



## **HYTEC ELECTRONICS Ltd**

**HEAD OFFICE:** 5 CRADOCK ROAD, READING, BERKS. RG2 0JT, UK  
Telephone: +44 (0) 118 9757770 Fax: +44 (0)118 9757566

E-mail: [sales@hytec-electronics.co.uk](mailto:sales@hytec-electronics.co.uk)

# **TB9212 MULTIPLEXED ANALOGUE INPUT MINI-TRANSITION BOARD**

## **USERS MANUAL**

Document Nos.: TB9212/UTM/1.0

Date: 19/06/2007

Author: PJM



---

## CONTENTS

<b>1. INTRODUCTION</b> .....	<b>3</b>
<b>2. SPECIFICATION</b> .....	<b>3</b>
<b>3. BOARD DESCRIPTION</b> .....	<b>3</b>
<b>4. OPERATING MODES</b> .....	<b>4</b>
<b>CONFIGURATION</b> .....	<b>4</b>
<b>JUMPERS</b> .....	<b>4</b>
<b>EXCITATION</b> .....	<b>4</b>
<b>5. OPERATION</b> .....	<b>4</b>
<b>6. CONNECTORS</b> .....	<b>4</b>
<b>7. APPENDIX A</b> .....	<b>5</b>
<b>PIN ASSIGNMENTS</b> .....	<b>5</b>



## 1. INTRODUCTION

The board is primarily intended to route 16 analogue inputs from PT100 or thermocouple terminal boards to an IP-MADC-8403 card mounted in a 9010 IOC Controller. The Hytec TB9212 is a Mini-Transition Board for use with the 9010 I/O Controller or the Hytec 8307 VME64x transition card, which routes 16 channels of analogue I/O with the following characteristics:-

- 16 analogue channel pairs
- Allows use of PT100 (8913-P) or thermocouple (8913-T) DIN Rail Boards with IP-MADC-8403
- 16 channels of differential filters condition 8403 inputs
- Differential mode
- 16 differential channels multiplexed as two groups of eight for reading PT-100s or thermocouples via the 8913-T/P.
- CAL signal from 8403 used to select multiplexer input group.
- External DC-DC Converter required to power and isolate the multiplexer switches.
- 1 signal pair for External Trigger
- Two 'IDAC' signals for excitation.
- 1 signal pair for External Clock
- Analogue Ground connections

## 2. SPECIFICATION

Mechanical:	Standard 9010 mini-transition board
Operating temp:	0 to 45 deg C ambient
Number of channels:	16
Input/output voltage range:	0 to +/-5V (8403 range is +/-2.5V)
Input filter:	1K in each arm with 0.033uF across them.
PT Mux Control:	/CALEN allows external switch control by 8403
Isolation:	100V with respect to VME 0V limited by 8403
Power:	+/- 12V @ 0.1A typical using external DC-DC converter.

## 3. BOARD DESCRIPTION

The board is primarily intended to route 16 analogue inputs from PT100 or thermocouple terminal boards to IP-MADC-8403 cards mounted in a 9010 IOC Controller.

It has R-C filters across the differential inputs of the ADCs.

The filters incorporate 1K in series with each analogue signal (high and low) bridged by 33nF capacitors.

The CALEN signal from the 8403 is used to select the multiplexer group for PT mode. CALEN set to a 1 in the CSR of the 8403 set /CALEN low at the I/O connector and also selects channel 1-8 of the differential inputs. CALEN set to a 0 in the CSR sets /CALEN high and selects channels 9-16.



## 4. OPERATING MODES

### Configuration

There is one operating mode:-

Differential with 16 channels multiplexed in two groups of eight (PT mode) selected by the CALEN signal from the 8403.

### Jumpers

There are no jumper settings required on this board.

### Excitation

Two current sources and +/-12V are available:-

1. +/-12V D.C. generated by external DC-DC converters
2. Programmable current source 0 to +1mA (DAC1 and DAC2 from the 8403) – see pin assignments

## 5. OPERATION

The operation of this card is completely automatic and the 8403 controls the multiplexer selection as described above. The card requires an external DC-DC converter to provide an isolated +/-12 volt supply which powers the multiplexer chips and can also be used externally.

## 6. CONNECTORS

The connectors on this card are exactly the same as those used on the Industry Pack cards. This card is designed to fit between the I/O connector of an 8403 Industry Pac ADC and the 50-way SCSI plant connector. This connector then carries 16 voltage input pairs together with various control and excitation signals.



## 7. APPENDIX A

### Pin Assignments of the (external) SCSI connector

Pin	Signal	Pin	Signal
1	Inp1 -	26	Inp1 +
2	Inp2 -	27	Inp2 +
3	Inp3 -	28	Inp3 +
4	Inp4 -	29	Inp4 +
5	Inp5 -	30	Inp5 +
6	Inp6 -	31	Inp6 +
7	Inp7 -	32	Inp7 +
8	Inp 8 -	33	Inp8 +
9	Inp9 -	34	Inp9 +
10	Inp10 -	35	Inp10 +
11	Inp11 -	36	Inp11 +
12	Inp12 -	37	Inp12 +
13	Inp13 -	38	Inp13 +
14	Inp14 -	39	Inp14 +
15	Inp15 -	40	Inp15 +
16	Inp16 -	41	Inp16 +
17		42	/CALEN
18	Xtrig -	43	Xtrig +
19	IDAC B	44	IDAC A
20	XClk -	45	XClk +
21	AGnd	46	+12V
22	AGnd	47	+12V
23	AGnd	48	-12V
24	AGnd	49	-12V
25	AGnd	50	