

# HanTron

## Model HT-3P

*Installation  
Maintenance  
Repair  
Manual*



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## Features

<b>Accuracy</b>	
<b>Conductivity</b>	± 1% 0 to 800 $\mu\text{S}/\text{cm}$
	± 1.5% 800 to 5,500 $\mu\text{S}/\text{cm}$
	± 2% 5,500 to 20,000 $\mu\text{S}/\text{cm}$
<b>Temperature</b>	± 2°F / 1°C

- Rugged integral probe.
- Four-electrode cell technology.
- 5 digit LCD displays full 20,000  $\mu\text{S}/\text{cm}$  or PPM.
- Full auto ranging conductivity measurements from 0 to 20,000  $\mu\text{S}/\text{cm}$ .
- Memory saves up to 20 readings.
- Calibrations protected from low battery loss (nonvolatile memory).

## Specifications

<b>Display</b>	5 digit LCD
<b>Dimension (LxWxH)</b>	5.3 x 3.3 x 1.6 in. (136 x 84 x 39 mm) .
<b>Conductivity Cell Capacity</b>	0.1 oz. (3.2 ml).
<b>Power</b>	(2) AAA Alkaline Batteries
<b>Battery Life</b>	10,000 Readings.
<b>Operating/Storage Temp</b>	32-132°F / 0-55°C
<b>Protection Rating</b>	IP64

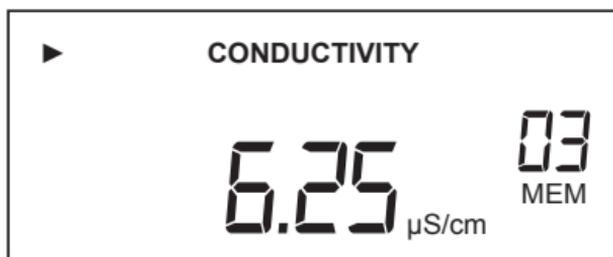
## Measuring Conductivity and Temperature

1. Rinse conductivity cell three times with sample.
2. Fill cup with sample. All four electrodes must be submerged. Make sure there are no bubbles in cell.
3. Press **READ/ENTER**: Display shows dashes while reading. Discard this reading and refill cup.
4. **READ/ENTER**: Measure conductivity of sample. Display shows dashes while reading. Use this reading.
5. **▲**: Displays temperature of the sample.
6. **▲**: Returns to conductivity of the sample.
7. Power turns off automatically after 30 seconds of inactivity.

## Storing Sample Measurements to Memory

The tester can save up to 20 readings.

1. **▼ / SAVE**: Displays next available memory location.
2. **▼ / SAVE** or **▲**: To select a specific memory location.
3. **READ/ENTER**: Stores conductivity and temperature data in location shown.
4. **MENU**: Exits memory options.



**NOTE:** Display shows -- when memory is full. Data cannot be overwritten, it must be erased via MENU commands.

## Menu Options

**MENU** is used to:

- Recall stored measurement records.
- Erase memory (individual records or all at once).
- Calibrate conductivity.
- Calibrate temperature.
- Change conductivity unit of measure ( $\mu\text{S}/\text{cm}$  or PPM).
- Change temperature unit of measure ( $^{\circ}\text{C}$  or  $^{\circ}\text{F}$ ).

Press **MENU** at any time to go to reading without saving changes.

## Recall Measurements Stored in Memory

1. **READ/ENTER**: Turns power on.
2. **MENU**: Displays menu items. (RECALL and MEM flashes).
3. **READ/ENTER**: Displays memory locations.
4. **▼ / SAVE** or **▲**: To choose a record to view. Display will alternate between conductivity and temperature.

## Erase Individual Records from Memory

1. **READ/ENTER**: Turns power on.
2. **MENU**: Displays menu items.
3. **▼ / SAVE** or **▲**: To display CLEAR and MEM (flashing).
4. **READ/ENTER**: Selects clear memory function.
5. **▼ / SAVE** or **▲**: To choose record to clear.
6. **READ/ENTER**: Displays data that is to be cleared.
7. **READ/ENTER**: Clears data from selected memory location and returns to measurement mode.

## Erase All Records from Memory

1. **READ/ENTER**: Turns power on.
2. **MENU**: Displays menu items.
3. **▼ / SAVE** or **▲**: To display CLEAR and MEM (flashing).
4. **READ/ENTER**: -- MEM flashes to indicate all records are about to be deleted.
5. **READ/ENTER**: Clears data from all memory locations and returns to measurement mode.

## Calibrate Conductivity

Conductivity calibration should be performed monthly, or upon changing batteries. There are three internal scales that each hold a different calibration value. Each of these scales can only be calibrated with a solution value within an allowable range. Solutions used outside of the allowable value for each scale will result in an error.

	Allowable Values for Calibration	Operating Range
Low	120 to 700 $\mu\text{S/cm}$	~ 0 to 800
Mid	1,200 to 4,000 $\mu\text{S/cm}$	~ 800 to 5,500
High	12,000 to 25,000 $\mu\text{S/cm}$	~ 5,500 to 25,000

1. Rinse conductivity cell three times with proper conductivity standard solution.
2. Refill conductivity cell with the same standard solution.
3. Press **READ/ENTER**: Display shows dashes while reading. Discard this reading.
4. Refill cell and press **READ/ENTER**: Use this reading.
5. **MENU**: Displays menu items.
6. **▼ / SAVE** or **▲**: To select CAL and CONDUCTIVITY (flashing).
7. **READ/ENTER**: Displays the conductivity of the standard solution.



8. **▼ / SAVE** or **▲**: Change the conductivity reading to match the value of sample. Hold down key for rapid scrolling.
9. **READ/ENTER**: Stores new calibration factor and returns to the measurement mode.

**Call and ask us about our calibration kits.  
148 Low • 3,482 Mid • 12,880 High**

## Calibrate Temperature

**Note:** Temperature calibration is not recommended.

1. **READ/ENTER**: Turns power on.
2. **MENU**: Displays menu items.
3. **▼ / SAVE** or **▲**: To select CAL TEMP (flashing)
4. **READ/ENTER**: Display current temperature.
5. **▼ / SAVE** or **▲**: Change temperature to desired value ( $\pm 5^{\circ}\text{F}$ ,  $\pm 5^{\circ}\text{C}$  from current reading)
6. **READ/ENTER**: Stores calibrated temperature and returns to measurement mode.

## Select Fahrenheit or Celsius

1. **READ/ENTER**: Turns power on.
2. **MENU**: Displays menu items.
3. **▼ / SAVE** or **▲**: To select TEMP °F (or °C) (flashing)
4. **READ/ENTER**: Enables unit of measure selection.
5. **▼ / SAVE** or **▲**: Select °F or °C.
6. **READ/ENTER**: Stores unit of measure and returns to measurement mode.

## Replace Batteries

BATT will display constantly when batteries are low.

1. Dry the instrument thoroughly.
2. Remove the single battery cover screw from bottom of tester.
3. Lift battery cover starting at screw end.
4. Replace with two of the same kind AAA alkaline batteries.
5. Replace battery cover starting at non-screw end.
6. Re-install battery cover screw.

Note: Battery panel needs to be flush for a water-resistant seal.

**NOTE**: Stored measurement records will be lost without battery power. Removing the batteries will not affect the calibration values and other menu settings. However, conductivity calibration is recommended at this time.

## Troubleshooting

To reset all menu items to the factory settings:

1. **READ/ENTER**: Turns power on.
2. Press and hold all four buttons for five seconds.
3. Display shows the firmware version and then shows “rESEt”
4. **READ/ENTER**: Reset to factory defaults.

**NOTE**: Press **MENU** to exit without resetting the meter. The conductivity cup must be empty and dry before resetting the device to factory settings. If the cup is not dry, the reset will indicate a fail.

5. Factory defaults are not calibrated. Follow **Calibrate Conductivity** instructions in this manual to recalibrate.

## **Errors Codes** (unit reads “ErrOr”)

- 01 - Thermistor shorted** or temperature higher than expected.
- 02 - Thermistor broken** or temperature lower than expected.
- 03 - Conductivity** lower than expected.
- 04 - Conductivity** higher than expected.
- 05 - Calibration solution** reading out of range.
- 06 - Unable to calibrate**, reading is unstable.
- 07 - Unable to zero**, reset with a clear dry cell.
- 08 - Conductivity** reading is unstable.
- 09 - Test station** unexpected range.

## **Care and Maintenance**

- Keep conductivity cell as clean as possible.
- Flush conductivity cell with clean water after use to prevent buildup on electrodes.
- Clean oily films or organic material from conductivity cell with foaming non-abrasive household cleaner. Do not scrub inside cell. Avoid solvents.
- Take care not to drop the tester. Shock may damage components.
- Do not place solutions hotter than 160°F (71°C) in conductivity cell.
- Do not exceed rated operating temperature. Take care not to leave tester in a vehicle or unairconditioned building on a hot day as temperatures may surpass 150°F.

## **Manufacturer's Product Warranty**

Advantage Controls warrants units of its manufacture to be free of defects in material or workmanship. Liability under this policy extends for 24 months from date of purchase. Liability is limited to repair or replacement of any failed equipment or part proven defective in material or workmanship upon manufacturer's examination. Removal and installation costs are not included under this warranty. Manufacturer's liability shall never exceed the selling price of equipment or part in question.

Advantage disclaims all liability for damage caused by its products by improper installation, maintenance, use or attempts to operate products beyond their intended functionality, intentionally or otherwise, or any unauthorized repair. Advantage is not responsible for damages, injuries or expense incurred through the use of its products. The above warranty is in lieu of other warranties, either expressed or implied. No agent of ours is authorized to provide any warranty other than the above.

Opening the meter is discouraged. Doing so may increase your chance of damaging the meter and may void your warranty.

## **30 Day Billing Memo Policy**

Advantage Controls maintains a unique factory exchange program to ensure uninterrupted service with minimum downtime. If your unit malfunctions, call 1-800-743-7431, and provide our technician with Model and Serial Number information. If we are unable to diagnose and solve your problem over the phone, a fully warranted replacement unit will be shipped, usually within 48 hours, on a 30 Day Billing Memo.

This service requires a purchase order and the replacement unit is billed to your regular account for payment. The replacement unit will be billed at current list price for that model less any applicable resale discount. Upon return of your old unit, credit will be issued to your account if the unit is in warranty. If the unit is out of warranty or the damage not covered, a partial credit will be applied based upon a prorated replacement price schedule dependent on the age of the unit. Any exchange covers only the pen tester electronics. Electrode tips are consumable and are not included under the factory warranty.