

## The EM202 is Tibbo's new 100BaseT Ethernet-to-serial module

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The EM202 is a "RJ45 form factor" Ethernet Module for onboard installation. Module hardware includes one 100BaseT Ethernet port (standard Ethernet magnetics and RJ45 connector are integrated in the EM202), one serial port (CMOS-level), and an internal processor, whose firmware acts as a bridge between the Ethernet and serial ports.

Standard Ethernet cable plugs directly into the RJ45 connector on the network "side" of the Module. Serial "side" interfaces directly to the serial port pins of most microcontrollers, microprocessors, UARTs, etc.

From the hardware standpoint, the EM202 can be viewed as a universal platform suitable for running a variety of network and serial communications-related applications. It is the application firmware, not the hardware that gives the EM202 most of its functionality.

The Application firmware EM202 is supplied with, currently in its 3rd generation ("Release3"), turns the EM202 into a Serial Device Server used to connect serial devices to the Ethernet (TCP/IP) networks.

The application firmware of the EM202 can be upgraded through the module's serial port or Ethernet port. Serial upgrades are facilitated by a so-called Monitor- a fixed "service" firmware inside the EM202. The Monitor itself cannot be upgraded. Network upgrades rely on the application firmware itself- there is a self upgrade algorithm that will be detailed later.

Since most of the EM202's operation is defined by its firmware the major part of the EM202's functional description can be found in the Device Server Application Firmware Manual. This EM202 Ethernet Module Manual focuses on the hardware portion of the EM202.

The EM202 is Tibbo's new 100BaseT Ethernet-to-serial Module in RJ45 form factor. Very compact and highly integrated, the Module features built-in Ethernet magnetics, RJ45 connector, and even four status LEDs! While being a true one-component Ethernet-to-serial solution, the EM202 has a board footprint just slightly bigger than that of a regular RJ45 connector. The EM202 is upward-compatible with Tibbo's original EM100 Ethernet Module.





### Features

- Compact, dimensions only 32.3x19x16mm
- Power consumption: 230mA@5VDC
- One 100BaseT Ethernet port with built-in RJ45 connector and Ethernet magnetics
- One serial (TTL) port with full- or half-duplex operation; baudrates of up to 115200bps; 5 parity modes (none, even, odd, mark, space); 7 or 8 data bits; optional RTS/CTS flow control
- Serial port includes RTS, CTS, DTR, and DSR lines; all lines can be used as remotely controlled I/O
- Four built-in LEDs display status information
- Two extended 12KByte routing buffers
- Onboard EEPROM stores numerous user-definable functioning parameters (Setting)
- Supported network protocols include UDP, TCP, ARP, ICMP (PING) and DHCP
- Module setup can be performed through the serial port or network (over-the-network IP-address configuration is also supported). Network setup can

be performed using UDP commands or "Telnet" TCP connection

- Specialized "on-the-fly" commands for serial port control, "modem" commands to control network connections, status commands for remote status monitoring, etc.
- Internal firmware is upgradeable through the serial port or network

Tibbo Ethernet Modules Comparison Chart

	<a href="#">EM100</a>	<a href="#">EM120</a>	<a href="#">EM200</a>	<a href="#">EM202</a>
Item				
Form factor	IC Chip			RJ45 Connector
Ethernet port type	10BaseT		100/10BaseT	
Ethernet magnetics	Built-in	External		Built-in
Ethernet (RJ45) connector	External			Built-in
Serial port	TTL; full-duplex (suitable for RS232/RS422 comm.) and half-duplex (suitable for RS485 comm.) operation; available lines (full-duplex mode): RX, TX, RTS, CTS, DTR, DSR; Baudrates: 150-115200bps; parity: none, even, odd, mark, space; 7 or 8 bits/byte; optional RTS/CTS flow control			
Number of additional general-purpose I/O lines	2	5		0
Routing buffer size (bytes)	510x2	12Kx2		
Average power consumption (mA)	40	50	220	230
Operating temperature (C)	(Room)		55	40
Mechanical dimensions (mm)	46.2x28x13	35x27.5x9.1	32.1x18.5x7.3	32.5x19x15.5

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