



# 822/823 Series Battery-Powered Digital Temperature Indicators User Manual

## 1. Description

The NOSHOK 822/823 Series Battery-Powered Digital Temperature Indicators are a complete solution for most industrial temperature monitoring and temperature indicating applications. Made with high quality construction, these indicators feature a large 4-digit LCD display. They are designed for optimum accuracy and performance. NOSHOK 822/823 Series Indicators are an ideal replacement for bi-metal, liquid bulb and gas thermometers. They are also a suitable replacement for Mercury reduction programs.

The NOSHOK 822/823 Series Battery-Powered Digital Temperature Indicator arrives factory calibrated to the customer's specified temperature range. No costly field calibration is required.

The housing, probe and fitting material is all fabricated from 316 stainless steel.

The 822/823 Series Indicator is rated to NEMA 4X (IP66). Many mounting configurations are available to meet customer requirements.

The 822/823 Series Indicator has a five year battery life with a low battery indication on the LCD.

## 2. Function

The 822/823 Series line of temperature indicators uses a Pt1000 Platinum RTD sensor which is read by our embedded processor and displayed on the LCD display.

The LCD-based 822/823 Series is battery powered and needs no wiring unless there are options chosen that require it.

## 3. Safety Instruction

Read the instruction manual completely before installing the 822/823 Series temperature sensor. All safety guidelines should be followed and the sensor should only be installed by qualified personnel following all local codes and regulations.

### 3.1. Safety Conventions

The following symbols should be noted in this instruction manual.



**Attention:** This symbol indicates an instruction that if not followed properly could lead to injury or death.

**Note:** this symbol indicates an action that could lead to damage or contamination if not followed.

### 3.2. Proper Use

**3.2.1. Designated use:** These devices are intended for specific industrial applications. Appropriate fittings, materials and form must be chosen depending on the use. Proper specification must be done to conform with temperature, pressure and flow velocity requirements.

**3.2.2. Installation:** these devices must be installed by qualified personnel taking all necessary precautions. The installation should adhere to all local regulations.



**3.2.3.** Ensure that the label on the 822/823 Series is correct and that the model is appropriate for the particular application.



**3.2.4.** These devices are repairable. In the event of failure they should be returned to the factory for repair and recalibration. Please ensure the unit is clean and has no contaminants before returning

**3.2.5.** If the installation will occur in a hazardous location or near hazardous materials all necessary precautions should be taken.

**3.2.6.** Mounting locations should be chosen to avoid high voltage electrical lines and for ease of installation and future maintenance.

## 4. Installation

### 4.1. Unpacking

If there is any visible damage to the unit check the packaging and notify the shipper immediately. Included in the package should be one 822/823 Series and one instruction manual.

**4.2. Storage:** Note that the device should be stored at a temperature between -4 °F to 160 °F (-20 °C to 70 °C) in a location that is reasonably dry and clean.

### 4.3. Orientation: See Figure 1.

There are no restrictions on the orientation of the probe installation location, but if there is a requirement for the pipe to be self draining, the seating should be angled such that it will drain properly.

The probe should be centered in the process flow no matter what the orientation. Angled inserts should have the probe pointing into the direction of flow as shown.

Ensure that during installation all necessary precautions are taken. If this is a sanitary installation ensure that the probe has been properly cleaned in advance of installation and ensure that it is transported to the site of installation in a way that will maintain its sanitary condition.

If there are flammable or explosive fluids or gases present at the site of installation ensure that proper grounding procedures are taken. Unwrapping a probe from bubble wrap or other packaging can impart a static charge on the probe which may discharge upon insertion into the mounting location.

If the function demands it, seal the process connection with PTFE tape.

**Note:** NPT connections should be hand tightened and then turned only 1-1/2 turns further with an appropriate wrench. This value may change according to what type of sealant is used on the pipe threads. Do not use the display body to tighten the probe into the mounting location. Doing so may damage the probe. Use only the process connection or compression fitting for tightening.

### 4.4. Troubleshooting

If the unit fails to function properly there are no user serviceable parts inside. If returning the unit to NOSHOK, please ensure that the unit is clean and free from any contaminants before shipping.

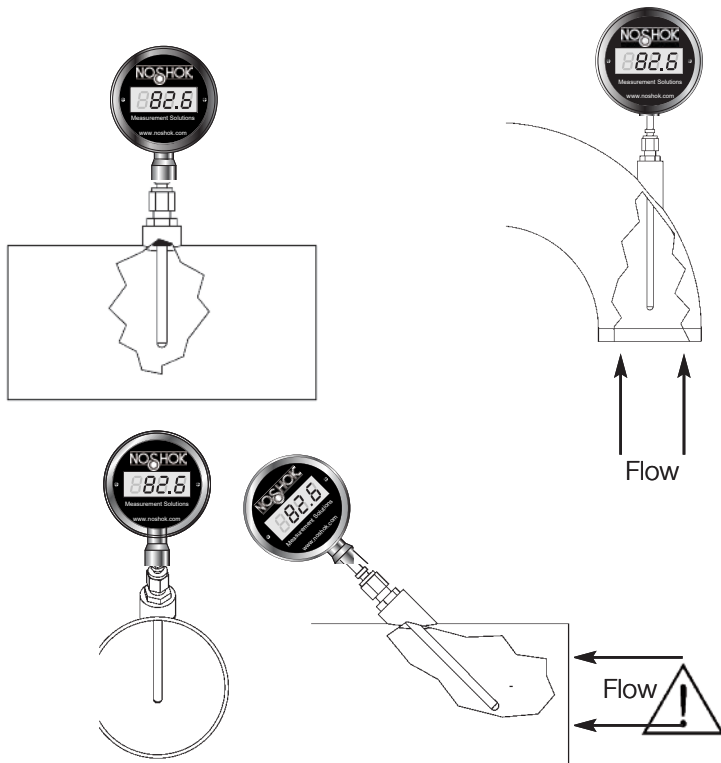


Figure 1

## **5. Limits**

### **5.1. Pressure Limits**

The pressure limits for the probe is 500 psig, but the pressure limits for the process connection could be considerably less. Ensure the appropriate process connection is used for the desired pressure limits.

### **5.2. Temperature Limits**

The ambient temperature range for the exterior housing enclosing the processor should not exceed 32 °F to 120 °F (0 °C to 50 °C). The temperature limits for the probe should conform to the following table according to the unit ordered. Note that the temperature will affect the pressure and flow velocity limits of the probe.

### **5.3. Thermal Characteristics**

For some RTD temperature indicators there is self heating from the measurement current. With NOSHOK 822/823 Series products the self heating is negligible. Any self heating error will be compensated for during factory calibration.

Calibration of all NOSHOK 822/823 Series products takes place after the RTD, probe and electronics are assembled and immersed up to the process connection or a minimum of 10X the probe diameter. There should be no discrepancy in the measurement due to the thermal characteristics of the probe or process fitting.

### **5.4. Response Time**

Warm up is approximately 30 seconds, then response time is typically 3 seconds due to the display refresh rate.

## **6. Calibration**

Calibration is performed at the factory. For recalibration return the unit to the factory. Please ensure that the unit is clean and free of contaminants before shipping. Certain Models with optional communication may be calibrated on site by an NOSHOK authorized representative or by factory trained professionals.

## **7. Long-Term Stability**

The electronics and RTD should not deviate more than 0.05% per year if sized and installed properly. Regularly scheduled verification should be done to ensure that the unit is within accepted norms.

## **8. Error Codes**

The 822/823 Series Battery-Powered Digital Temperature Indicator is programmed to display the following error conditions.



**CORPORATE HEADQUARTERS**

1010 West Bagley Road · Berea, Ohio 44017

440.243.0888 · Fax 440.243.3472

E-mail : [noshok@noshok.com](mailto:noshok@noshok.com)

Web : [www.noshok.com](http://www.noshok.com)

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