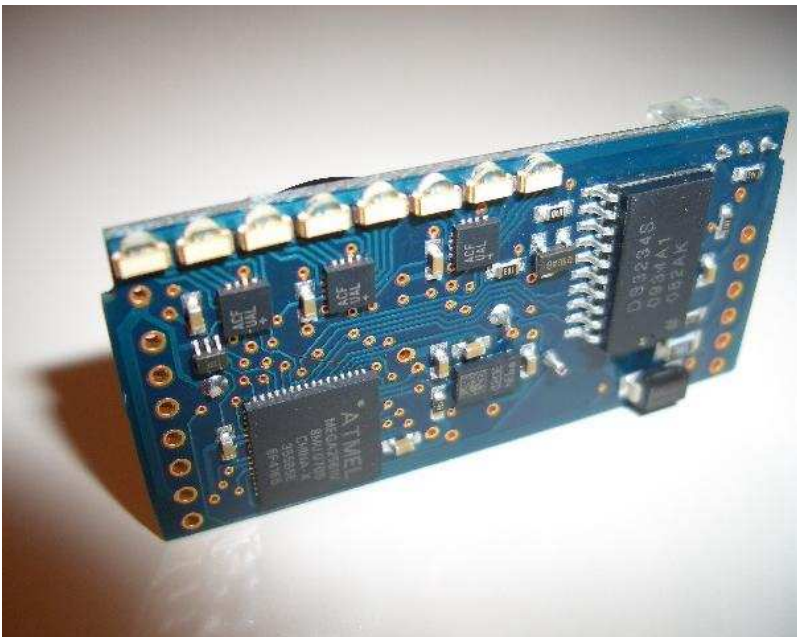


# AmbiComp

## Peripheral Sandwich Module



The Peripheral Sandwich Module is a component of the AmbiComp project and provides a set of supporting functions. On the microcontroller residing on the Peripheral Sandwich Module runs the AmbiComp Virtual Machine (ACVM), which is capable of connecting with other components in order to set up a scalable AmbiComp network. Based on this network, small and medium-sized enterprises can develop their applications.



### Features

---

- Powerful RISC microcontroller
- Power supply via the backplane
- Buffered real-time clock
- 8 full-color LEDs
- Light sensor
- 3-axis accelerometer
- Buzzer
- AICU bus interface for direct communication with other modules
- Java Virtual Machine

## Spezifikation

### Microcontroller:

The *Peripheral Sandwich Module* hosts an 8-bit RISC microcontroller, type AVR\* ATmega2561 from Atmel\* with a clock rate of 8 MHz.

### Software:

On the microcontroller, a compact hardware abstraction layer (BIOS) enables easy and efficient access to all interfaces of the sandwich module. With the help of this BIOS, the AmbiComp-specific Java Virtual Machine (ACVM) may run programs across all modules of a sandwich stack. Several of these stacks, which are dislocated, are connected by the ACVM through the use of a powerful routing

procedure (SSR). (More information on the ACVM and the program development for a sandwich stack in Java using an Eclipse plug-in can be found in the relevant data sheets.)

### Memory:

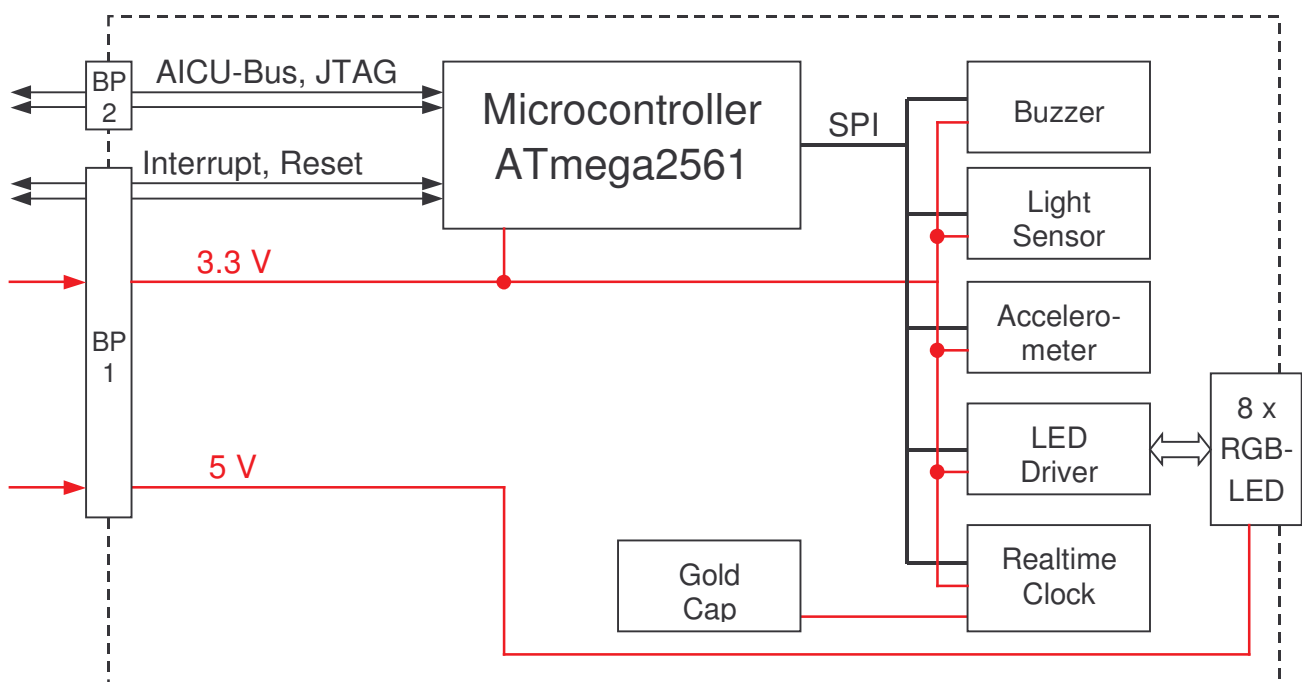
The microcontroller hosts 256 KiB flash for BIOS, ACVM and Java program, 8 KiB SRAM, and 4 KiB EEPROM.

### Peripherals:

The module provides the following functions:

- Real-time clock with high accuracy, buffered with a gold cap. (The runtime of the clock solely powered by the gold cap is typically 361 hours, at minimum 235 hours)

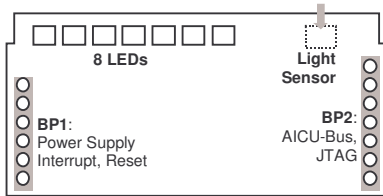
- 8 RGB LEDs to display all colors and intensities
- Light sensor, 3 db limits of the wave length approx. .430 – 970 nm, opening angle approx. 70°
- Buzzer for acoustical output, resonance frequency: 4000  $\pm$ 500 Hz, volume: 85 dB in 10 cm distance
- 3-xis accelerometer based on MEMS technology, maximum acceleration:  $\pm$  2 g or  $\pm$  8 g (programmable), resolution 16.2 mg or 64.8 mg per digit, max frequency of vibration: 400 Hz.



\* Atmel and AVR are registered trademarks of Atmel Corporation, San Jose, California, or its subsidiaries.

### Backplane:

Via an AmbiComp-specific inter-connection scheme ("backplane"), the *Peripheral Sandwich Module* can be connected with other AmbiComp modules.



Detailed dimensioning and pin layout are contained in the data sheet "Sandwich Modules - General Information".

## Power Supply

The power is provided by other modules via the backplane, which has a primary power supply.

The current consumption is approximately 107 mA (at 3.3 Volt). The 8 LEDs are not considered. They need at maximum 480 mA from 5 V (white, full intensity); the peak value is 182 mA.

## Mechanical Data

The module measures 49.8 mm x 24 mm. The height is 11 mm.

## Environmental Conditions

The *Ethernet Sandwich Module* is designed for indoor use.

The operating temperature range is -10 to +70 °C.

The storage temperature range is -40 to +85 °C.

The module conforms to the RoHS requirements.

## Order Code

105 000 14