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LS-171

**Magnet Measurement
Interfacing to the G-64 Euro Standard Bus
and Testing G-64 Modules**

Introduction

The Magnet Measurement system utilizes various modules with a G-64 Euro (Gespac) Standard Interface. All modules are designed to be software controlled, normally under the constraints of the OS-9 operating system with all data transfers to a host computer accomplished by a serial link.

G-64 Interfacing

To simplify system integration and increase acquisition times all software control is performed by the Magnet Measurement computer, an IBM 386 PC/AT. In order to control the Euro (Gespac) Standard modules an IBM I/O (DIO-32) card along with a DIO-32 to G-64 interface are used.

All module functions are accomplished by I/O transfers. Figure 1 details the bit assignments for the 4 I/O ports of the DIO-32. The DIO-32 to G-64 interface routes the port bits to the G-64 backplane. Signal routing for the DIO-32 to G-64 interface is listed in Table 1.

G-64 Computer Simulator

A simulator was designed to test/troubleshoot purchased, as well as in-house designed, G-64 modules. The computer simulator mimics the functionality of the IBM DIO-32 board.

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Operation

The simulator allows the operator to control the module address, control lines and data transfers and receives interrupt requests as if it were the controlling processor to the G-64 bus. While the simulator is enabled the normally active processor must be disconnected. This allows complete testing without computer intervention. The design of the simulator also allows it to be used as a G-64 bus monitor when the simulator is in its disabled (no control) state.

The front panel (see Figure 2) is divided into 4 sections which corresponds to the DIO-32 I/O ports. Switch position and associated logic levels are shown for each port section. The included LEDs will light when a logic bit is active. A bar or line over the bit descriptor implies an active logic level of 0, otherwise the active logic level is a 1. Figure 3 is the schematic of the simulator and is included for additional reference.

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Figure 1.

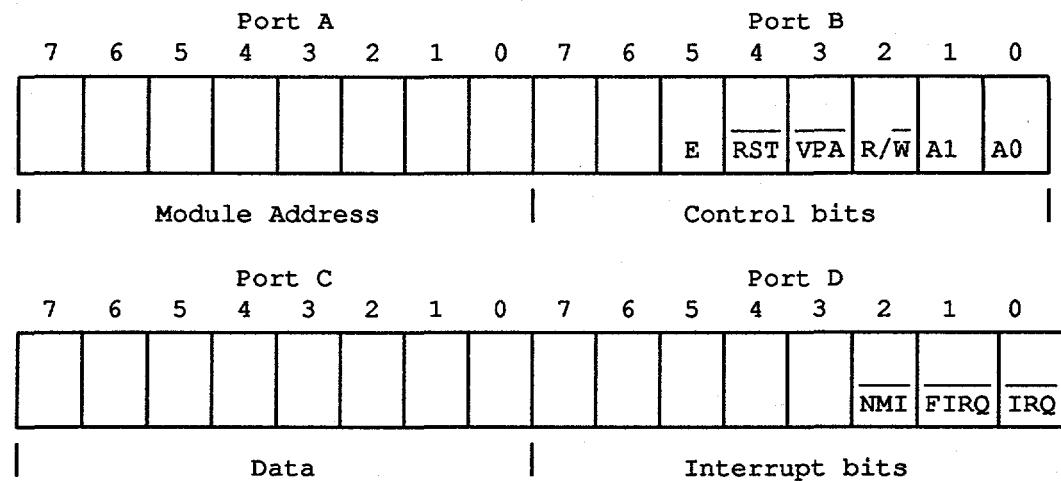
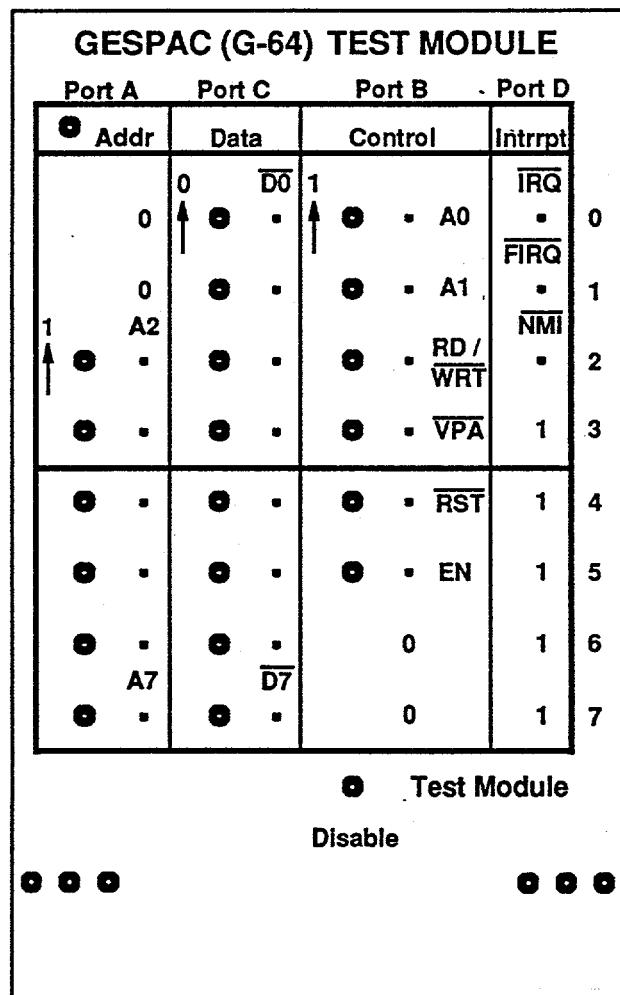


Table 1.
DIO-32 to G-64 Interface Pin out

Function		G-64	AT-DIO	Function		G-64	AT-DIO
			37 -----		----	D0	a23
			39			D1	a24
	A2	a4	38			D2	a25
	A3	a5	40 Port A	Data	D3	a26	11 Port C
Module	A4	a6	35			D4	b23
Address	A5	a7	42			D5	b24
	A6	a8	36			D6	b25
-----	A7	a9	41 -----	----	D7	b26	10 -----
	A0	a2	47 -----		IRQ	b16	4 -----
	A1	a3	50		FIRQ	b17	1
R/W	a17	44			NMI	b15	7
VPA	a14	48 Port B		D11	a22	3 Port D	
RES	b14	49		D12	b19	2	
E	b13	43		D13	b20	8	
A14	b8	46		D14	b21	5	
A15	b9	45 -----		D15	b22	6 -----	

Figure 2.
G-64 Computer Simulator Front Panel



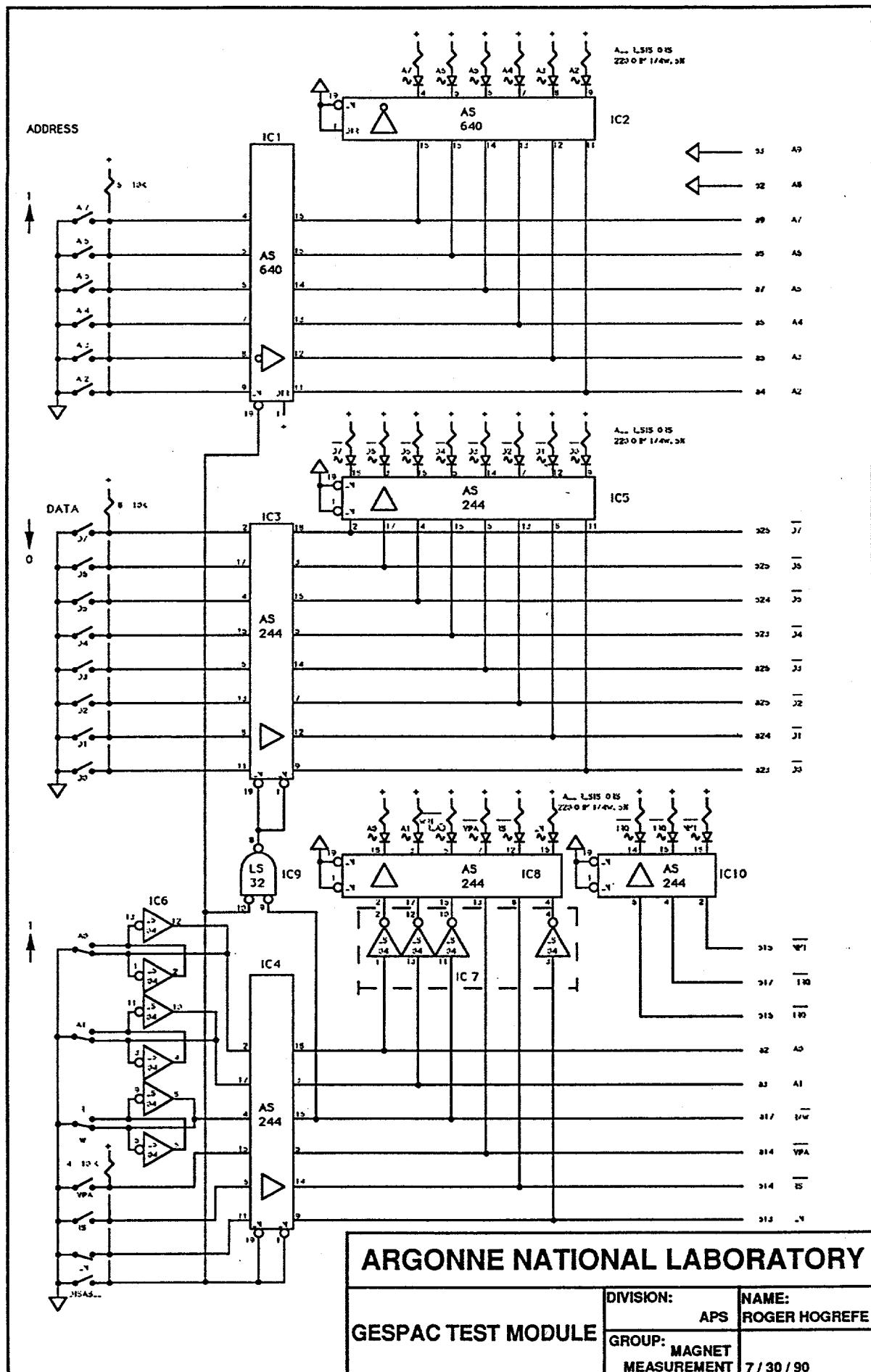


Figure 3. Schematic of the G-64 Computer Simulator