TECHNICAL PRODUCT DATA SHEET

IRMS216

2x16 Integrated Rack Mount GNSS Splitter

DESCRIPTION

The IRMS216 dual input, 16 output splitter amplifies and splits the GPS/GNSS signal from two GPS receive antennas while granting up to 16 GPS/GNSS receivers signal access at any time.

The standard configuration of the IRMS216 has dual +/48V telecom power and a regulated DC output voltage, with a couple power options available. The output voltage passes through both antenna input ports and powers the active GPS antennas connected to that port. The DC blocked outputs feature a 200 Ohm DC resistive load to ground simulating an antenna DC current draw for any receiver connected to those ports.

Redundancy is built into the unit with dual antenna inputs. The IRMS216 has the ability to automatically switch antennas, allowing all connected devices to remain fully functional in the event of an antenna failure. An external rotary switch on the front panel allows the user to manually select the desired antenna inputs.

A GNSS receiver within the IRMS216 monitors the antenna signal strength. There is also internal monitoring of both antennas' current draw. The IRMS216 will automatically choose the healthiest antenna. The device has been designed so that antenna selection can optionally be controlled externally via a rotary switch overriding the internal automatic switch mechanism.

The dual power supply option allows two internal power supply units to share the load. If one unit is not available, the other will seamlessly take over without any loss of power. Power supply LED fault indicator is clearly visible on the front panel, and can also transmitted using the contacts made available on the back panel.

FEATURES

- 16 GPS/GNSS Output Ports
- Dual Antenna Input Ports
- +/-48VDC Redundant Power Supplies
- Embedded Antenna Health Sensor
- Automatic Internal Antenna Port Switch
- External Antenna Port Selection Capability
- Passes GPS L1/L2, GLONASS L1/L2, Galileo, Beidou
- Antenna Fault Indicator Lights
- Power Fault Indicator Light
- Embedded Receiver to Monitor Signal
- Dual Power Option
- Standard 19 Inch Rack Mount Configuration

OPTIONS

The IRMS216 splitter comes with many available options to meet specific needs. Please contact GPS Source via phone, email, or visit the website for further information on product options and specifications.

1. IRMS216 Specifications

1.1 Electrical Specifications

Table 1-1. Operating Temperature -40°C to 85°C

Parameter		Conditions		Min	Typical	Max	Units
Frequency Range		Antenna (IN1, IN2): Any Port; Unused Ports: 50 Ohm		1.0		1.65	GHz
Gain	Amplified (Normal)	Antenna (IN1, IN2): Any Port; Unused Ports: 50 Ohm		-2	0	+2	dB
	Amplified (Custom)	As Specified (XXdB, 0dB to 20dB)		X - 2	X	X + 2	dB
In/Out Impedance		Antenna: (IN1, IN2), OUT1 to OUT16			50		Ohm
Input SWR		All Ports 50 Ohm				2.0:1	—
Output SWR		All Ports 50 Ohm				2.0:1	—
Noise Figure		Antenna (IN1, IN2): Any Port; Unused Ports: 50 Ohm, Gain = 0dB				7	dB
Gain Flatness		|L1 – L2| Antenna: (IN1, IN2) - Any Port; Unused Ports: 50 Ohm				4	dB
Amp. Balance		|Output 1 – 16|, Antenna: (IN1, IN2) - Any Port; Unused Ports: 50 Ohm				4	dB
Phase Balance		Phase (Output 1 - 16), Antenna: (IN1, IN2) - Any Port; Unused Ports: 50 Ohm				1.0	Degree
Signal Delay		T_d, Antenna - Any Port				8	ns
Delay Flatness		$T_{d, max} - T_{d, min}$, Antenna - Any Port				1	ns
Isolation	Amp (Gain = 0dB)	Measured at 1227MHz and 1575MHz Opposite Ports: Ant – 50 Ohm Adjacent Ports: Ant – 50 Ohm		30 20			dB
Input I_{P3} (Amplified)		Antenna: Any Port; Unused Ports 50 Ohm, Tone Spacing = 1MHz		2			dBm
Input P_{1dB} (Amplified)		Antenna: Any Port; Unused Ports 50 Ohm,		-8			dBm
AC IN		Wall Mount Transformer (various international plug types included)		110		240	VAC
DC IN	12V	Push-in Terminal Connector (Mating Connector)		12		16	VDC
	+48V -48V	Push-in Terminal Connector (Mating Connector)		+20 -20	+48 -48		VDC
DC Blocked	DC Blk	All Output Ports Blocked with a 200 Ohm Load				14	VDC
Current (Internal)		Current Consumption of Device (excludes antenna current)	12V			450	mA
			48V			75	mA
Antenna Output Voltage		DC Voltage Out on Antenna: (IN1, IN2)			5		VDC
Antenna/Thru Current	Powered	Input Port				120	mA
Max RF Input	Amplified	Max RF Input Without Damage				20	dBm

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1.2 Antenna Control Specifications

Antenna control can be automatic with manual override.

1.2.1 Antenna Fault Status

(Default Option) - Input selection of AUTO will cause device to choose antenna based on the health status of both antennas. Health status is determined by the current draw on antenna and or signal strength available to antenna. A current draw below 10mA and above 150mA will signal a fault for the respective input port. The fault condition will cause the device to automatically switch to the other input port. A current draw fault status is indicated by a solid yellow light on the front panel. An antenna experiencing a weak RF signal will be indicated by a flashing yellow light on the front panel. The device will choose Input Port 1 (IN1) with initial setup (LED light above IN1 will be active and green), however neither input has priority.

Table 1-2. IRMS216 Dual Antenna Input

LED Indicator Condition		
LED Indicator Condition	**Description**	**Input**
Solid Green	Good SNR, No Current Fault	Selected
Flashing Green	Acquisition Mode	Selected
Solid Green	3D Fix	Both
Solid Yellow	Antenna Current Fault	Both
Flashing Yellow Light	Low SNR	Both
No Light	Good SNR, No Current Fault	Input Not Selected

Note: *The acquisition light pattern may not be observable if unit acquires quickly after setup.*

1.2.2 Manual Override

Either antenna input can be selected by manually turning the switch on the front panel (IN1 or IN2). Manually turning the antenna switch will disable the device from automatically selecting between IN1 and IN2 based on the fault status of the antenna inputs and will set the antenna switch to the input selected by the operator. However, the device will continue to monitor the health of both antennas and indicate faults appropriately. Once selector is reversed back to AUTO, the last input chosen will remain as the default selection. For example, if device is switched from IN2 to AUTO, the device will continue to use IN2 until there is a fault or IN1 is manually selected. Manually selecting between IN1 and IN2 will not instantly cause the LED light to switch and there may be a delay of up to two seconds.

1.3 Rack Mount Power Fault Status

Power supply health status is indicated through an LED light on the front panel. The LED is delineated next to the POWER text. When the unit is powered and no fault is present, a solid green LED is activated.

1.3.1 Redundant Power Supply

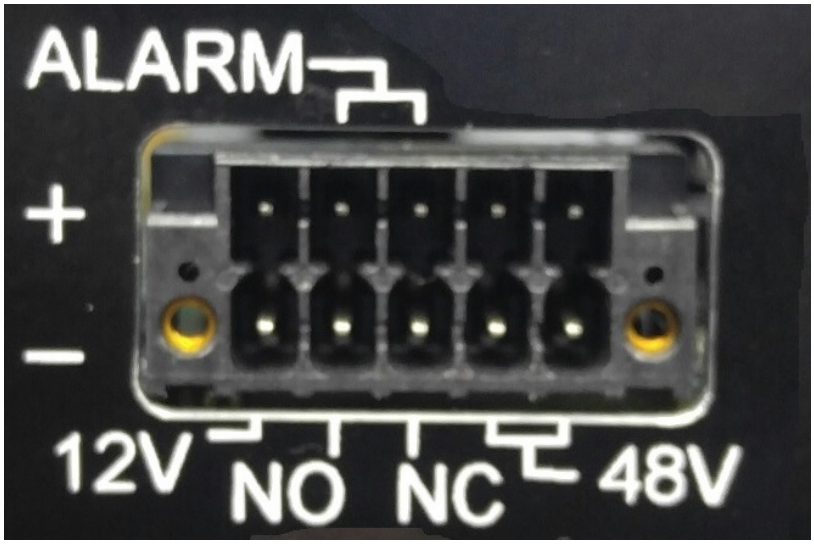
The IRMS216 is available with multiple power options for optimal redundancy. If one of the redundant power supplies fail, the LED delineated next to the POWER text flashes yellow. Slow flashing (2Hz rate) indicates a fault on the primary +/-48VDC power supply and a fast flashing of the LED (1Hz rate) indicates a fault on the secondary power supply.

Table 1-3. IRMS216 Dual Power Input

LED INDICATOR CONDITION		
LED Indicator Condition	**Description**	**Input**
Solid Green	No Power Faults	Both
Slow Flashing Yellow	Primary Supply Fault	Primary
Fast Flashing Yellow	Secondary Supply Fault	Secondary
No Light	No Power	Both

1.4 Remote Fault Monitoring

The antenna and power status is available to an external application via a set of signals in the Phoenix Contact push-in terminal connector. The signals enable the external application to identify antenna faults at IN1 and IN2 or a faulty power input. The fault status is output via an SPDT relay. The relay is energized when unit is powered and no fault is present. The relay will be de-energized when a fault is present or when power is off. The relay can switch up to 100mA at up to 60VDC or 60VAC. The normally open **(NO)** contact, the normally closed **(NC)** contact, and the common are brought out in the rear panel Phoenix Contact push-in terminal connector.



Normally Open (NO) contact, Normally Closed (NC) contact.

1.5 Diagnostic Port

The IRMS216 comes with a standard DB9(F) connector that allows the manufacturer to access the unit.

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2. Performance Data

2.1 IRMS216

Figure 2-1. IRMS216 Splitter: Gain vs. Frequency

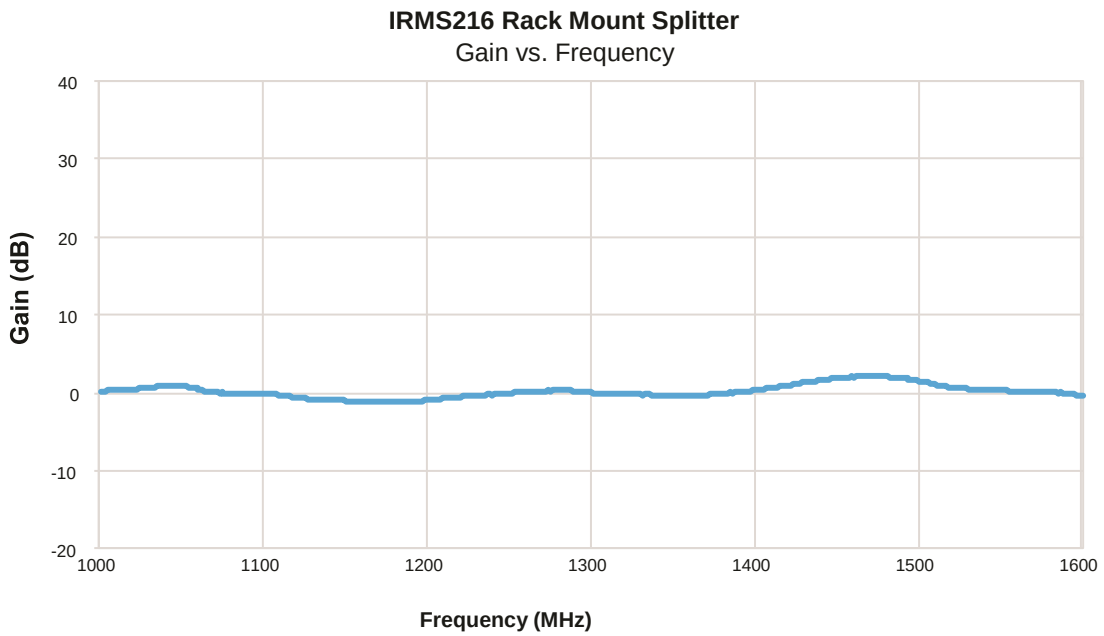
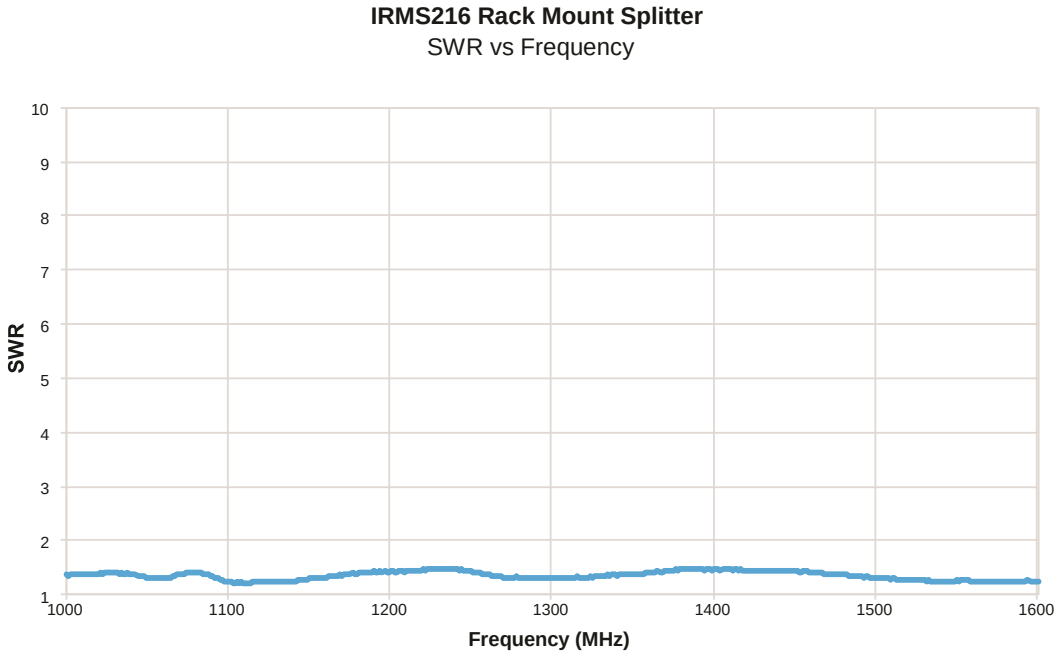


Figure 2-2. IRMS216 Splitter: SWR vs. Frequency



3. Product Options

Table 3-1. IRMS216 Available Options

Power Options		
Source Voltage Options	**Voltage Input**	**Type**
	DUAL 48VDC	Push-in Terminal Connector (Mating Connector)
	SINGLE 48VDC	Push-in Terminal Connector (Mating Connector)
	12VDC	Push-in Terminal Connector (Mating Connector)
	SINGLE AC IN	Wall Mount Transformer (various international plug types included)
	Dual AC IN	(2) Wall Mount Transformers Attached to Mating Connector (5 ft AC Power Cable)
	Dual AC/DC IN	Wall Mount Transformer Attached to 1 Input of the Mating Connector, (24V DC Input is Vacant) (5 ft AC Power Cable)
Connector	**Connector Type**	**Limitations**
RF	N (Female) (Std)	N/A
	TNC (Female)	
	SMA (Female)	
Housing		
Housings	**Housing Type**	**Limitations**
	19 x 8 x 3.5 (inches) Rack Mount	None
Port Options		
DC Blocked	Outputs 1 to 16 are DC Blocked and 200 Ohm Loaded, DC is passed to IN1 & IN2	

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4. Product Code Decoder

I R M S 2 1 6 - AXX - XXXXX - N F - XXXX

Integrated Rack Mount Splitter

216 = 2 Ant. Inputs x 16 Outputs

Gain Option

A00 = Standard Gain (0dB)
AXX = Custom Gain (XXdB)

Source Voltage

PWRAC = Power AC
PWRDC = Power 12VDC
PWR48 = Power Single -48VDC
2PWR48= Power Dual -48VDC
2PWRAC = Power Dual AC
2PWRACDC = Power Dual AC/DC

Rack Mount Ear Option

Blank = No Ears
RM21 = Extended Rack Ears

Connector Option

NF = N Female (std)
SF = SMA Female
TF = TNC Female

Notes:
Antenna output voltage is 5.0V
All ports will be same gain

Note: *If there are questions please contact GPS Source at GPSS-Sales@gd-ms.com or visit the website at www.gpssource.com*

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