



SN802GRC

- **Wireless Sensor Modem for RTD and Current Measurements**
- **Supports 2, 3 or 4-wire 100 ohm Platinum RTDs**
- **True RMS Current Measurement**
- **Contact Status Monitoring**
- **IEEE 802.11g Radio with Integral Antenna**
- **Compatible with b/g/n Access Points**
- **WPA2 Encryption Provides Strong Data Security**
- **Modem Configuration Through Wireless Link or Serial Port**
- **Up to 10 Years Battery Life**
- **FCC, Canadian IC Certified and CE Marked for Unlicensed Operation**

Wi-Fi® RTD/CT Sensor Modem

The SN802GRC is an IEEE 802.11g-based sensor modem supporting RTD, current transformer and switch closure inputs. The SN802GRC's very low average power consumption provides up to 10 years of operating battery life. The RFM WSN802GPA radio used in the SN802GRC can take advantage of existing Wi-Fi access points to lower deployment costs. With Wi-Fi networks widely available and well understood by IT departments, the SN802GRC is easily integrated into existing networks. The SN802GRC is compatible with 802.11b/g/n networks and supports WPA2 encryption, providing strong data security. The SN802GRC can operate at RF data rates from 1 to 11 Mbps, providing plenty of bandwidth for sensor applications.



SN802GRC Specifications

Characteristic	Sym	Notes	Minimum	Typical	Maximum	Units
Sensor Inputs			2, 3 or 4-wire 100 ohm Platinum RTD 3100:1 Current Transformer, 20 A Full Scale Contact Closure			
RTD Temperature Range			-200		+158	°C
RTD Resolution				0.0625		°C
RTD Accuracy				±0.3		°C
RTD Measurement Data Format			16-bit Signed Value			
Current Measurement Calibration			For 3100:1 Current Transformer			
Current Range			0		20	A
Current Resolution				4.882		mA
Current Accuracy					±2	%
Current Measurement Data Format			12-bit Unsigned Value			
Open Contact Voltage				3.3		V
Closed Contact Current				33		µA
Contact Status Data Format			8-bit Unsigned Value			

SN802GRC Specifications

Characteristic	Sym	Notes	Minimum	Typical	Maximum	Units
Internal Battery Voltage Range			3.0		3.6	V
Internal Battery Voltage Accuracy					±2	%
Internal Battery Voltage Data Format			12-bit Unsigned Value			
Serial Interface			RS232C, 38.4 kbps, 8N1, no flow control			
Radio			RFM WSN802GPA IEEE 802.11g module			
Radio Communication Modes			Access Point Connection or Ad Hoc Connection			
Operating Frequency Range			2401		2474	MHz
Supported RF Data Rates			1, 2, 5.5 and 11			Mbps
Number of RF Channels				11		
RF Transmit Power, EIRP				10		mW
Receiver Sensitivity, 8% PER:						
1 Mbps RF Data Rate				-92		dBm
2 Mbps RF Data Rate				-90		dBm
5.5 Mbps RF Data Rate				-84		dBm
11 Mbps RF Data Rate				-81		dBm
Antenna			Integral Chip Antenna			
Supplied Battery			Lithium Thionyl Chloride (LTC) C Cell, 8.5 A-hr			
Operating Battery Life					10	Years
Operating Temperature Range			-40		+85	°C
Operating Humidity Range, Non-condensing			5		95	%RH
Nominal Dimensions			5.5 x 2.5 x 1.3 inches 140 x 64 x 33 mm			
Mounting			Left and Right Flanges, Two Pre-drilled Holes Plus Slot in Each Flange			

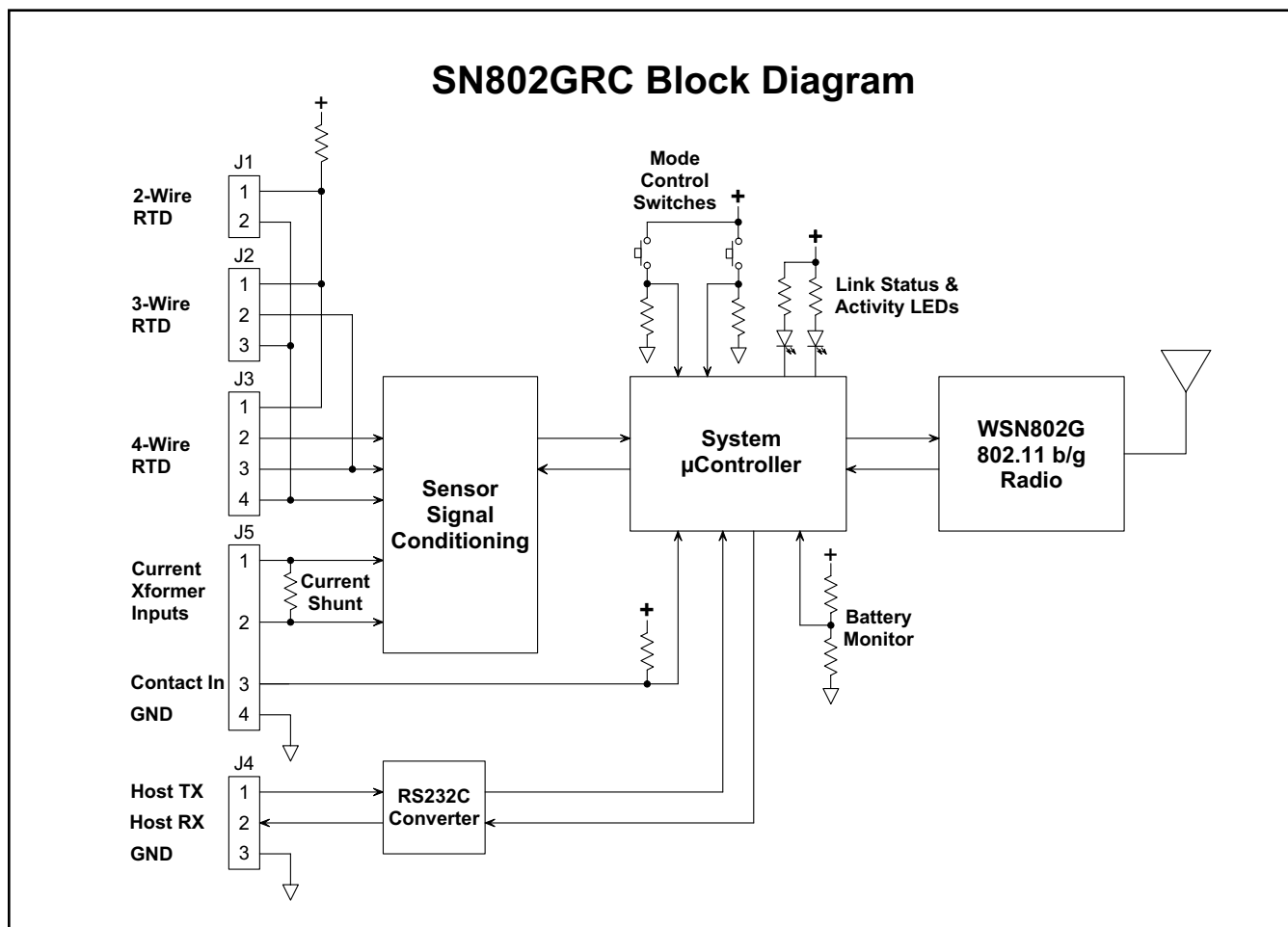


Figure 1

SN802GRC Operation

The SN802GRC is an IEEE 802.11g-based wireless sensor modem. The SN802GRC supports 100 ohm platinum RTD, current transformer and switch closure inputs. The SN802GRC's very low average power consumption provides up to 10 years of operation from a 8.5 A-hr C cell LTC battery. Alternately, the SN802GRC can be powered from three inexpensive AA batteries in limited temperature range applications where shorter battery operating life is acceptable.

The RFM WSN802G radio used in the SN802GRC sensor modem can communicate through Wi-Fi® access points or directly with a computer using ad hoc communications. Optional WPA2 encryption provides strong data security. The SN802GRC can be configured to operate on any of the 11 2.4 GHz channels defined for 802.11 operation, allowing it to be used in most regions of the world.

J1, J2 and J3 provide connection points for 2, 3 or 4-wire RTDs respectively, with a 4-wire RTD preferred for best accuracy. J4 provides connection points for

3-wire RS232 communication with a host computer, and J5 provides connection points for the current transformer input and contact input.

The SN802GRC automatically reports the sensor input readings on user defined intervals and conditions, eliminating the need for application polling. The SN802GRC achieves low power consumption by maintaining association with an access point while sleeping. When the SN802GRC sends data, it only has to wake up and send data; it does not have to reestablish a connection with the access point. The internal battery voltage is included in the sensor report, providing continual information on the battery status.

The SN802GRC is configured either over-the-air through a supplied utility or through user supplied SNMP tools. The SN802GRC is also configurable through the local serial port using a standard 3-wire RS-232 setup. In addition to reporting conditions, users can configure SSIDs, security keys, destination IP addresses, select DHCP or Static IP address operation, and serial port parameters.

Connector J1 Description

Pin	Name	I/O	Description
1	RTD+	I	2-wire RTD positive (red) input. This input is connected to the RTD current source.
2	RTD-	I	2-wire RTD negative (black) input. This input is connected to the RTD ground return switch.

Connector J2 Description

Pin	Name	I/O	Description
1	RTD+	I	3-wire RTD positive (red) input.
2	RTD-	I	First 3-wire RTD negative (black) input. This input is connected to the ADC negative differential input.
3	RTD-	I	Second 3-wire RTD negative (black) input. This input is connected to the RTD ground return switch.

Connector J3 Description

Ref	Name	I/O	Description
1	RTD+	I	First 4-wire RTD positive (red) input. This input is connected to the RTD current source.
2	RTD+	I	Second 4-wire RTD positive (black) input. This input is connected to the ADC positive differential input. If a 2-wire RTD is being used on J1 or a 3-wire RTD is being used on 2, jumper this input to J3 terminal 1.
3	RTD-	I	First 4-wire RTD negative (black) input. This input is connected to the ADC negative differential input. If a 2-wire RTD is being used on J1, jumper this input to J3 terminal 4.
4	RTD-	I	Second 4-wire RTD negative (black) input. This input is connected to the RTD ground return switch.

Connector J4 Description

Ref	Name	I/O	Description
1	HOST TX	I	Input terminal for host RS232 TX.
2	HOST RX	O	Output terminal for host RS232 RX.
3	GND	-	RS232 ground terminal.

Connector J5 Description

Ref	Name	I/O	Description
1	CURRENT 1	I	First current transformer input. There is a current shunt between this terminal and J5 terminal 2.
2	CURRENT 2	I	Second current transformer input.
3	CONTACT	I	Contact input. This terminal is connected to +3.3 V through a 100 K resistor.
4	GND	-	Contact ground terminal.

SN802GRC Case Dimensions

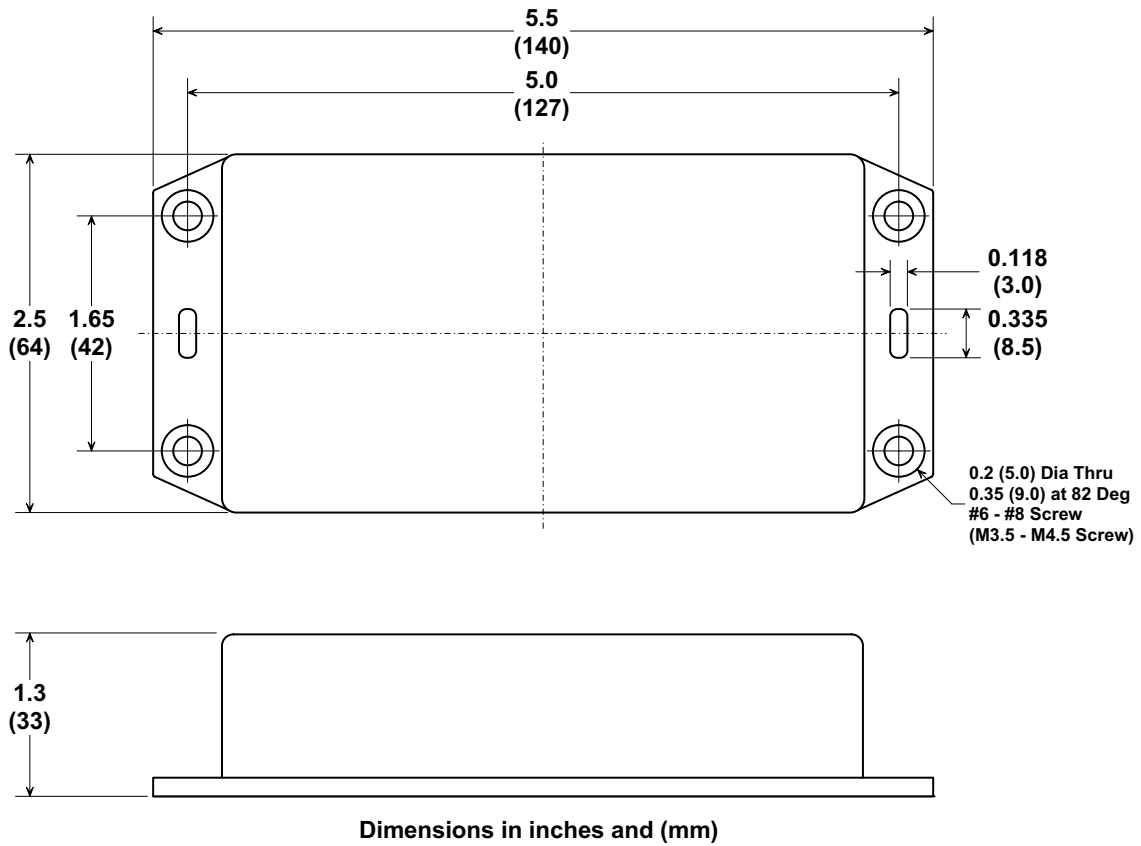


Figure 2

Note: Specifications subject to change without notice.

Wi-Fi® is a registered trademark of the Wi-Fi Alliance

Part # M-0802-4000, Rev A