

AmbiComp

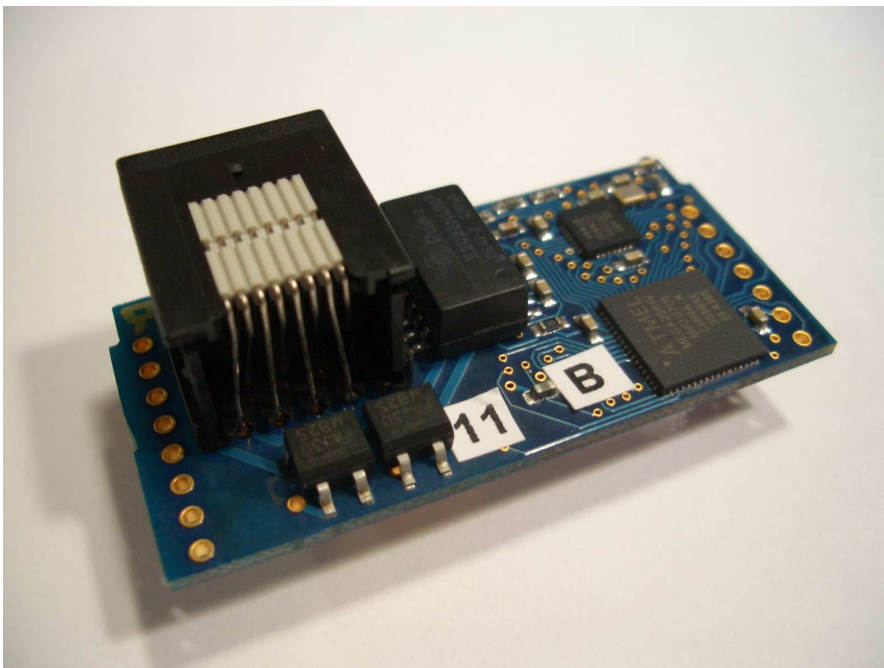
Ethernet Sandwich Module



The Ethernet Sandwich Module is a component of the AmbiComp project and provides an Ethernet interface. This allows communication with other modules and devices (e.g., PC) as well as integration of an AmbiComp system into a network. On the microcontroller residing on the Ethernet 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

- 10 Mbit/s Ethernet interface, supporting auto negotiation as well as full and half duplex modes
- Powerful RISC microcontroller with additional memory
- Power supply via the backplane or via the Ethernet interface (Power-over-Ethernet)
- Green and yellow LED to display module status
- LED for network activity and link status
- AICU bus interface for direct communication with other modules
- Java Virtual Machine



Specification

Microcontroller:

The *Ethernet 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. Additional 512 KiB SRAM are available through a separate integrated circuit.

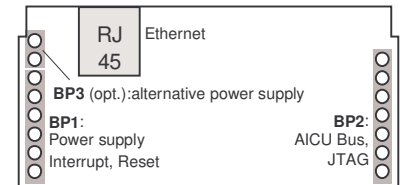
Ethernet:

A 10 Mbit/s Ethernet transceiver provides external communication. The transceiver supports auto negotiation as well as half and full duplex. The MAC address is pre-programmed.

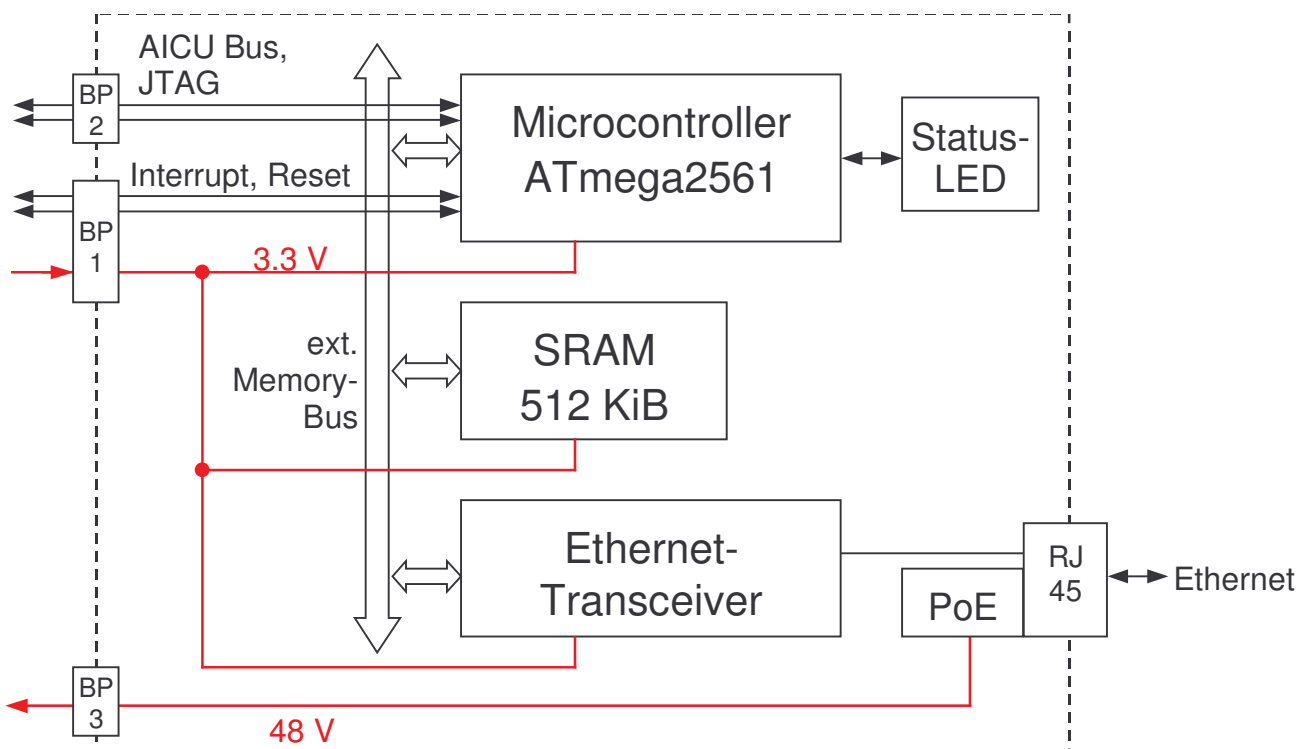
The interface supports Power-over-Ethernet (PoE).

Backplane:

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



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



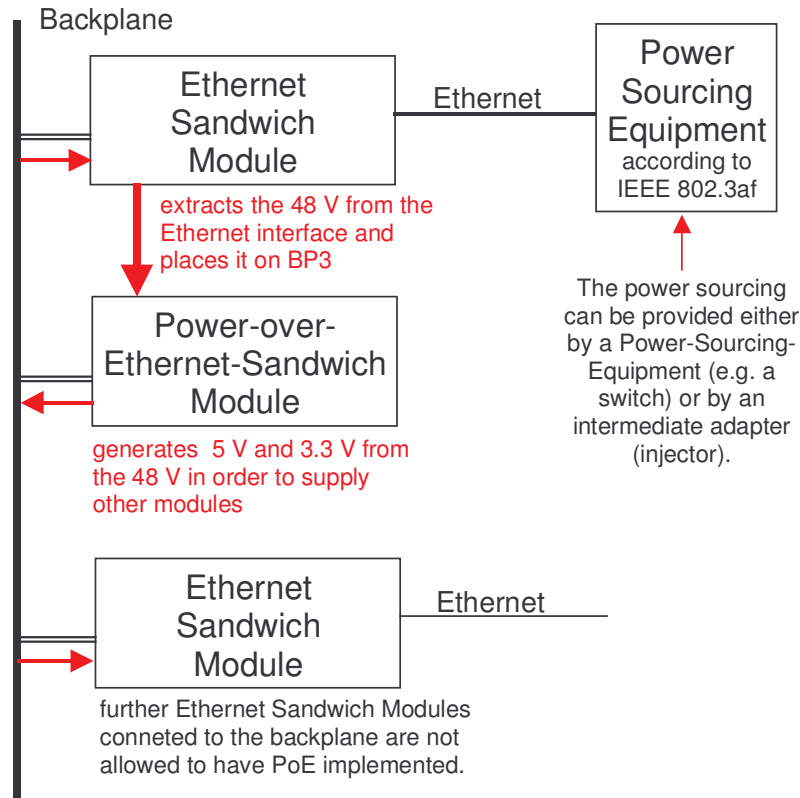
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Power Supply

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

As an alternative, the module and other AmbiComp modules can be connected via Power-over-Ethernet (PoE) according to IEEE802.3af as shown in the figure below (within the defined power limits).

The current consumption is approximately 132 mA (at 3.3 Volt), the peak value is 182 mA. The three status LEDs are not considered. Each of them consumes additional 10 mA.



Power supply with "Power-over-Ethernet"

Mechanical Data

The module measures 49.8 mm x 24 mm. The height is 15 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

103 000 15