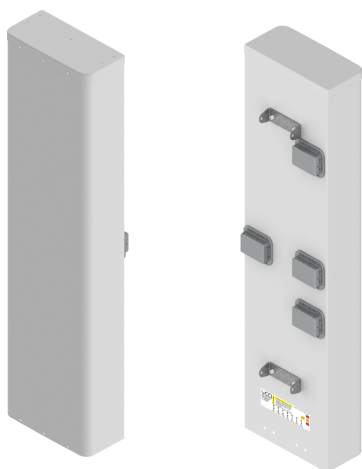




DATA SHEET

Multi-Band Fourteen-Port Antenna

FPA65R-BU6D



- Six foot (1.8 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 diplexing) 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 diplexing).

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-BU6D

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 ¹	13.6 dBi	14.1 dBi	14.4 dBi	14.4 dBi
Gain (Average)	13.2 dBi	13.4 dBi	13.5 dBi	14.0 dBi
Azimuth Beamwidth (-3dB)	71°	66°	70°	66°
Elevation Beamwidth (-3dB)	13.5°	12.3°	13.1°	11.1°
Electrical Downtilt	2° to 12°	2° to 12°	2° to 12°	2° to 12°
Elevation Sidelobes (1st Upper)	<-19 dB	<-19 dB	<-17 dB	<-17 dB
Front-to-Back Ratio @180°	> 30 dB	> 27 dB	> 30 dB	> 33 dB
Front-to-Back Ratio ±20°	> 28 dB	> 27 dB	> 29 dB	> 29 dB
Cross-Polar Discrimination at Peak	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Cross-Polar Discrimination at Sector ²	10.2 dB	9.4 dB	11.4 dB	7.5 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

¹Peak gain across sub-bands.²Electrical 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 ¹	17.9 dBi	18.1 dBi	18.4 dBi	18.1 dBi
Gain (Average)	16.7 dBi	17.2 dBi	17.4 dBi	17.1 dBi
Azimuth Beamwidth (-3dB)	70°	66°	66°	62°
Elevation Beamwidth (-3dB)	5.6°	5.1°	4.7°	4.0°
Electrical Downtilt	0° to 8°	0° to 8°	0° to 8°	0° to 8°
Elevation Sidelobes (1st Upper)	<-18 dB	<-18 dB	<-18 dB	<-17 dB
Front-to-Back Ratio @180°	> 35 dB	> 35 dB	> 35 dB	> 35 dB
Front-to-Back Ratio ±20°	> 32 dB	> 34 dB	> 34 dB	> 34 dB
Cross-Polar Discrimination at Peak	> 20 dB	> 19 dB	> 20 dB	> 20 dB
Cross-Polar Discrimination at Sector ²	9.5 dB	8.0 dB	8.5 dB	6.6 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

¹Peak gain across sub-bands.²Electrical specifications follow document "Recommendation on Base Station Antenna Standards" (BASTA) V11.1.



SPECIFICATIONS

Multi-Band Fourteen-Port Antenna

FPA65R-BU6D

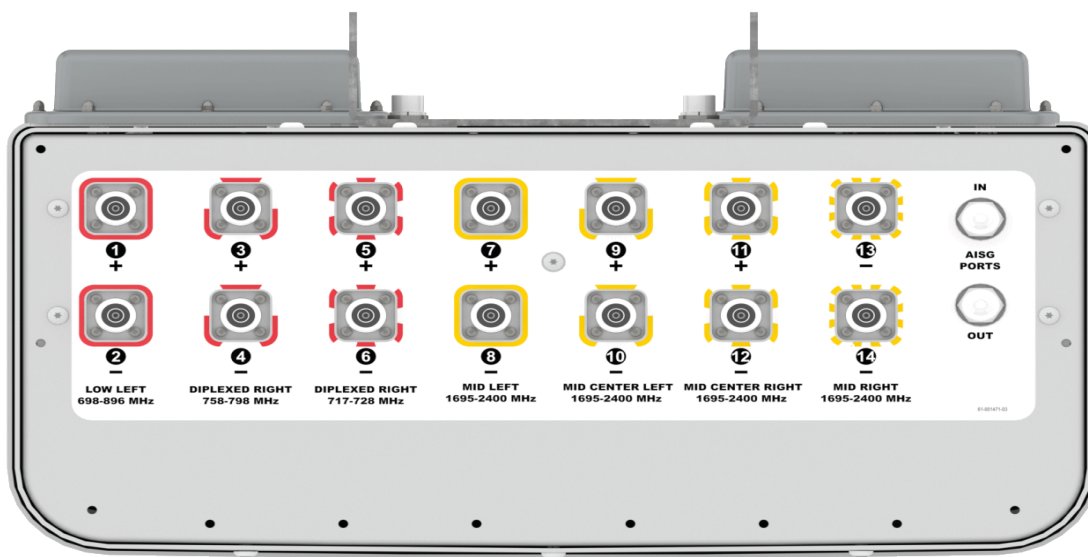
Mechanical

Dimensions (LxWxD)	71.2x20.7x9.7 in (1808x525x247 mm)
Survival Wind Speed	> 150 mph (> 241 kph)
Front Wind Load ¹	200 lbf @ 100 mph 888 N @ 161 kph
Side Wind Load ¹	71 lbf @ 100 mph 316 N @ 161 kph
Effective Projective Area (EPA), Front ¹	7.9 ft ² (0.7 m ²)
Weight*	95.5 lbs (43.3 kg)
Packaging Dimensions (LxWxD)	83.1x25.2x15.7 in (2110x640x400 mm)
Packaged Weight ~	146.4 lbs (66.4 kg)
Connector	14 x 4.3-10 female
Mounting Pole	2 to 5 in (5 to 12 cm)

¹Windload values calculated using CFD analysis
* Weight excludes mounting kit

Bottom View

FPA65R-BU6DB





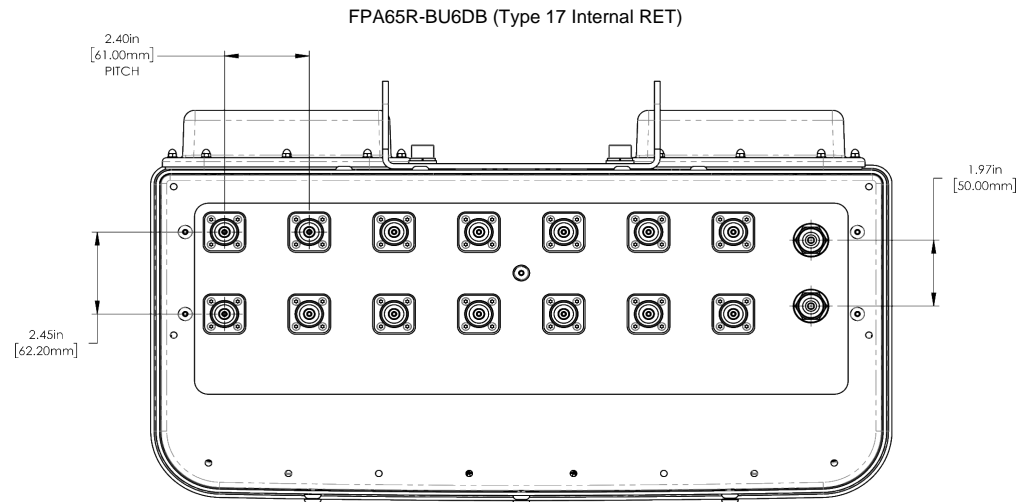
SPECIFICATIONS

Multi-Band Fourteen-Port Antenna

FPA65R-BU6D

Mechanical

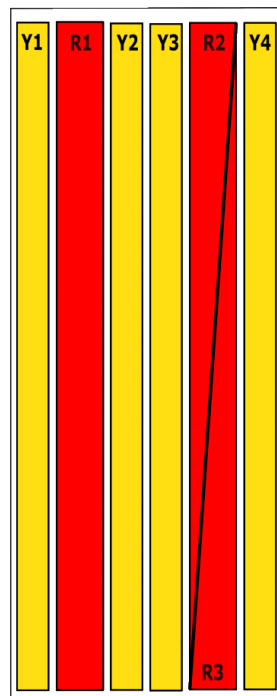
Connector Spacing



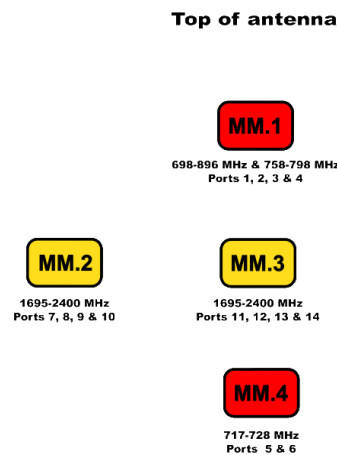
RET to Element Configuration

FPA65R-BU6DB 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 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		
Y1	7, 8	1695-2400	7, 8, 9, 10	ClxxxxxxMM.2
Y2	9, 10			
Y3	11, 12			
Y4	13, 14			



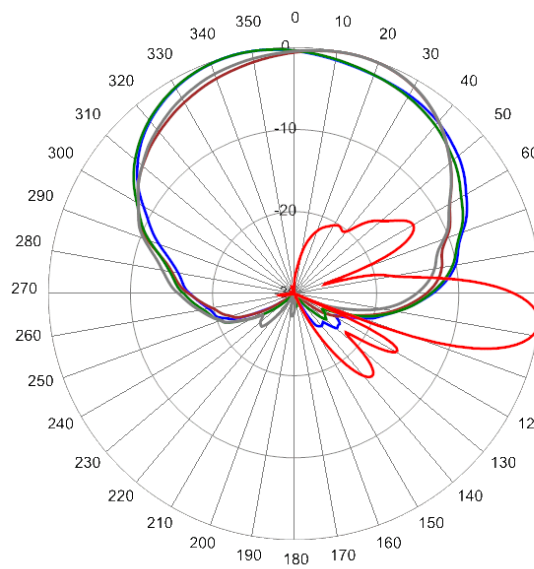
SPECIFICATIONS

Multi-Band Fourteen-Port Antenna

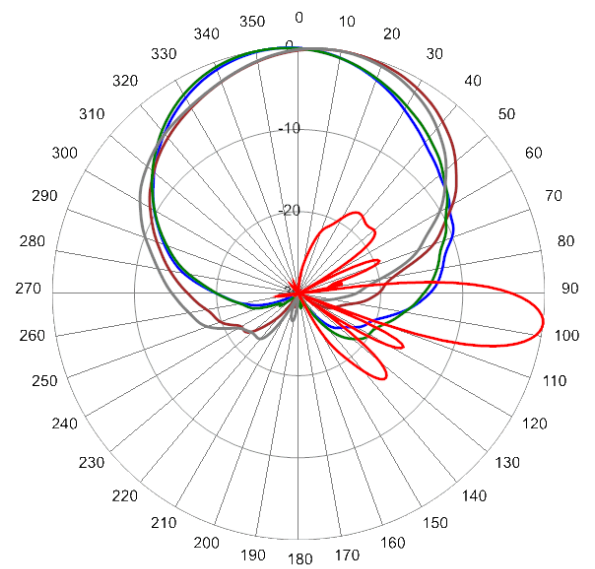
FPA65R-BU6D

Typical Antenna Patterns

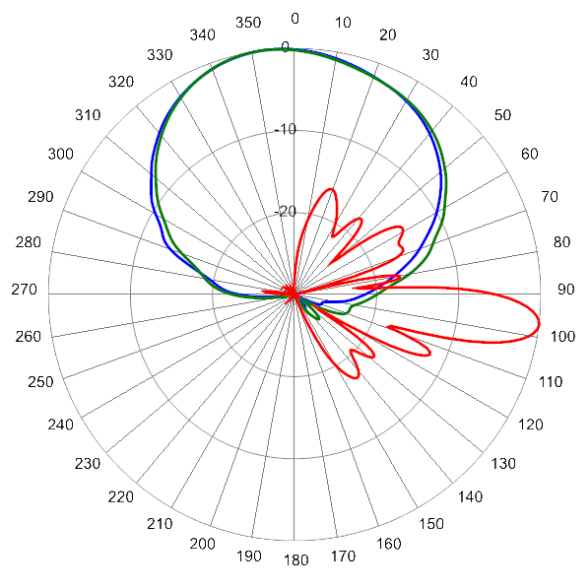
For detailed information on additional antenna patterns, contact customer support at support@cciprducts.com



722 MHz Azimuth with Elevation 7° (Ports 1, 2, 5 & 6)



788 MHz Azimuth with Elevation 7° (Ports 1, 2, 3 & 4)



896 MHz Azimuth with Elevation 7° (Ports 1 & 2)

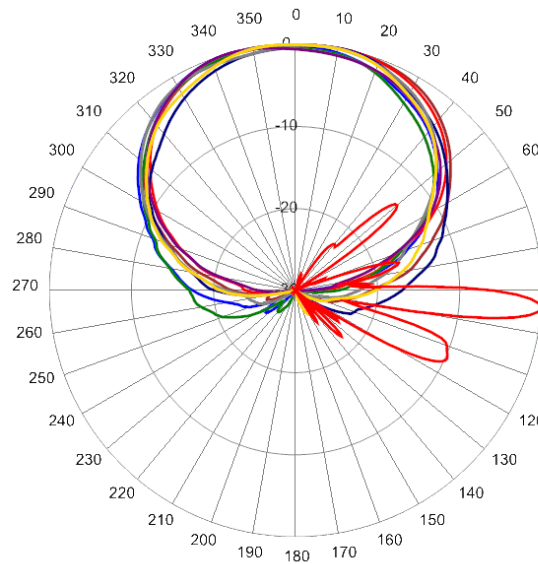


SPECIFICATIONS

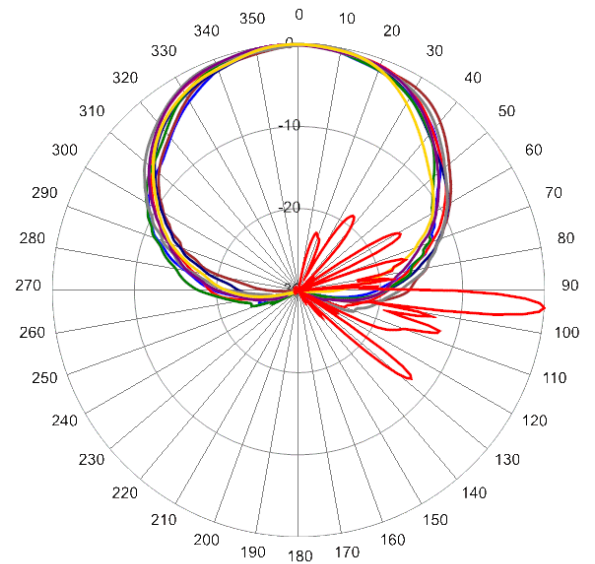
Multi-Band Fourteen-Port Antenna

FPA65R-BU6D

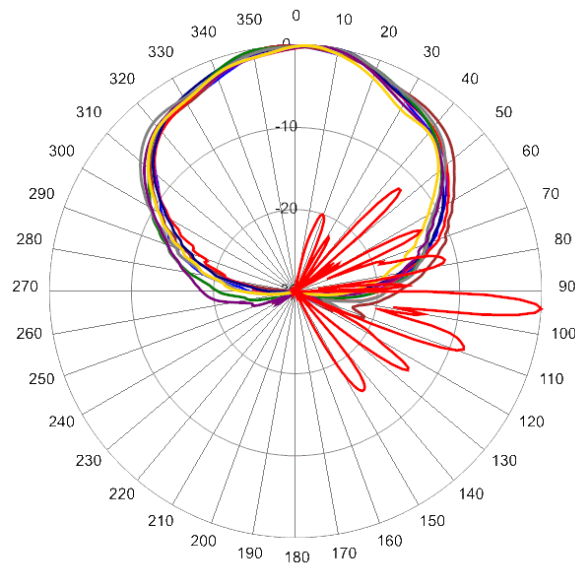
Typical Antenna Patterns



1755 MHz Azimuth with Elevation 4° (Ports 7 to 14)



2155 MHz Azimuth with Elevation 5° (Ports 7 to 14)



2360 MHz Azimuth with Elevation 4° (Ports 7 to 14)



ORDERING

Multi-Band Fourteen-Port Antenna

FPA65R-BU6D

Parts & Accessories

FPA65R-BU6DB-K	Six foot (1.8 m) antenna with 65° azimuth beamwidth, 4.3-10 female connectors, 4 factory installed BSA-RET400 RET actuators (Type 17 internal) and MBK-16 mounting bracket
MBK-01	Mounting bracket kit (top and bottom) with 0° to 10° mechanical tilt adjustment
MBK-16	Mounting Kit with fixed 0° mechanical tilt
BSA-RET400	Type 17 Internal Remote Electrical Tilt System (RET)
AISGC-M-F-10FT	10 Ft (3 m) Male/Female RRU to Antenna AISG cable



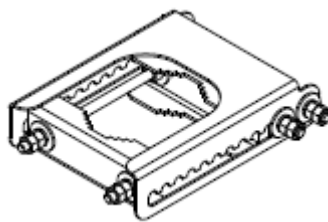
ACCESSORIES

Mounting Bracket Kit

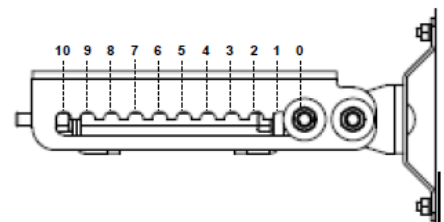
MBK-01

Mechanical

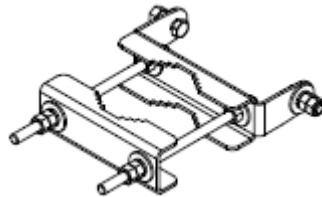
Weight	12.6 lbs (5.7 kg)
Hinge Pitch	47.25 in (1200 mm)
Mounting Pole Dimension	2 to 5 in (5 to 12 cm)
Fastener Size	M12
Installation Torque	40 ft·lb (54 N·m)
Mechanical Tilt Adjustment	0° - 10°



MBK-01 Top Adjustable Bracket



MBK-01 Top Adjustable Bracket Side View



MBK-01 Bottom Fixed Bracket



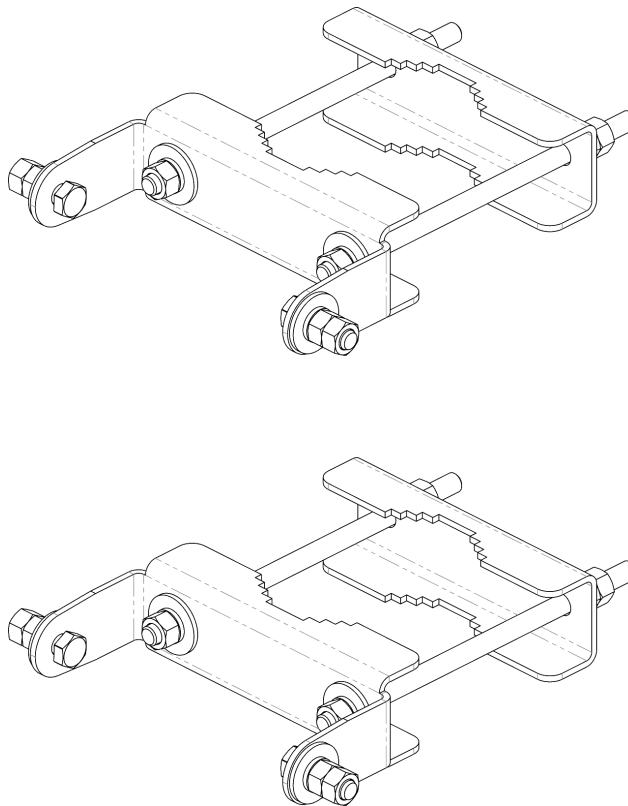
ACCESSORIES

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

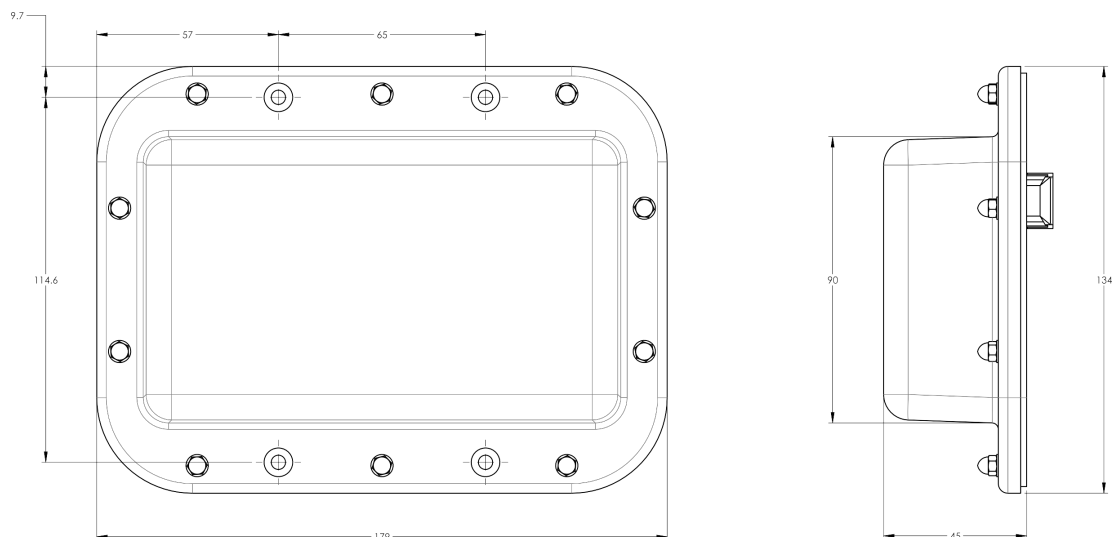
Electrical

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

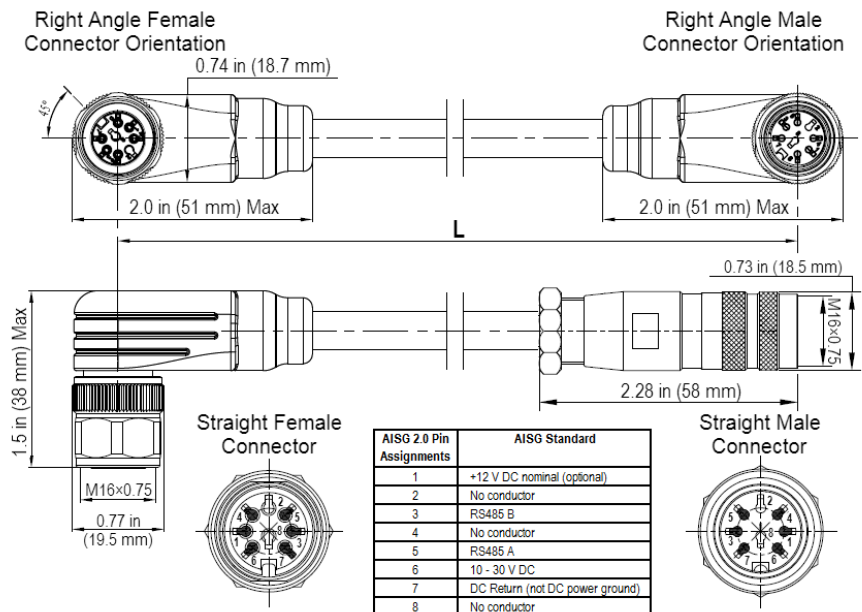
AISGC-M-F-xFT

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 Straight male/straight female
Tightening torque	Hand tighten only ≈ 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-BU6D

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



CCI Communication Components Inc.
EXTENDING WIRELESS PERFORMANCE