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The NEMO-Phase2 data acquisition and transmission system

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This work presents a new electronic board which will equip two experimental floors on the NEMO Phase-2 tower which will be deployed at Capo Passero. This board integrates the front-end electronics for PMT signal acquisition, the floor communication interfaces with environmental instruments, the interface with a hydrophone board and the high speed communication link with the tower backbone, i.e. with the on-shore lab. Inheriting the NEMO Phase-1 experience, the link will be realized using a synchronous protocol which embeds clock and data. The front-end is realized sampling at 200 MHz the PMT analog signal with fast ADCs endowed with a high dynamic range (14 bit) and very low power consumption. Because of the high speed proprietary protocol, a counterpart board is needed on shore to allow data exchange with floor electronics; this board (which at a very first step can be the same off-shore board) provides also the interface toward the experiment control system, the trigger architecture and the timing station which provides a time reference synchronous to the GPS time.

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