HIGH PRECISION TEMPERATURE MEASUREMENT SYSTEM USING SMARTLINK AT SPRING-8

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We develop a high precision temperature measurement system using SmartLink with SPring-8 standard control frame work. In storage ring of SPring-8,magnets temperature measurement is essential to keep the beam orbit stable,because 0.1C temperature deviation causes a few micron beam position distortion, so that the precise measurement of the magnet cooling water temperature with 0.01C resolution is a requested goal.The SmartLink[a] is a general-purpose measuring instrument designed for network-based systems and the guaranteed resolution is 0.01C for thermocouples and 0.001C for RTDÕs respectively. The system can be installed to any place along with the storage ring with the limited space. The temperature data from the SmartLink is taken by socket based network communication with an UNIX workstation and stored into the accelerator database system. In this article, temperature measurement system and results are presented.