



# IRMS232

## 2x32 Integrated Rack Mount GNSS Splitter

### DESCRIPTION

The IRMS232 dual input, 32 output splitter amplifies and splits the GPS/GNSS signal from two GPS receive antennas while granting up to 32 GPS/GNSS receivers signal access at any time.

The standard configuration of the IRMS232 has dual +/- 48V telecom power and a regulated DC output voltage, with a couple of 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 IRMS232 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 IRMS232 monitors the antenna signal strength. There is also internal monitoring of both antennas' current draw. The IRMS232 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. The power supply LED fault indicator is clearly visible on the front panel, and can also be transmitted using the contacts made available on the back panel.



### FEATURES

- 32 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
- Custom 19 Inch Rack Mount Configuration

### OPTIONS

The IRMS232 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.

### IRMS232 Data Sheet

059-FSA-AMS-ABX-BBZ-004

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# 1. IRMS232 Specifications

## 1.1 Electrical Specifications

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

Parameter		Conditions	Min	Typical	Max	Units		
<b>Frequency Range</b>		Antenna (IN1, IN2): Any Port; Unused Ports: 50 Ohm	1.0		1.65	GHz		
<b>Gain</b>	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		
<b>In/Out Impedance</b>		Antenna: (IN1, IN2), OUT1-OUT32		50		Ohm		
<b>Input SWR</b>		All Ports 50 Ohm			2.0:1	—		
<b>Output SWR</b>		All Ports 50 Ohm			2.0:1	—		
<b>Noise Figure</b>		Antenna (IN1, IN2): Any Port; Unused Ports: 50 Ohm, Gain = 0dB			7	dB		
<b>Gain Flatness</b>		L1 – L2  Antenna: (IN1, IN2) - Any Port; Unused Ports: 50 Ohm			4	dB		
<b>Amp. Balance</b>		Output 1 – 32 , Antenna: (IN1, IN2) - Any Port; Unused Ports: 50 Ohm			4	dB		
<b>Phase Balance</b>		Phase (Output 1 - 32), Antenna: (IN1, IN2) - Any Port; Unused Ports: 50 Ohm			1.0	Degree		
<b>Signal Delay</b>		$\tau_d$ , Antenna - Any Port			8	ns		
<b>Delay Flatness</b>		$\tau_d, \text{max} - \tau_d, \text{min}$ , Antenna - Any Port			1	ns		
<b>Isolation</b>	Amp (Gain = 0dB)	Measured at 1227MHz and 1575MHz	30			dB		
		Opposite Ports: Antenna – 50 Ohm Adjacent Ports: Antenna – 50 Ohm					20	
<b>Input <math>I_{P3}</math> (Amplified)</b>		Antenna: Any Port; Unused Ports 50 Ohm, Tone Spacing = 1MHz	2			dBm		
<b>Input <math>P_{1dB}</math> (Amplified)</b>		Antenna: Any Port; Unused Ports 50 Ohm	-8			dBm		
<b>AC IN</b>		Wall Mount Transformer (various international plug types included)	110		240	VAC		
<b>DC IN</b>	+24V	Push-in Terminal Connector (Mating Connector)	+20	+24		VDC		
	+48V						-20	+48
	-48V							
<b>DC Blocked</b>	DC Blk	All Output Ports Blocked with a 200 Ohm Load			14	VDC		
<b>Current (Internal)</b>		Current Consumption of Device (excludes antenna current) at 48V	24V		120	mA		
			48V		75	mA		
<b>Antenna Output Voltage</b>		DC Voltage Out on Antenna: (IN1, IN2)		5		VDC		
<b>Antenna/Thru Current</b>	Powered	Input Port			120	mA		
<b>Max RF Input</b>	Amplified	Max RF Input Without Damage			20	dBm		

## 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 an 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. IRMS232 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

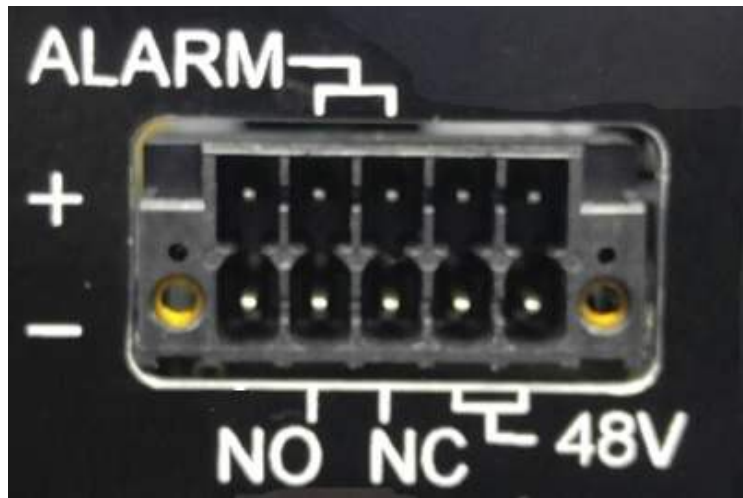
The IRMS232 is available with multiple power options for optimal redundancy. If one of the redundant power supplies fail, the LED delineated next to the POWER text flashes yellow. Slow flashing (2Hz rate) indicates a fault on the primary +/-48VDC power supply and a fast flashing of the LED (1Hz rate) indicates a fault on the secondary power supply.

**Table 1-3. IRMS232 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 IRMS232 comes with a standard DB9(F) connector that allows the manufacturer to access the unit.



## 2. Performance Data

### 2.1 IRMS232

Figure 2-1. IRMS232 Splitter: Gain vs. Frequency

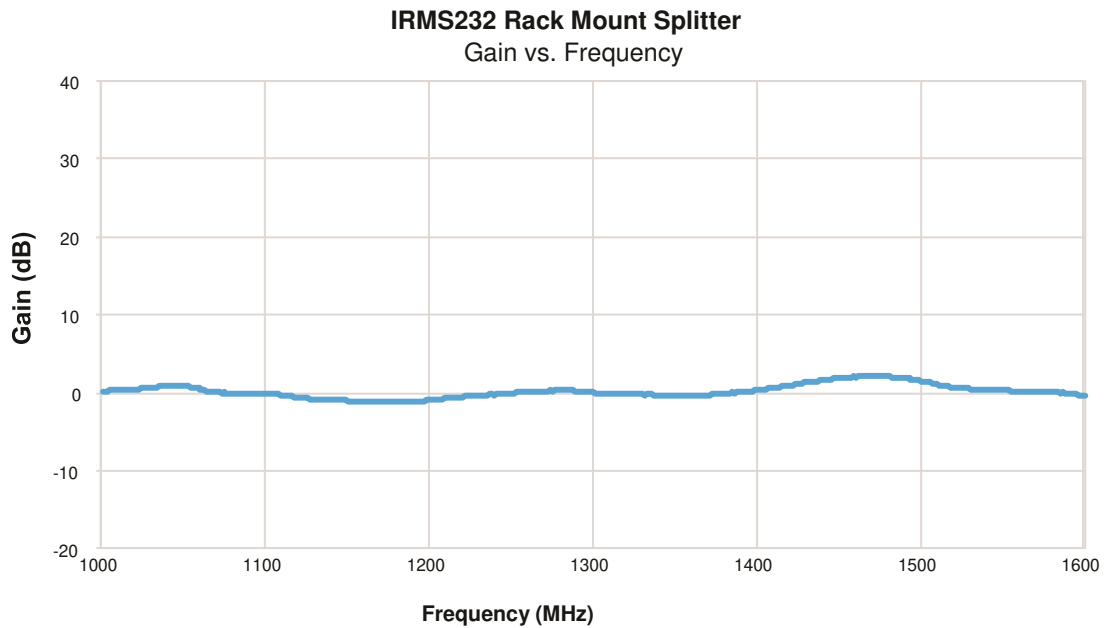
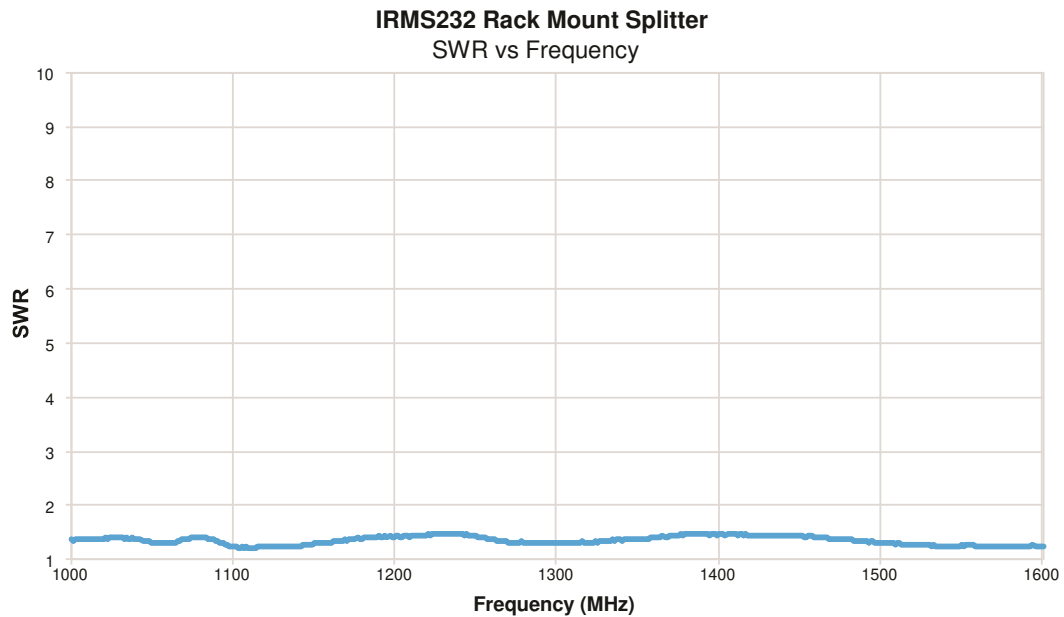


Figure 2-2. IRMS232 Splitter: SWR vs. Frequency

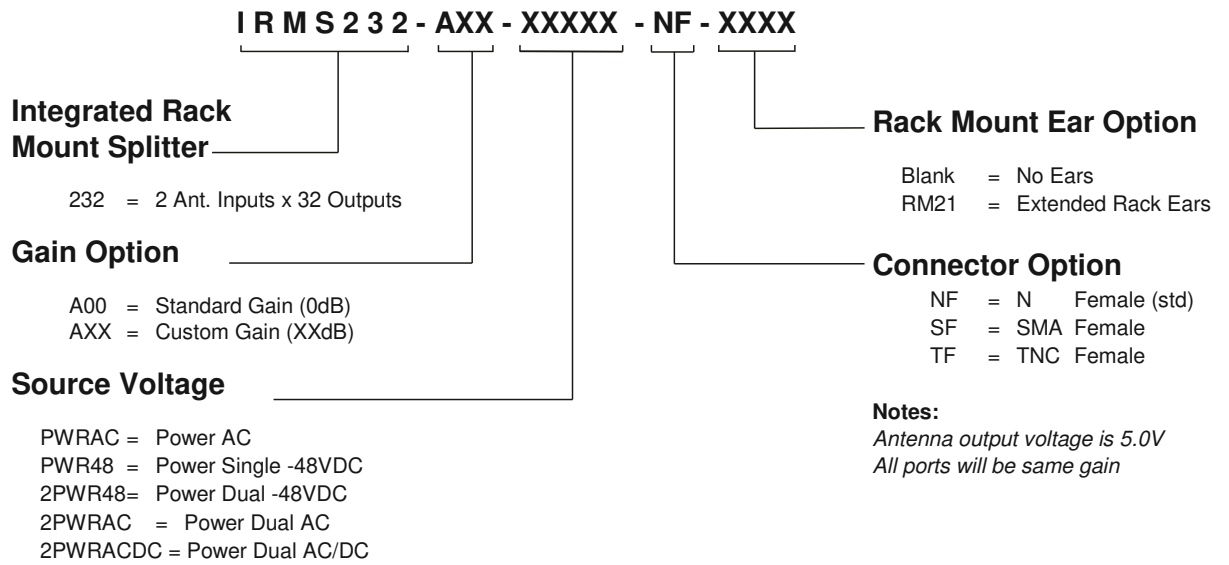


### 3. Product Options

Table 3-1. IRMS232 Available Options

Power Options		
	Voltage Input	Type
Source Voltage Options	SINGLE AC In	Wall Mount Transformer (various international plug types included)
	DUAL 48VDC	Push-in Terminal Connector (Mating Connector)
	SINGLE 48VDC	Push-in Terminal Connector (Mating Connector)
	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		
	Housing Type	Limitations
Housings	19 x 8 x 5.25 (inch) Rack Mount	None
Port Options		
DC Blocked	Outputs 1 to 32 are DC Blocked and 200 Ohm Loaded, DC is passed to IN1 & IN2	

## 4. Product Code Decoder



**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](mailto:GPSS-Sales@gd-ms.com) or visit the website at [www.gpssource.com](http://www.gpssource.com)



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