



## FEATURES

- \* MULTIPLE USE IN TRAFFIC CONTROL, RAILWAY SIGNAL CONTROL, GATE CONTROL, RAMP METERING, SIGN DISPLAY, AND SPRINKLER CONTROL
- \* MEETS OR EXCEEDS ALL LATEST CALTRANS SPECIFICATIONS OF THE JANUARY 1989 TSCES AND NOVEMBER 19, 1993 ADDENDUM 8
- \* ACCEPTS TWO DUAL MODEM MODULES
- \* VERTICAL BOARD DESIGN
- \* OPERATES IN HOSTILE ENVIRONMENTS
- \* EASE OF MAINTENANCE
- \* HIGHLY EFFICIENT, EASILY REMOVABLE POWER SUPPLY
- \* LOW POWER HCMOS DESIGN

## DESCRIPTION

The DTS Model 170E is presently on the CALTRANS Qualified Products List. It has been designed for use in hostile environments with emphasis placed on low power consumption using High-speed CMOS technology and a highly efficient power supply.

## APPLICATIONS

The Model 170E will operate in any traffic operation from two to eight phase, computerized systems, or ramp metering. With proper application software it may also be used for matrix sign control, lane control, gate control, and pump or sprinkler control

## MODULE DESIGN

All modules have been designed to increase reliability, reduce maintenance, and lower power consumption. Printed circuit boards have all been designed on a CAD system and 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 w/ standard and x2 clock frequency generator, the quad ACIA w/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 1 farad standby power capacitor.

## **OUTPUT MODULE**

A single output module contains all output circuitry. Lightning protection devices have been added to eliminate high energy voltage and current spikes.

## **POWER SUPPLY MODULE**

The Model 170E is equipped with a highly efficient (>80%) DC/DC converter power supply, each of the six outputs being current limited for added protection. Typical operation with a 412C Program Module requires 1/4 amp of line current. The supply has separate +5 logic, +5 MODEM, +5 front panel supplies along with the standard +12, -12, and -5 vdc power supplies. During a power down condition all supplies are held within specifications for a minimum of 70 msec. following the NMI signal. The power supply is self contained and may be easily removed from the 170E controller unit without side or top access. Power is supplied through a ten pin power connector to the mother board.

## **CHASSIS**

All pieces of the Model 170E have been designed on a CAD system and 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 three thumb screws. A pressure bracket at the back of the front panel prevents all removable circuit boards from backing out of their connectors. The 170E accommodates up to two dual 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**

<b>OPERATING TEMPERATURE RANGE</b>	-40 to +85 degrees C
<b>POWER</b>	115VAC, 60Hz, typically < 1/4 amp
<b>DIMENSIONS</b>	7"high x 13"deep x 19"wide
<b>WEIGHT</b>	15 LBS with Memory Module
<b>TIMING ACCURACY</b>	As good as 60Hz power line frequency
<b>POWER SUPPLY</b>	Easily removable, highly efficient DC/DC converter (>80%), long holdup after power down.
<b>COMMUNICATIONS</b>	Four RS232 compatible ACIA ports with up to two dual MODEM slots.
<b>MODULES</b>	All modules vertical with mechanically keyed PC edge connectors.
<b>MEMORY</b>	Using either external or internal memory feature non-volatile RAM is available at 000-FFF, 1000 3FFF, 6010-6FFF, and 7010-7FFF and UV erasable EPROM is available from 8000-FFFF.