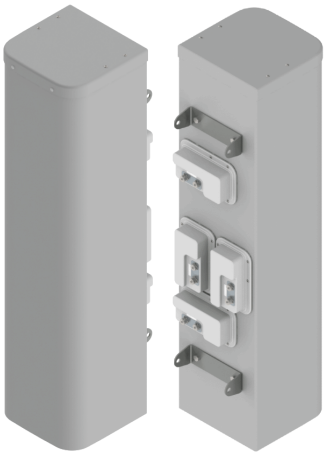
DATA SHEET

Twelve Port Multi-Band Antenna

TPA65R-BU4A



- Four foot (1.2 m) multiband, twelve port antenna with a 65° azimuth beamwidth covering 698-798 MHz, 824-896 MHz and 1695-2360 MHz frequencies
- Total of Eight high band ports, four high wide band ports covering 1695-1780 and 2110-2360 MHz, four additional high band ports covering 1850-1990 MHz. Total of four low band ports, two low band ports for 698-798 MHz and two low band ports for 824-896 MHz in a single enclosure.
- New enclosure with <12" (305mm) width, narrowest enclosure in the industry
- Full Spectrum Compliance for WCS and AWS-3 frequencies and upcoming Band 14 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
- 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 Antenna Array is a twelve port antenna with a total of eight high band ports. Four high band ports covering 1695-1780 and 2110-2360 MHz and four additional high band ports covering 1850-1990 MHz. In addition, the antenna includes a total of four low band ports, two ports covering 698-798 MHz and two ports covering 824-896 MHz. The CCI 12-Port provides the capability to deploy Dual 4x4 Multiple-input-Multiple-output (MIMO) in the high band and Dual 2x2 Multiple-input-Multiple-output (MIMO) in the low band. The CCI 12-Port allows for separate tilt control between the low band ports and the high band ports. With the use of four RET controllers, the frequency paired low and 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 Dual 2x2 MIMO for the 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

Discontinued

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SPECIFICATIONS

Twelve Port Multi-Band Antenna

TPA65R-BU4A

Electrical

Ports	2 Low Band Ports for 698-798 MHz		2 Low Band Ports for 824-896 MHz
Frequency Range	698-787 MHz	787-798 MHz	824-896 MHz
Gain[1]	13.0 dBi	12.6 dBi	13.1 dBi
Gain (Average)[2]	12.6 dBi	12.3 dBi	12.5 dBi
Azimuth Beamwidth (-3dB)	65°	67°	65°
Elevation Beamwidth (-3dB)	18.4°	16.7°	15.4°
Electrical Downtilt	2° to 16°	2° to 16°	2° to 16°
Elevation Sidelobes (1st Upper)	< -19 dB	< -16 dB	< -19 dB
Front-to-Back Ratio @180°	> 32 dB	> 33 dB	> 35 dB
Front-to-Back Ratio over ± 20°	> 30 dB	> 30 dB	> 34 dB
Cross-Polar Discriminationat Peak	> 25 dB	> 25 dB	> 25 dB
Cross-Polar Discrimination at Sector[2]	15 dB	11 dB	13 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)	≤ -150 dBc	≤ -150 dBc	≤ -150 dBc
Input Power Continuous Wave (CW)	500 watts	500 watts	300 watts
Polarization	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°
Input Impedance	50 ohms	50 ohms	50 ohms
Lightning Protection	DC Ground	DC Ground	DC Ground

[1]Peak gain across sub-bands.
[2]Electrical specifications follow document "Recommendation on Base Station Antenna Standards" (BASTA) V9.6.

Ports	4 High Band Ports for 1850-1990 MHz	4 High Band Ports for 1695-1780 and 2110-2360 MHz		
Frequency Range	1850-1990 MHz	1695-1780 MHz	2110-2180 MHz	2305-2360 MHz
Gain[1]	15.9 dBi	15.0 dBi	16.1 dBi	15.5 dBi
Gain (Average)[2]	15.2 dBi	14.5 dBi	15.5 dBi	15.1 dBi
Azimuth Beamwidth (-3dB)	60°	62°	57°	62°
Elevation Beamwidth (-3dB)	8.3°	9.4°	7.6°	7.1°
Electrical Downtilt	0° to 9°	0° to 9°	0° to 9°	0° to 9°
Elevation Sidelobes (1st Upper)	< -18 dB	< -16 dB	< -17 dB	< -16 dB
Front-to-Back Ratio @180°	> 35 dB	> 35 dB	> 35 dB	> 35 dB
Front-to-Back Ratio over ± 20°	> 35 dB	> 34 dB	> 34 dB	> 32 dB
Cross-Polar Discrimination at Peak	> 18 dB	> 23 dB	> 22 dB	> 25 dB
Cross-Polar Discrimination at Sector[2]	9 dB	11 dB	7 dB	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)	≤ -150 dBc	≤ -150 dBc	≤ -150 dBc	≤ -150 dBc
Input Power Continuous Wave (CW)	300 watts	300 watts	300 watts	300 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

[1]Peak gain across sub-bands.
[2]Electrical specifications follow document "Recommendation on Base Station Antenna Standards" (BASTA) V9.6.

Discontinued

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SPECIFICATIONS

Twelve Port Multi-Band Antenna

TPA65R-BU4A

Mechanical

Dimensions (LxWxD)	48.0x11.8x11.5 in (1220x300x293 mm)
Survival Wind Speed	> 150 mph (> 241 kph)
Front Wind Load	128 lbs (569 N) @ 100 mph (161 kph)
Side Wind Load	125 lbs (558 N) @ 100 mph (161 kph)
Equivalent Flat Plate Area	5.0 ft^2 (0.5 m^2)
Weight*	69.4 lbs (31.5.2 kg)
RET System Weight	6.6 lbs (3.0 kg)
Connector	12 x 4.3-10 Female
Mounting Pole	2 to 5 in (5 to 12 cm)

** Weight excludes mounting and RET*

Discontinued

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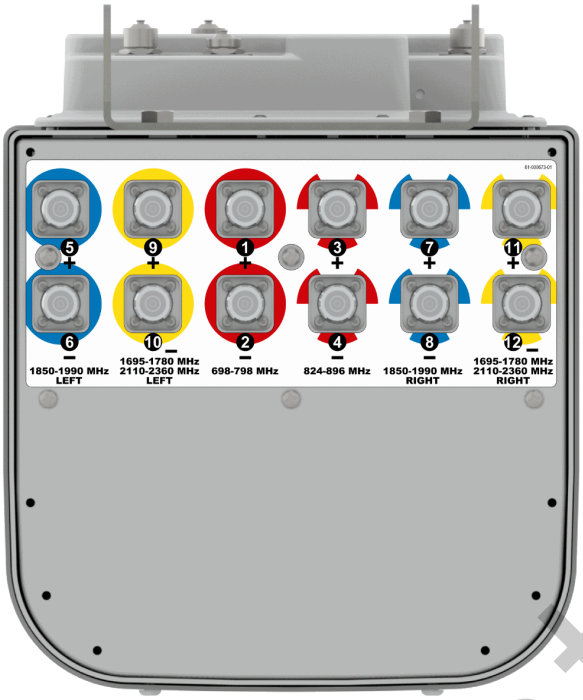
SPECIFICATIONS

Twelve Port Multi-Band Antenna

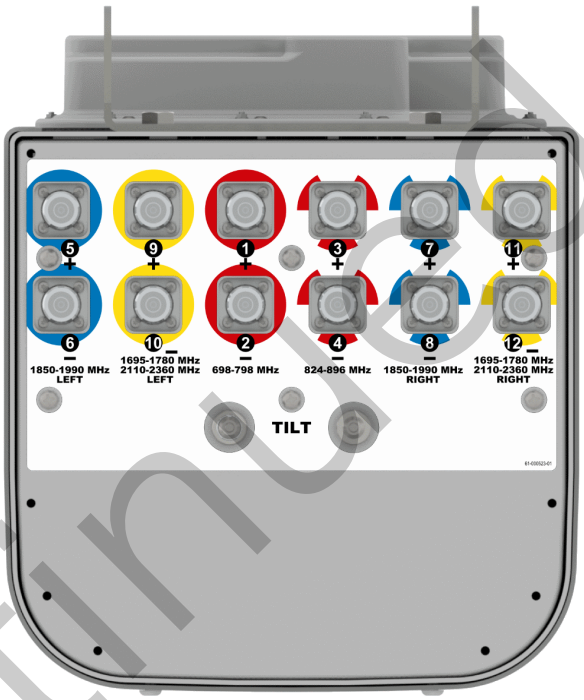
TPA65R-BU4A

Bottom View

TPA65R-BU4AA (Type 1 RET)

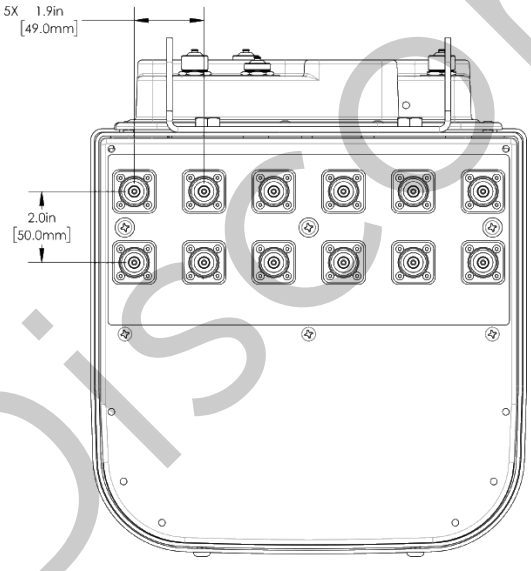


TPA65R-BU4AB (Type 17 RET)

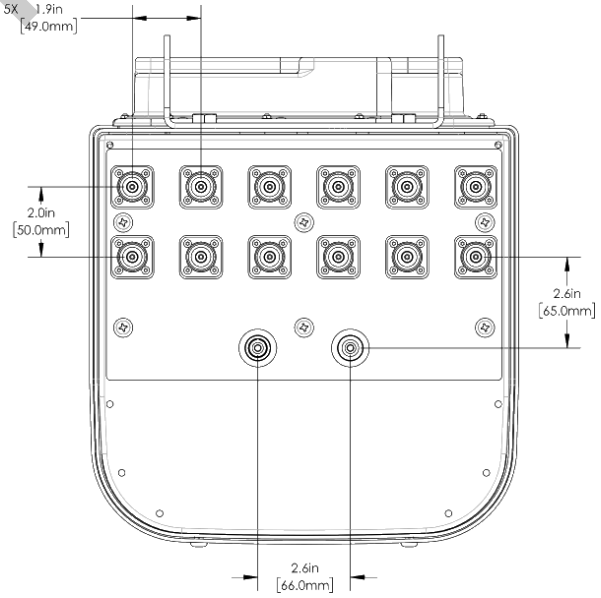


Connector Spacing

TPA65R-BU4AA (Type 1 RET)



TPA65R-BU4AB (Type 17 RET)



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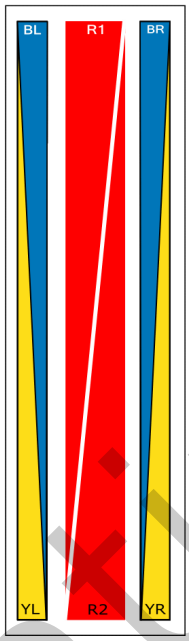
Mechanical

Element and RET configuration

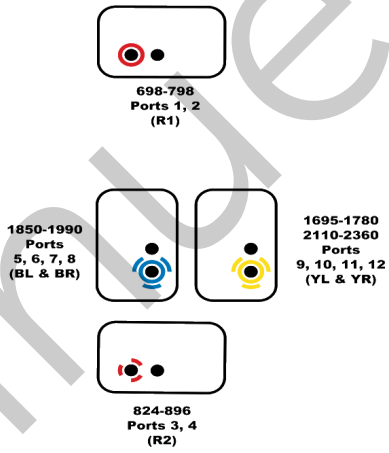
TPA65R-BU4AA and TPA65R-BU4AB

Top of antenna
Viewed from rear



Array	Ports	Freq (MHz)	Ports controlled by common RET
R1	1, 2	698-798	1, 2
R2	3, 4	824-896	3, 4
YL	9, 10	1695-1780 2110-2360	9, 10, 11, 12
YR	11, 12	1695-1780 2110-2360	
BL	5, 6	1850-1990	5, 6, 7, 8
BR	7, 8	1850-1990	

RET placement as view from rear of antenna



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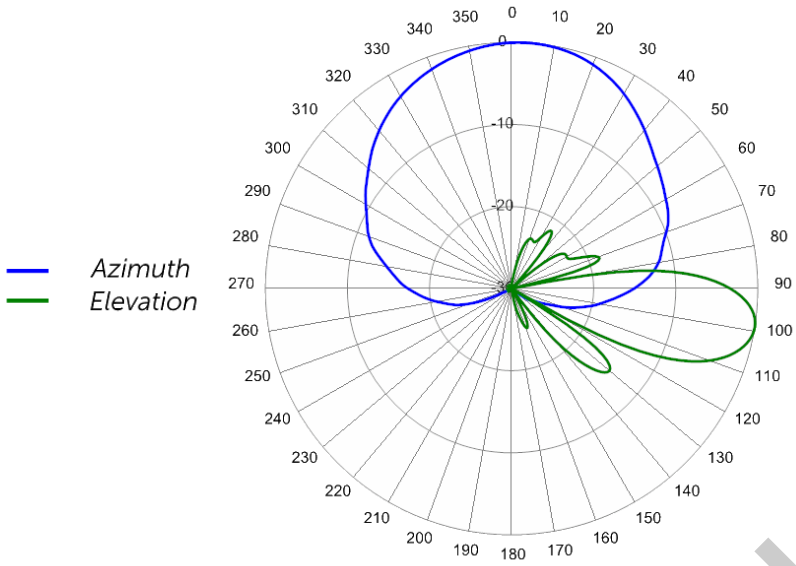
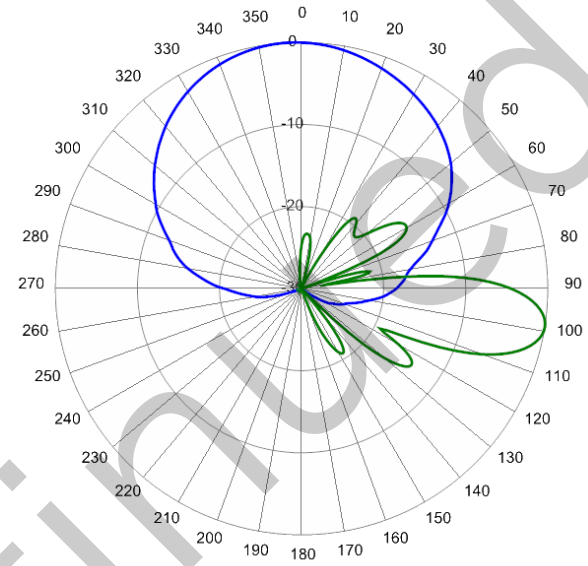
Typical Antenna Patterns

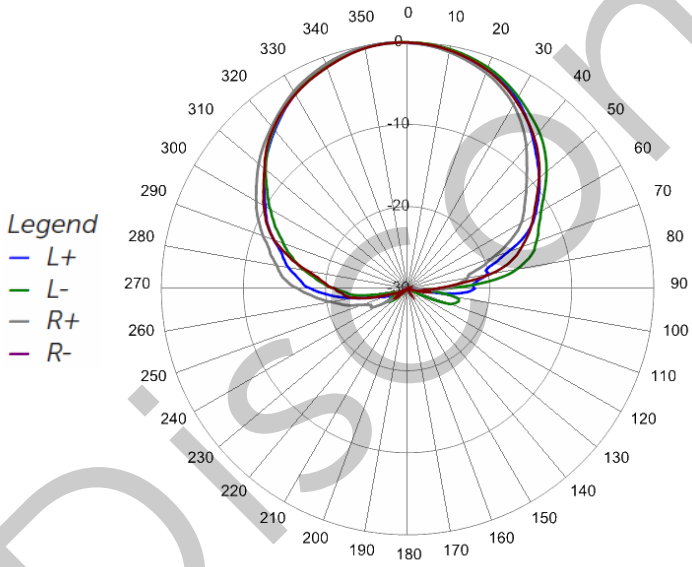
For detailed information on additional antenna patterns, contact customer support at support@cciproducts.com

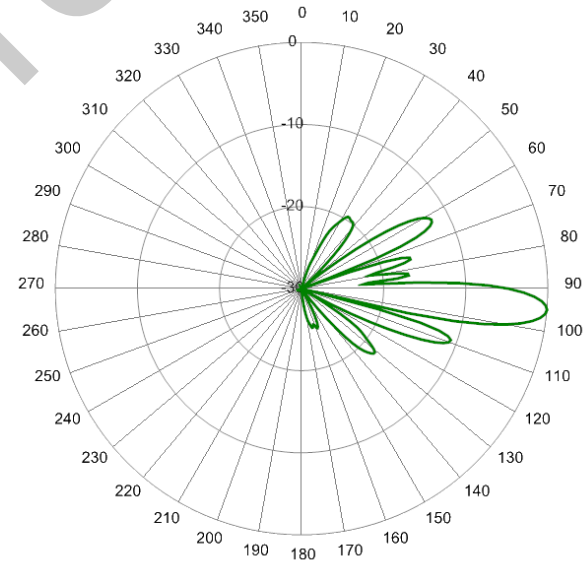


734 MHz Azimuth with Elevation 9°



860 MHz Azimuth with Elevation 9°





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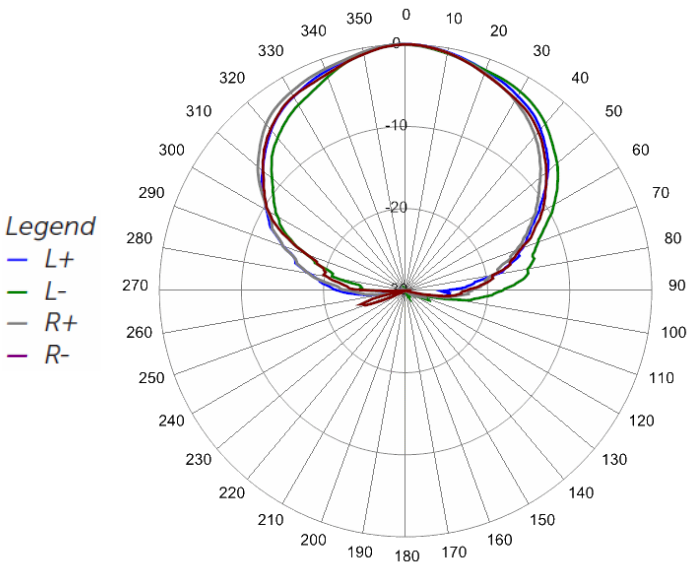
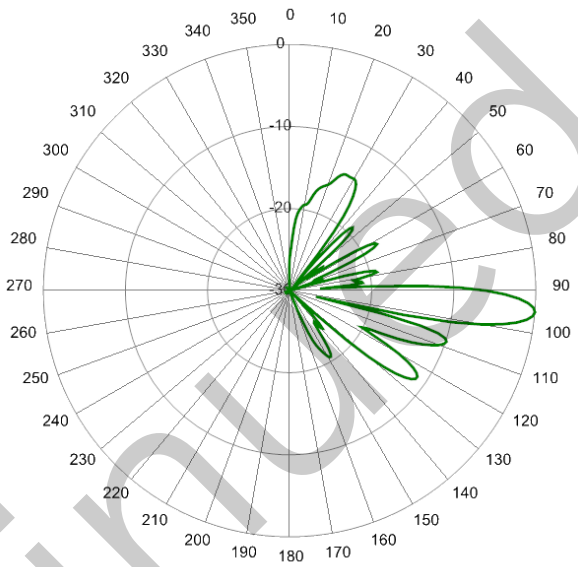
1920 MHz Azimuth



1920 MHz Elevation 5°



2350 MHz Azimuth

2350 MHz Elevation 5°

Discontinued

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Parts & Accessories

TPA65R-BU4AA-K	Four foot (1.2 m) Twelve Port antenna with 4.3-10 female connectors, four factory installed BSA-RET200 RET actuators (Type 1 external) and MBK-02 mounting bracket
TPA65R-BU4AB-K	Four foot (1.2 m) Twelve Port antenna with 4.3-10 female connectors, four factory installed BSA-RET400 RET actuators (Type 17 internal) and MBK-02 mounting bracket
MBK-02	Mounting bracket kit (top and bottom) with 0° to 10° mechanical tilt adjustment
BSA-RET200	Type 1 remote electrical tilt actuator
BSA-RET400	Type 17 remote electrical tilt actuator
OPA-CBK-AG-RRU	Twelve Port antenna to RRU AISG cable kit (Used with BSA-RET200 RET only)
OPA-CBK-RA-AG-RRU	Twelve Port antenna to RRU AISG right angle cable kit (Used with BSA-RET200 RET only)

Discontinued

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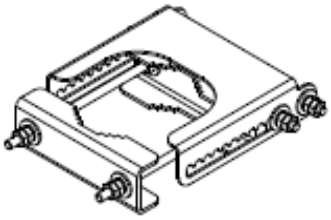
Mounting Bracket Kit

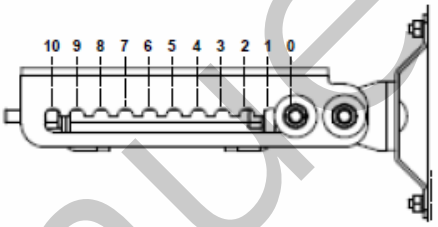
MBK-02

Mechanical

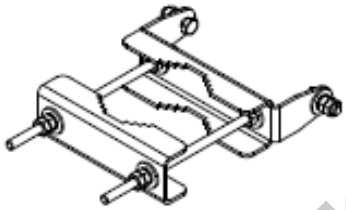
Weight	9.8 lbs (4.4 kg)
Hinge Pitch	31.5 in (800 mm)
Mounting Pole Dimension	2 to 5 in (5 to 12 cm)
Fastener Size	M10
Installation Torque	15 ft·lbs (20 N·m)
Mechanical Tilt Adjustment	0° - 10°



MBK-02 Top Adjustable Bracket



MBK-02 Top Adjustable Bracket Side View



MBK-02 Bottom Fixed Bracket

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MultiPort Series

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

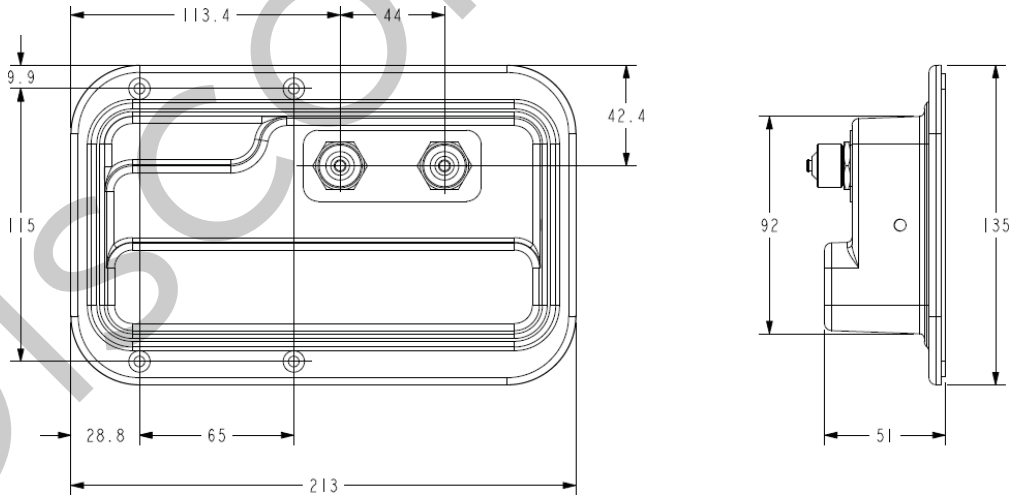
Electrical

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 x 8 pin Daisy Chain
Output Connector	Female 1 x 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=Acrylanitrile Butadiene Styrene



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MultiPort Series

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

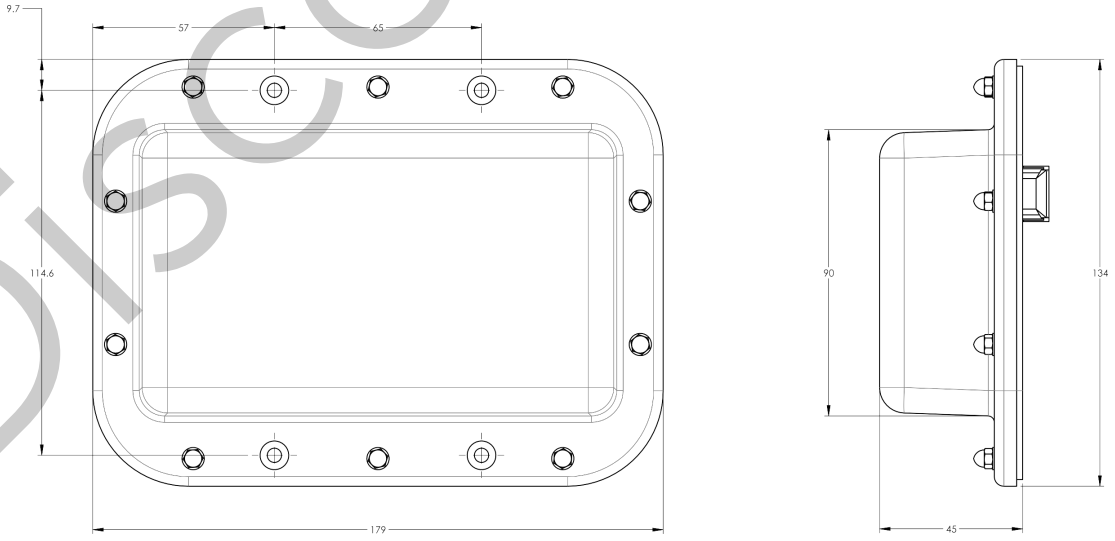
Data Interface Signal	DC
Input Voltage	10-30 Vdc
Current Consumption Tilt	100 mA at V_{in}=24 (500 mA MAX)
Current Consumption Idle	10 mA at V_{in}=24

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=Acrylanitrile Butadiene Styrene



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MultiPort Series

AISG Cable Kit

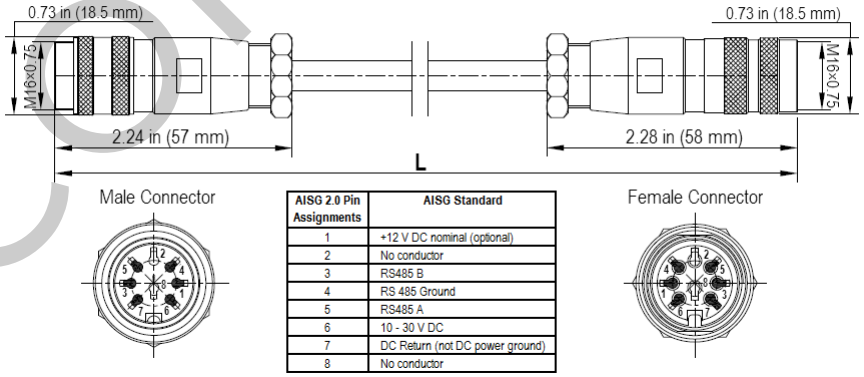
OPA-CBK-AG-RRU

Electrical Specifications

Individual Cable Part Number	AISGC-M-F-18	AISGC-M-F-10FT
Cable style	UL2464	UL2464
Protocol	AISG 1.1 and AISG 2.0	AISG 1.1 and AISG 2.0
Maximum voltage	300 V	300 V
Rated current	5 A at 104° F (40° C)	5 A at 104° F (40° C)

Mechanical Specifications

Individual Cable Part Number	AISGC-M-F-18	AISGC-M-F-10FT
Cables per kit	3	2
Connectors	2 x 8 pin IEC 60130-9 Straight male/straight female	2 x 8 pin IEC 60130-9 Straight male/straight female
Tightening torque	Hand tighten only ≈ 1.84 ft-lbs (2.5 N·m)	Hand tighten only ≈ 1.84 ft-lbs (2.5 N·m)
Construction	Shielded (Tinned Copper Braid)	Shielded (Tinned Copper Braid)
Braid coverage	85%	85%
Jacket Material	Matte Polyurethane (Black)	Matte Polyurethane (Black)
Conductors	1 twisted pair - 24 AWG 3 conductors - 19 AWG AWM style 2464	1 twisted pair - 24 AWG 3 conductors - 19 AWG AWM style 2464
Cable Diameter	0.307 in (7.8 mm)	0.307 in (7.8 mm)
Length	18 - 20 in (457 - 508 mm)	120 in (3048 mm)
Weight	0.27 lbs (0.12 kg)	0.69 lbs (.31 kg)
Minimum bend radius	3.9 in (100 mm)	3.9 in (100 mm)



AISG 2.0 Pin Assignments	AISG Standard
1	+12 V DC nominal (optional)
2	No conductor
3	RS485 B
4	RS 485 Ground
5	RS485 A
6	10 - 30 V DC
7	DC Return (not DC power ground)
8	No conductor

AISG-Male to AISG-Female Jumper Cable

Environmental Specifications

Individual Cable Part Number	AISGC-M-F-18	AISGC-M-F-10FT
Temperature Range	-40° to 80° C	-40° to 80° C
Flammability	UL 1581 VW-1	UL 1581 VW-1
Ingress Protection	IEC 60529:2001, IP67	IEC 60529:2001, IP67

Discontinued

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AISG Cable Kit

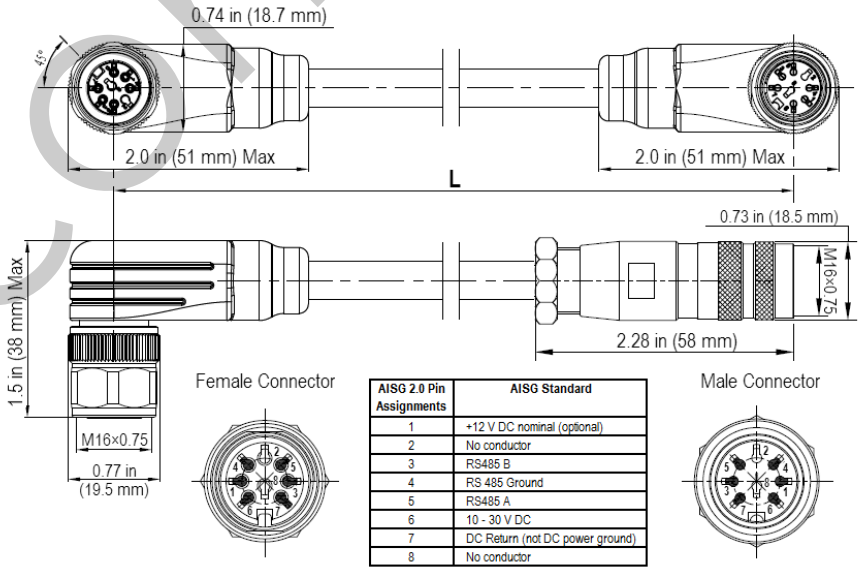
OPA-CBK-RA-AG-RRU

Electrical Specifications

Individual Cable Part Number	AISGC-MRA-FRA-20	AISGC-M-FRA-10FT
Cable style	UL2464	UL2464
Protocol	AISG 1.1 and AISG 2.0	AISG 1.1 and AISG 2.0
Maximum voltage	300 V	300 V
Rated current	5 A at 104° F (40° C)	5 A at 104° F (40° C)

Mechanical Specifications

Individual Cable Part Number	AISGC-MRA-FRA-20	AISGC-M-FRA-10FT
Cables per kit	3	2
Connectors	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
Tightening torque	Hand tighten only ≈ 1.84 ft-lbs (2.5 N·m)	Hand tighten only ≈ 1.84 ft-lbs (2.5 N·m)
Construction	Shielded (Tinned Copper Braid)	Shielded (Tinned Copper Braid)
Braid coverage	85%	85%
Jacket Material	Matte Polyurethane (Black)	Matte Polyurethane (Black)
Conductors	1 twisted pair - 24 AWG 3 conductors - 19 AWG AWM style 2464	1 twisted pair - 24 AWG 3 conductors - 19 AWG AWM style 2464
Cable Diameter	0.307 in (7.8 mm)	0.307 in (7.8 mm)
Length	20 in (508 mm)	120 in (3048 mm)
Weight	0.23 lbs (0.10 kg)	0.77 lbs (0.35 kg)
Minimum bend radius	3.9 in (100 mm)	3.9 in (100 mm)



AISG 2.0 Pin Assignments	AISG Standard
1	+12 V DC nominal (optional)
2	No conductor
3	RS485 B
4	RS 485 Ground
5	RS485 A
6	10 - 30 V DC
7	DC Return (not DC power ground)
8	No conductor

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

Discontinued

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AISG Cable Kit

OPA-CBK-RA-AG-RRU

Environmental Specifications

Individual Cable Part Number	AISGC-MRA-FRA-20	AISGC-M-FRA-10FT
Temperature Range	-40° to 80° C	-40° to 80° C
Flammability	UL 1581 VW-1	UL 1581 VW-1
Ingress Protection	IEC 60529:2001, IP67	IEC 60529:2001, IP67

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Twelve Port Multi-Band Antenna

TPA65R-BU4A

STANDARDS & CERTIFICATIONS

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

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