Development of a multi-points wireless temperature monitoring system for optohybrid for CMS GEM project

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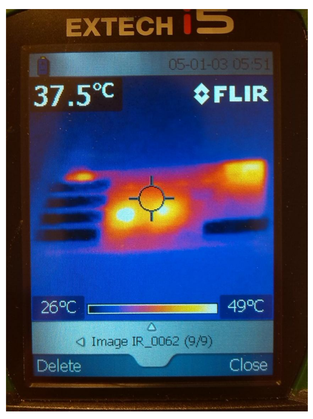
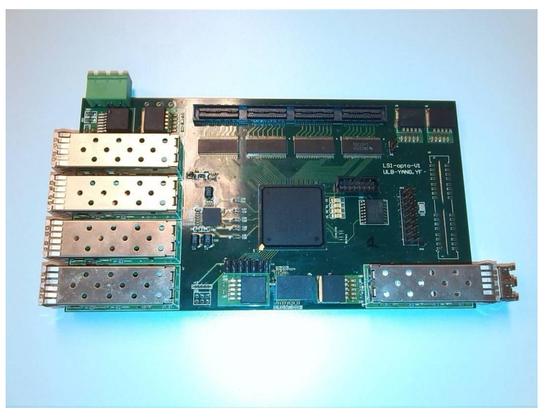
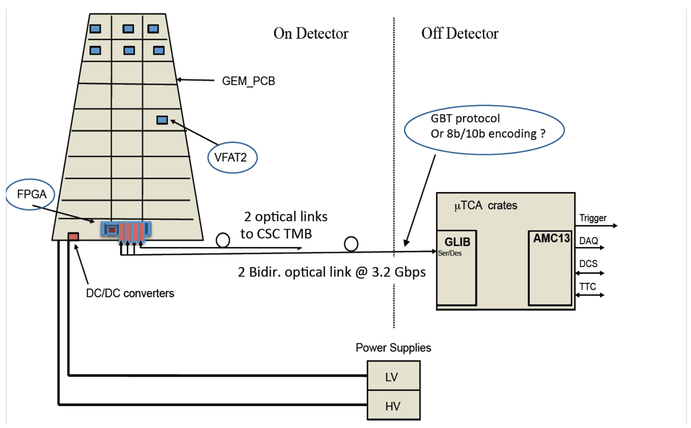
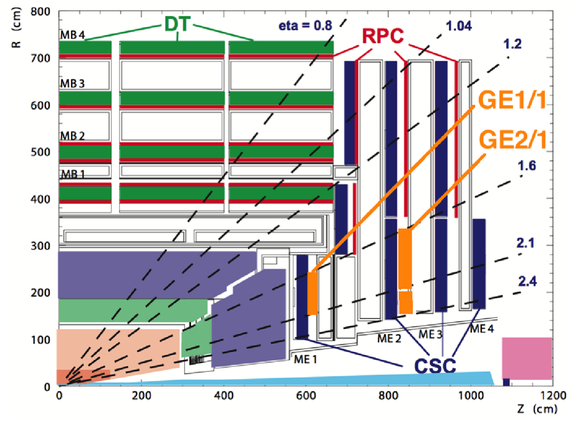
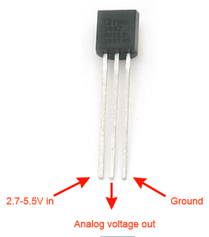








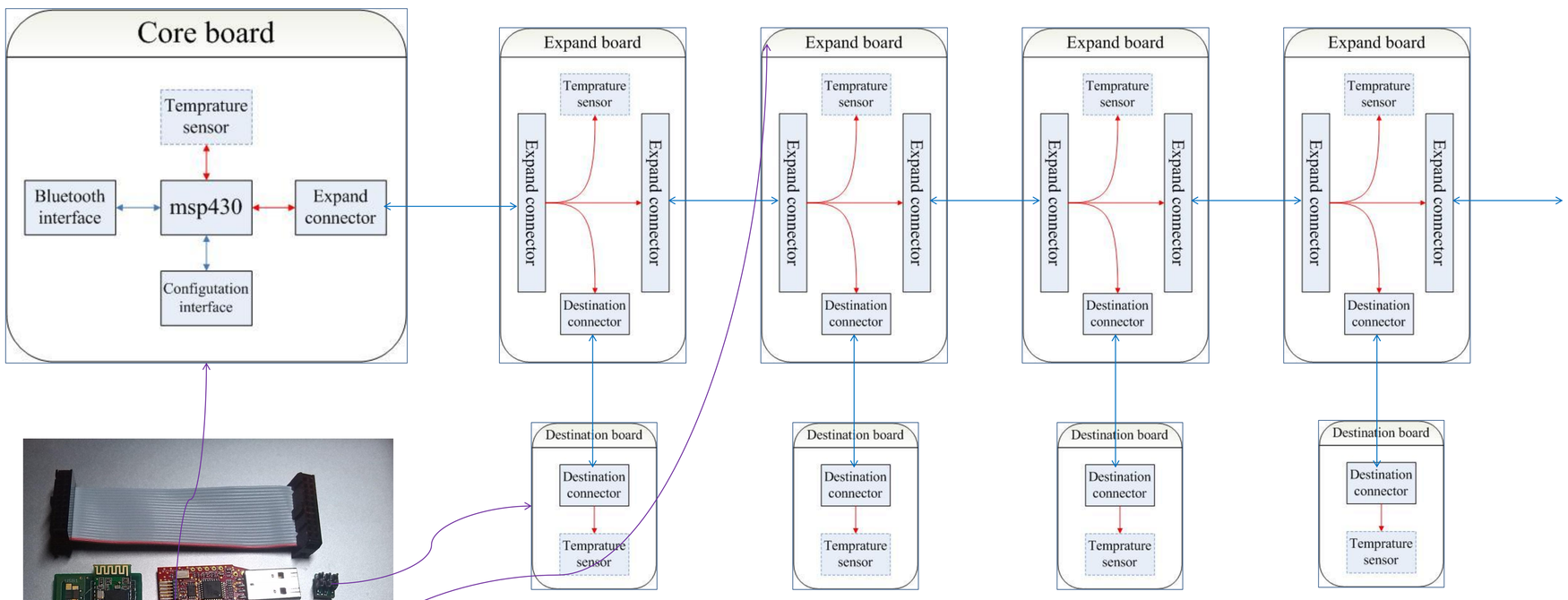
One optohybrid will be installed on GEM detector which cover 10° to control 24 front-end asic with a FPGA and interface with the external world via optical fiber. High reliability is required. Thermal distribution of the board is very important for cooling system design.
Long term multi-points monitoring is also important at R&D phase.



Small enough for small component
Easy for long term monitoring
Easy for logging
No PCB area
Multi-points
No adc
.....

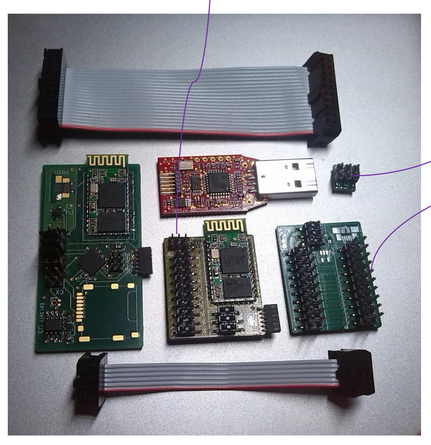
Require adc
Occupy PCB area
Extra effort for data path

Limited points
Difficult for logging data
Difficult for long term monitoring

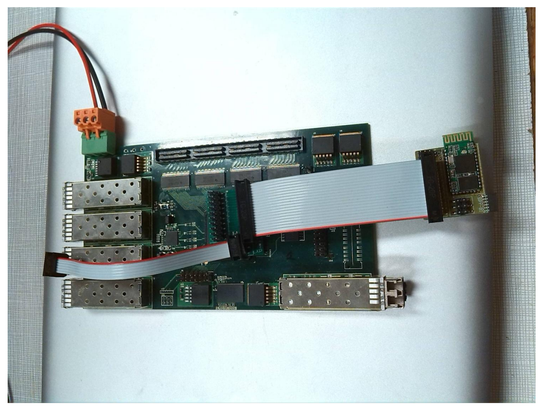


Why Bluetooth ?

Wireless
Low energy
Widely support
Enough bandwidth
Enough operation range
…….

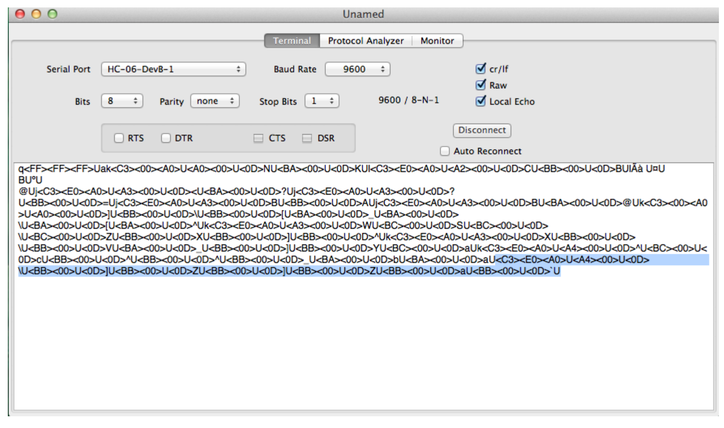


One core board can support up to 7 expand boards and 8 destination boards in total 16 temperature sensors.
34×27mm² for extend board
8.6×6.8mm² for destination board



Why ADT7310 ?

Digital output
From −55° C to +150° C
16 bits resolution
SPI interface
One-shot mode
Very low energy
…….



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Minimum difference 1 bit
Maximum difference 7 bits in 7 measurement
Temperature =Hex value/128
Tested on Mac, Nexus 7 and Huawei G510

Need better firmware and smaller connector

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