MOTOROLA Semiconductors

MEX6820
MEX68IC

Advance Information

EXORciser
INPUT/OUTPUT
MODULE
and
I/O INTERCONNECTION
CABLE

INPUT/OUTPUT MODULE AND I/O INTERCONNECT CABLE

The MEX6820 Input/Output Module and the MEX68IC I/O Interconnection Cables provide the user with an integral means of interfacing his defined process or peripheral device to the EXORciser.

- Four 8-Bit Input/Output Ports for Peripheral Interfacing
- Eight Individually Controlled Interrupt Lines – Four of Which May Be Used as Peripheral Control Output Lines
- Three-State TTL Voltage Compatible Inputs and Outputs
- Switch-Selectable Base Location Address for Each of the Two MC6820 Peripheral Interface Adapter Devices
- Program Controlled Maskable Interrupt Capability
- Four Programmable Control Registers
- Four Programmable Data Direction Registers
- Each MC6820 Peripheral Interface Adapter Addressed as Memory
- Bus Drive Capability
- Predrilled Wirewrap Area on Module for 14, 16, and 24-Pin Wire-wrap Sockets with 300 or 600-Mil Spacing on Pin Centers

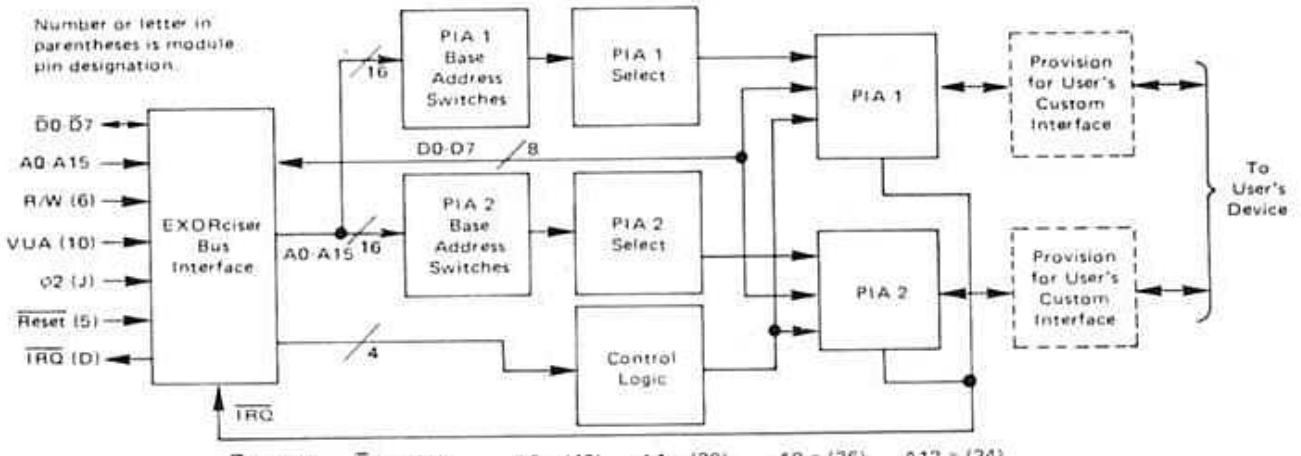
EXORciser

I/O MODULE

ORDERING INFORMATION

Order two MEX68IC Input/Output Interconnection cables with each MEX6820 Input/Output Module.

BLOCK DIAGRAM



D0 = (31)	D4 = (32)	A0 = (40)	A4 = (38)	A8 = (36)	A12 = (34)
D1 = (29)	D5 = (30)	A1 = (V)	A5 = (T)	A9 = (R)	A13 = (N)
D2 = (K)	D6 = (L)	A2 = (U)	A6 = (S)	A10 = (P)	A14 = (M)
D3 = (H)	D7 = (J)	A3 = (39)	A7 = (37)	A11 = (35)	A15 = (33)

MODULE SPECIFICATIONS

(Note: Positive current flow is defined as flowing into the terminal, negative current flow as flowing from the terminal.)

Specification	Value
Input Signals	
Logic "0"	TTL voltage compatible 0.0-0.85 V (-200 μA max at 0.4 V)
Logic "1"	2.0-5.25 V (25 μA max at 5.25 V)
Data Bus	Three-state TTL voltage compatible
Input Logic "0"	0.0-0.85 V (-200 μA max at 0.4 V)
Input Logic "1"	2.0-5.25 V (25 μA max at 5.25 V)
Output Logic "0"	0.5 V max at 40 mA through a resistor to ground
Output Logic "1"	2.6 V min at -10 mA through a resistor to V_{CC}
Output Off-State Leakage Current	100 μA max at 2.6 V
MC6820 Peripheral Interface Adapter Signals*	
PA0-PA7 Input/Output Lines	TTL voltage compatible
PB0-PB7 Input/Output Lines	Three-state TTL voltage compatible
CA1, CA2, and CB1 Control Signals	TTL voltage compatible
CB2 Control Signal	Three-state TTL voltage compatible
$\overline{IRQA}$ and $\overline{IRQB}$ Signals	TTL voltage compatible
Operating Temperature	0 to 70°C
Power Requirements	5 Vdc at 2 A max
Dimensions	
Width	9.75 in.
Height	5.75 in.
Thickness	0.062 in.

*See MC6820 data sheet for specifications on these signals.

INPUT/OUTPUT MODULE

The MEX6820 Input/Output Module provides the user with a flexible means of interfacing the EXORciser with his defined process or peripheral device, either by directly interfacing with the two MC6820 Peripheral Interface Adapters (PIAs) in the module or by constructing customized interface circuits between the PIA and the user's device. This interface is simplified by the TTL voltage compatibility of the PIA's dual 8-bit input/output lines. The module has provisions for mounting 14, 16, or 24-pin sockets, permitting the user to add the custom interface circuitry directly on the module.

The EXORciser's MC6800 Microprocessor addresses each PIA on the Input/Output Module as if it were memory. Switches on the module allow the user to select the base memory address for each PIA.

I/O INTERCONNECT CABLE

The MEX68IC I/O Interconnect Cable permits the user to connect an Input/Output Module to a peripheral. One end of this flatribbon cable is terminated with a 50-pin flatribbon connector; the other end is not terminated. Each I/O Module requires two cables.

EXORciser INTERFACE SIGNALS

The MEX6820 Input/Output Module interfaces directly with the EXORciser bus using the eight-bit bi-directional data bus, the 16-bit address bus, an interrupt request line, read/write line, φ2 clock line, valid user's address line and reset line. These lines permit the EXORciser to have complete control over the Input/Output Module.

Bi-Directional $\overline{\text{Data Bus}}$ ($\overline{D0}$-$\overline{D7}$) – These eight bi-directional lines, when enabled, provide a two-way transfer of data between the MPU Module and the I/O Module. The data bus drivers and receivers on the I/O Module are three-state logic devices. The data bus drivers and receivers are in their off or high-impedance state except when this module is selected in a memory read operation or memory write operation.

Address Bus (A0-A15) – These 16 lines, when enabled, transfer the selected memory address to the I/O Module. The MPU Module controls the operation of these three-state lines.

Read/Write (R/W) – This MPU Module output signal indicates to the I/O Module whether the EXORciser is performing a memory read (high) or write (low) operation. The normal standby state of this signal is read (high). Also, when the MC6800 MPU on the MPU Module is halted, this signal will be in the read state.

Valid User's Address (VUA) – This signal indicates that the address on the address bus is valid and the EXORciser is not addressing its EXbug program.

Phase 2 (φ2) Clock Signal – This signal is between 100 kHz and 1 MHz and is used to synchronize the transfer of data on the data bus. This signal is generated by the MPU Module.

$\overline{\text{Reset}}$ – This signal is used to restart the MC6800 MPU and reset the EXORciser from a power down condition or when the EXORciser RESTART switch is actuated. This signal resets and initializes the two MC6820 PIAs on the I/O Module.

$\overline{\text{Interrupt Request}}$ ($\overline{\text{IRQ}}$) – This level-sensitive input, on going low, requests that an interrupt sequence be generated within the machine. The MC6800 MPU will wait until it completes the current instruction that it is executing before it recognizes the request. At that time, if the interrupt mask bit in the MPU condition code register is not set (interrupt masked), the MPU will begin the interrupt sequence. The two PIAs on the I/O Module, at the user's option, are capable of generating an $\overline{\text{IRQ}}$ signal.

PERIPHERAL INTERFACE LINES

The user has the option of connecting the MC6820 PIA interface lines directly to the user's peripheral device or of constructing custom interface circuitry between the PIA and the user's peripheral device. These lines are the eight peripheral input/output lines PB0-PB7, and the four control lines CA1, CA2, CB1, and CB2 for each PIA. Refer to the MC6820 Peripheral Interface Adapter data sheet for a description and detailed specifications of these signals.