ETRXn Firmware Revision History

In order to find out the revision of your module's firmware use the "ATI<cr>" command.

If you are an existing customer and want to update your firmware please contact zigbeesupport@telegesis.com

R200	
Changes Initial Release	
Registers and Commands affected N/A	Indirectly affected N/A
Upgrade information available N/A	Upgrade Note Details N/A

R201	
Changes - Upgraded from EmberZNet2.1 to EmberZNet2.2.1 - Fixed problem with external interrupts which wouldn't trigger for specific actions - Set default of S1B to F0 - Fixed functionality 104 to 107 - Fixed potential problem with optional AT+SN parameter - Code size optimisations (no functional impact) - Optimisations for portability to ETRX2 (no functional impact) - Fixed S2A being the initial value of S29 - Scanning triggered by actions 0015 and 0016 now runs in the background - Action 0014 doesn't trigger on coordinator - Fixed critical bug in binding table handler - Removed cloning functionality due to bug in Ember bootloader - Fixed handling of mobile end devices	
Registers and Commands affected S1B S2A S29 AT+CLONE	Indirectly affected Nothing
Upgrade information available **Note: DO NOT use cloning. Use pass-through mode for OTA bootloading!**	Upgrade Note Details none

R202 27-April-2006	
Changes - Checking for bug fixed Ember bootloader R1005 before cloning - Added actions 0110 to 0113	
Registers and Commands affected - AT+CLONE	Indirectly affected N/A
Upgrade information available **<u>Note</u>: DO NOT use cloning. Use pass-through mode for OTA bootloading unless the local device uses >R202!**	Upgrade Note Details N/A

R203 15-May-2006	
Changes - Error 0x70 correctly renamed to error 0x28 - Fixed twisted bits in S0D and S0F (ETRX1) - Initial release (ETRX2) - Added S31 and S32 for ETRX2 - Changed Timer/Counter numbering conventions in documentation - Extended the number of supported baudrates - Number of characters for BCASTB, UCASTB and SCASTB are now shown in hexadecimal - Extended remote prompt of AT+OPLCHAN - Removed actions 104 to 107 - Code execution time improvements	
Registers and Commands affected - S0D, S0F (ETRX1) - S31, S32 (ETRX2) - AT+BCASTB, AT+UCASTB, AT+SCASTB - AT+OPLCHAN	Indirectly affected N/A
Upgrade information available **<u>Note</u>: DO NOT use cloning when upgrading from <R202 on ETRX1.**	Upgrade Note Details N/A

R204 2-June-2006

Changes

- Removed offset from RSSI readings introduced in R201 (now in dBm again)
- Fixed potential problem with timed actions triggered <2s after bootup
- Action 14 now only operates on routers only
- Code size optimisations (no functional impact)
- Added optional PWRCHANGE:nn prompt on change of power mode (S08)
- ETRX1: Added detection for unset brownout reset fuse at start-up and in S06
- Extended use of S01 on nodes other than coordinators. Can now define the only PAN ID willing to join using AT+JN and actions 15 and 16.
- ETRX2: Added S33 showing the supply voltage
- ETRX2: Added OTA bootloader support
- ETRX2: Added optional debouncing of interrupts in S2E
- Added automatic integrity check for channels
- Added mode for having more than just one remote S-register read in flight at any one time by setting bit 14 of S06
- Added capability of changes to S02 taking effect immediately rather than after leaving and joining a PAN by setting bit 15 of S08
- Power Mode 2 is overwritten by open channel
- ETRX2: Fixed Sleep Mode 1 stopping timers.
- AT+REMSN also lists node which originated the call if direct neighbour

Registers and Commands affected	Indirectly affected
- AT+LINKCHECK - S08 - S01 - S2E - S33 - AT+SREM - S06 - AT+REMSN	- All prompts displaying RSSI readings - AT+JN, action 15 and 16.
Upgrade information available	Upgrade Note Details
<u>Note</u>: DO NOT use cloning when upgrading from <R202 on ETRX1. **<u>Note</u>: ATSREM to remote Nodes <R204 may cause faulty readings**	N/A

R205 23-June-2006

Changes

- ETRX2: Moved to EmberZNet2.3RC3
- ETRX1: Moved to EmberZNet2.2.2
- Fixed actions 3000-3003
- PWRCHANGE prompt now displaying on correct bit setting of S08
- ETRX1: Added optional debouncing of interrupts in S2E
- Added possibility to disable channel OPEN and CLOSED prompts in S08
- Added two retries before leaving the network in case a mobile end device has moved and cannot find new parent
- Fixed potential reboot after unsuccessful join attempt of end device
- Improved reliability of channel operation
- Reduced amount of Broadcasts required for action 0014 -> greatly reduces appearance of error A1
- Released Together with fixed Telegesis Terminal 1.2.1
- Added ATSALL command

Registers and Commands affected	Indirectly affected
- S08 - S2E	
Upgrade information available	**Upgrade Note Details**
<u>Note</u>: DO NOT use cloning when upgrading from <R202 on ETRX1. **<u>Note</u>: ATSREM to remote Nodes <R204 may cause faulty readings**	N/A

R206 14-July-2006

Changes

- ETRX2: Moved to EmberZNet2.3
- ETRX1: Moved to EmberZNet2.2.3
- Efficiency improvements when polling for data
- Password protected registers can now be written remotely bit-wise
- AT&F doesn't leave the current network any more, just all S-Registers get reset to their original value
- Optional debouncing period of IRQ pins increased to 200ms
- ETRX2: UART can cause wakeup interrupt when bit 5 of S2E is set (1st character gets lost)
- Changed default setting of S2E to 0x0005

Registers and Commands affected	Indirectly affected
- AT&F - S2E	
Upgrade information available	**Upgrade Note Details**
<u>Note</u>: DO NOT use cloning when upgrading from <R202 on ETRX1. **<u>Note</u>: ATSREM to remote Nodes <R204 may cause faulty readings**	N/A

R207 4-August-2006

Changes

- Format of S0A changed on ETRX1 to be compatible with ETRX2
- ETRX1: Fixed error message when writing to S02
- ETRX2: Fixed invalid timing of timer 7
- Improved power management, polling and joining of SEDs and MEDs
- Added command AT+SSINK?
- Added command AT+PARENT?
- Added command AT+POLL
- Added command AT+CTABLE?
- Fixed problem with SED and MED sending data to a sink more than a single hop away
- Fixed Bug with regular channel following limited channel
- Improved operation of AT+SN and AT+REMSN

Registers and Commands affected	Indirectly affected
- S0A - S02 - AT+SSINK? - AT+PARENT? - AT+POLL - AT+CTABLE	- S26 - S27 - AT+SN - AT+REMSN
Upgrade information available	Upgrade Note Details
<u>Notes</u>: When reading S0A from an ETRX1 with firmware <R207 the reading will be incorrect.	Due to improvements to AT+SN and AT+REMSN we recommend that you do <u>not</u> use mixed networks consisting of R207 and previous releases of the firmware.

R208 21-November-2006

Changes

- Moved to EmberZNet2.5.1
- Fixed RSSI reading for AT+REMSN when bit 6 of the local node's S06 is set.
- ETRX2: Fixed AT+REMSN
- ETRX2: Fixed end device crashing during remote A/D read
- ETRX1: Fixed bit 8 of S06 showing the status of the brownout fuse
- A/D readings are now displayed in mV (hexadecimal)
- Removed Factory Default values for S2B, S2C and S04
- Improved channel operation and added end to end handshaking
- Disabled halting the module's operation while serial output buffers are full
- Functionality 0015 and 0016 now use latest encryption key when executing
- In S08 a character timeout of 1 second for xCASTB data and limited channels can be enabled
- ETRX2: Re-Introduced Cloning and added recovery bootloading
- ETRX2: Updated range of S02 in accordance with the Znet2.5 hardware abstraction layer
- Added bitwise writing of remote registers to ATSALL
- ETRX2: Improved hardware flow control
- Tidied up the list of error codes
- Increased maximum payload of BCASTs, UCASTs and SCASTs form 51 bytes to 65 bytes
- Improved efficiency of binding handling for unicasts
- Modified action 300x to flush the command buffer
- ETRX2: Set PWM defaults in S2F and S31 to an audible tone (800Hz)
- Improved PWM handling
- ETRX2: Improved handling of external interrupts and debouncing and decreased debouncing time to 100ms
- Changed default of S1B from F0 to F4
- Added optional error prompts for serial RX errors
- Improved broadcast buffering for end devices
- Added AT+RDATAB command to send raw data
- If S03 is all 0s (default) a random encryption key is generated when establishing a network (AT+EN)
- ETRX2: Fixed ATSALL
- Improved functionality for bit E of S08

Registers and Commands affected	Indirectly affected
- AT+REMSN - S08 - S06 - S12, S13 - S02 - ATSALL - AT+CLONE - AT+RECOVER - Action 300x -	- S2B, S2C, S04 - AT+BCAST, AT+BCASTB - AT+UCAST, AT+UCASTB - AT+SCAST, AT+SCASTB - S1B

R208 21-November-2006 (continued)	
Upgrade information available **<u>Note:</u> After upgrading to R208 the unit will perform a factory reset on the ETRX2.** **<u>Note:</u> When sending messages to devices running R207 the payload must not exceed the former limitation of 51 bytes.**	Upgrade Note Details We recommend that all nodes in a network are upgraded to R208. Do not use mixed R207 and R208 networks

R209 16-January-2007	
Changes - ETRX1: Moved to EmberZNet2.5.2 - ETRX2: Moved to EmberZnet2.5.3 - ETRX2: Fixed PWM not initialising after reset and power up - ETRX2: When setting bit 6 of S2E the internal reference (1.2V) of the A/D is presented at I/O0 during a measurement (about 16ms prior to measurement for settling until right after the measurement). During the remaining time I/O0 is unused. - ETRX2: When setting bit 7 of S2E I/O8 turns into A/D3, which can be read from S14 - ETRX1: Fixed external interrupt latencies - Improved channel stability with SED and MED. - When issuing AT+SINK? And no sink is known the local unit will also search for a sink after displaying "+SINK:None" - ETRX1: If bit E of S2E is set the A/D readings in S12 and S13 represent the 10 bit readings of the A/D registers against the internal 2.56V reference instead of the reading in mV. - ETRX2: Added pull-up enable register at S0C - Added Parents EUI to S2D - Improved Hardware flow control	
Registers and Commands affected - S2E - AT+SINK? - S2D - S0C - S14	Indirectly affected
Upgrade information available **<u>Notes</u>: When reading S0A from an ETRX1 with firmware <R207 the reading will be incorrect.**	Upgrade Note Details

R210 – 19-April-2007

Changes

- ETRX1: Moved to EmberZNet2.5.3
- Reduced amount of Broadcasts buffered for end devices to just a single one in order to save stack buffers
- Improved functionality 0014. Routers now check if they are orphaned by looking at neighbour table exchanges -> no additional traffic required
- Increased the size of the routing table for improved messaging capabilities in bigger networks
- Improved syntax checking for AT+UCAST and AT+SCAST commands
- Fixed SCASTB transmitting 1 additional character
- Improved AT+SN for bigger networks
- Added bit 5 of S06 to add V_{cc} reading in millivolts to transmissions for functionalities 0100-0103, 0110-0113 and 2000
- Improved new parent finding functionality for MEDs
- MEDs only leave network via functionality 0014 and not any more in case they don't find a new parent instantly. They will try to find a new parent instead of polling and also when executing functionality 0014.
- When setting bit 7 of S06 changes to S03 will take effect immediately. The unit will perform a "quiet" leave and will re-init with the new encryption key.
- Corrected functionality 2000 taking its time to be triggered by an IRQ
- All statements now consistently begin with <CR><LF>
- Fixed potential problem of channel transmitting '+' or '++'
- ETRX2: Added Compatibility for the PA version of the module

Registers and Commands affected	Indirectly affected
- AT+SCASTB - S06 - Functionality 2000	- AT+UCAST, AT+UCASTB - AT+SCAST, AT+SCASTB - AT+SN - Functionalities 0100-0103, 0110-0113 and 2000 - Channel operation
Upgrade information available	Upgrade Note Details
<u>Notes</u>: When using functionality 0014 on a node running R209 and this node is surrounded by R210 nodes only, it will leave the network. It is recommended to upgrade the entire network to R210.	

R211 – 27-June-2007	
Changes - Moved both Platforms to EmberZNet2.5.4 (fixes EUI64 corruption on the ETRX1) - Improved IRQ handling and debouncing on the ETRX2 - ETRX2: Added bit 8 of S2E to enable boost mode regardless of setting in S02 - ETRX1: Fixed AT+RDATAB command - Added functionalities 0018 to 001B for I/O mapping between devices - Added the AT+NTABLE command to show local Neighbour Table - Improved support for the ETRX2-PA	
Registers and Commands affected - S2E - AT+RDATAB - Functionalities 0018 – 001B - AT+NTABLE	Indirectly affected - S02
Upgrade information available **<u>Notes</u>: When using functionality 0014 on a node running R209 and this node is surrounded by >R210 nodes only, it will leave the network. It is recommended to upgrade the entire network to R211.**	Upgrade Note Details

R212 - 14-August-2007	
Changes - Fixed problem with debouncing when in sleep modes 2 and 3 (ETRX2) - Fixed Problem with MED not changing between two separate PANs using functionality 0014/0016 - Fixed Potential Problem when using re-starting actions driven by IRQs - ETRX2: MEDs don't re-join every 60 seconds in sleep mode 3 when polling using external interrupts	
Registers and Commands affected none	Indirectly affected n/a
Upgrade information available <u>Note:</u> When upgrading from versions prior to R208 please upgrade to R211 first and then upgrade to R212.	Upgrade Note Details

R213 – 18-March-2008

Changes

- Improved AT+CTABLE
- Improved channel stability for unbalanced/poor links
- The ETRX2-PA is now also allowed to use Boost mode
- Changes to S02 with bit S08F set remain after reset
- Added 16 bit network ID of local node to S34
- Unused GPIO7 (Pin38) set to be an output to make sure it doesn't float in deep sleep
- Prompts and responses can begin & end with <STX> & <ETX> respectively by setting S0B bit 7.
- Setting bits 8 or 9 of S08 doesn't disable the leading <CR><LF> for disabled prompts
- Prompt "noChilds" changed to "noChildren"
- Writes to non volatile 16 bit S-Registers are only completed if new value differs from old value
- When using debouncing external interrupts get executed after 100ms debounce time given that the correct level is still present
- Added Functionality 001C to check for stalled children and erase them from the child table (use with care, because children which haven't disappeared will not notice that they have been erased from their parent's child table and become unreachable)
- Added functionalities 0300 to 0321 to increment/decrement/clear the newly added S35
- Added functionalities 50xx & 51xx to start multiple timers

Registers and Commands affected	Indirectly affected
- AT+CTABLE - S08 - S0B - S34 - S35	- S02
Upgrade information available <u>Notes:</u> When upgrading from versions prior to R208 please upgrade to R211 first and then upgrade to R212. When using channels (AT+OPCHAN) the source and destination node must be both R213. The R213 channel does not interoperate with R212 and earlier versions.	Upgrade Note Details

R214 – 26-October-2009

Changes

- Moved to EmberZNet 2.5.5.1
- Fixed Functionality 0108
- Fixed I/O7 staying high when using an external RC timer for build in functionality on an end device, which looses the sink
- Improved channel stability
- Fixed Problem (introduced with R213) with end devices joining whilst asleep
- Fixed local node asking Trust Centre for permission in case a new node wants to join via the local node even if bits 2 and/or 3 are set in S06
- Removed factory test routines to save memory
- Improved IRQ and wakeup on UART Handling
- EVENT prompt can be disabled by setting bit 2 of S07

Registers and Commands affected	Indirectly affected
none	n/a

Upgrade information available	Upgrade Note Details
Notes: - The R214 channel does not interoperate with earlier versions than R213. - The PA module will only be auto detected on recent modules where the manufacturing tokens have been set correctly (where ATI produces human readable results)	