

# CONDUCTIVITY pDS METERS

## Operation Instructions

User Manual for Models EP11/pH  
M6/pH<sub>24</sub>



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**MYRON L  
COMPANY**  
pH/Conductivity Instrumentation  
*Accuracy • Reliability • Simplicity*

## DESCRIPTION

This manual describes your Myron L pDS meter, tells you how to use it, and how to keep it working accurately for many years.

Myron L pDS Meters are compact, light-weight, self-contained conductivity/pH meters. They contain a built-in conductivity cell with a replaceable pH sensor. Models EP11/pH and M6/pH have dials calibrated in micromhos (equivalent to the metric microsiemens) and in pH units. They will quickly determine the conductivity and pH of almost any solution.

Both are 3.4" x 4.5" x 4.0" (85 x 129 x 126mm) and weigh less than one pound (0.45 kg). pDS Meters are completely self-contained. The built-in conductivity cell is automatically temperature compensated from 50° to 160°F (10° to 71°C). They are powered by two 9 volt transistor batteries good for at least 2000 tests, or one year shelf life.

MODEL	CONDUCTIVITY RANGES	pH RANGE
EP11/pH	0-10, 0-100, 0-1000, 0-10,000 micromhos ( $\mu\text{mhos}$ )	2-12 pH
M6/pH	0-5000 micromhos ( $\mu\text{mhos}$ )	2-12 pH

### ACCURACY: (Both Models)

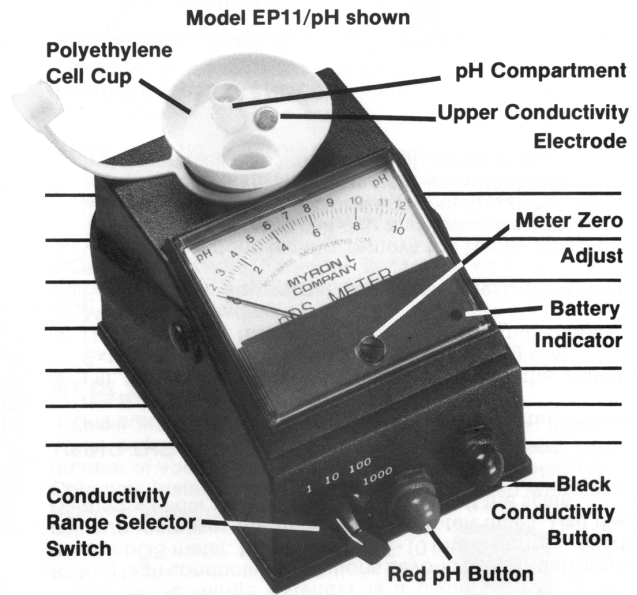
Conductivity:  $\pm 2\%$  of full scale  
pH:  $\pm 0.2$  pH units

### REPEATABILITY: (Both Models) $\pm 1\%$

By using an RE-10 Range Extender (see ACCESSORIES), the maximum conductivity range of each meter may be increased ten times.

The pictures in this manual show the major operating parts of your Myron L DS Meter. Handle your DS Meter and identify these parts to become familiar with it.

**IMPORTANT:** The pH sensor in your pDS Meter has a limited life much like a battery. Sensor longevity is affected both by the types of solution tested and care given your meter. pH sensors are user replaceable. See MAINTENANCE for additional information.



## USING YOUR METER

### CONDUCTIVITY MEASUREMENT: Model EP11/pH

1. Turn the Range Switch to the desired range. If you don't know which range to use, set it to 1000.
2. Rinse the cell cup three times with the sample you want to test. (For very hot or very cold samples see TEMPERATURE COMPENSATION below.)

### NEVER FILL THE CELL BY DIPPING THE METER INTO WATER!

3. Fill the cell with another sample to at least 1/4" (6 mm) above the upper electrode.
4. Press the black button.
5. Read the dial's black scale value indicated by the pointer. If the pointer is very low on the left or goes off the scale to the right, try the next lower or higher range.
6. Multiply the dial's black scale value by the range setting to determine conductivity in micromhos (microsiemens).
7. If the pointer goes off the scale to the right on the x1000 range, use an RE-10 range extender (see ACCESSORIES).

### CONDUCTIVITY MEASUREMENT: Model M6/pH

1. Rinse and fill the cell cup as in steps 2 and 3 above.
2. Press the black button.
3. Read the conductivity value in micromhos (microsiemens) indicated by the pointer on the dial's black scale.
4. If the pointer goes off the scale to the right, use an RE-10 range extender (see ACCESSORIES).

**NOTE:** When you are finished with the meter, RINSE THE CELL CUP with clean water, preferably distilled or deionized.

### pH MEASUREMENT

1. Obtain sample to be tested; if necessary, heat or cool it to room temperature.
2. Remove the pH compartment cap and sharply shake out any liquid.
3. Pour or squirt the sample into the built-in cell cup, especially the small pH compartment. Shake out and repeat three times with the sample to be tested. These may be the same rinsings used to condition the cell for conductivity measurement.
4. Press the red button. The pointer immediately indicates the pH of the sample on the red scale. If the pointer drifts, wait approximately 30 seconds and press the button again to obtain a stable reading of pH. If drifting continues, the electrode may be coated with a film. Use a liquid cleaner such as Windex™ or Fantastic™ to clean the pH sensor bulb (see pH SENSOR).
5. Rinse both pH and conductivity parts of the cell with clean water.

### LEAVE SOME LIQUID IN THE pH COMPARTMENT AND RECAP.

**TEMPERATURE COMPENSATION:** For very hot or very cold solutions let the three rinse samples each remain in the cell for several seconds, then immediately fill the cell with the sample you want to test (step 3 above). This allows the automatic temperature compensation feature time to work properly.

### CAUTION:

**ALWAYS** store your pH sensor wet and with the cap on.  
**ALWAYS** rinse the cell cup with pure water immediately after use or cleaning. This will prevent the build-up of unwanted deposits and possible contamination of the sample.

**DO NOT** test solutions which could damage the pH sensor. See MAINTENANCE.

**DO NOT** use with samples hotter than 160°F (71°C). The readings WILL NOT be accurate.

**DO NOT** splash solvents such as lacquer thinner, acetone benzene or chlorinated solvents on the plastic case.

**DO NOT** fix or modify the meter. That will void your warranty. See SERVICE for details or consult Myron L Company.

**DO NOT DIP THE INSTRUMENT INTO WATER.** If water does get inside the instrument, see MAINTENANCE for instructions on drying it.

## CONDUCTIVITY CALIBRATION

**CONDUCTIVITY STANDARD SOLUTIONS:** A Standard Solution has a known conductivity and ppm. Your meter was calibrated at the factory using NIST Standard Solutions. You can keep your meter accurate by using the same NIST Standard Solutions. To pick the right Myron L Company Standard Solution for your meter see ACCESSORIES.

How often you calibrate your meter depends on how much you use it. For once a day use, recalibrate it every three months.

### CHECKING CONDUCTIVITY CALIBRATION

1. Turn the Range Switch to the x1000 range (EP11/pH only).
2. Test a sample of appropriate Standard Solution.

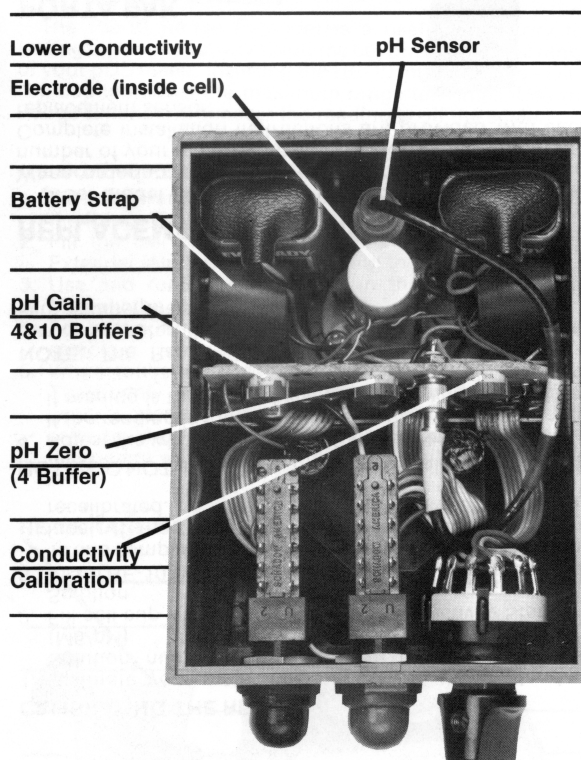
**CAUTION:** Throw away the Standard Solution as you use it. Don't put the used samples back in the bottle.

3. If the pDS Meter does not indicate the same value as is on the Standard Solution bottle's label, first clean the cell. For directions on how to do this see CELL CUP inside. Rinse the cell thoroughly and test the Standard Solution again. If the pDS Meter still does not indicate the correct value, recalibrate it as described below.

### TO RECALIBRATE CONDUCTIVITY

1. Remove the bottom cover using fingernails or a small screwdriver to loosen the front or rear edge. Identify the Conductivity Calibration Control (see photo below) so you can find it by touch while calibrating.
2. Test another sample of the Standard Solution (be careful to not splash solution inside the meter).
3. Adjust the Conductivity Calibration Control until the meter indicates the value that is on the Standard Solution label.

Model EP11/pH shown



## pH CALIBRATION/MAINTENANCE

### pH STANDARD BUFFER SOLUTIONS

All pH sensors "drift" and decrease in strength as they age. pH meters have two Calibration Controls to compensate for those effects. ZERO adjust corrects for "drift" of the pH sensor's response to neutral pH solutions. GAIN adjust amplifies the signal from the pH sensor for accurate readings of other pH values.

Use pH standard buffer solutions to calibrate all pDS meters. The recommended values are 4, 7, and 10. For greatest accuracy, adjust with the buffer closest in pH to the samples to be tested.

### pH ZERO ADJUST (Frequency: weekly)

Test by rinsing and refilling the cell with 7 buffer and pressing the red button. The meter should indicate 7 on the red scale. If it is necessary to calibrate Zero, perform the following steps:

1. Remove the bottom cover using fingernails or a small screwdriver to loosen the front or rear edge.
2. Refill cell with 7 buffer (see pH MEASUREMENT for proper procedure).
3. Press the red button and turn the pH Zero control until the needle indicates 7.
4. Recap the pH compartment and replace the bottom cover.

### pH GAIN (SLOPE) ADJUST (Frequency: bi-monthly)

The Gain should be calibrated approximately once every eight weeks. The Gain Control is used with 4 and 10 buffers.

**NOTE:** Never adjust the Gain control without first adjusting Zero.

Test by rinsing and refilling the cell with 4 or 10 buffer and pressing the red button. The meter should indicate the buffer value on the red scale. If it is necessary to calibrate the Gain perform the following steps:

1. Remove the bottom cover.
2. Rinse and fill the pH compartment with 4 buffer and press the red button. Adjust the Gain control until the needle indicates 4.
3. Rinse three times and test with 10 buffer. If adjustment is necessary, adjust to only half way between the initial reading and 10. If, after this, the 4 and 10 buffer readings are not less than one division from 4 and 10, the sensor is deteriorating and should be replaced. The sensor should also be replaced if the Gain control cannot make the pointer reach either 4 or 10.

## MAINTENANCE

### BATTERY CHECK

Models EP11/pH and M6/pH have a battery indicator glow light visible through the small hole on the lower right-hand corner of the meter face plate. If this light fails to glow when the black button is pressed, replace both batteries.

### BATTERY REPLACEMENT

To replace the batteries detach the battery connectors. Pull on the plastic straps to remove the batteries. Replace with fresh zinc carbon or alkaline 9 volt batteries. Reinsert the plastic straps to secure batteries.

### CELL CUP

Self-conditioning of the built-in electrodes occurs each time the button is pressed with a sample in the cell cup. This ensures consistent results each time. With some samples a small downward swing of the pointer is a result of this conditioning action. This action is powerful and removes normal films of oil and dirt. However, if very dirty samples - particularly scaling types - are allowed to dry in the cell cup, a film will build up. This film reduces accuracy. When there are visible films of oil, dirt, or scale in the cell cup or on the electrodes, scrub them lightly with a small brush and household cleanser. Rinse out the cleanser, and the meter is ready for accurate measurements.

### pH SENSOR

The unique pH electrode in your pDS meter is a nonrefillable combination type which features a porous Teflon\* liquid junction (covered by U.S. Patent No. 4128468). It should never be allowed to dry out (see pH MEASUREMENT). If it does, the sensor can sometimes be renewed by soaking in a saturated potassium chloride (KCl) solution for several days.

"Drifting" can be caused by a film on the sensor bulb. Use a liquid cleaner such as Windex™ or Fantastic™ to clean it. The sensor bulb is very thin and delicate. Excessive pressure during cleaning may break it.

Leaving high pH (alkaline) solutions in contact with the pH sensor for long periods of time can damage it. Rinsing such liquids from the pH compartment and moistening it with 4 buffer or tap water will extend its useful life.

Samples containing chlorine, sulphur, or ammonia can "poison" any pH electrode. If it is necessary to measure the pH of any such sample, thoroughly rinse the pH sensor with clean water immediately after taking the measurement. Any sample element which will reduce (add an electron to) silver, such as cyanide, will attack the reference electrode.

Replacement sensors are available only from the Myron L Company or our authorized distributors (see ACCESSORIES).  
\*™ DuPont Company

## WATER INSIDE THE METER

Your Myron L meter is a rugged instrument and will withstand water exposure around its cell, meter movement, and switches. However, care should be taken to keep water from leaking in around the bottom cover. It is not sealed (to prevent condensation from forming).

If the water is relatively clean (i.e., tap water or better), and there are only a few drops inside the meter, dry it as described below. Large amounts of water, or corrosive or very dirty solutions will almost certainly damage the meter movement or electronics. Such meters should be returned to the Myron L Company for repair.

To dry your meter:

1. Shake excess water out of the inside of the meter.
2. Dab the exposed surface dry with an absorbent cloth or tissue. Avoid pushing any water into the Calibration Controls or the switches.
3. Air dry the meter in a warm area with the bottom cover off. Allow several hours for thorough drying.

If the water entered through a leak in the case or cell, or if the instrument shows erratic readings or other unusual behavior, return it to the Myron L Company for servicing.

## ACCESSORIES STANDARD SOLUTIONS

**CONDUCTIVITY STANDARD SOLUTIONS:** Your pDS Meter has been factory calibrated with the appropriate NIST traceable Standard Solutions. All Myron L Company Conductivity Standard Solutions are traceable to the National Institute of Standards and Technology and are within 1.0% of Potassium Chloride reference solutions. The concentrations of the reference solutions are calculated from data in the International Critical Tables, Vol. 6.

**pH STANDARD BUFFER SOLUTIONS:** Ready to use, Myron L Company pH buffer solutions are mold inhibited and accurate to within +0.06 pH units @ 25° C. They are traceable to National Bureau of Standards certified pH references and are color-coded for instant identification.

### RECOMMENDED STANDARD SOLUTIONS

MODEL/RANGE	SOLUTION NUMBER
<b>EP11/pH</b>	
CONDUCTIVITY	
X10	KCI-70
X100	KCI-700
X1000	KCI-7000
with RE-10	442-30,000
pH ZERO	7 buffer
pH GAIN	10 buffer
<hr/>	
<b>M6/pH</b>	
CONDUCTIVITY	
with RE-10	442-3000
pH ZERO	442-30,000
pH GAIN	7 buffer
	4 buffer
	10 buffer



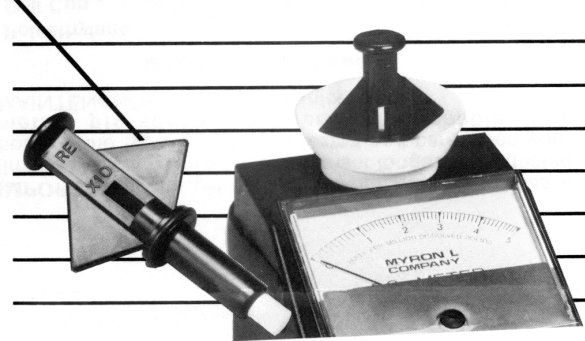
## RANGE EXTENDER

The RE-10 Range Extender is a useful accessory for testing high conductivity solutions beyond the normal range of your pDS meter. Inserting the RE-10 into a sample - filled cell cup increases the maximum range ten times. Use the Range Extender whenever the reading is off the scale.

### USING THE RE-10

1. Fill the cell cup three times to rinse it, but each time insert the Range Extender to rinse it also.
2. Fill the cell cup with your sample. Push the Range Extender into the cell cup, seating the O-ring seal.
3. Use and read the DS Meter in the normal manner. Multiply the reading by 10.
4. For best accuracy, repeat the complete test with a fresh sample.
5. When you're done testing, remove the Range Extender. Thoroughly rinse the cell cup and Extender with clean water (preferably distilled or deionized) to eliminate dried salts build-up. This is extremely important when the instrument will be used to test high purity water.

### RE-10 RANGE EXTENDER



### CALIBRATING THE RE-10

1. Calibrate your meter (without RE-10) using Standard Solution number KCL-7000 (EP1 1/pH) or 442-3000 (M6/pH).
2. Fill cell cup with 442-30,000 high conductivity Standard Solution.
3. Insert RE-10 and press the button. Multiply the reading by 10 and compare it with the value on the Standard Solution label. If they are not the same the RE-10 must be recalibrated.

**NOTE:** DO NOT adjust the Conductivity Calibrated Control.

4. Adjust the white insert of the Extender as follows: If the reading is too high—push or tap inward. If reading is too low—twist or pull outward with pliers.

**NOTE:** The Range Extender is factory calibrated to a particular meter. It should be recalibrated if it is to be used with another meter.

### REPLACEMENT pH SENSORS

Order **Model RPY** for either EP11/pH or M6/pH meters. When ordering, be sure to include the model and serial number of your meter to ensure receiving the proper type. Complete installation instructions are provided with each replacement sensor.

### PORTA PAK

Carrying Case for use with all Myron L DS and pDS meters is foam-lined and molded of sturdy ABS plastic.



### ORDERING

To order accessories contact your nearest stocking distributor, or the Myron L Company.

### WARRANTY & SERVICE

Myron L pDS meters, excluding the pH sensor, have a two-year warranty. **The pH sensor has a 6 month limited warranty.** If an instrument fails to operate properly, check the batteries, calibrations and cleanliness of the pH sensor bulb. If it still fails to properly function, return it prepaid to the Myron L Company.

If, in the opinion of the factory, failure was due to materials or workmanship, repair or replacement will be made without charge. A reasonable service charge will be made for diagnosis or repairs due to normal wear, abuse or tampering. This warranty is limited to the repair or replacement of the Myron L pDS meter only. The Myron L Company assumes no other responsibility or liability.

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