

# TM990/305

## COMBINATION MEMORY AND INPUT/OUTPUT EXPANSION MODULE

### FEATURES:

- 5MT interface via TM990/509 cable (includes 8V supply to power 5MT module).
- Memory capacity of up to 32K bytes.
- 16 optically isolated parallel input lines.
- 16 optically isolated parallel input/output lines.
- 500 volts input to output isolation.
- 2 +ve and 2 -ve edge triggered and latched interrupts.
- 16 or 20-bit address handling.

### DESCRIPTION:

The TM990/305 is a combination memory and input/output expansion module. This module can comprehend a 16-bit address, as used in a TM990/10X system, or a 20-bit address, as used in a system utilizing a memory-mapping CPU. The TM990/305 has a memory capacity of 32K bytes. Memory configuration is significantly enhanced by allowing the use of either static RAM\* or EPROM\*\* in each of the memory sockets. This module has 16 parallel input channels (Port 1) and 16 parallel input/output channels (Port 0) that can be configured individually as either inputs or outputs. All I/O channels are optically isolated and interface through the Communications Register Unit (CRU).

Input/output flexibility is designed into the TM990/305 to allow the user to configure the I/O channels to meet his requirements. Input channels may be configured for input voltages up to 30V, while output channels may be configured for TTL compatibility or as current drivers. Output channel polarity can be selected by the user as either inverting or non-inverting.

5MT industrial I/O interface capability is provided on the TM990/305 module. An on-board voltage regulator supplies the required +8V VCC while the required pullup resistors for the I/O channels can be installed in sockets provided on the module. A TM990/509 cable is then required to connect the TM990/305 to a 5MT I/O system.

\* (TMS 4016) \*\* (TMS 2516 or TMS 2532)

### POWER REQUIREMENTS (Typical)

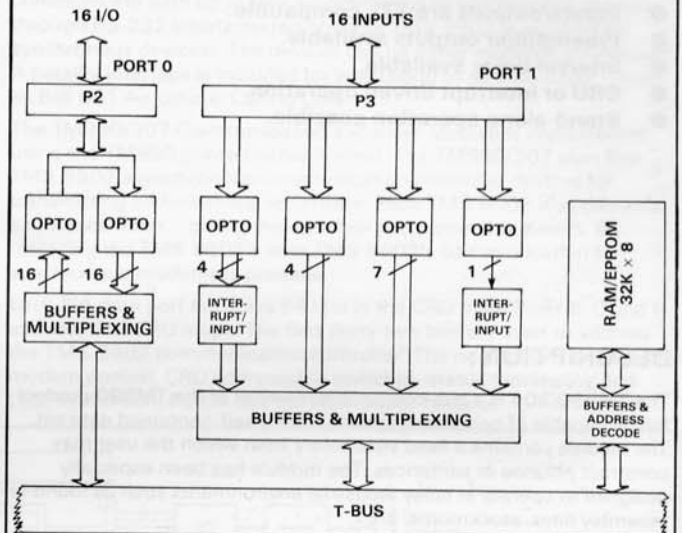
+5V  $\pm$  3% @ 0.7 A (no memory) to 1.5 A.  
+12V  $\pm$  3% @ 600 mA if 5MT interface cable (TM990/509) is used.

### ORDERING INFORMATION:

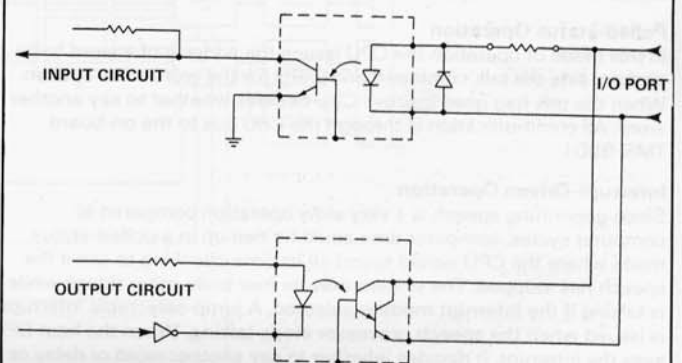
Part number	Description
TM990/305U	305 card with unpopulated memory sockets.
TM990/305E	305 card with 8K bytes EPROM.
TM990/509	5MT module interface cable.

Note: TM990/305 Module is shipped with 16 input opto-couplers and 4 output opto-couplers in PORT 0. No opto-couplers are shipped in PORT 1.

### BLOCK DIAGRAM:



### INPUT/OUTPUT SCHEMATIC:



### CRU ADDRESS MAP:

SOFTWARE BASE ADDRESS	SOFTWARE BASE ADDRESS
00 <sub>16</sub>	00 <sub>16</sub> OUTPUT PORT 0
20 <sub>16</sub>	20 <sub>16</sub> INTERRUPT RESETS
28 <sub>16</sub>	28 <sub>16</sub> UNDEFINED
30 <sub>16</sub>	30 <sub>16</sub> INTERRUPT MASKS
38 <sub>16</sub>	38 <sub>16</sub> STATUS LEDS
3C <sub>16</sub>	3C <sub>16</sub> BOARD I/O RESET
3E <sub>16</sub>	3E <sub>16</sub> BOARD INTERRUPT RESET

SOFTWARE BASE ADDRESS	INPUT CRU MAP
00 <sub>16</sub>	INPUT PORT 0
20 <sub>16</sub>	PORT 1 BITS 0-3/ INTERRUPTS 0-3
28 <sub>16</sub>	PORT 1 BITS 4-14
3E <sub>16</sub>	PORT 1 BIT 15/ BOARD INTERRUPT