

YAG Lidar system consists of a YAG Laser, HiRoP with optical path, thermotank, Programmable Laser Controller ( PLC ) and external trigger system with GPS. Remote controlling system is implemented for operation of Laser and HiRoP.

During WFCTA data acquisition, the LIDARs continuously scan the view of WFCTA and detect clouds and aerosols by analyzing the backscatter signal of a 355 nm pulsed laser beam. The cloud cameras use passive measurements of the infrared light and provide a picture of the

whole sky every 5 minutes. The energy fluctuation of YAG Laser is 5 % at 23 °C. Every shot

YAG Laser was divided into two beams by a BS spectroscopy, calibration beam and reference, and the reference beam was monitored during the observation. The YAG Laser worked in a

home-made thermotank with temperature fluctuation less than 2 °C. And then, the energy

fluctuation of the calibration beam was improved to less than 2 %.

Coupling the optical path with the HiRoP, the "reflector-turntable" method is adopted for optical path design, so that the laser beam can be rotated with the HiRoP to scan the whole view of WFCTA and the prototype. The movements of the HiRoP involves lifting, azimuth, and tilting. Specific methods to set mirrors was designed for the different movement modes of the HiRoP.