

# CruzPro®

CE

WTP110



Precision

Sea Water Temperature Gauge

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## Introduction

The CruzPro WTP110 provides accurate digital instrumentation for sea water temperature with a resolution of 0.01 degree Fahrenheit or Celsius.

For maximum accuracy, the displayed temperature may be calibrated using the front panel keys to compensate for slight differences in temperature transducers.

You can set high and low temperature alarms and a temperature trend arrow lets you know with a glance if the sea temperature is getting warmer, cooler or constant.

Five levels of backlighting can be selected and remotely switched ON/OFF. All setup and calibration constants are saved to a nonvolatile memory. The WTP110 outputs standard NMEA 0183 data of water temperature in Degrees F and degrees C and works on both 12 and 24 VDC systems.

The WTP110 with its large display digits draws only .035 amps and only .055 amps with full backlighting. Both transom mount and thru-hull mount temperature transducers are available separately.

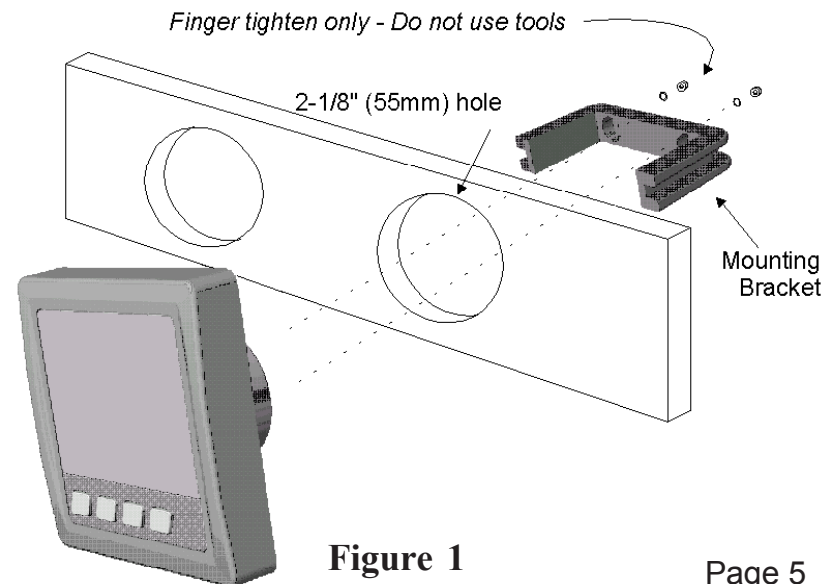
The WTP110 works with both 10Kohm and 30Kohm temperature senders and is fully compatible with the popular Dytek temperature probe.



## Installation

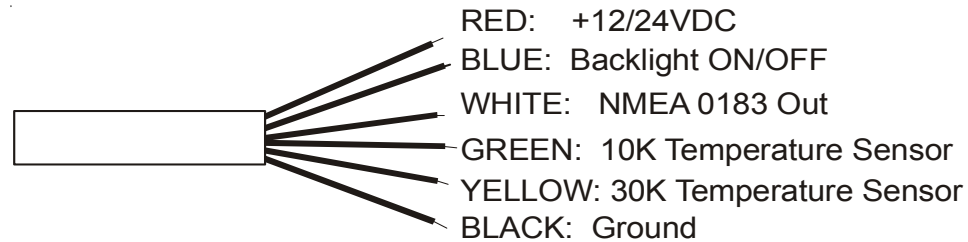
*Before starting the installation, please read this entire section first. Finger tighten the screws that mount the instrument bracket - It is not necessary or recommended to use tools.*

- Drill a 2-1/8" (55mm) mounting hole where you desire to mount the instrument (Figure 1).
- Connect the wires as shown in Figure 2.
- Carefully check all your wiring and then mount the instrument in the hole. Use only finger tension to tighten the bracket hold-down nuts



**Figure 1**

**Figure 2 - WTP110 Wiring Diagram**



Notes:

- a) When using the 10K ohm temperature sensor connect both the GREEN and YELLOW wires to the temperature sensor white wire. Connect the temperature sensor black wire and bare (shield) wire to Ground.
- b) When using the Dytex 30K ohm temperature sensor connect the outer tip of the male 3.5mm stereoplug to the WTP110 Yellow wire and connect the two other connections of the 3.5mm stereo plug to Ground. Do not connect the GREEN wire to anything.
- c) The WHITE NMEA 0183 serial data output wire can be left disconnected or you can connect this wire to a NMEA 0183 data repeater input for remote monitoring of the WTP110 temperature display.
- d) The BLUE Backlight ON/OFF wire must be connected to +12/24VDC for the backlights to work. Use the front panel keys to set the backlight intensity.

# Operation

## Key Functions

The ▼, +, ▲ and \* keys are used to select what to display, set backlight levels, calibrate temperature, set alarms and change units of measure. New information is automatically saved to a nonvolatile memory.

## Backlight Intensity

Press + the key 1/2 second to adjust the backlight level for night viewing. Each time you press the + key for 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 #2 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 backlight ON/OFF wire to +12VDC or +24VDC permanently.

## View Sea Water Temperature

Sea Water Temperature is normally displayed except when setting alarms or viewing Maximum Temperature Seen or Minimum Temperature Seen memory .

### View/Set Low Temperature Alarms

To set the Low Temperature Alarm value, press the ▼ key for ten seconds while viewing water temperature (until you hear a long beep). Use the ▼ and ▲ keys to adjust the value. Press the + key for 1/2 second to save the new value to memory.

### View/Set High Temperature Alarms

To set the High Temperature Alarm value, press the ▲ key for ten seconds while viewing water temperature (until you hear a long beep). Use the ▼ and ▲ keys to adjust the value. Press the + key for 1/2 second to save the new value to memory.

### Arming and Disarming the Temperature Alarms

To arm (enable) the low and high temperature alarms, press the ▲ key for one half second while viewing water temperature. The alarm bell symbol will be displayed. If the temperature drops below the Low Temperature alarm value or increases above the High Temperature alarm value (and the alarms are armed), then the alarm buzzer will sound and the alarm bell will flash.

To disarm (disable) the low and high temperature alarms, press the ▼ key for one half second while viewing water temperature. The alarm bell symbol will disappear.

### View Minimum Temperature Seen Memory

To view the minimum temperature seen (since last reset), quick press both the Use the ▼ and + keys. The ▼ icon will blink and after 5 second the display will revert to showing Temperature.

### View Maximum Temperature Seen Memory

To view the maximum temperature seen (since last reset), quick press both the Use the + and ▲ keys. The ▲ icon will blink and after 5 second the display will revert to showing Temperature.

### Reset Minimum/Maximum Temperature seen Memory

To reset the minimum and maximum temperature seen memories, press both the ▼ and ▲ keys for ten seconds while viewing water temperature (until you hear a long beep).

### Calibrating Temperature

To calibrate the temperature value, press and hold both the ▲ and \* keys 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 for 1/2 second to save the new value to memory. The ▼ and ▲ icons will flash while in temperature calibration mode.

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

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

### NMEA 0183 Sentences

The WTP110 outputs serial data of water temperature once per second in standard NMEA 0183 serial data format. The sentences are output in the following formats:

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

Water temperature (Degrees F): \$IIXDR,G,xx.xx\*CS

Where CS is the NMEA 0183 checksum.

### Temperature Trend Indicators

To help you see if the sea water temperature is falling, rising or stable the WTP110 keeps track of this information and displays an UP arrow “▲”, a down arrow “▼” or no arrow.

The sensitivity of the temperature trend indicators (how fast it responds and the duration of its memory) is adjustable using the front panel keys. To adjust the temperature trend indicator sensitivity, press and hold both the ▼ and \* keys for ten seconds while viewing water temperature (until you hear a long beep). Use the ▼ and ▲ keys to adjust the value between 0 (fast/short memory) and 200 (slow/long memory). Press the + key for 1/2 second to save the new value to memory.

### Display Unit Serial Number

To display the unit serial number, quick press both the + and \* keys while viewing water temperature.

## Notes and Warnings

- a) During calibration or setting of values, pressing and holding down the ▼ or ▲ keys will cause the values to scroll faster the longer you hold down the keys.
- b) A “quick press” is any press of a key or keys lasting less than 1/2 second.
- c) A 1/2 second press can be any press longer than 1/2 second and shorter than 2 seconds.
- d) On applying power to the WTP110, the software version is displayed for two seconds (e.g. “- - 1.0”).
- e) The temperature will be unstable for the first 10-15 seconds after the power is first turned on. During this time a “U” will be displayed.
- f) The WTP110 will display “-HI-” if the temperature sensor connections are a short circuit or too low a resistance..
- g) The WTP110 will display “-LO-” if the temperature sensor connections are open circuit or too high a resistance.
- h) The factory default transducer selection is for a CruzPro THT-1 with a resistance of 10Kohm @ 77 deg F (25 deg C). See the “Selecting 10K or 30K Transducer” section of this manual to change the transducer selection.
- i) Be sure to wire the transducer as per the instructions on page 6. The wiring is different between the 10Kohm temperature transducer and the 30Kohm temperature transducer.

# Specifications

**Power supply:** 9.50 to 33.00 (absolute maximum) VDC, 0.045 amps nominal. Operation outside this range can cause erratic behavior or damage.

**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:** Water Temperature, High and Low alarms, temperature trend arrows, alarm symbol.

**Resolution:** 0.01 deg Fahrenheit or Celsius.

**Accuracy:** Front panel adjustable.

**Range:** 32.00 to 99.99 deg F (0.00 to 37.77 deg C)

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

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

**NMEA 0183 sentences:** Water temperature:  
(Degrees C) \$VWMTW,xx.xx,C\*CS  
(Degrees F) \$IIXDR,G,xx.xx\*CS

CS=Check Sum

### Selecting 10K or 30K Transducer

The factory default transducer selection is for a CruzPro THT-1 with a resistance of 10Kohm @ 77 deg F (25 deg C). To change the selection:

- 1) Turn OFF the power to the WTP110.
- 2) Press and hold the \* key and while pressing the \* key, turn ON the power to the WTP110.
- 3) Continue to hold down the \* key for another two seconds.
- 4) Let go of the \* key and within 1/2 second, quick press the ▼ key to select the 30Kohm temperature transducer OR press the ▲ key to select the 10Kohm temperature transducer.

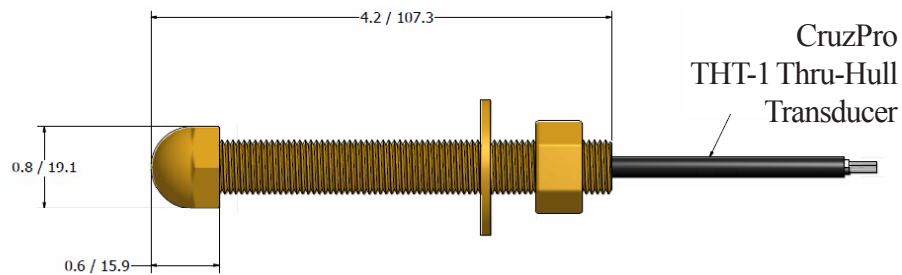
The transducer selection will be saved to a non-volatile memory and will not be forgotten when the power is turned off.

Be sure to wire the transducer as per the instructions on page 6. The wiring is different between the 10Kohm temperature transducer and the 30Kohm transducer.

## Transducer Information

The WTP110 temperature transducer has the following characteristics:

Temperature		30K Probe Resistance	10K Probe Resistance
50.00 deg F	10.00 deg C	58.80K	21.28K
59.00 deg F	15.00 deg C	46.20K	16.44K
68.00 deg F	20.00 deg C	37.00K	12.78K
77.00 deg F	25.00 deg C	30.00K	10.00K
86.00 deg F	30.00 deg C	24.42K	7.870K



CruzPro  
TMT-1 Transom  
Mount Transducer



## 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 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
- Multi-Function Instruments

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