User Manual
DOCUMENT # 605192

Pro10

USER MANUAL

English

a xylem brand

Item # 605192
Rev A, July 2014
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WARRANTY

The YSI Professional 10 instrument (Pro10) is warranted for three (3) years from date of purchase by the end user against defects in materials and workmanship, exclusive of batteries and any damage caused by defective batteries. Pro10 cable assemblies are warranted for two (2) years from date of purchase by the end user against defects in material and workmanship. Pro10 pH and ORP sensors are warranted for one (1) year from date of purchase by the end user against defects in material and workmanship. Pro10 instruments & cables are warranted for one (1) year from date of purchase by the end user against defects in material and workmanship when purchased by rental agencies for rental purposes. Within the warranty period, YSI will repair or replace, at its sole discretion, free of charge, any product YSI determines to be covered by this warranty.

To exercise this warranty, call your local YSI representative, or contact YSI Customer Service in Yellow Springs, Ohio at +1 937 767-7241, 800-897-4151 or visit YSI.com for a Product Return Form. Send the product and proof of purchase, transportation prepaid, to the Authorized Service Center selected by YSI. Repair or replacement will be made and the product returned, transportation prepaid. Repaired or replaced products are warranted for the balance of the original warranty period, or at least 90 days from date of repair or replacement.

LIMITATION OF WARRANTY

This Warranty does not apply to any YSI product damage or failure caused by:

1. Failure to install, operate or use the product in accordance with YSI's written instructions;
2. Abuse or misuse of the product;
3. Failure to maintain the product in accordance with YSI's written instructions or standard industry procedure;
4. Any improper repairs to the product;
5. Use by you of defective or improper components or parts in servicing or repairing the product;
6. Modification of the product in any way not expressly authorized by YSI.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. YSI'S LIABILITY UNDER THIS WARRANTY IS LIMITED TO REPAIR OR REPLACEMENT OF THE PRODUCT, AND THIS SHALL BE YOUR SOLE AND EXCLUSIVE REMEDY FOR ANY DEFECTIVE PRODUCT COVERED BY THIS WARRANTY. IN NO EVENT SHALL YSI BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY DEFECTIVE PRODUCT COVERED BY THIS WARRANTY.

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INTRODUCTION

Thank you for purchasing the YSI Pro10, an instrument from the YSI *Professional Series* product family. The Pro10 measures temperature and either pH or ORP in water. The Pro10 features an impact resistant and waterproof (IP-67) case, a rugged MS-8 (military-spec) cable connector, backlit display, user-selectable sensor options, 50 data set memory and a rubber over-mold case.

The Pro10 provides valuable instructions and prompts near the bottom of the display that will guide you through operation and use.

GETTING STARTED

> ⓘ *The Pro10 cannot communicate to a PC via a ProComm communications saddle.*

INITIAL INSPECTION

Carefully unpack the instrument and accessories and inspect for damage. Compare received parts with items on the packing list. If any parts or materials are damaged or missing, contact YSI Customer Service at 800-897-4151 (+1 937 767-7241) or the authorized YSI distributor from whom the instrument was purchased.

BATTERY INSTALLATION

The instrument requires 2 alkaline C-cell batteries. Under normal conditions, the average battery life is 425 hours at room temperature without using the back light. A battery symbol  will blink in the lower, left corner of the display to indicate low batteries when approximately 1 hour of battery life remains.

To install or replace the batteries:

1. Turn the instrument off and flip over to view the battery cover on the back.
2. Unscrew the four captive battery cover screws.
3. Remove the battery cover and remove the old batteries if necessary.
4. Install the new batteries, ensuring correct polarity alignment (figure 1).
5. Place the battery cover on the back of the instrument and tighten the four screws. Do not over-tighten.

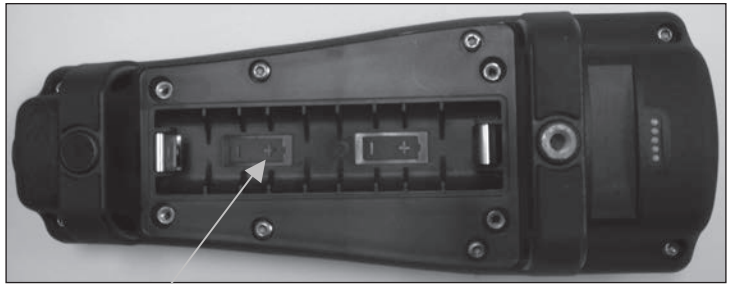

Figure 1. Pro10 with battery cover removed. Notice battery symbols indicating polarities.

> *The waterproof instrument case is sealed at the factory and is not to be opened, except by factory-authorized service technicians. Do not attempt to separate the two halves of the instrument case as this may damage the instrument, break the waterproof seal, and will void the warranty.*

KEY PAD

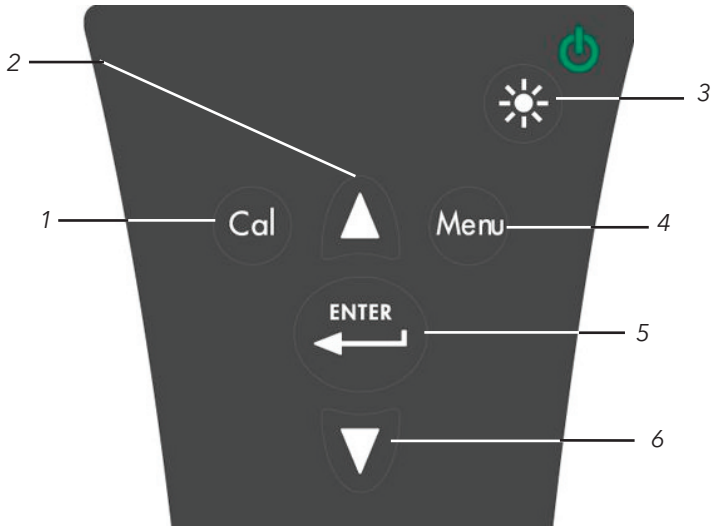

Figure 2, Keypad

Number	*Key*	*Description*
1	Cal	**Calibrate** Press and hold for 3 seconds to calibrate. Opens Calibrate menu from the Run screen.
2	▲	**Up Arrow** Use to navigate through menus, to navigate through box options along the bottom of the Run screen and to increase numerical inputs.
3	⏻ ☀	**Power and Backlight** Press once to turn instrument on. Press a second time to turn backlight on. Press a third time to turn backlight off. Press and hold for 3 seconds to turn instrument off.
4	Menu	**Menu** Press to enter the System Setup menu from the Run screen.
5	ENTER	**Enter** Press to confirm entries and selections.
6	▼	**Down Arrow** Use to navigate through menus, to navigate through box options at the bottom of the Run screen and to decrease numerical inputs.

CONNECTING THE SENSOR AND CABLE

"Bulkhead" refers to the sensor-end of the probe/cable assembly where an ion selective electrode (ISE - either pH or ORP) is installed (figure 3). The temperature sensor is located next to the sensor port on the bulkhead and is not replaceable.

When a port is empty on the cable, the bulkhead connector is not water-proof. Do not submerge the cable without a sensor installed! Submerging the cable without a sensor installed may cause permanent damage to the cable that is not covered under warranty. Install a YSI ProSeries port plug into the port if not installing a pH or ORP sensor.

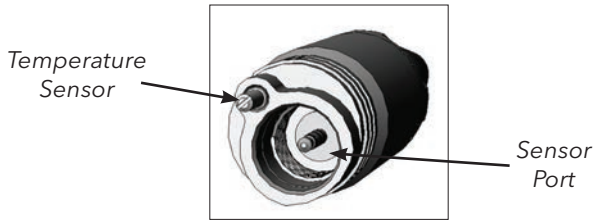

Figure 3.
The Pro10 bulkhead with 1 sensor port and a temperature sensor.

INSTALLING THE ISE SENSOR

The Pro10 has three compatible ISE sensors: pH (model #1001), pH-amplified (model #1001A) and ORP (model #1002).

Sensor Installation:

1. Locate sensor port on the 60510 cable, see figure 3.
2. If using the cable for the first time, remove the plastic plug from the cable's bulkhead port by pulling it straight out of the port. This can be discarded. Otherwise, remove the old sensor by unscrewing it from the bulkhead.
3. Ensure both the sensor connector and bulkhead connector are clean and dry.
4. Grasp the sensor with one hand and the cable bulkhead in the other.
5. Push the sensor into the connector on the cable until it is firmly seated with only 1 o-ring visible. Failure to properly seat the sensor may result in damage.
6. Twist the sensor clockwise to engage the threads and finger tighten. Do NOT use a tool. This connection is water-tight.

The sensor is shipped with the tip in a storage bottle. To remove, twist the bottle off the lid and remove the bottle from the sensor. Next, remove the o-ring and slide the lid off the sensor.

CONNECTING THE PROBE/CABLE ASSEMBLY TO THE INSTRUMENT

To connect the cable, align the keys on the cable connector to the slots on the instrument connector. Push together firmly and then twist the outer ring until it locks into place (figure 4). This connection is water-proof.

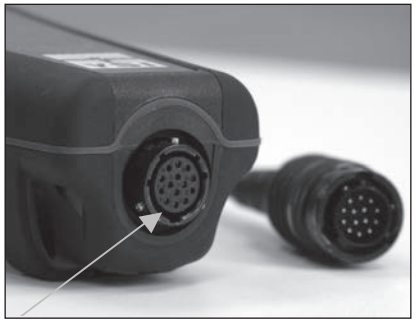

Figure 4, Note the keyed connector.

RUN SCREEN

Press the power/backlight key to turn the instrument on. The instrument will run through a self test and briefly display a splash screen with system information before displaying the main Run screen (figure 5). A language selection menu will display the first time the Pro10 is powered on. See the First Power On section of this manual for more information.

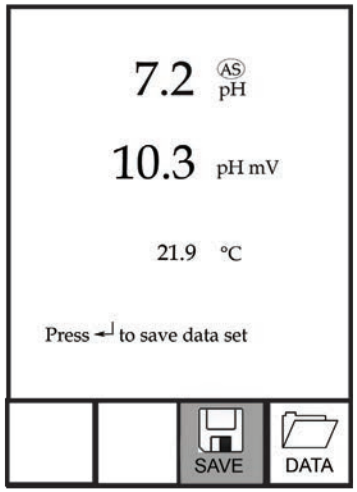

Figure 5, Run screen.

BACKLIGHT

Once the instrument is powered on, pressing the power/backlight key will turn on the display backlight. The backlight will remain on until the key is pressed again or after two minutes of not pressing any key on the keypad.

POWERING OFF

To turn the instrument off, press and hold the power/backlight key for three seconds.

NAVIGATION

The up and down arrow keys allow you to navigate through the functions of the Pro10.

NAVIGATING THE RUN SCREEN

When in the Run screen, the up and down arrow keys will move the highlighted box along the bottom options. Once a box is highlighted, press enter to access the highlighted option.

Description of Run screen box functions from left to right:

Option	*Description*
SAVE	Highlight and press enter to save displayed data to memory.
DATA	Highlight and press enter to view and/or erase saved data.

NAVIGATING THE SYSTEM SETUP MENU

When in the System Setup menu, the up and down arrow keys will move the highlighted bar up and down the system setup options. See the System Setup menu section of this manual for more information about these options.

FIRST POWER ON

The instrument will step through an initial configuration when powered on for the first time to select the language. Use the up or down arrow keys to highlight the appropriate language, then press enter to confirm (figure 6). The language can be changed again in the System Setup menu.

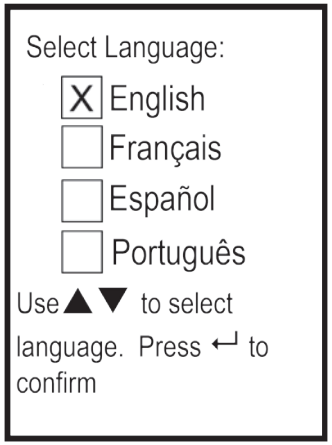

Figure 6, Select language.

After selecting a language, sensor and membrane, the Run screen will be displayed. The next time the instrument is powered up, the Run screen will display immediately after the splash screen. If the sensor type or membrane type is changed, ensure it is updated in the System Setup menu.

SYSTEM SETUP MENU

Press the menu key to access the System Setup menu, figure 7. Use the up and down arrow keys to scroll through setup options.

EXITING THE SYSTEM SETUP MENU

To exit the System Setup menu, press the down arrow key until the ESC - Exit box is highlighted, then press enter to return to the Run screen.

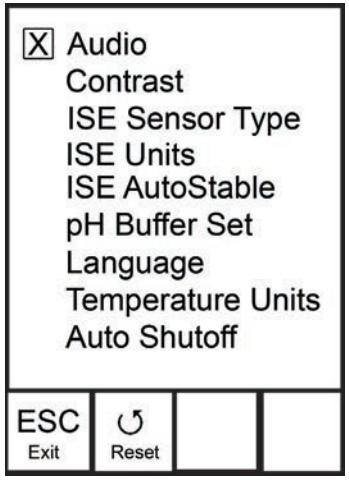

Figure 7, System Setup menu. Audio is enabled.

AUDIO

Audio can be enabled by highlighting Audio and pressing enter. When enabled, there will be an 'X' in the box next to Audio.

When Audio is enabled, the Pro10 will beep twice to indicate stability when Auto Stable is enabled. The instrument will also beep when a key is pressed. When Audio is disabled, the Pro10 will not beep.

CONTRAST

To adjust the display Contrast, use the up or down arrow keys to highlight Contrast, then press enter. Next, use the up or down arrow keys to adjust the contrast. The up arrow key will darken the contrast and the down arrow key will lighten the contrast. After adjusting the contrast, press enter to save and exit the Contrast adjustment function.

ALTERNATE CONTRAST ADJUSTMENT OPTION

If necessary, there is an alternate method of adjusting the contrast. To adjust the contrast, press and hold the menu key, then press the up arrow key to darken the contrast or press the down arrow key to lighten the contrast.

ISE SENSOR TYPE

ISE Sensor Type sets the type of ISE sensor being used; either pH (model #1001 or #1001A) or ORP (model #1002).

Use the up or down arrow keys to highlight ISE Sensor Type, then press enter to open a submenu. Highlight the sensor type corresponding to the sensor installed on the cable and press enter to confirm. The enabled sensor type will have an 'X' in the box next to it. Next, use the down arrow key to highlight the ESC – Exit box, then press enter to save changes and to close the sensor submenu.

ISE UNITS

Highlight ISE Units and press enter to open a submenu that allows you to select the ISE units to be displayed on the Run screen. Highlight a unit and press enter to enable or disable it. An enabled ISE unit will have an 'X' in the box next to it. Highlight the ESC-Exit box along the bottom of the display and press enter to save any changes and to close the ISE Units submenu.

When pH is enabled in the ISE Sensor Type menu, there are two selectable measurement units: pH and pH mV. pH mV is the sensor's electrical measurement signal before being converted into pH units. pH mVs can help you determine if you are performing a good calibration and the condition of the pH electrode.

When ORP is enabled in the ISE Sensor Type menu, only ORP mVs can be enabled as the ISE unit.

ISE AUTO STABLE

Auto Stable utilizes preset values to indicate when a reading is stable. The preset values are adjustable in the System Setup menu. The user can input a % change (0.0 to 9.9%) in measurement reading over 'x' amount of time in seconds (3 - 19). The auto stable criteria is applied to the pH measurement or the ORP mV reading depending on which sensor is enabled in the ISE Sensor menu.

When Auto Stable is enabled, an (AS) symbol will display next to the reading on the Run screen and blink during stabilization. When the ISE reading stabilizes based on the Auto Stable settings, the (AS) symbol will display steadily and the instrument will beep twice if Audio is turned on.

To enable Auto Stable, highlight ISE Auto Stable, then press enter to open the submenu. Next, use the up or down arrow keys to highlight the % change or seconds (secs) input field, then press enter to make the highlighted field adjustable. Use the up or down arrow keys to adjust the selected value, then press enter to confirm changes. Once

you have confirmed any changes, highlight the ESC-Exit box along the bottom of the display and press enter to close the Auto Stable submenu. To disable Auto Stable, set the % Change input to 0.0.

pH BUFFER SET

Highlight pH Buffer Set and press enter to open a submenu that allows you to select the Buffer Set used for auto buffer recognition during a pH calibration. There are two buffer set options: USA (4, 7 and 10) and NIST (4.01, 6.86 and 9.18). Highlight the buffer set and press enter to enable. The enabled buffer set will have an 'X' in the box next to it. Highlight the ESC-Exit box and press enter to save any changes and to close the submenu.

LANGUAGE

Highlight Language and press enter to open a submenu that allows you to change the language. Highlight the desired language (English, Spanish, Portuguese, or French) and press enter to enable. The enabled language will have an 'X' in the box next to it. Highlight the ESC-Exit box and press enter to save any changes and to close the Language submenu.

The text in the boxes along the bottom of the Run screen will always be displayed in English regardless of the language enabled in the System Setup menu.

TEMPERATURE UNITS

Highlight Temperature Units and press enter to open a submenu that allows you to change the temperature units displayed on the Run screen. Highlight the desired unit (Celsius or Fahrenheit) and press enter to enable. The enabled temperature unit will have an 'X' in the box next to it. Only one unit may be enabled at a time. Highlight the ESC-Exit box and press enter to save any changes and to close the Temperature Units submenu.

AUTO SHUTOFF

Auto Shutoff allows you to set the instrument to turn off automatically after a period of time since the last button press. In the setup menu, use the up or down arrow keys to highlight Auto Shutoff, then press enter to open the submenu. Press enter while the minute field is highlighted to make it adjustable. Next, use the up or down arrow keys to adjust the shut off time from 0 to 60 minutes. Press enter to save the new shutoff

time. Next, highlight the ESC-Exit box and press enter to close the submenu. To disable Auto Shutoff, set the Time in Minutes to 0 (zero).

RESETTING THE SYSTEM SETUP MENU TO FACTORY DEFAULT

To reset the Pro10 settings back to factory default, press the down arrow key while in the System Setup menu until the Reset - ↺ box is highlighted, then press enter. The instrument will prompt you to confirm the reset. Highlight Yes and press enter to continue with the reset or highlight No and press enter to cancel the reset. A Factory Reset will not affect data saved in the instrument's memory.

The following will be set in the Pro10 after performing a reset:

Parameter	*Reset Defaults*
Audio	On
Contrast	Set to mid range
ISE Sensor Type	pH
ISE Units	pH
ISE Auto Stable	Off (0.0 % Change and 10 seconds)
pH Buffer Set	USA
Temperature Units	°C
Language	English
Auto Shutoff	30 minutes
ISE Calibration	Reset to factory default*

*It is recommended to perform an ISE calibration after performing a reset.

CALIBRATION

TEMPERATURE

All Pro10 cables have built-in temperature sensors. Temperature calibration is not required nor is it available.

pH CALIBRATION

The Pro10 pH sensors can be calibrated by performing a 1, 2 or 3-point calibration. At least one of the calibration points must be done with

pH buffer 7 or 6.86. For auto buffer recognition to work properly with an older or dirty sensor, calibrate in buffer 7 or 6.86 first. For highest accuracy, use fresh, traceable pH buffers and ensure the sensor and calibration cup are clean.

1-POINT CALIBRATION

1. Place the sensor in pH buffer 7 or 6.86 and allow the temperature and pH readings to stabilize.
2. Press and hold Cal for three seconds.
3. Highlight pH and press enter. If pH is not listed as an option, check the System Setup menu to ensure pH is enabled in the ISE Sensor Type menu.
4. Highlight 1 point and press enter.
5. If necessary, use the up and down arrow keys to adjust the pH buffer value. Note the pH mV reading which ideally should be between -50 and +50 in buffer 7.
6. Press enter to complete the calibration or press Cal to cancel.
7. 'Calibration Successful' will display for a few seconds to indicate a successful calibration and then the instrument will return to the Run screen.
8. If the calibration is unsuccessful, an error message will display on the screen. Press the Cal key to exit the calibration error message and return to the Run screen. See the Troubleshooting guide for possible solutions.

2-POINT CALIBRATION

1. Place the sensor in pH buffer 7 or 6.86 and allow the temperature and pH readings to stabilize.
2. Press and hold Cal for three seconds.
3. Highlight pH and press enter. If pH is not listed as an option, check the System Setup menu to ensure pH is enabled in the ISE Sensor Type menu.
4. Highlight 2 point and press enter.
5. If necessary, use the up and down arrow keys to adjust the pH buffer value. Note the pH mV reading which ideally should be between -50 and +50 in buffer 7.
6. Press enter to continue to second point.
7. Rinse the sensor and place it in the second pH buffer (4/4.01 or 10/9.18).
8. If necessary, use the up and down arrow keys to adjust the pH buffer value.
9. Wait approximately 30 to 60 seconds for the pH sensor to stabilize and for the temperature reading to stabilize. Note the pH mV reading. pH mVs in buffer 4 should be +159 to 180 mV from the previous buffer 7 pH mV value. pH mVs in buffer 10 should be -159 to 180 mV from the previous buffer 7 pH mV value.
10. Press enter to complete the calibration or press Cal to cancel.
11. 'Calibration Successful' will display for a few seconds to indicate a successful calibration and then the instrument will return to the Run screen.
12. If the calibration is unsuccessful, an error message will display on the screen. Press the Cal key to exit the calibration error message and return to the Run screen. See the Troubleshooting section of this manual for possible solutions.

3-POINT CALIBRATION

1. Place the sensor in pH buffer 7 or 6.86 and allow the temperature and pH readings to stabilize.
2. Press and hold Cal for three seconds.
3. Highlight pH and press enter. If pH is not listed as an option, check the System Setup menu to ensure pH is enabled in the ISE Sensor Type menu.
4. Highlight 3 point and press enter.
5. If necessary, use the up and down arrow keys to adjust the pH buffer value. Note the pH mV reading which should be between -50 and +50 in buffer 7.
6. Press enter to continue to second point.
7. Rinse the sensor and place it in the second pH buffer (4/4.01 or 10/9.18). If necessary, use the up and down arrow keys to adjust the pH buffer value.
8. Wait approximately 30 to 60 seconds for the pH sensor to stabilize and for the temperature reading to stabilize. Note the pH mV reading. pH mVs in buffer 4 should be +159 to 180 mV from the previous buffer 7 pH mV value. pH mVs in buffer 10 should be -159 to 180 mV from the previous buffer 7 pH mV value.
9. Rinse the sensor and place it in the third pH buffer (4/4.01 or 10/9.18). If necessary, use the up and down arrow keys to adjust the pH buffer value.
10. Wait approximately 30 to 60 seconds for the pH sensor to stabilize and for the temperature reading to stabilize. Note the pH mV reading. pH mVs in buffer 4 should be +159 to 180 mV from the previous buffer 7 pH mV value. pH mVs in buffer 10 should be -159 to 180 mV from the previous buffer 7 pH mV value.
11. Press enter to complete the calibration or press Cal to cancel.

12. 'Calibration Successful' will display for a few seconds to indicate a successful calibration and then the instrument will return to the Run screen.
13. If the calibration is unsuccessful, an error message will display on the screen. Press the Cal key to exit the calibration error message and return to the Run screen. See the Troubleshooting section of this manual for possible solutions.

ORP CALIBRATION

1. Place the clean sensor in ORP calibration solution. Wait for the ORP and temperature readings to stabilize.
2. Press and hold Cal for three seconds.
3. Highlight ORP and press enter. If ORP is not listed as an option, check the System Setup menu to ensure ORP is enabled in the ISE Sensor Type menu.
4. Use the up and down arrow keys to adjust the ORP calibration solution value.
5. Wait for the temperature reading to stabilize, then press enter to complete the calibration or press Cal to cancel.
6. 'Calibration Successful' will display for a few seconds to indicate a successful calibration and then the instrument will return to the Run screen.
7. If the calibration is unsuccessful, an error message will display on the screen. Press the Cal key to exit the calibration error message and return to the Run screen. See the Troubleshooting section of this manual for possible solutions.

TAKING MEASUREMENTS

Before taking measurements, be sure the instrument has been calibrated to ensure the most accurate readings. Install the sensor guard to protect the sensor.

Place the probe in the sample to be measured and give the probe a quick shake to release any air bubbles. Be sure the sensors are completely submerged in the sample.

pH/ORP

pH and ORP readings are typically quick and accurate. However, it may take the sensor a little longer to stabilize if they become coated or fouled. To improve the response time of a sensor, follow the cleaning steps in the Maintenance section of this manual.

SAVING AND VIEWING DATA

The Pro10 can store 50 data sets in non-volatile memory for later viewing. A data set includes the values currently on the display, i.e. temperature and pH or ORP measurement data. Each data point is referenced with a data set number, 01 through 50.

SAVING DATA

From the Run screen, use the up or down arrow keys to highlight the Save box and press enter to save the current readings. The instrument will indicate the data set is saved and display the saved data set's number (figure 8).

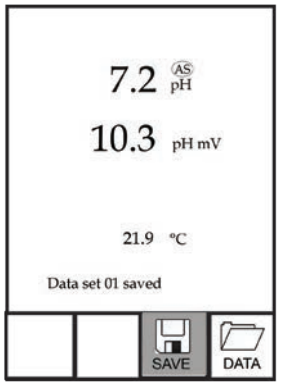

Figure 8, data set saved.

The instrument will display 'Memory Full' if all 50 data sets have been saved and you attempt to save another data set.

VIEWING AND ERASING SAVED DATA

Data mode allows you to view and erase saved data. From the Run screen, use the up or down arrow keys to highlight Data and press enter to access Data mode. Note the function boxes at the bottom of the display are different in Data mode (figure 9).

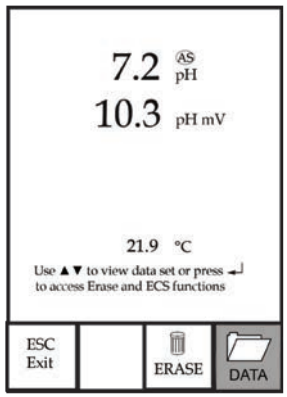

Figure 9, Data mode.

VIEWING DATA

Once in Data mode, use the up and down arrow keys to view saved data sets in sequential order or press enter to access the bottom functions. After accessing the bottom functions, highlight the Data box and press enter to regain access to scrolling through the saved data. The data set displayed is indicated by the data set number, 01 through 50.

ERASING DATA

While viewing saved data, press the enter key to access the function boxes at the bottom of the display. Next, use the up or down arrow keys to highlight Erase, then press enter. The instrument will give you the option to erase one data set or all data sets (figure 10).

Figure 10, Erase data mode.

Use the up or down arrow key to select Erase Data Set, Erase All Sets or the ESC-Exit function box, then press enter to confirm. Select ESC-Exit and press enter to exit Erase mode without erasing any data.

Select Erase Data Set and press enter to erase the data set that was displayed before entering Erase mode. For example, if data set 12 was displayed before entering erase mode, and Erase Data Set is selected, Data Set 12 will be erased from memory and the data sets AFTER that number will move up to keep them sequential. For example, if there are 15 records and number 12 is erased then 13 becomes 12, 14 becomes 13, and 15 becomes 14. The instrument will return to Data mode after erasing one data set.

Select Erase All Data Sets and press enter to clear the Pro10 memory and return to Data mode.

EXITING DATA MODE

While in Data mode, press enter to access the bottom functions. Next, highlight the ESC-Exit box and press enter to return to the Run screen.

CARE, MAINTENANCE AND STORAGE

This section describes the proper procedures for care, maintenance and storage of the sensors. The goal is to maximize their lifetime and minimize down-time associated with improper sensor usage.

GENERAL MAINTENANCE

GENERAL MAINTENANCE - GASKET AND O-RINGS

The instrument utilizes gasket and o-ring seals to prevent water from entering the battery compartment and the sensor port. Following the recommended procedures will help keep the instrument functioning properly.

If the gasket, o-rings and sealing surfaces are not maintained properly, it is possible that water can enter the battery compartment and/or sensor port of the instrument. If water enters these areas, it can damage the battery terminals or sensor port causing loss of battery power, false readings and corrosion to the sensors, ports or battery terminals. Therefore, when the battery compartment lid is removed, the gasket that provides the seal should be carefully inspected for

contamination (i.e. debris, grit, etc.) and cleaned with water and mild detergent if necessary.

The same inspection should be made of the o-rings associated with the pH or ORP sensor connector when replacing a sensor. The o-rings should be free of dirt or debris before installing the sensor onto the cable. If no dirt or damage to the o-rings is evident, then they should be lightly greased with the o-ring grease provided without removing them from their groove. However, if there is any indication of damage, the sensor o-ring should be replaced with an identical o-ring.

To remove the sensor o-rings:
Use a small, flat-bladed screwdriver or similar blunt-tipped tool to remove the o-ring from its groove near the sensor connector. Check the o-ring and the groove for any excess grease or contamination. If contamination is evident, clean the o-ring and nearby plastic parts with lens cleaning tissue or equivalent lint-free cloth. Alcohol can be used to clean the plastic parts, but use only water and mild detergent on the o-ring itself. Also, inspect the o-rings for nicks and imperfections.

ⓘ *Using alcohol on o-rings may cause a loss of elasticity and may promote cracking. Do not use a sharp object to remove the o-rings. Damage to the o-ring or the groove may result.*

To re-install the sensor o-rings:
Place a small amount of o-ring grease between your thumb and index finger. (More grease is not better!) Draw the o-ring through the grease while pressing the fingers together to place a very light covering of grease on the o-ring. Place the o-ring into its groove ensuring it does not twist or roll. Use the previously grease-coated finger to once again lightly go over the surface of the o-ring.

ⓘ *Do not over-grease the o-rings. Excess grease may collect particles that can compromise the seal. Excess grease can also cause the waterproofing capabilities of the o-ring to diminish, potentially causing leaks. If excess grease is present, remove it using a lens cloth or lint-free cloth.*

GENERAL MAINTENANCE - SENSOR PORT

It is important that the entire sensor connector end be dry when installing, removing or replacing a sensor. This will prevent water from entering the port. Once the sensor is removed, examine the

connector inside the port. If any moisture is present, use compressed air to completely dry the connector or let it air dry. If the connector is corroded, contact YSI Technical Support or the YSI authorized distributor where you purchased the instrument.

ⓘ *Remove sensors upside down (facing the ground) to help prevent water from entering the port upon removal.*

SENSOR MAINTENANCE

ⓘ *Typical working life for pH and ORP sensors is approximately 12-24 months depending on usage, storage and maintenance. Proper storage and maintenance generally extends the sensor's working life.*

SENSOR MAINTENANCE - TEMPERATURE

You must keep the temperature sensor free of build up. No additional maintenance is required. A toothbrush can be used to scrub the temperature sensor if needed.

SENSOR MAINTENANCE - pH AND ORP

ⓘ **CAUTION***: When using a cotton swab, be careful NOT to wedge the swab between the guard and the glass sensor. If necessary, remove cotton from the swab tip, so the cotton can reach all parts of the sensor tip without stress. You can also use a pipe cleaner for this operation if more convenient.*

Cleaning is required whenever deposits or contaminants appear on the glass or platinum sensor surfaces or when the sensor's response slows. The cleaning can be chemical and/or mechanical.

Removing the sensor from the cable may make cleaning easier. Initially, use clean water and a soft clean cloth, lens cleaning tissue, or cotton swab to remove all foreign material from the glass bulb or platinum button. Then use a moistened cotton swab to carefully remove any material that may be blocking the reference electrode junction of the sensor.

If good pH or ORP response is not restored, perform the following additional procedure:

1. Soak the sensor for 10-15 minutes in clean water containing a few drops of commercial dish washing liquid.
2. GENTLY clean the glass bulb and platinum button by rubbing with a cotton swab soaked in the cleaning solution.
3. Rinse the sensor in clean water (not DI water), wipe with a cotton swab saturated with clean water, and then rerinse with clean water.

If good pH or ORP response is still not restored, perform the following additional procedure:

1. Soak the sensor for 30-60 minutes in one molar (1 M) hydrochloric acid (HCl). This reagent can be purchased from most lab supply distributors. Be sure to follow the safety instructions included with the acid.
2. Rinse the sensor in clean water, wipe with a cotton swab saturated with clean water (not DI water), and then rerinse with clean water. To be certain all traces of the acid are removed from the sensor crevices, soak the sensor in clean water for about an hour with occasional stirring.

ⓘ **CAUTION**: *Do NOT mix the acid from the previous step with the chlorine bleach in the following step. Toxic gaseous products can be formed from the reaction between acid and chlorine bleach. Be certain to copiously rinse the sink and drain system of acid after its disposal and before disposal of the chlorine bleach.*

If biological contamination of the reference junction is suspected or if good response is not restored by the above procedures, perform the following additional cleaning step:

1. First, be sure all HCl acid from the previous cleaning step has been rinsed from the probe, sink and drain!
2. Soak the sensor for approximately 1 hour in a 1:1 dilution of commercially-available chlorine bleach.
3. Rinse the sensor with clean water (not DI water) and then soak for at least 1 hour in clean water with occasional stirring to remove residual bleach from the junction. (If possible, soak the sensor for a period of time longer than 1 hour in order to be certain all traces of chlorine bleach are removed.) Then rerinse the sensor with clean water and retest.

ⓘ *Dry the port and sensor connector with compressed air and apply a very thin coat of o-ring lubricant to all o-rings before reinstallation.*

If this procedure is unsuccessful, as indicated by improper sensor performance, contact YSI Technical Support or the YSI authorized dealer where you purchased the instrument.

SENSOR STORAGE

SHORT TERM STORAGE

The instrument is supplied with a grey storage sleeve that slides over the probe guard. The sleeve is used for short-term storage (up to 4 weeks). Be sure to keep a small amount of moisture (clean tap water) on the sponge in the sleeve during storage. The moistened sponge in the sleeve provides a 100% water saturated air environment which is ideal for short-term sensor storage.

LONG TERM STORAGE

The ISE sensor should be stored in solution. When storing for more than 30 days, place the ISE sensor in the storage bottle was originally included with the sensor. This can be filled with buffer 4 solution. If you no longer have the storage bottle, simply place the sensor in a buffer 4 solution.

Long Term Storage Temperature: 0 to 30°C (32 to 86°F)*

*Operating temperature range for pH sensor is -5 to 60°C (23 to 140°F) and operating temperature range for the ORP sensor is 0 to 60°C (32 to 140°F)

TROUBLESHOOTING

Symptom	*Possible Solution*
Instrument will not turn on, a battery symbol appears, or "Critical Shutdown" displays on the screen.	1. Low battery voltage, replace batteries. 2. Batteries installed incorrectly, check battery polarity. 3. Return system for service.

Symptom	*Possible Solution*
Temperature values display Over or Undr on Run screen.	1. Sample temperature is less than -5° C or more than +55°C. Increase or decrease the sample temperature to bring within the allowable range. 2. Contact YSI Tech Support. Possible temperature sensor failure.
Instrument will not calibrate pH or ORP; instrument displays "Calibration Over", "Calibration Under", or "Unstable Reading" during calibration.	1. Verify correct ISE sensor type selection in the System Setup menu. 2. Verify the calibration solution is accurate. 3. If calibrating pH, make sure you are calibrating buffer 7 first. 4. Clean the pH or ORP sensor. 5. Contact YSI Tech Support.
pH or ORP readings are inaccurate.	1. Verify correct ISE sensor type selection in the System Setup menu. 2. Verify temperature readings are accurate. 3. Recalibrate the pH or ORP sensor. 4. Clean the pH or ORP sensor. 5. Contact YSI Tech Support.
pH values display Over or Undr on Run screen.	1. Verify correct ISE sensor type selection in the System Setup menu. 2. Verify temperature readings are accurate. 3. Recalibrate the pH sensor. 4. Clean the pH sensor and recalibrate. 5. Contact YSI Tech Support.
ORP values display Over or Undr on Run screen.	1. Verify correct sensor type selection in the System Setup menu. 2. Sample ORP value is outside the measurement range of -1500 to 1500 mV. 3. Verify temperature readings are accurate. 4. Recalibrate the ORP sensor. 5. Clean the ORP sensor and recalibrate. 6. Contact YSI Tech Support.

SPECIFICATIONS

These specifications represent typical performance and are subject to change without notice. For the latest product specification information, please visit YSI's website at ysi.com or contact YSI Tech Support.

Parameter	*Range*	*Resolution*	*Accuracy*
Temperature	-5 to 55°C*	0.1°C	± 0.2°C
pH	0 to 14 pH units	0.01	Instrument with cable and sensor: +/- 0.2
ORP	-1500 to 1500 mV	1 mV	Instrument with cable and sensor: +/-20 mV

ACCESSORIES / PART NUMBERS

Part Number	*Description*
6050010	Pro10 Instrument
62610-1,-4, -10,-20, or-30	1, 4, 10, 20, 30-meter cable assembly* (3.2, 13, 32.8, 65.6, 98.4-feet)
605101	pH Sensor
605323	Amplified pH Sensor
605102	ORP Sensor
603075	Carrying case, large, soft-sided
603162	Carrying case, small, soft-sided (holds instrument and up to a 4 meter cable/probe assembly)
603074	Carrying case, hard-sided
603069	Belt clip for clipping instrument onto belt
063517	Ultra clamp for clamping instrument to lab counter or other surface
063507	Tripod for instrument
603062	Cable management kit, included with all cables longer than 1 meter
605978	Cable weight, 4.9 oz, stackable
603070	Shoulder strap
003821	pH 4 Buffer, box of 6 pints
003822	pH 7 Buffer, box of 6 pints
003823	pH 10 Buffer, box of 6 pints
603824	pH Buffer, assorted case, 2 pints each of buffer 4, 7 and 10

*All cables include a temperature sensor. The pH and ORP sensors are sold separately.

DECLARATION OF CONFORMITY

The undersigned hereby declares on behalf of the named manufacturer under our sole responsibility that the listed product conforms to the requirements for the listed European Council Directive(s) and carries the CE mark accordingly.

Manufacturer:	YSI Incorporated 1725 Brannum Lane Yellow Springs, OH 45387 USA
Product Name:	Pro10 Water Quality Instrument
Model Numbers	
Instrument/ Accessory:	Pro10 (6050010)
Probe/Cable Assemblies:	60510-1, -4, -10, -20, and -30
Conforms to the following:	
Directives:	EMC 2004/108/EC RoHS 2011/65/EU WEEE 2012/19/EU
Harmonized Standards:	• EN61326-1:2013 (IEC 61326-1:2012) • IEC 61000-3-2:2005 +A1:2008+A2:2009 • IEC 61000-3-3:2008
Supplementary Information:	All performance met the operation criteria as follows: 1. ESD, IEC 61000-4-2:2008 2. Radiated Immunity, IEC 61000-4-3:2006 +A1:2007 +A2:2010 3. Electrical Fast Transient (EFT), IEC 61000-4-4:2004 +A1:2010 4. Radio Frequency, Continuous Conducted Immunity, IEC61000-4-6:2008 5. IEC 6100-4-8:2009
Authorized EU Representative	Xylem Analytics UK Ltd Unit 2 Focal Point, Lacerta Court, Works Road Letchworth, Hertfordshire, SG6 1FJ UK

Signed: Lisa M. Abel Date: 7 July 2014
Title: Director of Quality

RECYCLING

YSI is committed to reducing the environmental footprint in the course of doing business. Even though materials reduction is the ultimate goal, we know there must be a concerted effort to responsibly deal with materials after they've served a long, productive life-cycle. YSI's recycling program ensures old equipment is processed in an environmentally friendly way, reducing the amount of materials going to landfills.

- Printed Circuit Boards are sent to facilities that process and reclaim as much material for recycling as possible.
- Plastics enter a material recycling process and are not incinerated or sent to landfills.
- Batteries are removed and sent to battery recyclers for dedicated metals.

When the time comes for you to recycle, follow the easy steps outlined at www.ysi.com.

BATTERY DISPOSAL

The Pro10 is powered by alkaline batteries which the user must remove and dispose of when the batteries no longer power the instrument. Disposal requirements vary by country and region, and users are expected to understand and follow the battery disposal requirements for their specific locale.

CONTACT INFORMATION

ORDERING AND TECHNICAL SUPPORT

Telephone: 800 897 4151 (USA)
+1 937 767 7241 (Globally)
Monday through Friday, 8:00 AM to 5:00 ET
Fax: +1 937 767 9353 (orders)
+1 937 767 1058 (technical support)
Email: environmental@ysi.com
Mail: YSI Incorporated
1725 Brannum Lane
Yellow Springs, OH 45387
USA
Internet: ysi.com

When placing an order please have the following available:
1.) YSI account number (if available)
2.) Name and phone number
3.) Purchase Order or Credit Card number
4.) Model Number or brief description
5.) Billing and shipping addresses
6.) Quantity

SERVICE INFORMATION

YSI has authorized service centers throughout the United States and Internationally. For the nearest service center information, please visit ysi.com and click 'Support' or contact YSI Technical Support directly at 800-897-4151 (+1 937-767-7241).

When returning a product for service, include the Product Return form with cleaning certification. The form must be completely filled out for a YSI Service Center to accept the instrument for service. The form may be downloaded from ysi.com.

a xylem brand

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