

Operational Description

The MD-1 is designed to control an astronomical telescope dome. It is a simple device comprised of a microcontroller, a 433 MHz transceiver module, integrated helical antenna, and I/O devices to connect with external DC motor control relays, an optical sensor, and two magnetic switches. The MD-1 operates from the dome's 12VDC power supply (lead-acid battery with solar cell charger).

The MD-1 units are used in pairs; one driving the dome rotation, and one riding on the dome controlling the shutters (open/close). A 433 MHz RF link provides the communications between the two units.

The microcontroller in the MD-1 continuously monitors the telescope dome slit position via the optical sensor and magnetic home sensor. It receives updates on the telescope position and user input from a PC. When required, it can rotate the dome by actuating a DC motor.

The "base" MD-1 periodically sends an RF message to the "shutter" board. This message can be a simple poll, or can include a command to open or close the shutter. The "shutter" MD-1 responds back with the current shutter state (open/closed/moving/error).