

### Features

- 2.4GHz Direct Sequence Spread Spectrum (DSSS) RF link
- 1S/s ~ 1kS/s sampling rate, 12bit data sampling (Up to 6 channels / node)
- Multi channel, multi-hop networking supported
- Automatic network configuration
- Long range communication: Up to 850ft(250m) line of sight, point-to-point
- Forward Error Correction(FEC) for reliable data transfer
- Low-power consumption

### Applications

- Environment or device monitoring
- Structural health monitoring
- Surveillance, physical security, networking of physical assets,
- Machinery health and status monitoring.
- Industrial automation, process control
- Discrete Sensor connection to DCS or PLC systems



### Overview

SNS2100 is a 2.4GHz wireless networked DAQ module for vast array of distributed monitoring and control applications. SNS2100 modules are deployed at several distributed points and inter-connected by a dynamically configurable wireless network that enables the transfer of acquired data from each module to the PC, via a base station module using USB. SNS2100 has an internal Li-Ion rechargeable battery that can run 100 hours or more operating continuously, and up to 5,000 hours operating only when needed using Sleep/Wakeup function. It can also operate from an external power source.

### Multi Channel / Multi-Hop

SNS2100 module is based on Carrier Sense Multiple Access(CSMA) for multi channel communication and the communication architecture supports both direct and multi-hop message packet delivery. Multi-hop communication enables the communication range to be extended even further. For instance, the range can be increased three-fold using three nodes configured as a three-hop network. SNS2100 is especially useful in fields where cable installation is costly or tedious.

### Automatic Network Configuration

SNS2100 modules are dynamically network configurable which greatly eases the installation procedure. There is no need to go through strenuous network configuration procedures as one would encounter setting up the I.P. address for connection to the internet. The protocol and messaging strategy supports random topologies.

### Reliable Data Transmission

SNS2100 offers both data detection and Forward Error Correction (FEC) algorithm for reliable data transmission. SNS2100 also has an internal non-volatile memory of 256kbytes so that the readings can be stored locally and later be transferred to the base station. Since it can store all it's readings, it is easier to make reliable retransmissions of data to the base station in case of communication error.

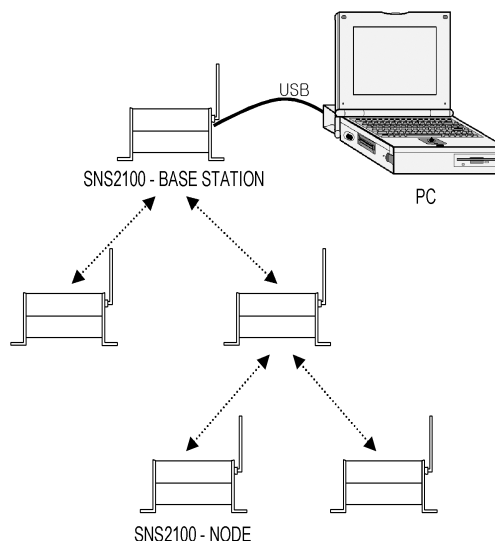
### Built-In Analog Signal Processing

SNS2100 is designed mainly for measuring bridge-based sensors such as strain sensors, of both 120ohm and 350ohm impedance. It has an internal Wheatstone bridge and a x1000 differential amplifier so that the output of the strain sensor can be directly connected to the unit for measurement, without any additional hardware.

### Support for OEM Products

softDSP's expertise in analog signal processing allows easy migration from the current input analog circuitry design to the one required by our OEM customer. A wide range of input range, filtering, can be provided from up to 6 input channels per node.

For more information please contact us at [info@softdsp.com](mailto:info@softdsp.com) or visit [www.softdsp.com](http://www.softdsp.com)



**Figure1.** Four SNS2100 modules connected in multi-hop network

### Hardware specification

CPU .....	16-bit RISC architecture, 8MIPS processing speed
Data storage memory.....	128kbytes
Size .....	5.5" x 3" x 2" (L x W x H) (14cm x 7.6cm x 5.1cm)

### Functions

Network configuration .....	Automatically detects nodes and the configure network
Sleep/Wakeup.....	Lowest power consumption is achieved using sleep function when not used

### Data Sampling

Sample rate .....	1S/s ~ 1kS/s
Resolution .....	12bits
Sampling modes .....	Realtime: Sends data to base station without retransmissions Store and forward: Stores data locally and after sampling has finished, sends to base station using handshaking/retransmissions for reliable data transfer.
Input.....	120ohm or 350ohm gauge-based sensor Up to 6 input channels can be provided for OEM products

### RF communication features

Communication Link .....	2.4GHz DSSS(Direct Sequence Spread Spectrum)
Max bit rate .....	1Mbps
Output power .....	+20dBm
RX sensitivity .....	-90dBm
Antenna.....	2dBi external omni-directional
Range .....	250 meters (830 feet) line of sight outdoor

### Power

Running .....	Average 50mA (Peak 150mA)
Consumption.....	Operating Continuously: Average 50mA (Peak 150mA) Idle: Average < 1mA
Battery .....	3x Lithium-Ion rechargeable batteries with 5500mAh capacity
Operating time .....	100 hrs, (continuous), up to 5000 hours using sleep/wakeup function

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