CPDC4X1

4X1 GPS Combiner Technical Product Data

Features

- Precise Amplitude Balance
  - Less than 1 dB variation between ports.
- Flat Group Delay
  - Less than 1ns variation between L1 and L2.
- Low Insertion Loss
  - -4.0 dB loss is typical across all operating frequencies.
- Wide Accepted Frequency Range
  - Accepts signals from the entire L-Band, covering all major GNSS constellations.
- Matched Phase Balance
  - Less than 5° of variation between ports.

Description

The **CPDC4X1** GPS Combiner (GNSS Combiner) is a four input, one output device. The frequency response covers the entire L-band (all GNSS Frequencies) with excellent flatness. In the standard configuration, DC is passed from a connected GPS device through the combiner to all inputs (antenna ports). The connected GPS device or receiver will continue to maintain a GPS lock in the event of an antenna failure. Contact GPS Networking Technical Support for any questions regarding standard configurations or special configurations at salestech@gpsnetworking.com or 1-800-463-3063.

Use Cases

- Combining a signal from four GPS antennas to provide redundancy in case of antenna failure
- Combining a signal from four GPS antennas to protect against environmental interruptions
- GNSS-optimized signal combination for laboratory test and measurement.
  - 65% less loss than daisy chaining two standard resistive combiners.

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Electrical Specifications, TA=25°C

General Specification

Parameter	Notes	Min	Typ	Max	Units
Frequency Range	Covers all major GNSS constellations.	1.1		1.7	GHz
Characteristic Impedance	Unused ports should be terminated with 50Ω loads.		50		Ω

GPS L1 & L2 RF Specification (1)

Parameter	Notes	Min	Typ	Max	Units
Input SWR	Input Standing Wave Ratio: S11			2.0:1	-
Output SWR	Output Standing Wave Ratio: S22		1.8:1	2.0:1	-
Insertion Loss	The loss that occurs from the input port to any output port: S21	-6.5	-7.5	-8.5	dB
Gain Flatness	The difference in loss or gain between the L1 and L2 frequencies.			1.0	dB
Amplitude Balance	The difference in gain or loss between each output port.		0.25	1.0	dB
Phase Balance	The difference in phase variation between each output port.			5	deg
Isolation	The amount of attenuation between two output ports.		L1:28.5 L2:28.9		dB
Group Delay Flatness	The difference in signal delay between the L1 and L2 frequencies.			1.0	ns

(1): Performance is slightly reduced around GPS L5. If working on sensitive L5 applications, please request performance data.

External Power Options (Networked Option)		
Source Voltage Options	Voltage Input	Style
	110VAC	Transformer (ITA Type A Wall Mount)
	220VAC (Euro)	Transformer (ITA Type C Wall Mount)
	240VAC (United Kingdom)	Transformer (ITA Type G Wall Mount)
	Customer Supplied DC 9-32 VDC	MIL-DTL-5015 10SL DC Connector (Includes Mate)
Output Voltage Options (2)	DC Voltage Out	Max Current out For Corresponding Vout
	3.3V	110mA
	5V	130mA
	9V	140mA
	12V	180mA
	15V	220mA
	Custom	Custom
Standard DC Configuration without External Power Option		
All ports pass DC		
200Ω loads standard for all DC Blocked outputs		
Standard DC Configuration with any External Power Option (AC/DC or Military DC)		
All DC Blocked Outputs feature 200Ω load in standard configuration		
User selected output DC voltage		
RF Connector Options		
Connector Options	Connector Style	Charge
	Type N-female	No Charge
	Type SMA-female	No Charge
	Type TNC-female	No Charge
	Type BNC-female	No Charge
	Other	Contact GPS Networking

(2): With Network Option, any RF port (input or output) can be specified to Pass DC or Block DC

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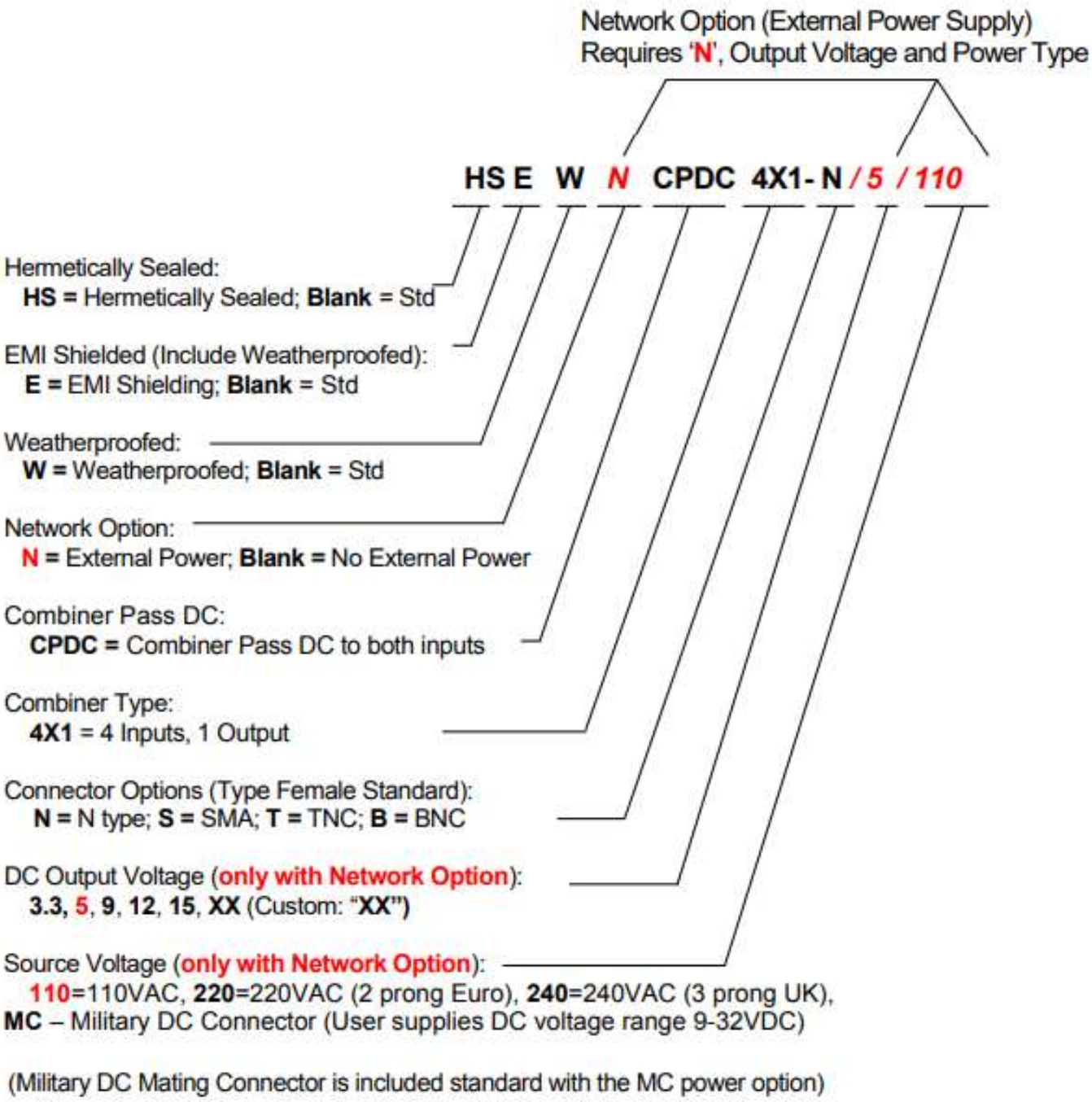
Part Number Configuration



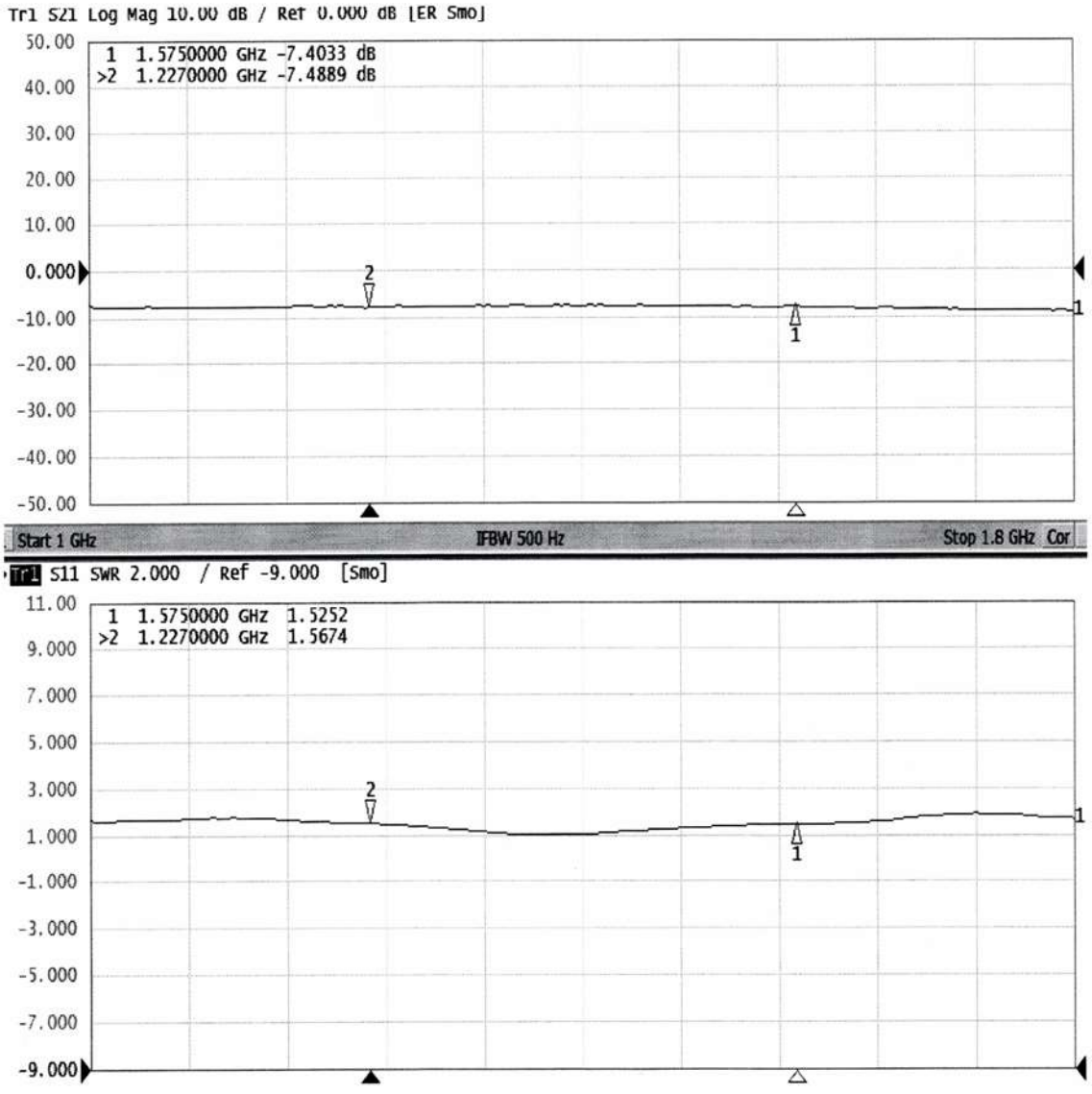
CPDC4X1

Performance

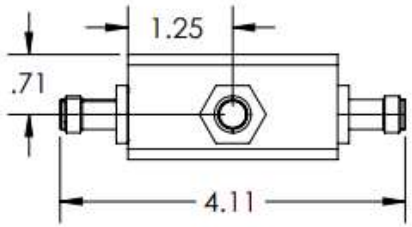
CPDC4x1 Standard Gain Typical

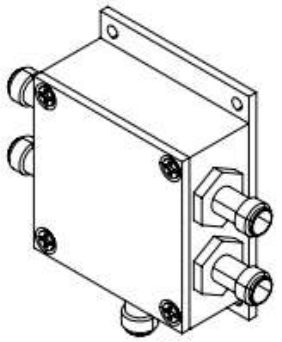
Each CPDC4X1 ships with a test sheet that verifies critical performance characteristics, such as gain, input VSWR, and amplitude balance; a typical VNA test sheet is shown below.

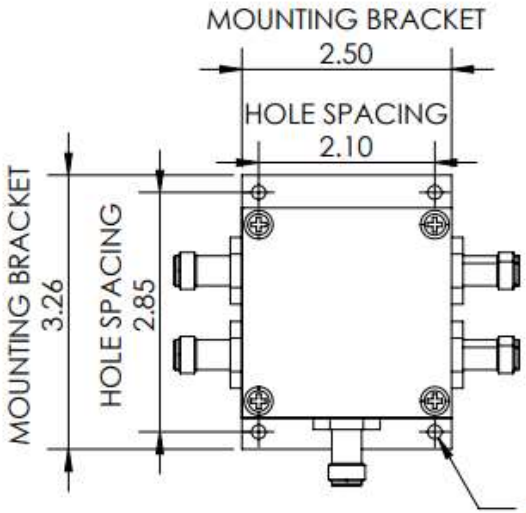
GPS NETWORKING **Test Data**

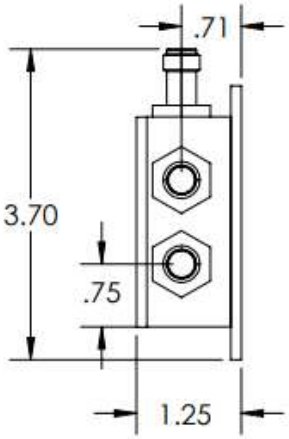


Mechanical









Mechanical
Dimensions:
Depth: 1.25"
Width: Body: 2.5"
Baseplate: 3.26"
Height: Body: 2.5"
Dimensions listed above
do not include connectors
Weight: 9.9oz (281g) MAX
Maximum weight is with female
N-connector option
Weight will vary by connector type
Operating Temperature Range:
-57°C to +87
Housing and Baseplate Finish:
Electroless Nickel Plated
(MIL-C-26074C, Class 1
0.0001-0.0003 MAX)
Lid Finish: Anodize, Type II,
Class 2, Black, per MIL-A-8625

Female TNC connectors shown, other options available
MC - Military DC connector shown, other options available
EMI shielding may increase dimension by 0.02 inches per axis

GPS NETWORKING
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CPDC4X1
Passive 4X1 GPS Combiner

7-2-2021	MM	Scale:1:2	Rev: 1	Sheet 1 of 1	Units are inches and degrees

Tolerances:
X ± 0.030
XX ± 0.015
XXX ± 0.005
Angle ± 1°

Contact us at salestech@gpsnetworking.com for 3D models or CAD drawings.