

RRMS116 SPLITTER

Rugged Rack-Mount GPS Signal Divider



DESCRIPTION

The RRMS116 Rack-Mount Splitter is a one-input, sixteen-output GPS L1/L2 signal divider that is 2U high and fits within a standard 19" rack. Typical use is where an input from a single active GPS roof antenna is split evenly between sixteen outputs. The RRMS116 is configured to work with a MIL-STD-704 or MIL-STD-1275 compliant 28VDC Power Supply that will power the active GPS antenna connected to J2. In this scenario, the RF outputs (J3 - J18) would feature a 200Ω DC load to simulate an antenna DC current draw for any receiver connected to those ports.

FEATURES

- Standard 19 inch Rack Mount Configuration
- Designed to withstand shock and vibration
- Passes GPS L1/L2
- Numerous options available

OPTIONS

The RRMS116 splitter is available with custom gain and various Mil Power connectors. Please contact GPS Source via phone, fax, email, or visit the website for further information on product options and specifications.

RRMS116 Splitter Data Sheet

1. RRMS116 Specifications

1.1 Electrical Specifications

Table 1-1. Electrical Specifications

Operating Temperature -40°C to 85°C

Parameter		Conditions	Min	Typ	Max	Units
Frequency Range		Ant: Any Port; Unused Ports: 50Ω	1		1.7	GHz
In/Out Impedence		Ant: J3-J18		50		Ω
Gain	Standard	Amplified Ant: Any Port; Unused Ports: 50Ω	6	8	10	dB
	Custom ⁽¹⁾	Amplified As Specified (xdB, from 0 to 14dB)	X - 1.5	X	X + 1.5	
Input SWR		All Ports 50Ω			2.0:1	—
Output SWR		All Ports 50Ω			2.0:1	—
Noise Figure		Ant: Any Port; Unused Ports: 50Ω			4.5	dB
Gain Flatness		[L1 – L2] Ant: Any Port; Unused Ports: 50Ω			4	dB
Amp. Balance		[J2] Ant: Any Port; Unused Ports: 50Ω			3	dB
Phase Balance		Phase [J2] Ant: Any Port; Unused Ports: 50Ω			2.0	Degree
Group Delay Flatness		$T_{d,max} - T_{d,min}$; Ant: Any Port			1	ns
Isolation		Adjacent Ports: Ant – 50Ω	27			dB
Amplified (Hi Iso.)		Opposite Ports: Ant – 50Ω	31			
Input I_{P3}		Ant: Any Port; Unused Ports 50Ω 1MHz Tone Spacing		-21		dBm
Input P_{1dB}		Ant: Any Port; Unused Ports 50Ω		-31		dBm
Current ($I_{internal}$)		Current Consumption of device (excludes Draw)			220	mA
Draw Current		Powered, Military or Quick Connect Option			100	mA
Max RF Input		Max RF Input Without Damage			20	dBm

1. Custom gain options available

Table 1-2. DC IN and OUT Specifications

Operating Temperature -40°C to 85°C

Parameter		Condition	Min	Typ	Max	Units
DC IN	DC Block	Any DC Blocked Port with a 200Ω Load			14	VDC
DC OUT⁽²⁾	Powered	Military or Leads Connect Option	8		32 ⁽¹⁾	VDC
		Military Connection; Ant thru Current 75mA		5		

- Notes: 1. The 1275B spike and surge protection assumes a 28V system, 33.3V, or greater which will trigger over the voltage protection circuitry.
 2. DC output voltage to the antenna port (J2) can be customized to 5V or 7.5V (5V default).

1.1.1 Power Military Connectors PMS-1275/XX and PMS-704/XX Option

Figure 1-1.

Pin	Description	PMS-1275/XX and PMS-704/XX Options ⁽¹⁾
A	Positive	
B	Ground	

Note: 1. Image is not to scale.

1.1.2 Power Military Connector MS38999-1275/XX and PMS38999-704/XX Option

Figure 1-2.

Input	Description	PMS38999-1275/XX and PMS38999-704/XX Options ⁽¹⁾
A	Positive	
B	Ground	
C	No Connect	

1.2 General Specifications

Description		Measurement
Weight		7.5 lbs
Mean Time Between Failure (MTBF) ⁽¹⁾	Active Configuration	190,392 at 40°C

Note: 1. Calculation derived using Airborne Inhabited Cargo parameters per MIL-STD-217F

2. Performance Data

2.1 RRMS116 — 8dB Amplification

Figure 2-1. Gain vs. Frequency

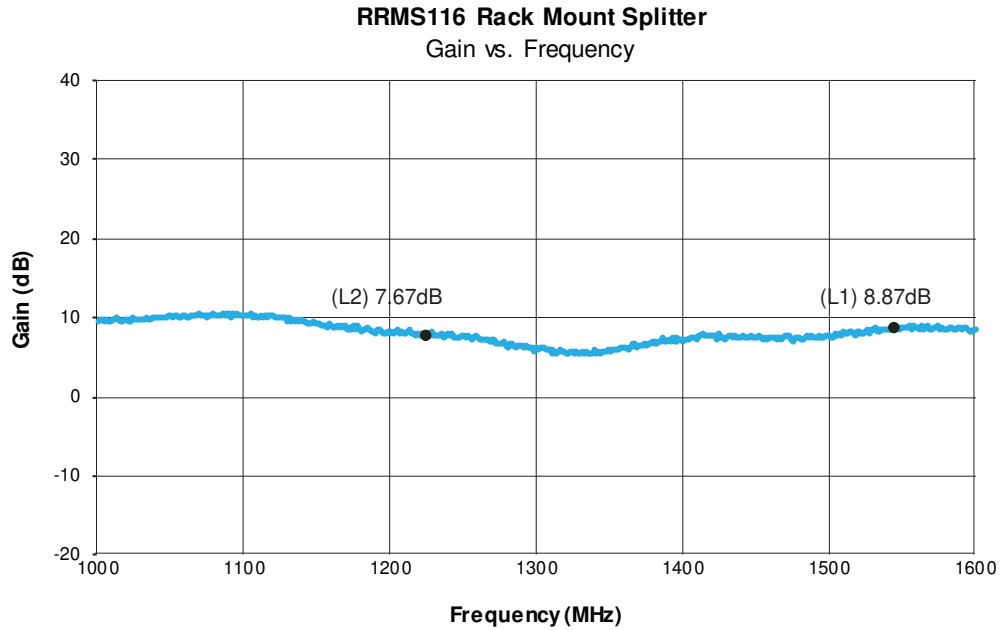
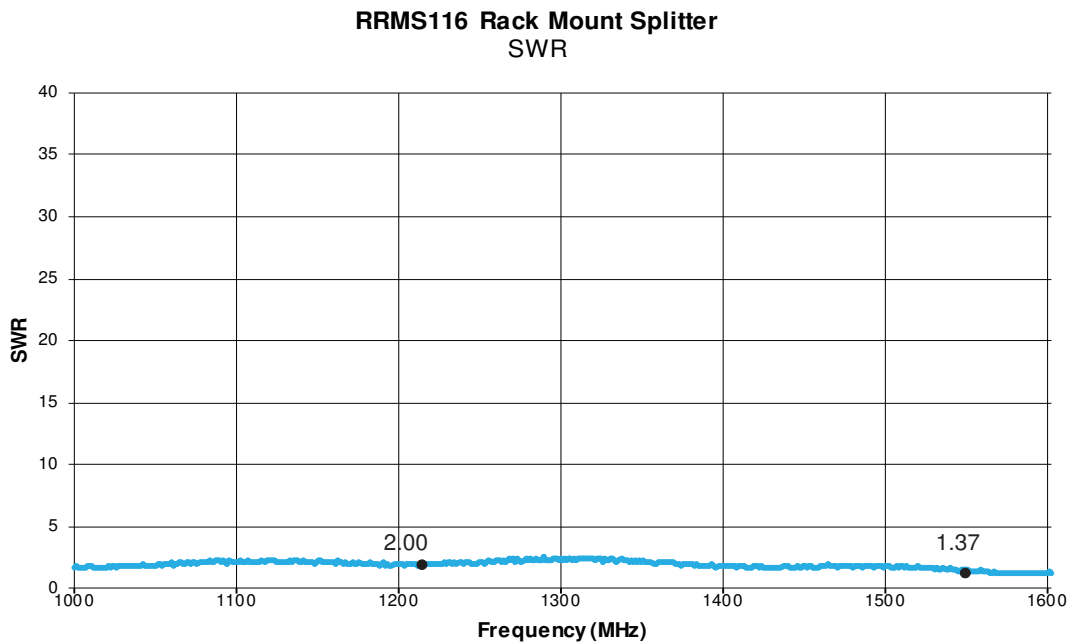


Figure 2-2. SWR vs. Frequency



3. Environmental Requirements

3.1 Altitude

The RRMS116 can operate without degradation at altitudes up to 10,000 feet above sea level. The non-operating altitude is up to 50,000 feet.

3.2 Humidity

The RRMS116 is capable of meeting the requirements of a ten-day humidity test conducted per MIL-STD-810C, Method 507.1; Procedure I. RRMS116 is designed to withstand exposure to 95% relative humidity at a temperature of 30°C for 28 days.

3.3 Shock and Vibration

The assembly can withstand the non-operational vibration and shock environments induced during vehicle transport. It has been tested to MIL-STD-810G, Method 5.14.7, Method 5.16.6, and Method 5.16.7.

3.4 Fungus

Designed to meet the requirements of Fungus conditions per requirement of MIL-STD-810, Method 508, per requirement 4 of MIL-HDBK-454.

3.5 Explosive Atmosphere

The RRMS116 is designed for operation in the presence of explosive mixtures of air and jet fuel without causing explosion or fire at atmospheric pressures corresponding to altitudes from -1,800ft to 50,000ft. The RRMS116 does not produce surface temperatures or heat in excess of 400°F. The RRMS116 does *not* produce electrical discharges at an energy level sufficient to ignite the explosive mixture when the equipment is turned on or off or operated. The RRMS116 meets the requirements of MIL-STD-810C, Method 511.1, and Procedure II. Hermetically sealed equipment meeting the Requirements of MIL-STD-202, Method 112D, or MIL-STD-883, Method 1014.7 (as applicable), and not exceeding a Helium leakage rate of 1×10^{-7} cc/s are exempt from this requirement.

3.6 Flammability

The RRMS116 is self-extinguishing or nonflammable and is designed to meet the Requirements of Paragraph 5.2.4 of MIL-STD-1587 and Requirement 3 of MIL-HDBK-454.

3.7 Finish and Colors

Paint has been applied to protect the exterior of the assembly from corrosion. Top coat color is matte black. Connector surfaces are free from paint.

3.8 Corrosion Resistance

The RRMS116 has been designed to constrain corrosion resulting from dissimilar materials per MIL-HDBK-729, section 6.

3.9 Electromagnetic Interference and Compatibility Test

The RRMS116 performs its intended function and operation does not degrade the performance of other equipment or subsystems. The following table defines the test requirements and test procedures for conducting the required electromagnetic compatibility testing. The RRMS116 is designed to meet the requirements of MIL-STD-461E:

Table 3-1. Test Requirements & Procedures

Test	Description	
CE102	Conducted Emissions Power Leads	10kHz to 10MHz
CE106	Conducted Emissions Antenna Terminal	10kHz to 31.5GHz
CS101	Conducted Susceptibility Power Leads	30Hz to 150kHz
CS103	Conducted Susceptibility Antenna Port	Intermodulation
CS105	Conducted Susceptibility Antenna Port	Cross-Modulation
CS114	Conducted Susceptibility Bulk Cable Injection	10kHz to 200MHz
RE102	Radiated Emissions Electric Field	10kHz to 18GHz
RS103	Radiated Susceptibility Electric Field	2MHz to 18GHz
Indirect Lightning ⁽¹⁾	Damped Sinusoidal transients	RF Leads, 10kHz to 100MHz
		Power Leads, 10kHz to 100MHz

Note: 1. For additional detail regarding Indirect Lightning, please contact GPS Source.

4. Product Options



Electrostatic Sensitive Device (ESD)

Remove electrostatic protection at use or in a protected area.

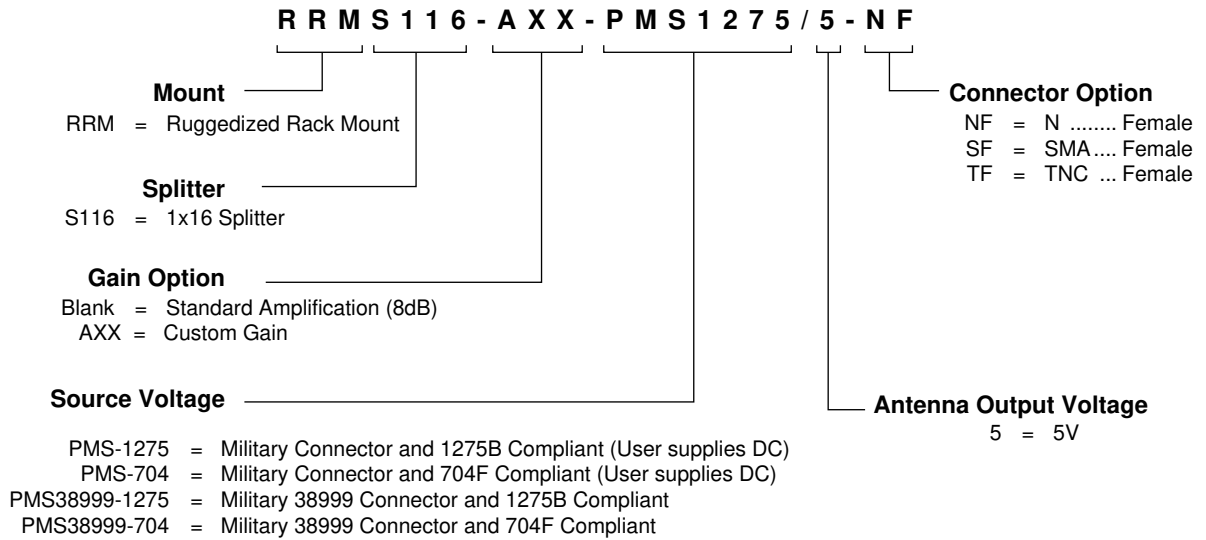
Reuse packaging materials for the unserviceable item. See DOD-HDBK-263 for protective handling or testing measures for this item

Table 4-1. RRMS116 Available Options

Power Supply		
Source Voltage	Voltage Input	Type
	DC 8-32VDC	Military Style Connector
Output Voltage ⁽¹⁾	DC Voltage Out	
	5.0	
Connector	Connector Type	Limitations
	SMA (Female)	N/A
	TNC (Female)	
	N (Female)	
Housing		
Housing	Housing Type	Limitations
	19 x 8 x 3.5 in Rack Mount	N/A
Port ⁽¹⁾		
DC Blocked	J3 – J18 are DC Blocked with 200Ω Load; DC is passed to ANT	

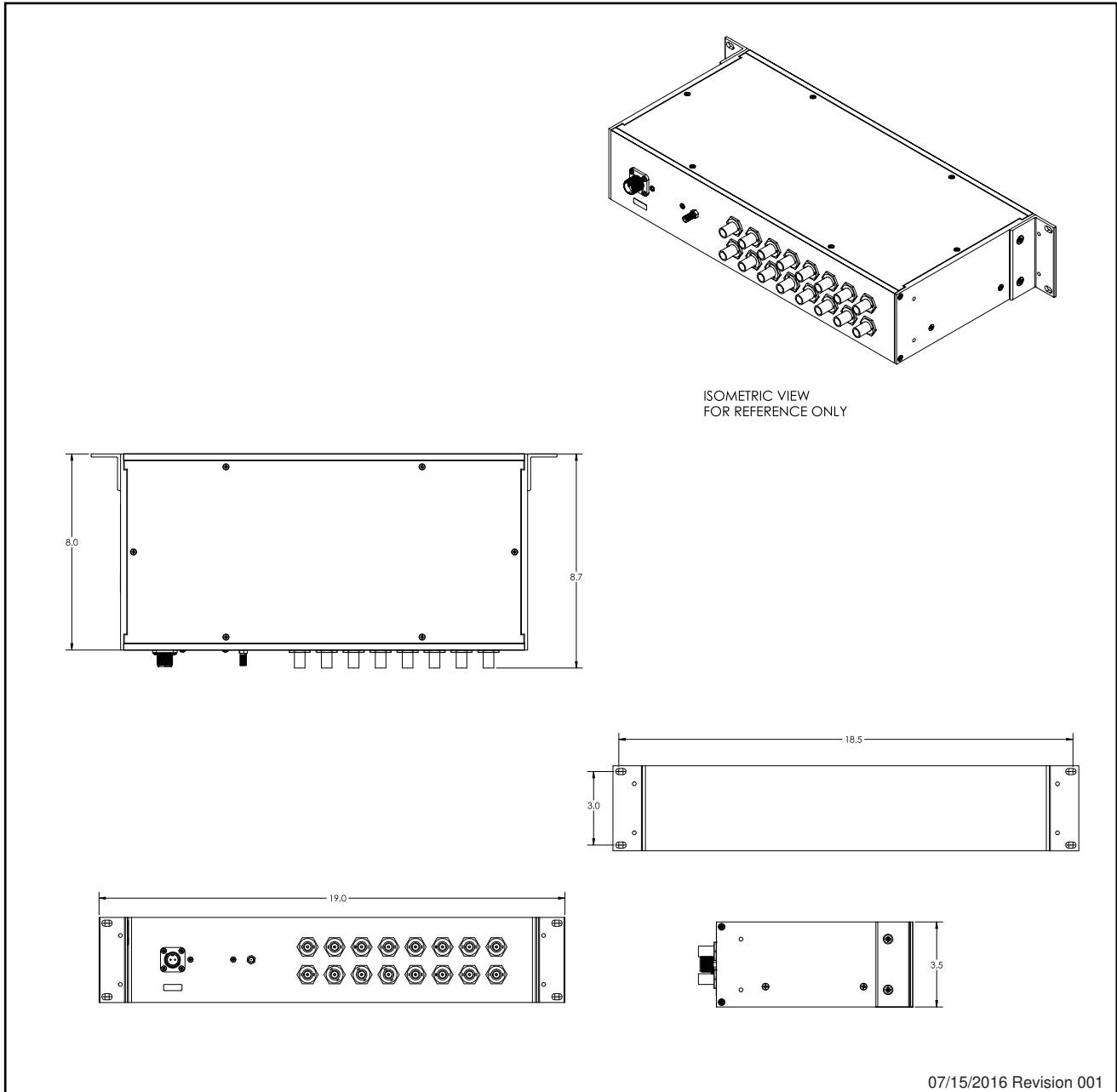
Notes: 1. RF outputs are DC Blocked standard. Call for special pass DC configurations.

5. Product Code Decoder



Note: To have product/part codes customized to meet exact needs, contact GPS Source at techsales@gpssource.com or visit the website at www.gpssource.com.

6. Mechanical Drawing



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GPS Source Part No. FSA-AGS-ABX-BBZ	Finish As Provided	Size C	Mass 7.65lb	Tolerances	
Description Ruggedized Rack Mount RMS116 GPS Splitter FSA 1 IN 16 OUT	Material See BOM	3 rd Angle Projection 		Linear .X = ±0.1 .XX = ±0.01	Angular ±1° RADII See Linear
All materials and finishes shall comply with European Union RoHS and are lead free. Dimensions are in inches unless otherwise specified.					



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