

# CruzPro<sup>®</sup>

SLT110



Speed, Temperature Log

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# Introduction

The SLT110 provides accurate digital instrumentation for boat speed and average boat speed, trip distance and total distance traveled, water temperature, elapsed time and provides a race timer that can be preset to two different (pre-programmable) values.

The SLT110 displays speed and average speed up to 50.0 Knots (58 M.P.H.) in tenths, very accurate water temperature in degrees F or C in tenths, trip log to 999.9 miles and permanent log to 9,999 miles. A downcounting race timer is presettable for two different start times from 1 to 99 minutes each. It beeps off the minutes and last ten seconds before reaching zero. After reaching zero, the race timer continues to track elapsed time.

Speed can be displayed in Knots, MPH and KM/H with selectable display damping. Temperature can be displayed in degrees Fahrenheit or Celsius. Speed, temperature and clock speed may all be calibrated using the front panel keys.

Five levels of backlighting can be selected and remotely switched ON/OFF. All setup and calibration constants are saved to a non-volatile memory. The SLT110 outputs NMEA 0183 data of boat speed, logs, and water temperature and works on both 12 and 24 VDC systems.

The SLT110 with its large display digits draws only .035 amps and only .055 amps with full backlighting. Both transom mount and thru-hull mount speed/temperature transducers are available separately.

# Specifications

**Power supply:** 9.50 to 33.00 VDC, .037 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:** Speed, Average Speed, Water Temperature, Race Timers, Elapsed time

**Resolution:** 0.1 Knot, MPH or KM/H, 0.1 deg F or C

**Accuracy:** Front panel adjustable speed, temperature, clock.

**Ranges:** Speed - 0.0 to 50.0 knots  
Temperature - 0.0 to 32.0 deg C  
Race Timer - 1 to 99 minutes

**Transducers:** Transom and thru-hull speed/temperature transducers available separately.

**Display:** 4 digit LCD, 5 levels of backlighting.

## **NMEA 0183 sentences:**

Water temperature: \$VWMTW,xx.x,C\*CS

Total/Trip Logs: \$VWVLW,xxxx,N,yyy.y,N\*CS

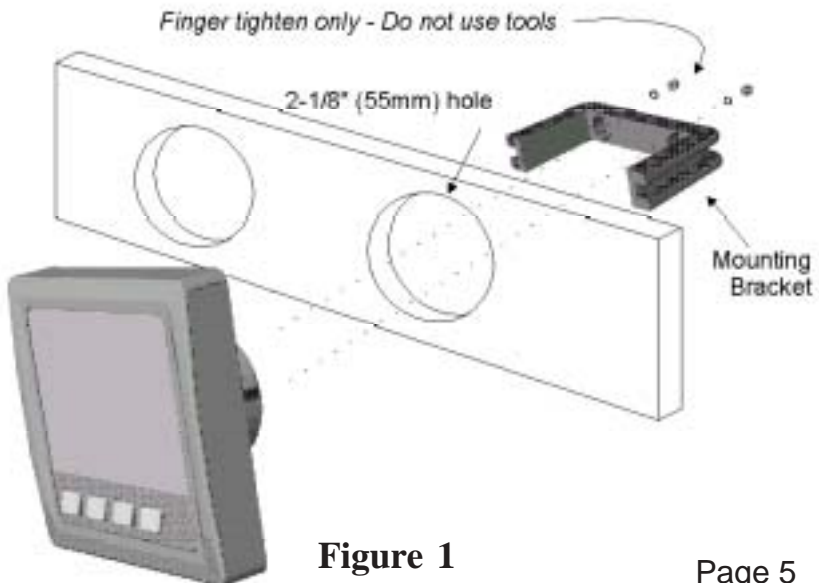
Speed (Knots/km/h): \$VWVHW,,,,,xx.x,N,yyy.y,K\*CS

CS=Check Sum

# Installation

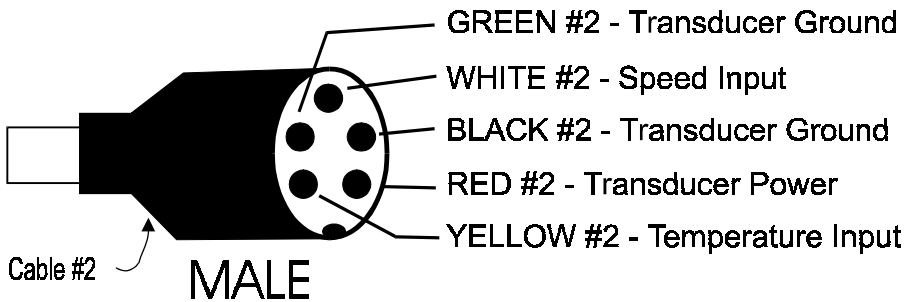
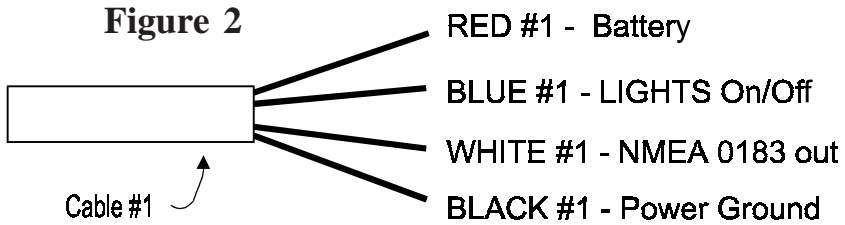
*Before starting the installation, please read this entire section first. Finger tighten the screws that mount the instrument bracket - It is not necessary or recommended to use tools.*

- Drill a 2-1/8" (55mm) mounting hole where you desire to mount the instrument (Figure 1).
- Connect the various wires from Cable 1 and Cable 2 as shown in Figures 2 and Figure 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

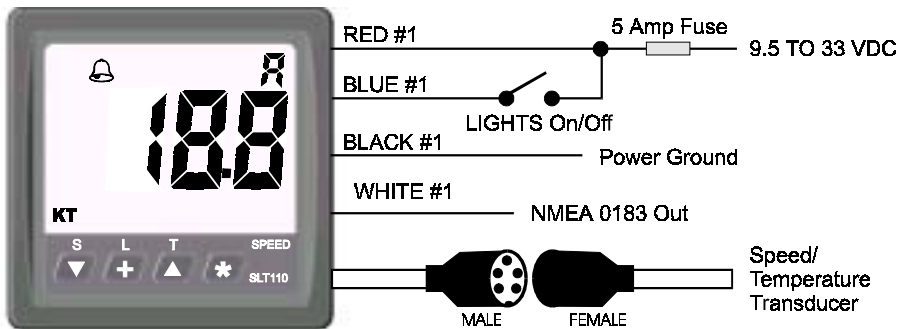


**Figure 1**

**Figure 2**



**Figure 3**



# Operation

## Key Functions

The **▼**, **+**, **▲** and **\*** (**S**, **L**, **T** and **\***) keys are used to select what to display, set backlight levels, calibrate speed, temperature and clock speed and set/change constants and units of display. 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 in cable #1 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.

## Display Speed/Logs/Water Temperature

Press the **S**, **L**, or **T** key to select Speed, Logs or Water Temperature display. Pressing the **S** key again while displaying speed will toggle the display between speed and average speed. Pressing the **L** key again while displaying the distance traveled log will toggle the display between total distance traveled and trip distance traveled. The trip log displays with a decimal point such as "82.3" and the permanent log displays to a full digit such as "562" so you always know which log you are viewing.

## Display Average Speed

Press the **S** key for a second time to display the average speed. An "A" will be displayed above the speed to indicate Average Speed display. The damping used to compute the average speed is adjustable and can be set between 1 and 20 (see page 10).

## Display Trip Log

Press the **L** key for a second time to display the trip log. The trip log displays with a decimal point such as "82.3" and the permanent log displays to a full digit such as "562" so you always know which log you are viewing. Each time you press the **L** key the display will toggle between Permanent Log and Trip Log.

## Display Elapsed Time

Press the **T** key for 1/2 second to display the elapsed time since the instrument was turned on. When the elapsed time exceeds 60 minutes, the elapsed time clock displays hours and minutes in place of minutes and seconds and the semi-colon flashes.

## Resetting the Trip Log/Elapsed Time Clock

While viewing the Trip Log, press and hold the **+** key for 10 seconds (till you hear a long beep) to reset both the trip log and



elapsed time clock to zero.

## Display/Start/Setting the Race Timer

The race timer can be started with one of two different values between 1 and 99 minutes (factory preset to 5 and 10 minutes). To start the timer with the first value, press both the ▼ and + keys. The display will start counting down from 5:00, beeping at each minute and for each of the last ten seconds. To start the timer with the second (10 minute) value, press both the + and ▲ keys simultaneously.

If the timer was already running, the current value is displayed. To stop and preset the timer, press the appropriate key combination (▼ and + or the + and ▲ keys). To restart the timer, press the appropriate key combination again.

The race timer start times are factory preset to start at either 5 or 10 minutes. To change the first start value, press and hold the ▼ and + keys for ten seconds and use the ▼ and ▲ keys to adjust the first start value to any number between 1 and 99 minutes. Press the + key to save the new value to memory. To change the second race timer start value press and hold the + and ▲ keys for ten seconds and use the ▼ and ▲ keys to adjust the second start value to any number between 1 and 99 minutes. Press the + key to save the new value to memory.

## Calibrating Speed

To calibrate the displayed speed value, press and hold the **S** key for ten seconds while viewing boat speed (until you hear a long beep). Use the **▼** and **▲** keys to adjust the value to read correctly. Press the **+** key to save the new value to memory.

## Selecting Speed & Log Units of Measure

While viewing Speed, Average Speed, Trip Log or Permanent Log, simultaneously press both the **▼** and **▲** keys to step through **U1** (Knots/N miles), **U2** (MPH/Miles) and **U3** (KPH/Km). The units of measure for the logs will automatically be adjusted according to the chosen units of measure for the speed.

## Selecting Average Speed Damping

Press and hold the **▼** and **▲** keys for ten seconds while viewing Average Speed (until you hear a long beep). Use the **▼** and **▲** keys to adjust the Speed Damping value to any number between 1 and 20. Press the **+** key to save the new value to memory. The factory default Speed Damping is set to 10.

## Calibrating Temperature

To calibrate the temperature value, press and hold the **T** key for ten seconds while viewing water temperature (until you hear a long beep). Use the **▼** and **▲** keys to adjust the value to read correctly. Press the **+** key to save the new value to memory.

## Selecting Temperature Units (Deg. C/F)

While viewing water temperature, press both the **▼** and **▲** keys to toggle between **C** and **F**.

## Calibrating Clock Speed

While viewing Elapsed Time, press and hold both the **▼** and **▲** keys for ten seconds (until you hear a long beep). Use the **▼** and **▲** keys to adjust the displayed value UP and DOWN from 50. Raising the value above 50 makes the clock run faster, lowering the value below 50 makes the clock run slower. Press the **+** key to save the new value to memory.

## NMEA 0183 Sentences

The SLT110 outputs serial data of boat speed, water temperature and both permanent and trip logs in NMEA 0183 serial data format. The sentences are output in the following formats:

Water temperature (C): \$VWMTW,xx.x,C\*CS

Total/Trip Logs (N.Mi): \$VWVLW,xxxx,N,yyy.y,N\*CS

Speed (Knots/km/h): \$VWVHW,,,,,xx.x,N,yyy.y,K\*CS

CS=Check Sum

## 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.







## Other CruzPro Products

- Depthsounders/w Keel Offset, Deep/Shallow/Anchor Drag Alarms
- PC Based DSP Fishfinder for Windows 98, 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 Stainless 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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