

- 4 Analog Channel, 9 - 30 VDC Wireless Sensor Node
- Wireless Data Communication via MODBUS TCP
- 2 RTD Inputs and 2 Current Transformer Inputs Plus 2 Switch Inputs
- Supports 2- and 3-Wire 100 ohm Platinum RTDs
- True RMS Current Measurement
- Switch State and Change-of-State Monitoring
- Robust IEEE 802.11g Radio
- DIN-Rail PC/ABS Case
- Internal Antenna or External 2 dBi Antenna Options
- Compatible with b/g/n Access Points
- WPA2 Encryption with Enterprise Security
- Configuration Through the Serial Port
- FCC, Canadian IC Certified Unlicensed Operation

The SN802GRC-4DM/X is an IEEE 802.11g-based sensor node supporting two RTD, two current transformer and two switch inputs. Sensor data is transmitted using MODBUS TCP protocol. The Murata WSN802GPA radio used in the SN802-GRC-4DM/X 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-4M is easily integrated into existing networks. The SN802-GRC-4DM/X is compatible with 802.11b/g/n networks and supports WPA2 encryption, providing strong data security. The SN802GRC-4DM/X can operate at RF data rates from 1 to 11 Mbps, providing plenty of bandwidth for sensor applications. The SN802GRC-4DM includes an internal antenna. The SN802GRC-4DMX utilizes an external diople antenna.

## SN802G RC-4DM/X

### 4-Channel RTD/CT Wi-Fi MODBUS Sensor Node



#### SN802GRC-4DM/X Specifications

Characteristic	Sym	Notes	Minimum	Typical	Maximum	Units
Sensor Inputs			2 or 3-wire 100 ohm Platinum RTDs Current Transformers Contact Closures			
RTD Temperature Range			-200		+600	°C
RTD Resolution				0.0625		°C
RTD Accuracy				±0.3		°C
RTD Measurement Data Format			16-bit Signed Value			
Input Range for Current Transformer			0		3.33	mA <sub>RMS</sub>
Current Measurement Resolution				16		bits
Current Measurement Accuracy					±2	%
Current Measurement Data Format			16-bit Unsigned Value			
Open Contact Voltage				3.3		V
Closed Contact Current				33		µA
Contact Status Data Format			1 bit of flag byte			

## SN802GRC-4DM/X Specifications

Characteristic	Sym	Notes	Minimum	Typical	Maximum	Units
Serial Interface			RS232C, 38.4 kbps, 8N1, no flow control			
Radio			Murata WSN802GPA IEEE 802.11g module			
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, Chip Antenna				10		mW
RF Transmit Power, EIRP, 2 dBi Dipole Antenna				15.8		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
Internal Antenna Option (SN802GRC-4DM)			SMD Chip Antenna			
External Antenna Option (SN802GRC-4DMX)			2 dBi RPSMA Dipole Antenna			
Power Supply Input Voltage Range			9		30	Vdc
Power Supply Input Current					250	mA
Operating Temperature Range			-40		+85	°C
Operating Humidity Range, Non-condensing			5		95	%RH
Nominal Case Dimensions			5.7 x 3.9 x 1.4 inches 120 x 101 x 35 mm			
Case Mounting			DIN-Rail			

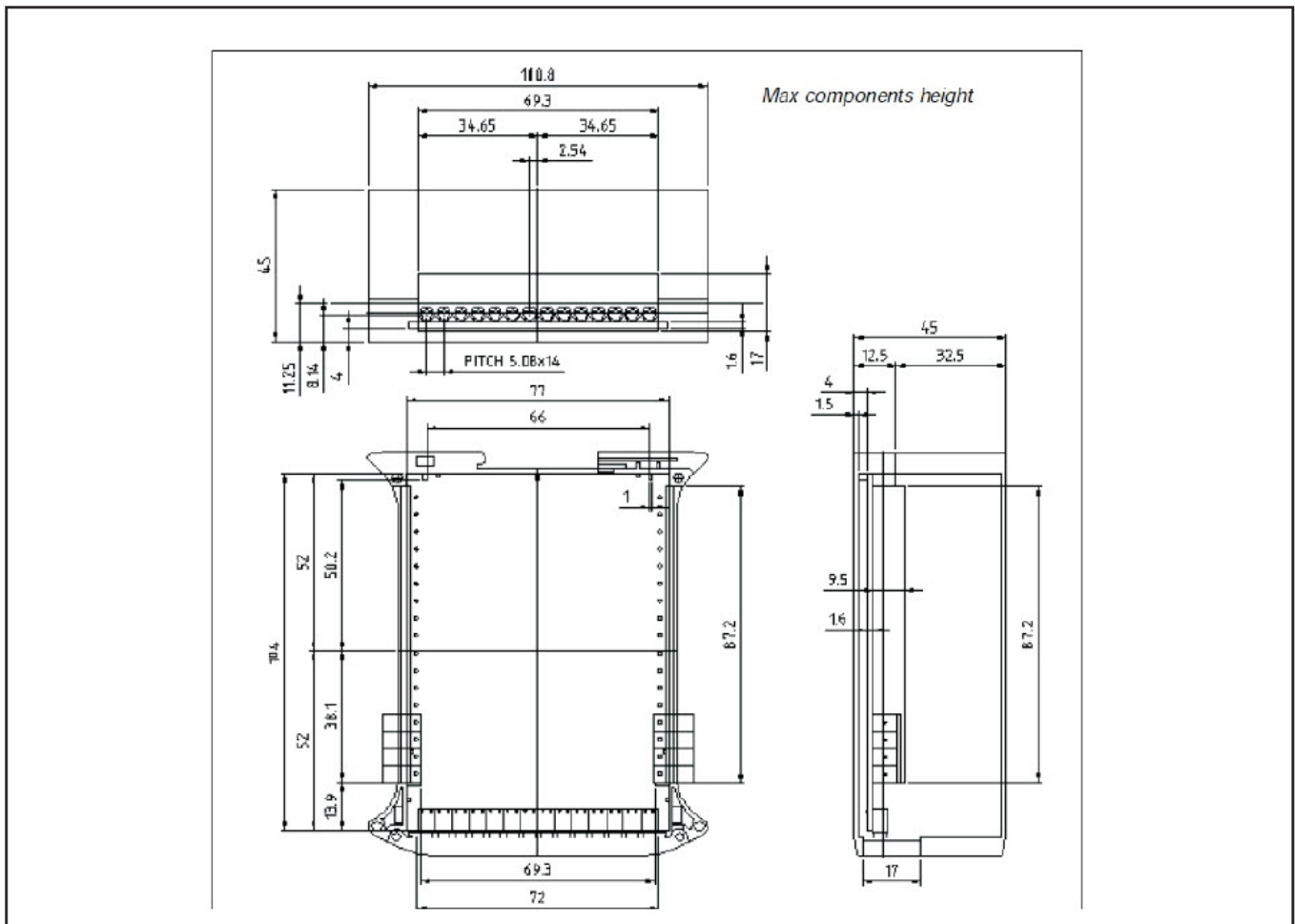


Figure 1

## SN802GRC-4DM/X Operation

The SN802GRC-4DM/X is an IEEE 802.11g-based wireless sensor node family that supports two 100 ohm platinum RTD inputs, two current transformer inputs and two switch inputs. All six inputs are measured every 1.5 seconds, providing fresh data when requested.

Data requests and responses are based on the widely used MODBUS TCP *Read Multiple Registers* command. The SN802GRC-4DM sensor includes an internal antenna. The SN802GRC-4DMX includes an external 2 dBi dipole antenna.

The Murata WSN802G E-Series radio used in the SN802GRC-4DM/X sensor modems communi-

cates through Wi-Fi routers or access points. Optional WPA2 encryption with Enterprise Security provides strong data protection. The SN802GRC-4DM/X can be configured to operate on any of the eleven 2.4 GHz channels defined for 802.11 operation, allowing it to be used in most regions of the world.

The SN802GRC-4DM/X sensor modems and radios are configured through the serial port under the front cover using a standard 3-wire RS-232 connection, allowing users to configure SSIDs, security keys, destination IP addresses, serial port parameters, etc.

### Connector J1 and J2 Description, 2- or 3-Wire RTD Input

Pin	Name	I/O	Description
1	RTD+	I	3-wire RTD positive (red) input. This input is connected to the RTD current source and the ADC positive differential input.
2	RTD-	I	First 3-wire RTD negative (black) input. This input is connected to the ADC negative differential input. This input is not used with a 2-wire RTD.
3	RTD-/GND	I	Second 3-wire RTD negative (black) input or 2-wire RTD negative input. This input is connected to the RTD ground return.

### Connector J3 and J4 Description, Current Transformer Input

Ref	Name	I/O	Description
1	CURRENT 1	I	First current transformer input. There is a 300 ohm current shunt between this terminal and terminal 2.
2	CURRENT 2	I	Second current transformer input.
3	GND	-	Ground terminal.

### Connector J5 and J6 Description, Contact Input

Ref	Name	I/O	Description
1	CONTACT	I	Contact input. This terminal is connected to +3.3 V through a 100 K resistor.
2	GND	-	Contact ground terminal.

### Connector J7 Description, 3-Wire RS232

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 J10 Description, Power Input

Ref	Name	I/O	Description
1	+DC	I	Power supply DC input, +9 to +30 Vdc.
2	GND	-	Power supply ground terminal.
3	NC	-	No connection
4	NC	-	No connection

## SN802GRC-4 Block Diagram

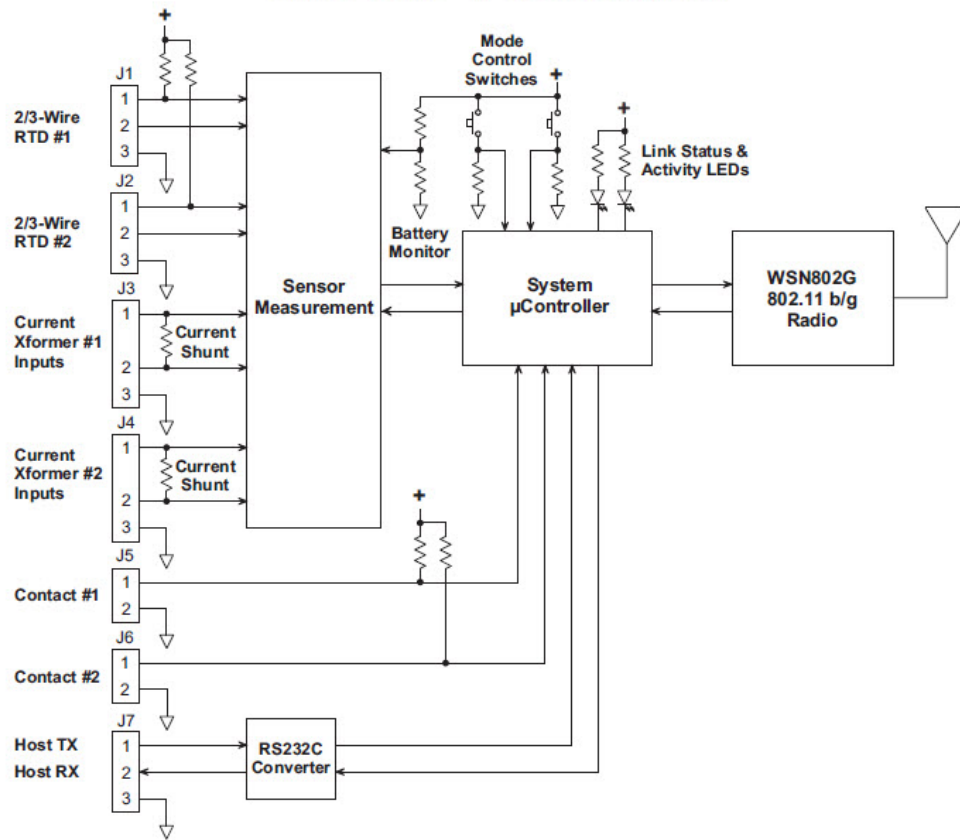


Figure 2



Note: Specifications subject to change without notice.