

THE CIRCLE READING SYSTEM FOR DCMT

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A multi-access automatic circle reading system for Chinese-Danish Meridian Telescope has been developed in CSAO. It consists of circle scanners and photon-electric counters. The method, in using TP-801B Single board computer as main controller for the system, is proved to be successful. It has advantages with low cost, high quality and easy operation. One CTC chip, three PIO chips and relational circuits are all of I/O interface. These programmable chips are provided in the board or expanded by designer.

In order to test the system, the panel for manual operation is set up. The alarm will sound in case that the system is out of order. Six step motors, in which the step angle is equal to 0.36 degrees, drive six micrometers to scan the lines of declination circle synchronously. According to the demands at least 5 lines of the circle should be scanned in one time and it takes altogether 12 seconds.

The step motor, on which axis a metal disk with a slit is mounted, directly connects fine screw of micrometer without any gears, so that an optical switch signal is obtained per revolution. However, one magnetic switch is fixed nearby zero position, the optical switch is combined with the magnetic switch to determine the zero position of the scan.

The data collecting system collects scanning data and transfers them to main computer M24.

All control programs were developed by z-80 assembly statement language.

The system was tested in 1990. The repeatability is better than 0.03 arc-second.

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