

170E Controller



- **Multi-purpose microcomputer**
- **Meets or exceeds most specifications, including latest Caltrans**
- **Operates in harsh environments**
- **Vertical board design**
- **Accepts 2 plug-in communications modules**
- **Low maintenance**
- **Low wattage, removable power supply**
- **Wired for future memory expansion (J4 slot)**



170E Controller

DESCRIPTION McCain introduces its first microcomputer, the 170E. California Department of Transportation specifications have been met. The Model 170E incorporates the latest concepts in design for operation in harsh environments.

APPLICATIONS The Model 170E is designed to operate traffic applications from two/eight phase intersections to computerized network systems. When different software packages are used, the Model 170E's applications extend to: ramp metering control, matrix sign control, sprinkler control, pump control, and changeable lane control.

MODULE DESIGN All modules have been designed to increase reliability, reduce maintenance, and lower power consumption. Printed circuit boards are mounted vertically to conserve mother board space. All removable modules may be mounted on extender cards for ease of maintenance.

CPU MODULE The CPU module includes the MPU; a clock generator capable of doubling the basic frequency; four ACIAs with RS232 interface and five clock speeds from 19.2 to 307.2 KHz; up to 32K of battery backed, write protected RAM; decode logic; and dual bus drivers. An optional 32K EPROM may be installed eliminating the need for a Program Module. This feature reduces complexity and total power drain.

INPUT MODULE The single input module uses CMOS technology to increase noise immunity in hostile environments. All input circuits are resident on this module to facilitate maintenance. All Down Time Accumulator and power up/down circuitry are located on this module along with the 2.2 farad standby power capacitor.

OUTPUT MODULE A single output module contains all output circuitry.

POWER SUPPLY The Model 170E is equipped with an efficient linear power supply. The six outputs are as follows:

+ 5V	Logic	± 0.1V	2.4A
+ 5V	Modem	± 0.25V	300MA
+ 5V	Front Panel	± 0.25V	500MA
- 5V	Spare	± 0.25V	300MA
+ 12V	Modem	±0.6V	1.0A
- 12V	Modem	± 0.6V	300MA

During a power-down, all supplies are held within specifications for a minimum of 70 milliseconds following the NMI signal. The power supply is self contained and may be easily removed from the front of the 170E controller unit. Power is supplied through an 18 pin power connector to the mother board.

CHASSIS All pieces of the Model 170E have been designed on a CAD system and are manufactured on numerical control equipment for best form and fit. Module interconnect is provided by a mother board with separate busses for I/O and Memory. Connectors C1S, C2S, C20S, C30S, and C40S are mounted vertically at the rear of the Model 170E. The front panel is hinged and held in place with two thumb screws and a catch. The wrap around design of the front panel prevents all removable circuit boards from backing out of their connectors. The 170E can accommodate two MODEM Modules.

STANDBY POWER The Model 170E is supplied with write protected NOVRAM and also a high capacitance device for powering the Down Time Accumulator to completion during a power-down condition. Should the power-down condition last beyond the discharge of the standby capacitor, the unit will still power up with the RESTART TIMER true and the DTA minutes timer displaying 255.

Specifications

Operating

Temperature Range..... -40 to +85 degrees C

Power..... 115VAC, 60Hz, typically
40 watts

Dimensions..... 7" H x 13" D x 19" W

Weight.....25 lbs. with Memory Module

Timing Accuracy..... As good as 60Hz power line frequency

Power Supply..... Easily removable, efficient AC/DC linear power supply with long holdup after power-down.

Communications..... Four RS232 compatible ACIA ports with up to two dual MODEM slots.

Modules..... All modules vertical with mechanically keyed PC edge connectors.

The Model 170E is warranted against defects in materials and workmanship for a period of two (2) years from the date of original shipment.