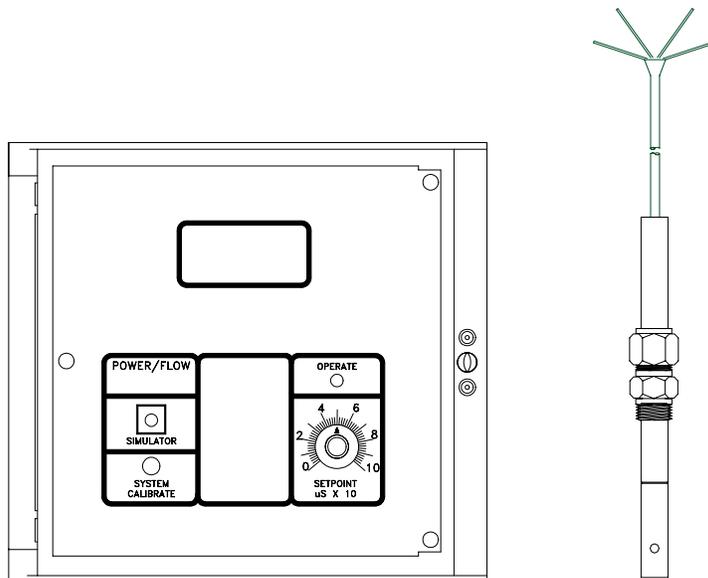


**LAKEWOOD INSTRUMENTS  
MODEL 267**

**CONDUCTIVITY MONITOR AND  
CONTROLLER**

*INSTALLATION & OPERATION MANUAL*

SERIAL #: \_\_\_\_\_



**Lakewood Instruments**

7838 North Faulkner Road, Milwaukee, WI 53224 USA

Phone (800) 228-0839 • Fax (414) 355-3508

<http://www.lakewoodinstruments.com>



# Lakewood Instruments

Congratulations on your purchase of a Lakewood Instruments controller. We would like to take this opportunity to welcome you to the Lakewood Instruments product family.

With proper care and maintenance, your controller should give you many years of trouble-free service. Please take the time to read and understand the operation manual, paying special attention to the sections on **INSTALLATION** and **MAINTENANCE**.

If, in the future, any parts or repairs are required, we strongly recommend that only original replacement parts be used. Our Customer Service Department would be happy to assist you with your parts or service requests.

We thank you for your selection and purchase of an Lakewood Instruments product.



# MODEL 267

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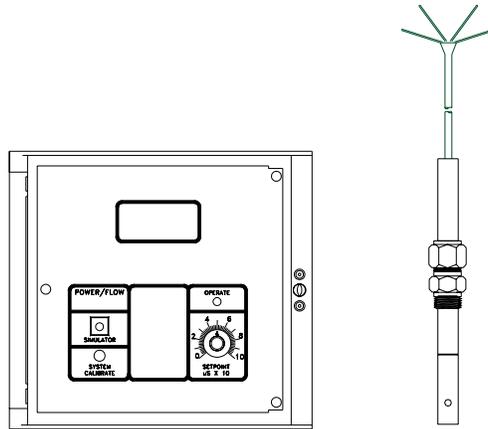
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# MODEL 267 CONDUCTIVITY MONITOR AND CONTROLLER



The Model 267 is a conductivity monitor and controller. It may be used in condensate systems or process water applications where the conductivity range is less than 100  $\mu\text{S}$ . It will operate at a range of 0-100  $\mu\text{S}$ . Custom ranges are available in 0-25  $\mu\text{S}$  and 0-50  $\mu\text{S}$ . The conductivity sensor comes with a  $\frac{3}{4}$ " MNPT and will operate at 400°F and 70 psi.

## SPECIFICATIONS

### Sensor

Material	316 SS
Max. Temp	400°F
Max. Pressure	70 psi
Cond. Range	0-100 $\mu\text{S}$

### Controller

Enclosure	ABS Plastic
Cond. Range	0-25 $\mu\text{S}$ , 0-50 $\mu\text{S}$ and 0-100 $\mu\text{S}$ (standard).
Resolution	1 $\mu\text{S}$ (0-100 $\mu\text{S}$ range).
Accuracy	$\pm 5$ $\mu\text{S}$ (0-100 $\mu\text{S}$ range).
Power	120 VAC, 50/60 Hz; 240 VAC, optional.
Relays	5 Amps @ 120 VAC

## Ordering Information

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267 Monitor/Controller with 0-100  $\mu$ S sensor and  $\frac{3}{4}$ " MNPT inline compression fitting.

### Custom Range (optional, select one only)

CR2 0-25  $\mu$ S scale.

CR5 0-50  $\mu$ S scale.

### Sensor Process Connection (optional)

1167375 316 SS ball valve with 1" process connection. This retractable option allows user to remove sensor without disturbing process.

## Operation

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The Model 267 measures the electrical conductance of your sample water to determine the level of TDS in your system. The level of conductance is expressed in either a micromhos ( $\mu$ mhos) or a microSiemens ( $\mu$ S) value. When the level of water conductivity demonstrates a level of TDS that exceeds the predetermined setpoint value, then the Model 267 triggers a blowdown of the system and dumps some of the water into the drain. Makeup water is added, which dilutes, and thus reduces, the TDS levels.

## Front Panel Controls

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The Model 267 controller features two front panel lights and two adjustments. The two lights are **POWER** and **OPERATE**.

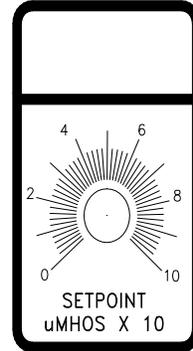
**POWER** **ON** when there is power to the controller

**OPERATE** **ON** when the conductivity exceeds the front panel setpoint and blowdown occurs

The two controller adjustment options are:

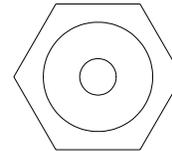
### 1). SETPOINT

Establishes the desired level of conductivity to be maintained. When the conductivity level exceeds the setpoint, blowdown occurs. Once the setpoint level is achieved, the controller shuts down the blowdown process. Consult your water treatment engineer to establish the proper setpoint for your system.



### 2). CALIBRATION

Allows you to calibrate the controller to match the actual condensate water conductivity.



SYSTEM  
CALIBRATE



Pushing the **SIMULATOR** button substitutes a fixed 50  $\mu\text{mhos}$  value in place of the sensor. This can be used to easily verify controller operation and calibration changes.

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# INSTALLATION

## Checking

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Inspect the shipping carton for obvious external damage. Note on the carrier's bill-of-lading the extent of the damage, if any, and notify the carrier. Save the shipping carton until your controller is started up.

-  **If there was shipping damage, call the Lakewood Instruments Customer Service Department at (800) 228-0839 and return the analyzer to the factory in the original carton.**

## Mounting

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Mount the controller on a FLAT, NON-VIBRATING wall.

Avoid drilling or punching additional holes in the analyzer enclosure. Damage incurred as a result of any alteration to the enclosure is not covered under the Lakewood Instruments product warranty.

**NOTE: EXCESSIVE HEAT AND/OR DIRECT SUNLIGHT EXPOSURE WILL DARKEN THE LCD DISPLAY SCREEN, MAKING IT DIFFICULT TO READ, AND MAY SHORTEN THE LIFE OF OTHER ELECTRONIC COMPONENTS.**

## Plumbing

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### Condensate Monitoring

Make sure you locate the sensor where the pipe is **ALWAYS** full of water.

- The controller diverts contaminated condensate to waste and keeps it out of the boiler. Always install the sensor in the bottom of a "U" to make sure the pipe is full.

**WARNING: DO NOT USE PVC OR CPVC PLUMBING.**

## Wiring

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See drawings for wiring instructions.

### Checking

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Check the power wiring. Make sure that the controller is powered from 120 VAC, unless it is specifically set up for 240 VAC.

Check the wiring to the blowdown solenoid valve. Make sure that the solenoid or ball valve is wired internally through the conduit knockouts to the VALVE OPEN terminal lug.

Make sure that the sensor has been attached according to the suggested installation drawing.

After you turn the flow on, check the plumbing for leaks.

### Setup and Calibration

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The Model 267 Controller is designed for ease of use. We have provided a few optional methods of calibrating so you can select the one best suited to your needs:

#### **EXAMPLE 1: USE A HAND-HELD CONDUCTIVITY METER**

You can use a Lakewood Instruments calibrated hand-held conductivity meter, a Myron L unit or other similar meters. Take a sample of the water. If you have one, use a sample valve spout to get the water directly from the inlet flow line. Let the water run for a few seconds to get a good sample.

- Measure the water conductivity level with the meter. Take careful note of the level. For the purposes of this example, the level is 25  $\mu\text{mhos}$ .
- Then turn the conductivity **CALIBRATE** screw on the front panel very slowly until the conductivity on the LCD matches that on the hand-held meter.
- You can verify that the calibration is correct by turning the setpoint dial knob very slowly to 26  $\mu\text{mhos}$  and then back to 24  $\mu\text{mhos}$  to make sure the **OPERATE** light goes **OFF** at 26  $\mu\text{mhos}$  and **ON** at 24  $\mu\text{mhos}$ .

## EXAMPLE 2: USE THE SIMULATOR

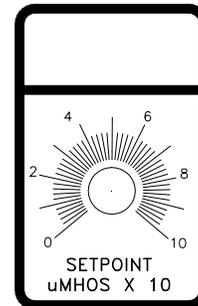
- Set the **CALIBRATE** screw so it points straight up.
- Press the **SIMULATOR** pushbutton.
- Adjust the **CALIBRATE** until the display reads 50.
- Verify operation of the controller with the pushbutton pushed in.

**NOTE: THIS IS A ROUGH CALIBRATION. USE EXAMPLE 1 FOR GREATER ACCURACY.**

## Establishing Setpoint

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After you have calibrated the controller, adjust the setpoint to the conductivity level you want to maintain. Consult with your water treatment engineer to determine the proper level for your system.



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# Maintenance and Technical Service

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## Technical Service

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 Technical Support for Lakewood Instruments can be reached by calling (800) 228-0839 or faxing (414) 355-3508, Monday through Friday, 7:30 a.m. - 5:00 p.m. CST.

 Mail and returns should be sent to:

**Lakewood Instruments  
7838 North Faulkner Road  
Milwaukee, WI 53224 USA**

When any merchandise is returned to the factory, please call and obtain a Return Goods Authorization (RGA) number and have the following information available:

- Customer's name, address, phone and fax numbers.
- A purchase order number (no exceptions) for cases where parts are required that are not under warranty.
- A contact person's name and phone number to call if the equipment is beyond repair or to discuss any other warranty matter.
- Equipment model and serial numbers.
- Reason for return (i.e., repair, warranty, incorrect part, etc.).

We will then fax to your attention an RGA form that must accompany the returned item.

**NOTE: THE RGA NUMBER MUST BE CLEARLY WRITTEN ON THE OUTSIDE OF THE PACKAGE(S) BEING RETURNED.**

## Service Guide

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When calling Lakewood Instruments, please have the controller's complete model number and serial number available, so that the technician can better assist you.

When any parts are returned to the factory, please indicate:

- Customer's name and address.
- Individual at customer location to send the repaired controller or new part to.
- The person (and phone number) to call if the equipment is beyond repair or for any warranty matter.

Write your controller's complete model number, serial number, here so that you will have them available if you wish to contact an Lakewood Instruments technician.

Model Number:

Serial Number:

## Troubleshooting

PROBLEM	CHECK
Controller is inoperative.	<ol style="list-style-type: none"> <li>1. Verify that the power outlet is 120 VAC.</li> <li>2. Plug in the power cord and check 120 VAC across terminal block <b>TA</b> lugs 2 and 3.</li> <li>3. Check continuity through the 10 Amp fuse on the rear circuit board. The fuse is located above terminal block <b>TA</b>.</li> </ol>
Conductivity control is inoperative.	<ol style="list-style-type: none"> <li>1. Make sure there is flow so the sensor is in water.</li> <li>2. Turn the setpoint fully counterclockwise to <b>0</b>. The <b>OPERATE</b> light should come on and the blowdown valve should open.</li> </ol>
The <b>OPERATE</b> light comes <b>ON</b> with the setpoint, but the valve does not open.	<ol style="list-style-type: none"> <li>1. Check for 120 VAC at the blowdown valve terminal when the <b>OPERATE</b> light is ON.</li> <li>2. Replace the relays if necessary.</li> <li>3. Refer to the blowdown valve instructions and thoroughly check the valve and wiring.</li> </ol>
There is no conductivity reading above <b>0</b> .	<ol style="list-style-type: none"> <li>1. Refer to the maintenance section to clean the sensor.</li> <li>2. Push the <b>SIMULATOR</b> pushbutton. Does the controller work at 50 <math>\mu</math>mhos?</li> <li>3. Replace the conductivity sensor.</li> </ol>
Controller drifts downward over a long time.	<ol style="list-style-type: none"> <li>1. Is the sensor clean?</li> <li>2. Is the sample flow rate too low?</li> </ol>

## Replacement Parts

P/N	Description
1167087	Conductivity Sensor 540K.1-4-105-18-TC500





**For more information call toll free in the USA (800) 228-0839**

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**Manufactured in the USA**

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