



ETRX2 – (ZigBee Technology) Wireless Mesh Networking Module

The Telegesis ETRX2 module is a low power, 2.4GHz ISM band transceiver, based upon the Ember EM250 single chip ZigBee / IEEE802.15.4 solution and EmberZNet 2.xx meshing technology.

Designed for integration into any device without the need for RF expertise the ETRX2 enables you to add powerful wireless networking capability to your products and bring them quickly to market. The comprehensive Telegesis AT command line interface allows for quick integration without complex software engineering.

MODULE FEATURES

- Small form factor, SMT module 37.5 x 20.5mm.
- Optional board-to-board or board-to-cable connector.
- 3 antenna options: Integrated ceramic antenna, Hirose U.FL coaxial connector or single port 50Ω pad.
- XAP16b microcontroller with non-intrusive debug interface (SIF).
- 128k flash and 5kbytes of SRAM.
- UART interface with DMA.
- Wide supply voltage range (2.1 to 3.6V).
- Module ships with standard Telegesis AT-style software interface based on the EmberZnet 2.xx meshing stack.
- Can act as an End Device, Router or Coordinator.
- 12 general-purpose I/O lines and 2 analogue inputs (all 17 GPIOs of the EM250 are accessible).
- Supports 4 different power modes for extended battery life.
- Current consumption below 1uA in deep sleep mode with self wakeup.
- Firmware upgrades via RS232 or over the air (password protected).
- Hardware supported encryption (AES-128).
- Tested for CE and FCC compliance (with integrated antenna), FCC modular approval.
- Operating temperature range: -40°C to +85°C.
- Future Options: On board, low power voltage regulator, DC/DC regulator and watch crystal.

RADIO FEATURES

- Based on the Ember EM250 single chip ZigBee / IEEE802.15.4 solution.
- 2.4GHz ISM Band.
- 250kbit/s over the air data rate – NB Actual usable data throughput with ZigBee is about 20kbps.
- 16 channels (802.15.4 Channel 11 to 26).
- +3dBm output power (+5dBm in boost mode).
- High sensitivity of -98dBm typ. at 1% packet error rate.
- Hardware acceleration for IEEE 802.15.4 compliant transmissions.

SUGGESTED APPLICATIONS

- AMR – Automatic Meter Reading.
- Wireless Alarms and Security.
- Home/Building Automation.
- Wireless Sensor Networks.
- M2M Industrial Controls.
- Future ZigBee systems.
- PC Peripherals.
- IEEE 802.15.4 Systems.
- Item Tracking.

DEVELOPMENT KITS

- Two complementary development kits consisting of three or five modules and a single development board with USB connectivity and I/O breakouts.
- AT-style software interface command dictionary can be modified for high volume customers.
- Custom software development available upon request.

EXAMPLE AT-STYLE COMMANDS

AT+BCAST	Sends a Broadcast
AT+UCAST:<address>	Sends a Unicast
AT+EN	Establish PAN network

Unlike many other module command layers the Telegesis AT-Style command set fully mirrors the functionality of the EmberZNet mesh networking stack. With the ETRX2 module there is therefore no requirement for any embedded firmware expertise when engineering your mesh networking solution.

The ETRX2 is available in Power Amplified form.



Please see reverse of page for product range.

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ETR2-PA - Power Amplified Mesh Module

The Telegesis ETR2-PA offers boosted output power whilst being a drop in replacement for the standard ETR2. Care was taken to retain the low deep sleep current to make this module ideally suited for battery operated end devices with the lowest transmit current in its class.

ETR2USB - USB Stick

Based on the ETR2 module, the USB stick allows a PC/Server to monitor and control devices in a ZigBee network. The USB stick acts as a virtual com port in Windows and is controlled by the Telegesis AT-Style Commands.



ETR2CF - CF Card

Telegesis has used the ETR2 Module to provide a portable handheld unit able to communicate with other modules in the field.

Can be used in a PDA with a CF slot or in laptop computer with a PCMCIA/CF adaptor. Contains an ETR2 module and therefore all the usual Telegesis AT-style Commands available via a virtual com port.



Router-E (above)

To accompany the Telegesis ETR2 wireless mesh networking modules the Router-E offers an easy way to extend the range of ZigBee networks. Acts as a "router" which enables increased distance between nodes in a ZigBee network.

EAP-E - Ethernet Access Point (below)

To accompany the Telegesis ETR2 wireless mesh networking modules the EAP-E Ethernet Access Points offer an easy way to interact with remote ZigBee networks using Ethernet.

Via Telnet, or a virtual COM port, the Telegesis AT-Command interface - based on the EmberZNet meshing stack - can be easily accessed by the application software. Custom firmware development is also supported.



ETR2DVKA-Plus - upgraded Development Kit (above)

The Development Kit provides genuine quick and easy, out-of-the-box evaluation and application development, based on the Telegesis wireless meshing modules. Kit contents as per ETR2DVKA Plus:-

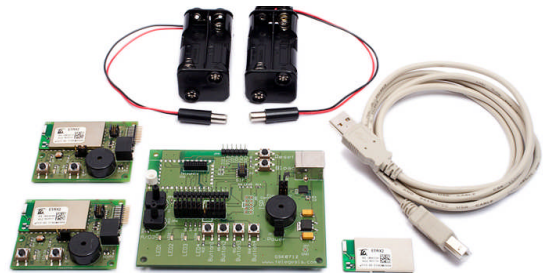
- ZigBee USB stick
- Power amplified module mounted on carrier board
- Power amplified module with external antenna connector
- ½ wave antenna and cable for above

Experiment using the power amplified ETR2-PA modules with their greatly extended range.

ETR2DVKA - Development Kit (below)

This ETR2 Development Kit provides genuine quick and easy, out-of-the-box construction of a working mesh network. Using the comprehensive AT-style Command Dictionary and the simple to use Telegesis Terminal software package provided, it should take less than half an hour to set up a three-way mesh network and to begin detailed, in-depth assessment of the latest EmberZNet meshing technology. Kit includes three ETR2 modules.

New Module Carrier Boards now have temperature and light sensor plus SIF interface.



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