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# **SCB 9303 Digital Output Signal Conditioning Board**

## **Product Specification**

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## Revision History

The following table shows the revision history for this document.

Date	Version	Change Notes
20/09/2018	2.0	PCB Issue 2
30/12/2019	2.1	Change from Hytec to Newwood Solutions for contact details

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## 1. INTRODUCTION

The SCB 9303 is a small optically isolated 16-channel signal conditioning board used to route signals from Industry Pack I/O to front panel SCSI connectors in the IOC 9010 and VME64X VTB 8307 Mixed Signal Transition Board. Sixteen pairs of circuits are isolated together with two input strobes and two output strobes. All circuit pairs are current limited and protected from over-voltage by zener diodes. A power connector accepts isolated +/-12V power from the main board and routes it to pins 49 and 50 on the SCSI connector.

## 2. PRODUCT SPECIFICATIONS

### 2.1 Power Requirements

+/-12V is accepted from main-board mounted DC-DC converters for routing to the main unit SCSI connector.

### 2.2 Operating Temperature Range

0 to +45 deg Celsius ambient.

### 2.3 Mechanical

Printed circuit board with two 50-way sockets PL1, PL2 and 6 way power plug PL3 (+5V, +/-12V and GND).

Board Dimensions: 2.55 x 1.80 inches

### 2.4 Signal Specifications

#### Digital Outputs (16)

PL2/1 to PL2/32 are arranged as 16 circuit pairs

PL2/1 is an opto-coupler photo-transistor collector output

PL2/2 is an opto-coupler photo-transistor emitter output

PL1/1 is the cathode of the opto-coupler photodiode which has its anode pulled up to +5V via 270 ohms

When PL1/1 is switched low to the GND connection PL1/2, current flows in the photodiode and the output phototransistor conducts

This circuit is repeated 16 times and provides optically coupled output switches for the 8001 and 8505

#### Strobe Inputs (2)

PL2/33 and PL2/34, PL2/39 and PL2/40 are arranged in circuit pairs

PL2/33 to PL2/34 has a 4.7mA current diode in series with an opto-coupler photodiode

PL1/33 is the opto-coupler photo-transistor collector output with 10K pull-up resistor to +5V

PL1/34 is the photo-transistor emitter output connected to GND

Hence PL2/33 and PL2/34 form a current circuit which saturates the output transistor when current flows

This circuit is repeated for pins 39 and 40

#### Strobe Outputs (2)

PL2/35 and PL2/36, PL2/37 and PL2/38 are arranged in pairs

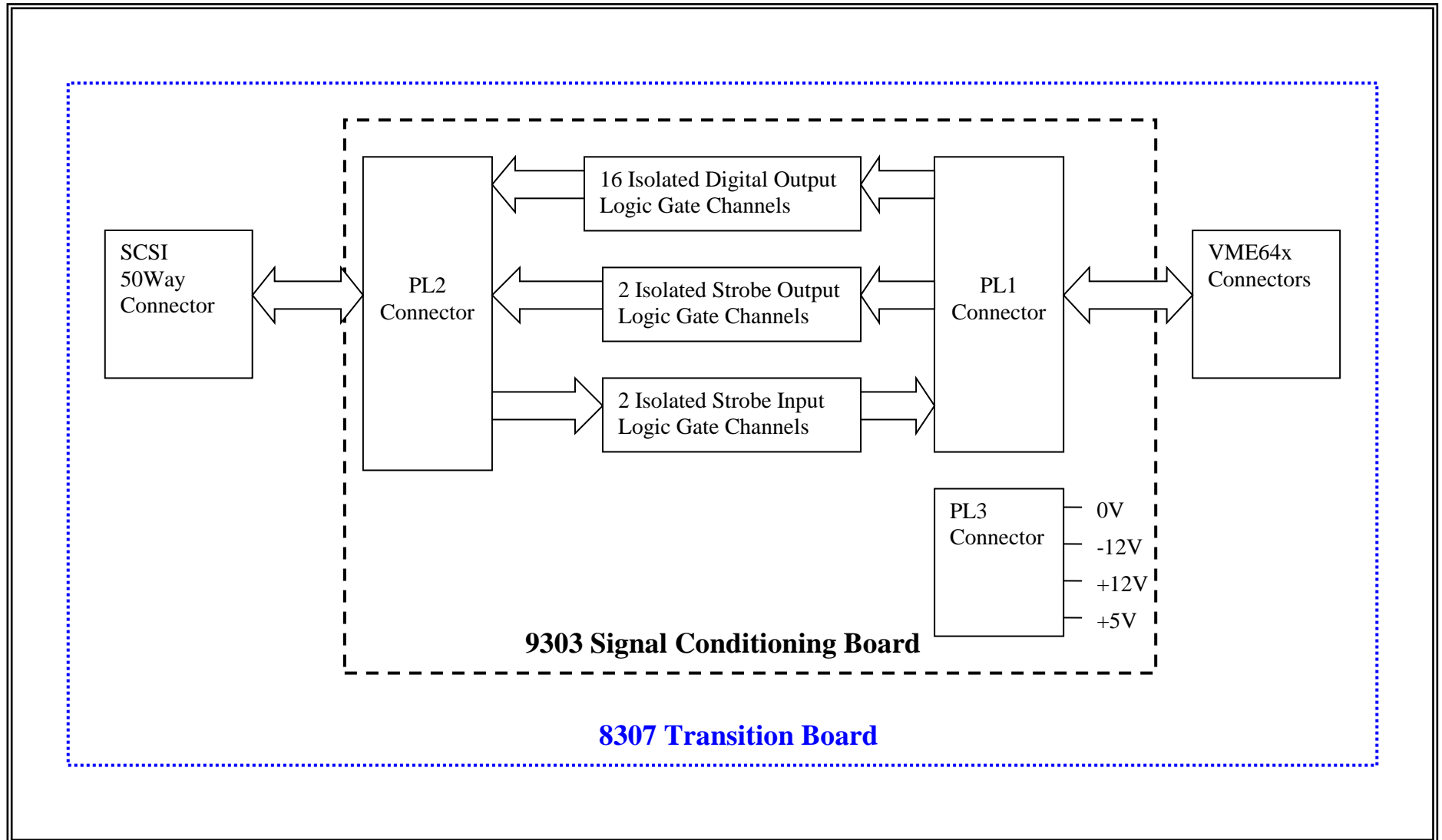
PL2/35 is the opto-coupler photo-transistor collector output

PL2/36 is the photo-transistor emitter output

PL1/35 is the cathode of the opto-coupler photodiode which has its anode pulled up to +5V via 270 ohms

When PL1/35 is switched low, current flows in the photodiode and the output phototransistor conducts

This circuit is repeated for pins 37 and 38



Block Diagram Example of connections between the 8307 transition card and 9303 SCB module

**Table1 of Signal Allocation PL1**

<b>Pin</b>	<b>Signal</b>	<b>Pin</b>	<b>Signal</b>
1	VME Digital Output 1 +ve	26	VME Digital Output 13 -ve
2	VME Digital Output 1 -ve	27	VME Digital Output 14 +ve
3	VME Digital Output 2 +ve	28	VME Digital Output 14 -ve
4	VME Digital Output 2 -ve	29	VME Digital Output 15 +ve
5	VME Digital Output 3 +ve	30	VME Digital Output 15 -ve
6	VME Digital Output 3 -ve	31	VME Digital Output 16 +ve
7	VME Digital Output 4 +ve	32	VME Digital Output 16 -ve
8	VME Digital Output 4 -ve	33	VME Strobe In 1 +ve
9	VME Digital Output 5 +ve	34	VME Strobe In 1 -ve
10	VME Digital Output 5 -ve	35	VME Strobe Out 1 +ve
11	VME Digital Output 6 +ve	36	VME Strobe Out 1 -ve
12	VME Digital Output 6 -ve	37	VME Strobe Out 2 +ve
13	VME Digital Output 7 +ve	38	VME Strobe Out 2 -ve
14	VME Digital Output 7 -ve	39	VME Strobe In 2 +ve
15	VME Digital Output 8 +ve	40	VME Strobe In 2 -ve
16	VME Digital Output 8 -ve	41	
17	VME Digital Output 9 +ve	42	
18	VME Digital Output 9 -ve	43	
19	VME Digital Output 10 +ve	44	
20	VME Digital Output 10 -ve	45	
21	VME Digital Output 11 +ve	46	
22	VME Digital Output 11 -ve	47	
23	VME Digital Output 12 +ve	48	
24	VME Digital Output 12 -ve	49	
25	VME Digital Output 13 +ve	50	

**Table2 of Signal Allocation PL2**

<b>Pin</b>	<b>Signal</b>	<b>Pin</b>	<b>Signal</b>
1	Isolated digital Output 1 +ve	26	Isolated digital Output 13 -ve
2	Isolated digital Output 1 -ve	27	Isolated digital Output 14 +ve
3	Isolated digital Output 2 +ve	28	Isolated digital Output 14 -ve
4	Isolated digital Output 2 -ve	29	Isolated digital Output 15 +ve
5	Isolated digital Output 3 +ve	30	Isolated digital Output 15 -ve
6	Isolated digital Output 3 -ve	31	Isolated digital Output 16 +ve
7	Isolated digital Output 4 +ve	32	Isolated digital Output 16 -ve
8	Isolated digital Output 4 -ve	33	Isolated Strobe Input 1 +ve
9	Isolated digital Output 5 +ve	34	Isolated Strobe Input 1 -ve
10	Isolated digital Output 5 -ve	35	Isolated Strobe Output 1 +ve
11	Isolated digital Output 6 +ve	36	Isolated Strobe Output 1 -ve
12	Isolated digital Output 6 -ve	37	Isolated Strobe Output 2 +ve
13	Isolated digital Output 7 +ve	38	Isolated Strobe Output 2 -ve
14	Isolated digital Output 7 -ve	39	Isolated Strobe Input 2 +ve
15	Isolated digital Output 8 +ve	40	Isolated Strobe Input 2 -ve
16	Isolated digital Output 8 -ve	41	
17	Isolated digital Output 9 +ve	42	
18	Isolated digital Output 9 -ve	43	
19	Isolated digital Output 10 +ve	44	
20	Isolated digital Output 10 -ve	45	
21	Isolated digital Output 11 +ve	46	
22	Isolated digital Output 11 -ve	47	
23	Isolated digital Output 12 +ve	48	
24	Isolated digital Output 12 -ve	49	-12VX
25	Isolated digital Output 13 +ve	50	+12VX

**PL3 Connections**

Pins 1&2 +5V  
 Pins 3 GND  
 Pin 4 N/C  
 Pin 5 +12V  
 Pin 6 -12V

**Table3 9010 or 8307 SCSI Pin Allocation**

<b>Pin</b>	<b>Signal</b>	<b>Pin</b>	<b>Signal</b>
1	Output 1 -	26	Output 1 +
2	Output 2 -	27	Output 2 +
3	Output 3 -	28	Output 3 +
4	Output 4 -	29	Output 4 +
5	Output 5 -	30	Output 5 +
6	Output 6 -	31	Output 6 +
7	Output 7 -	32	Output 7 +
8	Output 8 -	33	Output 8 +
9	Output 9 -	34	Output 9 +
10	Output 10 -	35	Output 10 +
11	Output 11 -	36	Output 11 +
12	Output 12 -	37	Output 12 +
13	Output 13 -	38	Output 13 +
14	Output 14 -	39	Output 14 +
15	Output 15 -	40	Output 15 +
16	Output 16 -	41	Output 16 +
17	Strobe In 1 -	42	Strobe In 1 +
18	Strobe Out 1 -	43	Strobe Out 1 +
19	Strobe Out 2 -	44	Strobe Out 2 +
20	Strobe In 2 -	45	Strobe In 2 +
21		46	
22		47	
23		48	
24		49	
25	+12V	50	-12V