

## Functional Description of the FXI Symbioso control system and wireless remote.

### RF Hardware and Control Protocol

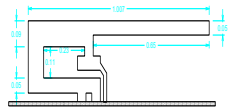
The FXI mattress control system consist of two parts, a control unit contains the power supply, blower and microcontroller system with an integral 2.4GHz IEEE 802.15.4 compliant RF transceiver and a remote unit that controls the functions of the mattress unit and contains an identical microprocessor and integrated transceiver module.

The mattress control unit and the remote control unit are designed around a Texas Instruments (TI) CC2531 (Datasheet attached) and CC2590 chip set operating the ZigBee RF4CE protocol standard. The CC2590 is a combination LNA and PA chip designed to operate in conjunction with the CC2531.

The mattress control unit is powered from an external 12vdc power supply and regulated down to 3.3vdc for the CC2531 and the CC2590.

The remote control unit is powered from three 1.5v AA alkaline cells and again regulated down to 3.3vdc for the CC2531 and CC2590 chips.

Both units contain an integral PCB antenna formally designated as a 2.4 GHz inverted 'F' antenna. Maximum gain is measured to be +3.3db and the overall size is 25.7 x 7.5 mm. The antenna is designed to have a 50 ohm feed point with no ground plane located behind the antenna. (See TI design note DN0007). Inverted F antenna shown aprox. Full size.



A full description of the ZigBee RF4CE protocol functionality is given in the attached PDF file.

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