• 2.4 GHz IEEE 802.15.4, Tiny Wireless Measurement System
• Designed Specifically for Deeply Embedded Sensor Networks
• 250 kbps, High Data Rate Radio
• Wireless Communications with Every Node as Router Capability
• Expansion Connector for Light, Temperature, RH, Barometric Pressure, Acceleration/Seismic, Acoustic, Magnetic and other ACEINNA Sensor Boards

Applications
• Indoor Building Monitoring and Security
• Acoustic, Video, Vibration and Other High Speed Sensor Data
• Large Scale Sensor Networks (1000+ Points)

MICAz
The MICAz is a 2.4 GHz Mote module used for enabling low-power, wireless sensor networks.

Product features include:
• IEEE 802.15.4 compliant RF transceiver
• 2.4 to 2.48 GHz, a globally compatible ISM band
• Direct sequence spread spectrum radio which is resistant to RF interference and provides inherent data security
• 250 kbps data rate
• Supported by MoteWorks™ wireless sensor network platform for reliable, ad-hoc mesh networking
• Plug and play with ACEINNA’s sensor boards, data acquisition boards, gateways, and software

MoteWorks™ enables the development of custom sensor applications and is specifically optimized for low-power, battery-operated networks. MoteWorks is based on the open-source TinyOS operating system and provides reliable, ad-hoc mesh networking, over-the-air-programming capabilities, ACEINNA development tools, server middleware for enterprise network integration and client user interface for analysis and a configuration.

Processor & Radio Platform (MPR2400CB)
The MPR2400 is based on the Atmel ATmega128L. The ATmega128L is a low-power microcontroller which runs MoteWorks from its internal flash memory. A single processor board (MPR2400) can be configured to run your sensor application/processing and the network/radio communications stack simultaneously. The 51-pin expansion connector supports Analog Inputs, Digital I/O, I2C, SPI and UART interfaces. These interfaces make it easy to connect to a wide variety of external peripherals. The MICAz (MPR2400) IEEE 802.15.4 radio offers both high speed (250 kbps) and hardware security (AES-128).

Sensor Boards
ACEINNA offers a variety of sensor and data acquisition boards for the MICAz Mote. All of these boards connect to the MICAz via the standard 51-pin expansion connector. Custom sensor and data acquisition boards are also available. Please contact ACEINNA for additional information.
Notes

1 MHz steps for compliance with IEEE 802.15.4/D18-2003.
Specifications subject to change without notice

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**Processor/Radio Board**

- Processor Performance
  - Program Flash Memory: 128K bytes
  - Measurement (Serial) Flash: 512K bytes
  - Configuration EEPROM: 4K bytes
  - Serial Communications: UART
  - Analog to Digital Converter: 10 bit ADC
  - Other Interfaces: Digital I/O, I2C, SPI
  - Current Draw: 8 mA (Active mode), < 15 µA (Sleep mode)

**RF Transceiver**

- Frequency band: 2400 MHz to 2483.5 MHz
  - ISM band, programmable in 1 MHz steps
- Transmit (TX) data rate: 250 kbps
- RF power: -24 dBm to 0 dBm
- Receive Sensitivity: -90 dBm (min), -94 dBm (typ)
- Adjacent channel rejection: 47 dB (+ 5 MHz channel spacing), 38 dB (- 5 MHz channel spacing)
- Outdoor Range: 75 m to 100 m
  - 1/2 wave dipole antenna, LOS
- Indoor Range: 20 m to 30 m
  - 1/2 wave dipole antenna
- Current Draw:
  - 19.7 mA (Receive mode)
  - 11 mA (TX, -10 dBm)
  - 14 mA (TX, -5 dBm)
  - 17.4 mA (TX, 0 dBm)
  - 20 µA (Idle mode, voltage regular on)
  - 1 µA (Sleep mode, voltage regulator off)

**Electromechanical**

- Battery: 2X AA batteries (Not Include n Pack)
- External Power: 2.7 V - 3.3 V
  - Molex connector provided
- User Interface: 3 LEDs
  - Red, green and yellow
- Size (in):
  - 2.25 x 1.25 x 0.25 (Excluding battery pack)
- Weight (oz):
  - 0.7 (Excluding batteries)
- (grams):
  - 18 (Excluding batteries)
- Expansion Connector: 51-pin
  - All major I/O signals

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**Base Station**

A base station allows the aggregation of sensor network data onto a PC or other computer platform. Any MICAz Mote can function as base station when it is connected to a standard PC interface or gateway board. The MIBS10 or MIB520 provides a serial/USB interface for both programming and data communications. ACENNIA also offers a stand-alone gateway solution, the MIB600 for TCP/IP-based Ethernet networks.

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**Ordering Information**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>MPR2400CB</td>
<td>2.4 GHz MICAz Processor/Radio Board</td>
</tr>
<tr>
<td>WSN-STA2400CB</td>
<td>2.4 GHz MICAz Starter Kit</td>
</tr>
<tr>
<td>WSN-PRO2400CB</td>
<td>2.4 GHz MICAz Professional Kit</td>
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