



# Filters & Combiners

DATA SHEET

1800/2100 MHz Outdoor Diplexer

DPO-1822-E-T2



- Combines the frequencies covering the 1800 MHz band (1710-1880 MHz) with the 2100 MHz band (1920-2170 MHz)
- High power 300 W per port with low insertion loss in a small, lightweight enclosure
- Low intermodulation with isolation of >50 dB port to port
- AISG 2.0 pass-through on either port with Smart DC with Autosense
- High reliability of >500K Hours MTBF and multi-strike lightning protection
- Twin or Single outdoor (IP67) Diplexer with flexible pole or wall mounting options

## Overview

The CCI Outdoor Diplexer passes the 1800 MHz band covering 1710-1880 MHz on its low band input port and with the 2100 MHz band which covers 1920-2170 MHz on its high band input port. The Diplexer combines the low band and high band signals on to a common port and is specifically intended for use in multi-band systems with limited feeder lines. The Diplexer facilitates the addition of new technologies including LTE and new spectrum to 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 significantly reduces the total cost to upgrade a site.

The CCI Outdoor Diplexer provides full band performance for each band with low insertion loss, low Intermodulation, and high 200 W per port power handling. Excellent return loss performance delivers the best match to the antennas and base station, saving precious transmit power. The CCI Diplexer enables full Remote Electrical Tilt (RET) and Tower Mount Amplifiers (TMA) control capability by providing DC/AISG 2.0 compliant pass-through on either input port using Smart DC with autosense. The diplexer is available in a single or twin unit configuration.

## Technical Description:

The CCI Outdoor Diplexer consists of multiple filters and can be used as either a splitter or combiner to aggregate the 1800 MHz with the 2100 MHz bands onto a common feeder line. The fully weatherproof tower mount outdoor Diplexer provides DC and AISG signal pass-through on either of the band specific ports, enabling power and control for TMA's & RET antennas. The Diplexer is available with DC/AISG pass using Smart DC with autosense. The Smart Bias-Tee architecture passes the DC and AISG carrier frequency from any one of the input ports to the common port while blocking the DC and AISG signals from being re-injected into the other input ports. The Diplexer 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 Diplexer to minimize any passive intermodulation products from occurring. The Diplexer housing is constructed from die cast aluminum and consists of an IP67 moisture proof enclosure, with IP67 immersion proof connectors suited to long-life masthead mounting. The Diplexer 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.



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## SPECIFICATIONS

### 1800/2100 MHz Outdoor Diplexer

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#### Electrical

RF Parameters	Ports	Frequency(MHz)	Specification
Return Loss	COMMON	1710-1880	20 dB minimum
		1920-2170	20 dB minimum
	1800 MHz	1710-1880	20 dB minimum
	2100 MHz	1920-2170	20 dB minimum
Insertion Loss	COMMON to 1800 MHz	1710-1880	0.3 dB maximum
	COMMON to 2100 MHz	1920-2170	0.3 dB maximum
Isolation	COMMON to 1800 MHz	1920-2170	50 dB minimum
	COMMON to 2100 MHz	1710-1880	50 dB minimum
Group Delay	COMMON to 1800 MHz	1710-1880	25 ns maximum
	COMMON to 2100 MHz	1920-2170	27 ns maximum
Group Delay Variation	COMMON to 1800 MHz	1710-1880	6 ns maximum
	COMMON to 2100 MHz	1920-2170	8 ns maximum

DC/AISG	
DC Autosense	DC path is automatically determined, when the unit is used as a combiner or splitter.
Combine mode priority	1. 1710 - 1880 MHz 2. 2300 - 2700 MHz 3. 1920 - 2170 MHz 4. 690 - 960 MHz
DC Autosense Combine Mode Operation	The port with DC voltage (7 to 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.
DC Autosense, Splitter Mode Operation	DC/AISG pass through will be disabled for ports where a short circuit is detected and DC/AISHG will be passed to all other ports.
DC Bypass Power-Up to Operating Time	<100 ms
Current Consumption @ TBD voltage	35 mA typical, 50 mA maximum (7.0 to 30 VDC)
Current (Single Path)	2.5 A
Current Common	2.5 A
AISG signal	2.176 MHz, per AISG 2.0

General Characteristics	
Impedance	50 ohms
Continuous Average Power	300 W (+54.77 dBm) maximum
Peak Envelope Power	1.5 kW (+61.76 dBm) maximum
Intermodulation Performance	<-117 dBm (-160 dBc) at 2 x +43 dBm tones all bands

#### Environmental

Operating Temperature	-40 °C to +65 °C
Ingress Protection	IP67
Relative Humidity	5% - 95%
MTBF/Design Life	>500,000 hours/10 years?
Lightning Protection	8/20us, ±20KA max, 10 strikes per IEC61000-4-5



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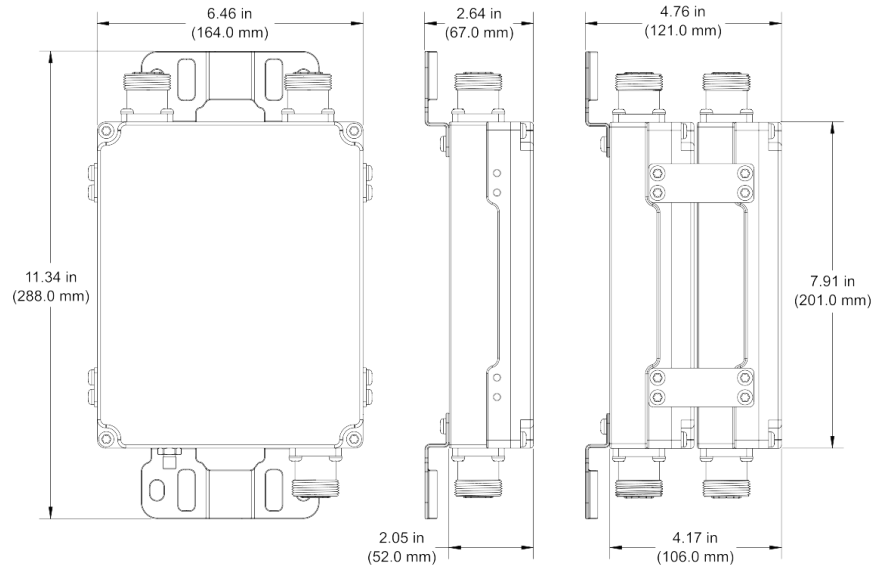
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#### Mechanical

Model	DPO-1822-x-Sx (2 In, 1 Out)	DPO-1822-x-Tx (4 In, 2 Out)
Modularity	Single	Twin
Ports, In-Line	2 x BTS, 1 x ANT	4 x BTS, 2 x ANT
Connectors	3 x 4.3-10 female	6 x 4.3-10 female
Weight with brackets	2.2 Kg	4.5 Kg
Dimensions with brackets	11.34 x 6.46 x 2.64 in. (288.0 x 164.0 x 67.0 mm)	11.34 x 6.46 x 4.76 in. (288.0 x 164.0 x 121.0 mm)
Dimensions enclosure only	7.91 x 6.46 x 2.05 in. (201.0 x 164.0 x 52.0 mm) per Diplexer	
Housing Ground Lug	1 x M8	1 x M8
Finish	Housing - Powder Coat Gray; Bracket(s) - 304 Stainless Steel (Passivated per ASTM A-967)	
Packaging Size	TBD	19.29 x 15.35 x 15.75 in. (490 x 390 x 400 mm) for 4 pcs.
Packaging Weight	TBD	51.5 Lbs.(23.4 kg) for 4 pcs.
Available Mast Diameter	3 to 6 inches (76.2 to 152.4 mm)	
Pole Mounting	Use integral mouting bracket and the 2 band clamps provided (Orientation, the connectors will be in-line with mast)	
Wall Mounting	Use integral mouting bracket and appropriate fasteners (Orientation, no restrictions)	



Outdoor Diplexer Outline Drawing



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## STANDARDS & CERTIFICATIONS

1800/2100 MHz Outdoor Diplexer

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### Parts & Accessories

- DPO-1822-E-S2** Single Outdoor Broadband Diplexer with 4.3-10 connectors and Smart DC for DC/AISG pass-through in either direction on any port
- DPO-1822-E-T2** Twin Outdoor Broadband Diplexer 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



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