



**PULSAFEEDER
4-20 MA INPUT NODE (N420I)**

INSTALLATION & OPERATION MANUAL

SERIAL #: _____

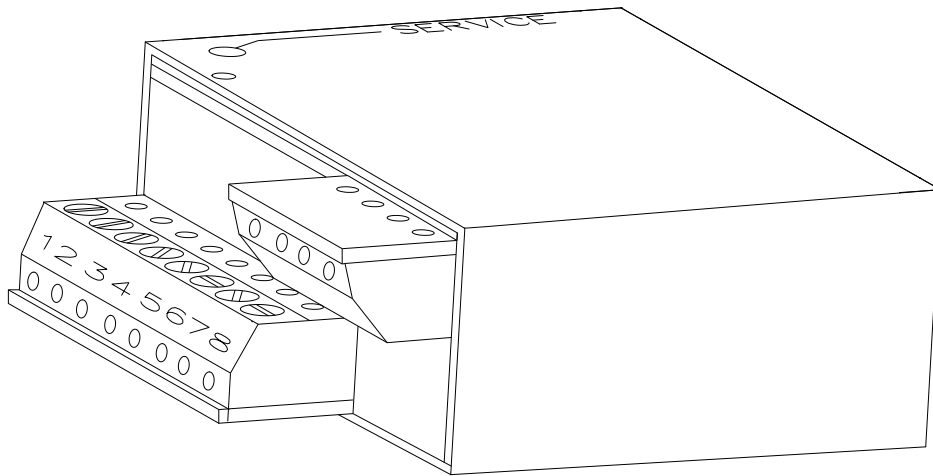


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PULSAblue N420I

1 Introduction

N420I

The Model N420I Node is a LONWORKS[®] compatible node that uses twisted pair communications. It accepts four 4-20 mA inputs which can be tied into most 3300/3400 Series controllers. Up to two N420I nodes may be installed on the 3300/3400 Series controller for a total of eight 4-20 mA inputs.

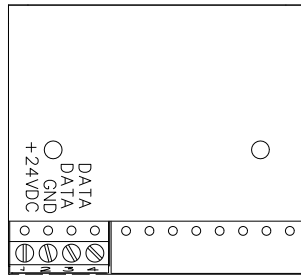
NOTE: To use the N420I with a 3300/3400 Series controller it must have the NIN option and contain Rel 98 Firmware. All controllers shipped after 1 June 98 will have Rel 98 firmware.

Relay configuration and datalogging

After a N420I is installed, not only will you be able to view external 4-20 mA inputs you will also be available to datalog information and control relays based on the external device.

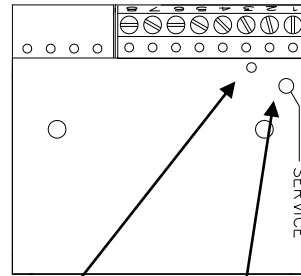
1.1 Specifications

Inputs	Four 4-20 mA inputs, external loop power required
Network wiring distance	400 meters from furthest node
Power	24 VDC



Network and Power connections

Connection to NIN and other nodes as well as 24 VDC.



Service Light

Indicates status.

Service Pin

node Installs node on network.

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 N420I to operate. The NIN option provides power and two way communications to the N420I. 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.



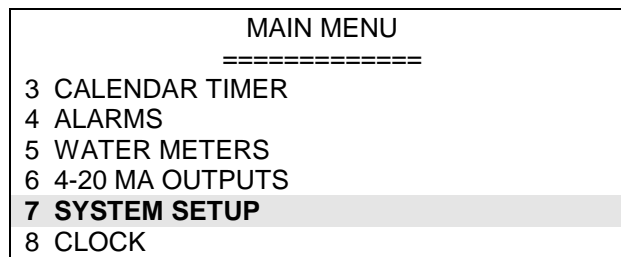
Behavior	Description	Resolution
1	Bad Node	Replace Node
2	Node is unconfigured,	Install Node
3	Node is running normally	none
3	Node does not have power	Check power supply

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

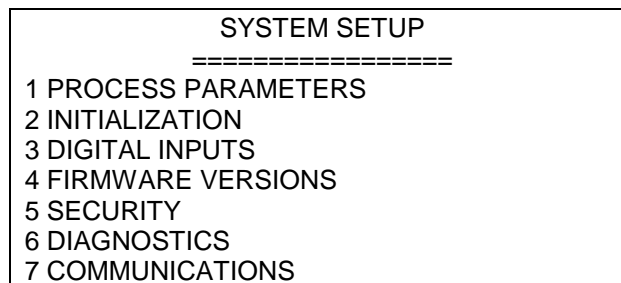
1.3 Operation with 3300/3400 Series Controllers

Before it can be used, the N420I must be installed into the software of the controller.

Under the **Main Menu**,



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



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 N420I TO ANOLOG INPUTS (4).

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.

1.4 CONFIGURATION

For the N420I 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 COND
2 INP1
3 INP2
4 INP3
5 INP4

```

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:

```

                INP1
            =====
1 DISPLAY AS . . .
2 SET 4-20 MA RANGE
3 CALIBRATE 4-20 MA
4 CHANGE MY NAME

```

Select **DISPLAY AS...** and press **ENT**. You should see the following screen:

```

                INP1
            =====

```

DISPLAY AS . . .
99.99 mA

At this point you may configure the node to the scale required for your 4-20 mA input. Here is a list of symbols for configuring the 4-20 mA input.

Range	Symbols	Symbols
99999	m/y	mA
9.999	uA	gal
99.99	pH	l
999.9	μS	°F
	ppm	psi
	mV	ppb
	MΩ	Ω
	°C	gpm
	M ³ /H	lpm
	%	NTU

To make changes use ↑ or ↓, then press **ENT**.

INP1
=====

1 DISPLAY AS . . .
2 SET 4-20 MA RANGE
3 CALIBRATE 4-20 MA
4 CHANGE MY NAME

To accurately read and display the information from the external 4-20 mA input device we will need to scale the input of the node to match the scale of the external device. To do this select SET 4-20 MA RANGE then press **ENT**. You should see the following screen:

4 MA VALUE=
4.00 mA

20 MA VALUE=
20.00 mA

At this point you may configure the node to the scale required for your 4-20 mA input. Enter in the proper values and then press **ENT**.

INP1
=====

1 DISPLAY AS . . .

```
2 SET 4-20 MA RANGE
3 CALIBRATE 4-20 MA
4 CHANGE MY NAME
```

The default current output values of the 4-20 mA node are fairly close and are accurate in most applications. However it may be necessary to calibrate the 4-20 mA current output with a current meter. To do this select CALIBRATE 4-20 MA, then press **ENT**.

```
SIMULATE 4 MA
4.00
```

Simply connect a current meter inline with the 4-20 mA device, simulate 4 mA with the external device, then type in the value from the current meter into the 3300/3400 Series controller: Press **ENT** when value is entered.

```
SIMULATE 20 MA
20.00
```

Now you will be prompted to simulate 20 mA with the external device, then type in the value from the current meter into the 3300/3400 Series controller: Press **ENT** when value is entered. Calibration complete.

```
INP1
=====
1 DISPLAY AS . . .
2 SET 4-20 MA RANGE
3 CALIBRATE 4-20 MA
4 CHANGE MY NAME
```

You may change the name of the input to be something other than INP1. To do this select CHANGE MY NAME then press **ENT**.

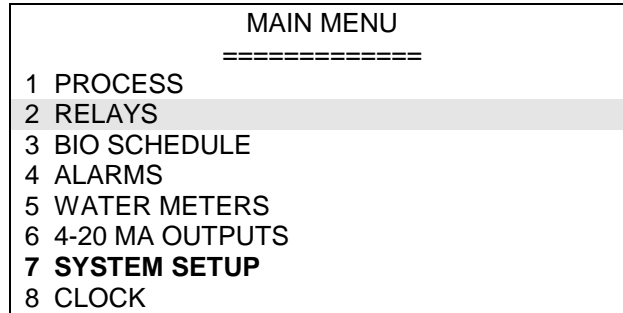
```
OLD NAME=
  INP1
NEW NAME=
  INP1
```


Use the ↑ or ↓ keys to change the character. Press **ENT** to go to the next character.

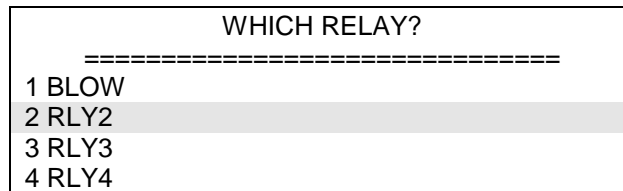
1.4.1 Configuration of Node with Relays

The N420I can be used to control relays in the 3300/3400 Series controller or the NRLY node.

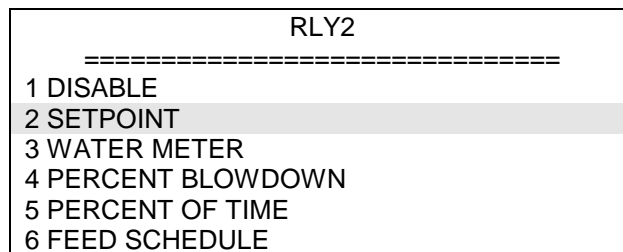
Under the **Main Menu**,



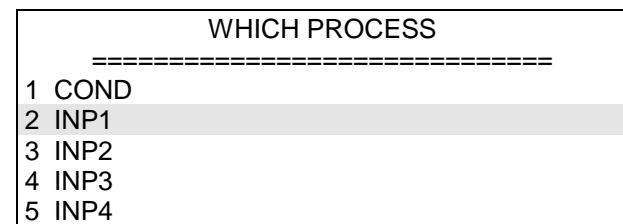
highlight **RELAYS**, then press **ENT**. You should see the following screen:



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



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



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 mA
DEADBAND 0.00 mA

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.

1.5 Maintenance and Technical Service

1.5.1 Technical Service

Your PULSAbue 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.

