

412c Prom Module

The Model 412C System Memory Module plugs directly into the slot provided for the Traffic PROM Module in any Model 170 Controller which meets the State of California TSCE Specification. The Module is fully buffered on sixteen address and eight data lines. It provides various jumper selectable configurations of SRAM (Static Random Access Memory), EPROM (Electrically Programmable Read Only Memory), and NOVRAM (Nonvolatile SRAM). The Module is mounted through the front panel of and addressable from the 170 Controller; and includes two eight position slide switches, a Write Protect circuit to protect all RAM contents during power failures, a Real Time Clock Adjuster (RTCA) with stable master clock, an on-board +12 vdc to +5 vdc converter power supply, and a voltage sense/battery switch-over circuit.



Memory The 412 C System Memory Module incorporates four, twenty-eight pin sockets to accommodate a variety of memory chip configurations. The most common maximum configuration consists of 32k of EPROM and 20K of SRAM. The minimum configuration would consist of 8K of EPROM and no SRAM (the 170 Controller contains 2K of SRAM). During a power failure the contents of SRAM are protected from corruption by a Write Protect circuit that monitors the DC voltage of the Module.

DC/DC Converter Power to the Module is supplied by a DC regulator which supplies +5 V DC from the +12 V DC source.

Real Time Clock Adjuster The 412 C contains a circuit, powered by battery, that accurately develops and accumulates 1/60th second increments in a 24 bit counter. This counter runs continuously during both power on and power off conditions and can be reset by command from the 170 controller. The RTCA may be used in place of the 170 Controller Down Time Accumulator to increase down time accuracy.

Identification Slide Switches Two, eight position slide switches are provided at the front panel labeled FEATURE and LOCATION. The 16 bits represented may be used to uniquely identify a controller location, capabilities, or any other parameter needed for area control.

Memory

Total 64K Memory Map
 EPROM: 2764, 27128, 27256 @ 200 nanosecond
 SRAM: 6264, 62256 @ 200 nanosecond, 20 microamp @ 2 VDC battery mode
 NOVRAM: Dallas 1225Y @ 200 nanosecond

DC/DC Converter

Type: Motorola LM340-K5
 Current: 1.0 amp max. with current limit
 Input: 7.0 to 40 VDC

RTCA c/Clock

Frequency: 30.72 kHz +/- 10 ppm
 Resolution: 1/60th second
 Capacity: 24 bit
 Standby: <1 ma. from 3.6 VDC battery extends down time accumulation to 72 hours

ID Switches

2 each 8 position, low profile, right angle, slide.
 TRUE=closure, FALSE=open circuit, pulled up to +5 VDC

Write Protect

Toggle function (write to address 7000) to enable/disable the write to RAM memory

Battery

1.8 amp-hr., 3.6 VDC open circuit, lithium thiononyl chloride

Voltage Sense

FAIL @ +9 VDC +/- 0.5 VDC
 RECOVER @ +11 VDC +/- 0.5 VDC

Circuit Board

5"H x 10.375"W x 0.063" thick, NEMA F-4 glass cloth, soldermask both sides, component silkscreen, gold plated edge connector contacts, and humidity resistant ultraviolet traceable conformal coating.

Front Panel

1.5"W x 5.0"H x 0.125" thick, clear chem sealed aluminum, 2 ea. 8 position slide switches, handle, and device to prevent incorrect insertion.

Miscellaneous

Weight: 11 oz.
 Operating Temperature: -37 to +74 degrees C
 Power Requirements: 95 ma max. @ +5 VDC
 234 ma max. @ +12 VDC