WI-FI Node Sensors

B10-100 Wi-Fi 802.11
Data Sheet

SensoScientifc
800.279.3101
www.sensoscientific.com

B10-100 WI-FI Node Sensor

(B10-100-K100 model shown)

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Wi-Fi 802.11 Specifications

The embedded module is a stand alone, embedded wireless 802.11 networking module. Because of its small form factor and extremely low power consumption, the Wi-Fi Node sensor has a long battery life. The embedded module incorporates a 2.4GHz radio, processor, TCP/IP stack, real-time clock, crypto accelerator, power management and analog sensor interfaces.
Once the embedded is setup it can scan to find an access point, associate, authenticate and connect over any Wifi network.

Overview
- Host Data Rate up to 1 Mbps for UART
- Intelligent, built-in power management with programmable wakeup
- Can be powered from regulated 3.3-3.7V source or 2.0-3.0V batteries
- Real time clock for time stamping, auto-sleep and auto-wakeup
- Over the air firmware upgrade (FTP)
- Memory 128 KB RAM,2MB ROM, 2 KB battery-backed memory, 8 Mbit Flash.
- Secure WiFi authentication WEP-128, WPA-PSK (TKIP), WPA2-PSK (AES)
- Built in networking applications DHCP, UDP, DNS, ARP, ICMP, TCP, sockets
- 802.11 power save and roaming functions

INTERNAL WI-FI module specifications

Radio Characteristics

Parameter	Specifications
Frequency	2402 ~ 2480MHz
Modulation	802.11b compatibility : DSSS(CCK-11, CCK-5.5, DQPSK-2, DBPSK-1) 802.11g : OFDM (default)
Channel intervals	5MHz
Channels	1 - 14
Transmission rate (over the air)	1 – 11Mbps for 802.11b / 6 – 54Mbps for 802.11g
Receive sensitivity	-85dBm typ.
Output level (Class1)	+18dBm
Maximum RF input to U.FL connector	10 dBm

Environmental Conditions

Parameter	RN-131G	RN-131C
Temperature Range (Operating)	-30 °C ~ +85 °C	0 °C ~ +70 °C
Temperature Range (Storage)	-40°C ~ +85 °C	-40°C ~ +85 °C
Relative Humidity (Operating)	≤90%	≤90%
Relative Humidity (Storage)	≤90%	≤90%

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Electrical Characteristics

Supply Voltage	Min	Typ.	Max.	Unit
Supply Voltage VDD	3.0	3.3	3.7	VDC
Supply Voltage (VBATT option)	2.0	3.0	3.3	VDC
Pin 21 switched 3.3V output			150	ma
Digital Iinput				
Input logic HIGH VIH	2.3V			VDC
Input logic LOW VIL			1.0V	VDC
Digital Output drive				
PIO 4,5,6,7,8		24		ma
PIO 9,10,11,12,13		8		ma
Power consumption				
Sleep		4		uA
Standby (doze)	-	15	-	mA
Connected (idle, RX)		40		mA
Connected (TX)		140	212	mA

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B10-100 Temperature Wi-Fi Node Transmitter Specifications

OPERATING TEMPERATURE

- Node transmitter: -40 °C to 35°C

DATA

- Data Buffer capacity: 400 readings.

PROBES

- Supports multiple types of probes for different applications
- Wide temperature range: -200°C to 200°C
- Accuracy:
    - Class A = +/-(0.15+0.002*T)°C or 100.00 +/-0.06Ω at 0°C
    - Class 1/10 DIN = +/-1/10*(0.3+0.005*T)°C or 100.00 +/-0.03 Ω at 0°C

WIRELESS

- IEEE 802.11b/g
- Up to 54Mbps
- Optional external antenna for extended range

802.11 SECURITY

- WPA2-PSK (AES)
- WPA1-PSK (TKIP)
- WPA1+2 PSK (AES+TKIP)
- WEP (40bit, 128bit)

SECURE COMMUNICATION PROTOCOL

- TCP/IP is used (unlike UDP protocol, TCP/IP guarantees data is delivered to the receiver and acknowledgement is sent back to sensor node)

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NETWORK

- IP based
- DHCP or static support
- Very small bandwidth footprint (less than 500 bites per package)

USER INTERFACE

- Four (4) different color LEDS for multiple status indication
- Five (5) input control buttons
- Micro USB connector for easy configuration

OPTIONAL FEATURES

- Micro SD card
- Door open/close indicator
- Output control option
- External power supply option

PHYSICAL DIMENSIONS

- Height: 4"3/4 (120 mm)
- Width: 3" (76mm) - 4" (100mm) with vial
- Thickness:
  - 1"1/4 top (32mm)
  - 2"1/8 bottom (54mm)

ACCESORIES

- Attachable vial holder for glycol bottle (to avoid air temperature fluctuations)
- Wall mount holster (for easy wall mount)
- Anti-spill protective and mounting case

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External Temperature Probes

The Wi-Fi Node supports any type of RTD sensors. The most prevalent probe types are:

Type	Temp Range	Typical Application
Standard	-40°C to 75°C	Refrigerators and freezers
High Precision	0°C to 100°C	Water baths
Ultra Low	-80°C to 50°C	Ultra low freezers
Cryogenic	-200°C to 0°C	Cryogenic
High Temperature	0°C to 200°C	Incubators, blanket warmers

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