

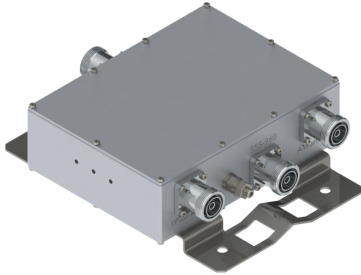


Filters & Combiners

DATA SHEET

Outdoor Broadband Triplexer

TPO-697136B-D-x2



- The Outdoor triplexer the frequency ranges 555-960 MHz, 1695-2200 MHz, and 2305-2690 MHz onto a common port.
- Supports the 600/700/850/900 bands on port 1, AWS/PCS bands on port 2, and the WCS/BRS bands on port 3
- High power >200 W per port with low insertion loss
- AISG 2.0 pass-through with Smart DC which allows DC/AISG pass through in both combine and split paths
- Low intermodulation with isolation of >50 dB port to port
- Available twin unit configuration
- High reliability of >500K Hours MTBF and multi-strike lightning protection
- Lightweight outdoor enclosure with pole or wall mounting options

Overview

The CCI Outdoor Broadband Triplexer combines the frequency ranges 555-960 MHz, 1695-2200 MHz, and 2305-2690 MHz onto a common port. Specifically intended for use in multi-band systems with limited feeder lines, this CCI Triplexer facilitates the addition of new technologies including LTE and new spectrum onto existing sites, while providing a high degree of isolation between systems. Decreasing the number of feeder lines lowers tower loading, leasing and installation expenditures and the total cost to upgrade a site is significantly reduced. An optional twin unit with two Triplexers mounted on a single bracket is also available.

The CCI Outdoor Triplexer provides full band performance for each band with low insertion loss, low Intermodulation, and high power handling. Excellent return loss delivers the best match to the antennas and base station, saving precious transmit power. The Triplexer enables full Remote Electrical Tilt (RET) and Tower Mount Amplifiers (TMA) capability by providing DC and AISG 2.0 compliant pass-through on either port using Smart DC.

Technical Description:

The Outdoor Broadband Triplexer consists of multiple filters and can be used as either a splitter or combiner to aggregate the 600/700/850/900 bands on port 1, the AWS/PCS bands on port 2, and the WCS/BRS bands on port 3 onto a common feeder line. The fully weatherproof tower mount unit has DC/AISG pass through Smart DC with full autosense DC capability, which allows DC/AISG pass through in both the combine and split paths. The Triplexer has internal multi-strike lightning protection using a multi-stage surge protection circuit.

The unit has been designed to minimize insertion loss while maximizing isolation. Particular attention has been given to the intermodulation performance of the Triplexer to minimize any passive intermodulation products from occurring. The Triplexer housing is constructed from die cast aluminum and consists of an IP67 moisture proof enclosure, with IP67 moisture proof connectors suited to long-life masthead mounting. The Triplexer can be pole or wall mounted with the included bracket. The RF ports can be configured with 4.3-10 connectors.

CCI filter and combiner products are designed and produced to ISO 9001 certification standards for reliability and quality at our state-of-the-art engineering and manufacturing facilities.



Filters & Combiners

SPECIFICATIONS

Outdoor Broadband Triplexer

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Electrical Specification

| RF Parameters | Ports | Frequency(MHz) | Specification | |
|---|---------------------------|----------------|---------------------------------|------------------------------|
| Return Loss | Common | 555 - 960 | 18 dB minimum, 20 dB typical | |
| | | 1695 - 2200 | 18 dB minimum, 20 dB typical | |
| | | 2305 - 2690 | 18 dB minimum, 20 dB typical | |
| | 600/700/850/900 | 555 - 960 | 18 dB minimum, 20 dB typical | |
| | | AWS/PCS | 1695 - 2200 | 18 dB minimum, 20 dB typical |
| | | WCS/BRS | 2305 - 2690 | 18 dB minimum, 20 dB typical |
| Insertion Loss | COMMON to 600/700/850/900 | 555 - 960 | 0.15 typical, 0.2 dB maximum | |
| | COMMON to AWS/PCS | 1695 - 2200 | 0.2 dB typical, 0.35 dB maximum | |
| | COMMON to WCS/BRS | 2305 - 2690 | 0.2 dB typical, 0.35 dB maximum | |
| Isolation | COMMON to 600/700/850/900 | 1695 - 2200 | 50 dB minimum | |
| | | 2305 - 2690 | 50 dB minimum | |
| | COMMON to AWS/PCS | 555 - 960 | 50 dB minimum | |
| | | 2305 - 2690 | 50 dB minimum | |
| | COMMON to WCS/BRS | 555 - 960 | 50 dB minimum | |
| | | 1695 - 2200 | 50 dB minimum | |
| Group Delay \pm Group Delay Variation | COMMON to 600/700/850/900 | 555 - 960 | 2 ns \pm 0.5 ns | |
| | COMMON to AWS/PCS | 1695 - 2200 | 11 ns \pm 6.0 ns | |
| | COMMON to WCS/BRS | 2305 - 2690 | 11 ns \pm 6.0 ns | |

| General Characteristics | |
|----------------------------|---|
| Impedance | 50 ohms |
| Continuous Average Power | 300 W (+54.77 dBm) max. |
| Peak Envelope Power | 5 kW (+667 dBm) max. |
| IM Performance (all ports) | <-117 dBm (-160 dBc) typical (2x +43 dBm tones) all bands |

| DC/AISG | |
|--------------------------------------|--|
| Smart DC | DC path is automatically determined, when the unit is used as a combiner or splitter |
| Combine mode standard priority* | 1. 2305 - 2690 MHz 2. 555 - 960 MHz 3. 1695 - 2200 MHz |
| | *Customer can request a different priority at time of purchase |
| Combine Path Operation | The port with DC voltage (7 - 30 V) is automatically passed to the COMMON Port. If more than one port has DC voltage present, the port with the highest priority is passed. If a short circuit is detected on the COMMON Port DC/AISG is disabled for the entire unit. |
| Split Path Operation | DC/AISG pass through will be disabled for all ports where a short circuit is detected and DC/AISG will be passed to all other ports. |
| DC Bypass Power-Up to Operating Time | <100 ms |
| Current Consumption @ voltage | 35 mA typical, 50 mA maximum (7.0 to 30 VDC) |
| Current (Single Path) | 2.5 A maximum |
| Current Common | 2.5 A maximum |
| AISG signal | 2.176 MHz, per AISG 2.0 |



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Environmental Specification

| | |
|-----------------------|---|
| Operating Temperature | -50 °C to +60 °C |
| Ingress Protection | IP67 |
| MTBF/Design Life | >500,000 hours |
| Lightning Protection | 8/20us, ±10KA max., 10 strikes per IEC61000-4-5 |

Mechanical Specification

| Model | Single (3 In, 1 Out) | Twin (6 In, 2 Out) |
|----------------------------------|---|---|
| Modularity | Single | Twin |
| Ports, In-Line | 3 x BTS, 1 x ANT | 6 x BTS, 2 x ANT |
| Connectors | 4 x 4.3-10 female | 8 x 4.3-10 female |
| Dimensions w/Bracket | 10.09 x 8.27 x 3.32 in. (256.2 x 210.0 x 84.4 mm) | 10.09 x 8.76 x 6.28 in. (256.2 x 222.5 x 159.4 mm) |
| Housing Dimensions | 6.16 x 8.27 x 2.79 in. (156.4 x 210.0 x 70.8 mm) | 6.16 x 8.27 x 5.74 in. (156.4 x 210.0 x 145.8 mm) |
| Weight | 9.0 lbs (4.1 kg) | 17.4 lbs (7.9 kg) |
| Frontal Wind Load | 111.3 N @150km/hour | 111.3 N @150km/hour |
| Lateral Wind Load | 35.0 N @150km/hour | 70.0 N @150km/hour |
| Housing Ground Lug | 1 x M8 | 1 x M8 |
| Ground Screw on Mounting Bracket | Not Applicable | |
| Finish | Housing - Powder Coat Gray; Bracket(s) - 304 Stainless Steel (Passivated per ASTM A-967) | |
| Available Mast Diameter | 3 to 6 inches (76.2 to 154.2 mm) | |
| Pole Mounting | Use integral mounting bracket and the 2 band clamps provided (Orientation, the connectors will be in-line with mast) | |
| Wall Mounting | Use integral mounting bracket and appropriate fasteners (Orientation, no restrictions) | |

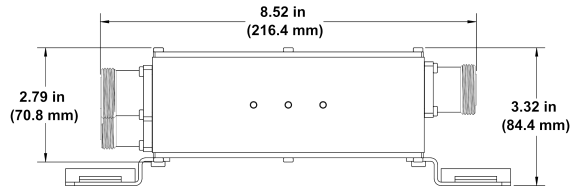
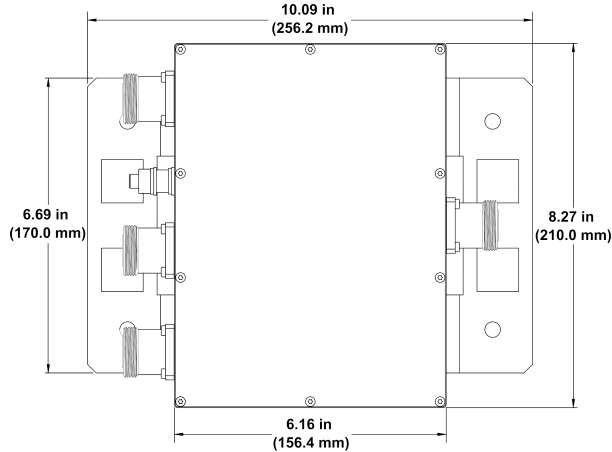


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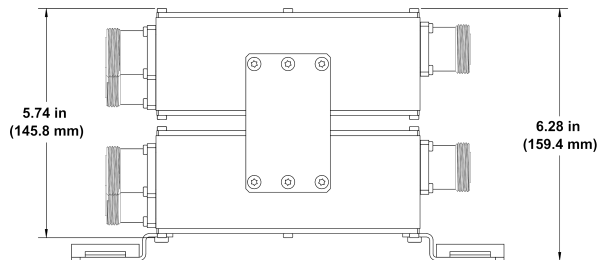
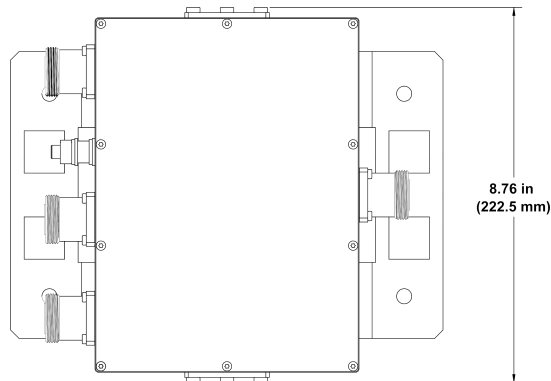
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Single Outdoor Broadband Triplexer Outline Drawing



Twin Outdoor Broadband Triplexer Outline Drawing



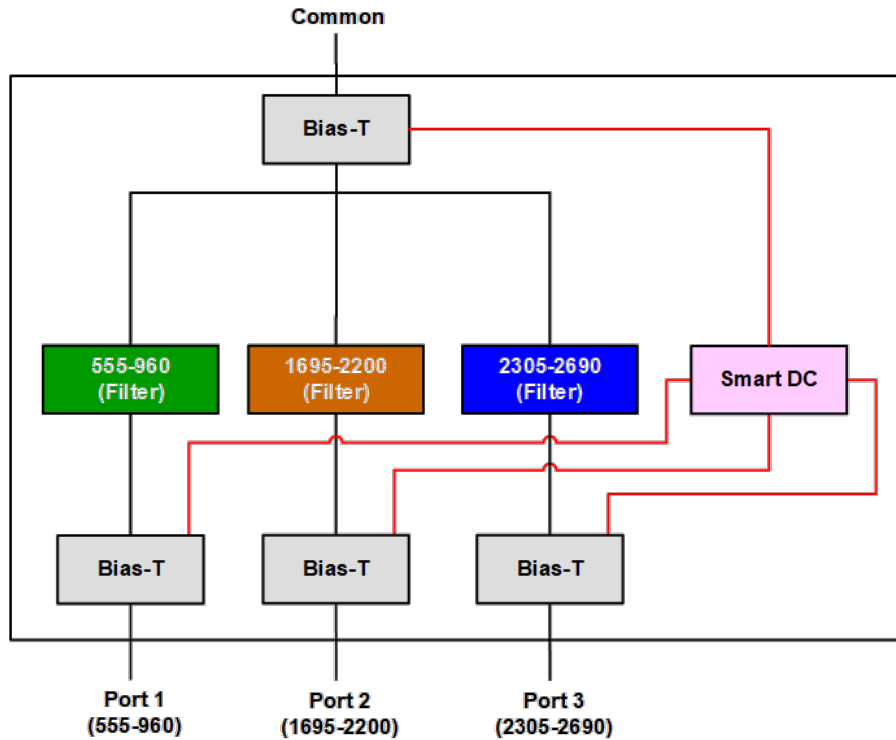
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Block Diagram



Outdoor Broadband Triplexer Block Diagram



Filters & Combiners

STANDARDS & CERTIFICATIONS

Outdoor Broadband Triplexer

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Parts & Accessories

- TPO-697136B-D-S2** Single Outdoor Broadband Triplexer with 4.3-10 connectors and Smart DC for DC/AISG pass through in either direction on any port
- TPO-697136B-D-T2** Twin Outdoor Broadband Triplexer with 4.3-10 connectors and Smart DC for DC/AISG pass-through in either direction on any port

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, IEC61000-4-5, GR-63-CORE 4.3.1, EN 60529 IP67, IP68 |

Certifications

Federal Communication Commission (FCC) Part 15 Class B, CE, CSA US, ISO 9001

