Theory of Operation

The configuration of this system consists of a master unit and up to 40 slave units (numbered 1 to 40). The majority of the time, the system is in an idle state while the legislative body is debating. In this mode, no transmissions are being made from either the master or slave units. When the time comes for a vote to be taken, the vote recording mode is selected by the system operator and the units are placed into an active mode (refer to attached timing diagrams). This duration of this active period is generally 30 to 60 seconds. In normal use, the total active time is approximately 3 to 5 minutes per hour.

The system uses a time division multiplex scheme to control the transmission interval of the slave units. Each slave unit has an individual address and a corresponding time slot. While in the active mode, the master unit transmits a polling command (a request for voting switch status), which is received by all of the slave units. Each slave unit transmits the requested information in its designated time slot, ensuring that only one unit is transmitting at any instant in time. After the last of the slave units has responded, the master unit then transmits a lamp status update command to each of the slave units. The slave units only receive data during this period and do not transmit a response. The entire sequence is then repeated until the system operator terminates the vote recording mode.

Control information transmitted from the master and slave units is in the form of short packets, consisting of a synchronization preamble, source and destination addresses, and miscellaneous status and control information. The total length of the packet (not including the preamble) is 32 bits.