

Electronics for Near-field Acoustic Characterization System

Naval Physical and Oceanographic Laboratory, Kochi, has designed and developed a Near-field Acoustic Characterization System that is used to determine the far-field transmission and reception characteristics of sonars. The Electronics that is part of the system is used to simultaneously receive voltage generated by several hydrophones in the System, amplify, and digitize the signal. The digitized data is sent to a processing computer through an Ethernet interface. In addition, the Electronics is used to excite the transducers in the Near-field Acoustic Characterization System with custom designed waveforms at the required drive levels using power amplifiers. The waveform generation is done based on instructions from the processing computer received through an Ethernet interface. The Electronics has interfaces to the sonar system under measurement, without affecting its normal operation.

The Electronics works as a stand-alone system with its own power supply modules with a single 230V/50Hz Power source. The Electronics is realized in three PCB's that are inserted into a custom backplane. The Electronics can be housed in a stand-alone unit and can work as an add-on to an existing sonar system (as shown in the Figure). Alternatively, it can be housed in the sonar cabinets.



Drawings that are used to manufacture the PCB's and detailed instructions for assembly of the components are finalized. Several units have been manufactured. The entire Near-field Acoustic Characterization System has been installed on ships and proven.

The technology for assembling the Electronics is ready for transfer to Indian industries on non-exclusive basis. Technology will be transferred only to industries with experience in manufacture of electronics systems. Industries that accept the ToT may manufacture and supply the electronics only after obtaining prior permission from DRDO.

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