EM500 BASIC-programmable Ethernet Module

Tibbo TECHNOLOGY

Features

- 10/100BaseT Ethernet port
- Dual-function LED control
- Thickness: 6.5mm
- One serial port, 8 I/O lines
- Works with a standard RJ45 jack
- Height and width of an RJ45 jack

About

The EM500 is a miniature stand-alone BASIC-programmable embedded module, designed to be used in combination with a standard LED/magnetics RJ45 jack. The combined footprint of the EM500 and a standard jack is only 28.5x18.5mm.

The module's hardware mix, which includes 10/100BaseT Ethernet, a serial port, and 8 I/O lines, has been carefully tailored to address the basic needs of lightweight network-enabled control devices.

Compact dimensions, space-saving "vertical slice" mechanical design, low power consumption, and innovative dual-function LED control lines make the module an excellent fit for miniature, cost-sensitive designs.

In the near future, the EM500 will also support Wi-Fi communications (using the GA1000 add-on board), as well as external LCD, keypad, and flash disk (via an SPI flash IC).

The EM500 can be ordered standalone or in combination with an industry-standard RJ45 jack and/or all discrete components required to complete the circuit.

Specifications

- Based on a second-generation ASIC (T2000).
- 10/100BaseT, auto-MDIX Ethernet port (no magnetics)
- One serial port (CMOS-level):
  - Baudrates of up to 460800bps;
  - None/even/odd/mark/space parity modes;
  - 7/8 bits/character modes;
  - Full-duplex mode with optional flow control;
  - Half-duplex mode with direction control;
  - Encoding and decoding of Wiegand and clock/data streams.
- 512KB flash memory for firmware and application.
- 200 bytes of EEPROM space for data storage.
- 8 general-purpose I/O lines (including 2 interrupt lines).
- Control lines for two external dual-function status LEDs.
- Additional control line for a dedicated Ethernet link LED.
- External reset source required.

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Specifications (continued)

- Power: 260mA @ 3.3V (100BaseT mode).
- “Vertical slice” construction; dimensions: 18.5x16.0x6.5mm.
- Firmware is upgradeable through the serial port or network (including “cold upgrade” firmware uploads through the network).
- To be available later:
  - Optional Wi-Fi interface (will require GA1000 add-on module).
  - Flash disk (will require an external SPI flash IC).
  - Support for external LCD and keypad.

Programming

Platform Objects

- Sock — socket comms (up to 16 UDP, TCP, and HTTP sessions).
- Net — controls Ethernet port.
- Ser — up to 4 serial ports (UART, Wiegand, and clock/data modes).
- Io — handles I/O lines, ports, and interrupts.
- Stor — provides access to the EEPROM
- Romfile — facilitates access to resource files (fixed data).
- Pat — “plays” patterns on up to five LED pairs.
- Button — monitors MD line (setup button).
- Sys — in charge of general device functionality.

Function Groups

String functions (21 in total!), date/time conversion functions, and hash calculation functions (md5 and sha1).

Variable Types

Byte, char, integer (word), short, dword, long, real, string, plus user-defined arrays and structures.

Tibbo Integrated Development Environment (TIDE)

All BASIC-programmable Tibbo devices are provided with free TIDE software.

Code in Comfort

Enjoy a modern code editor supporting syntax highlighting, context help, code hinting, and auto-completion.

Debug with Ease

Set breakpoints, watch variables, inspect the stack, step through your code... the built-in debugger in Tibbo IDE provides all the tools for fast and convenient debugging.

Our debugger does not rely on any special hardware like an ICE machine or a JTAG board. Simply connect your Tibbo device to the Ethernet, select it in the IDE, and you are all set!

For more information on TIDE, see http://basic.tibbo.com/product/tide.html