



**PULSAFEEDER
pH AND ORP NODE (NpH)**

INSTALLATION & OPERATION MANUAL

SERIAL #: _____

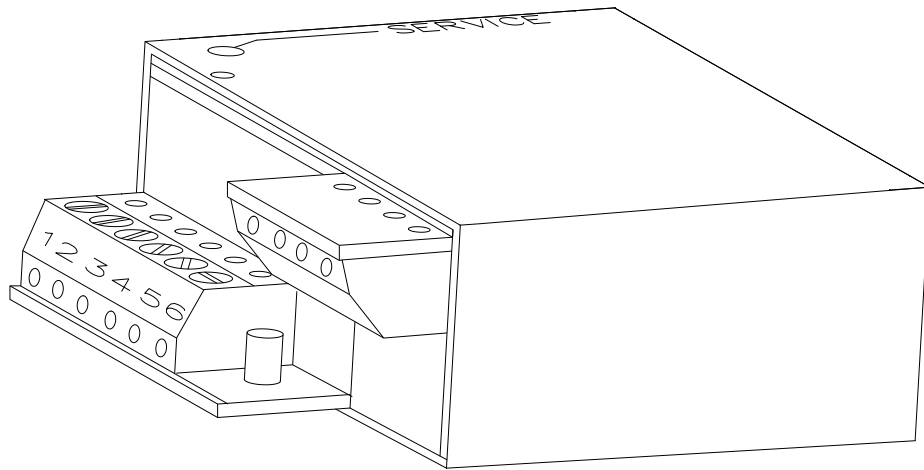


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PULSAblue NpH

1 Introduction

NPH

The Model NPH pH and ORP Node is a LONWORKS[®]-compatible node that uses twisted pair communications. The NPH works with several different temperature compensation inputs and with pH or ORP sensors. These multiple-sensor input options allow for various sensors to be used. Temperature compensation is adjustable by pH per Celsius for use with various processes. Up to four NpH nodes may be installed on the 3000 series controller.

<p>NOTE: To use the NpH with a 3000 series controller it must have the NIN option and contain Rel 98 Firmware. All controllers shipped after 1 June 98 will have Rel 98 firmware.</p>

Relay configuration and datalogging

After a NpH is installed, not only will you be able to view additional inputs you will also be able to datalog information and control relays based on the external device.

Specifications

Sensor Connections

- BNC Sensor BNC
- Pin 1 none
- Pin 2 none
- Pin 3 Reference
- Pin 4 none
- Pin 5 Solution Ground and Temperature Compensator
- Pin 6 Temperature Compensator

Range

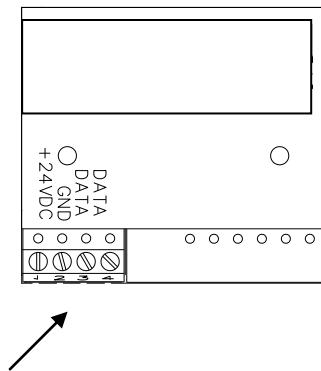
- pH Range 0-14 (with proper pH sensor)
- ORP Range -2000 to +2000 (with proper ORP sensor)

Temperature

- Compensation Inputs None 100 PTC
- 500 NTC 1K PTC
- 4K NTC 3K PTC
- 10K NTC 10K PTC
- Compensation is adjustable by pH per °C (pH only)

Power 24 VDC

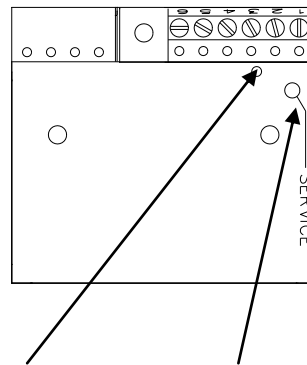
Network and Power connections



Network and Power connections

Service Light

Service Pin



Service Light

Service Pin

2 INSTALLATION

2.1 Checking

Inspect the shipping carton for obvious external damage. Note on the carrier's bill-of-lading the extent of the damage, if any, and notify the carrier. Save the shipping carton until your Node is started up.



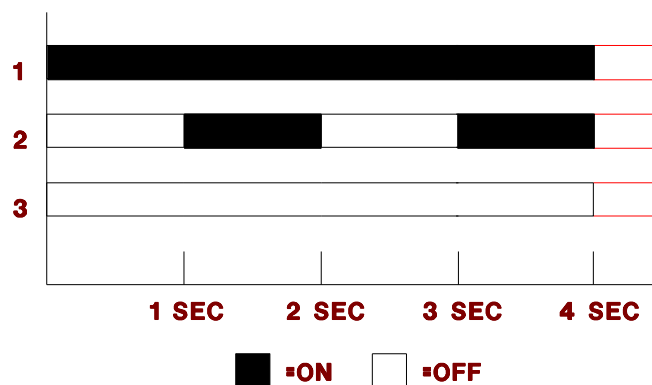
If shipping damage has occurred, call the Pulsafeeder Customer Service Department at (800) 333-6677 and return the controller to the factory in the original carton.

2.2 Connections

The NIN option is required on the 3300/3400 series controller for the NPH to operate. The NIN option provides power and two way communications to the NPH. Refer to the drawings in the back of this manual for wiring details.

2.3 Service Light

The service light is used for installation of the node and for troubleshooting. Below is a chart of what the service light might indicate during operation.



Behavior	Description	Resolution
1	Bad Node	Replace Node
2	Node is unconfigured,	Install Node
3	Node is running normally	none
3	Node does not have power	Check power supply

Light will also be on while the service button is pressed.

3 Operation with 3300/3400 Series Controllers

Before it can be used, the NPH must be installed into the software of the controller.

Under the **Main Menu**,

MAIN MENU	
=====	
3	CALENDAR TIMER
4	ALARMS
5	WATER METERS
6	4-20 MA OUTPUTS
7	SYSTEM SETUP
8	CLOCK

highlight **SYSTEM SETUP**, then press **ENT**. You should see the following screen:

SYSTEM SETUP	
=====	
1	PROCESS PARAMETERS
2	INITIALIZATION
3	DIGITAL INPUTS
4	FIRMWARE VERSIONS
5	SECURITY
6	DIAGNOSTICS
7	COMMUNICATIONS
8	NODE INSTALLATION

Highlight **NODE INSTALLATION**, then press **ENT**. You should see the following screen:

NODE INSTALLATION	
=====	
1	INSTALL A NEW NODE
2	DE-INSTALL A NODE

Highlight **INSTALL A NEW NODE**, then press **ENT**. You should see the following screen:

INSTALL A NEW NODE	
=====	
1	RELAYS 5-8
2	RELAYS 9-12
3	MAKEUP COND
4	REMOTE SENSOR
5	REMOTE SENSOR
6	REMOTE SENSOR
7	REMOTE SENSOR
8	ANOLOG INPUTS (4)
9	ANOLOG INPUTS (4)
10	DIGITAL INPUTS (4)
11	DIGITAL INPUTS (4)

NOTE: YOU MUST ASSIGN YOUR NPH TO REMOTE SENSOR. THEN YOU MAY SELECT PH OR ORP (DEPENDING ON SENSOR BEING USED).

Select which node to install.

WHICH PROCESS?	
=====	
1	CONDUCTIVITY
2	pH
3	ORP

The following screen should appear:

PRESS SERVICE PIN	
PRESS ANY KEY	

Momentarily press the Service Pin on the node to be installed. The Service Light should turn on while the Service Pin is pressed. After the Service pin is released press any key on the key pad and the node will be installed.

4 CONFIGURATION

4.1 Configuration of Node with Sensors

For the NPH to work properly with different sensors it must be configured properly.

Under the **Main Menu**,

```

                MAIN MENU
            =====
3 BIO SCHEDULE
4 ALARMS
5 WATER METERS
6 4-20 MA OUTPUTS
7 SYSTEM SETUP
8 CLOCK

```

highlight **SYSTEM SETUP**, then press **ENT**. You should see the following screen:

```

                SYSTEM SETUP
            =====
1 PROCESS PARAMETERS
2 INITIALIZATION
3 DIGITAL INPUTS
4 FIRMWARE VERSIONS
5 SECURITY
6 DIAGNOSTICS
7 COMMUNICATIONS
8 NODE INSTALLATION

```

Highlight **PROCESS PARAMETERS**, then press **ENT**. You should see the following screen (screen will vary depending on which other nodes are installed):

```

                WHICH PROCESS
            =====
1 pH
2 COND
3 pH-1

```

Select which node to set up. pH and COND are not nodes. Highlight the appropriate node and press **ENT**. You should see the following screen:

```

                pH-1
            =====
1 CHANGE MY NAME
2 TEMP COMPENSATION
3 pH PER °C
4 SENSOR SHEILD
5 DAMPING

```

See the Sensor Configuration Chart to configure selections 2-5 above.

Sensor	Sensor Shield	Temp Comp.
1167153 and 1167154	GND	NONE

1167155	REF	NONE
1169065	REF	NONE
520 Series	GND	10K PTC
521 Series	REF	Varies
530 Series	GND	10K PTC

If you are not familiar with Damping or Percent/°C the values should be left at .5 sec for damping and 0.00 pH for pH per °C.

All other pH and ORP sensors not manufactured by Pulsafeeder will use REF for SENSOR SHIELD. Temperature input will vary by manufacturer.

4.2 Configuration of Node with Relays

The N420I can be used to control relays in the 3000 series controller or the NRLY node.

Under the **Main Menu**,

MAIN MENU	
=====	
1	PROCESS
2	RELAYS
3	BIO SCHEDULE
4	ALARMS
5	WATER METERS
6	4-20 MA OUTPUTS
7	SYSTEM SETUP
8	CLOCK

Highlight **RELAYS**, then press **ENT**. You should see the following screen:

WHICH RELAY?	
=====	
1	BLOW
2	RLY2
3	RLY3
4	RLY4

Highlight the appropriate relay , then press **ENT**. You should see the following screen:

RLY2	
=====	
1	DISABLE
2	SETPOINT
3	WATER METER
4	PERCENT BLOWDOWN
5	PERCENT OF TIME
6	FEED SCHEDULE

Highlight **SETPOINT** , then press **ENT**. You should see the following screen:

WHICH PROCESS	
=====	
1	COND
2	pH-1

Highlight the appropriate Input , then press **ENT**. You should see the following screen:

SETPOINT	
=====	
1	SETPOINT VALUES
2	WHEN TO ACTIVATE

Highlight **SETPOINT VALUES**, then press **ENT**. You should see the following screen:

SETPOINT= 0.00 pH
DEADBAND 0.00 pH

Type in the appropriate setpoint and deadband for when the relay should be activated. Press **ENT** to save setpoint and deadband values.

SETPOINT	
=====	
1	SETPOINT VALUES
2	WHEN TO ACTIVATE

Highlight the appropriate **WHEN TO ACTIVATE** , then press **ENT**. You should see the following screen:

WHEN TO ACTIVATE	
=====	
1	*ABOVE SETPOINT
2	BELOW SETPOINT

This screen configures the relay to turn on above or below the setpoint. Press **1** or **2** to make selection. * indicates current selection.

5 Maintenance and Technical Service

5.1 Technical Service

Your PULSAblue is a state of the art microprocessor based controller. If you are experiencing a problem with your process control instrument, first consult the troubleshooting guide in this manual. If the problem is not covered or cannot be solved, contact Technical Services for assistance:

PULSAFEEDER INC. (SPO)
27101 AIRPORT ROAD
PUNTA GORDA, FL 33982
941-575-3800

Trained technicians are available to diagnose your problem and arrange a solution. Solutions may include purchase of replacement parts or returning the controller to the factory for inspection and repair. All returns require a Return Authorization number to be issued by Pulsafeeder. Parts purchased to correct a warranty issue may be credited after an examination of original parts by Pulsafeeder. Warranty parts returned as defective which test good will be sent back freight collect. No credit will be issued on any replacement electronic parts.

Any modifications or out-of-warranty repairs will be subject to bench fees and costs associated with replacement parts.

Warranty

Pulsafeeder, Inc. warrants control systems of its manufacture to be free of defects in material or workmanship. Liability under this policy extends for 24 months from date of shipment. Electrodes/probes are considered maintenance items and as such are warranted for six (6) months from the date of shipment of the controller. Electrodes/probes purchased as spare parts are warranted for 90 days from date of shipment. The manufacturer's liability is limited to repair or replacement of any failed equipment or part, which is proven defective in material or workmanship upon completion of the manufacturer's examination. This warranty does not include removal or installation costs and in no event shall the manufacturer's liability exceed the selling price of such equipment or part.

The manufacturer disclaims all liability for damage to its products through improper installation, maintenance, use, or attempts to operate such products beyond their functional capacity, intentionally or otherwise, or any unauthorized repair. The manufacturer is not responsible for consequential or other damages, injuries, or expense incurred through the use of its products.

The above warranty is in lieu of any other warranty, whether expressed or implied. The manufacturer makes no warranty of fitness or merchantability. No agent of ours is authorized to provide any warranty other than the above.