



## ETRX2-PA – (ZigBee Technology)

### Power Amplified Mesh Networking Module

The Telegesis ETRX2-PA offers boosted output power whilst being a drop in replacement for the standard ETRX2. 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.

Based on the Ember EM250 single chip ZigBee solution utilizing EmberZNet2.xx meshing technology, it has been designed for fast integration into any device without the need for RF experience and expertise.

#### Optional U.FL external antenna connector - ETRX2HR-PA

#### 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 two or three 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
AT+JN	Join PAN

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.

At power-up the last configuration is loaded from non-volatile S-Registers, which can eliminate the need for an additional host controller.

#### MODULE FEATURES

- Small form factor, SMT module 37.75 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, optional software support for hardware I<sup>2</sup>C and SPI.
- Wide supply voltage range (2.8 to 3.6V).
- Module ships with standard Telegesis AT-style software interface based on the mesh stack of EmberZNet 2.x.
- 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 2uA 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, 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/IEEE 802.15.4 solution.
- 2.4GHz ISM Band.
- 250kbit/s over the air data rate – NB actual usable data throughput with ZigBee is 20kpbs.
- 16 channels (802.15.4 Channel 11 to 26).
- +18dBm output power (<100mA).
- High sensitivity of -97dBm typ. at 1% packet error rate.
- Hardware acceleration for IEEE 802.15.4 compliant transmissions.