Other CruzPro Products

- Depthsounders, Fishfinder & Speed/Temperature/Log
- DC Volts/Amps/Amp-Hour Monitors
- AC Volts/Amps/Freq/kW Monitor
- LPG/Petrol Gas Detectors/Alarms
- Bilge Water Alarms & Bilge Pump Controllers
- Windlass Controller/Chain Counter
- Digital Fuel Gauges & Fuel Consumption Calculator
- Digital Gauge for 1 or 3 Tanks /w Separate Alarms
- Smart 4 step Alternator Regulator
- Marine Security System/w Reliable Intrusion Sensors
- RPM/Engine Hours/Elapsed Time Gauge/w Alarm
- Digital Oil Pressure Gauge/Alarm
- Digital Temperature Gauges for 1 or 3 Areas /w Alarms
- One and Three Bank Digital Volts Gauges
- Digital Amps Gauge
- Digital Clock/Watch/Race Timers/w 8 Alarms
- 8 and 16 Amp Light Dimmers / Motor Speed Controller
- Solar Panel Charge Controllers 6/8/9 & 20 Amps
- 4 & 8 Channel NMEA Combiners/RS-232 Convertors
- Engine/Exhaust Temp. Monitor & Digital Pyrometer
- NMEA 0183 Remote Data Repeater/w 4 Input Channels

CruzPro®
TL60

CE

Tank Level Gauge/w High/Low Alarms for 3 Tanks

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a 120 gallon/litre tank, pump an additional 15 gallons/litres into the tank for a total of 15 + 15 = 30 gallons/litres. When you have pumped this amount into the tank, use the ▲ and ▼ keys to make the display read 30 and hold down the ✚ key until you hear a long beep and the number "3" blinks on the display.

Continue this process of filling and entering data until the display shows "LAST". Then fill the tank and make the display read the correct number. Press and hold down the ✚ key until you hear a long beep.

Your tank level gauge should now be working for that tank! Repeat as required for the other two tanks.

Important Notes:

a) If you make an error during this process you will have to start over from step 1.

Introduction

The TL60 Tank Level Gauge provides an accurate digital display for three tanks. Level can be displayed in liters/gallons or percent (0-100%) up to 999 and as a percentage (0-100%) up to 6500 liters/gallons. The TL60 "learns" your tank shape and sender errors and provides a display accurate to +/- 2%. It is compatible with popular level senders made by VDO, Teleflex, Mercury, GM, Stewart-Warner, Centroid, Aero-Tec and others (sender available seperately). High & Low Level alarms can be set for each tank. When activated, the built-in 85 dB alarm will sound and the display will flash. Five levels of backlighting can be selected and all set-up, calibration constants, alarm values, tank and sender characteristics are saved in a non-volatile memory. An external alarm output or NMEA 0183 digital output can be programmed.

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b) The TL-60 will display "0" for Tank Level until that tank has been calibrated.

c) The display will show "- - -" for numbers larger than 999, so select percent display (0-100%) for tank levels greater than 999 gallons or litres.

d) The sender resistance (output voltage) must change between each calibration point or the TL60 will not work correctly. See www.cruzpro.com/centroid.html for setting up Centroid capacitive senders.

Selecting NMEA 0183 or External Alarm Output

To toggle Screw Terminal Pin (C) between NMEA 0183 and External Alarm Output, press and hold down both the ▼ and ▲ keys for 10 seconds (until you hear a long beep). When the external alarm output is activated, a 5V signal (10 mA Max.) is output on screw terminal (C).

Specifications

Power supply: 9.5 to 33.0 VDC, .035 amps nom.

Operating temperature: 32 to 122 F (0 to 50 C)

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

Accuracy: +/- 2% of full scale

Senders: Works with 0-70, 0-90, 10-180 and 30-250 ohm senders by VDO, Teleflex, Stewart-Warner, Centroid, Aero-Tec and others (Automatically adjusts for both American and European standards).

Alarms: 85 db internal High & Low Level alarm, settable from 0 to 6500 for each tank.

Display: 4 digits, Liters, Gallons or Percent (0-100%) to 999 and Percent (0-100%) only to 6500 litres or gallons. Five levels of backlighting.

Data output: NMEA 0183 (Standard $IIXDR sentence). 4800 baud serial output of Tank Levels or External Alarm Output selectable.

calibration mode and blink the number "1".

Step 3

Pump liquid until the tank is approximately 1/8th full. For example, if you have a 120 gallon/liter tank, pump approximately 120/8 = 15 gallons/litres into the tank. The exact number is not critical. When you have pumped this amount of liquid into the tank use the ▲ and ▼ keys to make the display read the correct number of liters or gallons that have been pumped into the tank so far. When the display reads correctly, press and hold the ✚ key until you hear a long beep. A blinking "2" will now be displayed.

Step 4

Pump additional fuel into the tank so that the tank is approximately 2/8th full. For example, if you have

You do not have to have a fuel sender attached.

Step 1

Make sure the tank is empty and ***apply power*** to the TL60 ***while holding down*** either the **1**, **2** or **3** key. Continue holding the **1**, **2** or **3** key for a further 5 seconds after applying power. When you release the key, the display will show "YES?" to ask if you are sure you want to erase all previous calibration data.

Step 2

Wait for 10 seconds, then press the ▲ key to answer YES. Any other key or removal of power will abort the calibration. If you press the ▲ key, you will hear a long beep, all previous calibration data (for that tank only) will be erased and the TL-60 will enter the

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.

Finger tighten only - Do not use tools

2-1/8" (55mm) hole

Mounting Bracket

Bulkhead Gasket
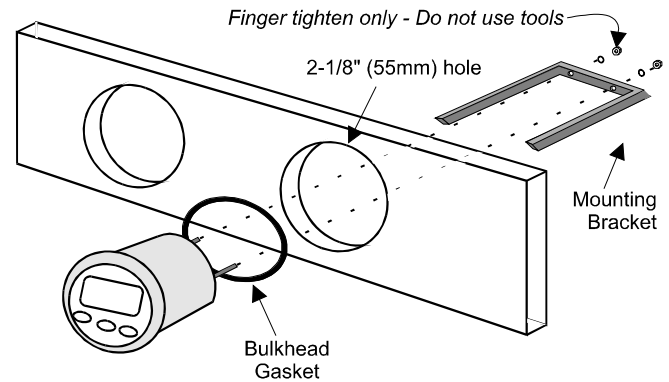
Figure 1   **Page 5**

Alarms ON/Off

While viewing tank level 1, 2 or 3, press the ▲ or ▼ key for 1/2 second to "arm" or "disarm" all the low tank level alarms simultaneously. The display will blink the Tank1, 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 Gallons/Litres or % Remaining

While viewing tank level 1, 2 or 3, press the ✚ key for ten seconds (until you hear a long beep) to switch between viewing tank levels in Gallons/Litres or % Remaining. The letters "G-L" or "Pct" will be displayed briefly to verify your selection. Your selection is then automatically saved to memory.
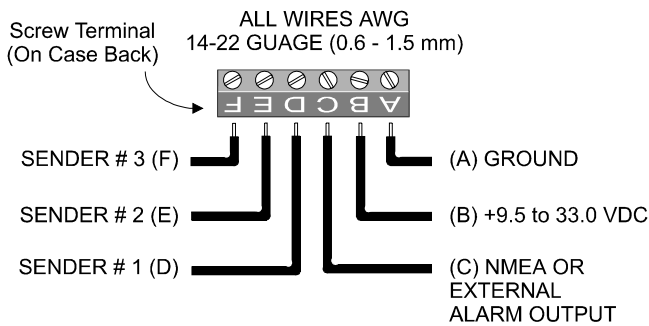
driver to make the connections to the screw terminal on the instrument case back as shown in figure 2.

● Carefully check all your wiring against those shown in figure 2. If everything is wired correctly you can mount the TL60 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.*

Mounting and Wiring

● Drill a 2-1/8" (55mm) mounting hole where you desire to mount the instrument (Figure 1).

● Bring the sender wires, ground, and power lines out of the mounting hole and use a small flat screw-

Screw Terminal (On Case Back)

ALL WIRES AWG 14-22 GUAGE (0.6 - 1.5 mm)

A B C D E F

SENDER # 3 (F)

SENDER # 2 (E)

SENDER # 1 (D)

(A) GROUND

(B) +9.5 to 33.0 VDC

(C) NMEA OR EXTERNAL ALARM OUTPUT

Setting Up and Calibration

During this process the TL60 "learns" the tank shape and level sender characteristics. This information will be saved to memory and this process will only have to be done once for each tank

For best accuracy, this process requires that the tank be empty at the start and involves filling the tank completely. If the tank was not empty when performing the calibration, the remaining liquid level will be a reserve when the gauge shows empty.

While filling the tank, you will stop eight times and tell the TL-60 how much liquid has been pumped into the tank so far.

We recommend strongly that you practice this procedure several times without emptying or filling the tank just to get familiar with the process.

Operation

Key Functions

The ▼ , ✚ and ▲ keys are used to select backlight levels, display tank levels (in liters, gallons or percent), set low level alarms and calibrate the instrument to your tank shape and sender type. After changes are made, the new information is automatically saved to non-volatile memory.

Backlight Intensity

Press the ✚ key for 1/2 second to adjust the backlight level for night-time 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 Tank1, Tank2 or Tank3

Press the "1", "2" or "3" keys to select which tank to display.

Setting High/Low Level Alarms

While viewing Tank Level for the desired tank (1, 2 or 3), press and hold the ▼ or ▲ 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 tank will be displayed. Press the ▲ and ▼ keys to set the desired alarm limit (0 to 6500 liters or gallons). Press the ✚ key to save your entry. The default low alarm setting is 0 and the default high alarm level alarm setting is 999.