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This product may be covered by one or more of the following patents:

United States Patents Des. 336,895; 5,274,577
France Brevet No. 91 12756
Spain 2039150
United Kingdom Patent No. 2248954
and other international patents pending
**General Description**

The PHAMP-3 is a unity gain preamplifier which converts the high impedance mV signal of a pH electrode to a low impedance signal which has been compensated for variations in temperature. The signal can travel 1,000 feet over ordinary wire and connectors to process meters and controllers (such as the IDP and INFC).

The PHAMP-3 requires an external power source between 10-40 volt DC. It can be powered by the excitation of a process meter (such as the NEWPORT IDP) or the optional PSU-12V power supply. The PHAMP-3 uses a 1000 ohm RTD sensor for automatic temperature compensation. (RTD not included. Fixed resistors must be connected for applications not using an RTD). The electronics are entirely encapsulated in a compact epoxy filled enclosure designed for easy mounting in a manufacturing process. The PHAMP-3 offers redundant outputs from either a BNC connection, terminal strip or both at the same time.

**Specifications**

- **Output Offset:** 3 mV typical; (.05 pH)
- **Input:** -1 to 15 pH
- **Input Impedance:** $10^{11}$ Ohms
- **Output Impedance:** 20K Ohms
- **Output Voltage:** 472mV to -472mV
- **Operating Temperature:** 0 to 60°C
- **Power:** 10 to 40 Vdc
- **Dimensions:** 38.1 H x 76.2 W x 38.1mm D

**Operating Instructions**

Connect as shown below:

- Power supply connects to Terminals 1&2.
- pH input from electrode connects to BNC connector.
- pH output to meter(s) can be connected to Terminals 3&4 or BNC.
- RTD (1K ohm) connects to Terminals 4&5. (Terminal #4 is common for pH output & ATC).

The table below shows how the millivolt output of a pH electrode and the resistance of a 1KΩ RTD varies with temperature. The PHAMP-3 compensates temperature to 25°C.

**Automatic Temperature Compensation**

<table>
<thead>
<tr>
<th>Temp.</th>
<th>0°C</th>
<th>25°C</th>
<th>40°C</th>
<th>50°C</th>
<th>70°C</th>
<th>90°C</th>
<th>100°C</th>
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<td>pH mv.</td>
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<td>+414.0</td>
<td>+448.8</td>
<td>+476.6</td>
<td>+504.4</td>
<td>+518.2</td>
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<td>1</td>
<td>325.1</td>
<td>+354.9</td>
<td>+372.8</td>
<td>+384.7</td>
<td>+408.5</td>
<td>+432.3</td>
<td>+444.2</td>
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<td>270.1</td>
<td>+295.8</td>
<td>+310.7</td>
<td>+320.6</td>
<td>+340.5</td>
<td>+360.3</td>
<td>+370.2</td>
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<td>+236.6</td>
<td>+248.5</td>
<td>+256.5</td>
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<tr>
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<td>+177.5</td>
<td>+186.4</td>
<td>+192.4</td>
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</table>

**PHAMP-3 Accessories**

- BNC-(M) to BNC-(M) 3 ft extension cable (part number BNC-C-36/N)
- 12 Volt dc power supply (part number PSU-12 V/N).