Band Fourteen-Port Antenna

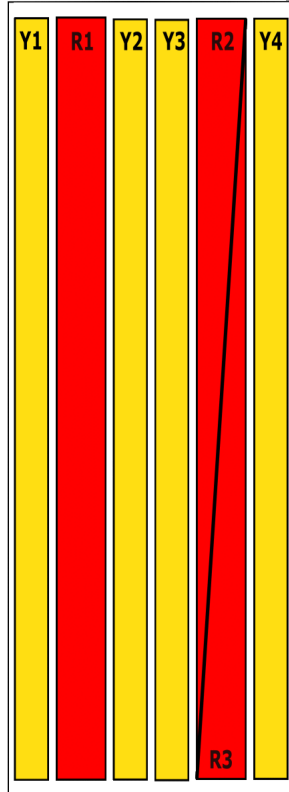
FPA65R-BU4D

Mechanical

RET to Element Configuration

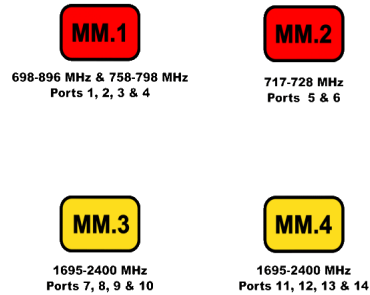
FPA65R-BU4DB Element and RET configuration (Type 17 Internal RET)

**Top of antenna  
Viewed from rear**



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

Top of antenna



Array	Ports	Freq (MHz)	Ports controlled by dedicated RET	AISG RET UID
R1	1, 2	698-896	1, 2, 3, 4	ClxxxxxxMM.1
R2	3, 4	758-798		
R3	5, 6	717-728	5, 6	ClxxxxxxMM.2
Y1	7, 8	1695-2400	7, 8, 9, 10	ClxxxxxxMM.3
Y2	9, 10			
Y3	11, 12	1695-2400	11, 12, 13, 14	ClxxxxxxMM.4
Y4	13, 14			

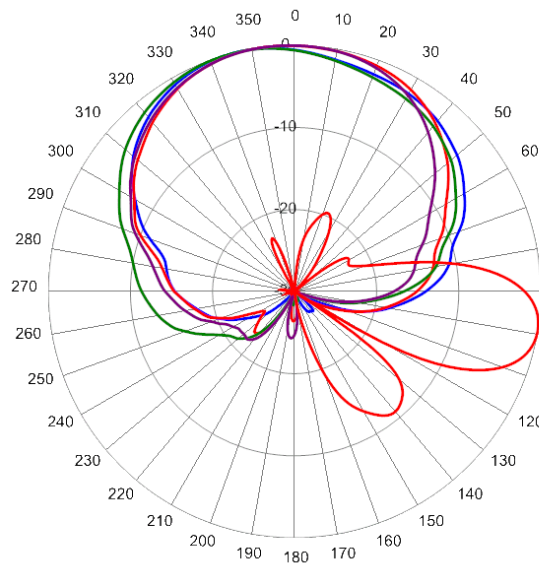


Multi-Band Fourteen-Port Antenna

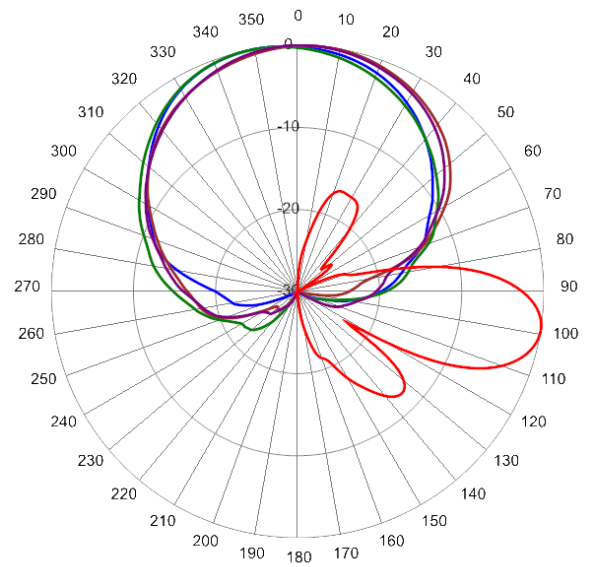
FPA65R-BU4D

Typical Antenna Patterns

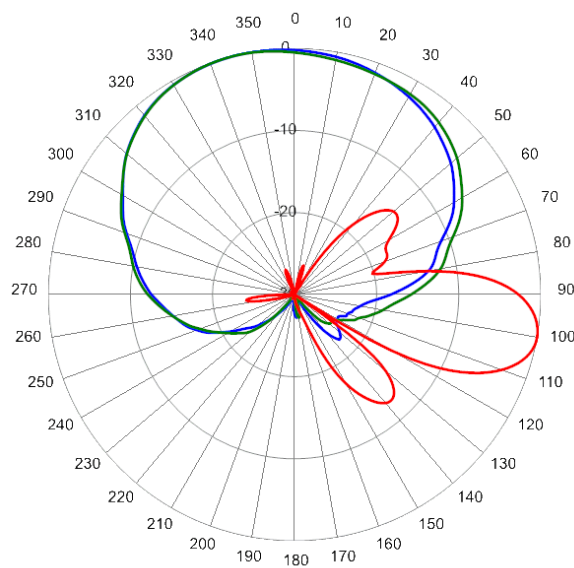
For detailed information on additional antenna patterns, contact customer support at support@cciproducts.com



722 MHz Azimuth with Elevation 9° (Ports 1, 2, 5 & 6)



788 MHz Azimuth with Elevation 9° (Ports 1, 2, 3 & 4)



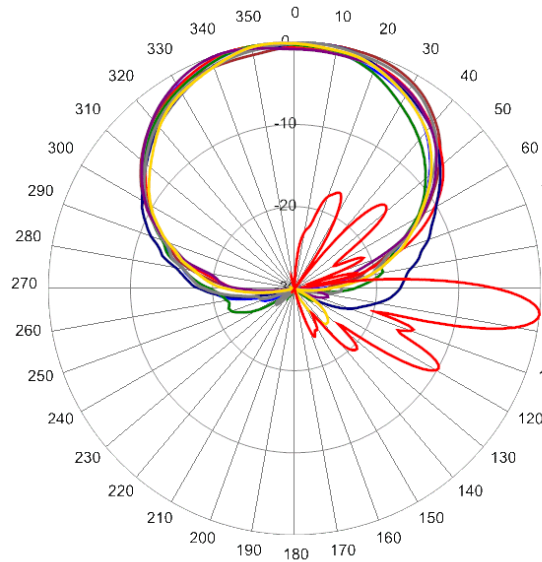
896 MHz Azimuth with Elevation 9° (Ports 1 & 2)



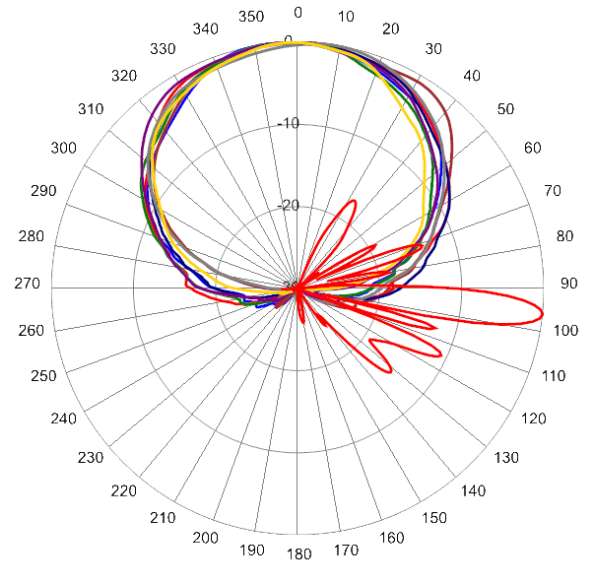
Multi-Band Fourteen-Port Antenna

FPA65R-BU4D

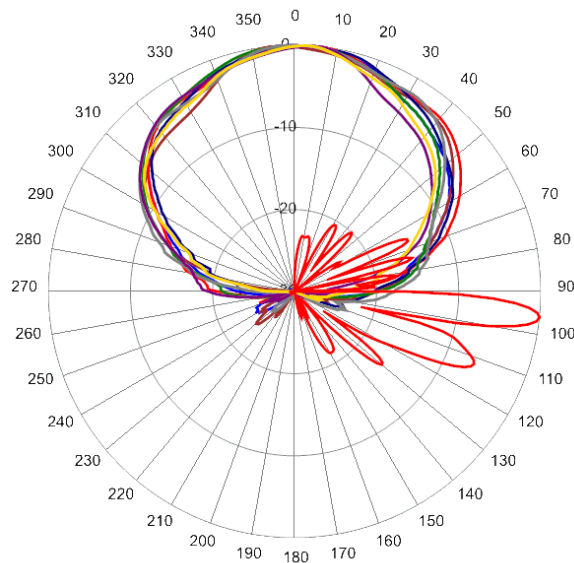
Typical Antenna Patterns



1755 MHz Azimuth with Elevation 6° (Ports 7 to 14)



2155 MHz Azimuth with Elevation 6° (Ports 7 to 14)



2360 MHz Azimuth with Elevation 6° (Ports 7 to 14)



ORDERING

Multi-Band Fourteen-Port Antenna

FPA65R-BU4D

Parts & Accessories

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<b>FPA65R-BU4DB-K</b>	Four foot (1.2 m) antenna with 65° azimuth beamwidth, 4.3-10 female connectors, 4 factory installed BSA-RET400 RET actuators (Type 17 internal) and MBK-15 mounting bracket
<b>MBK-02</b>	Mounting bracket kit (top and bottom) with 0° to 10° mechanical tilt adjustment
<b>MBK-15</b>	Mounting Kit 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

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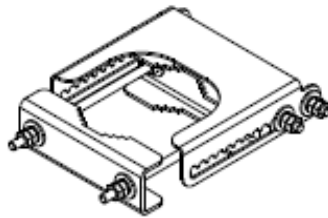


Mounting Bracket Kit

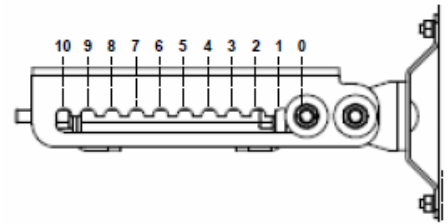
MBK-02

Mechanical

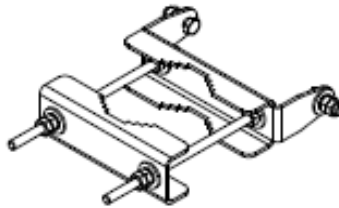
<b>Weight</b>	9.8 lbs (4.4 kg)
<b>Hinge Pitch</b>	31.5 in (800 mm)
<b>Mounting Pole Dimension</b>	2 to 5 in (5 to 12 cm)
<b>Fastener Size</b>	M10
<b>Installation Torque</b>	15 ft-lbs (20 N·m)
<b>Mechanical Tilt Adjustment</b>	0° - 10°



MBK-02 Top Adjustable Bracket



MBK-02 Top Adjustable Bracket Side View



MBK-02 Bottom Fixed Bracket

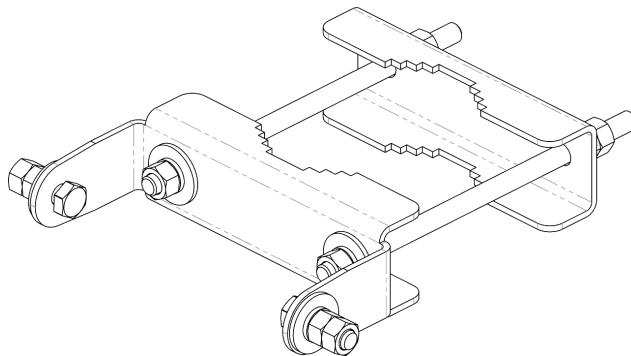
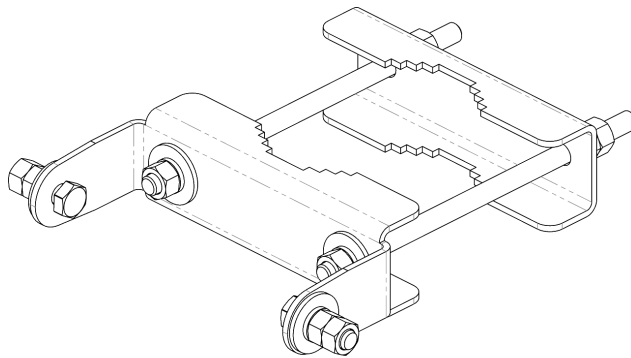


Mounting Bracket Kit

MBK-15

Mechanical

<b>Weight</b>	8.6 lbs (3.9 kg)
<b>Hinge Pitch</b>	31.5 in (800 mm)
<b>Mounting Pole Dimension</b>	2 to 5 in (5 to 12 cm)
<b>Fastener Size</b>	M10
<b>Installation Torque</b>	15 ft·lbs (20 N·m)
<b>Mechanical Tilt</b>	0°



MBK-15 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

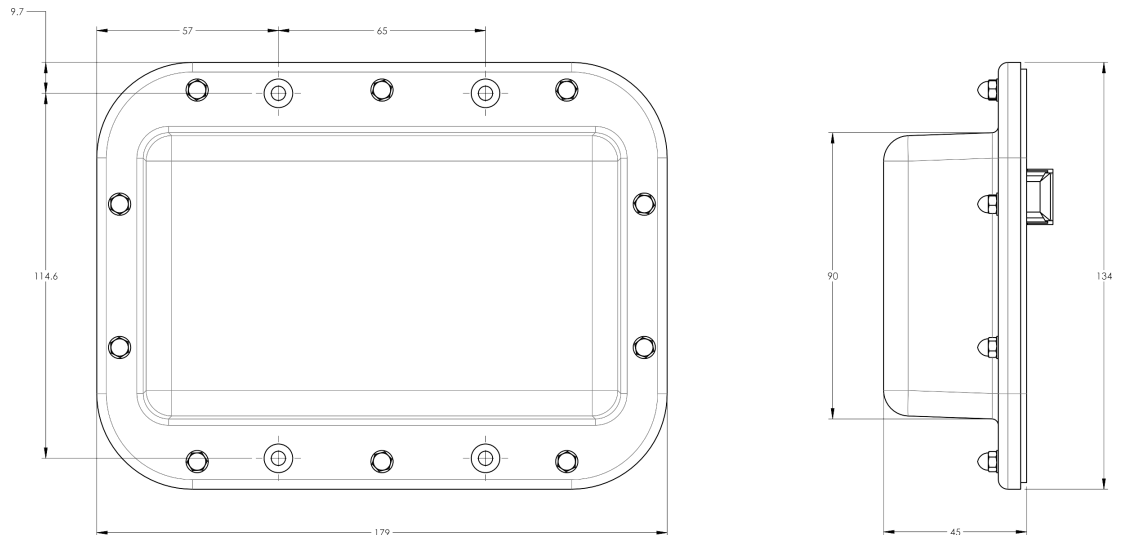
Electrical

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

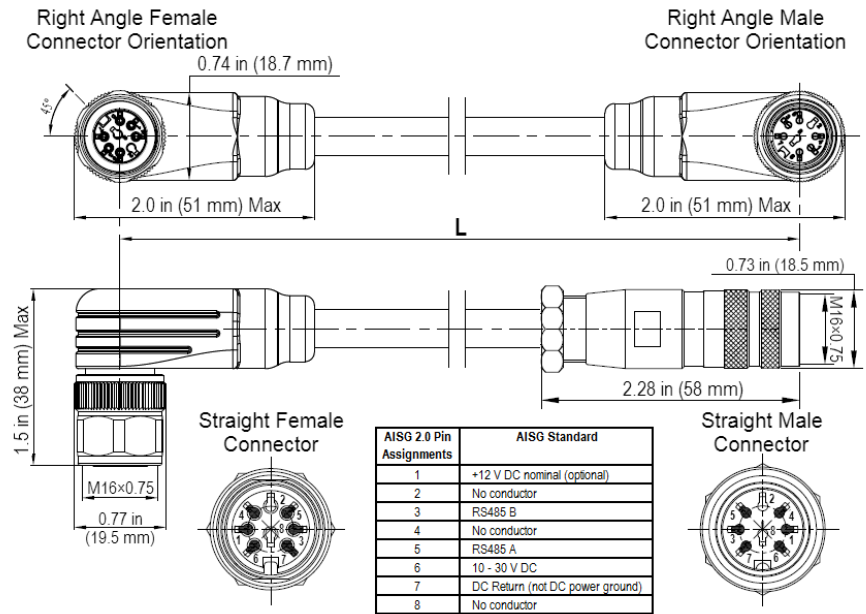
AISGC-M-F-xFT

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 Fourteen-Port Antenna

FPA65R-BU4D

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

