

Connection Checker for the Elettra 2.0 eBPM System

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The upgrade of the Elettra synchrotron to the ultra-high brightness Elettra 2.0 requires the installation of a new electron Beam Position Monitor (eBPM) system. The infrastructure comprises 168 BPMs, each featuring a complex signal chain: two pairs of four-conductor RF cables connecting the pickups to the RF front-end (PTFE), followed by five-conductor RF cabling and a network link to the DAQ10SX acquisition unit.

With over 3,000 cables and 6,000 total connections—including triggers, clocks, and data networks—systematic validation is critical. To ensure reliable beam trajectory measurements from the onset of machine commissioning, it is essential to verify that all physical links and associated subsystems are correctly mapped and fully operational.

This contribution describes the dedicated hardware and software tools developed for this purpose. We outline the automated test strategy, the verification workflow, and the management of the data collected during the large-scale installation phase.

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