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# **TB8213**

## **32-CHANNEL RELAY SWITCH**

## **VME64X TRANSITION BOARD**

### **USERS MANUAL**

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## 1. INTRODUCTION

The Hytec TB8213 is a single-width VME64X Transition Board which incorporates 32 relays with contacts accessible from rear panel connectors with the following characteristics:-

- 2 groups of straight-through connections (connectors 1 & 2)
- 2 groups of 16 single-pole change-over relay contacts controlled from digital I/O.
- 4 SCSI connectors 1-4 routed to 8002 Carrier Board sites A-D respectively
- Ground discharge limited on insertion

## 2. PRODUCT SPECIFICATIONS

Size:	Single width Transition Board 6U x 80mm
Operating temp:	0 to 45 deg C ambient
Power Requirements:	+5V @ 3.5A from VME bus
Number of channels:	32
Connectors:	4 SCSI 50-way sockets mounted on the rear panel Connectors 1 & 2 are straight-through connections to sites A & B of the carrier board. Connectors 3 & 4 provide the relay contact connections (driven from sites C & D) J1 connector 160 way DIN mates with P2 pins J0 connector 5x19 way 2mm socket mates with P0.
Relay contacts:	Single-pole changeover arranged in groups of three pins, NC, CMN, NO. NC-CMN is the un-energised state
Voltage rating:	100V d.c. max.
Current rating:	100mA max.
Contact resistance:	200mohms initially

## 3. BOARD DESCRIPTION

The board is primarily intended to provide 32 single pole change-over contacts controlled from IP-8505-DIO boards on two rear panel connectors. These are output on connectors 3 & 4. Connectors 1 & 2 provide straight through connections to sites A & B on the 8002 Carrier Board.  
Ground discharge resistors are fitted at the base of the board.

## 4. OPERATION

Plug IP-DIO-8505 Digital I/O Industry packs onto sites C & D of an 8002 Carrier Board.  
Plug the 8213 Transition Board into the slot at the rear of the 8002 slot.  
Connect signals according to the table of connections shown in appendix A, connectors 3 & 4.

In order to energise a relay the appropriate output bit must be set to a logic 0.



## APPENDIX A

**Connection tables for TB8213 Analogue I/O Transition Board**

Connector: 1		IP Site: A					
SCSI Pin	VME	IP	Signal	SCSI Pin	VME	IP	Signal
1	P2-C6	2	Sig_Lo1	26	P2-A6	1	Sig_Hi1
2	P2-C7	4	Sig_Lo2	27	P2-A7	3	Sig_Hi2
3	P2-C8	6	Sig_Lo3	28	P2-A8	5	Sig_Hi3
4	P2-C9	8	Sig_Lo4	29	P2-A9	7	Sig_Hi4
5	P2-C10	10	Sig_Lo5	30	P2-A10	9	Sig_Hi5
6	P2-C11	12	Sig_Lo6	31	P2-A11	11	Sig_Hi6
7	P2-C12	14	Sig_Lo7	32	P2-A12	13	Sig_Hi7
8	P2-C13	16	Sig_Lo8	33	P2-A13	15	Sig_Hi8
9	P2-C14	18	Sig_Lo9	34	P2-A14	17	Sig_Hi9
10	P2-C15	20	Sig_Lo10	35	P2-A15	19	Sig_Hi10
11	P2-C16	22	Sig_Lo11	36	P2-A16	21	Sig_Hi11
12	P2-C17	24	Sig_Lo12	37	P2-A17	23	Sig_Hi12
13	P2-C18	26	Sig_Lo13	38	P2-A18	25	Sig_Hi13
14	P2-C19	28	Sig_Lo14	39	P2-A19	27	Sig_Hi14
15	P2-C20	30	Sig_Lo15	40	P2-A20	29	Sig_Hi15
16	P2-C21	32	Sig_Lo16	41	P2-A21	31	Sig_Hi16
17	P2-C22	34		42	P2-A22	33	
18	P2-C23	36		43	P2-A23	35	
19	P2-C24	38		44	P2-A24	37	
20	P2-C25	40		45	P2-A25	39	
21	P2-C26	42		46	P2-A26	41	
22	P2-C27	44		47	P2-A27	43	
23	P2-C28	46		48	P2-A28	45	
24	P2-C29	48		49	P2-C27	47	
25	P2-C30	50		50	P2-C28	49	



Connector: 2		IP Site: B					
SCSI Pin	VME	IP	Signal	SCSI Pin	VME	IP	Signal
1	P2-Z5	2	Sig_Lo17	26	P2-D4	1	Sig_Hi17
2	P2-D6	4	Sig_Lo18	27	P2-D5	3	Sig_Hi18
3	P2-D7	6	Sig_Lo19	28	P2-Z7	5	Sig_Hi19
4	P2-Z9	8	Sig_Lo20	29	P2-D8	7	Sig_Hi20
5	P2-D10	10	Sig_Lo21	30	P2-D9	9	Sig_Hi21
6	P2-D11	12	Sig_Lo22	31	P2-Z11	11	Sig_Hi22
7	P2-Z13	14	Sig_Lo23	32	P2-D12	13	Sig_Hi23
8	P2-D14	16	Sig_Lo24	33	P2-D13	15	Sig_Hi24
9	P2-D15	18	Sig_Lo25	34	P2-Z15	17	Sig_Hi25
10	P2-Z17	20	Sig_Lo26	35	P2-D16	19	Sig_Hi26
11	P2-D18	22	Sig_Lo27	36	P2-D17	21	Sig_Hi27
12	P2-D19	24	Sig_Lo28	37	P2-Z19	23	Sig_Hi28
13	P2-Z21	26	Sig_Lo29	38	P2-D20	25	Sig_Hi29
14	P2-D22	28	Sig_Lo30	39	P2-D21	27	Sig_Hi30
15	P2-D23	30	Sig_Lo31	40	P2-Z23	29	Sig_Hi31
16	P2-Z25	32	Sig_Lo32	41	P2-D24	31	Sig_Hi32
17	P2-D26	34		42	P2-D25	33	
18	P2-D27	36		43	P2-Z27	35	
19	P2-Z29	38		44	P2-D28	37	
20	P2-D30	40		45	P2-D29	39	
21	P2-C1	42		46	P2-A1	41	
22	P2-C2	44		47	P2-A2	43	
23	P2-C3	46		48	P2-A3	45	
24	P2-C4	48		49	P2-C2	47	
25	P2-C5	50		50	P2-C3	49	



<b>Connector: 3</b>				<b>IP Site: C</b>			
<b>SCSI Pin</b>	<b>VME</b>	<b>Relay</b>	<b>Contact</b>	<b>SCSI Pin</b>	<b>VME</b>	<b>Relay</b>	<b>Contact</b>
1	P0-A11	RL-1	NC	26		RL-1	CMN
2		RL-1	NO	27	P0-C11	RL-2	NC
3		RL-2	CMN	28		RL-2	NO
4	P0-E11	RL-3	NC	29		RL-3	CMN
5		RL-3	NO	30	P0-B12	RL-4	NC
6		RL-4	CMN	31		RL-4	NO
7	P0-D12	RL-5	NC	32		RL-5	CMN
8		RL-5	NO	33	P0-A13	RL-6	NC
9		RL-6	CMN	34		RL-6	NO
10	P0-C13	RL-7	NC	35		RL-7	CMN
11		RL-7	NO	36	P0-E13	RL-8	NC
12		RL-8	CMN	37		RL-8	NO
13	P0-B14	RL-9	NC	38		RL-9	CMN
14		RL-9	NO	39	P0-D14	RL-10	NC
15		RL-10	CMN	40		RL-10	NO
16	P0-A15	RL-11	NC	41		RL-11	CMN
17		RL-11	NO	42	P0-C15	RL-12	NC
18		RL-12	CMN	43		RL-12	NO
19	P0-E15	RL-13	NC	44		RL-13	CMN
20		RL-13	NO	45	P0-B16	RL-14	NC
21		RL-14	CMN	46		RL-14	NO
22	P0-D16	RL-15	NC	47		RL-15	CMN
23		RL-15	NO	48	P0-A17	RL-16	NC
24		RL-16	CMN	49		RL-16	NO
25				50			

**Note: A low input level energises the relay and the NO contact is closed to CMN  
Pins 25 and 50 may be linked to 0V or +5V.**



<b>Connector: 4</b>				<b>IP Site: D</b>			
<b>SCSI Pin</b>	<b>VME</b>	<b>IP</b>	<b>Signal</b>	<b>SCSI Pin</b>	<b>VME</b>	<b>IP</b>	<b>Signal</b>
1	P0-A1	RL-17	NC	26		RL-17	CMN
2		RL-17	NO	27	P0-C1	RL-18	NC
3		RL-18	CMN	28		RL-18	NO
4	P0-E1	RL-19	NC	29		RL-19	CMN
5		RL-19	NO	30	P0-B2	RL-20	NC
6		RL-20	CMN	31		RL-20	NO
7	P0-D2	RL-21	NC	32		RL-21	CMN
8		RL-21	NO	33	P0-A3	RL-22	NC
9		RL-22	CMN	34		RL-22	NO
10	P0-C3	RL-23	NC	35		RL-23	CMN
11		RL-23	NO	36	P0-E3	RL-24	NC
12		RL-24	CMN	37		RL-24	NO
13	P0-B4	RL-25	NC	38		RL-25	CMN
14		RL-25	NO	39	P0-D4	RL-126	NC
15		RL-26	CMN	40		RL-26	NO
16	P0-A5	RL-27	NC	41		RL-27	CMN
17		RL-27	NO	42	P0-C5	RL-28	NC
18		RL-28	CMN	43		RL-28	NO
19	P0-E5	RL-29	NC	44		RL-29	CMN
20		RL-29	NO	45	P0-B6	RL-30	NC
21		RL-30	CMN	46		RL-30	NO
22	P0-D6	RL-31	NC	47		RL-31	CMN
23		RL-31	NO	48	P0-A7	RL-32	NC
24		RL-32	CMN	49		RL-32	NO
25				50			

**Note: A low input level energises the relay and the NO contact is closed to CMN  
Pins 25 and 50 may be linked to 0V or +5V.**



### APPENDIX C

#### Relay detail

