New-EEE Control and Data Acquisition System for the EEE Project

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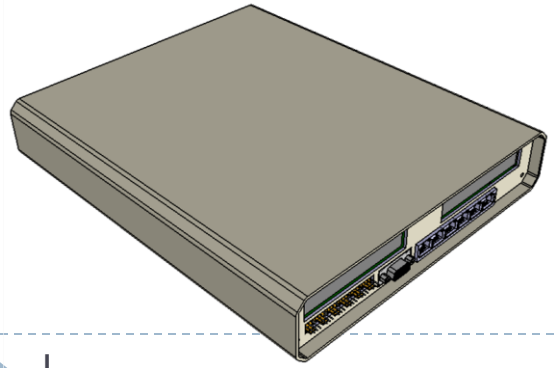
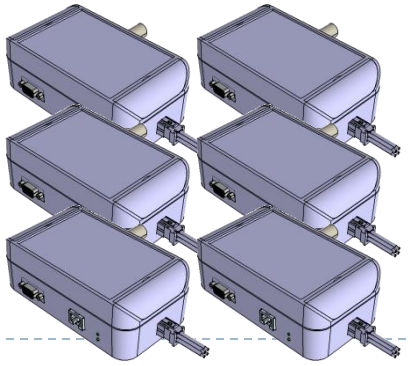
- The EEE Project:
  - Studies of extensive cosmic ray air showers by means of a network of tracking telescopes installed in high school buildings distributed all over Italy. Each telescope consist of 3 multi-gap resistive plate chambers (MRPC) of ~ 2 m^2
- R&D Objectives:
  - Design a compact and highly integrated system to control all the parameters of the EEE Cosmic Rays telescope
  - Simple installation and maintenance
  - Easy-to-use software interface for students and teachers
  - Reduced costs to boost an expansion of the EEE telescope network
- **The new system architecture:**
  - A standard PC is interfaced via a single USB link to a very compact custom-designed master unit (E3MB) which controls two TDC boards and six E3I2C boards through I2C protocol. The TDC boards are used for data read-out and time measurements, the E3I2C boards to control and monitor the HV/LV power supply for the MRPC



E3 Mother Board equipped with 2 TDC boards

E3 I2C Boards



Development of a fully functional engineering model

Preliminary performances evaluation: occupancy&hit multiplicity, angular distributions, particle arrival time distribution. All the distributions are computed ONLINE using the dedicated DAQ software