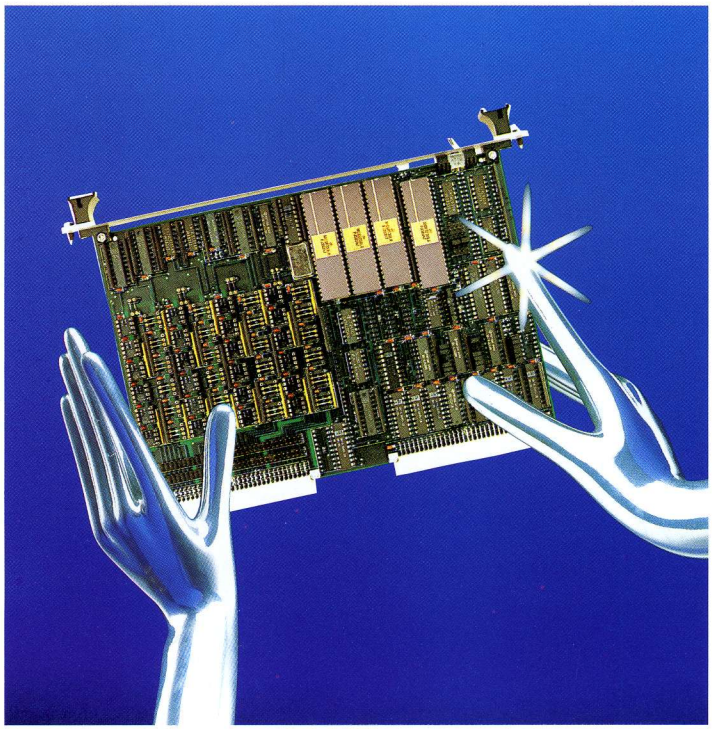
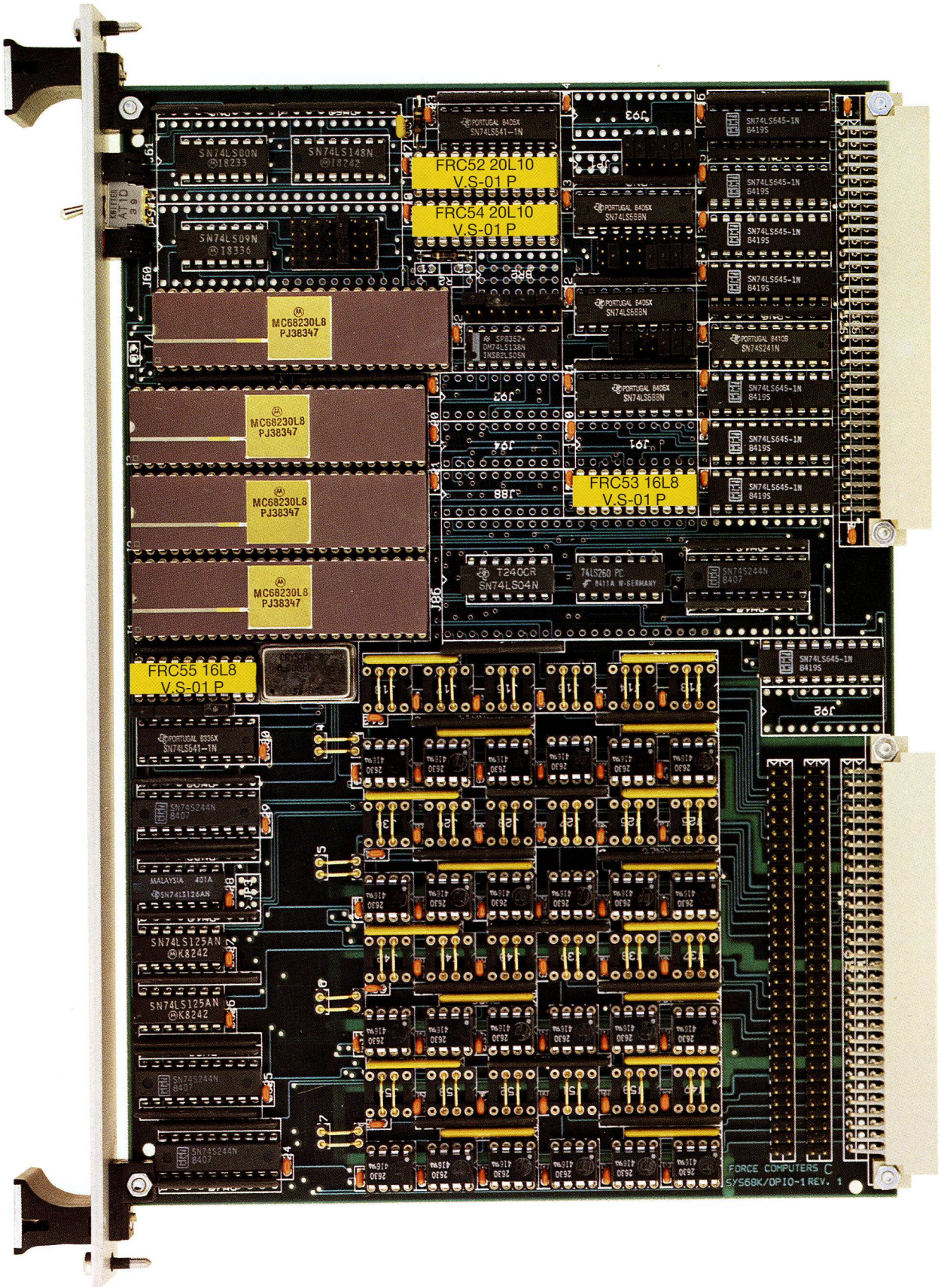


# System 68000 VME
# SYS68K/PIO-1

## Multi Channel Parallel I/O Board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FORCE COMPUTERS C
SY568K/OPIO-1 REV. 1

## General Description

The SYS68K/PIO-1 is a high performance interface board based on the VMEbus. Four interface units provide four input and four output channels, each 8bit wide.

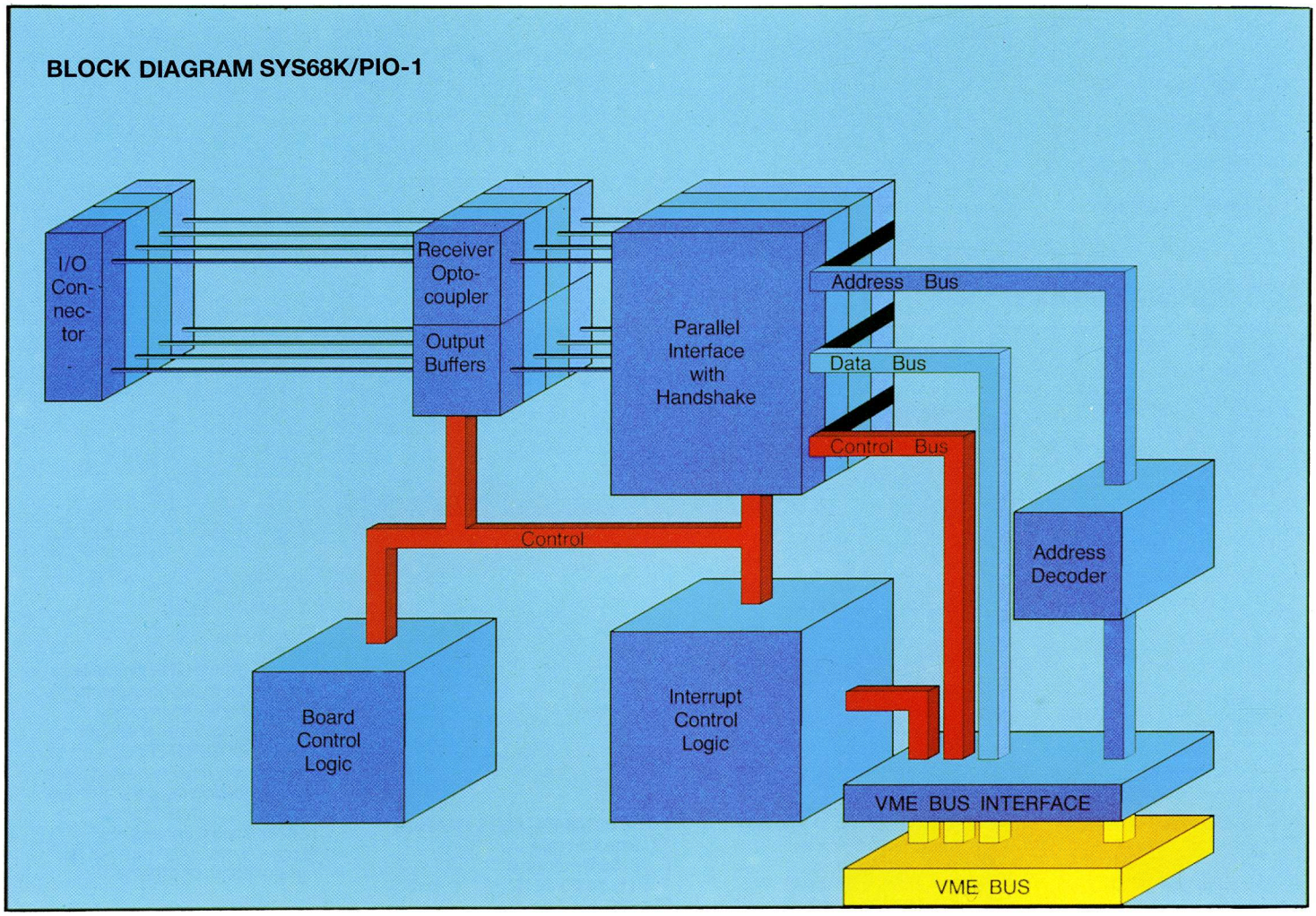
Each input signal is opto coupled, providing current sensing. Each output signal is driven by TTL buffers.

To allow fully asynchronous operation of the SYS68K/PIO-1, each parallel interface and timer module (PI/T) can force handshake or timer interrupts to the VMEbus. The interrupt vectors are software programmable, the level is jumper selectable.

## FEATURES OF THE SYS68K/PIO-1

- 4 TTL buffered 8 bit parallel output ports with 2 handshake signals per port.
- 4 opto-coupled 8 bit parallel input ports with 2 handshake signals per port.
- 4 Timers (24bit).
- Interrupt capabilities:
  4 Timer Interrupts
  4 I/O Handshake Interrupts
  Each interrupt has a software programmable vector.
- Jumper selectable Access Address and Address Modifier Code.
- Fully VMEbus compatible.
- RUN/LOCAL function switch.
- RUN/LOCAL indicators.

**BLOCK DIAGRAM SYS68K/PIO-1**



# Global Operation

The SYS68K/PIO-1 is a parallel I/O board designed to communicate fully asynchronous from the VMEbus to the outside world.

Four 8 bit input and four 8 bit output ports are provided on the board.

### 1. The Parallel Ports

The parallel I/O is designed with Parallel Interface and Timer modules (PI/T 68230). The clock frequency is 8 MHz.

Each PI/T includes the following features:

- All registers are Read/Write and directly addressable
- Special Port Interrupt Service Request
- 4 different interrupt vectors for the port interrupts
- 8 bit output port
- 8 bit input port
- Selectable Handshaking Modes

All input and handshake input signals are routed to high speed opto coupler (HCPL 2630) to provide current sensing. The typical propagation delay time of each opto coupler is 50 ns.

Each I/O channel with the 2 ports contains a separate power supply input where the opto coupler supply voltage can be connected.

In addition, the standby power of the VMEbus (+5V) can be used to drive the opto coupler.

Each I/O signal is available through two 64 pin I/O connectors or through the 64 pin DIN connector (P2).

The SYS68K/PIO-1 can operate in a 16 bit parallel mode because two PI/T devices are on the lower data bus (D0-D7) and two devices are connected to the upper data bus (D8-D15). This allows a parallel transfer of 16 bit data with a common handshake.

### 2. The Timer Operation

Each PI/T device contains a 24 bit timer capable of generating an interrupt. Therefore 4 different timer interrupts can be generated from the SYS68K/PIO-1.

### 3. The Interrupt Structure

The four PI/T port service request and timer interrupt request outputs are gated to drive one jumper selectable interrupt request level on the VMEbus. The port service request interrupt has four software programmable vectors, and the timer interrupt has one software programmable vector per PI/T. 20 software programmable interrupt vectors are provided for by the SYS68K/PIO-1.

### 4. The Addressing

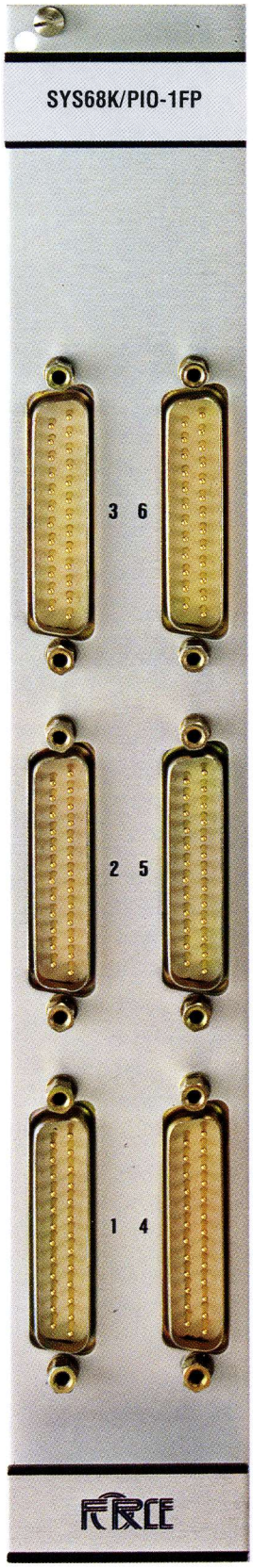
The SYS68K/PIO-1 contains a flexible address and address modifier decoding logic. The access address and the address modifier code are jumper selectable (A24 or A16 mode). Therefore, both standard and the Short I/O addressing modes are supported.

# SYS68K/PIO-1FP

**Front Panel with 6 I/O Connectors**

The SYS68K/PIO-1FP is a double-wide (12HE/8TE) front panel, providing six 25-pin D SUB male connectors, each with flat cable and connectors to the SYS68K/PIO-1 I/O-channel ports.

The connectors 1, 2, 3 and 4 are each supplied with two 14-pin connectors on the other end of the flat cable, for the bidirectional channel configuration. The connectors 5 and 6 are each mounted with one 14-pin connector. The assignment of the connector to the I/O channels is user selectable, as well as the individual configuration of the bidirectional I/O ports or separate input and output ports.



## SYS68K/PIO-1 Specifications

| | |
|---|---|
| Interface | 4 TTL level parallel I/O channels |
| Channel config. | Input: 8 lines data<br>2 lines handshake<br>Output: 8 lines data (64 mA sink)<br>2 lines handshake<br>direction control |
| Channel level | TTL compatible voltage<br>Receiver sinks 8mA for logic 0 |
| Devices | 4 Parallel Interface/Timer (68230)<br>24 Optocouplers (HCPL2630) |
| Interrupt | Jumper selectable interrupt request level<br>20 different interrupt vectors possible |
| Bus | VMEbus compatible (A24:D16/A16:D16)<br>Jumper selectable board base address<br>Address Modifier decoding |
| Address Space | 512 bytes |
| Power Requirements | +5V/2.0A (typ)<br>+5V/2.5A (max) |
| Operating Temp. | 0 to +50 degrees C |
| Storage Temp. | −50 to +90 degrees C |
| Relative Humidity | 0−95 % (non-condensing) |
| Board Dimensions | Double Eurocard<br>234* 160 mm (9.2 x 6.3 inch) |

## Ordering Information

| | |
|---|---|
| SYS68K/PIO-1<br>Part No. 310010 | Parallel I/O Board including User's Manual. |
| SYS68K/PIO-1FP<br>Part No. 310012 | Front Panel for the Parallel I/O Signals |
| SYS68K/PIO-1/UM<br>Part No. 800028 | User's Manual for the SYS68K/PIO-1 Board. |

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