

32 INDUSTRIAL INPUT MODULE

The GESINP-2A module offers the best solution currently available on the electronic board market with regard to interfacing between the microprocessor and industrial environment, offering a maximum number of inputs on a small surface at low cost. 32 inputs are grouped on one Euroboard, isolated by optocouplers which can work on 12, 24 and 48 V, with a maximum input current of 15 mA. It is without a doubt the best number of inputs/occupied surface proportion and thus the most economical.

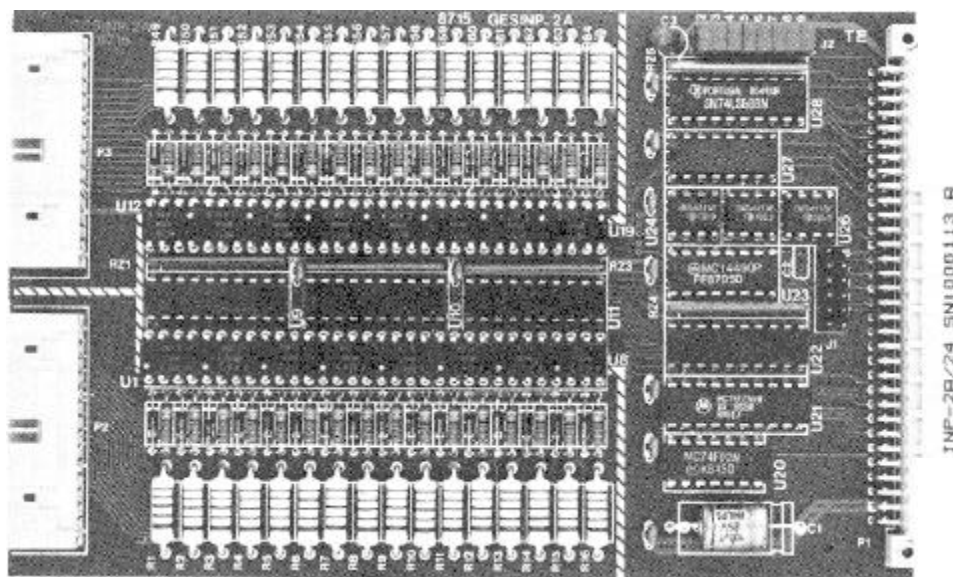
Of the 32 input lines, 6 can be connected to certain bus signals such as " Reset ", " Halt " or " Interrupts ".

These 6 lines are connected to the signals via a debouncing-circuit in addition to the opto-electric coupling.

The input signals are connected by two 26-pin connectors (16 inputs each) compatible with our standard PC board adaptor available as an option (GESICU-1 A).

Technical features

- 32 industrial inputs
- Four 8-channel ports
- 1 500V opto-coupler isolation
- Input voltage 12 V, 24 V, or 48 V (GND common)
- Input current max. 15 mA
- Optional debouncing on 6 input lines
- Fully decoded address
- External connection by two 26-pin flat cable connectors
- Separate power lines for the 2 I/O connectors
- Single power supply: + 5 V



References

- GESINP-2A/24: 32 industrial inputs: 24V/15 mA max.
 GESINP-2A/48: 32 industrial inputs: 48 V/15 mA max.

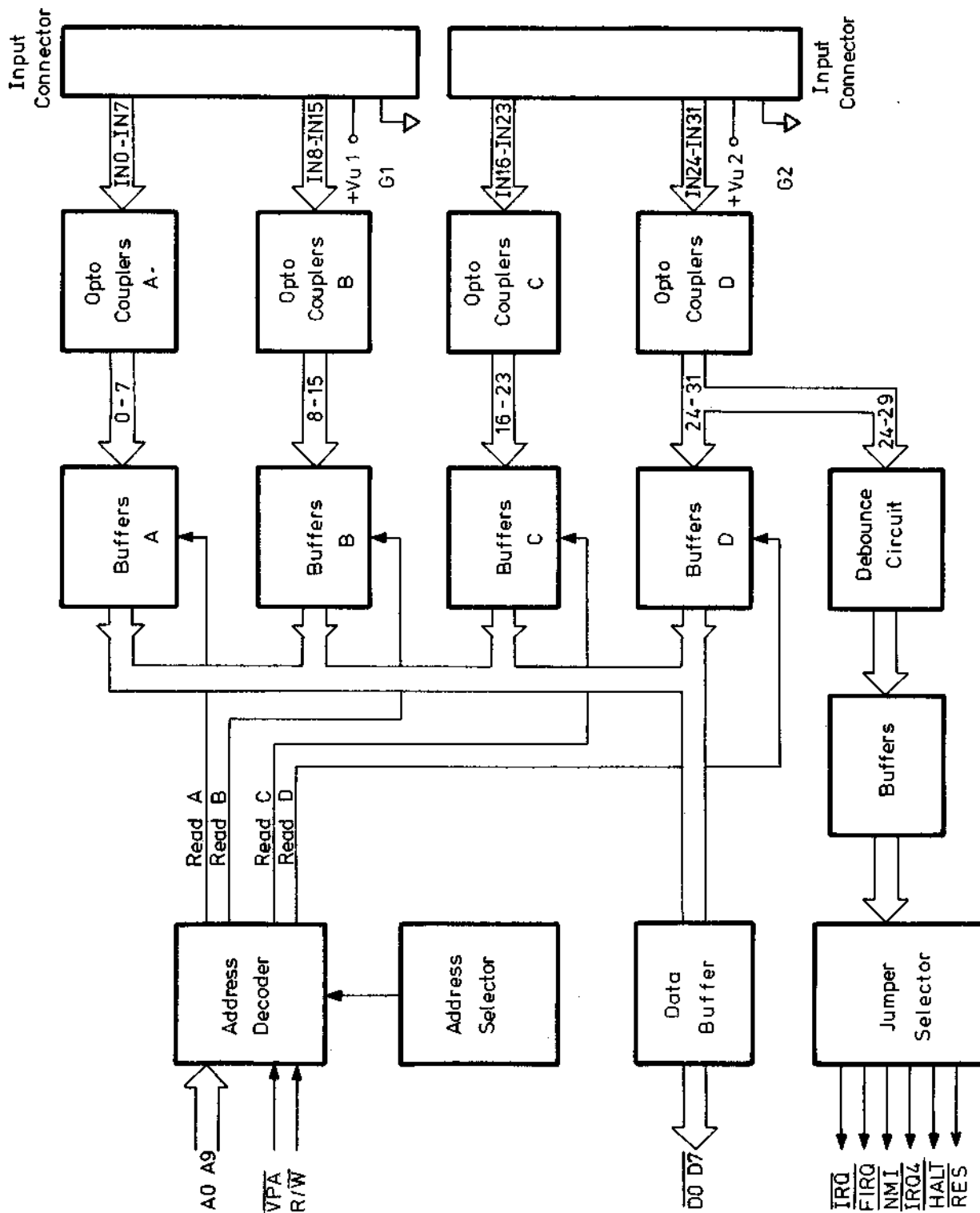


Figure 1.1 Block Diagram

1. GENERAL INFORMATION

1.1 DESCRIPTION

The GESINP-2A Euroboard provides the user with 32 optocoupled inputs addressable through 4 ports of 8 channels each. Input voltage is 12 V, 24 V (GESINP-2AT24) or 48 V (GESINP-2AT48) at a maximum current of 15 mA. Six of the 32 input lines can be connected to RES, NMI, IRQ, FIRQ, IRQ4 and HALT signals of the bus through a debouncing circuit.

The GESINP-2A module is fully compatible with the standard G-64 bus, it is also compatible with the GESINP-1 module and replaces it.

The block diagram of fig. 1.1 illustrates the different parts of the module and their interconnections.

INTERCONNECTIONS

1.2 SPECIFICATIONS

Input lines	- 32 optocoupled with + Vu common (6 debounced) - Separate power lines for the 16 inputs of P2 and the 16 inputs of P3 connector
Access	Through 4 ports of 8 channels each
Isolation:	1500 V by optocoupler
Input voltage:	12V/24V or 48V (GESINP-2AT48)
Input current:	16 mA max (24 V) 7 mA max (48 V)
Bus interface:	- Data bus: 3 state TTL compatible - Other signals: TTL compatible
Bus driver:	48 mA device type
Power requirements:	* 5 Vdc 300 mA typ.
Operating temperature	* 5° to + 55°C
PCB dimensions:	100 x 160 mm

Table 1.1 Specifications

2. PREPARATION FOR USE,

2.1 CONNECTOR AND JUMPER IDENTIFICATION

Table 2.1 identifies the jumpers and connectors of the GESINP-2A module. Fig. 2.1 shows their location on the printed circuit.

Designation	Function
P1	G-64 Bus interface connector
P2, P3	Opto isolated input connector
J1	Debounced line selector
S1	Module address selector

Table 2.1 Connector and jumper identification

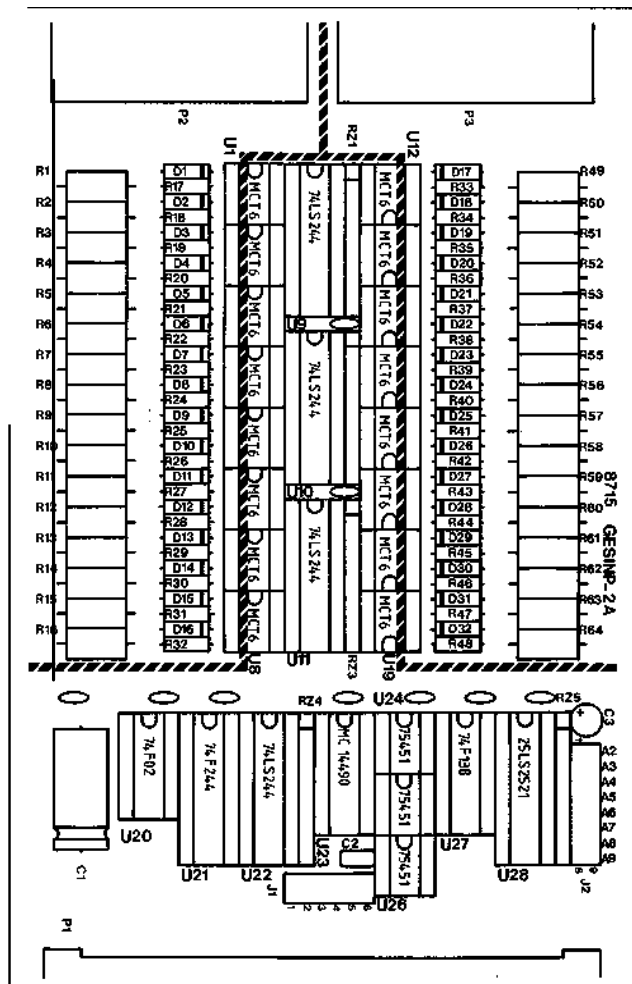


Fig. 2 GESINP-2A: Implementation

2.2 INPUT SIGNAL INTERFACE

Table 2.2 identifies the input lines connected to P2 and P3.

Pin number P2 or P3	Function		Read address (base + ...)	
	P2	P3	P2	P3
8 to 15	Input 0 to 7	Input 16 to 23	0 (d0-D7)	2 (D0-D7)
16 to 23	Input 8 to 15	Input 24 to 31	1 (D0-D7)	3 (D0-D7)
1-3, 25, 26	User's System Ground			
4, 7, 24	Not Used			
5, 6,	Positive 12/24 V or 48 V ² User's System Voltage ¹			

1 The common user's voltage of P2 is isolated from the voltage of P3. This allows the user to have a different potential for the inputs of P2 and P3.

2 For 12 V or 24 V version, Rx value is 1.6 Kohm. For 48 V version, Rx value is 6.8 Kohm.

Table 2.2 P2 and P3 connector description.

2.3 INTERFACE WITH THE G-64 BUS

The GESINP-2A module interconnects directly on the (3-64 Bus. Signals used by the module are identified in the table 2.3. For more information on the bus, refer to the G-64/G96 Bus Specification Manual.

ROW B	ROW A		Definition
GND	GND	1	Power
A8	A0	2	Address Lines A0 to A23
A9	A1	3	
A10	* A2	4	
A11	* A3	5	
A12	* A4	6	
A13	* A5	7	
A14	* A6	8	
A15	* A7	9	
$\overline{\text{BRQ}}$	* BGRT	* 10	Control and Interrupt Lines
$\overline{\text{DS1}}$	* $\overline{\text{DS0}}$	* 11	
$\overline{\text{BGACK}}/\overline{\text{BBUSY}}$	* HALT	12	
Enable	* SYCLK	* 13	
$\overline{\text{RES}}$	$\overline{\text{VPA}}$	14	
$\overline{\text{NMI}}$	* $\overline{\text{RDY}}/\overline{\text{DTACK}}$	* 15	
$\overline{\text{IRQ1}}$	* $\overline{\text{VMA}}$	* 16	
$\overline{\text{IRQ2}}$	* $\overline{\text{R/W}}$	17	
IACK	* $\overline{\text{IRQ4}}$	* 18	
$\overline{\text{D12}}$	* $\overline{\text{D8}}$	* 19	Data Lines D0 to D15 and Arbitration Lines
$\overline{\text{D13}}$	* $\overline{\text{D9}}$	* 20	
$\overline{\text{D14}}$	* $\overline{\text{D10}}$	* 21	
$\overline{\text{D15}}$	* $\overline{\text{D11}}$	* 22	
$\overline{\text{D4}}$	$\overline{\text{D0}}$	23	
$\overline{\text{D5}}$	$\overline{\text{D1}}$	24	
$\overline{\text{D6}}$	$\overline{\text{D2}}$	25	
$\overline{\text{D7}}$	$\overline{\text{D3}}$	26	
$\overline{\text{BERR}}$	* $\overline{\text{Page}}$	* 27	Misc.
Chain In	* Chain Out	* 28	
+ 5 V bat.	* PWF	* 29	Power
- 12 V	* + 12 V	* 30	
+ 5 V	+ 5 V	31	
GND	GND	32	

* Not used by the GESINP-2A module

Table 2.3 PI connector, G-64 Bus.

2.4 DEBOUNCED LINES

Debounced lines can be used to activate 6 control lines of the bus. They are identified in table 2.4. Debouncing is made by MCI 4490 devices; its oscillator frequency is determined by Cx and is a user's option:

$$F_o \approx \frac{1.875}{C_x} \text{ with } F_o \text{ in MHz, } C_x \text{ in pF}$$

J1	Debounced	Input line to activate
1-12	TRQ4*	IN 29
2-11	FIRQ	IN 26
3-10	TRQ	IN 28
4-9	NMI	IN 27
5-8	RES	IN 24
6-7	HALT	IN 25

* Option used in place of Halt Ack G-64 bus signal

Table 2.4 Debounced lines

2.5 ADDRESS SELECTION

The base address of the module is selected by J2 in the L_Kbyte field reserved for peripherals which is characterised by VPA signal. A field of 4 addresses is required by the module as defined in table 2.5.

J2 allows the user to select of 256 base addresses VPA field:

J2	OFF	ON
1 o o 16	A2	$\overline{A2}$
2 o o 15	A3	$\overline{A3}$
3 o o 14	A4	$\overline{A4}$
4 o o 13	A5	$\overline{A5}$
5 o o 12	A6	$\overline{A6}$
6 o o 11	A7	$\overline{A7}$
7 o o 10	A8	$\overline{A8}$
8 o o 9	A9	$\overline{A9}$

Table 2.6 Address selection

2.6 USE OF GESICU-1 module

The GESICU-1 module is designed to offer a connection unit for GESPAC Digital Input/Output euroboards. Table 2.7 shows the correspondence between GESICU-1 and the GESINP and GESOUT boards. The GESICU-LA can be used to interconnect I/O signals to the GESINP-2A module. Its schematic diagram is shown on fig. 2.2. Refer please to the GESICU-1 data sheet for more information.

Connection unit	Digital Input/Output module
GESICU-1A (common plus)	GESOUT-1 GESOUT-2A (ULN 2804) GESINP-2A
GESICU-1B (common ground)	GESOUT-2B (UDN 2983) GESINP-1 GESINP-2B

Table 2.7 Correspondence table

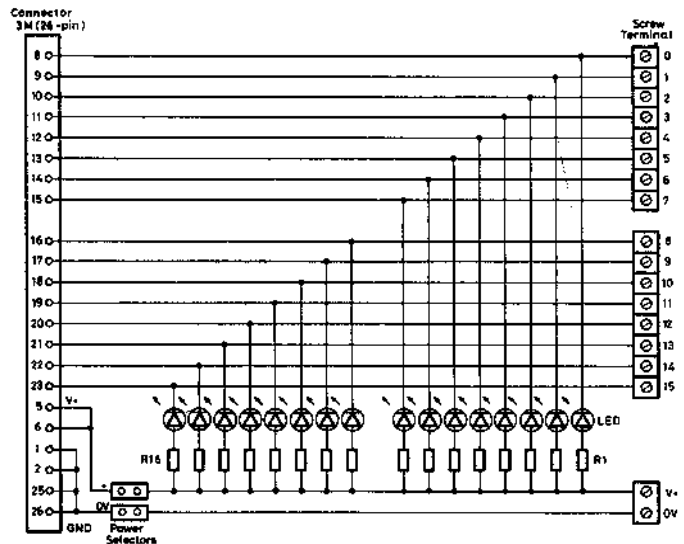


Fig. 2.2 GESICU-1A

