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Development of the Safety System for the Inner Tracking System of the ALICE Experiment

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During the LHC Long Shutdown 2, the ALICE experiment has undergone numerous upgrades to cope with the large amount of data expected in Run3. Among all new elements integrated into ALICE, the experiment counts with a new Inner Tracking System (ITS), equipped with innovative pixel sensors that will substantially improve the performance of the system. The new detector is equipped with a complex Low Voltage (LV) distribution, increasing the power dissipated by the detector and requiring the installation of a large number of temperature measurement points. In 2020, a new safety system has been developed to distribute the ITS LV interlock system and to monitor the new temperature values. The safety system is based on a Siemens S7-1500 PLC device. The control application governing the PLC has been configured through the UNICOS-CPC infrastructure made at CERN for the standardisation of industrial applications. UNICOS-CPC enables both the automatisation of control tasks governing the PLC and the interface to the WinCC OA based SCADA system. This paper provides a complete description of the setup of this safety system.

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