

# Temperature Gauge

Model: TG-3

## 3 Inputs with High/Low Alarms Installation / Operation Manual



### Introduction

The TG-3 Temperature Gauge provides an accurate digital display of temperature for up to three different areas such as mobile air fill stations / medical supply compartments. Degrees F or C can be displayed.

You can set Low and High temperature alarms for each sensor independently and the TG-3 continuously monitors the temperature of each sensor at all times. When activated, the built-in 85 dB alarm will sound and the display will flash.

Five levels of backlighting can be selected and all setup, calibration constants and alarm values are saved in a nonvolatile memory.

An external alarm output or standard NMEA 0183 serial data output can be programmed on the screw terminal output.

### Specifications

**Power Supply:** 9.5 to 33.0 VDC, .035 amps nom.

**Operating Temperature:** 32 to 122° F ( 0 to 50° C)

**Range:** -20° F (-29° C) to +160° F (+71° C)

**Size:** 2.5" dia X 4.1" deep (61 mm x 104 mm)

**Accuracy:** 1% of full scale +/- 1 degree

**Sensor:** Standard 10Kohm NTC thermistor type temperature sensor (One included. Additional units available separately - specify model TGS-25.)

**Alarms:** 85 db internal High & Low Temperature alarms, individually settable for each sensor.

**Display:** 4 digits, Degrees F or Degrees C. Five levels of backlighting.

**Data Output:** NMEA 0183 (Standard \$IIXDR sentence). 4800 baud serial output of all three temperatures or External Alarm Output selectable.

### Installation

Before starting the installation, please read this entire section first. Be sure to install the bulkhead gasket before you install the instrument. Finger tighten the screws that mount the instrument bracket - do not use tools.

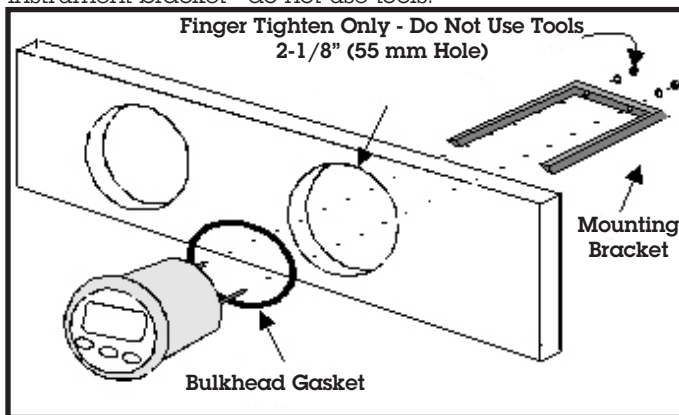


Figure 1

### Mounting and Wiring

- Drill a 2-1/8" (55mm) mounting hole where you desire to mount the instrument (Figure 1).
- Locate suitable position to mount sensor(s) and secure. Note, sensor is water proof and can be installed in wet locations.
- Bring the sensor wires, ground, and power lines out of the mounting hole and use a small flat screwdriver provided to make the connections to the screw terminal on the instrument case back as shown in figures 2 and 3.

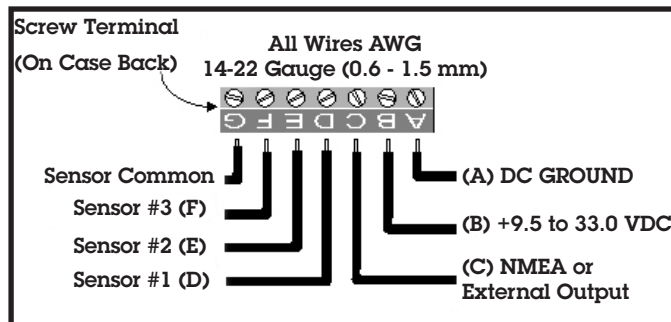


Figure 2

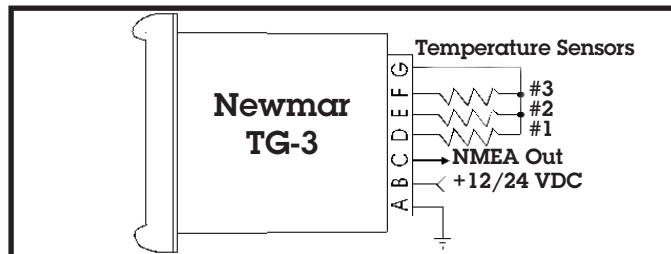


Figure 3

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M-TG-3

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Carefully check all your wiring against those shown in figure 2. If everything is wired correctly you can mount the TG-3 in the instrument hole. Be sure the bulkhead gasket is in place and use only finger tension to tighten the bracket hold-down nuts

**Do not overtighten the bracket or you may damage the case - do not use tools to tighten the nuts.**

## Operation

### Key Functions

The **t**, **:** and **s** keys are used to select backlight levels, select sensor to display (in degrees (°) F or C), set low and high temperature alarms and calibrate the instrument to the sensor. After changes are made, the new information is automatically saved to nonvolatile memory.

### Backlight Intensity

Press the **:** key for 1/2 second to adjust the backlight level for nighttime viewing. Each time you press the **:** key for 1/2 second, the backlight level will change 1, 2, 3, 4, OFF, 1, 2, ... etc.

### Selecting Sensor 1, Sensor 2 or Sensor 3

Press the **:** or **s** key to cycle up through the sensors (1, 2, 3, 1, 2, etc.). Press the **t** key to cycle backwards through the sensors (3, 2, 1, 3, 2, etc). The icon near the "1", "2" or "3" on the LCD display will indicate which sensor is being monitored.

### Setting High/Low Temperature Alarms

While viewing temperature for the desired sensor (1, 2 or 3), press and hold the **t** or **s** key for ten (10) seconds to set the Low or High alarm value. You will hear a long beep and the low/high level alarm value for that sensor will be displayed. Press the **s** and **t** keys to set the desired alarm limit. Press the **:** key to save your entry. The default low alarm setting are -20° F and +140° F.

### Alarms ON/Off

While viewing temperature for sensor 1, 2 or 3, press the **s** or **t** key for 1/2 second to "arm" or "disarm" all the alarms simultaneously. The display will blink the 1, 2 or 3 icon when the alarms are armed. You should leave the alarms armed at all times and only disarm it to silence the alarm buzzer.

### Selecting Degrees F or Degrees C

To switch between displaying degrees (°) F or C, turn off the power to the TG-3, then press and hold down both the **t** and

**s** keys and reapply power. Your selection will automatically be saved to memory.

### Setting Up and Calibration

The TG-3 is calibrated at time of manufacture for a nominal temperature sensor. Since calibration can vary a little from one sensor to another, you can adjust the calibration for each sensor independently by using the front panel keys.

To enter the Temperature Calibration mode, turn off the power to the TG-3, then press and hold down the **t**, **:** or **s** key (to calibrate Sensor 1, 2 or 3) and reapply power. Use the **s** and **t** keys to make the displayed value read correctly. Press the **:** key to save the calibration data to memory.

### Selecting NMEA 0183 or External Alarm Output

The TG-3 comes factory preset to output NMEA 0183 compatible serial data. If you do not need this feature and would rather have an external alarm output on Screw Terminal (C), you can do so as follows:

While viewing temperature, press and hold down both the **t** and **s** keys for 10 seconds (until you hear a long beep). The new output mode is automatically saved to memory. When the external alarm output is activated, a 5V signal (10 mA Max.) is output on screw terminal (C).

Use Newmar model DIR as alarm contacts.

### NMEA 0183 Sentence Description

The TG-3 outputs a 4800 BAUD serial data stream of Temperature (Degrees (°) Celsius) for Sensors 1, 2 and 3 once per second.

Temperature 1: \$IIXDR,C,xxx.x,C,Z301,\*CS

Temperature 2: \$IIXDR,C,xxx.x,C,Z302,\*CS

Temperature 3: \$IIXDR,C,xxx.x,C,Z303,\*CS

\*CS = Check Sum

### Notes and Warnings

- 1) Connect the first temperature sensor to screw terminal D.
2. If you have fewer than three sensors, leave the spare terminals (E and/or F) disconnected (floating).

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