

Congratulations !

The **WP-Sim** is a complete pH, ORP, Conductivity, TDS and Temperature simulator for TPS instruments. The **WP-Sim** provides an indispensable tool for checking the operation of instruments without sending them to the factory for service.

The manual is divided into the following sections:

1. Table of Contents

Each major section of the handbook is clearly listed. Sub-sections have also been included to enable you to find the information you need at a glance.

2. Introduction

The introduction has a diagram and explanation of the display and controls of the **WP-Sim**. It also contains a full listing of all of the items that you should have received with your **WP-Sim**. Please take the time to read this section, as it explains some of items that are mentioned in subsequent sections.

3. Main Section

The main section of the handbook provides complete details for operation of the **WP-Sim**.



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**Model WP-Sim
Multi-Function Simulator**

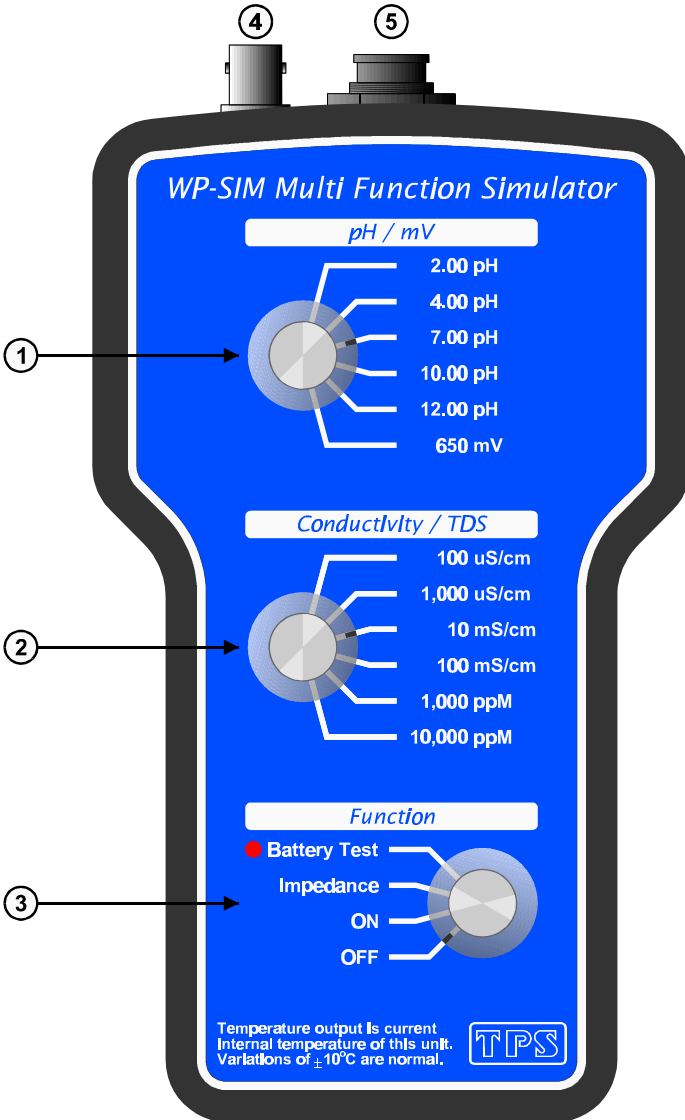
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1. Introduction

1.1 WP-Sim Illustration



- ① **pH / mV Output Selector**
Used to select one of a range of pH and Millivolt values. The Function switch must be set to ON or Impedance for the pH/mV output to be active. See sections 2 and 3.
- ② **Conductivity / TDS Output Selector**
Used to select one of a range of Conductivity and TDS values. The values are simulated by a precision resistor network, so the Function switch can be left in the OFF position for these tests. See section 4.
- ③ **Function Switch**
Used to select ON / OFF, Impedance (section 7) or Battery Test (section 8).
- ④ **pH / mV Output Connector**
All pH and Millivolt signals are output through this connector.
- ⑤ **Conductivity / TDS / Temperature Output Connector**
All Conductivity, TDS and Temperature signals are output through this connector.

1.2 Unpacking Information

Before using your new **WP-Sim**, please check that the following accessories have been included:

	Part No
1. WP-Sim Multi Function Simulator	130126
2. pH / mV Output Cable with BNC plug	130131
3. 9V Battery	130026
(The battery is inside the unit.)	
4. WP-Sim Handbook.....	130050

Output Cables that may have been ordered with your **WP-Sim** ...

1. pH / mV Output Cable with TPS4 plug.....	130132
2. Conductivity / TDS Output Cable with 5 Pin DIN plug	130133
3. Conductivity / TDS Output Cable with 6 Pin Waterproof plug ...	130134
4. Conductivity / TDS Output Cable with 7 Pin Waterproof plug ...	130135
5. Conductivity / TDS Output Cable with 9 Pin Waterproof plug ...	130136
6. pH PLUS mV Output Cable for Pool Controllers.....	130137

Options ...

1. Aluminium Carry Case.....	130059
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1.3 Specifications

	Simulated Values	Accuracy
pH	2.00 pH 4.00 pH 7.00 pH 10.00 pH 12.00 pH	±0.03 pH
Millivolts	650 mV	±2 mV
Conductivity	100 uS/cm 1,000 uS/cm 10 mS/cm 100 mS/cm	±5%
TDS	1,000 ppM 10,000 ppM	±5%
Temperature	Current temperature inside WP-Sim unit.	Can be up to ±10 °C offset

All output values (other than Temperature) are simulated for 25 °C.

Power 9V Alkaline Battery for 100+ hours
of continuous operation.

Dimensions..... 187 x 110 x 51 mm

Mass Approx 200g

Environment Temperature : 0 to 45 °C
Humidity : 0 to 90 % R.H.

2. Simulating pH Values

1. Obtain the correct pH / mV output cable for the instrument under test.
2. Connect one end of the pH / mV output cable to the **WP-Sim** and the other end to the instrument under test, as per the example diagram below...



3. Switch the **WP-Sim** Function switch to ON. Switch the instrument under test on and select pH mode. See the instrument's handbook if necessary.
4. Use the pH / mV selector to output any of the 5 simulated pH values. The readout of the instrument under test should approximately correspond to the simulated pH value selected on the **WP-Sim**. Variations are possible due to the current temperature and calibration settings of the instrument under test.

Please note that the simulated values are for 25 °C.

3. Simulating Millivolt Values

1. Obtain the correct pH / mV output cable for the instrument under test.
2. Connect one end of the pH / mV output cable to the **WP-Sim** and the other end to the instrument under test, as per the example diagram below...



3. Switch the **WP-Sim** Function switch to ON. Switch the instrument under test on and select Millivolt mode. See the instrument's handbook if necessary.
4. Switch the pH / mV selector to 650 mV. The readout of the instrument under test should be approximately 650 mV. Variations are possible due to the current calibration settings of the instrument under test.

4. Simulating Conductivity and TDS Values

1. Obtain the correct Conductivity / TDS output cable for the instrument under test.
2. Connect one end of the Conductivity / TDS output cable to the **WP-Sim** and the other end to the instrument under test, as per the example diagram below...



3. The **WP-Sim** does not need to be switched on for Conductivity or TDS output. Switch the instrument under test on and select Conductivity or TDS mode as required. See the instrument's handbook if necessary.
4. Use the Conductivity / TDS selector to output any of the 4 simulated Conductivity or 2 simulated TDS values. The readout of the instrument under test should approximately correspond to the simulated Conductivity or TDS value selected on the **WP-Sim**. Variations are possible due to the current temperature and calibration settings of the instrument under test.

Please note that the simulated values are for 25 °C.

5. Simulating Temperature Values

1. Obtain the correct Conductivity / TDS / Temp output cable for the instrument under test.
2. Connect one end of the Conductivity / TDS /Temp output cable to the **WP-Sim** and the other end to the instrument under test, as per the example diagram below...

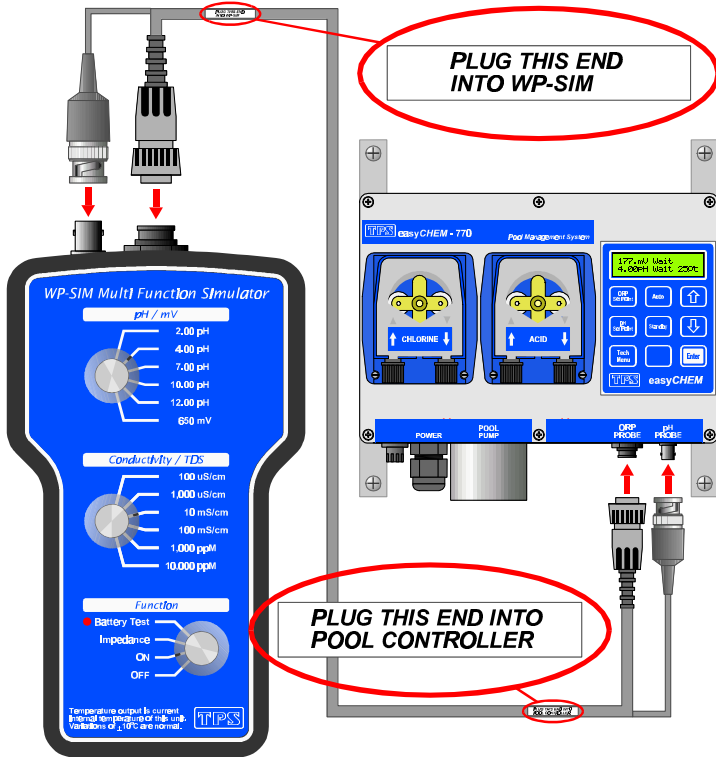


3. The **WP-Sim** does not need to be switched on for Temperature output. Switch the instrument under test on and select Temperature mode. See the instrument's handbook if necessary.
4. The output will correspond to the current temperature inside the **WP-Sim**. Variations are possible due to the calibration settings of the instrument under test.

6. Simulating pH, ORP & Temperature for Pool Controllers

This section is applicable to combination pH and ORP pool controllers, such as the poolCHEM series, easyCHEM 770 and easyCHEM 660.

1. Obtain the correct Pool Controller output cable for the instrument under test.
2. Each end of the cable is labelled as the WP-Sim or Pool Controller end. Connect the cable to the **WP-Sim** and the pool controller correctly, as per the example diagram below...



3. Switch the **WP-Sim** Function switch to ON. Switch the instrument under test on.

Continued over the page...

4. Switch the pH / mV selector to your choice of pH or mV value. The readout of the instrument under test should approximately correspond to the simulated values selected on the **WP-Sim**. In addition, the pool controller will display the current temperature inside the **WP-Sim**. Variations are possible due to the current calibration settings of the instrument under test.

Note : As the **WP-Sim** is simultaneously outputting pH and mV values, you will notice that BOTH readings on the display change when the pH / mV selector is changed. Please disregard the pH values when the **WP-Sim** is set to 650 mV, and disregard the mV reading when the **WP-Sim** is set to a pH value.

7. Impedance Test for pH

Testing a pH meter with simulated pH values only checks for the **accuracy** of the input circuit. It does not check for the **impedance** of the input circuit. The input impedance must be extremely high to match the pH sensor. If the input impedance has been reduced due to component failure, corrosion etc, accuracy will be affected and the pH sensor may suffer permanent damage.

To test the impedance of the pH meter's input circuit...

1. Obtain the correct pH / mV output cable for the instrument under test.
2. Connect one end of the pH / mV output cable to the **WP-Sim** and the other end to the instrument under test, as per the example diagram below...



3. Switch the **WP-Sim** Function switch to ON. Switch the instrument under test on and select pH mode. See the instrument's handbook if necessary.

4. Use the pH / mV selector to output any of the 5 simulated pH values. The readout of the instrument under test should approximately correspond to the simulated pH value selected on the **WP-Sim**. Variations are possible due to the current temperature and calibration settings of the instrument under test.

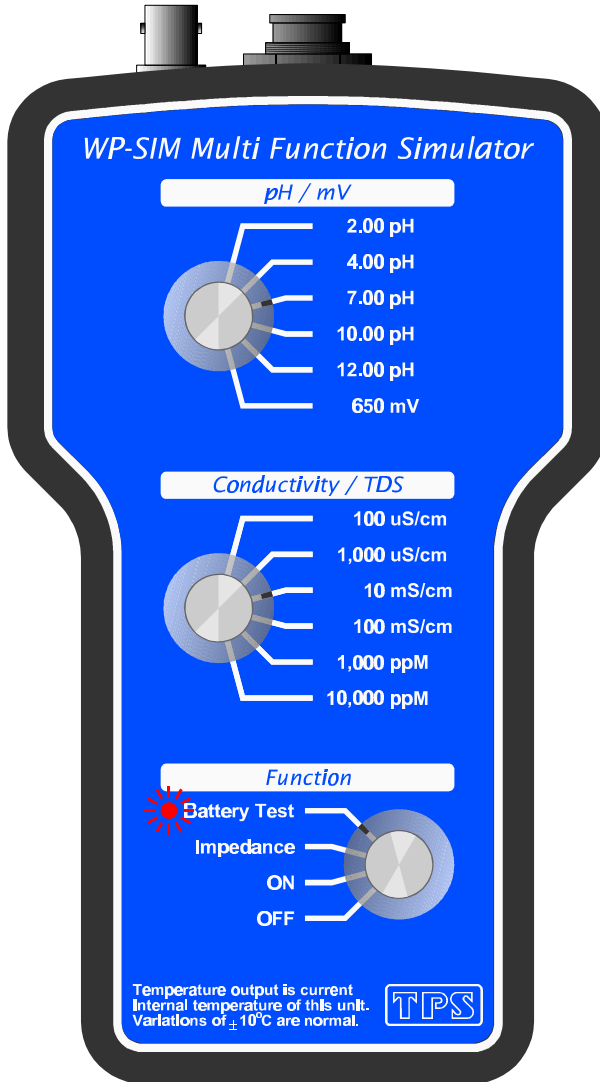
Please note that the simulated values are for 25 °C.

5. Make a note of the reading obtained on the display.
6. Now switch the **WP-Sim** Function switch to **Impedance**.

The pH value on the instrument's display should change by less than 0.05pH if it's input impedance is high enough. If the display changes by more than this amount, the instrument must be returned for repair.

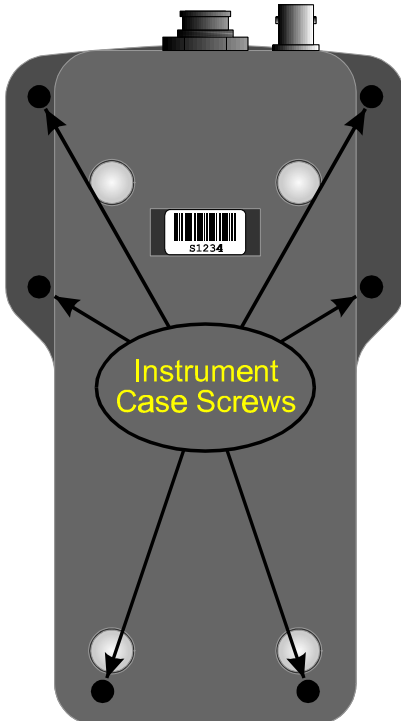
8. Testing the WP-Sim Battery

The **WP-Sim** is equipped with a **Battery Test** function. To check the battery, set the Function switch to **Battery Test**. The red light on the front panel will glow brightly if the battery is OK. If the light is very dim or does not operate at all, the battery must be replaced.



9. Changing the WP-Sim Battery

1. Turn the instrument over and locate the 6 Instrument Case Screws on the rear. See the diagram below.



2. Remove all 6 screws and open the **WP-Sim**.

CAUTION : THERE ARE WIRES THAT CONNECT THE CIRCUIT BOARD TO THE CONNECTORS. TAKE CARE WHEN OPENING THE METER TO ENSURE THESE WIRES ARE NOT BROKEN.

Do not lose the nylon washers, as these form a part of the waterproof seal when the screws are replaced.

3. Replace the battery with a new alkaline 9V battery.
4. Re-fit the rear of the **WP-Sim** and replace the Instrument Case Screws.

10. Warranty

TPS Pty. Ltd. guarantees all instruments and sensors to be free from defects in material and workmanship when subjected to normal use and service. This guarantee is expressly limited to the servicing and/or adjustment of an instrument returned to the Factory, or Authorised Service Station, freight prepaid, within twelve (12) months from the date of delivery, and to the repairing, replacing, or adjusting of parts which upon inspection are found to be defective. Warranty period on sensors is three (3) months.

There are no express or implied warranties which extend beyond the face hereof, and TPS Pty. Ltd. is not liable for any incidental or consequential damages arising from the use or misuse of this equipment, or from interpretation of information derived from the equipment.

Shipping damage is not covered by this warranty.

Please note

A guarantee card is packed with the instrument or sensor. This card must be completed at the time of purchase and the registration section returned to TPS Pty. Ltd. within 7 days. No claims will be recognised without the original guarantee card or other proof of purchase. This warranty becomes invalid if modifications or repairs are attempted by unauthorised persons, or the serial number is missing.

Procedure for service

If you feel that this equipment is in need of repair, please re-read the manual. Sometimes, instruments are received for "repair" in perfect working order. This can occur where batteries simply require replacement or re-charging, or where the sensor simply requires cleaning or replacement.

TPS Pty. Ltd. has a fine reputation for prompt and efficient service. In just a few days, our factory service engineers and technicians will examine and repair your equipment to your full satisfaction.

To obtain this service, please follow this procedure

Return the instrument AND ALL SENSORS to TPS freight pre-paid and insured in its original packing or suitable equivalent. INSIST on a proof of delivery receipt from the carrier for your protection in the case of shipping claims for transit loss or damage. It is your responsibility as the sender to ensure that TPS receives the unit.

Please check that the following is enclosed with your equipment:

- **Your Name and daytime phone number.**
- **Your company name, ORDER number, and return street address.**
- **A description of the fault. (Please be specific.)**
(Note: "Please Repair" does NOT describe a fault.)

Your equipment will be repaired and returned to you by air express where possible.

For out-of-warranty units, a repair cost will be calculated from parts and labour costs. If payment is not received for the additional charges within 30 days, or if you decline to have the equipment repaired, the complete unit will be returned to you freight paid, not repaired. For full-account customers, the repair charges will be debited to your account.

- **Always describe the fault in writing.**
- **Always return the sensors with the meter.**