

Thermo Scientific Orion Pre-Amplifier

General Information

The Thermo Scientific Orion pre-amplifier, Cat. No. 2001PA, can transmit a pH or millivolt signal up to 100 meters. (Minimal testing done up to 300 meters). The pre-amplifier has an aluminum NEMA 4X type enclosure and is designed for use with the Thermo Scientific Orion online pH monitors. The pre-amplifier is CE and CSA approved.

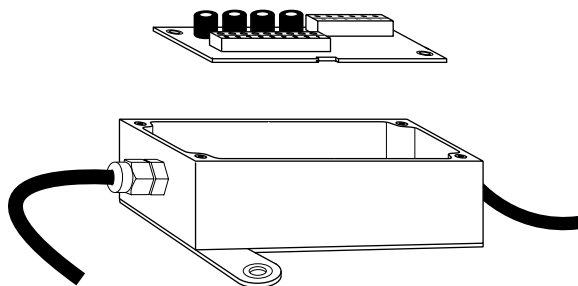
Wiring Instructions

The power for the monitor should be disconnected when wiring the pre-amplifier. Remove the pre-amplifier circuit board from the housing for easier wiring. Feed the cables for the electrode and ATC temperature probe (if separate) through the watertight fitting on the pre-amplifier. The electrode and thermistor inputs are located on the J2 terminal strip on the pre-amplifier circuit board. Connect the wiring for the electrode and ATC probe inputs, as shown in the terminal connections illustrations. Instructions for grounding, including solution ground wiring, are provided on the next page.

A nine conductor 24 gauge shielded cable should be used for wiring the pre-amplifier to the monitor. The pre-amplifier outputs (to the monitor) are located on the J1 terminal strip on the pre-amplifier circuit board. Feed the 24 gauge cable for the outputs to the monitor through the watertight fitting, as shown in the terminal connections illustrations. Connect the wiring for the outputs to the monitor on the electrode and thermistor inputs on the monitor circuit board.

When connecting the pre-amplifier to the pH monitor, the drain wire in the 24 gauge connecting cable should be connected to the grounding stud (chassis ground) inside the monitor. To avoid grounding loops, do not attach the drain wire in the connecting cable to the pre-amplifier. To minimize noise interference, avoid placing the pre-amplifier to monitor connection cable near other power cables.

Terminal Connections on Pre-Amplifier Circuit Board



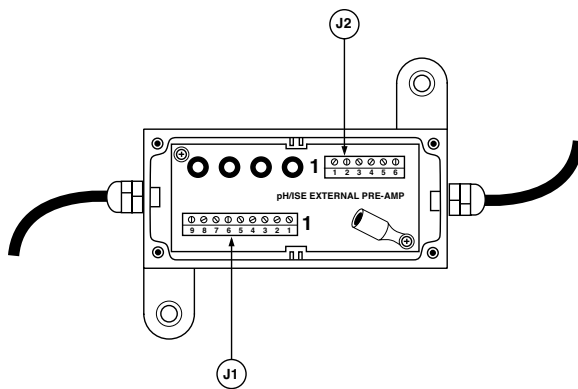
Electrode and Thermistor

Inputs to the Pre-Amp (J2)

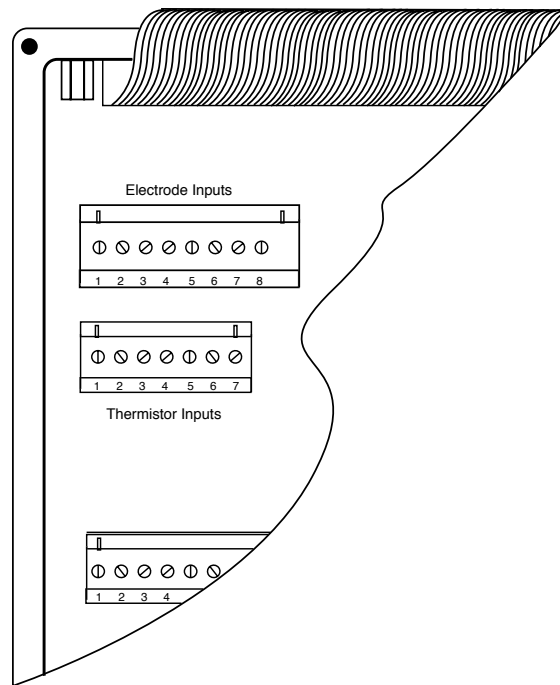
1. pH signal
2. Not used
3. pH reference
4. Thermistor
5. Thermistor
6. Analog Ground

Pre-Amp Outputs to Monitor (J1)

1. pH signal
2. pH reference
3. Log R signal
4. Log R driver
5. +5 volts
6. Analog ground
7. -5 volts
8. Thermistor
9. Thermistor



Terminal Connections on Monitor Circuit Board



Inputs to Monitor

Electrode Inputs

1. Channel 1 Log R signal
2. Channel 1 pH signal
3. Channel 1 pH reference
4. Channel 1 Log R driver
5. Channel 2 Log R signal
6. Channel 2 pH signal
7. Channel 2 pH reference
8. Channel 2 Log R driver

Thermistor Inputs

1. +5 volts
2. -5 volts
3. Ground
4. Channel 1 ATC
5. Ground
6. Channel 2 ATC
7. Ground

After wiring the pre-amplifier, replace the circuit board back into the pre-amplifier housing. Feed any slack in the cables back out of the pre-amplifier box and tighten the watertight fittings over the PVC jacket of the cable. Replace the cover on the pre-amplifier and firmly tighten the screws so that the cover and the enclosure make contact. Mount the pre-amplifier with the bracket and the two stainless steel screws supplied.

Note: The pre-amplifier is designed for use for one channel (with one electrode and thermistor). If two channels are being used on the pH monitor, then 2 pre-amplifier are required.

Special Grounding Instructions

For noisy pH or millivolt readings, the following grounding options may be useful. First, make sure the pre-amplifier connections are properly wired to the electrodes and monitor, as described in the previous section.

1. If using the electrode flow cell, Cat. No. 2001FC, ground the flow cell to the earth/chassis ground. If the readings still do not stabilize, remove this connection and go to step 2.
2. If using an electrode or thermistor, that contains a solution ground wire, connect this wire to the analog ground on the pre-amplifier circuit board. The analog ground connection is located at pin # 6, J2 terminal strip. If the readings still do not stabilize, remove this connection and go to step 3.
3. The solution ground wire may also be connected to the earth/chassis ground located on the screw inside the pre-amplifier used to hold the circuit board in place. The chassis ground connection is an insulated lug. Insert the solution ground wire into the lug and crimp it into place.

There is no one ideal solution to a grounding problem and different samples and conditions may require one or more of the above remedies. If the grounding suggestions do not improve the millivolt signal, review your setup for all grounding conditions. Try to isolate all components on your system to determine if ground loops are present and are affecting your signal.

Note: For the best results, when using multiple flow cells or electrodes make sure each is properly grounded.

Ordering Information

| Cat. No. | Description |
|----------|---|
| 2001PA | Pre-amplifier for online pH monitors |
| 2001SC | ROSS® combination pH electrode with screw cap connector, includes ROSS reference fill solution |
| 2001FS | ROSS reference filling solution, 5 x 60 mL bottles |
| 2001EC | Electrode cable, 1 meter |
| 20015M | Electrode cable, 5 meters |
| 2001XM | Electrode cable, 10 meters |
| 2001TP | ATC temperature probe, 30 k Ω , stainless steel with 1 meter cable |
| AQUA10 | AquaPro combination pH electrode with built-in ATC and solution ground, polymer non-refillable reference system, 5 meter cable |
| AQUA20 | AquaPro combination twist-lock pH electrode with built-in ATC and solution ground, polymer non-refillable reference system, 5 meter cable |
| AQUA2A | AquaPro twist-lock adapter for AQUA20 pH electrode |
| AQUA30 | AquaPro combination pH electrode module, flat bulb assembly, polymer non-refillable reference system |
| AQUA3H | AquaPro bulkhead assembly with thermistor for AQUA30 pH electrode |
| AQUA40 | AquaPro combination pH electrode, polymer non-refillable reference system, screw cap connector |

©2008 Thermo Fisher Scientific Inc. All rights reserved. All trademarks are the property of Thermo Fisher Scientific Inc. and its subsidiaries. ROSS and the COIL traddress are trademarks of Thermo Fisher Scientific Inc. US Patent 6,793,787.



Environmental Instruments Water Analysis Instruments

North America

166 Cummings Center
Beverly, MA 01915 USA
Toll Free: 1-800-225-1480
Tel: 1-978-232-6000
Dom. Fax: 1-978-232-6015
Int'l Fax: 978-232-6031

Europe

Denmark House, Angel Drove
Ely, Cambridgeshire
England, CB7 4ET
Tel: 44-1353-666111
Fax: 44-1353-666001

Asia Pacific

Blk 55, Ayer Rajah Crescent
#04-16/24, Singapore 139949
Tel: 65-6778-6876
Fax: 65-6773-0836

www.thermo.com/water

