

Project	CERN-TMS
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1. Overview

We have now had official acceptance of the TMS design from CERN. Work on the PUPE hardware, the PUPE FPGA Firmware and TMS Software has been going on while awaiting design acceptance.

2. Work Done

The following work has been performed:

- The TMS test signal generator hardware has been purchased.
- The TMS test signal generator, TmsSigGen, has been produced. Information on this is at: <https://portal.beam.ltd.uk/support/cern/doc>. This will produce the main timing and analogue test signals for the TMS system to aid development and testing. Extra test signals will be added as required later in the project.
- We have been working on the Linux system for the Module Controllers and System controller.
- We have been working on the TMS software API.
- The PUPE's circuit design has been worked on and is near completion. Is at the start of layout with a preliminary mechanical outline and very basic placement has been received from Layer16. Schematics are almost complete but need some tweaks around the FPGA clocks. The bill of materials is being prepared for manufacturing review.
- The PUPE's digital input front panel connections to the PUPE are being developed. We have some cables for evaluation from Samtec using tiny 50 Ohm connections but these appear fragile. We are going to order up MCX to bulkhead SMA for development. We have started on the design on the digital timing input cables which will likely be MCX to LEMO-00. (MCX use less space on the board and things are tight!).
- The PUPE FPGA design has been worked on. All modules are substantially complete. Testbench for single channel core and for 3 core complete design build. Testbench data files, and timing signals need to be verified as realistic by CERN. Diagnostic debug signals also to be modified by CERN. Some Top Level IO and Timing Issues to be resolved. No external ADC connection (only SDRAM test mode input) or external control pins yet implemented. HAIL wrapper requires some modification to support the external signals.

3. Parts Ordered

The following TMS hardware has been ordered from vendors:

- Compact PCI backplanes.
- Compact PCI Module controllers.
- System Controllers.

These should be delivered by the end of the second week in March.

4. Current Schedule

The detailed project schedule has been updated due to the delay in getting the design acceptance. The detailed project schedule is at: <https://portal.beam.ltd.uk/support/cern/schedule.php>.

The basic schedule information is:

Major TMS components arrive	March 9th
PUPE Hardware prototype boards working	March 30th
PUPE FPGA firmware Alpha level	April 6th
PUPE Software Alpha level	April 6th
Pre-Series Unit Complete	April 20 th (Likely to be delayed until May 4th)