

IP-RELAY

REFERENCE MANUAL

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1. INTRODUCTION

The IP-RELAY module from ALPHI TECHNOLOGY is design around the 9000 Series/Molded SIP Reed Relay. The SIP relay is the industry standard when high reliability and consistent performance is needed. The IP-RELAY incorporates 25 high performance relays ideally suited for Automatic Test Equipment (ATE), Instrumentation, RF and Telecommunications applications.

The IP-RELAY meets the single-wide Industry Pack standard according to the IP VITA 4 Specifications.

Overview:

- Single-size INDUSTRY PACK module.
- Easy to use and program
- 25 Reed SPST - 9000 Series/Molded SIP Reed Relays
- 5 V only power supply, low power
- Optional Extended temperature grade (-40°C to + 85°C)

2. DESCRIPTION

The IP-RELAY is populated with 25 SPST - 9000 Series/Molded SIP Reed Relay. An onboard Altera 7064 controls the 25 - relays by setting a bit in the I/O space this switches a VN0104N8 for each relay to open or close.

Features:

- 25 reed relays
- Fast switching
- Single pole single throw
- Read back register
- Normally Open (default)
- Independent relay drivers for reliability

3. BLOCK DIAGRAM

There are three basic sections to the IP-RELAY

- The INDUSTRY PACK bus interface.
- The Relay Drivers.
- The Relays.

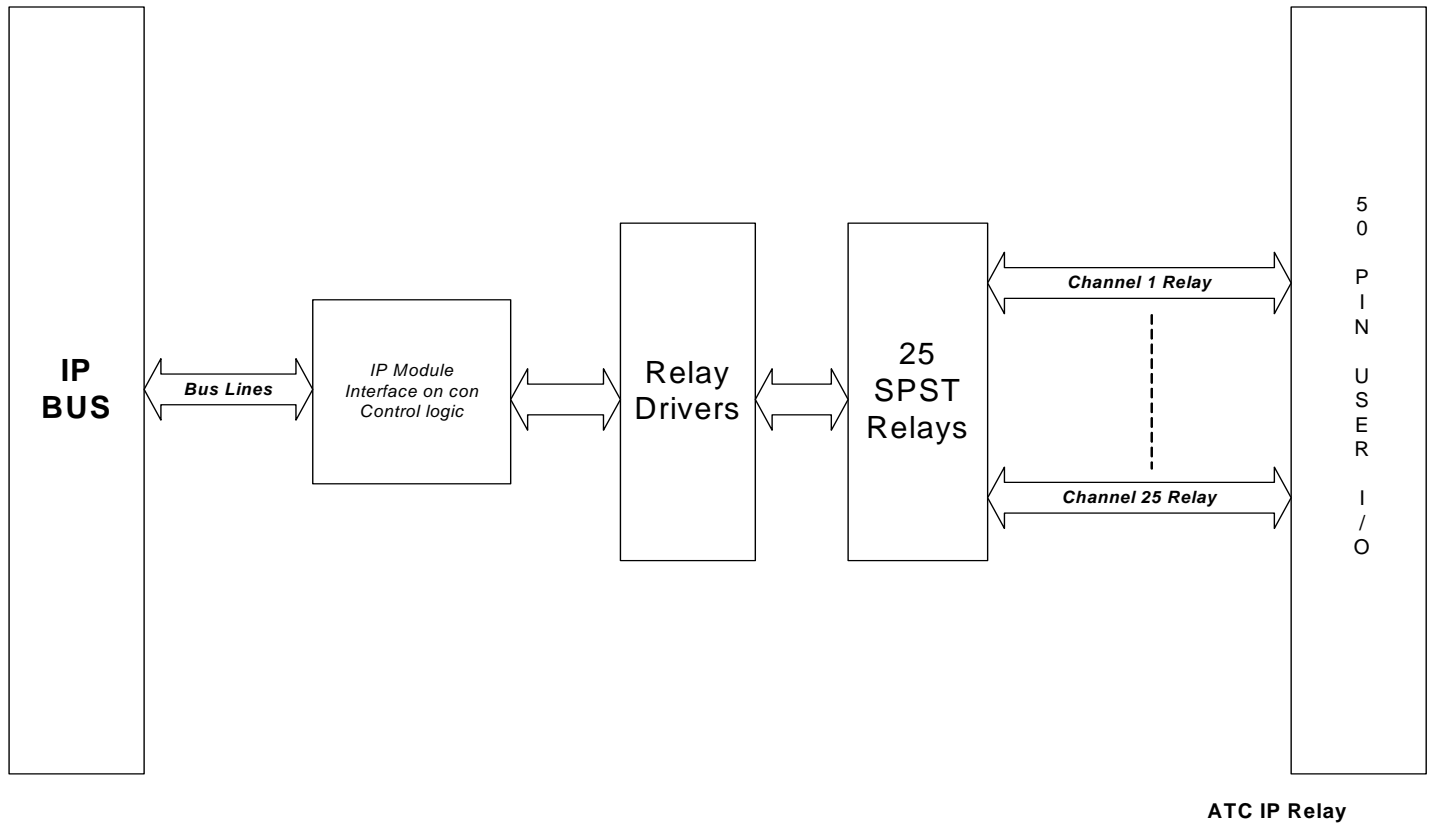


Figure 1 IP-RELAY Block Diagram

4. IP-RELAY SPACES

The following describes the different spaces used by the IP-RELAY

- **ID** space INDUSTRY PACK identification codes
- **I/O** space Controllers registers access

The base address of these spaces depends on the specific INDUSTRY PACK carrier used.

4.1.1 ID SPACE

The identification space is defined as follows:

Description		value
\$01	Ascii "I"	\$49
\$03	Ascii "P"	\$50
\$05	Ascii "A"	\$41
\$07	Ascii "C"	\$43
\$09	Manufacturer identification	\$11
\$0B	Module type	\$21
\$0D	Revision module	\$0A
\$0F	Reserved \$00	
\$11	Software Driver #	low byte
\$13	Software Driver #	high byte
\$15	Number of bytes used in ID space	\$0A
\$17	CRC	
\$19-3F	User available	

Correct reading of the first four bytes that contain the ASCII text "IPAC" can be used to identify the presence of an Industries Pack module.

Location \$09 provide the Manufacturer identities (ALPHI TECHNOLOGY INDUSTRY PACKs \$11).

The next two location identifies the module type and revision.

A 8-bit CHECKSUM (CRC) provide data integrity of the valid ID code set by the manufacturer.

The next bytes \$ 19 to \$ 3F are free for user data storage.

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4.1.2 I/O SPACE

This region is where the access control for each relay resides. By default (power on) each relay is open reading \$0 writing a \$1 to the corresponding bit will close the relay. Below is a chart to distinguish each relay channel and its corresponding bit. Write \$0 opens relay, Write \$1 close relay.

I/O SPACE \$00

Bit 3	BIT 2	BIT 1	BIT 0
RELAY 3	RELAY 2	RELAY 1	RELAY 0

Bit 7	BIT 6	BIT 5	BIT 4
RELAY 7	RELAY 6	RELAY 5	RELAY 4

Bit 11	BIT 10	BIT 9	BIT 8
RELAY 11	RELAY10	RELAY 9	RELAY 8

Bit15	BIT 14	BIT 13	BIT 12
RELAY 15	RELAY 14	RELAY 13	RELAY 12

I/O SPACE \$01

Bit 19	BIT 18	BIT 17	BIT 16
RELAY 19	RELAY 18	RELAY 17	RELAY 16

Bit 23	BIT 22	BIT 21	BIT 20
RELAY 23	RELAY 22	RELAY 21	RELAY 20

			BIT 24
			RELAY 24

Table 1: Direct access registers

5. ELECTRICAL DRAWING

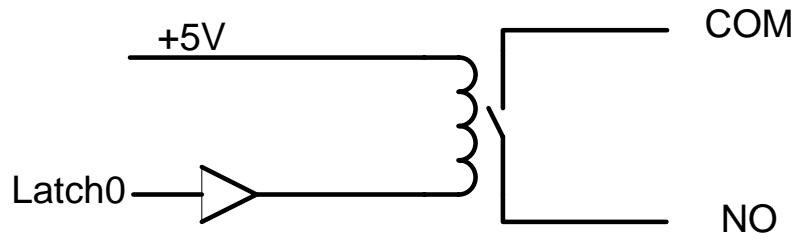


Figure 2: Electrical Drawing

6. CONNECTOR

The follow is the pin out for all 25 relay channels.

PIN	SIGNAL	PIN	SIGNAL
1	RLY0 COM	26	RLY12 NO
2	RLY0 NO	27	RLY13 COM
3	RLY1 COM	28	RLY13 NO
4	RLY1 NO	29	RLY14 COM
5	RLY2 COM	30	RLY14 NO
6	RLY2 NO	31	RLY15 COM
7	RLY3 COM	32	RLY15 NO
8	RLY3 NO	33	RLY16 COM
9	RLY4 COM	34	RLY16 NO
10	RLY4 NO	35	RLY17 COM
11	RLY5 COM	36	RLY17 NO
12	RLY5 NO	37	RLY18 COM
13	RLY6 COM	38	RLY18 NO
14	RLY6 NO	39	RLY19 COM
15	RLY7 COM	40	RLY19 NO
16	RLY7 NO	41	RLY20 COM
17	RLY8 COM	42	RLY20 NO
18	RLY8 NO	43	RLY21 COM
19	RLY9 COM	44	RLY21 NO
20	RLY9 NO	45	RLY22 COM
21	RLY10 COM	46	RLY22 NO
22	RLY10 NO	47	RLY23 COM
23	RLY11 COM	48	RLY23 NO
24	RLY11 NO	49	RLY24 COM
25	RLY12 COM	50	RLY24 NO

Table 2 - 50 pin connector