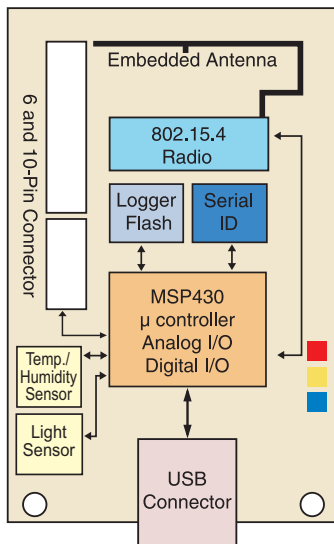# TELOSB

TELOSB MOTE PLATFORM

ACEINNA
POWERFUL SENSING SOLUTIONS

- IEEE 802.15.4 Compliant

- 250 kbps, High Data Rate Radio

- TI MSP430 Microcontroller with 10kB RAM

- Integrated Onboard Antenna

- Data Collection and Programming via USB Interface

- Open-source Operating System

- Integrated Temperature, Light and Humidity Sensor

Applications

- Platform for Low Power Research Development

- Wireless Sensor Network Experimentation

TPR2420CA Block Diagram

TELOSB

MEMSIC's TelosB Mote TPR2420 is an open-source platform designed to enable cutting-edge experimentation for the research community. The TPR2420 bundles all the essentials for lab studies into a single platform including: USB programming capability, an IEEE 802.15.4 radio with integrated antenna, a low-power MCU with extended memory and an optional sensor suite. TPR2420 offers many features, including:

- IEEE 802.15.4 compliant RF transceiver
- 2.4 to 2.4835 GHz, a globally compatible ISM band
- 250 kbps data rate
- Integrated onboard antenna
- 8 MHz TI MSP430 microcontroller with 10kB RAM
- Low current consumption
- 1MB external flash for data logging
- Programming and data collection via USB
- Sensor suite including integrated light, temperature and humidity sensor
- Runs TinyOS 1.1.11 or higher

The TelosB platform was developed and published to the research community by UC Berkeley. This platform delivers low power consumption allowing for long battery life as well as fast wakeup from sleep state. The TPR2420 is compatible with the open-source TinyOS distribution.

TPR2420 is powered by two AA batteries. If the TPR2420 is plugged into the USB port for programming or communication, power is provided from the host computer. If the TPR2420 is always attached to the USB port no battery pack is needed.

TPR2420 provides users with the capability to interface with additional devices. The two expansion connectors and onboard jumpers may be configured to control analog sensors, digital peripherals and LCD displays.

TinyOS is a small, open-source, energy-efficient software operating system developed by UC Berkeley which supports large scale, self-configuring sensor networks. The source code software development tools are publicly available at:
http://www.tinyos.net

Specifications	TPR2420CA	Remarks
Module		
Processor Performance	16-bit RISC	
Program Flash Memory	48K bytes	
Measurement Serial Flash	1024K bytes	
RAM	10K bytes	
Configuration EEPROM	16K bytes	
Serial Communications	UART	0-3V transmission levels
Analog to Digital Converter	12 bit ADC	8 channels, 0-3V input
Digital to Analog Converter	12 bit DAC	2 ports
Other Interfaces	Digital I/O,I2C,SPI	
Current Draw	1.8 mA	Active mode
	5.1 µA	Sleep mode
RF Transceiver		
Frequency band[1]	2400 MHz to 2483.5 MHz	ISM band
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	Inverted-F antenna
Indoor Range	20 m to 30 m	Inverted-F antenna
Current Draw	23 mA	Receive mode
	21 µA	Idle mode
	1 µA	Sleep mode
Sensors		
Visible Light Sensor Range	320 nm to 730 nm	Hamamatsu S1087
Visible to IR Sensor Range	320 nm to 1100nm	Hamamatsu S1087-01
Humidity Sensor Range	0-100% RH	Sensirion SHT11
Resolution	0.03% RH	
Accuracy	± 3.5% RH	Absolute RH
Temperature Sensor Range	-40°C to 123.8°C	Sensirion SHT11
Resolution	0.01°C	
Accuracy	± 0.5°C	@25°C
Electromechanical		
Battery	2X AA batteries	Attached pack
User Interface	USB	v1.1 or higher
Size (in)	2.55 x 1.24 x 0.24	Excluding battery pack
(mm)	65 x 31 x 6	Excluding battery pack
Weight (oz)	0.8	Excluding batteries
(grams)	23	Excluding batteries
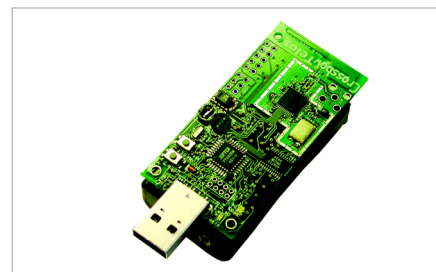
TPR2420 with Sensor

Suite

Notes
[1]Programmable in 1 MHZ steps, 5 MHz steps for compliance with IEEE 802.15.4/D18-2003.
Specifications subject to change without notice

Ordering Information

Model	Description
TPR2420CA	IEEE 802.15.4 TelosB Mote with Sensor Suite