

General description

The OPT-1020 and OPT-1120 daughter boards provide the analog input signal isolation for the DAQ cards.

OPT-1020	bandwidth 20kHz, isolation voltage 2.5 kV, screw terminals
OPT-1020B	bandwidth 20kHz, isolation voltage 2.5 kV, BNC connector
OPT-1120	bandwidth 120kHz, isolation voltage 1.5 kV, screw terminals
OPT-1120B	bandwidth 120kHz, isolation voltage 1.5 kV, BNC connector

If the DAQ card provides the 12V power supply voltages, the OPT-1020/1120 board can be powered from the card; if not, external power supply must be used.

One OPT-1x20 board can be connected to the DAQ card using the CAB-2604C flat cable and CAB-2511/2 shielded cable. If multiple OPT-1x20 boards are used, an interconnection cables CAB-1004C and CAB-2604C (up to four boards), or CAB-1008C and CAB-2608C (up to eight boards) are required (not included). Entire set of boards can be connected to the DAQ cards via CAB-2511/2. Please pay attention to the maximum current capacity of the DAQ cards power supply output, for higher number of OPT-1x20 boards it is necessary to use external power supply.

General instructions for use

The OPT-1x20 boards is designed for DAQ&C applications and may be used only according to the manufacturer's recommendations and precautions given in this manual and other general standards and terms and may be used only such a way, that its failure caused by any reason will not be dangerous to any person or property.

Installation

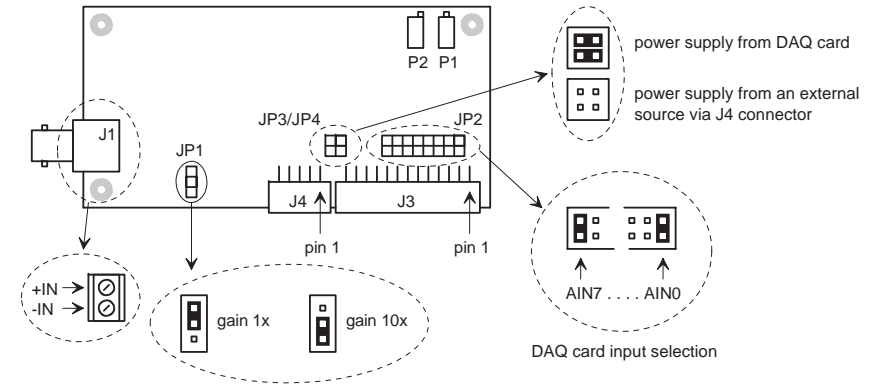
The OPT-1x20 boards is supplied as an unencapsulated kit intended for fastening via three screws.

The board can be used in an environment with operating temperature -10~60 °C and relative humidity up to 90%, noncondensing and normal levels of pollution.

Specifications

Input voltage (for processing):	±11 V max.	
Overvoltage protection:	±24 V	
Input impedance:	1 MOhm	(±1 %)
Selectable gain:	1x, 10x	(via on-board jumper)
Bandwidth (-3 dB, signal 7 V _{AC}):	0÷20 kHz typ.	(all OPT-1020 version)
	0÷120 kHz typ.	(all OPT-1120 version)
Nonlinearity:	±0,05% max.	(±0,025 typ.)
Isolation voltage (see note below):	2.5 kV _{AC} / 3.5 kV _{DC}	(OPT-1020H only)
	1.5 kV _{AC} / 2 kV _{DC}	(all other version)
Power supply:	+10.8~12.6 V _{DC} (240 mA max.)	
Recommended cable length:	2 m max.	
Dimensions of board:	102 x 49 mm	
Mounting hole spacing:	94 x 42 mm	
Mounting hole diameter:	3.5 mm	

Note: "AC" indicates the rms value of a 50 Hz AC harmonic signal.



Configuration jumpers	
JP1	jumper for input range configuration, resp. gain of input amplifier
JP2	jumper for configuration of OPT-1x20 output signal routing to the DAQ card input (only one OPT-1x20 board can be connected to the card input)
JP3/4	jumpers for selecting of power supply (see picture above)
P1	potentiometer for precise gain adjustment
P2	potentiometer for precise offset adjustment

Pin assignment of connector PFL26 (J3), resp. cable CAB-2511 to the DAQ card					
PFL26	D-Sub 25	signal	PFL26	D-Sub 25	signal
1	---	AGND	2	13	AGND
3	25	AIN0	4	12	AGND
5	24	AIN1	6	11	AGND
7	23	AIN2	8	10	AGND
9	22	AIN3	10	9	AGND
11	21	AIN4	12	8	AGND
13	20	AIN5	14	7	AGND
15	19	AIN6	16	6	AGND
17	18	AIN7	18	5	AGND
19	17	---	20	4	---
21	16	---	22	3	---
23	15	GND (power supply)	24	2	GND (power supply)
25	14	+12V (from card)	26	1	reserved

Pin assignment of connector PFL10 (J4)	
PFL10	signal
1, 2, 3, 4	power supply 12V (+5%, -10%), positive signal
5, 6	unused
7, 8, 9, 10	power supply 12V (+5%, -10%), negative signal
Jumpers JP3/JP4 must be removed before connecting an external power supply.	

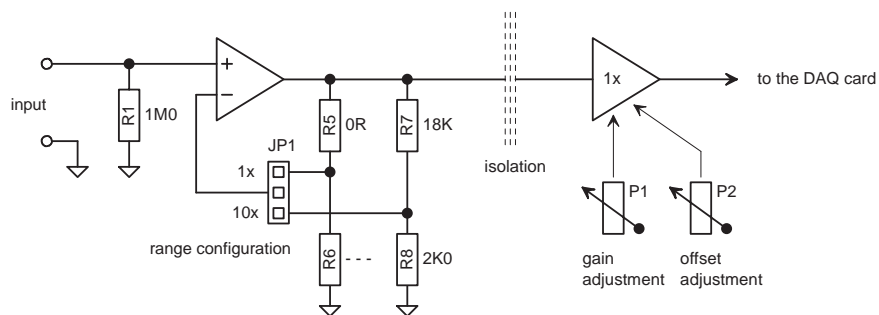


Fig. 1. Simplified schematic of OPT-1x20 internal circuits.

As you can find out from the schematic...

- the analog input can be equipped with a current shunt, or the input impedance can be reduced by replacing R1 (a resistor with value of 1 MOhm and tolerance of 1% is fitted at the factory);
- the input amplifier is equipped with positions for two dividers determining the gain; the first is reserved for users and the factory setting is 1x amplification (i.e. a resistor with value of 0 Ohm is fitted in position R5 and position R6 is left free), the second is factory fitted with a divider for 10x gain (18K and 2K resistors with a tolerance of 0.1%);
- after changing the range (i.e. relocating the JP1 jumper position) it is recommended to re-compensate the offset and calibrate the gain (see the meaning of potentiometers P1 and P2).

Warning: The manufacturer is not liable for damage to the OPT-1x20 board or other damage caused by additional installation or change of components.

OPT-1020/1120

User Guide

(further information available at <http://www.tedia.eu>)

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