

The Izze-Racing wireless strain gauge amplifier is a small, lightweight, high-speed, low-noise, 24-bit ADC module specifically designed for wireless strain gauge & load cell instrumentation. Applications include axle torque, tire strain, and wheel strain measurement. The amplifier includes a matching receiver.



SPECIFICATIONS – AMP (TRANSMITTER)

Diff. Voltage Measurement Range, ΔV	± 32 V
Maximum Differential Voltage, ΔV_{max}	± 3.3 V
Resolution	1 μ V, 24 Bit ADC
Accuracy	± 60 μ V
Update Rate	100Hz
RMS Noise (350 Ω bridge)	± 0.75 μ V at 100Hz
Filter	Low-Pass, $f_c = 1.6$ kHz
Recommended Battery Voltage, V_B	3 to 9 V
Supply Current, Active, I_s (350 Ω bridge)	24.3 mA (avg)
Supply Current, Sleeping, I_s (350 Ω bridge)	134 μ A (avg)
Bridge Excitation Voltage, V_B	2.7 V
Max. Bridge Excitation Current Draw, $I_{B,max}$	40 mA
Input Impedance, R_i	110 k Ω
Recommended Bridge Impedance, R_B	350 Ω
Resolution, Temperature Sensor	0.4 $^{\circ}$ C
Accuracy, Temperature Sensor	± 2.0 $^{\circ}$ C
Center Radio Frequency, Nominal	920 MHz (adjustable)
RF Output Power	1mW
Wireless Range, Open Space	> 100m

SPECIFICATIONS – RECEIVER

Voltage Input, V_B	5 to 16 V
Supply Current, I_s	30 mA
RF Frequency	920 MHz (adjustable)
Sensitivity	> 100dBm

MECHANICAL SPECS – AMP

Weight (excl. harness)	8 g
L x W x H	43 x 35 x 6 mm
Protection Rating	IP65

MECHANICAL SPECS – RECEIVER

Weight (excl. harness)	18 g
L x W x H	50 x 35 x 8 mm
Protection Rating	IP65



Wireless Strain Gauge Amplifier, W-SGAMP-V2 - Datasheet

CAN SPECIFICATIONS – RECEIVER

Standard	CAN 2.0A, ISO-11898
Bit Rate	1 Mbit/s
Byte Order	Big-Endian / Motorola
Data Conversion	1 dBm per bit RSSI 1mV per bit Battery Voltage 1 μ V per bit Diff. Voltage 0.1 °C per bit Temperature (all variables signed)
CAN ID (Default)	1065 (Dec) / 0x429 (Hex)
Termination	None

WIRING SPECS:

Wire	M22759/32-26, DR25 jacket
Cable Length	500 mm
Connector	None

AMP – BRIDGE

Excitation +	Red
Excitation -	Black
Signal +	Blue
Signal -	White

AMP – BATTERY

Positive	Red
Negative	Black

RECEIVER

Supply Voltage, V _s	Red
Ground	Black
CAN +	Blue
CAN -	White

CAN MESSAGE STRUCTURE – RECEIVER:

CAN ID: 0x429 (Default)

Amp Differential Voltage, μ V		Amp Battery Voltage, mV		Amp Temperature, °C		RSSI (signal strength), dBm	
Byte 0 (MSB)	Byte 1 (LSB)	Byte 2 (MSB)	Byte 3 (LSB)	Byte 4 (MSB)	Byte 5 (LSB)	Byte 6 (MSB)	Byte 7 (LSB)



PROGRAMMING – RECEIVER:

To modify the wireless receiver's base CAN ID and/or bit rate, send the following CAN message at 1Hz for at least 10 seconds and then reset the receiver by disconnecting power for 5 seconds.

CAN ID: Current Base ID

Programming Constant		New CAN Base ID (11-bit)		Bit Rate			
Byte 0 (MSB)	Byte 1 (LSB)	Byte 2 (MSB)	Byte 3 (LSB)	Byte 4	Byte 5	Byte 6	Byte 7
30000 = 0x7530		1 = 0x001		1 = 1 Mbit/s			
		⋮		2 = 500 kbit/s			
		2047 = 0x7FF		3 = 250 kbit/s			
				4 = 125 kbit/s			

CAN messages should only be sent to the receiver during the configuration sequence.

DO NOT continuously send CAN messages to the receiver.

Network ID, Node ID, and RF Frequency Programming

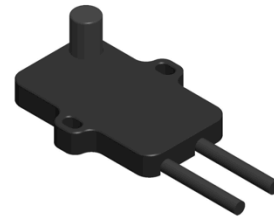
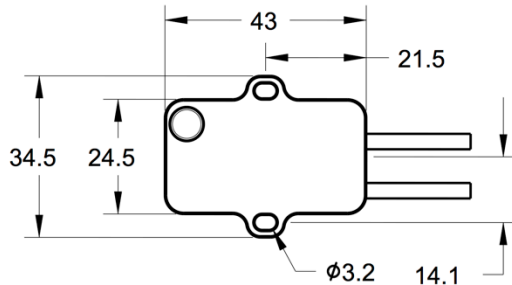
The receiver's Network ID, Node ID, and Radio Frequency may be changed in order to communicate with another Wireless Strain Gauge Amplifier. Send the following CAN message at 1 Hz for at least 10 seconds and then reset the receiver by disconnecting power for 5 seconds.

CAN ID = Current Base ID

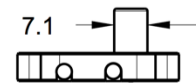
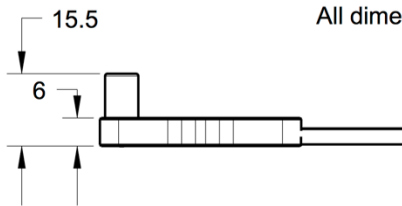
Programming Constant		Network ID	Node ID	Radio Frequency			
Byte 0 (MSB)	Byte 1 (LSB)	Byte 2	Byte 3	Byte 4 (MSB)	Byte 5 (LSB)	Byte 6	Byte 7
20020 = 0x4E34		0 = 0x00	0 = 0x00	Decimal Value x 10 ⁵ Hz		0 = 0x00	0 = 0x00
		⋮	⋮				
		255 = 0xFF	255 = 0xFF	(ex: 9155 = 915,500,000 Hz)			

DIMENSIONS:

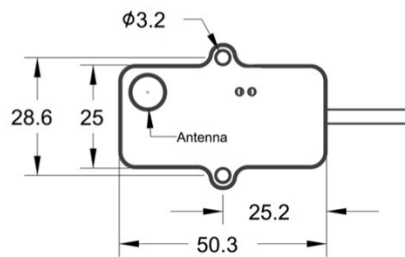
Wireless Strain Gauge Amplifier, W-SGAMP-V2



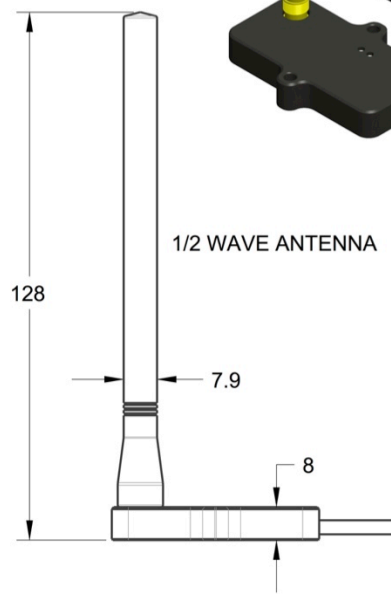
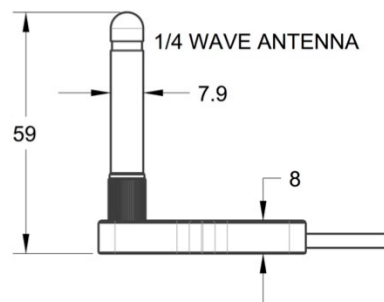
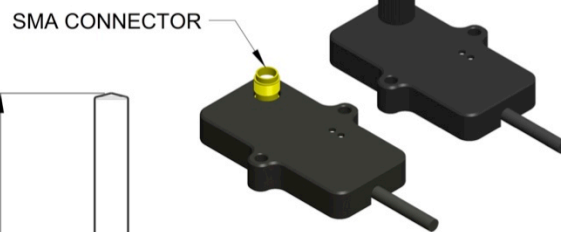
SCALE 1.000
All dimensions in mm



Strain Gauge Receiver, W-REC-V2



ALL DIMENSIONS IN MM





FEATURES & FUNCTIONALITY:

AUTO-ZERO:

- Amplifier will auto-zero the differential voltage reading during startup (e.g., battery attached)

AUTO-SLEEP:

- Amplifier will sleep after 60s of no-activity ($\Delta V < 20\mu V$), to conserve battery life.
- When sleeping, amplifier will check for activity ($\Delta V > 20\mu V$) every 8 seconds.

(features may be modified or disabled upon request)

ADDITIONAL INFORMATION:

- Single-cell 3.6V Lithium Ion or Lithium Polymer batteries are highly recommended given their high energy density (energy per unit mass)