Other CruzPro Products

- Depthsounders/w Keel Offset, Deep/Shallow/Anchor Drag Alarms
- PC Based DSP Fishfinder for Windows98, NT, SE, XP, 2000
- Speed/Temperature/Logs
- Digital DC Volts Gauge/w Alarms
- Digital DC Volts Gauge/w Alarms for 3 Battery Banks
- Digital Amps Gauge
- DC Volts/Amps/Amp-Hour Monitors
- AC Volts/Amps/Freq/kW Monitors
- LPG/Petrol Gas Detectors/Alarms
- Bilge Water Alarms/w Stainless Steel Water Sensor
- Intelligent Bilge Pump Controllers/w Stainlesss Steel Water Sensors
- Intelligent Windlass Controller/Chain Counters
- Digital Fuel Gauges & Fuel Consumption Calculator
- Digital Tank Level Gauges 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 Gauges/w Alarm
- Digital Engine Temperature Gauge/w Alarms
- Digital Oil Pressure Gauge/w Alarms
- Digital Temperature Gauges for 1 or 3 Areas /w Alarms
- 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

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CruzPro®

RH110

RPM, Engine Hours, Elapsed Time Gauge

Table of Contents

RH110AB
http://www.cruzpro.com
Made in New Zealand

Selecting NMEA 0183 or External Alarm Output

The RH110 comes factory preset to output NMEA 0183 serial data output. If you would rather have this line work as an External Alarm output, you can do so as follows:

While viewing RPM, press and hold down both the ▼and ▲ keys for 10 seconds (until you hear a long beep). This operation switches the output mode between NMEA 0183 and External Alarm. The new output mode is automatically saved.

When the external alarm output is activated, a 5V signal (10 mA Max.) is output on the NMEA 0183 wire.

Notes and Warnings

a) During calibration or setting of alarm values, pressing and holding down the ▼ or ▲ keys will cause the values to scroll faster the longer you hold down the keys.

b) The sensitivity control potentiometer is located on the rear of the RH110. Rotate the sensitivity control clockwise to increase the sensitivity. Use the lowest sensitivity that still provides a reliable RPM reading over the entire range of engine speed.

c) The RH110 can output a test signal on the NMEA 0183 output line that can be connected to the RPM input to verify proper operation of the input circuitry. To temporarily activate the test signal, press and hold the ▼, ✚ , and ▲ keys for 10 seconds while viewing RPM. Normal operation is restored when the power is turned off.

Presetting Engine Hours

If the engine is not new when connecting the RH110, you might wish to preset the Engine Hours to a value. Turn off the power. Press and hold the ▲ key while reapplying power to the RH110 to change the Engine Hours value. Use the ▲ and ▼ keys to adjust the engine hours and press the ✚ key to save the new value.

Adjusting Elapsed Time Clock Speed

If the clock is running too slow or fast, press and hold the ▼ key while applying power to the R110. Press the ▼ key to slow the clock speed. Press the ▲ key to increase clock speed. Press the ✚ key to save the Clock Speed calibration information.

Adjusting Display Damping

Press and hold the ✚ key while applying power to the RH110. Press the ▼ key to lower the damping or the ▲ key to increase damping (3 minimum, 16 maximum). Press the ✚ key to save the new damping value.

Introduction

The RH110 RPM/Engine Hours/Elapsed Time gauge is a four digit digital display of engine RPM, total engine hours and elapsed time. The RH110 also has a settable maintenance alarm, max RPM memory, High RPM Alarm and user adjustable display damping.

The RH110 works with any engine and can be driven from a wide range of tachometer signal frequencies and amplitudes. A rear mounted variable potentiometer allows for signal amplitude adjustment for best stability of the display. Front panel calibration is provided for maximum accuracy.

A separate engine hours countdown alarm can be set to warn you to perform needed maintenance every so many hours of engine running time. A high RPM alarm can be set and the RH110 keeps track of the maximum RPM seen. When activated, the RH110 built-in 85 dB alarm will sound and the display will flash. Five levels of backlighting can be selected and remotely switched ON/OFF. You can select from 13 different levels of display damping. All calibration, alarm values and max rpm are saved to non-volatile memory.

The RH110 outputs NMEA 0183 data of RPM and engine hours and works on both 12 and 24 VDC systems. If not required, the NMEA 0183 data output wire can be programmed as an exernal alarm output.

The RH110 with its large display digits draws only .01 amps and only .05 amps with full backlighting.

Specifications

Power supply: 9.50 to 33.00 VDC, .01 amps nominal

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

Size: 4.3" x 4.3" x 3.5" deep (110 x 110 x 89 mm).

Display Data: RPM, Engine Hours, Elapsed Time and Maintenance Alarm value

Resolution: 1 RPM

Accuracy: Front panel calibration
Rear panel sensitivity adjustment.

Range: 0 to 9999 RPM

Alarms: Settable High RPM Alarm
Max RPM Memory

Display: 4 digit LCD, 5 levels of backlighting
Remote ON/OFF control

NMEA 0183 output: RPM, Elapsed Time, Engine Hours

and ▼ keys to set the desired alarm value (0 to 9,999 hours). Press the ✚ key to save your entry. The maintenance alarm will count down to zero whenever power is applied to the RH110. When it reaches zero, the alarm will sound and the display will flash the engine hours. Press any key to silence the maintenance alarm. A value of zero disables this feature.

Setting the Maximum RPM Alarm Value

To set the Maximum RPM alarm value, press and hold the ▲ key for ten seconds while viewing RPM (until you hear a long beep).

The factory default of 5000 RPM will be displayed. Press the ▲ key to raise the RPM alarm value or the ▼ key to lower the RPM alarm value. Press the ✚ key to save the Maximum RPM Alarm value to memory. Whenever the engine RPM exceeds the Maximum RPM Alarm value, the built-in alarm will sound and the display will flash the RPM.

Calibrating RPM

Turn off the power. Press and hold both the ▲ and ▼ keys and reapply power to enter the RPM Calibration mode. Press the ▲ and ▼ keys to adjust the display to read the correct RPM. Press the ✚ key to save the calibration information.

Clearing Elapsed Time

While viewing Elapsed Time, press and hold the ✚ key for ten (10) seconds. You will hear a long beep and the elapsed time will restart counting from 0:00.

Displaying Maximum RPM Seen

While viewing engine RPM, press and hold down the ✚ key for ten (10) seconds. The maximum RPM seen since the last reset will be displayed. The maximum RPM seen is always saved to nonvolatile memory, therefore is not lost if the power is removed from the RH110. Press any key to return to the Engine RPM display.

Resetting Maximum RPM Seen Memory

While viewing the "Maximum RPM Seen" display, press and hold the ✚ key for three seconds (until you hear a long beep). The Maximum RPM Seen will be cleared to zero and you will be returned to viewing engine RPM.

Setting the Maintenance Alarm

While displaying Engine Hours, press and hold the ✚ key for ten (10) seconds. You will hear a long beep and the RH110 will display the Maintenance Alarm value in full hours. Press the ▲

Installation

Before starting the installation, please read this entire section first. Finger tighten the screws that mount the instrument bracket - It is not necessary or recommended to use tools.

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

- Connect the various wires as shown in Figure 2 and 3.

- Carefully check all your wiring against figures 2 and 3 and then mount the instrument in the hole. Use only finger tension to tighten the bracket hold-down nuts

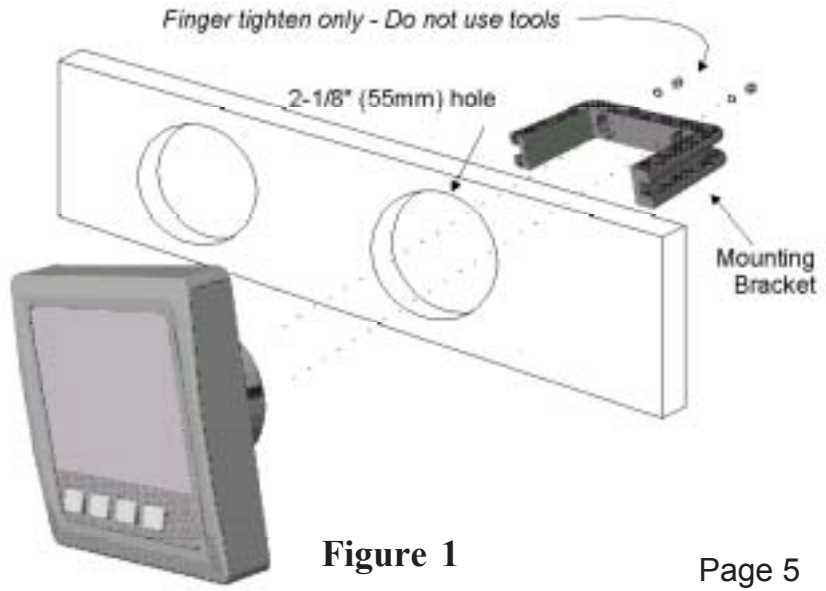


Figure 1

Figure 2

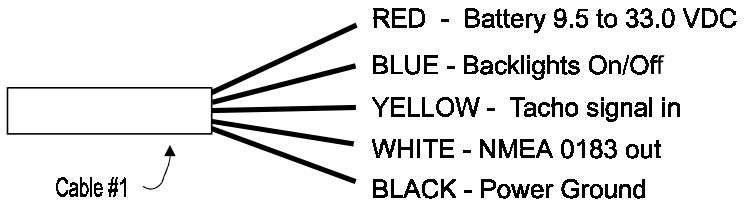
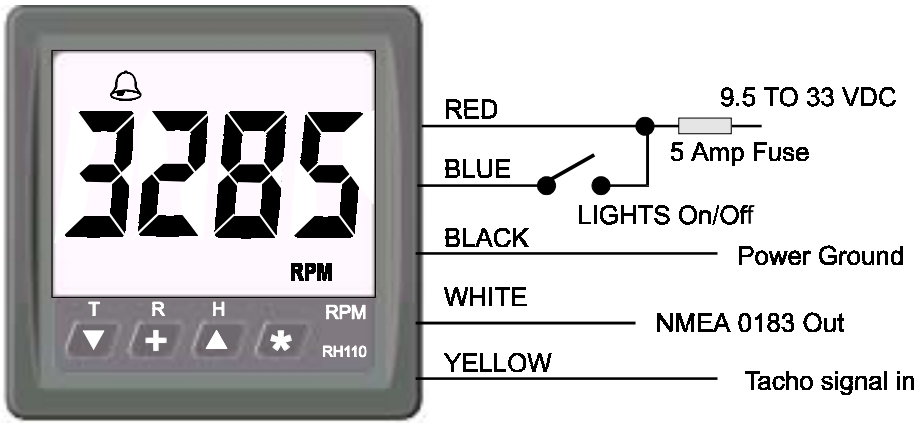


Figure 3



Operation

Key Functions

The ▼, ✚, ▲ and ✱ (**T**, **R**, **H** and ✱) keys are used to select what to display, set backlight levels, calibrate RPM and set/change constants such as alarm values. New information is automatically saved to non-volatile memory.

Backlight Intensity

Press ✚ the key 1/2 second to adjust the backlight level for night viewing. Each time you press the ✚ key 1/2 second, the level will get brighter 1, 2, 3, 4, OFF, 1, 2, ... etc. The blue backlight ON/OFF control wire must be switched to +12/24V for the backlights to work and offers external backlight ON/OFF control. If ON/OFF control is not required, connect the blue wire to +12/24VDC permanently.

Turning Alarms ON/OFF

Press the ▲ key 1/2 second to turn alarms ON. The alarm icon will light. Press the ▼ key 1/2 second to disable the alarms.

Display Elapsed Time, RPM, Engine Hours

Press the **T**, **R** or **H** key to select Elapsed Time, RPM or Engine Hours display.