

Designed for very low levels acquisitions in harsh environments, EIBN board can also be configured by the user for the conditioning and acquisition of parameters from various low level sensors: voltage, potentiometer, temperature ...:

- Opened loop detection and cold junction compensation for E/x, J, K/T, R/S, B thermocouples, with internal or external silicium,
- PT100 platinum probes in 3-wire connection,
- Linear PTC thermistors, 1mA constant current source.
- LM35A : 5V supply voltage.

- ◆ 24 differential analog inputs for low voltage measures
- ◆ Programmable gains : 1, 2, 4.. up to 128
- ◆ VIN: from +20 mV to +2.5V FS
- ◆ Very low drift and high CMR (110 dB)
- ◆ Conditioning linearization of PT100, 3 wire connection
- ◆ Cold junction compensation for thermocouples J, K, T, R, S, E, PLII
- ◆ 4th order Butterworth low pass filter 1.5 to 22 kHz
- ◆ 14 bits simultaneous sampling ADCS with over sampling capability and digital filter

### APPLICATIONS

- Aircraft test
- Airborne cargo test
- Armored vehicle test

### SPECIFICATIONS\*

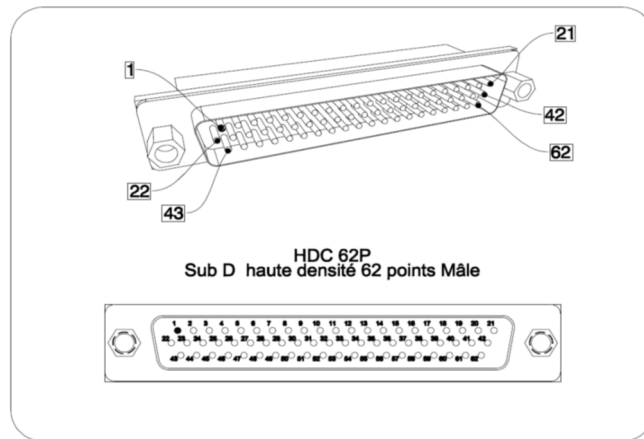
INPUTS	
Channels	24 (4 groups of 6)
Mixed inputs	4 independent groups (ex : 6 PT100 + 6 ThK + 6 ThJ + 6 low voltage)
Configuration	Same for all channels in each group
Mode	Differential
Impedance	ZIND ≥ 1 MΩ ZIND ≥ 10 KΩ (power off)
Common mode	± 2,5 V max.
Detection	Opened loop
Protection	± 40 V max
AMPLIFIERS	
Type	Instrumentation
Gains (SPGA)	- 1 to 128 in 2n
Common mode rejection	90 dB at 1 kHz
Levels	± 2,56 V to ± 20 mVFS
Input offset and drift	≤ ± 15 μV max / ≤ ± 0,1μV°C
Long term offset drift	± 10 μV/ √ Khr
Gain accuracy (G=1)	≥ ± 0,05 % FS
Gain drift	≤ ± 20 ppm/°C
Long term gain drift	± 40 ppm/ √ Khr

RTD CONDITIONING			
Probe impedance	100 $\Omega$ at 0°C		
Coefficient	$\alpha = 0,385$ or $\alpha = 0,392$		
Connection	3 wires		
Linearization	By processing software		
Injection current	@ 1mA		
Ranges	-50°C + 52°C ; -100 °C + 104°C -197°C + 211°C ; -200 °C + 438°C		
Resolution	0,01°C		
PT100 RANGES			
<b>3 WIRE MOUNTING</b>	<b>G PT100 (<math>\alpha=0,385^\circ</math>) t max (without linearization)</b>		
	16 -200/+438°C 32 -197/+211°C 64 -100/+104°C 128 -50/+52°C		
<b>4 WIRE MOUNTING</b>	<b>G PT100 (<math>\alpha=0,385^\circ</math>)</b>		
	8 -200/+621°C 16 -200/+158°C		
PT050 RANGES			
<b>4 WIRE MOUNTING</b>	<b>G</b>		
	8 -200/+621°C 16 -200/+158°C		
THERMOCOUPLE CONDITIONING			
Cold junction	E/X ; J ; K/T ; R/S ; B (Software selection)		
Sensor	Silicon (thermal plug to pins)		
Compensation range	- 20°C + 85°C		
Compensation error	$\pm 0,5^\circ\text{C}$ at 25°C $\pm 1^\circ\text{C}$ range from - 10°C to + 65°C $\pm 2^\circ\text{C}$ range from - 20°C to + 85°C		
Linearization	By processing software		
THERMOCOUPLE RANGES			
	<b>Type</b>	<b>Range 1 (+/-20mV)</b>	<b>Range 2 (+/-40mV)</b>
	E	-200/+287°C	-200/+538°C
	J	-210/+367°C	-210/+714°C
	K	-200/+485°C	-200/+968°C
	T	-200/+386°C	-
	R	-50/+1684°C	-
	S	-50/+1760 (18,61 mV) °C	-
	B	-250/+1820 (13,81 mV) °C	-
RESISTANCE MEASUREMENT(2 WIRES)			
Injection current	1 mA		
RESISTANCE RANGE			
	<b>GAINS</b>	<b>R max</b>	
	1	2560 $\Omega$	
	2	1280 $\Omega$	
	4	640 $\Omega$	
	8	320 $\Omega$	
	16	160 $\Omega$	
	32	80 $\Omega$	
	64	40 $\Omega$	
	128	20 $\Omega$	

RESISTANCE RANGE																			
	<table> <thead> <tr> <th>Gains</th> <th>+/-VIN Max (mV)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2560 <math>\Omega</math></td> </tr> <tr> <td>2</td> <td>1280 <math>\Omega</math></td> </tr> <tr> <td>4</td> <td>640 <math>\Omega</math></td> </tr> <tr> <td>8</td> <td>320 <math>\Omega</math></td> </tr> <tr> <td>16</td> <td>160 <math>\Omega</math></td> </tr> <tr> <td>32</td> <td>80 <math>\Omega</math></td> </tr> <tr> <td>64</td> <td>40 <math>\Omega</math></td> </tr> <tr> <td>128</td> <td>20 <math>\Omega</math></td> </tr> </tbody> </table>	Gains	+/-VIN Max (mV)	1	2560 $\Omega$	2	1280 $\Omega$	4	640 $\Omega$	8	320 $\Omega$	16	160 $\Omega$	32	80 $\Omega$	64	40 $\Omega$	128	20 $\Omega$
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SILICIUM SENSORS																			
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2	+2°C ; +150°C																		
FILTERS																			
Analog filters	4th order antialiasing Butterworth low pass filters																		
Cut off frequency	120 Hz / - 3 dB																		
Digital filter	Over sampling with digital filter																		
ACDS																			
Coding parameters	14 bits, bipolar simultaneous sampling ADCS Coding parameters : 95.5 dB SNR ; -107 dB THD $\pm 0,5$ LSB INL ; $\pm 0,5$ LSB DNL																		
PHYSICAL CHARACTERISTICS																			
Size (H x W x D)	114 x 78 x 18 mm Front panel 88 x 17,6 mm																		
Weight	140 g																		
Power supply	+ 15V / 80 mA ; - 15V / 80 mA + 7, 5V / 200 mA ; - 7, 5V / 220 mA																		
Front panel connector	HDC 62 pts Male																		
Back panel connector	AMP 501 80-pt MINIBOX																		
ENVIRONMENT																			
Storage temperature	- 55 + 100°C																		
Operating temperature	- 40 + 75°C																		
Specifications	- 10 + 60°C																		
Relative humidity	90 % non condensing																		
Sinusoidal vibrations	20 to 2000 Hz - 5 g																		
Shocks	100g/6 ms																		
Pressure	25 to 1100 mbar																		
Electromagnetic environment	MIL STD 461A and 462Z																		
EUROPEAN STANDARDS																			
	CE Compliance (EMC - EN 61326 - EN 55011 Class A) ROHS - 2002/95/EC																		

\*Specifications given for 25°C

**FRONT PANEL CONNECTOR**



PIN	SI- GNAL	PIN	SIGNAL	PIN	SIGNAL	
43	IN2(+)	22	IN1(+)	1	IN0(+)	GR0
44	IN2(-)	23	IN1(-)	2	IN0(-)	
45	IN5(+)	24	IN4(+)	3	IN3(+)	
46	IN5(-)	25	IN4(-)	4	IN3(-)	
47	GND	26	GND	5	GND	GR1
48	IN8(+)	27	IN7(+)	6	IN6(+)	
49	IN8(-)	28	IN7(-)	7	IN6(-)	
50	IN11(+)	29	IN10(+)	8	IN9(+)	
51	IN11(-)	30	IN10(-)	9	IN9(-)	GR2
52	GND	31	GND	10	GND	
53	IN14(+)	32	IN13(+)	11	IN12(+)	
54	IN14(-)	33	IN13(-)	12	IN12(-)	
55	IN17(+)	34	IN16(+)	13	IN15(+)	GR3
56	IN17(-)	35	IN16(-)	14	IN15(-)	
57	GND	36	GND	15	GND	
58	IN20(+)	37	IN19(+)	16	IN18(+)	
59	IN20(-)	38	IN19(-)	17	IN18(-)	GR3
60	IN23(+)	39	IN22(+)	18	IN21(+)	
61	IN23(-)	40	IN22(-)	19	IN21(-)	
62	GND	41	GND	20	GND	
		42	10mV/c	21	VCPT	

**IN(+)<sub>x</sub>, IN(-)<sub>x</sub> :** analog inputs

**GND :** measure reference

**ORDERING INFORMATION**

EIBN	24 Differential analog inputs board
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Specifications are subject to change. Please, verify the latest specifications prior order.

Version : 2.0 — Edition : June 2016

