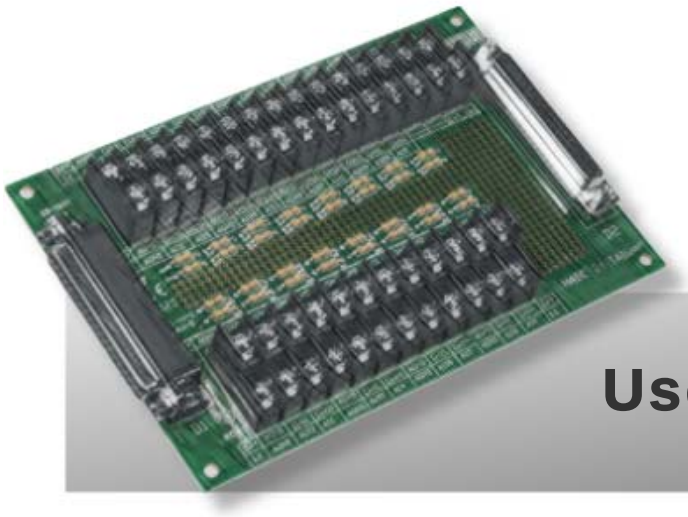

DB-8025/8125/8225/8325/1825

User Manual

Version 1.5
August 2011

Warranty

All products manufactured by ICP DAS are warranted against defective materials for a period of one year from the date of delivery to the original purchaser.

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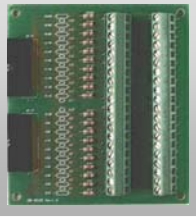
DB-8025

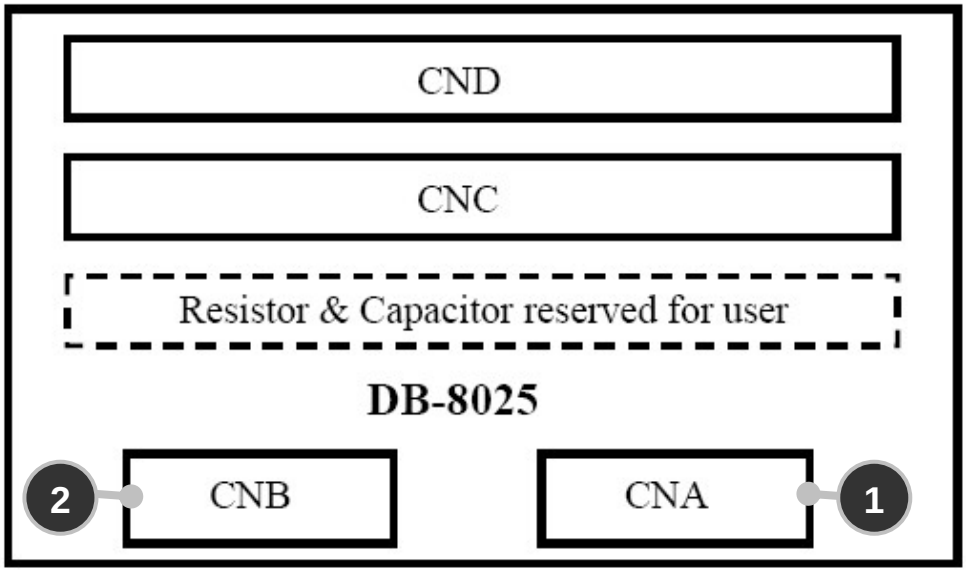
for 20-pin connector A/D card



1. Accessories

The DB-8025 is the cost-effective universal screw terminal board for 20-pin connector A/D card.

1.1. DB-8025 Layout

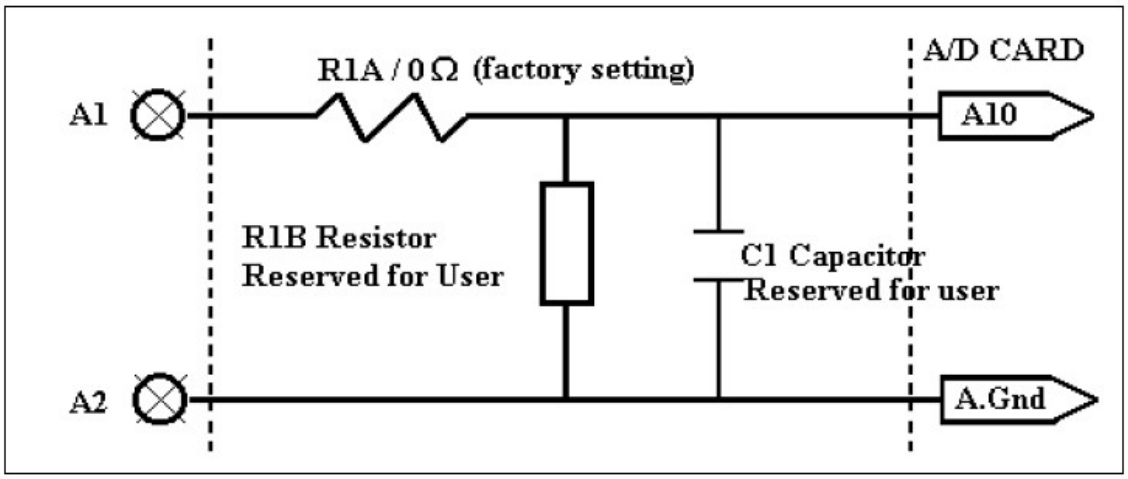


1. **CNA** 20-Pin connector for A1~A20
2. **CNB** 20-Pin connector for B1~B20

1.2. Pin Assignment

Pin	Description	Pin	Description
1	A1	1	B1
2	A2	2	B2
3	A3	3	B3
4	A4	4	B4
5	A5	5	B5
6	A6	6	B6
7	A7	7	B7
8	A8	8	B8
9	A9	9	B9
10	A10	10	B10
11	A11	11	B11
12	A12	12	B12
13	A13	13	B13
14	A14	14	B14
15	A15	15	B15
16	A16	16	B16
17	A17	17	B17
18	A18	18	B18
19	A19	19	B19
20	A20	20	B20

1.3. Wring Diagram

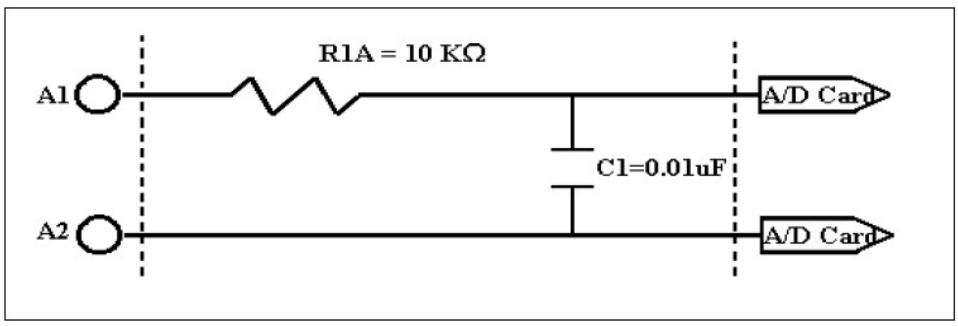


1.4. Capacitor Filter, Voltage Divider and Current Input

1.4.1 Input R/C Filtering

Input Filtering are provided on the DB-8025 by install a resistor and a capacitor on the desired input channel.
For example:

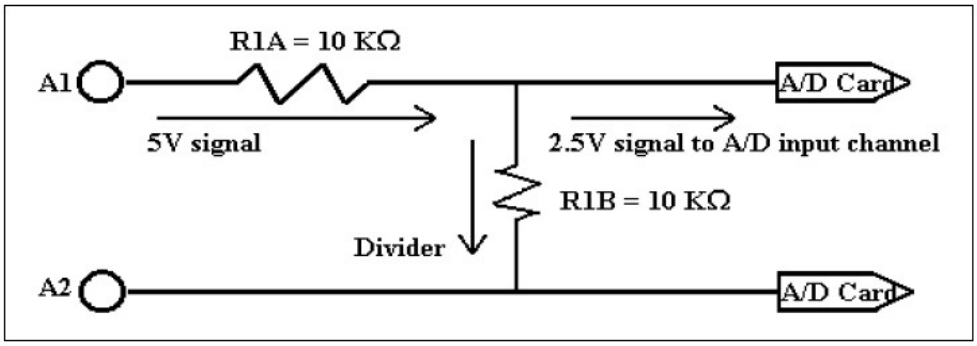
1.6 KHz Low pass filter
Equation: f3db = 1/(2 π ・R・C)
The steps are shown below
Step1: Change R1A (0 Ω) resistor to 10 KΩ
Step2: Install 0.01 uF Capacitor on C1.



1.4.2 Voltage Divider

If the input voltage signals level is over the A/D card input range. The DB-8025 provided 2 resistors on the input channel to divide input voltage signal. The steps are shown below:
Step1. Change R1A (0 Ω) resistor to 10 KΩ. (0.1%)
Step2. Install 10 KΩ (0.1%) on R1B. (Voltage Signal /2)

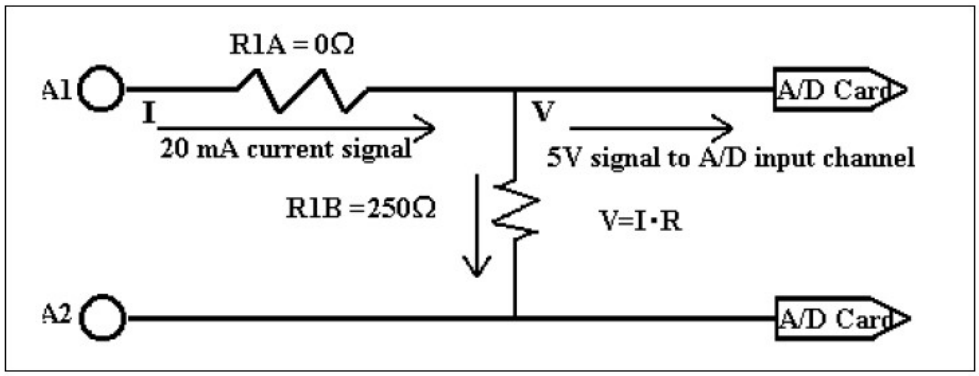
V/n : n = R1A/(R1A+R1B)



1.4.3 Current Input

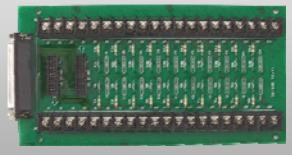
If you want to measure current input signal, you have to install 250 Ω resistor to R1B. The steps are shown as below:
Current signal range: 0 ~ 20 mA
R1B change to 250 Ω
Voltage = 20 mA x 250 Ω = 5V ; Range = 0 ~ 5V
Formula:

Input voltage signal = input current signal x 250 Ω



DB-8125

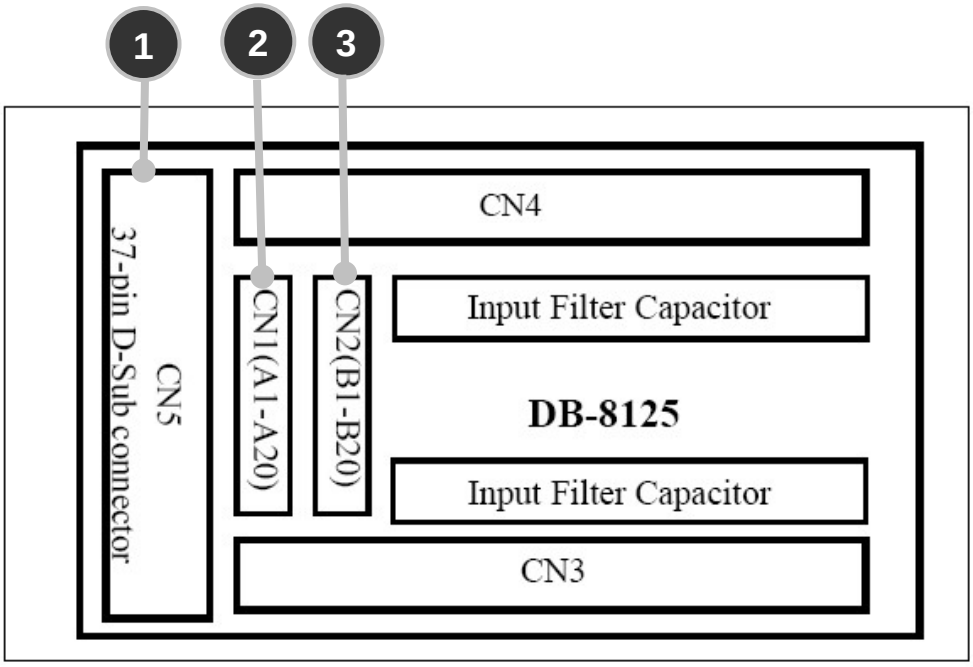
for 20-pin or 37-pin D-Sub connector A/D card



2. Accessories

The DB-8125 is the cost-effective universal screw terminal board for 20-pin connector or 37-pin D-Sub connector A/D card.

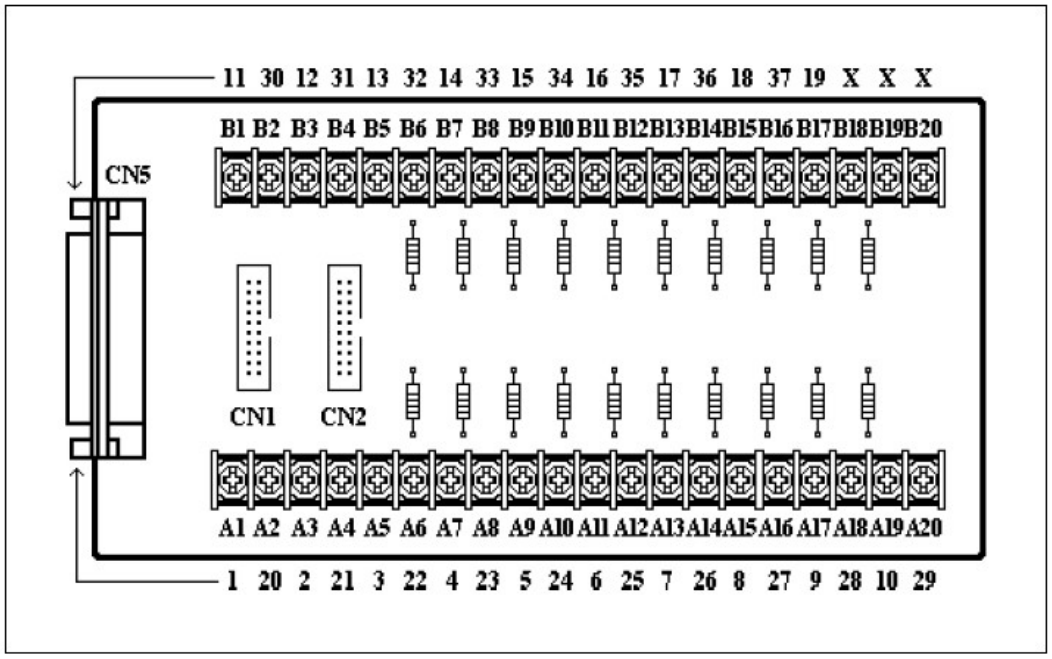
2.1. DB-8125 Layout



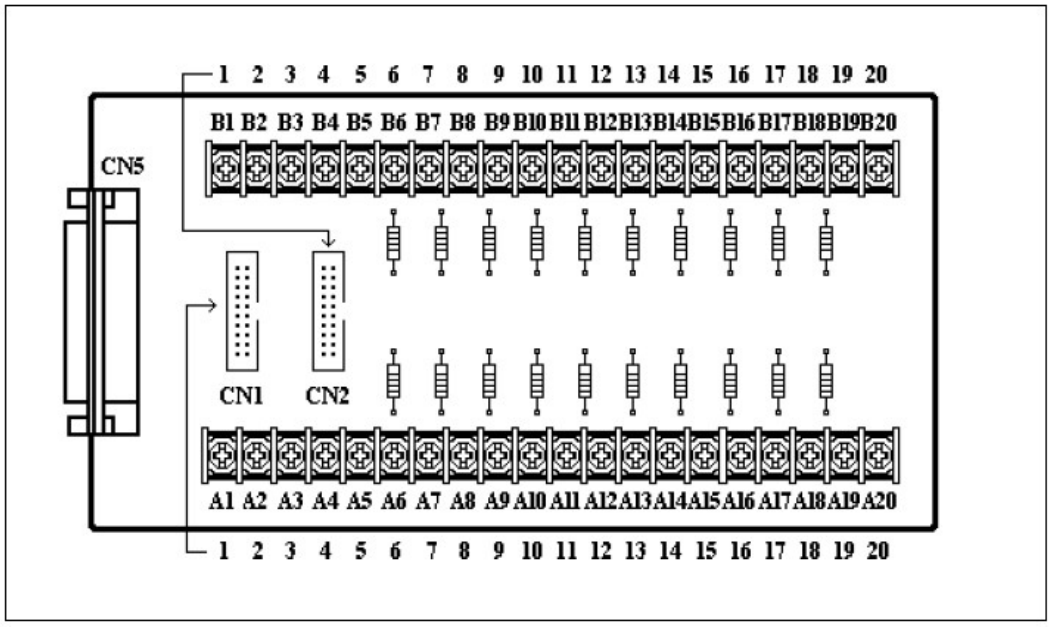
1. **CN5** 37-Pin D-Sub connector for A1~A20 and B1~B25
2. **CN1** 20-Pin connector for A1~A20
3. **CN2** 20-Pin connector for B1~B20

2.2. Pin Assignment

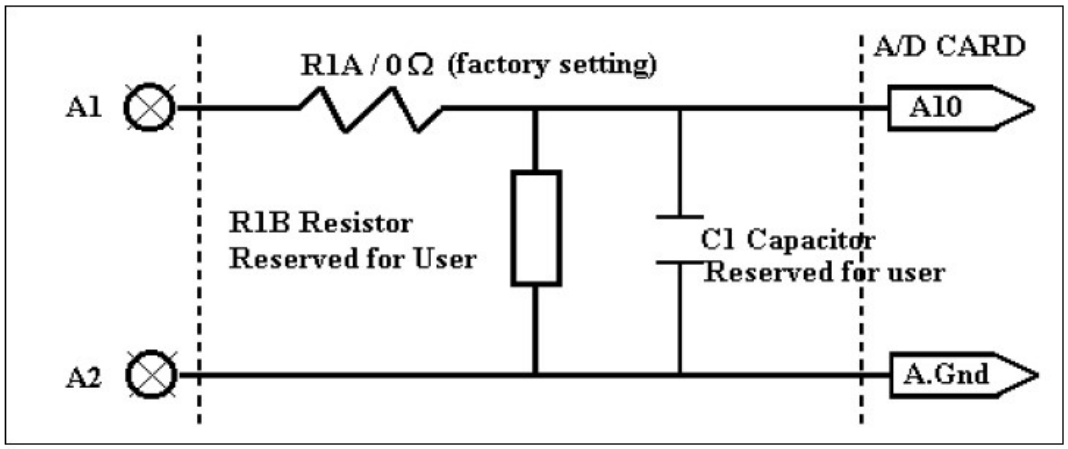
- 37-pin D-Sub connector pin assignment



- 20-Pin connector pin assignment



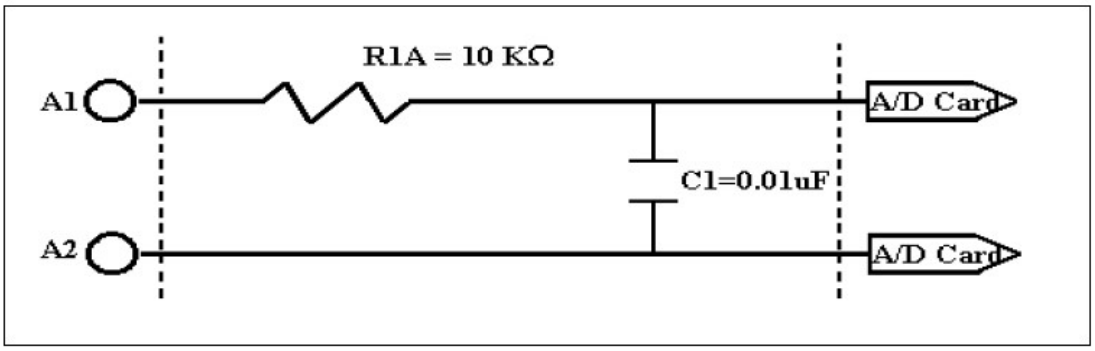
2.3. Wring Diagram



2.4. Capacitor Filter, Voltage Divider and Current Input

2.4.1 Input R/C Filtering

Input Filtering are provided on the DB-8125 by install a resistor and a capacitor on the desired input channel.
For example:
1.6 KHz Low pass filter
Equation: f3db = 1/(2 π · R · C)
The steps are shown below
Step1. Change R1A (0Ω) resistor to 10 KΩ
Step2. Install 0.01 uF Capacitor on C1.



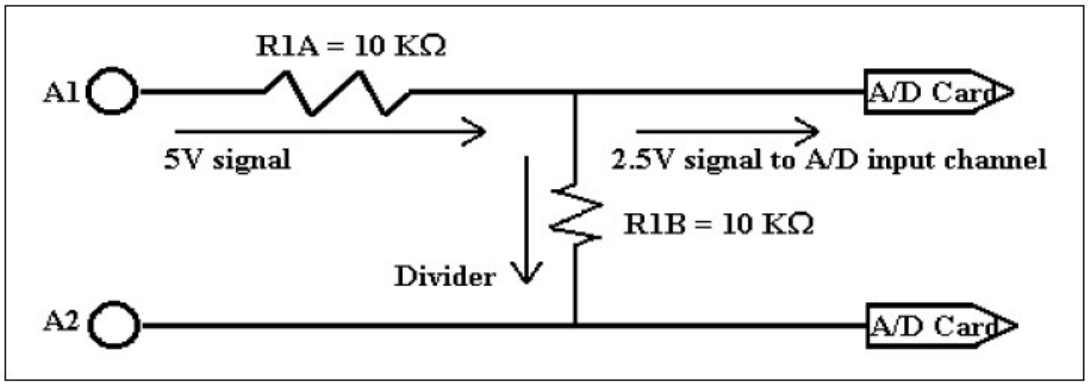
2.4.2 Voltage Divider

If the input voltage signals level is over the A/D card input range. The DB-8125 provided 2 resistors on the input channel to divide input voltage signal. The steps are shown below

Step1. Change R1A (0 Ω) resistor to 10 KΩ. (0.1%)

Step2. Install 10 KΩ (0.1%) on R1B. (Voltage Signal /2)

V/n : n = R1A/(R1A+R1B)



2.4.3 Current Input

If you want to measure current input signal, you have to change R1B (0Ω) resistor to 250 Ω. The steps are shown as below:

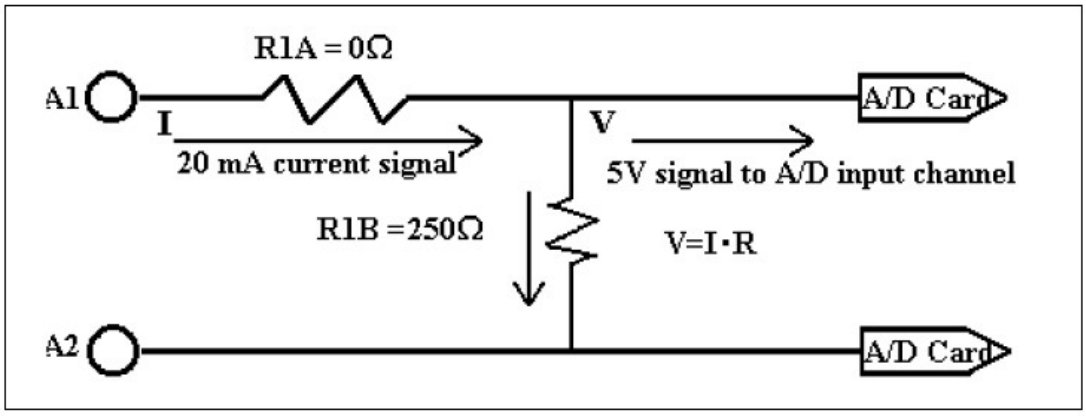
Current signal range: 0 ~ 20 mA

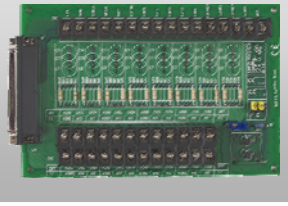
R1B change to 250 Ω

Voltage = 20 mA x 250 Ω = 5 V ; Range = 0 ~ 5 V

Formula:

Input voltage signal = input current signal x 250 Ω



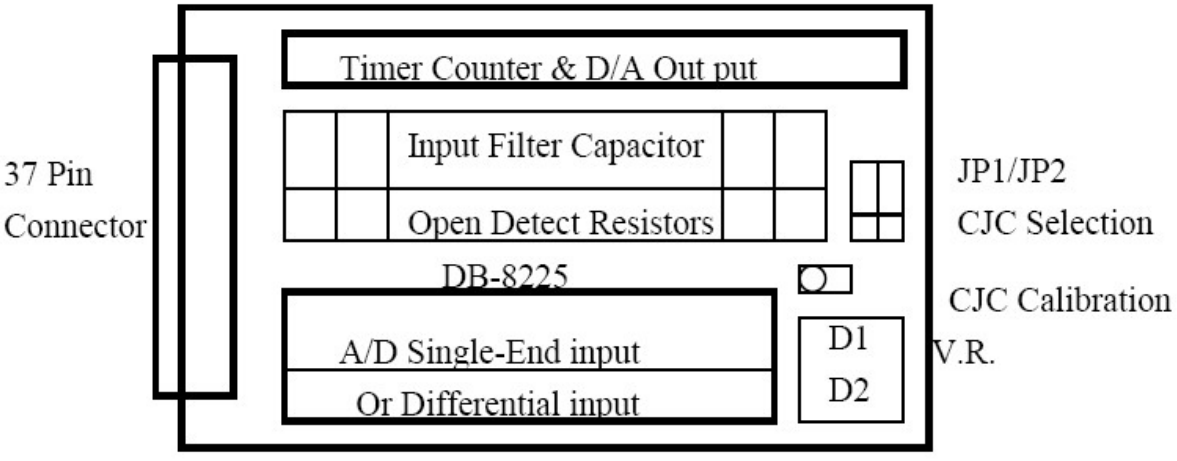


3. Accessories

The DB-8225 terminal board is designed for A-82x series card for convenient wiring.

A/D Card Type	Input Mode
A-822HG	Single - End or Differential
A-822DG	Single - End or Differential
A-821PG	Single - End or Differential
A-826PG	Single - End or Differential

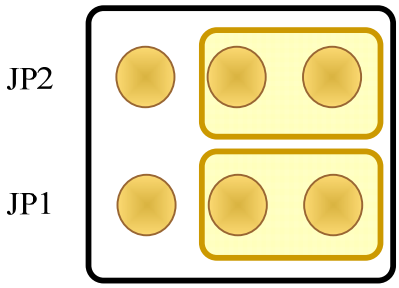
3.1. DB-8225 Layout



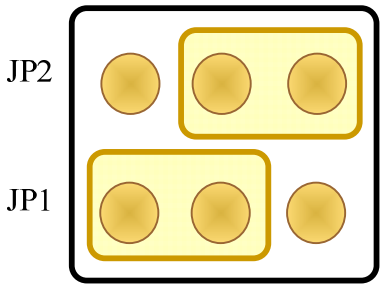
3.2. CJC Jumper Setting

The CJC just for A/D channel 0.

3.2.1 Single-End Mode



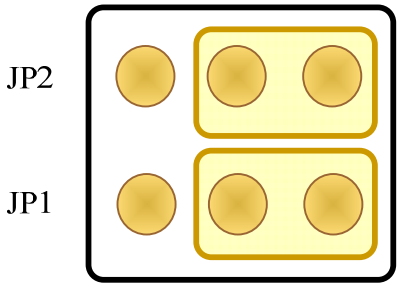
NO CJC Connection
(Default)



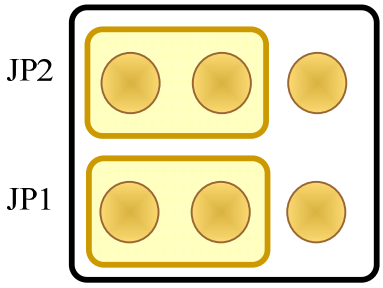
Single-End CJC
Connection

To single-end mode
A/D channel 0

3.2.1 Differential Mode



NO CJC Connection
(Default)



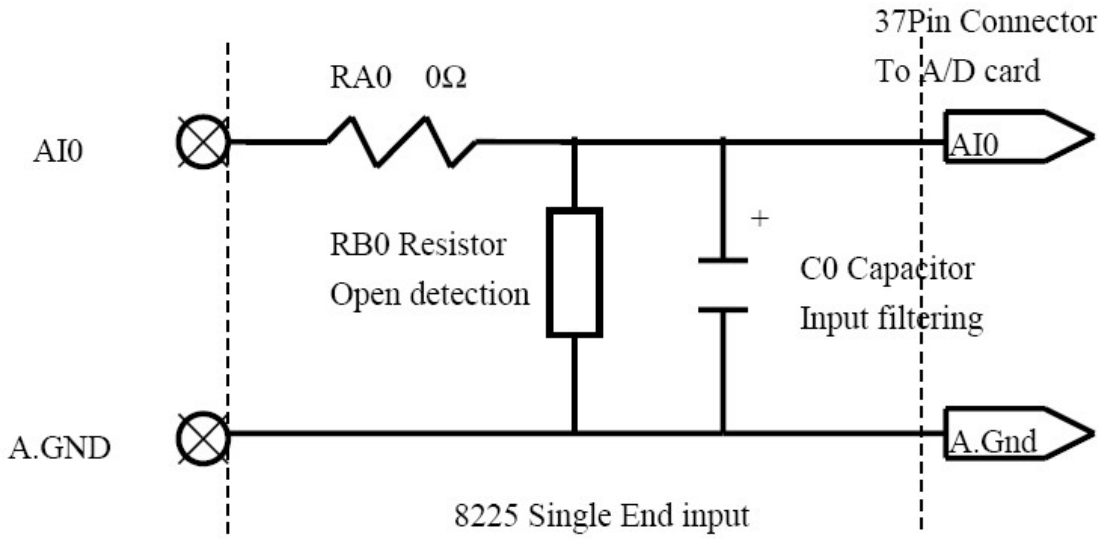
Differential CJC
Connection

To differential mode
A/D channel 0

3.3. Wiring Diagram

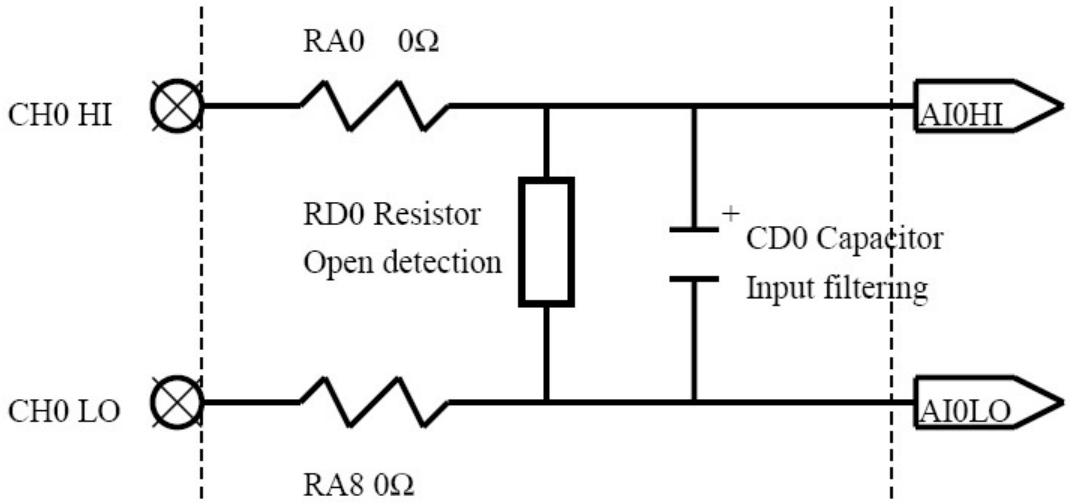
The A-82x series provides Single-Ended and Differential connections.

3.3.1 Single-End Connection



8225 Single End input

3.3.2 Differential Connection



8225 Differential input

3.4. CJC Output

Built -in CJC Circuitry is provided producing 10 mV per Deg C with 0.0 Volts @ -273 Deg C. The A-822 should be protected from draughts and direct sunlight in order to accurately reflect room temperature.

CJC Calibration:

(1) Connect the A-82X series to DB-8225 CN1
(2) Set A-822HG/DG to Single-End Mode
(3) Set JP1 to 1-2 and JP2 to 2-3 (Single-End mode)
(4) Read the temperature from a Digital thermometer placed near D1/D2 (See DB-8225 Layout).
(5) Read A-82x AI0 (Single-End Channel 0)
(6) Adjust VR1 until a stable reading of 10 mV per deg C is attained.

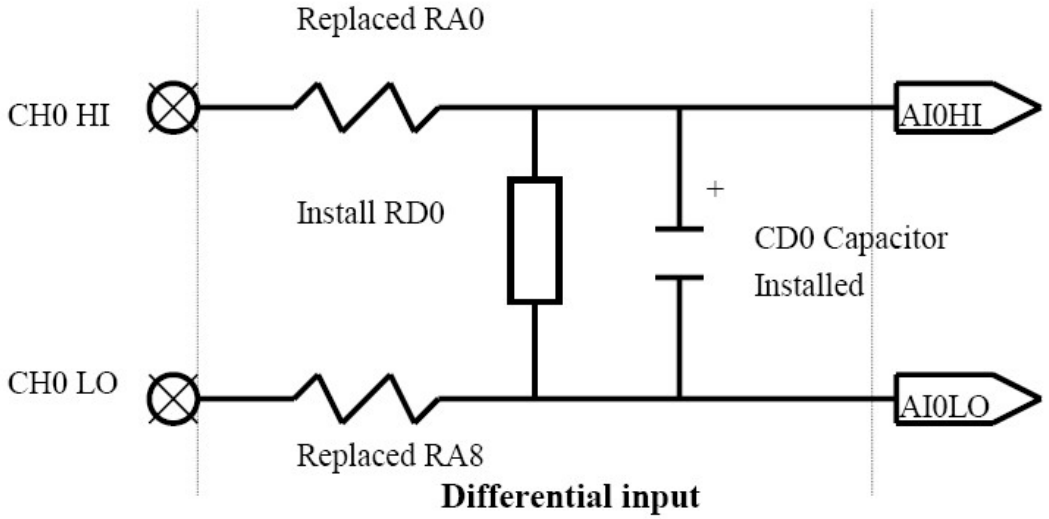
For example, when the environment temperature is 24 deg C. the reading value of CJC will be 2.97 V

(273 deg c +24 deg c) X 10 mV/deg c = 2.97 V

You should need an A/D Channel for CJC calibration. AI0 is reserved for CJC calibration use in single ended mode and CH0-HI and CH0-LO is reserved for differential mode.

3.5. Open Detect and Input Filtering

Open thermocouple detection and input filtering are provided on the DB-8225 by installing 3 resistors and a capacitor on the desired input channel. For example channel 0 is desired channel, RA0and RA8 must be removed and RD1 must be installed. These biasing resistors will slowly pull an open input channel to 0 Vdc. This 0Vdc condition can be sensed and flagged in software.



Channel	0Ω replaced by 10KΩ	Install 100MΩ	Install 1uF
0	RA0, RA8	RD0	CD0
1	RA1, RA9	RD1	CD1
2	RA2, RA10	RD2	CD2
3	RA3, RA11	RD3	CD3
4	RA4, RA12	RD4	CD4
5	RA5, RA13	RD5	CD5
6	RA6, RA14	RD6	CD6
7	RA7, RA15	RD7	CD7

In Singled-End mode, RA_n should be replaced by 10 KΩ. RB_n should be added 100 MΩ resistor on it and C_n should be added 1uF.capactor on it also

Note!! n : Channel 0~15

3.6. Voltage Divider and Current Input

3.6.1 Voltage Divider

If the input voltage signals level is over the A-82x input range .The DB-8225 provided 2 resistors on the input channel to divide input voltage signal.

The steps are shown below:
Step (1) Change RA0 (0 Ω) resistor to 10 KΩ (0.1%)

Step (2) Install 10 KΩ (0.1%) on RB0 (Voltage Signal / 2)

V/n : n = RB0 / (RA0+RB0)

3.6.2 Current Input

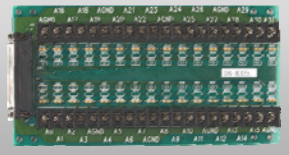
If you want to measure current input signal, you should have to change RA0 (0 Ω) resistor to 250 Ω. The steps are show below:

Current Signal range: 0~20 mA
RA0 change to 250 Ω
Voltage =20 mA X 250 Ω = 5 V; Range 0~ 5V

Formula :
Input voltage signal = input current signal x 250 Ω

3.7. CN3 Timer Counter and D/A Output Connector

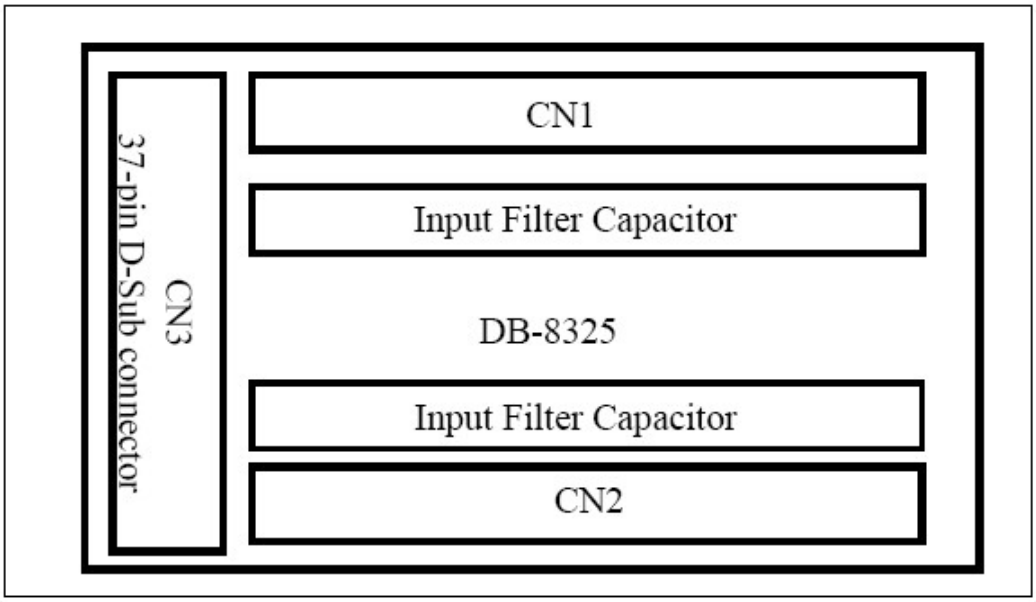
Pin Name	Connector
+5 V	From PC +5 V
D.GND	Digital Ground
EXTCLK	External Clock for A-822HG/DG
INTCLK	No Function
DRDY	No Function
EXTTRG	External Trigger of A/D converter
COUT1	8254 Counter 1 output (Internal trigger used)
GATE	8254 Counter 1 Gate (Internal trigger used)
COUT0	8254 Counter 0 Output (Reserved for user)
GATE0	8254 Counter 0 Gate (Reserved for user)
AGND	Analog Ground
EXTVREF2	External reference voltage input of D/A channel 2
DAOUT2	Output of D/A Channel 2
EXTVREF1	External reference Voltage input of D/A Channel 1
DAOUT1	Output of D/A Channel 1
VREF	Output of D/A Internal reference Voltage



4. Accessories

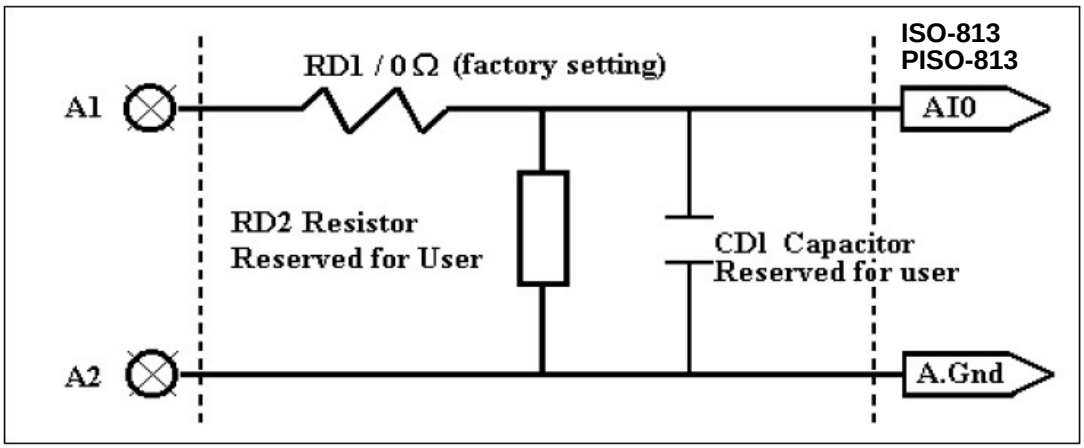
The DB-8325 is screw terminal board for ISO-813 and PISO-813 isolated A/D card.

4.1. DB-8325 Layout



1. A0~A31 for ISO-813 and PISO-813 analog input channel 0~31
2. A.GND for ISO-813 and PISO-813 analog ground

4.2. Wring Diagram



4.3. Capacitor Filter, Voltage Divider and Current Input

4.3.1 Input R/C Filtering

Input Filtering are provided on the DB-8325 by install a resistor and a capacitor on the desired input channel.

For example:

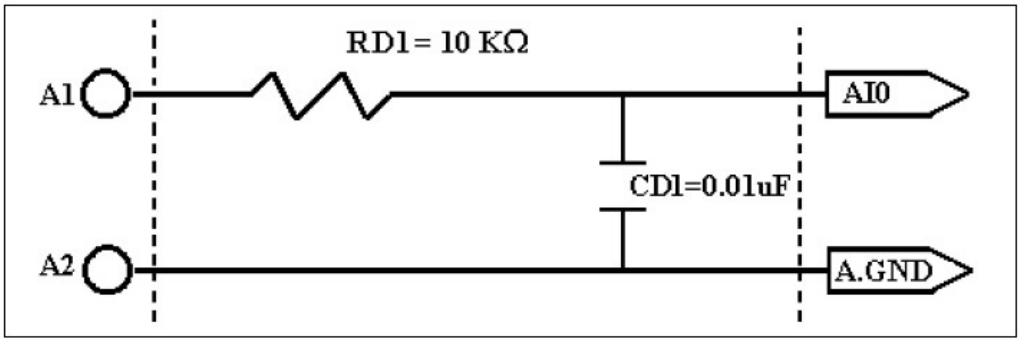
1.6 KHz Low pass filter

Equation: f3db = 1/(2 π · R · C)

The steps are shown below:

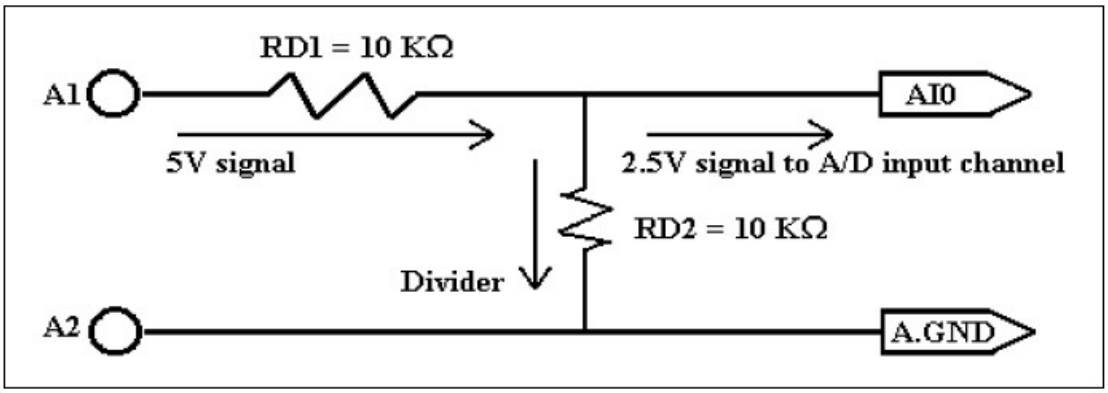
Step1. Change RD1 (0 Ω) resistor to 10 KΩ

Step2. Install 0.01 uF Capacitor on CD1.



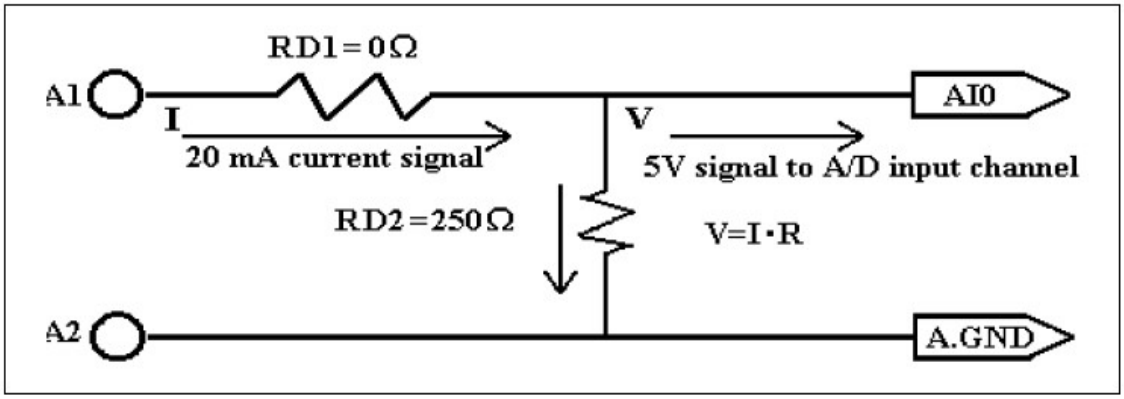
4.3.2 Voltage Divider

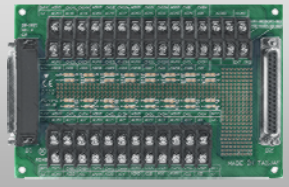
If the input voltage signals level is over the A/D card input range. The DB-8325 provided 2 resistors on the input channel to divide input voltage signal. The steps are shown as below:
Step1. Change RD1 (0 Ω) resistor to 10 KΩ (0.1%)
Step2. Install 10 KΩ (0.1%) on RD2. (Voltage Signal /2)
V/n : n = RD1/(RD1+RD2)



4.3.3 Current Input

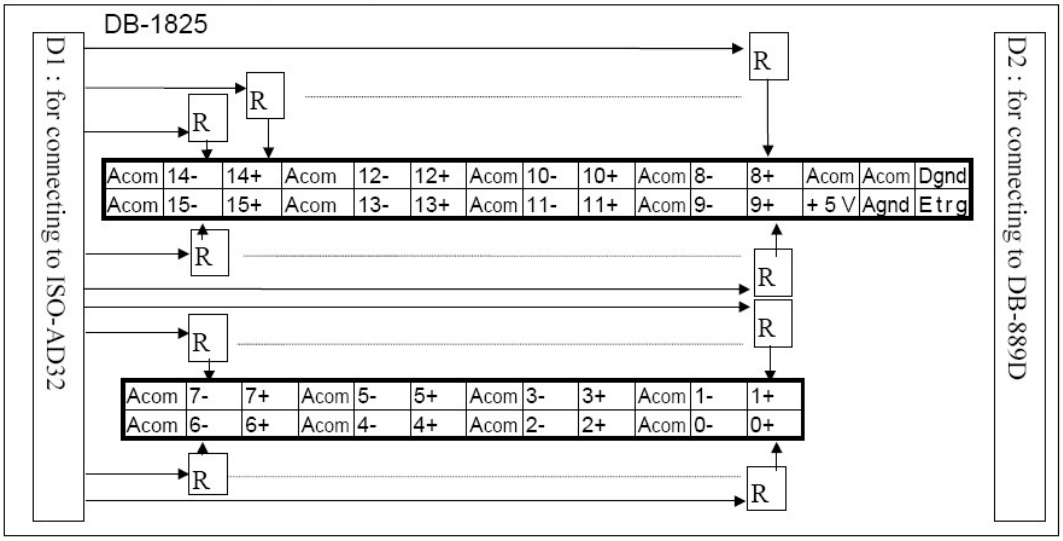
If you want to measure current input signal, you have to change RD2 (0 Ω) resistor to 250 Ω. The steps are shown as below:
Current signal range: 0 ~ 20 mA
RD2 change to 250Ω
Voltage = 20 mA x 250 Ω = 5 V; Range = 0 ~ 5V
Formula:
Input voltage signal = input current signal x 250 Ω



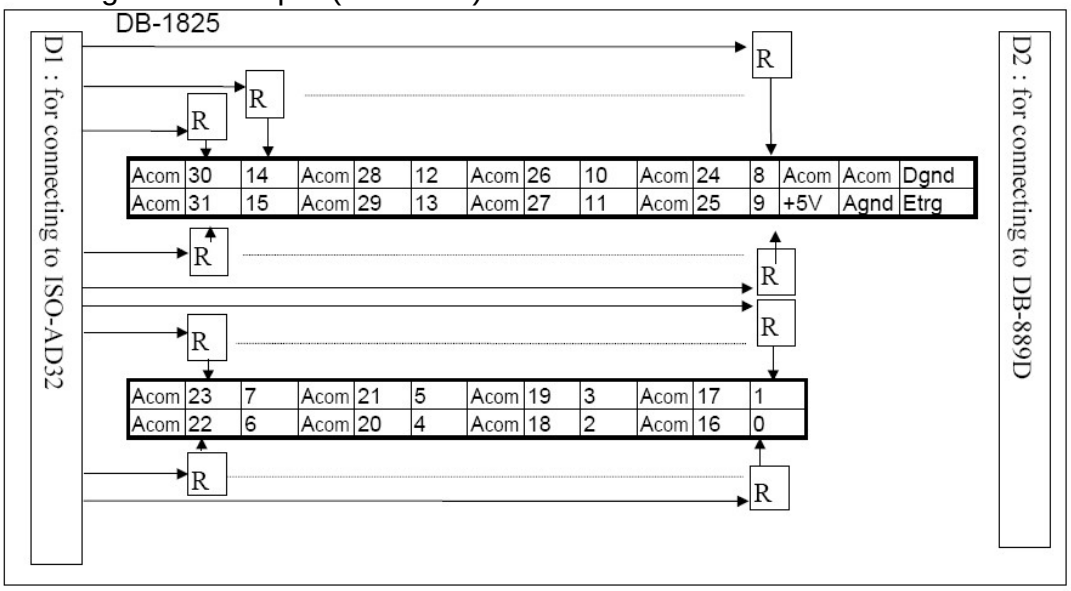


PCB layout for connecting to ISO-AD32

for differential input (R=0 ohm)



for single-ended input (R=0 ohm)

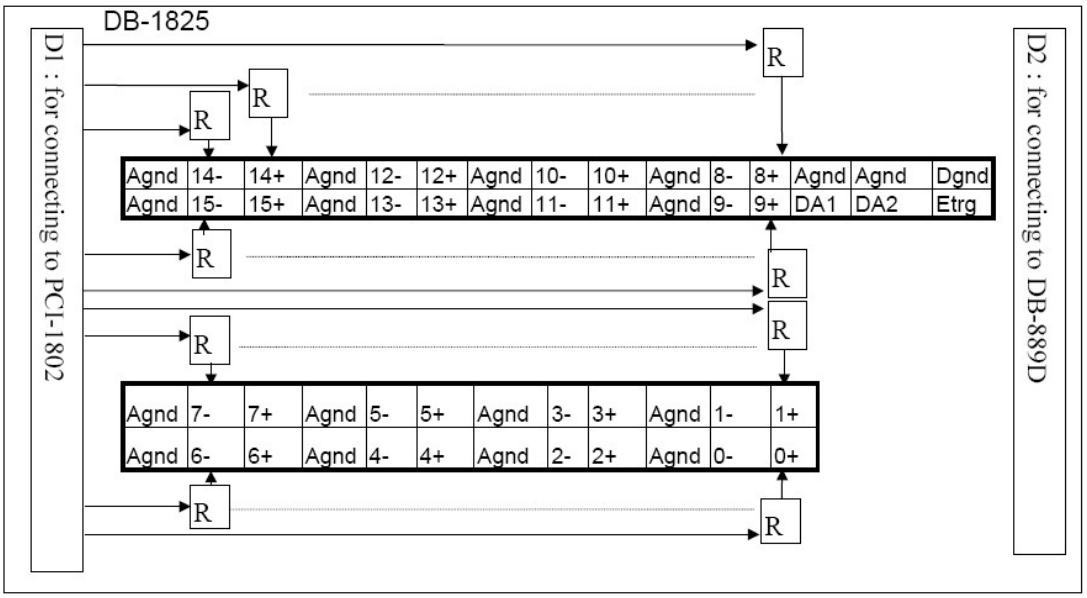


Pin assignment of D1 same as **CN1 of ISO-AD32**.

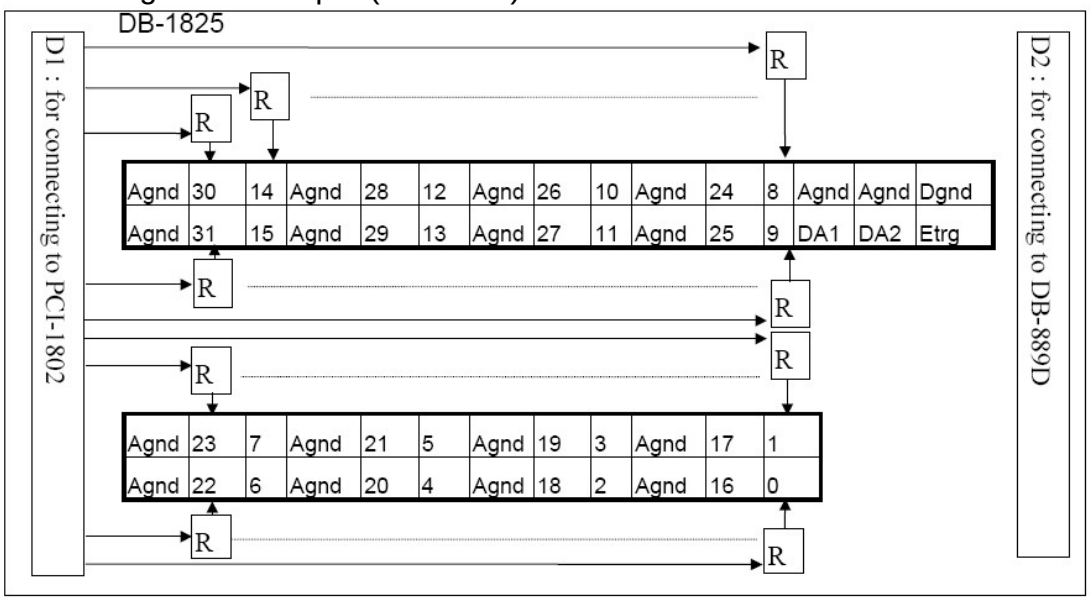
Pin assignment of D2 same as **CN1 of DB-889D**.

PCB layout for connecting to PCI-1202/1602/1802/822/826

for differential input (R=0 ohm)



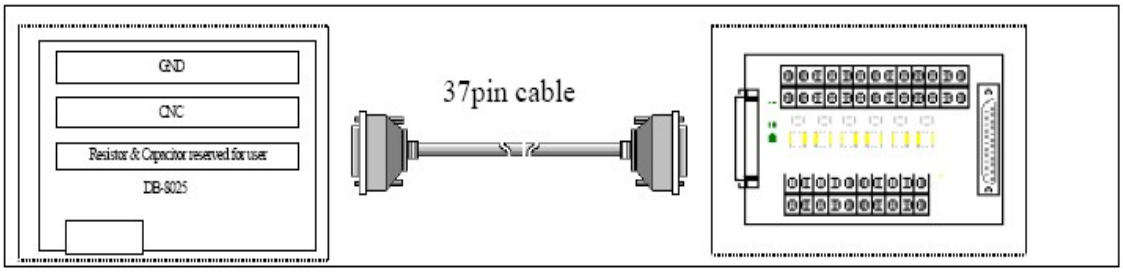
for single-ended input (R=0 ohm)



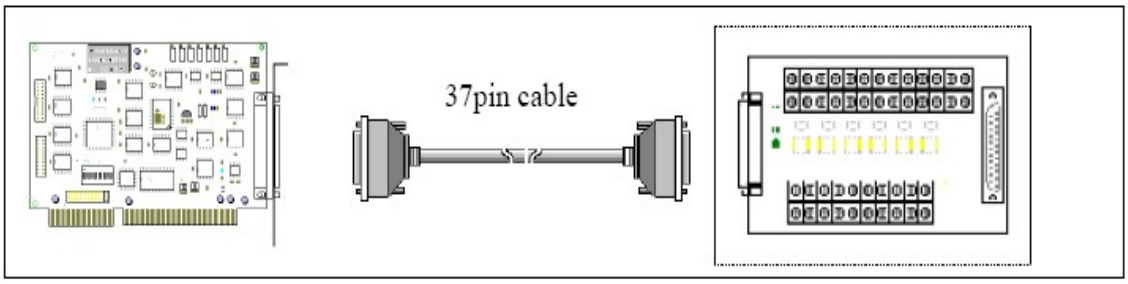
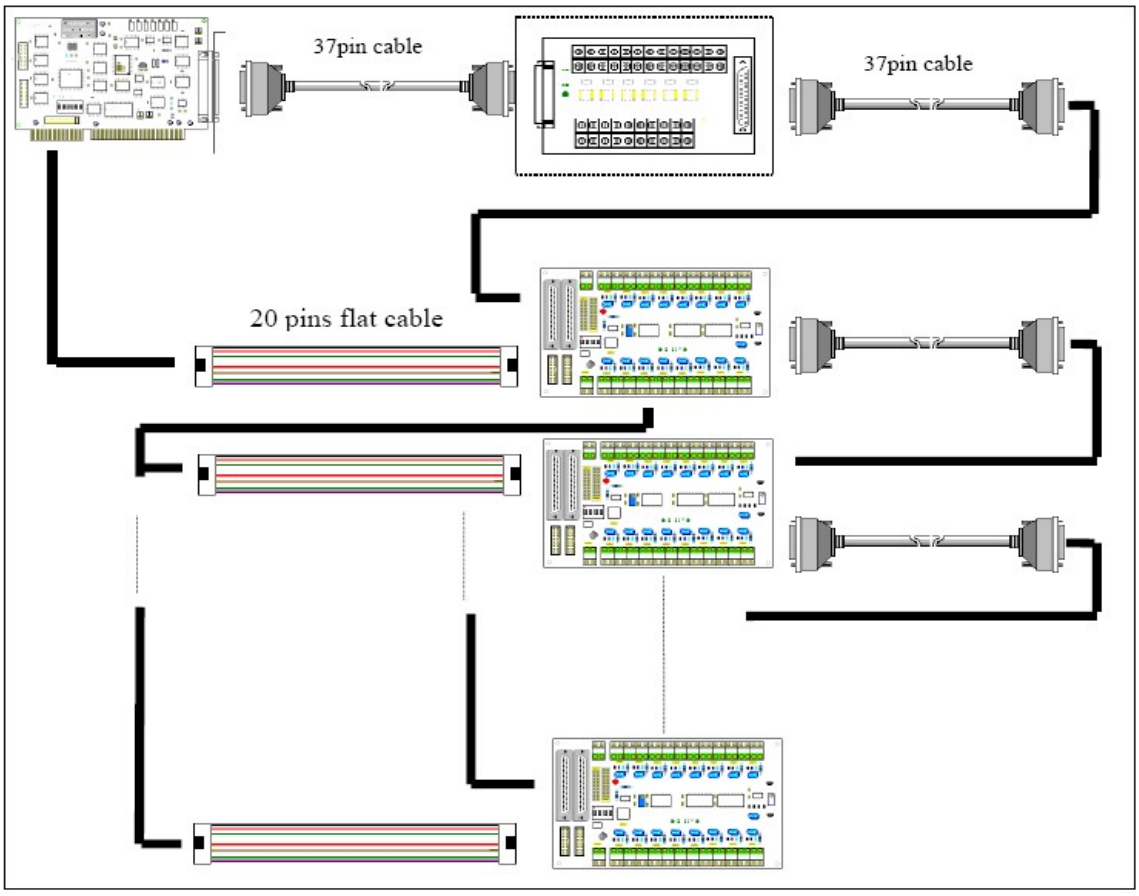
Pin assignment of D1 same as **CON3 of PCI-1202/1602/1802/822/826**

Pin assignment of D2 same as **CN1 of DB-889D**

Connection to ISO-AD32



Connection to PCI-1202/1602/1802/822/826



Connection to PCI-1202/1602/1802/822/826 and multiple DB-889D (16 channels differential)