



Arch Rock IPsensor Node is an IEEE 802.15.4 wireless battery-powered device with integrated temperature, humidity and light sensors. Available expansion ports and generic sensor drivers allow users to easily augment the IPsensor node by choosing from thousands of different external switches, sensors, and relays to create uniquely tailored wireless networks.

The versatile IPsensor node can be placed in residential, commercial, or enterprise settings and will automatically and securely join the Arch Rock PhyNet IP-based wireless mesh network via an IEEE 802.15.4 standards compliant radio with internal antenna operating at 2.4GHz.

A web-based interface lets users add external sensors without writing embedded software on the sensor nodes. Users can choose among available pre-compiled embedded applications to program the nodes over-the-air from the PhyNet™ server.

Users can configure and manage the node via a web-based interface on the PhyNet Server.

How is the IPsensor Node used?

Monitor conditions of data centers, manufacturing facilities, office buildings, and retail spaces with four high quality sensors built-in to each node:

- Temperature
- Humidity
- Photosynthetically Active Radiation
- Total Solar Radiation

Connect thousands of sensor types – thermal, energy, pulse counters, air flow, infrared, accelerometers, switches, etc. via available expansion ports:

- Analog to Digital Converters
- Binary input/output
- Open/close contacts

Control and actuate external device relays

How does the IPsensor Node work?

As part of an Arch Rock IP-based Wireless Sensor Network, the IPsensor Node:

- Joins an Arch Rock IP-based wireless mesh network automatically
- Acts as a routing node for other nodes in the wireless mesh network
- Is managed via embedded web services, ICMP, telnet-command shell



Arch Rock IPsensor Node

FEATURES

- Built-in sensors for temperature, humidity, total solar radiation (TSR), photosynthetically active radiation (PAR)
- Integrated expansion ports for additional sensors or switches
- Node-level support for native IETF 6LoWPAN-based IPv6
- Triply redundant mesh routing
- Management interface via Embedded Web Services
- Services: UDP/TCP/Command Shell
- Supports Over-the-air (OTA) programming
- AES128-based link encryption and node authentication for secure communications

BENEFITS

- Quickly create, test and deploy applications by connecting to on-board sensors or the large universe of sensors, switches, and relays available through the expansion ports
- Nodes in the IP-based Wireless Sensor Network communicate natively with any other IP devices on the enterprise network regardless of media link
- Reliable, secure, responsive and energy efficient mesh networking

EMBEDDED APPLICATIONS

Arch Rock embedded applications specify sensing and control services and generic drivers for internal and external sensors, switches and relays available on the IPsensor node. All embedded applications include multi-hop, self-organizing mesh networking, industry-standard IETF 6LoWPAN-based IPv6 support. Embedded monitoring, configuration, alarm, data, and management functionality is exposed as Web Services.

PRODUCT SPECIFICATIONS

CONNECTORS

1 x USB 2.0 connector
1 x Extender Board with Screw Terminals

RADIO & MICROCONTROLLER

**Fully-enclosed, TelosB-compatible,
2.4 GHz IEEE 802.15.4 low-power radio:**
16 Channels
Integrated internal antenna
TI MSP430, 10K RAM, 48K Flash,
12 bit ADC, 128k External Flash

EXTERNAL INTERFACE**Power Switch:**

On / Off

Ident Button:

Boot from Golden Image
Reset to factory defaults
Self Identity
Network Join

LED:

Status

SECURITY

AES-128 bit encryption w/ CBC-MAC & CCM
Unique keying with system pass phrase

INTERNAL SENSORS**Temperature:**

Accuracy: +/- 2° C

Humidity:

Accuracy: +/- 5%

Photosynthetically Active Radiation**Total Solar Radiation****EXTERNAL PORTS**

(using standard embedded application)

2 x Analog-Digital Converters
1 x Switch
3 x Binary Input/Outputs

PHYSICAL SPECIFICATIONS**Operating Temperature:**

0° C to +70° C

Operating Humidity:

0% to 100% (non-condensing)

Storage Temperature:

-40° C to +85° C

Enclosure Rating:

IP30

Dimensions:

9.7cm x 9.2cm x 3.0cm (H x W x D)

Weight:

167 grams (excluding batteries)

Antenna:

Integrated On-board

Wireless Frequency Range:

2.405 ~ 2.480 GHz

Power:

3VDC (2x1.5 V AA batteries)

IP NETWORKING**UDP port 6400:**

EWS management protocol

TCP port 23:

telnet - command shell

UDP/TCP port 7:

echo - echos back text

UDP port 9:

reboot - remotely reboot node

UDP port 1000:

S/W update - firmware download & reprogram

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Who We Are:

Arch Rock is a pioneer in standards-based wireless sensor network (WSN) technology. The company's products, which gather data from the physical world and integrate it into the enterprise IT infrastructure, are used in environmental monitoring, tracking and logistics, industrial automation and energy monitoring and control.

