



**PULSAFEEDER
CONDUCTIVITY NODE (NCON)
COND NODE KIT (NCKT)**

INSTALLATION & OPERATION MANUAL

SERIAL #: _____

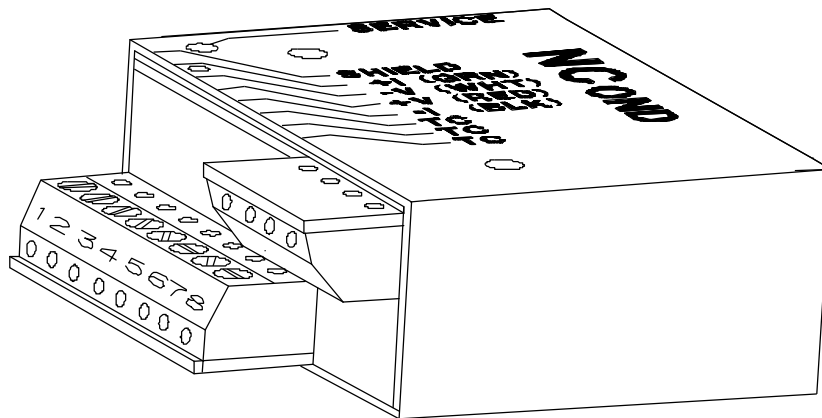


Table of Contents

| | | |
|-------|--|---|
| 1 | Introduction..... | 2 |
| 1.1 | Specifications..... | 3 |
| 1.2 | INSTALLATION | 4 |
| 1.2.1 | Checking..... | 4 |
| 1.2.2 | Connections | 4 |
| 1.2.3 | Service Light | 4 |
| 1.3 | Operation with 3300/3400 Series Controllers..... | 5 |
| 1.4 | CONFIGURATION..... | 6 |
| 1.4.1 | Sensor Configuration Chart | 6 |
| 1.4.2 | Configuration of Node with Sensors | 6 |
| 2 | Maintenance and Technical Service | 7 |
| 2.1.1 | Technical Service..... | 8 |

PULSAbLue NCON

1 Introduction

NCON

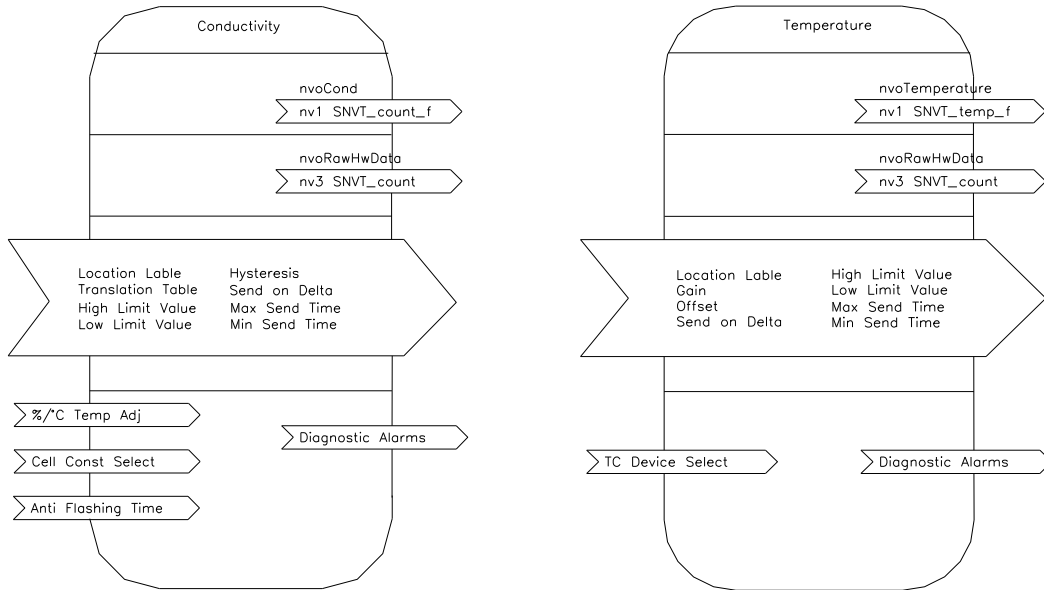
The Model NCON Conductivity Node is a LONWORKS®-compatible node that uses twisted pair communications. The NCON works with several different temperature compensation inputs and with two- or four-electrode sensors. These multiple-sensor input options allow for various conductivity sensors to be used. Temperature compensation is adjustable by percent per degrees Celsius for use with various processes. The NCON's ability to cover a wide range in conductivity is due to its advanced auto-ranging circuitry. The NCON's four-electrode circuitry allows for compensation when fouling occurs on sensor electrodes. When sensor fouling can no longer be corrected, the NCON sends a fouled electrode alarm.

The NCON can be used with the Pulsafeeder PULSAbLue 3300/3400 Series controllers. On cooling towers it can be used for chill loop monitoring and control as well as on the makeup line for multi-setpoint or cycles of concentration control on the cooling tower.

NCKT

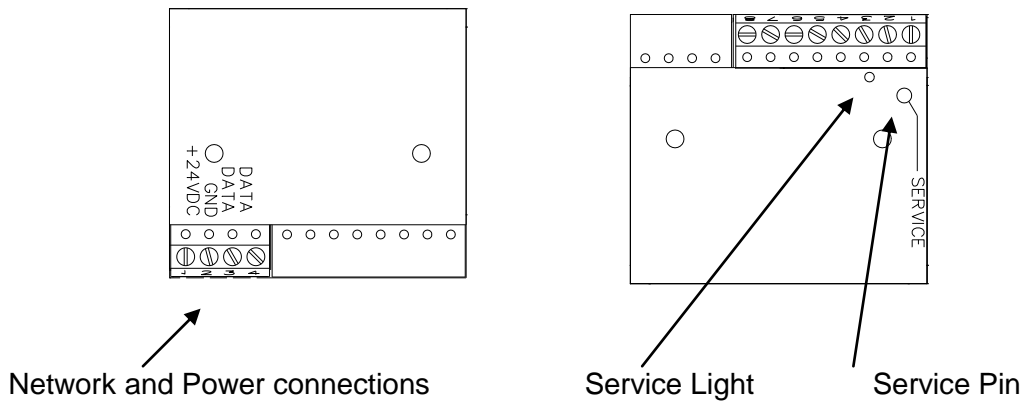
The NCKT is a pre packaged option that includes the NCON, NEMA 4X enclosure, sensor tee, and a 4 electrode conductivity sensor. Its primary application is in cooling towers but may be used in other applications. The sensor can cover a range of 0-10,000µS and is rated 100°F @ 140 psi.

1.1 Specifications



Conductivity Range 0-1,000,000 μS (with proper conductivity sensor)
Temperature
Compensation Inputs None 100 PTC
 500 NTC 1K PTC
 4K NTC 3K PTC
 10K NTC 10K PTC
 Compensation is adjustable by % per $^{\circ}\text{C}$

Power 24 VDC



1.2 INSTALLATION

1.2.1 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.



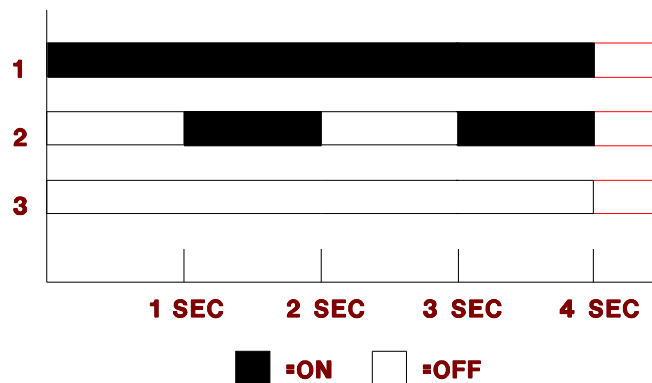
If shipping damage has occurred, call the Pulsafeeder Customer Service Department at (800) 333-6677 and return the controller to the factory in the original carton.

1.2.2 Connections

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

1.2.3 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.

1.3 Operation with 3300/3400 Series Controllers

Before it can be used, the NCON 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 |

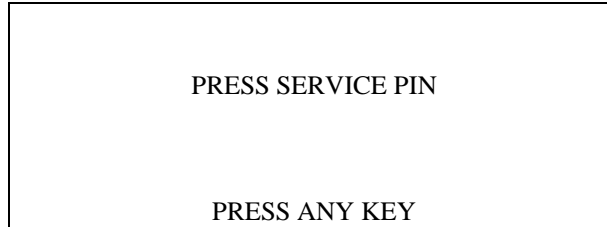
Highlight **INSTALL A NEW NODE**, then press **ENT**. You should see the following screen:

| 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) |

Select which node to install.

NOTE: YOU MUST ASSIGN YOUR NCON TO MAKEUP COND OR REMOTE SENSOR.

The following screen should appear:



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.

1.4 CONFIGURATION

1.4.1 Sensor Configuration Chart

| Sensor | Cell Constant | Temp Comp. |
|----------------|---------------|------------|
| SR | .1 | NONE |
| 2 Elec Cooling | 1 | 500 NTC |
| 4 Elec Cooling | .38 | 500 NTC |
| 540K.1-500 | .1 | 500 NTC |
| 540K.1-1000 | .1 | 1K PTC |
| 540K.01-500 | .01 | 500 NTC |
| 540K.01-1000 | .01 | 1K PTC |
| 543H | .5 | 4K NTC |
| 543M | .38 | 4K NTC |
| 543L | .1 | 4K NTC |
| 543LL | .1 | 1K PTC |

If you are not familiar with Damping or Percent/°C the values should be left at .5 and 2%/°C respectively.

1.4.2 Configuration of Node with Sensors

For the NCON 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:

| WHICH PROCESS | |
|---------------|---------------|
| ===== | |
| 1 | pH |
| 2 | COND |
| 3 | MCON |
| 4 | REMOTE SENSOR |
| 5 | REMOTE SENSOR |

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:

| MCON | |
|----------|-----------------------|
| ===== | |
| 1 | CHANGE MY NAME |
| 2 | TEMP COMPENSATION |
| 3 | CELL CONSTANT |
| 4 | PERCENT PER °C |

See the Sensor Configuration Chart on the previous page to configure selections 2-4 above.

2 Maintenance and Technical Service

2.1.1 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.