



PROFESSIONAL WATER TREATMENT SYSTEMS

Product Catalog

Cooling Tower • Boiler • Condensate • Process Water Treatment

Controllers • Sensors • Plumbing Assemblies • Valves • Water Meters

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COOLING TOWER CONTROLLERS



Model 3175 Water Treatment Controller with 7" capacitive touchscreen interface.

Microprocessor-based controllers for conductivity, pH, and ORP control of cooling tower water chemistry — from the compact Model 140 through the touchscreen 3175 platform.

Model 3175 Water Treatment Controller

The Model 3175 is based on the proven 1500 series platform and incorporates new features. It is easy to program with the familiar 1575e menu interface and can be used in cooling tower, boiler, or condensate applications with the appropriate conductivity sensor.

FEATURES

- Five output relays.
- 7" capacitive touchscreen interface.
- Simple navigation.
- Easy to program with the familiar 1575e menu interface.
- Scheduled feed, which can use four (4) relays for biocides or other chemicals.
- Ball valve delay feature allows accurate control of motorized ball valves.
- Two (2) water meter inputs, two (2) drum switch inputs, conductivity input, a flow switch input, a 4-20 mA output, and a 4-20 mA input are all standard features.
- The 4-20 mA input can be used with a transmitter for one of the following: remote conductivity, makeup conductivity, pH, ORP, percent, pressure, milliamps, flow rates, or traced chemistry control. This transmitter can be added in the field.
- Removable power cord and receptacles for simple conduit installations.
- Onboard selector switch for 120 or 240 VAC power.
- Indicators for power, alarm, and relay status.

BENEFITS

- Can be used in cooling tower, boiler, or condensate applications with the appropriate conductivity sensor.
- Reliable and flexible conductivity control at a low cost.

SPECIFICATIONS

Conductivity Range	50–10,000 μ S
Conductivity Sensor	2 electrode
Conductivity Resolution	$\pm 10 \mu$ S (conductivity < 5,000 μ S); $\pm 100 \mu$ S (conductivity > 5,000 μ S)
Temperature Compensation	500 NTC, none
Accuracy & Repeatability	$\pm 1.0\%$
Deadband / Setpoint	Adjustable
Auto/Manual Outputs	Menu selectable
Interface	7 inch capacitive color touchscreen
Drum Switch Inputs (2)	Digital contact inputs
Water Meter Inputs (2)	Contact head, paddle wheel, or turbine
Timers	Maximum blowdown time exceeded, relay runtime exceeded
Output Signal (1)	4-20 mA isolated or non-isolated, optionally powered output for conductivity
Input Signal (1)	4-20 mA non-isolated, internally powered input for conductivity
Output Relays (5)	1 blowdown, 4 selectable use
Output Relay Rating	3A each, 10A total
Power	120/240 VAC 50/60 Hz
Ambient	32°–120°F (0–49°C)
Enclosure	NEMA 4X, ETL

Note: Contact Lakewood Instruments for current pricing, part numbers, and to build a full system quote.

Model 1575e Water Treatment Controller



Part Number 1229239 shown — Controller Only.

The Model 1575e uses the latest in microprocessor capability, giving the user a high level of application flexibility. A large illuminated graphics screen, multiple inputs, and very easy setup characterize this technology. The Model 1575e is ETL approved.

FEATURES

- Removable power cord and receptacles for simple conduit installations.
- Scheduled feed, which can use three relays for biocides or other chemicals.
- Two (2) water meter inputs, two (2) drum switch inputs, conductivity input, a flow switch input, a 4-20 mA output, and a 4-20 mA input are all standard features.
- The 4-20 mA input can be used with a transmitter for remote conductivity, makeup conductivity, pH, ORP, percent, pressure, milliamps, flow rate, or traced chemistry control. This transmitter can be added in the field.
- Designed with a single circuit board for better reliability and lower cost.
- Large open shallow enclosure for easy wiring.
- Ball valve delay feature allows accurate control of motorized ball valves.
- Heavy-duty stainless steel domed numeric keypad and illuminated graphical display allow for quick and easy programming. Steel domed switches improve tactile sensing and keypad life.
- LED indicators for power, alarm, and relay status.

BENEFITS

- Easy to program with the Lakewood plain-English, intuitive, user-friendly menu interface.
- Controller can be used in boiler, cooling tower, or condensate applications when used with the appropriate conductivity sensor.
- Single circuit board design improves reliability.
- No add-on options — 4-20 mA output and feed schedule clock features are standard.

SPECIFICATIONS

Conductivity Range	50–10,000 μ S
Conductivity Sensor	2 electrode
Conductivity Resolution	$\pm 10 \mu$ S (<5000 μ S); $\pm 100 \mu$ S (>5000 μ S)
Temperature Comp.	500 NTC, none
Accuracy & Repeatability	$\pm 1.0\%$
Deadband / Setpoint	Programmable
Auto/Manual Outputs	Menu selectable
Keypad	16 tactile push-buttons
Display	Illuminated 128 x 64 pixel LCD
Drum Switch Inputs	2 digital contact inputs
Water Meter Inputs (2)	Contact head, paddle wheel, or turbine
Timers	Max. blowdown time exceeded and relay run time exceeded
Output Signal	One 4–20 mA, isolated/non-isolated optionally powered output for conductivity
Input Signal	One 4–20 mA, non-isolated internally powered input for conductivity
Output Relays	4, 3 selectable use, 1 blowdown
Relay Ratings	3A each, 10A total
Power	120/240 VAC 50/60 Hz
Ambient	32°–120°F (0–49°C)
Enclosure	NEMA 4X, ETL
Sensors/Plumbing — Cooling Tower	Max pressure 140 psi (9.65 bar) @ 100°F; max temp 140°F (60°C); min flow 1 gpm (3.785 Lpm)

ORDERING INFORMATION

Controller Only

Part No.	Description
1229239	1575e controller only, no sensor or plumbing

Controller Systems

Part No.	Description
1229240	1575e with cooling tower sensor tee and sensor
1229241	1575e with cooling tower Left Exit flowswitch and sensor
1230563	1575e with cooling tower Right Exit flowswitch and sensor
1229242	1575e with cooling tower Left Exit FS and sensor on mounting plate
1269417	1575e with cooling tower Right Exit FS and sensor on mounting plate
1269338	1575e with cooling tower sensor, flow switch, and Trace Sensor Kit on a mounting plate

Cooling Tower Components

Part No.	Description
1167158	Sensor, Conductivity 2 elec w/20 ft cable
1167157	Sensor, Conductivity 2 elec w/2 ft cable
1169207	Sensor, Conductivity 2 elec 4ft body w/20 ft cable
1167214	Plumbing, tee, 3/4 inch NPT
1107003	Plumbing, with 20 ft FS, remote plumbing Left Exit
1230562	Plumbing, with 20 ft FS, remote plumbing Right Exit
1269378	Kit, pH Retrofit — includes isolation kit, pH sensor, and tee
1269387	Kit, ORP Retrofit — includes isolation kit, ORP sensor, and tee

Replacement Parts

Part No.	Description
1269534	Kit, O-Ring, 1166418, for sensor and/or flow sight, set of 10
1269533	Kit, Blue Ring replacement, 1169740, set of two
1107004	Reed Switch w/20 ft of cable
1167235	Reed Switch w/36 in. of cable for use with Mounting Plate
1269596	Kit, Flow Sight, 1167266, set of five
1269595	Kit, Flow Float, 1167234, set of five
1269006	Lubricant Pack, Silicone, set of 20

Model 1575e Controller Systems



Model 1575e Controller System.

The Model 1575e uses the latest in microprocessor capability, giving the user a high level of application flexibility. A large illuminated graphics screen, multiple inputs, and very easy setup characterize this technology. One of these inputs is the 4-20mA input that can be used with a transmitter for trace chemistry control, as a pH input, or as makeup conductivity for cycles of concentration control.

ORDERING INFORMATION

1575e with Trace Sensor Kit — includes the Model 1575e controller with cooling tower conductivity sensor and left exit flow switch plumbing assembly on a mounting plate, plus an Inline Fluorometer with Trace Connection/Isolation Kit and an Inline Tee

Part No.	Description
1269338	1575e w/Trace Sensor Kit

1575e with pH or ORP Sensor Kit — includes the Model 1575e controller with cooling tower conductivity, flow switch plumbing assembly, and pH or ORP Sensor Kit on a mounting plate

Part No.	Description
1269333	1575e w/pH and conductivity
1269409	1575e w/ORP and conductivity
1269378	Retrofit Kit, pH
1269387	Retrofit Kit, ORP

1575e with Cycles of Concentration — includes the Model 1575e controller with cooling tower conductivity sensor and flowswitch plumbing assembly on a mounting plate, plus the Cycles of Concentration Kit

Part No.	Description
1269339	1575e w/Cycles of Concentration
1269426	Retrofit Kit, Cycles of Concentration

Model 140 Water Treatment Controller



Part Number 1239594 shown — Controller Only.

The Model 140 uses the latest in microprocessor capability, giving the user a high level of application flexibility. Multiple inputs and very easy setup characterize this technology. Water meters, sensors, and plumbing assemblies are purchased separately.

FEATURES

- Use this controller for cooling towers.
- Removable power cord and receptacles for simple conduit installations.
- Scheduled feed, which can use two relays for biocides or other chemicals.
- One (1) water meter input, conductivity input, flow switch input, and 4-20 mA output are all standard features.
- Designed with a single circuit board for better reliability and lower cost.
- Large open shallow enclosure for easy wiring.
- The enclosure is rated NEMA 4X.
- Power selector switch for 115 or 230 VAC operation.
- Heavy-duty stainless steel domed numeric keypad and graphical display allow for quick and easy programming. Steel domed switches improve tactile sensing and keypad life.
- LED indicators for power, flow status, alarm, and relay status.

BENEFITS

- Easy to program with the Lakewood plain-English, intuitive, user-friendly menu interface.
- Single circuit board design improves reliability.
- No add-on options — 4-20 mA output and biocide features are standard.
- Multiple methods of chemical feed for application flexibility.

SPECIFICATIONS

Conductivity Range	0–10,000 μ S
Conductivity Sensor	2 electrode
Conductivity Resolution	$\pm 10 \mu$ S
Temperature Comp.	500 ohm NTC
Accuracy & Repeatability	$\pm 1.0\%$
Deadband / Setpoint	Adjustable
Auto/Manual Outputs	Menu selectable
Keypad	16 tactile push-buttons
Display	16 x 2 character
Water Meter Input	Contact head, paddle wheel, or turbine
Timer	Max. blowdown time exceeded, relay time exceeded
Output Signal	One 4–20 mA, isolated or non-isolated, optionally powered
Output Relays	2 selectable use, 1 blowdown
Relay Ratings	3A each, 10A total
Power	120/240 VAC 50/60 Hz
Ambient	32°–120°F (0–49°C)
Enclosure	NEMA 4X, ETL
Sensors/Plumbing — Cooling Tower	Max pressure 140 psi (9.65 bar) @ 100°F; max temp 140°F (60°C); min flow 1 gpm (3.785 Lpm)

ORDERING INFORMATION

Controller Only

Part No.	Description
1239594	140 controller only, no sensor or plumbing

Controller Systems (include sensor and plumbing assemblies)

Part No.	Description
1239595	140 with cooling tower sensor tee and sensor
1239596	140 with cooling tower Left Exit flowswitch and sensor
1269226	140 with cooling tower Right Exit flowswitch and sensor
1239597	140 with cooling tower Left Exit FS and sensor on mounting plate
1269418	140 with cooling tower Right Exit FS and sensor on mounting plate

Cooling Tower Components

Part No.	Description
1167158	Sensor, Conductivity 2 elec w/20 ft cable
1167157	Sensor, Conductivity 2 elec w/2 ft cable
1169207	Sensor, Conductivity 2 elec 4ft body w/20 ft cable
1167214	Plumbing, tee, 3/4 inch NPT
1107003	Plumbing, with 20 ft FS, remote plumbing Left Exit
1230562	Plumbing, with 20 ft FS, remote plumbing Right Exit

Replacement Parts

Part No.	Description
1269534	Kit, O-Ring, 1166418, for sensor and/or flow sight, set of 10
1269533	Kit, Blue Ring replacement, 1169740, set of two
1107004	Reed Switch w/20 ft of cable
1167235	Reed Switch w/36 in. of cable for use with Mounting Plate
1269596	Kit, Flow Sight, 1167266, set of five
1269595	Kit, Flow Float, 1167234, set of five
1269006	Lubricant Pack, Silicone, set of 20

Model 1520e / 1530e pH or ORP Water Treatment Controller



Part Number 1240475 shown — Controller Only.

The Model 1520e/30e uses the latest in microprocessor capability, giving the user a high level of application flexibility for pH or ORP control. The controller can be configured in the field to operate as a pH or an ORP controller. A large illuminated graphics screen, multiple inputs, and very easy setup characterize this technology. Water meters, sensors, and plumbing assemblies are purchased separately.

FEATURES

- Removable power cord and receptacles for simple conduit installations.
- Scheduled feed, which can use three relays for biocides or other chemicals.
- Two (2) water meter inputs, two (2) drum switch inputs, pH or ORP input, flow switch input, and 4-20 mA output are all standard features.
- A 4-20 mA input for remote pH or ORP applications can be used in place of the standard pH or ORP input.
- Designed with a single circuit board for better reliability and lower cost.
- Large open shallow enclosure for easy wiring.
- Heavy-duty stainless steel domed numeric keypad and illuminated graphical display allow for quick and easy programming. Steel domed switches improve tactile sensing and keypad life.
- LED indicators for power, alarm, and relay status.

BENEFITS

- Easy to program with the Lakewood plain-English, intuitive, user-friendly menu interface.
- Controller can be removed from a cooling tower and placed in another type of application when used with the appropriate pH or ORP sensor.
- Single circuit board design improves reliability.
- No add-on options — 4-20 mA output and biocide features are standard.

SPECIFICATIONS

pH Range	2–12 pH
ORP Range	–1000 to +1000 mV
Sensor Types	Solution ground, signal differential, or single-ended
Resolution	±.10 pH or 1 mV
Accuracy & Repeatability	± 1.0%
Deadband / Setpoint	Adjustable
Auto/Manual Outputs	Menu selectable
Keypad	16 tactile push-buttons
Display	Illuminated 128 x 64 pixel LCD
Drum Switch Inputs	2 digital contact inputs
Water Meter Inputs (2)	Contact head, paddle wheel, or turbine
Timer	Relay run time exceeded
Output Signal	One 4–20 mA, non-isolated/isolated powered output
Output Relays	4 selectable use
Relay Ratings	3A each, 10A total
Power	120/240 VAC 50/60 Hz
Ambient	32°–120°F (0–49°C)
Enclosure	NEMA 4X, ETL
Sensors/Plumbing — Cooling Tower	Max pressure 140 psi (9.65 bar) @ 100°F; max temp 140°F (60°C); min flow 1 gpm (3.785 Lpm)

ORDERING INFORMATION

Controller Only

Part No.	Description
1240475	1520e/30e controller only, no sensor or plumbing

pH Controller Systems

Part No.	Description
1240476	1520e with cooling tower flowswitch and pH sensor, Left Exit
1269454	1520e with cooling tower flowswitch and pH sensor, Right Exit
1240518	1520e with cooling tower FS and pH sensor on mounting plate

ORP Controller Systems

Part No.	Description
1263418	1530e with cooling tower flowswitch and ORP sensor
1240519	1530e with cooling tower FS and ORP sensor on mounting plate

pH and ORP Cooling Tower Components

Part No.	Description
1240472	Sensor, pH 1520e/2350e/2412e w/15 ft cable
1240473	Sensor, ORP 1530e/2330e/2430e w/15 ft cable
1240477	Plumbing, 1520/30e, 2330e, 2350e, 3175 w/20 ft flow switch
1269193	pH/ORP transmitter
1269455	Plumbing, 1520/30e, w/FS, Right Exit

Replacement Parts

Part No.	Description
1269534	Kit, O-Ring, 1166418, for sensor and/or flow sight, set of 10
1269533	Kit, Blue Ring replacement, 1169740, set of two
1107004	Reed Switch w/20 ft of cable
1167235	Reed Switch w/36 in. of cable for use with Mounting Plate
1269596	Kit, Flow Sight, 1167266, set of five
1269595	Kit, Flow Float, 1167234, set of five
1269006	Lubricant Pack, Silicone, set of 20

Trace Sensor Kit

Part Number 1269338 shown — Trace Mounted Sensor Kit shown with a Model 1575e Cooling Tower Water Treatment Controller on a Mounting Plate.

The Trace Sensor Kit adds trace chemistry control to the Lakewood Instruments Model 1575e and 3175 cooling tower controllers. The Trace Mounted Sensor Kit includes an Inline Fluorometer, an inline tee, a pre-wired isolator, and a power supply.

The Inline Fluorometer is a low-cost, compact fluorometer designed for monitoring fluorescent dyes in industrial water systems. Integration into the automation system enables monitoring of fluorescent trends in real time for better control of cooling water chemistry. The fluorometer is a rugged, 24/7 device providing maximum performance, minimal maintenance, and solid-state reliability.

FEATURES

- Includes a single-channel fluorometer that provides a 4-20 mA analog signal output directly proportional to the concentration of traced chemistry.
- Solid-state LED/photodiode technology, no moving parts.
- A low-maintenance design for trouble-free performance.
- Includes a pre-wired isolator to eliminate power supply interference.
- Includes an in-line tee for use in light industrial environments.
- Works with PTSA fluorescent dye.
- Probe output is pre-calibrated (base and slope) at 200 ppb trace @ 20 mA. A 1-to-1000 PTSA mix equates to 100 ppm of chemical in the system.

BENEFITS

- Easy to add to the Lakewood Instruments Model 1575e and 3175 cooling tower controllers in the field. A firmware upgrade allows older 1575e units to accept this technology.
- Easy to transition to trace chemistry control using Lakewood Instruments control schemes.
- Installs into the process flow with a PVC tee.
- Comes pre-set and aligned at the factory.

SPECIFICATIONS

Material	PVC Type 1
Threading	1 inch NPTF
Max Pressure	100 psi
Max Temperature	140°F (60°C)
Range (Calibrated)	0–200 ppb (trace)
Output Signal	4–20 mA
Input Voltage	8 to 30 VDC

ORDERING INFORMATION

Trace Sensor Systems

Part No.	Description
1269324	1575e Trace Sensor Kit — includes Inline Fluorometer, 1575e Trace Connection/Isolation Kit, and Inline Tee
1269326	1575e Trace Connection Kit — includes isolator and power supply (fluorometer and tee not included)
1269301	Inline Fluorometer
1269522	In-Line Tee
1269524	Replacement O-Ring for Little Dipper

COOLING TOWER ACCESSORIES AND REPLACEMENT PARTS



Controller with conductivity sensor and flow switch plumbing assembly on a mounting plate.

Sensors, plumbing assemblies, and field-replaceable parts for Lakewood Instruments cooling tower controllers.

O-Ring Kit, Set of Ten

Part No. 1269534

EPDM O-Rings (AS568-911) for use with Lakewood Instruments cooling tower pH, conductivity, and ORP sensors, and flow sights. Sold in packages of 10.

Blue Ring Replacement Kit, Set of Two

Part No. 1269533

Everything needed (except glue) to replace the blue locking ring on a Lakewood Instruments plumbing assembly. Sold in sets of two.

Reed Switch

Part No. 1167235

36 inches of cable, for use with flow switch plumbing assemblies attached to a Lakewood Instruments controller enclosure or mounting plate.

Reed Switch, 20 ft

Part No. 1107004

20 feet of cable, for use with flow switch plumbing assemblies not attached to the controller enclosure.

Flow Float, Set of Five

Part No. 1269595

Activates the reed switch and provides a visual indicator of flow in Lakewood Instruments flow switch plumbing assemblies. Sold in sets of five.

Flow Sight, Set of Five

Part No. 1269596

Includes O-ring; part of the flow switch plumbing assembly, giving a visible indication of flow float condition. Sold in sets of five. Color may vary.

2-Electrode Conductivity Sensor, 20 ft

Part No. 1167158

Used on models 101-161RS, 101-161RSFS, 140, 1512e, 1575, and 1575e.

2-Electrode Conductivity Sensor

Part No. 1167157

Used on models 101, 111, 151, 161, 173, 175, 211, 215, 222C, 412, 420, and 140/1575e on a mounting plate.

4-Electrode Conductivity Sensor

Part No. 1167286

30 inches of cable, for use with models 224C, 1400, 2175, 2412, 2430, NCKT, and 3175 on a mounting plate.

4-Electrode Conductivity Sensor, 20 ft

Part No. 1169202

20 ft of cable, for use with models 2175e, 2412e, 2430e, 2175-N4, 2412-N4, 2430-N4, 2812e, 2830e, 2832e, 2875e, and 3175. Also available with a 4 ft body for submersion applications.

2-Electrode Conductivity Sensor, Submersible

Part No. 1169207 (4 ft body) / 1269377 (2 ft body)

2 ft or 4 ft body with 20 ft cable for submersion applications. Used on models 101-161RS, 101-161RSFS, 140, 1512e, 1575, and 1575e.

pH Sensor, 3175, w/10 ft cable

Part No. 1269422

Used on the 3175 series of cooling tower controllers.

ORP Sensor, 3175, w/10 ft cable

Part No. 1269423

Used on the 3175 series of cooling tower controllers.

pH Sensor, w/15 ft cable

Part No. 1240472

Used on models 1520e, 2350e, 2412e, 2812e, and 2832e.

ORP Sensor, w/15 ft cable

Part No. 1240473

Used on models 1530e, 2330e, 2430e, 2830e, and 2832e.

Remote Input RTD

Part No. 1224302

Used where extreme variations in water temperature cause inaccurate conductivity readings. 500 ohm NTC. Compatible with models 101, 111, 151, 161, 140, 173, 175, 211, 215, 412, 420, 1400, 1575, 1575e, 2175, 2412, 2430, and 3175.

FLO-TEKTOR (formerly called SPAD)

Part No. 1269090 (5 VDC, 20 ft) / 1269228 (5 VDC, 50 ft) / 1269103 (24 VDC, 20 ft) / 1269229 (24 VDC, 50 ft)

Used as an alternative or backup to a mechanical flow switch. Designed to detect the operation of external equipment, such as a recirculation pump, allowing flow determination based on pump operation instead of, or in addition to, flow through a pipe. Externally mounted with no interconnections to pumps required. Available with 20 ft or 50 ft of cable. 5V version for Models 140, 150, 1520/30e, and 1575e; 24V version for Models 1512e, 2000 series, and 3175.

Plumbing 100

Part No. 1167214

Replacement plumbing assembly with 3/4 inch NPT connections, for use with Models 101, 111, 151, 161, 140, and 1575e with cooling tower conductivity sensors. Does not include flow switch.

Plumbing FS

Part No. 1167215

Comes with flow sight, float, reed switch, and 3/4 inch NPT connections, for use with Models 101-FS, 111-FS, 151-FS, 161-FS, 173, 175, 211, 215, 222C, 224C, or 2175 cooling tower controllers.

Plumbing FS, 20 ft

Part No. 1107003

Comes with flow sight, float, reed switch, and 3/4 inch NPT connections, for use with Models 101-RSFS, 111-RSFS, 151-RSFS, 161-RSFS, 140 w/FS, 1575e w/FS, 2175e, 2875e, and 3175 cooling tower controllers.

Plumbing FS, 20 ft, Right Exit

Part No. 1230562

Same as Plumbing FS 20 ft, exiting to the right. For use with Models 101-RSFS, 111-RSFS, 151-RSFS, 161-RSFS, 140 w/FS, 1575e w/FS, 2175e, 2875e, and 3175 cooling tower controllers.

Plumbing Tee

Part No. 1169440

Designed for 3/4 inch solvent-weld connections. Used with Lakewood Instruments cooling tower conductivity sensors.

Plumbing, 1520/30e, 2330e, 2350e

Part No. 1240477

Comes with flow sight, float, reed switch, and 3/4 inch NPT connections. For use with Models 1520e, 1530e, 2330e, 2350e, and 3175 cooling tower controllers. Does not include solution ground. Also available in a Right Exit version — contact Lakewood Instruments for part number.

Plumbing, 1512e, 2412e, 2430e, 2812e, 2830e, 3175

Part No. 1268640

Comes with flow sight, float, reed switch, and 3/4 inch NPT connections. For use with Models 1512e, 2412e, 2430e, 2812e, 2830e, and 3175. Also available in a Right Exit version — contact Lakewood Instruments for part number.

Plumbing, 2400e and 3175 w/pH, Conductivity, and ORP

Part No. 1268942

Comes with flow sight, float, reed switch, and 3/4 inch NPT connections. For use with Model 2832e and 3175 cooling tower controllers. Also available in a Right Exit version — contact Lakewood Instruments for part number.

Plumbing, 2000e and 3175 w/pH and ORP

Part No. 1269245

Comes with flow sight, float, reed switch, and 3/4 inch NPT connections. For use with Model 2000e and 3175 cooling tower controllers. Also available in a Right Exit version — contact Lakewood Instruments for part number.

DS Drum Switch

Part No. 1167511

Can be used as either a high or low level indicator. Applications: chemical drum monitor, waste water tank level. Compatible with the 3175 series and the 1500 series. Features: normally open or normally closed contacts, 4 ft body length.

pH/ORP Transmitter

Part No. 1269193

Converts the pH or ORP signal from a pH or ORP sensor to a 4-20 mA signal.

Conductivity Transmitter

Part No. 1269340

Converts the conductivity signal from a conductivity sensor to a 4-20 mA signal. For use with the Model 1575e.

pH / ORP Simulator

Part No. 1263402

Used to simulate pH or ORP input to a controller. Powered by a 9V battery and comes with a coaxial cable with BNC connectors.

EZ Service Kit

Part No. 1268992

Includes a flow sight, a float, spare fuses, O-rings, O-lube, tie wraps, a small screwdriver, a wire brush, pH simulator shunts, and conductivity test terminal blocks for cooling tower controllers, plus instructions for use — all in a compartmentalized plastic bag that rolls up for storage.

ORDERING INFORMATION — COOLING TOWER ACCESSORIES AND REPLACEMENT PARTS

Part No.	Description
1269534	Kit, O-Ring, 1166418, for sensor and/or flow sight, set of 10
1269533	Kit, Blue Ring replacement, 1169740, set of two
1167235	Reed Switch w/36 in. of cable for use with Mounting Plate
1107004	Reed Switch w/20 ft of cable
1269595	Kit, Flow Float, 1167234, set of five
1269596	Kit, Flow Sight, 1167266, set of five
1167158	Sensor, Conductivity 2 elec w/20 ft cable
1169207	Sensor, Conductivity, 2 elec 4 ft body w/20 ft cable
1269377	Sensor, Conductivity, 2 elec 2 ft body w/20 ft cable
1167157	Sensor, Conductivity 2 elec w/2 ft cable
1167286	Sensor, Conductivity 4 elec

Part No.	Description
1169202	Sensor, Conductivity 4 elec w/20 ft of cable
1169201	Sensor, Conductivity, 4 elec, 4 ft body (not pictured)
1269422	Sensor, pH, 3175
1269423	Sensor, ORP, 3175
1240472	Sensor, pH, 1520e/2350e/2412e/2812e/2832e w/15 ft cable
1240473	Sensor, ORP, 1530e/2330e/2430e/2830e w/15 ft cable
1224302	Remote Input RTD, 500 NTC (temperature input)
1269090	FLO-TEKTOR, 5 VDC 20 ft cable (formerly SPAD)
1269228	FLO-TEKTOR, 5 VDC 50 ft cable (formerly SPAD)
1269103	FLO-TEKTOR, 24 VDC 20 ft cable (formerly SPAD)
1269229	FLO-TEKTOR, 24 VDC 50 ft cable (formerly SPAD)
1167214	Plumbing, tee, 3/4 inch NPT
1167215	Plumbing, FS, plumbing on box
1107003	Plumbing, with 20 ft FS, remote plumbing, Left Exit
1230562	Plumbing, with 20 ft FS, remote plumbing, Right Exit
1169440	Plumbing, tee
1240477	Plumbing, 1520/30e, 2330e, 2350e, 3175 w/20 ft flow switch
1268640	Plumbing, 1512e, 2412e, 2430e, 2812e, 2830e, 3175
1268942	Plumbing, 2400e, 3175 w/pH, conductivity, and ORP
1269245	Plumbing, 2000e w/pH and ORP
1269455	Plumbing, 1520/1530e, w/FS, Right Exit
1167511	Drum Switch
1269193	pH/ORP transmitter
1269340	Conductivity transmitter
1263402	pH/ORP simulator
1268992	EZ Service Kit
1269006	Lubricant Pack, Silicone, set of 20
1269717	Fuse Kit, 100mA, 250V, Slow, AG3, qty 5
1269720	Fuse Kit, 10A, 250V, Fast, AG3, qty 5
1269733	Fuse Kit, 15A, 250V, Fast, 3AB, qty 5

MISCELLANEOUS PLUMBING ACCESSORIES



9176 Chemical Injection Manifold, representative of the plumbing accessories in this section.

9050 Corrosion Coupon Rack

Part No. 1167416

A PVC four-coupon holder system. Includes an inlet and outlet shutoff valve, four (4) coupon holders, and a 5 gpm (18.9 lpm) flow regulator. Material is PVC Schedule 40 with a brass regulator and valves. The coupon holder is 3/4 inch MNPT, PVC. The pressure rating is 140 psi at 100°F (9.7 bar @ 38°C). The maximum temperature is 140°F (60°C).

Coupon Holder

Part No. 1167500

3/4 inch MNPT, PVC. The pressure rating is 140 psi at 100°F (9.7 bar @ 38°C). The maximum temperature is 140°F (60°C).

9102 Sample Shutoff Assembly

Part No. 1167419

A PVC inlet plumbing assembly with a brass shut-off valve and a sample-cock. The material is PVC Schedule 80 with brass valves. The pressure rating is 140 psi at 100°F (9.7 bar @ 38°C). The maximum temperature is 140°F (60°C). Connections are 3/4 inch NPT.

9160 Corporation Stop

Part No. 1167423 (stainless steel, 18") / 1167424 (Carpenter 20, 18") / 1269718 (stainless steel, 9") / 1269719 (Carpenter 20, 9")

Effectively disperses chemicals, such as acid, in the center of a pipe. Process and chemical inlet connections are 1 inch NPT. The quill diameter is 1/2 inch, in 316 stainless steel. The quill adjustment valve and process connections are brass; the chemical inlet valve is PVC Schedule 80. Also available in Carpenter 20. Available in 9 and 18 inch quill lengths.

9176 Chemical Injection Manifold

Part No. 1167426

Designed for use with four (4) chemical injection points, including acid. A sample valve, shutoff valve, and quick-release unions are included for easy removal. The material is PVC, Schedule 40 and 80, with four 1/2 inch FNPT PVC injection tees (one Schedule 80, for acid). Maximum pressure is 140 psi @ 100°F (9.7 bar @ 38°C); maximum temperature is 140°F (60°C).

ORDERING INFORMATION

Part No.	Description
1167500	Coupon Holder, PVC 3/4" NPT
1167416	9050, PVC corrosion coupon rack
1167419	9102, Controller inlet and shut-off valve with sample cock
1167423	9160, 316 S.S. corporation stop, 1" NPT, CPVC shut-off valve, 18 in
1167424	9160C20, Carpenter 20 corp. stop, 1" NPT, CPVC shut-off valve, 18 in
1269718	9160, 316 S.S. corporation stop, 1" NPT, CPVC shut-off valve, 9 in
1269719	9160C20, Carpenter 20 corp. stop, 1" NPT, CPVC shut-off valve, 9 in
1167426	9176, PVC injection manifold for up to 4 chemical pumps

MOTORIZED BALL VALVES



95 Series "Sprite" motorized ball valves — CPVC (left) and chrome-plated brass or stainless steel (right) body styles.

95 Series "Sprite" Motorized Ball Valves

The Model 95 Series, "Sprite," is a mini 2-way motorized ball valve designed as an economical alternative to solenoid valves for use in high-fouling, cooling water environments. It is considered "mini" because it measures only about 3 inches wide by 3 inches tall.

The Sprite is motor-driven open by line voltage and motor-driven closed by way of a built-in capacitor. This ensures the valve will close even on a complete loss of power, and it only requires two wires to power it.

The long service life valve and actuator (approximately 70,000 to 100,000 cycles) includes a manual override and a visual indicator of valve position.

SPECIFICATIONS

Valve Sizes	1/2, 3/4, and 1 inch
Body / Ball / Stem	CPVC, chrome-plated brass, or 316 stainless steel
Seal	EPDM
Seat	PTFE
Threads	NPT (female)
Maximum Pressure	145 psi CPVC; 232 psi brass; 232 psi stainless
Maximum Temperature	140°F (60°C)
Max Delta-P	100 psi to fully close
Actuator Housing Material	ABS
Actuator Ambient Temp	−4°F to 113°F (−20°C to 45°C)
Actuator Rating	IP67
Max Torque	2 Nm
Power Supply	120/240 VAC
Max Power	5 W
Current	25 ± 5 mA
Running Time	5–7 seconds

Note: Valve assembly model numbers: 1/2" — 95SP50 (CPVC), 95SB50 (chrome/brass), 95SS50 (SS); 3/4" — 95SP75, 95SB75, 95SS75; 1" — 95SP100, 95SB100, 95SS100. Other materials and sizes are available with a minimum 100-piece buy.

ORDERING INFORMATION

Part No.	Description
1269072	95SP50, 1/2" CPVC motorized ball valve
1269073	95SP75, 3/4" CPVC motorized ball valve
1269074	95SP100, 1" CPVC motorized ball valve
1269076	95SB50, 1/2" chrome-plated brass motorized ball valve
1269077	95SB75, 3/4" chrome-plated brass motorized ball valve
1269078	95SB100, 1" chrome-plated brass motorized ball valve
1269080	95SS50, 1/2" 316 SS motorized ball valve
1269081	95SS75, 3/4" 316 SS motorized ball valve
1269082	95SS100, 1" 316 SS motorized ball valve
1269262	J-Box option

9500 SERIES COOLING WATER BLOWDOWN VALVES



950X Series plastic (left) and 951X Series brass (right) diaphragm bleed valve assemblies.

950X Series plastic valve assemblies use a PVC body with a 316 stainless steel guide, set-screw flow control, and Buna-N diaphragm; differential pressure is 10 psi to open, maximum pressure 50 psi (3.4 bar), maximum temperature 120°F (49°C). 951X Series brass valve assemblies use a brass body with a Viton diaphragm; differential pressure is 10 psi to open, maximum pressure 235 psi (16.2 bar), maximum temperature 180°F (82°C), power 120 VAC. Both series are supplied with a 120 VAC to 24 VDC power supply.

Note: Valve assembly model and part number by size: 1/2" — 9501 (1167433) plastic / 9511 (1166666) brass, 1–10 gpm; 3/4" — 9502 (1167434) / 9512 (1166667), 5–15 gpm; 1" — 9503 (1167435) / 9513 (1166668), 10–40 gpm; 1-1/2" — 9504 (1167436), 15–80 gpm (plastic only); 2" — 9505 (1167437), 20–150 gpm (plastic only). Flow range is a rough approximation for pressure differentials from 1 to 50 psi (0.01 to 3.4 bar).

ORDERING INFORMATION

Part No.	Description
1167433	9501, 1/2" plastic diaphragm bleed valve
1167434	9502, 3/4" plastic diaphragm bleed valve
1167435	9503, 1" plastic diaphragm bleed valve
1167436	9504, 1-1/2" plastic diaphragm bleed valve
1167437	9505, 2" plastic diaphragm bleed valve
1166666	9511, 1/2" brass diaphragm bleed valve
1166667	9512, 3/4" brass diaphragm bleed valve
1166668	9513, 1" brass diaphragm bleed valve

9600 SERIES Y STRAINERS



960X Series steel (left) and 961X Series plastic (right) Y strainers.

960X Series steel Y strainers use a cast-iron body with a 20-mesh stainless steel screen; maximum pressure 250 psi @ 100°F, maximum temperature 120°F. 961X Series plastic Y strainers use a PVC true-union body with a 1/32" perforated plastic screen; maximum pressure 150 psi @ 70°F, maximum temperature 150°F.

***Note:** Strainer model and part number by size: 1/2" — 9601 (1166675) steel / 9611 (1166682) plastic; 3/4" — 9602 (1166676) / 9612 (1166683); 1" — 9603 (1166677) / 9613 (1166684).*

ORDERING INFORMATION

Part No.	Description
1166675	9601, 1/2" steel wye strainer
1166676	9602, 3/4" steel wye strainer
1166677	9603, 1" steel wye strainer
1166682	9611, 1/2" plastic wye strainer
1166683	9612, 3/4" plastic wye strainer
1166684	9613, 1" plastic wye strainer

WATER METERS



Carlson MRS Series industrial contacting head multi-jet water meter.

Autotrol™ Turbine Water Meter

The Model 1TM and 2TM turbine water meters offer accurate flow sensing for water treatment applications, with stainless steel NPT adapter fittings for reliable, leak-free installation.

SPECIFICATIONS

Flow Rate Range	1TM (1"): 0.275–35 gpm (0.0625–7.95 m ³ /h) • 2TM (2"): 5–250 gpm (1.14–56.8 m ³ /h)
Housing Material	30% glass-filled PPO
Turbine (Impeller)	Polypropylene
Bearings	1TM: Polyimide • 2TM: Carbon graphite (no shaft — thrust bearing)
Shaft	1TM: 302 stainless steel
Accuracy	± 3% of reading
Pressure Drop	1TM: 1.5 psi @ 30 gpm (10.3 kPa @ 7 m ³ /h) • 2TM: 2.5 psi @ 150 gpm (17.2 kPa @ 34 m ³ /h)
Maximum Water Temp.	100°F (38°C)
Maximum Temperature	122°F (50°C)
Maximum Pressure	1TM: 127 psi (875 kPa) • 2TM: 100 psi (689 kPa)
Available Cable Lengths	25, 50 ft (7.6, 15.2 m); up to 1,000 ft (305 m) in kit form

1TM-NPT — Part No. 3023532

A 1 inch turbine water meter with stainless steel NPT adapter fittings. Flow rate is 0.275–35 gpm. Max water temp 100°F (38°C), max temp 122°F (50°C), max pressure 127 psi (875 kPa). Comes complete with turbine adapters, turbine nuts, replacement turbine, and turbine gasket. Hall Effect cable sold separately.

2TM-NPT — Part No. 3023536

A 2 inch turbine water meter with stainless steel NPT adapter fittings. Flow rate is 5–250 gpm. Max water temp 100°F (38°C), max temp 122°F (50°C), max pressure 100 psi (689 kPa). Comes complete with turbine adapters, turbine nuts, replacement turbine, and turbine gasket. Hall Effect cable sold separately.

49C25 Water Meter Cable — Part No. 1033354

The Hall Effect sensor with 25 ft of cable for use with the Autotrol turbine water meters.

INSTALLATION INSTRUCTIONS

Install the turbine assembly in the water line. Note the flow direction arrow on the turbine body. It is highly recommended that there be a length of straight pipe on either side of the turbine equal to ten times the pipe diameter. If installation conditions do not permit this length, a minimum of 12 inches (31 cm) of straight pipe before and after the 2 inch (5 cm) turbine, and 6 inches (15 cm) before and after the 1 inch (2.5 cm) turbine, may be sufficient.

- Autotrol turbine water meters are not to be used as a union. Water meters must be supported at both ends.
- Water meters will be ideally located in horizontal pipe with a length of straight pipe equal to 10 pipe diameters on either side.
- Water meters must have flow oriented from bottom to top when mounted vertically.
- Do not over-tighten the turbine housing adapter nuts, or you may damage the threads.

ORDERING INFORMATION**Turbines**

Part No.	Description
3023532	1TM-NPT, 1" turbine meter with NPT fittings
3023536	2TM-NPT, 2" turbine meter with NPT fittings

Sensor Cables (1 required for each turbine)

Part No.	Description
1033354	49C25, 25 ft cable for turbine meter

Carlson MRS® Series Industrial Contacting Head Multi-Jet Water Meters

Carlson MRS® industrial electric contacting multi-jet meters are an economical answer for industrial applications needing good tolerance to contaminants, an electrical output signal, and total volume registration. With an easy-to-read register display, the MRS® water meter is designed with reliability and affordability in mind. The MRS® series meter is available in sizes from 3/4" to 2". Carlson's MRS® industrial meters meet or exceed AWWA specifications.

TYPICAL APPLICATIONS

- Cooling tower and boiler water treatment
- Proportional feed of chemicals
- Wide flow range
- Remote totalizing
- Automatic regeneration

FEATURES

- Low-cost accuracy
- Wide flow range
- Low maintenance

SPECIFICATIONS

Materials	Cast bronze
Temperature	35°F–122°F (50°C); protect from freezing
Max Pressure	150 psi (10.3 bar)
pH Range	6.5–8.0 pH
Accuracy	± 1.5% of max flow
Max Current	100 mA
Max Voltage	24 VDC
Cable Length	6 ft

METER SELECTION CHART

Meter / Pipe Size	Model	Continuous Flow*	Flow Range	Length	Height	Width	Conn. Length (x2)
5/8" x 3/4"	750MRS	10 GPM	1/4–20 GPM	7-1/2"	4-1/4"	3-5/8"	2"
3/4" x 3/4"	7575MRS	15 GPM	1/2–30 GPM	7-1/2"	4-3/8"	3-7/8"	2"
1"	1000MRS	25 GPM	3/4–50 GPM	10-1/4"	4-1/2"	4"	2-1/4"
1-1/2"	150MRS	50 GPM	1-1/2–100 GPM	11-1/8"	6"	5"	2-3/8"
2"	200MRS	80 GPM	2–160 GPM	11-1/8"	7"	6-1/2"	2-3/4"

Note: *Continuous Flow: the size of meter selected should be based on continuous flow (GPM), not pipe size. For example, if continuous flow is 25 GPM, a 1" meter should be selected rather than a 3/4" meter.

ORDERING INFORMATION

Ordering Information

Part No.	Description
1269624	750MRS, 3/4" NPT, 1 GPC
1269625	750MRS, 3/4" NPT, 10 GPC
1269626	750MRS, 3/4" NPT, 100 GPC
1269627	7575MRS, 3/4" NPT, 1 GPC
1269628	7575MRS, 3/4" NPT, 10 GPC
1269629	7575MRS, 3/4" NPT, 100 GPC
1269630	1000MRS, 1" NPT, 1 GPC
1269631	1000MRS, 1" NPT, 10 GPC
1269632	1000MRS, 1" NPT, 100 GPC
1269633	150MRS, 1.5" NPT, 1 GPC
1269634	150MRS, 1.5" NPT, 10 GPC
1269635	150MRS, 1.5" NPT, 100 GPC
1269636	200MRS, 2" NPT, 1 GPC
1269637	200MRS, 2" NPT, 10 GPC
1269638	200MRS, 2" NPT, 100 GPC

CONDENSATE CONTROLLERS



Water treatment controller shown in a condensate control configuration.

Controllers for monitoring and controlling condensate return quality, available in conductivity-based (Model 1575e) and pH/ORP-based (Model 1520e/30e) configurations.

Model 1575e Water Treatment Controller — Condensate



Part Number 1229239 shown — Condensate Controller, Controller Only.

The Model 1575e uses the latest in microprocessor capability, giving the user a high level of application flexibility. A large illuminated graphics screen, multiple inputs, and very easy setup characterize this technology. The Model 1575e is ETL approved.

FEATURES

- Removable power cord and receptacles for simple conduit installations.
- Scheduled feed, which can use three relays for biocides or other chemicals.
- Two (2) water meter inputs, two (2) drum switch inputs, conductivity input, flow switch input, 4-20 mA output, and remote conductivity input via 4-20 mA are all standard features.
- Designed with a single circuit board for better reliability and lower cost.
- Large open shallow enclosure for easy wiring.

- Ball valve delay feature allows accurate control of motorized ball valves.
- Heavy-duty stainless steel domed numeric keypad and illuminated graphical display allow for quick and easy programming. Steel domed switches improve tactile sensing and keypad life.
- LED indicators for power, alarm, and relay status.

BENEFITS

- Easy to program with the Lakewood plain-English, intuitive, user-friendly menu interface.
- Controller can be used in boiler, cooling tower, or condensate applications when used with the appropriate conductivity sensor.
- Single circuit board design improves reliability.
- No add-on options — 4-20 mA output and feed schedule clock features are standard.

SPECIFICATIONS

Conductivity Range	1–10 or 10–100 μ S
Conductivity Sensor	2 electrode
Conductivity Resolution	$\pm 1 \mu$ S (conductivity <100 μ S)
Temperature Comp.	500 NTC, none
Accuracy & Repeatability	$\pm 1.0\%$
Deadband / Setpoint	Programmable
Auto/Manual Outputs	Menu selectable
Keypad	16 tactile push-buttons
Display	Illuminated 128 x 64 pixel LCD
Drum Switch Inputs	2 digital contact inputs
Water Meter Inputs (2)	Contact head, paddle wheel, or turbine
Timers	Max. blowdown time exceeded and relay run time exceeded
Output Signal	One 4–20 mA, isolated/non-isolated optionally powered output for conductivity
Input Signal	One 4–20 mA, non-isolated internally powered input for conductivity
Output Relays	4, 3 selectable use, 1 blowdown
Relay Ratings	3A each, 10A total
Power	120/240 VAC 50/60 Hz
Ambient	32°–120°F (0–49°C)
Enclosure	NEMA 4X, ETL
Sensors/Plumbing — Condensate	Max pressure 70 psi (4.8 bar); max temp 392°F (200°C); min flow 1 gpm (3.785 Lpm)

ORDERING INFORMATION

Controller Only

Part No.	Description
1229239	1575e controller only, no sensor

Condensate Sensors

Part No.	Description
1104591	540K.1-4-10I-10, with 3/4" NPT inline, 10–100 μ S
1168617	540K.1-4-10R-18, with 1.0" NPT retractable, 10–100 μ S
1104592	540K.01-4-10I-10, with 3/4" NPT inline, 1–10 μ S
1169642	540K.01-4-10R-18, with 1.0" NPT retractable, 1–10 μ S

Condensate Sensor Replacement Tips

Part No.	Description
1169054	540K.1-TC500, 10–100 μ S
1169055	540K.01-TC500, 1–10 μ S

Note: The Model 1575e reads in whole numbers only. All cable lengths are 20 feet.

Model 1520e / 1530e pH or ORP Water Treatment Controller — Condensate



Part Number 1240475 shown — Water Treatment Controller, Controller Only.

The Model 1520e/30e uses the latest in microprocessor capability, giving the user a high level of application flexibility for pH or ORP control. The controller can be configured in the field to operate as a pH or an ORP controller. Water meters, sensors, and plumbing assemblies are purchased separately.

SPECIFICATIONS

pH Range	2–12 pH
ORP Range	–1000 to +1000 mV
Accuracy & Repeatability	± 1.0%
Keypad	16 tactile push-buttons
Display	Illuminated 128 x 64 pixel LCD
Power	120/240 VAC 50/60 Hz
Enclosure	NEMA 4X, ETL
Sensors/Plumbing — Condensate	Max pressure 70 psi (4.8 bar); max temp 230°F (110°C); min flow 1 gpm (3.785 Lpm)

ORDERING INFORMATION**Controller Only**

Part No.	Description
1240475	1520e/30e controller only, no sensor

Condensate Sensors

Part No.	Description
1165305	520-4-7I-10-STD
1167983	520-4-7R-18-STD

Replacement Parts

Part No.	Description
1263221	pH or ORP transmitter
1167304	5207-STD replacement pH sensor tip

Note: All cable lengths are 15 feet.

BOILER CONTROLLERS



Water treatment controller with blowdown, alarm, and relay status indicators.

A boiler blowdown control system typically pairs a controller with a boiler sensor mounted in a sample or continuous-blowdown line, an orifice union or globe valve to prevent steam flashing at the sensor, and a motorized ball valve or solenoid at the blowdown point — all wired back to the controller enclosure.

Model 3175 Water Treatment Controller — Boiler



Model 3175 Water Treatment Controller, shown in a boiler application.

The Model 3175 is based on the proven 1500 series platform and incorporates new features. It is easy to program with the familiar 1575e menu interface and can be used in cooling tower, boiler, or condensate applications with the appropriate conductivity sensor.

FEATURES

- Five output relays.
- 7" capacitive touchscreen interface.
- Simple navigation.
- Easy to program with the familiar 1575e menu interface.

- Scheduled feed, which can use four (4) relays for biocides or other chemicals.
- Ball valve delay feature allows accurate control of motorized ball valves.
- Two (2) water meter inputs, two (2) drum switch inputs, conductivity input, a flow switch input, a 4-20 mA output, and a 4-20 mA input are all standard features.
- The 4-20 mA input can be used with a transmitter for one of the following: remote conductivity, makeup conductivity, pH, ORP, percent, pressure, milliamps, flow rates, or traced chemistry control. This transmitter can be added in the field.
- Removable power cord and receptacles for simple conduit installations.
- Onboard selector switch for 120 or 240 VAC power.
- Indicators for power, alarm, and relay status.

BENEFITS

- Can be used in cooling tower, boiler, or condensate applications with the appropriate conductivity sensor.
- Reliable and flexible conductivity control at a low cost.

SPECIFICATIONS

Conductivity Range	50–10,000 μ S
Conductivity Sensor	2 electrode
Conductivity Resolution	$\pm 10 \mu$ S (conductivity < 5,000 μ S); $\pm 100 \mu$ S (conductivity > 5,000 μ S)
Temperature Compensation	500 NTC, none
Accuracy & Repeatability	$\pm 1.0\%$
Deadband / Setpoint	Adjustable
Auto/Manual Outputs	Menu selectable
Interface	7 inch capacitive color touchscreen
Drum Switch Inputs (2)	Digital contact inputs
Water Meter Inputs (2)	Contact head, paddle wheel, or turbine
Timers	Maximum blowdown time exceeded, relay runtime exceeded
Output Signal (1)	4-20 mA isolated or non-isolated, optionally powered output for conductivity
Input Signal (1)	4-20 mA non-isolated, internally powered input for conductivity
Output Relays (5)	1 blowdown, 4 selectable use
Output Relay Rating	3A each, 10A total
Power	120/240 VAC 50/60 Hz
Ambient	32°–120°F (0–49°C)
Enclosure	NEMA 4X, ETL

Note: Contact Lakewood Instruments for current pricing, part numbers, and to build a full system quote.

Model 1575e Water Treatment Controller — Boiler



Part Number 1229239 shown — Boiler Controller, Controller Only.

The Model 1575e uses the latest in microprocessor capability, giving the user a high level of application flexibility. A large illuminated graphics screen, multiple inputs, and very easy setup characterize this technology. The Model 1575e is ETL approved.

FEATURES

- Removable power cord and receptacles for simple conduit installations.
- Scheduled feed, which can use three relays for biocides or other chemicals.
- Two (2) water meter inputs, two (2) drum switch inputs, conductivity input, a flow switch input, a 4-20 mA output, and a 4-20 mA input are all standard features.
- Designed with a single circuit board for better reliability and lower cost.
- Large open shallow enclosure for easy wiring.
- Ball valve delay feature allows accurate control of motorized ball valves.
- Heavy-duty stainless steel domed numeric keypad and illuminated graphical display allow for quick and easy programming. Steel domed switches improve tactile sensing and keypad life.
- LED indicators for power, alarm, and relay status.

BENEFITS

- Easy to program with the Lakewood plain-English, intuitive, user-friendly menu interface.
- Controller can be used in boiler, cooling tower, or condensate applications when used with the appropriate conductivity sensor.
- Single circuit board design improves reliability.
- No add-on options — 4-20 mA output and feed schedule clock features are standard.

SPECIFICATIONS

Conductivity Range	500–8,000 μ S for boilers
Conductivity Sensor	2 electrode
Conductivity Resolution	$\pm 10 \mu$ S (<5000 μ S); $\pm 100 \mu$ S (>5000 μ S)
Temperature Comp.	500 NTC, none
Accuracy & Repeatability	$\pm 1.0\%$

Deadband / Setpoint	Programmable
Keypad	16 tactile push-buttons
Display	Illuminated 128 x 64 pixel LCD
Output Relays	4, 3 selectable use, 1 blowdown
Relay Ratings	3A each, 10A total
Power	120/240 VAC 50/60 Hz
Ambient	32°–120°F (0–49°C)
Enclosure	NEMA 4X, ETL
Sensors/Plumbing — Boiler	Max pressure 600 psi (41.3 bar); max temp 486°F (252°C)

ORDERING INFORMATION

Controller Only

Part No.	Description
1229239	1575e controller only, no sensor

Controller Systems

Part No.	Description
1229244	1575e, SR2, 1/2" union, orifice plate
1229245	1575e, SR2, 3/4" union, orifice plate
1229243	1575e, SR2, PLKT
1269004	1575e, SR2, PL5

Model 150 Boiler Water Treatment Controller



Part Number 1269089 shown — Boiler Water Treatment Controller.

The Model 150 uses the latest in microprocessor capability, giving the user a high level of application flexibility. Multiple inputs and very easy setup characterize this technology. This controller can be used in Continuous Sample, Sample/Cycle, or Sample/Hold modes to control boiler water conductivity.

FEATURES

- Use this controller for conductivity control of boilers, in Continuous Sample, Sample/Cycle, or Sample/Hold mode.
- Removable power cord and receptacles for simple conduit installations.
- One (1) water meter input, conductivity input, flow switch input, and 4-20 mA output are all standard features.
- Designed with a single circuit board for better reliability and lower cost.
- Large open shallow enclosure for easy wiring.
- The enclosure is rated NEMA 4X.
- Power selector switch for 115 or 230 VAC operation.
- Heavy-duty stainless steel domed numeric keypad and illuminated graphical display allow for quick and easy programming. Steel domed switches improve tactile sensing and keypad life.
- LED indicators for power, alarm, and relay status.
- The display is lit by two LEDs when any key is pressed.

BENEFITS

- Easy to program — an intuitive menu and numeric keypad simplify setup.
- No add-on options. Flow switch input, 4-20 mA output, and three boiler conductivity control methods (Continuous Sample, Sample/Cycle, Sample/Hold) are standard.
- Single circuit board design improves reliability.
- Multiple methods of chemical feed for application flexibility.

SPECIFICATIONS

Conductivity Range	100–10,000 μ S
Conductivity Sensor	2 electrode
Conductivity Resolution	$\pm 10 \mu$ S
Accuracy & Repeatability	$\pm 1\%$
Deadband / Setpoint	Adjustable
Auto/Manual Outputs	Menu selectable
Output Relays	2 selectable use, 1 for blowdown
Keypad	16 tactile push-buttons
Display	16 x 2 character
Water Meter Input	Contact head, paddle wheel, or turbine
Timer	Max blowdown time exceeded, relay time exceeded
Output Signal	One 4–20 mA, non-isolated powered output
Relay Ratings	3A each, 10A total
Power	120/240 VAC 50/60 Hz
Ambient	32°–120°F (0–49°C)
Enclosure	NEMA 4X, ETL

ORDERING INFORMATION

Controller Only

Part No.	Description
1269089	150 controller only, no sensor

Controller Systems (include sensor and plumbing; motorized ball valves purchased separately)

Part No.	Description
1269092	150, SR2, 1/2" union, orifice plate
1269260	150, SR2, 3/4" union, orifice plate
1269093	150, SR2, PLKT

BOILER ACCESSORIES AND REPLACEMENT PARTS



Boiler Sensor SR2 with conduit elbow and 20 ft. high-temperature cable.

Boiler Sensor SR2

Part No. 1168374

A 2-electrode sensor with conduit elbow and 20 foot cable. Used for monitoring conductivity in a boiler blowdown line. Cannot be used after a sample cooler.

Body 316 SS; electrodes 416 SS; max pressure 600 psi (41.4 bar); max temperature 486°F (252°C); cable 20 ft high-temp; process thread 3/4" MNPT; conduit connection 3/4" MNPT.

Boiler Sensor SR2T

Part No. 1269392

A 2-electrode sensor with conduit elbow, 20 foot cable, and a 3/4" cross fitting. Used for monitoring conductivity in a boiler blowdown line. Cannot be used after a sample cooler.

Same specifications as the SR2.

Boiler Sensor SR2N

Part No. 1169993

A 2-electrode sensor with 20 foot cable and conductivity node, for use with Models 2255, 2855e, and 3175 only. Cannot be used after a sample cooler.

Same specifications as the SR2.

Boiler Sensor SR2HD

Part No. 1229843

A 2-electrode sensor with conduit elbow and 20 foot cable, for monitoring conductivity in a boiler blowdown line where a harsh or high-amine environment exists. Cannot be used after a sample cooler.

Body 316 SS; electrodes 416 SS; max pressure 600 psi (41.4 bar); max temperature 486°F (252°C); cable 20 ft high-temp; process thread 3/4" MNPT; conduit connection 3/4" MNPT.

Boiler Sensor SR2NHD

Part No. 1235438

A 2-electrode sensor with 20 foot cable and conductivity node, for harsh or high-amine environments. For Models 2255, 2855e, and 3175 only.

Same specifications as the SR2HD.

Boiler Sensor SR4

Part No. 1168375

A 4-electrode sensor with 20 foot cable. Can be used in the boiler blowdown line or with a sample cooler. Compatible only with Models 2250 and 2250e.

Body 316 SS; electrodes titanium; max pressure 250 psi (17.2 bar); max temperature 392°F (200°C); cable 20 ft; process thread 3/4" MNPT; conduit connection 3/4" FNPT; temp comp 4K NTC.

Boiler Sensor SR4N

Part No. 1169994

A 4-electrode sensor with 20 foot cable and conductivity node. Can be used in the boiler blowdown line or with a sample cooler. Compatible with Models 2255, 2855e, and 3175.

Same specifications as the SR4.

4-Electrode Boiler Sensor (543M-STD)

Part No. 1168074

Can be used in the boiler blowdown line or with a sample cooler. Compatible only with Models 2250 and 2250e.

Same specifications as the SR4.

2-Electrode Boiler Sensor

Part No. 1167162

Used for monitoring conductivity in a boiler blowdown line. Cannot be used after a sample cooler.

Same specifications as the SR2.

2-Electrode Harsh Duty Boiler Sensor

Part No. 1229841

Used for monitoring conductivity in a boiler blowdown line where a harsh or high-amine environment exists. Cannot be used after a sample cooler.

Same specifications as the SR2.

PLKT Plumbing Kit

Part No. 1233981

A 1/2 inch plumbing kit for sample/cycle and continuous sample applications in boilers. Includes unions, orifice plates, a cross, a tee, and a manual block valve only. Does not include piping.

PL5 / PL575 Cycle Sample Plumbing

Part No. 1167295 (PL5, 1/2") / 1168601 (PL575, 3/4")

Used as a cycle-sample method in boilers. The orifice restricts flow near the boiler sensor to prevent steam flashing during a sample. The PL6 can also be used as a PL5, and the PL675 as a PL575.

PL6 / PL675 Continuous Plumbing

Part No. 1167297 (PL6, 1/2") / 1167296 (PL675, 3/4")

Used for continuous sampling of a boiler. The lower orifice bleeds a small sample across the sensor; the upper orifice is used with the motorized ball valve and opens when conductivity is above setpoint.

Globe Valve with Position Indicator (GV)

Part No. 1167520

A 1/2" NPT globe valve with position indicator, used for throttling or metering the flow restriction near the boiler sensor to prevent steam flashing.

Globe Valve without Position Indicator (GVN)

Part No. 1269395

A 1/2" NPT globe valve without a position indicator, used for the same purpose as the GV.

Orifice Plates and Unions

Part No. See ordering table

Orifice plates for 1/2" and 3/4" NPT unions restrict flow near the boiler sensor to prevent steam flashing during a sample. Available in 1/16", 1/8", 1/4", and 3/8" orifice sizes. The orifice union is a specially milled union for mounting the plates.

MBV1 / MBV2 Motorized Ball Valves

Part No. 1268608 (MBV1, 1/2" NPT) / 1268614 (MBV2, 3/4" NPT)

Carbon steel motorized ball valves rated 400 psi (27.58 bar) @ 486°F (252°C), with Jamesbury XTREME® seals and a 316 stainless steel ball.

BOILER CONTROLLER REPLACEMENT PARTS — ORDERING INFORMATION

Part No.	Description
1168374	SR2, 2-electrode boiler sensor, conduit elbow, and 20 ft cable
1269392	SR2T, 2-electrode boiler sensor, conduit elbow, 20 ft cable, and cross
1229843	SR2HD, 2-electrode harsh duty sensor, conduit elbow, and 20 ft cable
1169993	SR2N, 2-electrode sensor, 20 ft cable, conductivity node (2255, 2855, 3175 only)
1235438	SR2NHD, 2-electrode harsh duty sensor, 20 ft cable, conductivity node (2255, 2855, 3175 only)
1168375	SR4, 4-electrode sensor with 20 ft cable
1169994	SR4N, 4-electrode sensor, 20 ft cable, conductivity node (2255, 2855, 3175 only)
1167162	2-electrode boiler sensor, replacement
1229841	2-electrode harsh duty boiler sensor, replacement
1168074	4-electrode sensor (543M-STD)
1167295	PL5, 1/2 sample/cycle plumbing
1268601	PL575, 3/4 sample/cycle plumbing
1167297	PL6, 1/2 continuous plumbing
1167296	PL675, 3/4 continuous plumbing
1233981	PLKT plumbing kit, 1/2" sample/cycle and continuous sample kit (unions, orifice plates, cross, tee, manual block valve; no piping)
1167520	GV, globe valve with position indicator
1269395	GVN, globe valve without position indicator
1167244	Orifice union, 1/2 inch NPT
1166355	Orifice plate, 1/2 inch NPT, 1/16
1166356	Orifice plate, 1/2 inch NPT, 1/4
1166354	Orifice plate, 1/2 inch NPT, 1/8
1167972	Orifice plate, 1/2 inch NPT, 3/8
1167245	Orifice union, 3/4 inch NPT
1168998	Orifice plate, 3/4 inch NPT, 1/16
1169000	Orifice plate, 3/4 inch NPT, 1/4
1168999	Orifice plate, 3/4 inch NPT, 1/8
1169001	Orifice plate, 3/4 inch NPT, 3/8
1268608	MBV1, 1/2 inch motorized ball valve
1268614	MBV2, 3/4 inch motorized ball valve
1269179	Replacement ball valve, 1/2 inch, for MBV1
1269180	Replacement ball valve, 3/4 inch, for MBV2
1269181	Replacement actuator for MBV1 and MBV2
1107251	PS, power supply (+24 VDC, required for 3 or more nodes)

PROCESS CONTROLLERS



Lakewood Instruments water treatment controllers.

Model 1520e / 1530e pH or ORP Water Treatment Controller — Process



Part Number 1240475 shown — Water Treatment Controller, Controller Only.

The Model 1520e/30e uses the latest in microprocessor capability, giving the user a high level of application flexibility in pH or ORP control. The controller can be configured in the field to operate as a pH or an ORP controller. A large illuminated graphics screen, multiple inputs, and very easy setup characterize this technology. Water meters, sensors, and plumbing assemblies are purchased separately.

The 1520e/30e uses the Lakewood Instruments Model 520 Series pH sensor for process pH applications and the Model 530 Series ORP sensor for process ORP applications. With two different body materials and three mounting options, Lakewood Instruments can supply pH or ORP sensors to fit the application. See the 520 Series for process pH sensors and the 530 Series for process ORP sensors.

SPECIFICATIONS

pH Range	2–12 pH
ORP Range	–1000 to +1000 mV
Sensor Types	Solution ground, signal differential, or single-ended
Accuracy & Repeatability	± 1.0%
Keypad	16 tactile push-buttons
Display	Illuminated 128 x 64 pixel LCD
Power	120/240 VAC 50/60 Hz
Enclosure	NEMA 4X, ETL
Sensors/Plumbing — Process/Wastewater	Max pressure 70 psi (4.8 bar); max temp 230°F (110°C); min flow 1 gpm (3.785 Lpm)

ORDERING INFORMATION**Controller Only**

Part No.	Description
1240475	1520e/30e controller only, no sensor

PROCESS SENSORS



Model 520 Series pH sensor, shown with inline ball valve mounting.

Lakewood Instruments process pH, ORP, and conductivity sensors, available in CPVC or 316 stainless steel bodies with inline or retractable mounting.

Model 520 / 522 Series pH Sensors

Lakewood Instruments uses the latest technology in pH electrode construction. Lakewood's differential electrode design prevents ground loop problems and excessive dependence on the reference electrode connection to the process stream for stable readings. With two body materials, three mounting options, four glass electrodes, and two electrical connectors, Lakewood Instruments can supply a pH sensor to fit the application. Model 520 sensors include a BNC electrical connector; Model 522 sensors include an SMB electrical connector for node connections.

BODY SPECIFICATIONS

Option	Body Material	Max Temp.	Pressure	Wetted Materials
-5x	CPVC	150°F (66°C)	100 psi (6.9 bar)	CPVC, glass, carbon, Viton
-7x	316 SS	230°F (110°C)	150 psi (10.3 bar)	316 SS, glass, Viton

Note: Temperature rating depends on the combination of body and glass electrode — use the lower of the two. Maximum pressure for the -5I/-5R/-7I/-7R options with Teflon ferrules is 70 psi.

ELECTRODE TYPES

-STD: Standard glass-bulb electrode for systems with low fouling potential and minimal abrasives. pH range 0–12; max temp 230°F (110°C).

-PW: High-purity glass-bulb electrode for systems with low conductivity. pH range 0–12; max temp 212°F (100°C).

-HS: High-sodium glass-bulb electrode, compensating for sodium ion errors in high-pH, high-sodium systems. pH range 0–14; max temp 212°F (100°C).

-DG: Extra-strength dome glass-bulb electrode for slightly fouling or abrasive water. pH range 0–12; max temp 212°F (100°C).

Temperature Compensator: 10K PTC

INLINE MOUNTING OPTIONS

-5I 1-1/2 inch NPT, CPVC compression fitting

-7I 3/4 inch NPT, 316 SS Swagelok fitting

-5R 1-1/2 inch NPT, CPVC ball valve

-7R 1 inch NPT, 316 SS ball valve

ORDERING INFORMATION — PICK ONE OPTION FROM EACH CATEGORY**pH Sensor:** 520 | 522**Cable Length or Enclosure:** -4 (180" of cable) | -5 (NEMA-4X enclosure) | -6 (custom cable, max 15 ft)**Material, Inline Fitting:** -5S CPVC no fitting | -5I CPVC w/compression fitting 1-1/2" NPT | -5R CPVC w/ball valve 1-1/2" NPT | -7S 316 SS no fitting | -7I 316 SS w/Swagelok fitting 3/4" NPT | -7R 316 SS w/ball valve 1" NPT**Body Length:** -10" (not available with -5R or -7R) | -18" | -48"**Electrode Type:** -STD | -DG | -HS | -PW*Example: 520-4-5R-18-STD***MODEL 520 SERIES — ORDERING INFORMATION**

Part No.	Description
1169666	520-4-5I-18-DG
1167986	520-4-5I-18-STD
1105051	520-4-5I-10-STD
1167988	520-4-5R-18-STD
1109615	520-4-5S-18-STD
1269483	520-4-5S-18-DG
1167989	520-4-5S-48-STD
1105052	520-4-5S-10-STD
1268974	520-4-5S-10-HS
1228083	520-4-7I-10-HS
1165305	520-4-7I-10-STD
1269219	520-4-7I-10-DG
1269601	520-4-7I-10-PW
1167984	520-4-7I-18-STD
1269270	520-4-7I-18-DG
1240143	520-4-7I-48-STD
1167983	520-4-7R-18-STD
1269102	520-4-7R-18-DG
1269171	520-4-7S-18-STD
1109944	520-4-7S-48-DG
1167982	520-4-7S-48-STD
1169876	520-4-7S-10-STD
1168586	520-5-5I-18-STD
1105054	520-5-5I-10-STD
1168587	520-5-5R-18-STD
1104404	520-5-5S-18-STD
1168588	520-5-5S-48-STD
1269297	520-5-5S-48-HS

Part No.	Description
1105055	520-5-5S-10-STD
1268639	520-5-5S-10-HS
1168592	520-5-7I-18-STD
1105056	520-5-7I-10-STD
1168593	520-5-7R-18-STD
1168594	520-5-7S-48-STD
1105057	520-5-7S-10-STD
1239903	520-6-5I-18-STD
1169704	520-6-5S-48-HS
1167125	520-6-5S-48-STD
1167126	520-6-5S-18-STD
1169646	520-6-7R-18-STD
1167129	520-6-7S-48-STD
1167130	520-6-7S-18-STD

REPLACEMENT PARTS

Part No.	Description
1169452	Sensor tip 5205-DG with BNC connector (specify length when ordering)
1169453	Sensor tip 5205-HS with BNC connector (specify length when ordering)
1167302	Sensor tip 5205-STD with BNC connector (specify length when ordering)
1269639	Sensor tip 5205-PW with BNC connector (specify length when ordering)
1169460	Sensor tip 5207-DG with BNC connector (specify length when ordering)
1169462	Sensor tip 5207-HS with BNC connector (specify length when ordering)
1167304	Sensor tip 5207-STD with BNC connector (specify length when ordering)
1269602	Sensor tip 5207-PW with BNC connector (specify length when ordering)
1269580	Sensor tip 5225-DG with SMB connector (specify length when ordering)
1269581	Sensor tip 5225-HS with SMB connector (specify length when ordering)
1269582	Sensor tip 5225-STD with SMB connector (specify length when ordering)
1269640	Sensor tip 5225-PW with SMB connector (specify length when ordering)
1269583	Sensor tip 5227-DG with SMB connector (specify length when ordering)
1269584	Sensor tip 5227-HS with SMB connector (specify length when ordering)
1269585	Sensor tip 5227-STD with SMB connector (specify length when ordering)
1269642	Sensor tip 5227-PW with SMB connector (specify length when ordering)
1167261	Fitting, 5I
1167090	Fitting, 5R
1167374	Fitting, 7I
1167375	Fitting, 7R

Part No.	Description
1166317	Cable, 4 conductor / ft, 20 ft minimum order (price per foot)
1169780	Cable, pH, BNC / 4 conductor, 5 ft
1169781	Cable, pH, BNC / 4 conductor, 10 ft

Model 530 / 532 Series ORP Sensors

Lakewood Instruments uses the latest technology in ORP electrode construction. Lakewood's differential electrode design prevents ground loop problems and excessive dependence on the reference electrode connection to the process stream for stable readings. With two body materials and three mounting options, Lakewood Instruments can supply an ORP sensor to fit the application. ORP sensor range is -1000 to +1000 mV.

BODY SPECIFICATIONS

Option	Body Material	Max Temp.	Pressure	Wetted Materials
-5x	CPVC	150°F (66°C)	100 psi (6.9 bar)	CPVC, glass, carbon, Viton
-7x	316 SS	230°F (110°C)	150 psi (10.3 bar)	316 SS, glass, Viton

Note: Maximum pressure for the -5I/-5R/-7I/-7R options with Teflon ferrules is 70 psi.

INLINE MOUNTING OPTIONS

-5I 1-1/2 inch NPT, CPVC compression fitting

-7I 3/4 inch NPT, 316 SS Swagelok fitting

-5R 1-1/2 inch NPT, CPVC ball valve

-7R 1 inch NPT, 316 SS ball valve

ORDERING INFORMATION — PICK ONE OPTION FROM EACH CATEGORY

ORP Sensor: 530 | 532

Cable Length or Enclosure: -4 (180" of cable) | -5 (NEMA-4X enclosure) | -6 (custom cable, max 15 ft)

Material, Inline Fitting: -5S CPVC no fitting | -5I CPVC w/compression fitting 1-1/2" NPT | -5R CPVC w/ball valve 1-1/2" NPT | -7S 316 SS no fitting | -7I 316 SS w/Swagelok fitting 3/4" NPT | -7R 316 SS w/ball valve 1" NPT

Body Length: -10" (not available with -5R or -7R) | -18" | -48"

Example: 530-4-5R-18

MODEL 530 SERIES — ORDERING INFORMATION

Part No.	Description
1169194	530-4-5I-18
1169668	530-4-5I-10
1169265	530-4-5R-18
1169266	530-4-5S-48
1169664	530-4-5S-10
1169268	530-4-7I-18
1169889	530-4-7I-10
1169269	530-4-7R-18
1105075	530-4-7S-48
1169271	530-4-7S-10
1105076	530-5-5I-18
1169272	530-5-5I-10
1105077	530-5-5R-18
1169273	530-5-5S-48
1105078	530-5-5S-10
1169275	530-5-7I-18
1105079	530-5-7I-10
1169276	530-5-7R-18
1167144	530-6-5S-48
1167145	530-6-5S-18
1167148	530-6-7S-48
1167149	530-6-7S-18

REPLACEMENT PARTS

Part No.	Description
1167318	Sensor tip 5305 with BNC connector (specify length when ordering)
1106786	Sensor tip 5307 with BNC connector (specify length when ordering)
1269586	Sensor tip 5325 with SMB connector (specify length when ordering)
1269587	Sensor tip 5327 with SMB connector (specify length when ordering)
1167261	Fitting, 5I
1167090	Fitting, 5R
1167374	Fitting, 7I
1167375	Fitting, 7R
1166317	Cable, 4 conductor / ft, 20 ft minimum order (price per foot)
1169780	Cable, pH, BNC / 4 conductor, 5 ft
1169781	Cable, pH, BNC / 4 conductor, 10 ft

Model 540 Series 2-Electrode Conductivity Sensors

The Model 540 conductivity sensor offers a reliable, easy-to-use tool for measuring high-purity water or condensate return. Available configured as in-line, retractable, or submersible, the Model 540 provides accurate input for monitoring or control of total dissolved solids in the 1–10 μS or 10–100 μS conductivity ranges. These sensors withstand temperatures up to 392°F (200°C) and provide long service life.

SPECIFICATIONS

Length(s), Body	10 inch or 18 inch
Diameter, OD	3/4 inch
Material	316 SS
Temperature Range	0–392°F (200°C)
Temperature Comp.	500 NTC
Cell Constants	0.01 or 0.1
Cable Length	20 ft max
Cable Insulation	TFE
Pressure (Swagelok fitting)	70 psi (4.8 bar)
Insulator Material	PVDF
Range K.1	10–100 μS
Range K.01	1–10 μS

BENEFITS

- Reliable control
- Labor-saving
- Economical
- Long life
- Accurate

INLINE MOUNTING OPTIONS

-10I 3/4 inch NPT, 316 SS Swagelok fitting

-10R 1 inch NPT, 316 SS ball valve

ORDERING INFORMATION — PICK ONE OPTION FROM EACH CATEGORY

Sensor: 540K.1 | 540K.01

Cable Length or Enclosure: -4 (240" of cable) | -5 (NEMA-4X enclosure)

Material, Inline Fitting: -10S 316 SS no fitting | -10I 316 SS w/Swagelok fitting 3/4" NPT | -10R 316 SS w/ball valve 1" NPT

Body Length: -10" (not available with -10R) | -18"

Temp Comp: -TC500

Example: 540K.1-4-10R-18-TC500

MODEL 540K.1 SERIES — ORDERING INFORMATION

Part No.	Description
1104591	540K.1-4-10I-10-TC500
1169602	540K.1-4-10I-18-TC500
1168617	540K.1-4-10R-18-TC500
1105096	540K.1-4-10S-10-TC500
1167087	540K.1-4-10S-18-TC500

REPLACEMENT PARTS — MODEL 540K.1

Part No.	Description
1169054	Sensor tip 540K.1-TC500
1167374	Fitting, 10I
1167375	Fitting, 10R
1166317	Cable, 4 conductor / ft, 20 ft minimum order (price per foot)

MODEL 540K.01 SERIES — ORDERING INFORMATION

Part No.	Description
1104592	540K.01-4-10I-10-TC500
1167084	540K.01-4-10I-18-TC500
1169642	540K.01-4-10R-18-TC500

REPLACEMENT PARTS — MODEL 540K.01

Part No.	Description
1169055	Sensor tip 540K.01-TC500
1167374	Fitting, 10I
1167375	Fitting, 10R
1166317	Cable, 4 conductor / ft, 20 ft minimum order (price per foot)

Model 543 Series 4-Electrode Conductivity Sensors

The Model 543 sensor family offers 4-electrode conductivity sensing across three ranges (M, L, LL) for process and high-purity water applications, in CPVC or 316 stainless steel bodies with inline or retractable mounting.

BODY SPECIFICATIONS

Option	Body Material	Max Temp	Pressure	Wetted Materials
-5x	CPVC	150°F (66°C)	100 psi (6.9 bar)	CPVC, 316 SS, PEEK, titanium, Viton
-8x	316 SS	260°F (127°C)	150 psi (10.3 bar)	316 SS, PEEK, titanium, Viton

ELECTRODE SPECIFICATIONS

Electrode	Conductivity Range	Temp. Compensator	Max Temp	Max Pressure
543-M	500–100,000 µS	4K NTC	392°F (200°C)	250 psi (17.2 bar)
543-L	100–1,000 µS	4K NTC	392°F (200°C)	250 psi (17.2 bar)
543-LL	10–500 µS	1K PTC	392°F (200°C)	250 psi (17.2 bar)

INLINE MOUNTING OPTIONS

All sensors have a 3/4 inch NPT sensor tip.

-8I 1 inch NPT, 316 SS Swagelok fitting

-8R 1-1/2 inch NPT, 316 SS ball valve

ORDERING INFORMATION — PICK ONE OPTION FROM EACH CATEGORY

Sensor: 543-M | 543-L | 543-LL

Cable Length or Enclosure: -4 (240" of cable) | -5 (NEMA-4X enclosure)

Material, Inline Fitting: -5S CPVC no fitting | -8S 316 SS no fitting | -8I 316 SS w/Swagelok fitting 1" NPT | -8R 316 SS w/ball valve 1-1/2" NPT

Body Length: -10" (not available with -8R) | -18" | -48"

Example: 543-M-4-8R-18

MODEL 543-M SERIES — ORDERING INFORMATION

Part No.	Description
1166602	Sensor tip 543-M-4-5S-10
1105230	Sensor tip 543-M-4-5S-18
1169101	Sensor tip 543-M-4-5S-48
1104578	Sensor tip 543-M-4-8I-10
1168103	Sensor tip 543-M-4-8I-18
1169104	Sensor tip 543-M-4-8R-18
1105233	Sensor tip 543-M-4-8S-10
1105234	Sensor tip 543-M-4-8S-18
1169103	Sensor tip 543-M-4-8S-48
1109802	Sensor tip 543-M-5-8I-18
1105236	Sensor tip 543-M-5-5S-10
1105237	Sensor tip 543-M-5-5S-18
1105238	Sensor tip 543-M-5-5S-48
1105242	Sensor tip 543-M-5-8I-10
1105243	Sensor tip 543-M-5-8R-18
1105244	Sensor tip 543-M-5-8S-10
1105245	Sensor tip 543-M-5-8S-18
1105246	Sensor tip 543-M-5-8S-48

Replacement Parts

Part No.	Description
1168074	Sensor tip 543M-STD
1169168	Fitting, 8I
1169058	Fitting, 8R
1168893	Adapter, 543 to 3/4 NPT
1166317	Cable, 4 conductor / ft, 20 ft minimum order (price per foot)

MODEL 543-L SERIES — ORDERING INFORMATION

Part No.	Description
1105161	543-L-4-5S-10
1105162	543-L-4-5S-18
1169120	543-L-4-5S-48
1169123	543-L-4-8I-10
1169124	543-L-4-8R-18
1105166	543-L-4-8S-10
1105167	543-L-4-8S-18
1169122	543-L-4-8S-48
1105169	543-L-5-5S-10
1105170	543-L-5-5S-18
1105171	543-L-5-5S-48
1104430	543-L-5-8I-18
1105168	543-L-5-8I-10
1109654	543-L-5-8R-18
1105175	543-L-5-8S-10
1104859	543-L-5-8S-18
1105176	543-L-5-8S-48

Replacement Parts

Part No.	Description
1168075	Sensor tip 543L-STD
1169168	Fitting, 8I
1169058	Fitting, 8R
1168893	Adapter, 543 to 3/4 NPT
1166317	Cable, 4 conductor / ft, 20 ft minimum order (price per foot)

MODEL 543-LL SERIES — ORDERING INFORMATION

Part No.	Description
1105195	543-LL-4-5S-10
1105196	543-LL-4-5S-18
1169130	543-LL-4-5S-48
1105199	543-LL-4-8I-10
1169133	543-LL-4-8I-18
1169134	543-LL-4-8R-18
1105200	543-LL-4-8S-10
1105201	543-LL-4-8S-18
1169132	543-LL-4-8S-48
1105203	543-LL-5-8R-18
1105204	543-LL-5-5S-10
1105205	543-LL-5-5S-18
1105206	543-LL-5-5S-48
1105210	543-LL-5-8I-10
1105211	543-LL-5-8I-18
1105212	543-LL-5-8S-10
1105213	543-LL-5-8S-18
1105214	543-LL-5-8S-48

Replacement Parts

Part No.	Description
1168076	Sensor tip 543LL-STD
1169168	Fitting, 8I
1169058	Fitting, 8R
1168893	Adapter, 543 to 3/4 NPT
1166317	Cable, 4 conductor / ft, 20 ft minimum order (price per foot)

PLACING AN ORDER

Orders may be placed with our Customer Service Department (CSD) by fax, e-mail, or mail. A Purchase Order (PO) or Visa, MasterCard, or Discover may be used to purchase items. To use a PO, an established account is required and the PO must be on company letterhead. To establish an account, a credit application must be completed. Payment terms with accounts are net 30 days. Contact us for more details.

CONTACT US

1-800-228-0839

(414) 355-3508 fax

csd@lakewoodinstruments.com

www.lakewoodinstruments.com

Visit our website to download manuals, cut sheets, and the price list/catalog in PDF format, and to download the latest versions of communications interface software.

CANCELLATIONS AND RETURNS

Order cancellations will not be accepted for items requiring special engineering, custom assembly, or special buy-out parts after order acceptance. Orders for special-order pH sensors requiring other than standard glass cannot be canceled after receipt of order because of loss of product due to storage-life limitations.

Standard products can be returned for re-stocking, subject to a 20% re-stocking charge. All returned goods must be less than one year old, in good condition, and unused. Acceptance of a return is subject to inspection and final acceptance by the Quality Control Department. Custom and special-order products will not be accepted for return.

DOMESTIC EQUIPMENT WARRANTY

WARRANTY

Lakewood Instruments LLC warrants all equipment manufactured by us to be free from defects in workmanship or material for two (2) years from date of sale. If our equipment is found to be defective within two (2) years from the date of sale, Lakewood Instruments LLC will, at its option, repair or replace said equipment.

WARRANTY EXCLUSIONS AND LIMITATIONS

Lakewood Instruments LLC only performs warranty repairs and replacements at its own factory service facilities. Lakewood Instruments LLC does not warrant the suitability of the equipment for a particular application or the merchantability of the equipment.

All pH electrodes and other electrodes or sensor assemblies are warranted for twelve (12) months from the date of sale, regardless of installation date, for cooling water and boiler applications only. For all other applications, Lakewood Instruments LLC warrants only that the sensor will function correctly at time of installation.

Controllers, instruments, sensors, valves, chemical pumps, or other equipment not manufactured by Lakewood Instruments LLC are covered only by its manufacturer's warranty.

Repaired or replaced equipment warranties are limited to the term of the original equipment.

Lakewood Instruments LLC assumes no liability for damage or loss caused by misuse or misapplication of the equipment. Lakewood Instruments LLC accepts no consequential loss for use of its equipment. Lakewood Instruments LLC's warranty is voided by improper installation or by unauthorized repairs or field modification of the equipment or parts.

This warranty is limited to products sold and installed in the United States.

RETURN GOODS AUTHORIZATION (RGA)

No return will be accepted without a return number from Lakewood Instruments LLC. The RGA will not be issued without the correct serial number and model number. All items must be shipped freight prepaid. Original packing is the preferred method of return. If items are re-packed for return, any damage that results in shipping will be billed to the repair/evaluation purchase order. Receipt and use of this form does not guarantee that full or partial credit will be issued.

All returns should be sent to the attention of the Technical Service Department. When returning any item, include the RGA number and a complete description of what appears to be wrong, along with the name of the contact person, their telephone number, and a return shipping address. All replacements will be sent via UPS at no charge.

FREIGHT DAMAGE OR LOSS

Inspect shipments upon receipt. If there is any damage, notify the delivering carrier and file a claim. If a damage repair or replacement estimate is needed, notify us and we will forward the information to the carrier specified. All shipments are FCA Milwaukee, WI 53224.

CREDITS AND RESTOCKING

Credits for returned material will be issued solely at the discretion of Lakewood Instruments LLC. No credits will be issued after one (1) year from the date of sale. Credit for returned material is subject to a 20% restocking charge. Only standard manufactured items will be accepted for restocking; custom products or engineered systems will not be accepted. All parts returned for restock credit must be received at our facility in salable condition. Any visual or physical damage that occurred in shipping or during prior installation will be billed to the repair/evaluation purchase order.

All pH and ORP probes must have the probe tips sealed so that the tips remain wetted for the duration of shipping and evaluation. Failure to do so will result in the full list purchase price of replacement probes being billed to the repair/evaluation purchase order.