

pH Probe Amplifier

Model PHDA

Description

The PHDA is a pH probe amplifier module that can be used with B&B Electronics' SDAXX, SPDA, and ADIO12 data acquisition modules to monitor and record pH values from 0 to 14. pH probes have a very high input impedance and produce output voltages between -0.414V and 0.414V @ 25°C. The PHDA converts the probe output to a voltage between 0V and 4.9V. Temperature compensation can be performed in software for temperatures between 0°C and 100°C. The PHDA is included with software programs that can be used with the SDAXX, SPDA, and ADIO12 data acquisition modules to read data from the PHDA.



Features

- 0V to 4.9Vdc output
- Software temperature compensation over 0 to 100°C range
- Pin compatible with B&B Electronics' SDAXX and ADIO12 modules
- Input impedance greater than 10 Tera Ω
- TCDA (thermocouple amplifier) can be connected to the PHDA so that the temperature of the substance can be measured as well as the pH.

A/D Connections

The A/D Connector of the PHDA is a DB-25 (male) connector. This side of the PHDA must be connected to a data acquisition module. This connector is pin compatible with B&B Electronics' 232SDAXX, 485SDAXX, and ADIO12 modules. This allows you to simply plug the PHDA into one of these modules, and the A/D connections are complete. The pin assignments are shown in Table 1. Pins 17 and 18 are connected to provide +5V to REF+ of the SDAXX modules, and pin 19 is connected to GND to provide 0V to REF- of the SDAXX modules. The conditioned voltage that corresponds to pH is present on pin 8. If a TCDA module (thermocouple amplifier) is cascaded onto a PHDA module, the voltage on pins 9 and 10 correspond to temperatures. Table 1 shows the pin assignments for the A/D Connector.

Auxiliary Connections

The Auxiliary Connector of the PHDA is a DB-25 (female) connector. Nothing needs to be connected to this side of the PHDA for proper operation. However, a TCDA module (thermocouple amplifier) can be connected to this side of the PHDA so that the temperature of a substance can be measured as well as the pH. Table 2 shows the pin assignments for the Auxiliary Connector, and Figure 1 show a block diagram of possible connections.

pH Probe Connections

The PHDA module has a BNC female connector used for connecting a pH probe. The input impedance of this connection is greater than 10 Tera Ω .

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Table 1: A/D Connector Pinout

DB-25 Pin#	Function	DB-25 Pin#	Function
1	GND	14	-----
2	-----	15	-----
3	-----	16	-----
4	-----	17	looped to pin #18
5	-----	18	looped to pin #17
6	-----	19	GND
7	GND	20	-----
8	Vout	21	-----
9	TC #0	22	-----
10	TC #1	23	-----
11	-----	24	-----
12	-----	25	-----
13	-----		

1. ----- denotes no connection
2. TC #0 and TC #1 available only if a TCDA module is cascaded with the PHDA module.
3. Vout is the voltage that represents the pH value.

Table 2: Auxiliary Connector Pinout

DB-25 Pin#	Function	DB-25 Pin#	Function
1	GND	14	-----
2	-----	15	-----
3	-----	16	-----
4	-----	17	-----
5	-----	18	-----
6	-----	19	-----
7	-----	20	-----
8	TC in #0	21	-----
9	TC in #1	22	-----
10	-----	23	-----
11	-----	24	-----
12	-----	25	-----
13	-----		

1. ----- denotes no connection
2. TC #0 and TC #1 are available only if a TCDA module is cascaded with a PHDA module.

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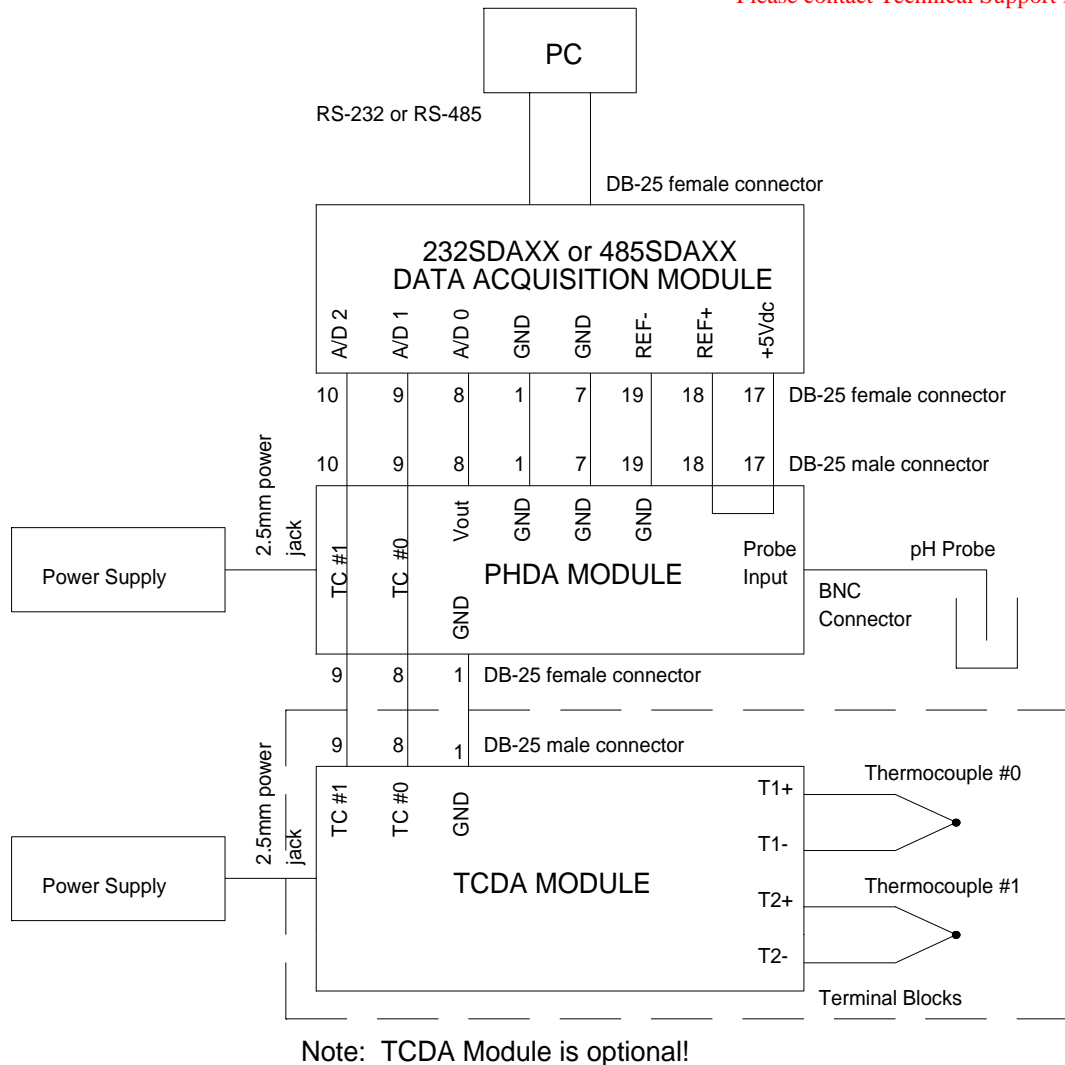


Figure 1: Block Diagram of PHDA, TCDA, and A/D Converter

Specifications

- Channels: 1
- Input Voltage Range: -0.520 to +0.520V
- Output Voltage Range: 0V to 4.9V
- pH Error: +/- 0.1pH
- Input Offset Voltage: 6.3mV max.
- Input Offset Voltage Drift: 1.3µV/°C
- Input Resistance: >10TΩ
- Operating Temperature Range: 0 to 70°C
- Temperature Compensation: 0 to 100°C
- A/D Connections: DB-25 (male) connector
- Auxiliary Connections: DB-25 (female) connector
- Probe Connection: BNC connector
- Power Requirements: 9V to 16VDC @ 10mA (232PS not included)
- Size: 0.9 x 1.2 x 2.5 in

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