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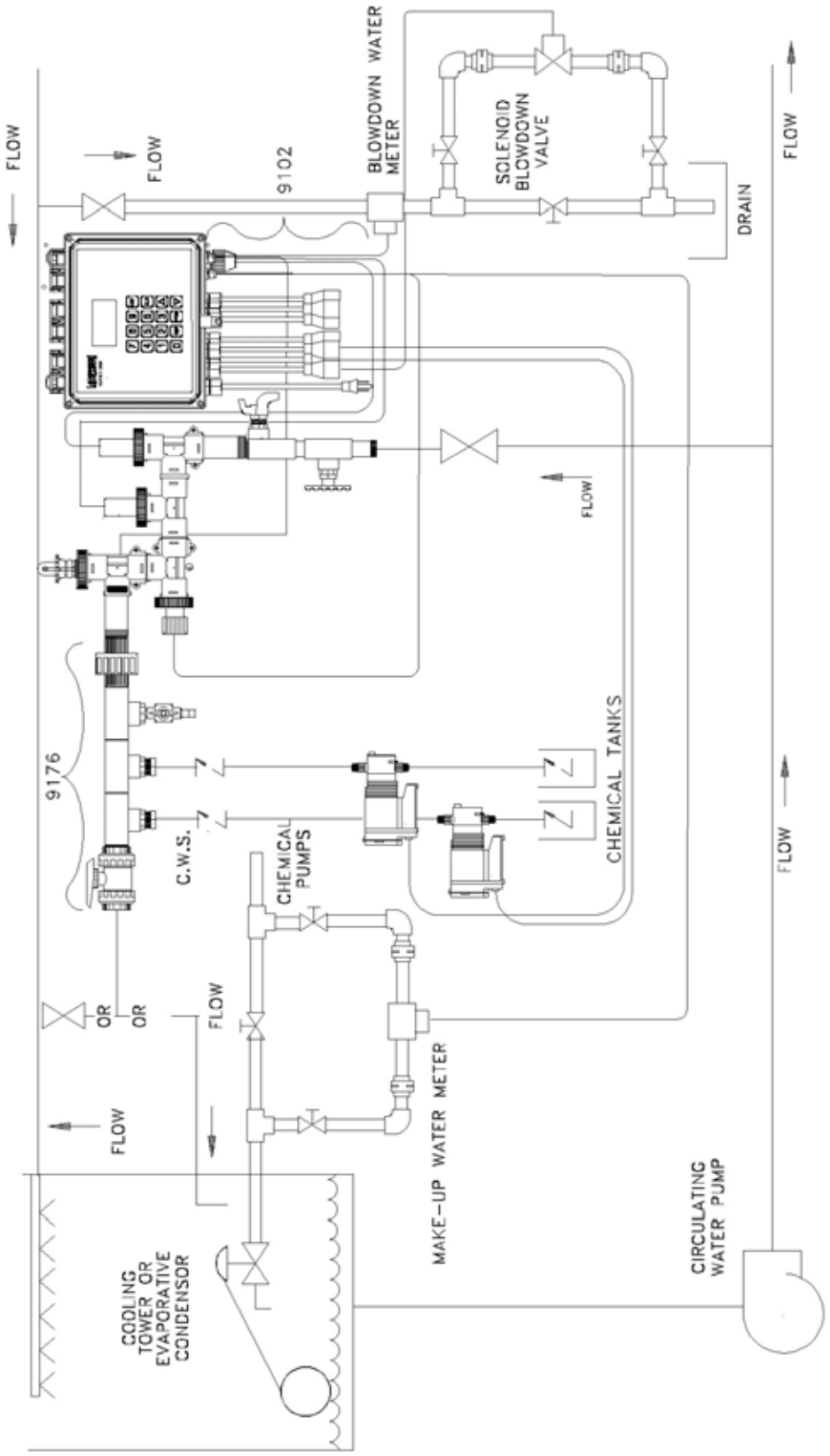
COOLING TOWER CONTROLLERS



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LAKEWOOD INSTRUMENTS
MODEL 140
WATER TREATMENT CONTROLLER

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 new technology. Water meters, sensors and plumbing assemblies are purchased separately.

PART NUMBER 1239597 SHOWN
Cooling Tower Water Treatment Controller W/Sensor and Flow Switch Plumbing on a Mounting Plate

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 illuminated graphical display allow for quick and easy programming. Steel domed switches improve the tactile sensing and life expectancy of the keypad.
- LED indicators for power, alarm and relay status.

BENEFITS

- Easy to program with the Lakewood plain English, intuitive, and 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 µS
Conductivity sensor	2 electrode
Conductivity Resolution	± 10 µS
Temperature comp.	500 ohm NTC
Accuracy & repeatability	± 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)
Water temperature	32°- 140°F (0 - 49°C)
Pressure	140 psi @ 100
Enclosure	NEMA 4X CSA and ANSI/UL

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ORDERING OPTIONS

Controller Options

1239594 Cooling Tower Water Treatment Controller Only. (No Sensor or Plumbing).

1239595 Cooling Tower Water Treatment Controller, Including Sensor Tee and Conductivity Sensor.

1239596 Cooling Tower Water Treatment Controller, Including Flow Switch Plumbing and Conductivity Sensor.

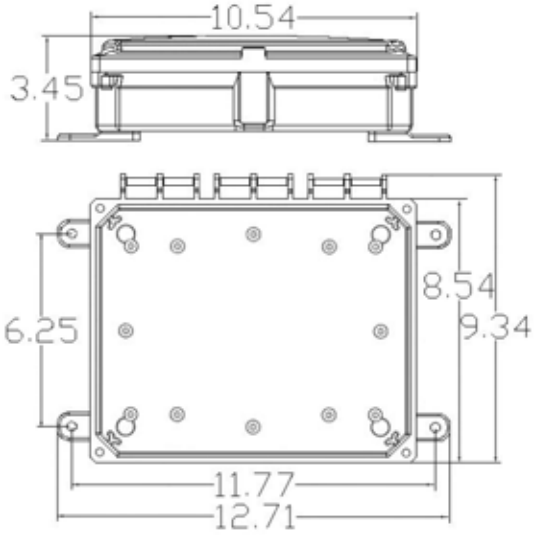
1239597 Cooling Tower Water Treatment Controller, Including Flow Switch Plumbing and Conductivity Sensor on a Mounting Plate (12 X 18).

Cooling Tower Options

1107003 Cooling Tower Flow Switch Plumbing

1167214 Cooling Tower Sensor Tee

1167158 Cooling Tower Sensor with 20 ft cable



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MODEL 140

PART NO.	DESCRIPTION	LIST	CD
1239595	140 with cooling tower sensor tee and sensor	$869	W
1239596	140 with cooling tower flowswitch and sensor	939	W
1239597	140 with cooling tower FS and sensor on mounting plate	1,043	W

PART NO.	CONDUCTIVITY COOLING TOWER CONTROLLER	LIST	CD
1239594	140 controller only, no sensor	$762	W

PART NO.	COOLING TOWER COMPONENTS	LIST	CD
1167158	Sensor, Conductivity 2 elec w/20 ft Cable	$218	W
1167157	Sensor, Conductivity 2 elec w/2 ft Cable	187	W
1169207	Sensor, Conductivity, 2 elec 4ft body	245	W
1167214	Plumbing, tee, 3/4 inch NPT	85	R
1107003	Plumbing, with 20' FS, remote plumbing	173	R

PART NO.	REPLACEMENT PARTS	LIST	CD
1166418	O-Ring, for sensor and/or flow sight, set of 10	$10	R
1169740	Red Ring replacement Kit set of two	50	R
1107004	Reed Switch w/20 ft of cable	48	R
1167266	Flow Sight set of five	65	R
1167234	Flow Float set of five	75	R
1107003	Plumbing, with 20' FS, remote plumbing	173	R

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LAKEWOOD INSTRUMENTS
MODEL 1512e
WATER TREATMENT CONTROLLER

The Model 1512e uses the latest in microprocessor capability, giving the user a high level of application flexibility. The user in the field can configure this controller to operate as a pH and conductivity or as an ORP and conductivity controller. A large illuminated graphics screen, multiple inputs, and very easy setup characterize this new technology. The Model 1512e is CSA and ANSI/UL.

PART NUMBER 1268960 SHOWN
Cooling Tower Water Treatment Controller, Including Flow Switch Plumbing, pH Sensor And Conductivity Sensor On A Mounting Plate

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, pH or ORP input, flow switch input, two 4-20 mA outputs, and remote conductivity and pH/ORP input via 4-20 mA, and seven relay outputs 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 the tactile sensing and life expectancy of the keypad.
- LED indicators for power, flow, alarm, and relay status.

BENEFITS

- Easy to program with the Lakewood plain English, intuitive, and user friendly menu interface.
- Single circuit board design improves reliability.
- No add-on options. Two 4-20 mA outputs and feed schedule clock features are standard.

SPECIFICATIONS

Conductivity range	50-10,000 µS
Conductivity sensor	2 electrode
Conductivity Resolution	± 10 µS (conductivity <5000 µS) ±100 µS (conductivity > 5000 µS)
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
Temperature comp.	Automatic
Accuracy & repeatability	± 1.0%
Deadband/Setpoint	Programmable
Auto/Manual outputs	Menu selectable
Keypad	16 tactile push-buttons
Display	illuminated 128x64 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	Two 4 – 20 mA, isolated or non-isolated optionally powered output for conductivity and pH/ORP
Input Signal	Two 4-20 mA, non-isolated internally powered input for conductivity and pH/ORP
Output relays	7, 6 selectable use, 1 blowdown
Relay ratings	3A each, 12A total
Power	120/240 VAC 50/60 Hz
Ambient	32° - 120°F (0 - 49°C)
Enclosure	NEMA 4X CSA and ANSI/UL

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)

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ORDERING OPTIONS

Controller Options

1268957 Model 1512e Controller Only. (No Sensors or Plumbing).

1268960 Model 1512e Cooling Tower Water Treatment Controller, Including pH and Conductivity Sensors and Flowswitch Plumbing Assembly on a Mounting Plate (12 X 18 in.).

1268961 Model 1512e Cooling Tower Water Treatment Controller, Including ORP and Conductivity Sensors and Flowswitch Plumbing Assembly on a Mounting Plate (12 X 18 in.).

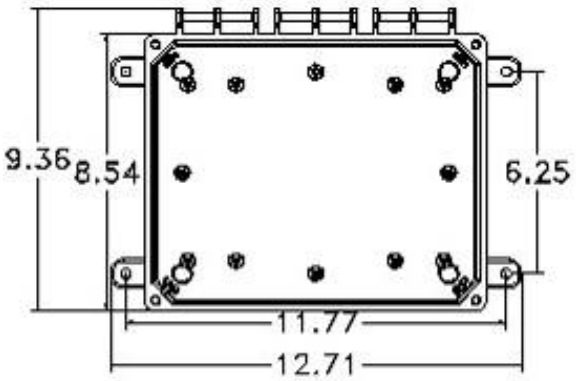
Cooling Tower Options

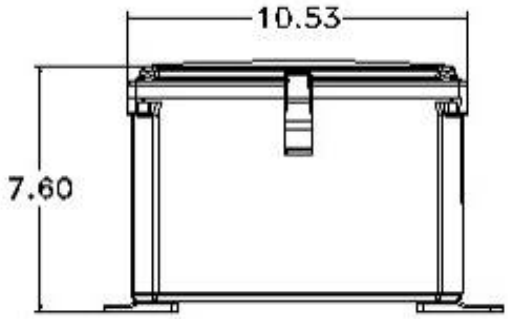
1268640 Cooling Tower Flow Switch Plumbing

1240472 Cooling Tower pH sensor w/15 ft cable

1268640 Cooling Tower ORP sensor w/15 ft cable

1167158 Cooling Tower cond sensor w/20 ft cable





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PART NO.	pH and CONDUCTIVITY CONTROLLER SYSTEMS	LIST	CD
1268958	1512e with cond and pH sensors, and FS plumbing	$2,208	W
1268960	1512e with cond and pH sensors on mounting plate	2,327	W

PART NO.	ORP and CONDUCTIVITY CONTROLLER SYSTEMS	LIST	CD
1268959	1512e with cond and ORP sensors, and FS plumbing	$2,208	W
1268961	1512e with cond and ORP sensors on mounting plate	2,327	W

PART NO.	pH/ORP and CONDUCTIVITY CONTROLLER	LIST	CD
1268957	1512e controller only, no sensors	$1,422	W

PART NO.	COOLING TOWER COMPONENTS	LIST	CD
1167158	Sensor, Conductivity 2 elec w/20 ft Cable	$218	W
1169207	Sensor, Conductivity, 2 elec 4ft body	245	W
1240472	Sensor, pH 1520e, 2350e, 2412e w/15 ft of cable	389	W
1240473	Sensor, ORP 1530e, 2330e, 2430e w/15 ft of cable	389	W
1268640	Plumbing, 1512e/2412e/2430e	212	R

PART NO.	REPLACEMENT PARTS	LIST	CD
1166418	O-Ring, for sensor and/or flow sight, set of 10	$10	R
1169740	Red Ring replacement Kit set of two	50	R
1107004	Reed Switch w/20 ft of cable	48	R
1167266	Flow Sight set of five	65	R
1167234	Flow Float set of five	75	R
1268640	Plumbing, 1512e/2412e/2430e	212	R

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LAKEWOOD INSTRUMENTS
MODEL 1520/30e
pH or ORP WATER TREATMENT CONTROLLER

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

PART NUMBER 1240518 SHOWN
Cooling Tower Water Treatment Controller With Flow Switch Plumbing And Ph Sensor On A PVC Mounting Plate.

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.
- 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 the tactile sensing and life expectancy of the keypad.
- LED indicators for power, alarm and relay status.

BENEFITS

- Easy to program with the Lakewood plain English, intuitive, and user friendly menu interface.
- Controller can be removed from a cooling tower and be 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

		Drum Switch Inputs	2 digital contact inputs
pH range	2-12 pH	**Water meter inputs (2)**	Contact head, paddle wheel or turbine
ORP range	-1000 to +1000 mV		
Sensor Types	Solution ground, Signal differential, or Single-ended	**Timer**	Relay run time exceeded
		Output Signal	One 4 – 20 mA, non-isolated powered output
Resolution	± .10 pH or 1 mV	**Output relays**	4 selectable use
Accuracy & repeatability	± 1.0%	**Relay ratings**	3A each, 10A total
Deadband/Setpoint	Adjustable	**Power**	120/240 VAC 50/60 Hz
Auto/Manual outputs	Menu selectable	**Ambient**	32° - 120°F (0 - 49°C)
Keypad	16 tactile push-buttons	**Enclosure**	NEMA 4X
Display	illuminated 128x64 pixel LCD		CSA and ANSI/UL

Sensors/Plumbing	**Cooling Tower**
Max Pressure @ 100°F	140 psi (9.65 bar)
Max Temp	140°F (60°C)
Min flow	1 gpm (3.785 Lpm)

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ORDERING OPTIONS

Controller Options

1240475 Model 1520/30e Controller Only. (No Sensor or Plumbing).

1240476 Model 1520e Cooling Tower Water Treatment pH Controller, Including pH Sensor and Flowswitch Plumbing Assembly.

1240518 Model 1520e Cooling Tower Water Treatment pH Controller, Including pH Sensor and Flowswitch Plumbing Assembly on a Mounting Plate (12 X 18).

1263418 Model 1530e Cooling Tower Water Treatment ORP Controller, Including ORP Sensor and Flowswitch Plumbing Assembly.

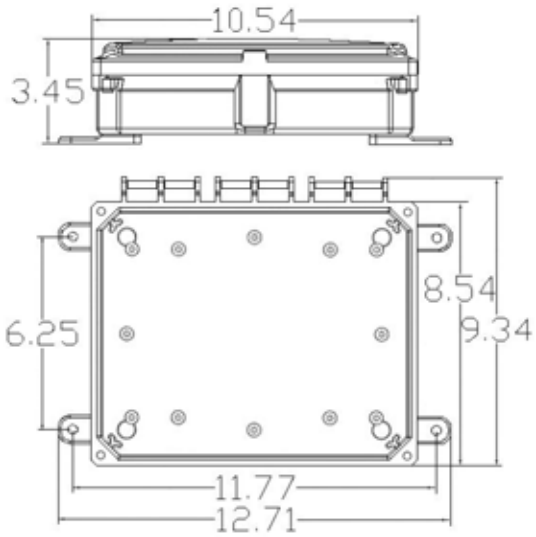
1240519 Model 1530e Cooling Tower Water Treatment ORP Controller, Including ORP Sensor and Flowswitch Plumbing Assembly on a Mounting Plate (12 X 18).

Cooling Tower Options

1240477 Cooling Tower Flow Switch Plumbing Assembly

1240472 Cooling Tower pH Sensor With 15 Ft Cable

1240473 Cooling Tower ORP Sensor With 15 Ft Cable



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MODEL 1520/30e

PART NO.	pH COOLING TOWER CONTROLLER SYSTEMS	LIST	CD
1240476	1520e with cooling tower flowswitch and pH sensor	$1,738	W
1240518	1520e with cooling tower FS and pH sensor on mounting plate	1,842	W

PART NO.	ORP COOLING TOWER CONTROLLER SYSTEMS	LIST	CD
1263418	1530e with cooling tower flowswitch and ORP sensor	$1,738	W
1240519	1530e with cooling tower FS and ORP sensor on mounting plate	1,842	W

PART NO.	pH/ORP COOLING TOWER CONTROLLER	LIST	CD
1240475	1520/30e controller only, no sensor	$1,201	W

PART NO.	pH and ORP COOLING TOWER COMPONENTS	LIST	CD
1240472	Sensor, pH 1520e, 2350e, 2412e w/15 ft of cable	$389	W
1240473	Sensor, ORP 1530e, 2330e, 2430e w/15 ft of cable	389	W
1240477	Plumbing, 1520/30e, 2330e, 2350e w/ 20ft flow switch	180	R
1263221	pH transmitter	266	R

PART NO.	REPLACEMENT PARTS	LIST	CD
1166418	O-Ring, for sensor and/or flow sight, set of 10	$10	R
1169740	Red Ring replacement Kit set of two	50	R
1107004	Reed Switch w/20 ft of cable	48	R
1167266	Flow Sight set of five	65	R
1167234	Flow Float set of five	75	R
1240477	Plumbing, 1520/30e, 2330e, 2350e w/ 20ft flow switch	180	R

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LAKEWOOD INSTRUMENTS
MODEL 1575e
WATER TREATMENT CONTROLLER

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 new technology. The Model 1575e is NTL/CSA/CE approved.

PART NUMBER 1229242 SHOWN
Cooling Tower Water Treatment Controller, Including Flow Switch Plumbing And Conductivity Sensor On A Mounting Plate

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 the tactile sensing and life expectancy of the keypad.
- LED indicators for power, alarm and relay status.

BENEFITS

- Easy to program with the Lakewood plain English, intuitive, and 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 μS	**Timers**	Max. blowdown time exceeded and relay run time exceeded
Conductivity sensor	2 electrode		
Conductivity Resolution	± 10 μS (conductivity <5000 μS) ±100 μS (conductivity > 5000 μS)	**Output Signal**	One 4 – 20 mA, isolated or non-isolated optionally powered output for conductivity
Temperature comp.	NONE,500NTC	**Input Signal**	One 4-20 mA, non-isolated internally powered input for conductivity
Accuracy & repeatability	± 1.0%		
Deadband/Setpoint	Programmable	**Output relays**	4, 3 selectable use, 1 blowdown
Auto/Manual outputs	Menu selectable	**Relay ratings**	3A each, 10A total
Keypad	16 tactile push-buttons	**Power**	120/240 VAC 50/60 Hz
Display	illuminated 128x64 pixel LCD	**Ambient**	32° - 120°F (0 - 49°C)
Drum Switch Inputs	2 digital contact inputs	**Enclosure**	NEMA 4X CSA and ANSI/UL
Water meter inputs (2)	Contact head, paddle wheel or turbine		

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)

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ORDERING OPTIONS

Controller Options

1229239 Model 1575e Conductivity Controller Only. (No Sensor or Plumbing).

1229240 Model 1575e Cooling Tower Water Treatment Conductivity Controller, Including Conductivity Sensor and Sensor Tee.

1229241 Model 1575e Cooling Tower Water Treatment Conductivity Controller, Including Conductivity Sensor and Flowswitch Plumbing Assembly.

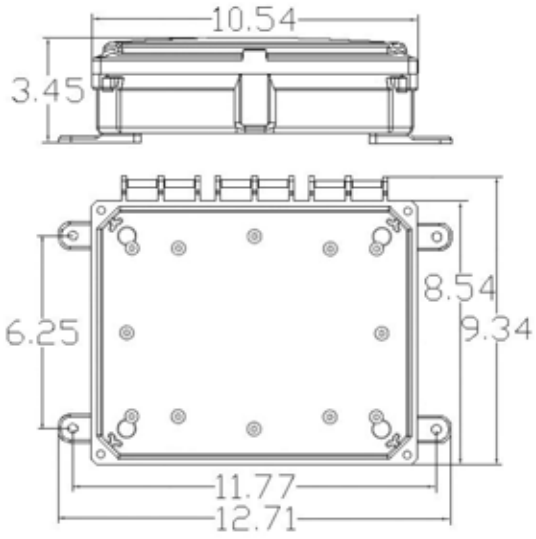
1229242 Model 1575e Cooling Tower Water Treatment Conductivity Controller, Including Conductivity Sensor and Flowswitch Plumbing Assembly on a Mounting Plate (12 X 18 in.).

Cooling Tower Options

1107003 Cooling Tower Flow Switch Plumbing

1167214 Cooling Tower Plumbing Tee

1167158 Cooling Tower sensor With 20 ft cable



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MODEL 1575e

PART NO.	CONDUCTIVITY COOLING TOWER CONTROLLER SYSTEMS	LIST	CD
1229240	1575e with cooling tower sensor tee and sensor	$1,335	W
1229241	1575e with cooling tower flowswitch and sensor	1,396	W
1229242	1575e with cooling tower FS and sensor on mounting plate	1,498	W

PART NO.	CONDUCTIVITY COOLING TOWER CONTROLLER	LIST	CD
1229239	1575e controller only, no sensor	$1,054	W

PART NO.	CONDUCTIVITY COOLING TOWER COMPONENTS	LIST	CD
1167158	Sensor, Conductivity 2 elec w/20 ft Cable	$218	W
1167157	Sensor, Conductivity 2 elec w/2 ft Cable	187	W
1169207	Sensor, Conductivity, 2 elec 4ft body	245	W
1167214	Plumbing, tee, 3/4 inch NPT	85	R
1107003	Plumbing, with 20' FS, remote plumbing	173	R

PART NO.	REPLACEMENT PARTS	LIST	CD
1166418	O-Ring, for sensor and/or flow sight, set of 10	$10	R
1169740	Red Ring replacement Kit set of two	50	R
1107004	Reed Switch w/20 ft of cable	48	R
1167266	Flow Sight set of five	65	R
1167234	Flow Float set of five	75	R
1107003	Plumbing, with 20' FS, remote plumbing	173	R

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INTRODUCTION TO THE LAKEWOOD INSTRUMENTS 2000e SERIES

The 2000e series cooling tower controllers consist of the following models and functions:

2175e Conductivity controller
2330e ORP controller
2350e pH controller
2412e pH and conductivity controller
2430e ORP and conductivity controller
2875e Conductivity controller with eight relays
2812e pH and conductivity controller with eight relays
2830e ORP and conductivity controller with eight relays
2832e pH and ORP and conductivity controller with eight relays

All of the above model numbers include:

The appropriate cooling tower sensors (Conductivity, pH, and/or ORP).
The appropriate cooling tower plumbing assembly with flow switch.
Four relay outputs with drop cords. (The model 2800e series includes eight.)
Two water meter inputs.
Biocide feed capability by day and time.
Three security levels (technician, operator, and view only).
A NEMA 4X enclosure.
Multiple feed schemes (setpoint, by water meter, percent of bleed, percent of time, feed schedule, and as an alarm).
English and Spanish menus.

The following options are able to be added to all of the above controllers:

RS2L	RS232 option card.
WEBNode	IP/TCP connection device.
EZWEB	Wireless communications.
2KIN	LonWorks communications option.
35L	Two 4-20 mA output channels.

And with the addition of the NIN option card the following options can be added:

NRLY	Relay Node with 4 additional relay outputs each. (Add up to two. The 2800e series already includes one.)
N420I	Four channels of 4-20 mA input each. (Add up to two.)
NDIG	Four channels of digital input each. (Add up to two.)
NpH	pH or ORP sensor input.
NCON	Conductivity sensor input.
	A total of five sensor nodes can be added; 1 makeup conductivity, and any combination of 4 NpH or NCON total.

Please refer to the 2000e series Capabilities sheet for an illustrated example.

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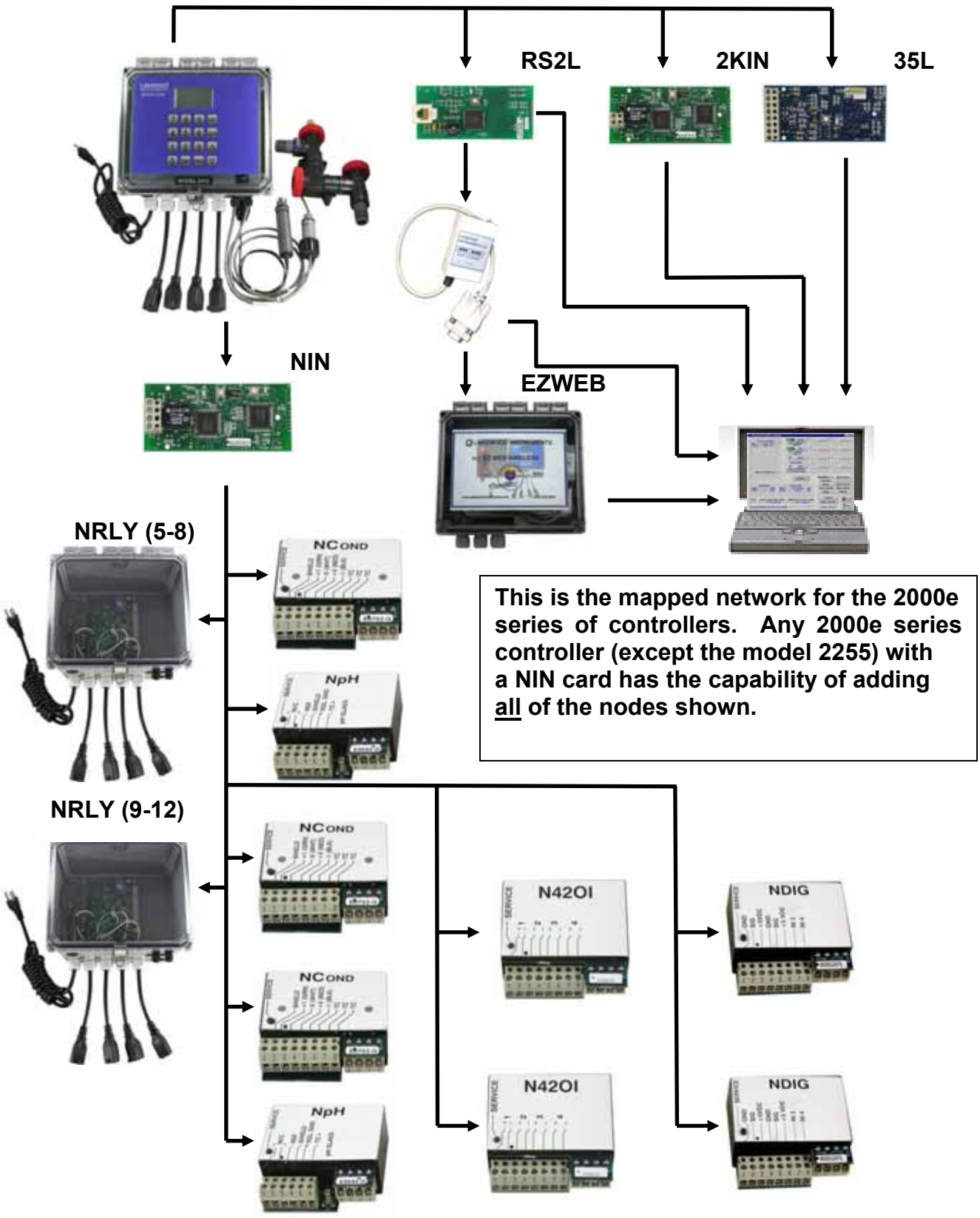
2000e SERIES CAPABILITIES



This is the mapped network for the 2000e series of controllers. Any 2000e series controller (except the model 2255) with a NIN card has the capability of adding all of the nodes shown.

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LAKEWOOD INSTRUMENTS
MODEL 2175e MICROPROCESSOR-BASED CONDUCTIVITY COOLING TOWER CONTROLLER

LONWORKS® Technology is the latest in microprocessor capability that gives the user the highest level of application flexibility. A large graphic screen, multiple inputs and very easy setup with easy field upgrade characterize this new technology.

FEATURES

- Enclosure is NEMA 4X rated.
- Power On/Off switch included.
- 4-electrode conductivity sensor with 20 ft cable includes fouling compensation and alarm.
- Integral flowsight & flow switch lockout.
- Records both makeup (MTR1) and blowdown (MTR2) water meter totals.
- Configure blowdown water meter (MTR2) as second makeup meter.
- Blowdown Relay options:
  Bleed x gallons for every x gallons makeup
  Bleed x minutes for every x gallons of makeup
  Bleed by setpoint
  Bleed by cycles of concentration with **NCON/NCKT** Option
  Bleed by multi-setpoint selected with **NCON/NCKT** Option
- Three user-selectable relay options (four additional with **NRLY**):
  Feed by setpoint, direct or reverse;
  Water meter actuated feed. MTR1, MTR2 or sum;
  Feed after blowdown by percent of bleed time;
  Feed by percentage of time;
  Schedule feed timer; General alarm contact.
- Three security levels:
  View only
  Operator
  Technician
- Four different languages:
  English Spanish (standard)
  English French (optional)
  English German (optional)

BENEFITS

- Multiple control options in a single economical package.
- Very accurate control of chemical feed and cycles of concentration.
- Very low maintenance.
- Tolerant to power surges and brownouts.
- Power cord, plug outlets and detached plumbing make installation easy. There is plenty of protected room inside the enclosure for electrician wiring.
- Indicates when to clean sensor.
- Very accurate monitoring of the evaporated water.
- Feeds chemical AFTER blowdown.
- Has expansion slots to add additional control, such as chiller loop monitor and cycles of concentration based on incoming makeup water.

SPECIFICATIONS

Inputs

Power	120/240 VAC 50/60 Hz
Sensor	4 electrode Conductivity 304 S.S. electrodes
Temperature comp.	Automatic
Flow switch	Dry contact
Water Meter Inputs (2)	Contacting head, Paddle Wheel, or Turbine.

Outputs

Relays	Four, 3 Amps @ 120 VAC
4-20 mA	Two isolated or non-isolated w/-35L option

Sensor/Plumbing

Pressure	140 psi (9.7 bar) @ 100°F (38°C)
Max. Temperature	140°F (60°C)
Min. Flow	1 gpm

Controller

Conductivity Range	0-5,000 µS (other ranges optional)
Conductivity Accuracy	± 40 µS
Conductivity Resolution	10 µS
Deadband	Adjustable
Setpoints	Direct or Reverse (configurable in the field)
Feed timer	Adjustable
Keypad	16 tactile push-buttons
Display	Illuminated 128x64 pixel LCD
Ambient Temperature	32-158°F (0-70°C)
Enclosure	NEMA 4X CSA and ANSI/UL

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ORDERING INFORMATION

2175e **L**ON**W**ORKS® Technology-based conductivity and water meter actuated chemical feed controller. The 2175e has built-in options for feed on conductivity, by feed schedule, blowdown or makeup. Totalizing of makeup and blowdown, and three security levels are standard features. Conductivity range is 0-5,000 µS.

CONTROLLER OPTIONS (optional, select one or more)

-PS +24 volt power supply required for 3 or more nodes.
-RS2L Communications node with LRWS program.
-35L Two 4-20 mA output configurable for remote data acquisition of conductivity.
-NIN Network interface node. Allows 2 NRLY, 1 Makeup NCON, 4 sensor nodes (NpH or NCON), 2 N420I and or 2 NDIG to be added.
2KIN-V1 Card to connect controller to LON based systems or gateways.

LANGUAGE OPTIONS (optional, choose one, English and Spanish Standard)

-EF English and French.
-EG English and German.

REMOTE NODE OPTIONS (optional, MUST have -NIN Option)

NRLY Four additional relays with enclosure (2 per 2000 Series Controller), also available with receptacles and power cord
NpH pH/ORP node for a pH or ORP sensor.
N420I 4-20 ma input node for up to four 4-20 ma inputs.
NDIG Digital input node for up to four digital inputs.
NCON Conductivity node for makeup water or closed loop control (node only).
NCKT Conductivity node for makeup water or closed loop control with PVC sensor, tee and enclosure. Maximum water pressure and temperature is 140 psi @ 100°F (9.7 bar @ 38°C).

NOTE: <u>NOT</u> FOR USE WITH MULTIPLE COOLING TOWERS.

MOUNTING OPTIONS (optional)

MP Mounting Plate (12 X 21 in.)

SOFTWARE AND REMOTE COMMUNICATIONS

LRWS W*indows*-based software program for computer to communicate with 2000 Series.
WEBNode IP/TCP device for use with 2000 Series controllers.
EZWeb Wireless internet interface for use with WEBNode and 2000 Series controllers.

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MODEL 2175e

PART NO.	DESCRIPTION	LIST	CD
1268647	2175e-RTC	$2,195	W
1268759	2175e-RTC-35L	2,400	W
1268760	2175e-RTC-35L-NIN	2,605	W
1268761	2175e-RTC-NIN	2,400	W
1268762	2175e-RTC-RS2L	2,400	W
1268763	2175e-RTC-RS2L-35L	2,605	W
1268764	2175e-RTC-RS2L-NIN	2,605	W
1268765	2175e-RTC-RS2L-35L-NIN	2,810	W
	This controller model is available on a mounting plate. Call factory for part numbers	121	W

PART NO.	DESCRIPTION	LIST	CD
1268926	2175e controller only, no plumbing, no sensor	1,903	W

PART NO.	REPLACEMENT PARTS	LIST	CD
1166418	O-Ring, for sensor and/or flow sight, set of 10	$10	R
1169740	Red Ring replacement Kit set of two	50	R
1107004	Reed Switch w/20 ft of cable	48	R
1167266	Flow Sight set of five	65	R
1167234	Flow Float set of five	75	R
1107003	Plumbing, with 20' FS, remote plumbing	173	R
1169202	Sensor, Conductivity 4 elec w/ 20 ft of cable	256	W
1107251	PS (+24VDC supply required for 3 or more nodes)	34	R

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LAKEWOOD INSTRUMENTS
MODEL 2330e MICROPROCESSOR-BASED ORP COOLING TOWER CONTROLLER

LONWORKS® Technology is the latest in microprocessor capability that gives the user the highest level of application flexibility. A large graphic screen, multiple inputs and very easy setup with easy field upgrades characterize this new technology.

FEATURES

- Enclosure is NEMA 4X rated.
- Power On/Off switch is included.
- Differential ORP sensor with diagnostics to indicate fouled reference or open pt band.
- Integral flow sight & flow switch lockout.
- Records both makeup (MTR1) and blowdown (MTR2) water meter totals.
- Configure blowdown water meter (MTR2) as second makeup meter.
- Four user-selectable relay options (four additional with **NRLY**):
  - Feed by setpoint, direct or reverse;
  - Water meter actuated feed. MTR1, MTR2 or sum;
  - Feed by percentage of time;
  - Schedule feed timer;
  - General alarm contact.
- Three security levels:
  - View only
  - Operator
  - Technician.
- Four different languages.
  - English Spanish (standard)
  - English French (optional)
  - English German(optional)

BENEFITS

- Multiple control options in a single economical package.
- Very accurate control of chemical feed.
- Very low maintenance.
- Tolerant to power surges and brownouts.
- Power cord, plug outlets and detached plumbing make installation easy. There is plenty of protected room inside the enclosure for electrician wiring.
- Very accurate monitoring of the evaporated water.
- Expansion slots to add additional control, such as chiller loop monitor.

SPECIFICATIONS

Inputs	
Power	120/240 VAC 50/60 HZ
Sensor	ORP combination glass electrode
Temperature comp.	None
Flow switch	Dry contact
Water Meter Inputs (2)	Contacting Head, Paddle Wheel, or Turbine.
Outputs	
Relays	Four, 3 Amps @ 120 VAC
4-20 mA	Two, isolated or non-isolated w/-35L option
Sensor/Plumbing	
Pressure	140 psi (9.7 bar) @ 100°F (38°C)
Max. Temperature	140°F (60°C)
Min. Flow	1 gpm

Controller	
ORP Range	-1000 to +1000 mV
ORP Accuracy	± 5 mV
ORP Resolution	1 mV
Deadband	Adjustable
Setpoints	Direct or Reverse (configurable in the field)
Feed timer	Adjustable
Keypad	16 tactile push-buttons
Display	Illuminated 128x64 pixel LCD
Ambient Temperature	32-158°F (0-70°C)
Enclosure Rating	NEMA 4X CSA and ANSI/UL

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ORDERING INFORMATION

2330e LONWORKS Technology-based ORP controller with plumbing and flow switches. Four relays are integral to the system. The relays may be configured for ORP high or low setpoints and alarms. ORP range is -1000 to +1000 mV. Sensor has 15 ft. of cable.

CONTROLLER OPTIONS (optional, select one or more)

-PS +24 volt power supply required for 3 or more nodes.
-RS2L Communications node with LRWS program.
-35L Two 4-20 mA output configurable for remote data acquisition of ORP.
-NIN Network interface node. Allows 2 NRLY, 1 Makeup NCON, 4 sensor nodes (NpH or NCON), 2 N420I and or 2 NDIG to be added.
2KIN-V1 Card to connect controller to LON based systems or gateways.

LANGUAGE OPTIONS (optional, choose one, English and Spanish Standard)

-EF English and French.
-EG English and German.

REMOTE NODE OPTIONS (optional, MUST have -NIN Option)

NRLY Four additional relays with enclosure (2 per 2000 Series Controller), also available with receptacles and power cord
NpH pH/ORP node for a pH or ORP sensor.
N420I 4-20 ma input node for up to four 4-20 ma inputs.
NDIG Digital input node for up to four digital inputs.
NCON Conductivity node for makeup water or closed loop control (node only).
NCKT Conductivity node for makeup water or closed loop control with PVC sensor, tee and enclosure. Maximum water pressure and temperature is 140 psi @ 100°F (9.7 bar @ 38°C).

NOTE: NOT FOR USE WITH MULTIPLE COOLING TOWERS.

MOUNTING OPTIONS (optional)

MP Mounting Plate (12 X 21 in.).

SOFTWARE AND REMOTE COMMUNICATIONS

LRWS W*indows*-based software program for computer to communicate with 2000 Series.
WEBNode IP/TCP device for use with 2000 Series controllers.
EZWeb Wireless internet interface for use with WEBNode and 2000 Series controllers.

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MODEL 2330e

PART NO.	DESCRIPTION	LIST	CD
1268657	2330e-RTC	$2,405	W
1268766	2330e-RTC-35L	2,610	W
1268767	2330e-RTC-35L-NIN	2,815	W
1268768	2330e-RTC-NIN	2,610	W
1268769	2330e-RTC-RS2L	2,610	W
1268770	2330e-RTC-RS2L-35L	2,815	W
1268771	2330e-RTC-RS2L-NIN	2,815	W
1268772	2330e-RTC-RS2L-35L-NIN	3,020	W
	This controller model is available on a mounting plate. Call factory for part numbers.	121	W

PART NO.	DESCRIPTION	LIST	CD
1268965	2330e controller only, no plumbing, no sensor	2,029	W

PART NO.	REPLACEMENT PARTS	LIST	CD
1166418	O-Ring, for sensor and/or flow sight, set of 10	$10	R
1169740	Red Ring replacement Kit set of two	50	R
1107004	Reed Switch w/20 ft of cable	48	R
1167266	Flow Sight set of five	65	R
1167234	Flow Float set of five	75	R
1240473	Sensor, ORP 1530e, 2330e, 2430e w/15 ft of cable	389	W
1240477	Plumbing, 1520/30e, 2330e, 2350e w/ 20ft flow switch	180	R
1107251	PS (+24VDC supply required for 3 or more nodes)	34	R

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LAKEWOOD INSTRUMENTS
MODEL 2350e MICROPROCESSOR-BASED
pH COOLING TOWER CONTROLLER

LONWORKS® Technology is the latest in microprocessor capability that gives the user the highest level of application flexibility. A large graphic screen, multiple inputs and very easy setup with easy field upgrade characterize this new technology.

FEATURES

- Enclosure is NEMA 4X rated.
- Power On/Off switch is included.
- Differential pH sensor with 15 ft of cable includes diagnostics to indicate fouled reference or broken glass.
- Integral flowsight & flow switch lockout.
- Records both makeup (MTR1) and blowdown (MTR2) water meter totals.
- Configure blowdown water meter (MTR2) as second makeup meter.
- Four user-selectable relay options (four additional with **NRLY**):
  Feed by setpoint, direct or reverse;
  Water meter actuated feed. MTR1, MTR2 or sum;
  Feed by percentage of time;
  Schedule feed timer; General alarm contact.
- Three security levels:
  View only
  Operator
  Technician
- Four different languages.
  English Spanish (standard)
  English French (optional)
  English German (optional)

BENEFITS

- Multiple control options in a single economical package.
- Very accurate control of chemical feed.
- Very low maintenance.
- Tolerant to power surges and brownouts.
- Power cord, plug outlets and detached plumbing make installation easy. There is plenty of protected room inside the enclosure for electrician wiring.
- Very accurate monitoring of the evaporated water.
- Expansion slots to add additional control, such as chiller loop monitor.

SPECIFICATIONS

Inputs	
Power	120/240 VAC 50/60 HZ
Sensor	pH combination glass electrode
Temperature comp.	None
Flow switch	Dry contact
Water Meter Inputs (2)	Contacting Head, Paddle Wheel, or Turbine
Outputs	
Relays	Four, 3 Amps @ 120 VAC
4-20 mA	Two, isolated or non-isolated w/-35L option
Sensor/Plumbing	
Pressure	140 psi (9.7 bar) @ 100°F (38°C)
Max. Temperature	140°F (60°C)
Min. Flow	1 gpm (3.8 Lpm)

Controller	
pH Range	0-14 pH
pH Accuracy	± 0.05 pH
pH Resolution	0.01 pH
Deadband	Adjustable
Setpoints	Direct or Reverse (configurable in the field)
Feed timer	Adjustable
Keypad	16 tactile push-buttons
Display	Illuminated 128x64 pixel LCD
Ambient Temperature	32-158°F (0-70°C)
Enclosure	NEMA 4X CSA and ANSI/UL

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ORDERING INFORMATION

2350e LONWORKS Technology-based pH controller with plumbing and flow switch. Four relays are integral to the system. The relays may be configured for pH high or low setpoints and alarms. pH range is 0-14 pH. Sensor has 15 ft. of cable.

CONTROLLER OPTIONS (optional, select one or more)

-PS +24 volt power supply required for 3 or more nodes.
-RS2L Communications node with LRWS program.
-35L Two 4-20 mA output configurable for remote data acquisition of pH.
-NIN Network interface node. Allows 2 NRLY, 1 Makeup NCON, 4 sensor nodes (NpH or NCON), 2 N420I and or 2 NDIG to be added.
2KIN-V1 Card to connect controller to LON based systems or gateways.

LANGUAGE OPTIONS (optional, choose one, English and Spanish Standard)

-EF English and French.
-EG English and German.

REMOTE NODE OPTIONS (optional, MUST have -NIN Option)

NRLY Four additional relays with enclosure (2 per 2000 Series Controller), also available with receptacles and power cord
NpH pH/ORP node for a pH or ORP sensor.
N420I 4-20 ma input node for up to four 4-20 ma inputs.
NDIG Digital input node for up to four digital inputs.
NCON Conductivity node for makeup water or closed loop control (node only).
NCKT Conductivity node for makeup water or closed loop control with PVC sensor, tee and enclosure. Maximum water pressure and temperature is 140 psi @ 100°F (9.7 bar @ 38°C).

NOTE: NOT FOR USE WITH MULTIPLE COOLING TOWERS.

MOUNTING OPTIONS (optional)

MP Mounting Plate (12 X 21 in.)

SOFTWARE AND REMOTE COMMUNICATIONS

LRWS W*indows*-based software program for computer to communicate with 2000 Series.
WEBNode IP/TCP device for use with 2000 Series controllers.
EZWeb Wireless internet interface for use with WEBNode and 2000 Series controllers.

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MODEL 2350e

PART NO.	DESCRIPTION	LIST	CD
1268659	2350e-RTC	$2,405	W
1268773	2350e-RTC-35L	2,610	W
1268774	2350e-RTC-35L-NIN	2,815	W
1268775	2350e-RTC-NIN	2,610	W
1268776	2350e-RTC-RS2L	2,610	W
1268777	2350e-RTC-RS2L-35L	2,815	W
1268778	2350e-RTC-RS2L-NIN	2,815	W
1268779	2350e-RTC-RS2L-35L-NIN	3,020	W
	This controller model is available on a mounting plate. Call factory for part numbers.	121	W

PART NO.	DESCRIPTION	LIST	CD
1268966	2350e controller only, no plumbing, no sensor	2,029	W

PART NO.	REPLACEMENT PARTS	LIST	CD
1166418	O-Ring, for sensor and/or flow sight, set of 10	$10	R
1169740	Red Ring replacement Kit set of two	50	R
1107004	Reed Switch w/20 ft of cable	48	R
1167266	Flow Sight set of five	65	R
1167234	Flow Float set of five	75	R
1240472	Sensor, pH 1520e, 2350e, 2412e w/15 ft of cable	389	W
1240477	Plumbing, 1520/30e, 2330e, 2350e w/ 20ft flow switch	180	R
1107251	PS (+24VDC supply required for 3 or more nodes)	34	R

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LAKEWOOD INSTRUMENTS
MODEL 2412e MICROPROCESSOR-BASED
pH & CONDUCTIVITY COOLING TOWER CONTROLLER

LONWORKS® Technology is the latest in microprocessor capability that gives the user the highest level of application flexibility. A large graphic screen, multiple inputs and very easy setup with easy field upgrades characterize this new technology.

BENEFITS

- Multiple control options in a single economical package.
- Very accurate control of chemical feed and cycles of concentration.
- Very low maintenance.
- Tolerant to power surges and brownouts.
- Power cord, plug outlets and detached plumbing make installation easy. There is plenty of protected room inside the enclosure for electrician wiring.
- Very accurate monitoring of the evaporated water.
- Feeds chemical AFTER blowdown.
- Has expansion slots to add additional control, such as chiller loop monitor and cycles of concentration based on incoming makeup water.

FEATURES

- Enclosure is NEMA 4X rated.
- Power On/Off switch is included.
- 4-electrode conductivity with 20 ft of cable includes fouling compensation and alarm.
- Differential pH sensor with 15 ft of cable includes diagnostics to indicate fouled reference or broken glass.
- Integral flowsight & flow switch lockout.
- Records both makeup (MTR1) and blowdown (MTR2) water meter totals.
- Configure blowdown water meter (MTR2) as second makeup meter.
- Blowdown Relay options:
  - Bleed x gallons for every x gallons makeup
  - Bleed x minutes for every x gallons of makeup
  - Bleed by setpoint
  - Bleed by cycles of concentration with **NCON/NCKT** Option
  - Bleed by multi-setpoint selected with **NCON/NCKT** Option
- Three user-selectable relay options (four additional with **NRLY**):
  - Feed by setpoint, direct or reverse;
  - Water meter actuated feed. MTR1, MTR2 or sum;
  - Feed after blowdown by percent of bleed time;
  - Feed by percentage of time;
  - Schedule Feed Timer;
  - General alarm contact.
- Three security levels:
  - View only
  - Operator
  - Technician
- Four different languages.
  - English Spanish (standard)
  - English French (optional)
  - English German (optional)

SPECIFICATIONS

Inputs

Power	120/240 VAC 50/60 HZ
Sensor	4-electrode Conductivity, pH glass electrode
Temperature comp.	Automatic
Flow switch	Dry contact
Water Meter Inputs (2)	Contacting Head, Paddle Wheel, or Turbine

Outputs

Relays	Four, 3 Amps @ 120 VAC
4-20 mA	Two, isolated or non-isolated w/-35L option

Sensor/Plumbing

Pressure	140 psi (9.7 bar) @ 100°F (38°C)
Max. Temperature	140°F (60°C)
Min. Flow	1 gpm (3.8 Lpm)

Controller

Conductivity Range	0-5,000 µS (other ranges optional)
Conductivity Accuracy	± 40 µS
Conductivity Resolution	10 µS
pH Range	0-14 pH
pH Accuracy	± 0.05 pH
pH Resolution	0.01 pH
Deadband	Adjustable
Setpoints	Direct or Reverse (configurable in the field)
Feed timer	Adjustable
Keypad	16 tactile push-button
Display	Illumin. 128x64 pixel LCD
Ambient Temperature	32-158°F (0-70°C)
Enclosure Rating	NEMA 4X CSA and ANSI/UL

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ORDERING INFORMATION

2412e LONWORKS® Technology-based pH and conductivity controller with plumbing and flow switch. Four relays are integral to the system. One is dedicated to blowdown. The others may be configured for pH (acid or caustic), inhibitor feed on conductivity, water meter, percent of time or schedule feed. pH range is 0-14 and conductivity range is 0-5,000 µS.

CONTROLLER OPTIONS (optional, select one or more)

-PS +24 volt power supply required for 3 or more nodes.
-RS2L Communications node with LRWS program.
-35L Two 4-20 mA outputs configurable for data acquisition of conductivity and pH.
-NIN Network interface node. Allows 2 NRLY, 1 Makeup NCON, 4 sensor nodes (NpH or NCON), 2 N420I and or 2 NDIG to be added.
2KIN-V1 Card to connect controller to LON based systems or gateways.

LANGUAGE OPTIONS (optional, choose one, English and Spanish Standard)

-EF English and French.
-EG English and German.

REMOTE NODE OPTIONS (optional, MUST have -NIN option)

NRLY Four additional relays with enclosure (2 per 2000 Series Controller), also available with receptacles and power cord
NpH pH/ORP node for a pH or ORP sensor.
N420I 4-20 ma input node for up to four 4-20 ma inputs.
NDIG Digital input node for up to four digital inputs.
NCON Conductivity node for makeup water or closed loop control (node only).
NCKT Conductivity node for makeup water or closed loop control with PVC sensor, tee and enclosure. Maximum water pressure and temperature is 140 psi @ 100°F (9.7 bar @ 38°C).

NOTE: NOT FOR USE WITH MULTIPLE COOLING TOWERS.

MOUNTING OPTIONS (optional)

MP Mounting Plate (12 X 21 in.).

SOFTWARE AND REMOTE COMMUNICATIONS

LRWS W*indows*-based software program for computer to communicate with 2000 Series.
WEBNode IP/TCP device for use with 2000 Series controllers.
EZWeb Wireless internet interface for use with WEBNode and 2000 Series controllers.

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MODEL 2412e

PART NO.	DESCRIPTION	LIST	CD
1268649	2412e-RTC	$2,886	W
1268780	2412e-RTC-35L	3,091	W
1268781	2412e-RTC-35L-NIN	3,296	W
1268782	2412e-RTC-NIN	3,091	W
1268783	2412e-RTC-RS2L	3,091	W
1268784	2412e-RTC-RS2L-35L	3,296	W
1268785	2412e-RTC-RS2L-NIN	3,296	W
1268786	2412e-RTC-RS2L-35L-NIN	3,501	W
	This controller model is available on a mounting plate. Call factory for part numbers.	121	W

PART NO.	DESCRIPTION	LIST	CD
1268967	2412e controller only, no plumbing, no sensors	2,029	W

PART NO.	REPLACEMENT PARTS	LIST	CD
1166418	O-Ring, for sensor and/or flow sight, set of 10	$10	R
1169740	Red Ring replacement Kit set of two	50	R
1107004	Reed Switch w/20 ft of cable	48	R
1167266	Flow Sight set of five	65	R
1167234	Flow Float set of five	75	R
1169202	Sensor, Conductivity 4 elec w/ 20 ft of cable	256	W
1240472	Sensor, pH 1520e, 2350e, 2412e w/ 15 ft of cable	389	W
1268640	Plumbing, 1512e/2412e/2430e	212	R
1107251	PS (+24VDC supply required for 3 or more nodes)	34	R

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LAKEWOOD INSTRUMENTS
MODEL 2430E MICROPROCESSOR-BASED
ORP & CONDUCTIVITY COOLING TOWER CONTROLLER

LONWORKS® Technology is the latest in microprocessor capability that gives the user the highest level of application flexibility. A large graphic screen, multiple inputs and very easy setup with easy field upgrades characterize this new technology.

BENEFITS

- Multiple control options in a single economical package.
- Very accurate control of chemical feed and cycles of concentration.
- Very low maintenance.
- Tolerant to power surges and brownouts.
- Power cord, plug outlets and detached plumbing make installation easy. There is plenty of protected room inside the enclosure for electrician wiring.
- Very accurate monitoring of the evaporated water.
- Feeds chemical AFTER blowdown.
- Has expansion slots to add additional control, such as chiller loop monitor and cycles of concentration based on incoming makeup water.

FEATURES

- Enclosure is NEMA 4X rated.
- Power On/Off switch is included.
- 4-electrode conductivity with 20 ft of cable includes fouling compensation and alarm.
- Differential ORP sensor with 15 ft of cable has diagnostics to indicate fouled reference or open pt band.
- Integral flowsight & flow switch lockout.
- Records both makeup (MTR1) and blowdown (MTR2) water meter totals.
- Configure blowdown water meter (MTR2) as second makeup meter.
- Blowdown Relay options:
  - Bleed x gallons for every x gallons makeup
  - Bleed x minutes for every x gallons of makeup
  - Bleed by setpoint
  - Bleed by cycles of concentration with **NCON/NCKT** Option
  - Bleed by multi-setpoint selected with **NCON/NCKT** Option
- Three user-selectable relay options (four additional with **NRLY**):
  - Feed by setpoint, direct or reverse;
  - Water meter actuated feed. MTR1, MTR2 or sum;
  - Feed after blowdown by percent of bleed time;
  - Feed by percentage of time;
  - Schedule feed timer;
  - General alarm contact.
- Three security levels:
  - View only
  - Operator
  - Technician
- Four different languages.
  - English Spanish (standard)
  - English French (optional)
  - English German (optional)

SPECIFICATIONS

Inputs

Power	120/240 VAC 50/60 HZ
Sensor	4 electrode Conductivity ORP combination glass electrode
Temperature comp.	Automatic
Flow switch	Dry contact
Water Meter Inputs (2)	Contacting Head, Paddle Wheel, or Turbine.

Outputs

Relays	Four, 3 Amps @ 120 VAC
4-20 mA	Two, isolated or non-isolated w/-35L option

Sensor/Plumbing

Pressure	140 psi (9.7 bar) @ 100°F (38°C)
Max. Temperature	140°F (60°C)
Min. Flow	1 gpm (3.8 Lpm)

Controller

Conductivity Range	0-5,000 µS (other ranges optional)
Conductivity Accuracy	± 40 µS
Conductivity Resolution	10 µS
ORP Range	-1000 to +1000 mV
ORP Accuracy	± 5 mV
ORP Resolution	1 mV
Deadband	Adjustable
Setpoints	Direct or Reverse (configurable in the field)
Feed timer	Adjustable
Keypad	16 tactile push-button
Display	Illumin. 128x64 pixel LCD
Ambient Temperature	32-158°F (0-70°C)
Enclosure Rating	NEMA 4X CSA and ANSI/UL

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ORDERING INFORMATION

2430e LONWORKS Technology-based ORP and conductivity controller with plumbing and flow switch. Four relays are integral to the system. One is dedicated to blowdown. The others may be configured for ORP, inhibitor feed on conductivity, water meter, percent of time or schedule feed. ORP range is -1000 to +1000 mV and conductivity range is 0-5,000 µS.

CONTROLLER OPTIONS (optional, select one or more)

-PS +24 volt power supply required for 3 or more nodes.
-RS2L Communications node with LRWS program.
-35L Two 4-20 mA output configurable for data acquisition of conductivity and ORP.
-NIN Network interface node. Allows 2 NRLY, 1 Makeup NCON, 4 sensor nodes (NpH or NCON), 2 N420I and or 2 NDIG to be added.
2KIN-V1 Card to connect controller to LON based systems or gateways.

LANGUAGE OPTIONS (optional, choose one, English and Spanish Standard)

-EF English and French.
-EG English and German.

REMOTE NODE OPTIONS (optional, MUST have -NIN option)

NRLY Four additional relays with enclosure (2 per 2000 Series Controller), also available with receptacles and power cord
NpH pH/ORP node for a pH or ORP sensor.
N420I 4-20 ma input node for up to four 4-20 ma inputs.
NDIG Digital input node for up to four digital inputs.
NCON Conductivity node for makeup water or closed loop control (node only).
NCKT Conductivity node for makeup water or closed loop control with PVC sensor, tee and enclosure. Maximum water pressure and temperature is 140 psi @ 100°F (9.7 bar @ 38°C).

NOTE: NOT FOR USE WITH MULTIPLE COOLING TOWERS.

MOUNTING OPTIONS (optional)

MP Mounting Plate (12 X 21 in.).

SOFTWARE AND REMOTE COMMUNICATIONS

LRWS W*indows*-based software program for computer to communicate with 2000 Series.
WEBNode IP/TCP device for use with 2000 Series controllers.
EZWeb Wireless internet interface for use with WEBNode and 2000 Series controllers.

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MODEL 2430e

PART NO.	DESCRIPTION	LIST	CD
1268628	2430e-RTC	$2,886	W
1268787	2430e-RTC-35L	3,091	W
1268788	2430e-RTC-35L-NIN	3,296	W
1268789	2430e-RTC-NIN	3,091	W
1268790	2430e-RTC-RS2L	3,091	W
1268791	2430e-RTC-RS2L-35L	3,296	W
1268634	2430e-RTC-RS2L-NIN	3,296	W
1268792	2430e-RTC-RS2L-35L-NIN	3,501	W
	This controller model is available on a mounting plate. Call factory for part numbers.	121	W

PART NO.	DESCRIPTION	LIST	CD
1268968	2430e controller only, no plumbing, no sensors	2,029	W

PART NO.	REPLACEMENT PARTS	LIST	CD
1166418	O-Ring, for sensor and/or flow sight, set of 10	$10	R
1169740	Red Ring replacement Kit set of two	50	R
1107004	Reed Switch w/20 ft of cable	48	R
1167266	Flow Sight set of five	65	R
1167234	Flow Float set of five	75	R
1169202	Sensor, Conductivity 4 elec w/ 20 ft of cable	256	W
1240473	Sensor, ORP 1530e. 2330e, 2430e w/ 15 ft of cable	389	W
1268640	Plumbing, 1512e/2412e/2430e	212	R
1107251	PS (+24VDC supply required for 3 or more nodes)	34	R

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LAKEWOOD INSTRUMENTS
MODEL 2812e MICROPROCESSOR-BASED
pH & CONDUCTIVITY COOLING TOWER CONTROLLER

LONWORKS® Technology is the latest in microprocessor capability that gives the user the highest level of application flexibility. A large graphic screen, multiple inputs and very easy setup with easy field upgrades characterize this new technology.

(Shown with Mounting Plate Option)

BENEFITS

- Multiple control options in a single economical package.
- Very accurate control of chemical feed and cycles of concentration.
- Very low maintenance.
- Tolerant to power surges and brownouts.
- Power cord, plug outlets and detached plumbing make installation easy. There is plenty of protected room inside the enclosure for electrician wiring.
- Very accurate monitoring of the evaporated water.
- Feeds chemical AFTER blowdown.
- Has expansion slots to add additional control, such as chiller loop monitor and cycles of concentration based on incoming makeup water.

FEATURES

- Power On/Off switch is included.
- 4-electrode conductivity with 20 ft of cable includes fouling compensation and alarm.
- Differential pH sensor with 15 ft of cable includes diagnostics to indicate fouled reference or broken glass.
- Integral flowsight & flow switch lockout.
- Records both makeup (MTR1) and blowdown (MTR2) water meter totals.
- Configure blowdown water meter (MTR2) as second makeup meter.
- Blowdown Relay options:
  - Bleed x gallons for every x gallons makeup
  - Bleed x minutes for every x gallons of makeup
  - Bleed by setpoint
  - Bleed by cycles of concentration or multiple setpoint with NCON/NCKT Option
- **SEVEN** user-selectable and programmable relays with these control options:
  - Feed by setpoint, direct or reverse (from either input);
  - Water meter actuated feed. MTR1, MTR2 or sum;
  - Feed after blowdown by percent of bleed time;
  - Feed by percentage of time;
  - Schedule feed timer;
  - General alarm contact.
- Three security levels:
  - View only
  - Operator
  - Technician
- Includes two different languages.
  - English/Spanish

SPECIFICATIONS

Inputs

Power	120 VAC 50/60 HZ
Sensor	4 electrode Conductivity pH combination glass electrode
Temperature comp.	Automatic
Flow switch	Dry contact
Water Meter Inputs (2)	Contacting Head, Paddle Wheel, or Turbine.

Outputs

Relays	Eight, 3 Amps @ 120 VAC, 12 Amps total
4-20 mA	Two, isolated or non-isolated w/-35L option

Sensor/Plumbing

Pressure	140 psi (9.7 bar) @ 100°F (38°C)
Max. Temperature	140°F (60°C)
Min. Flow	1 gpm (3.8 Lpm)

Controller

Conductivity Range	0-5,000 µS (other ranges optional)
Conductivity Accuracy	± 40 µS
Conductivity Resolution	10 µS
pH Range	2-12 pH
pH Accuracy	± 0.05
pH Resolution	0.01 pH
Deadband	Adjustable
Setpoints	Direct or Reverse
Feed timer	Adjustable
Keypad	16 tactile push-button
Display	Illumin. 128x64 pixel LCD
Ambient Temperature	32-158°F (0-70°C)
Enclosure Rating	NEMA 4X

Intertek

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ORDERING INFORMATION

2812e LONWORKS Technology-based pH and conductivity controller with plumbing and flow switch. Eight relays are integral to the system. One is dedicated to blowdown. The others may be configured for pH (acid or caustic), inhibitor feed on conductivity, water meter, percent of time, or schedule feed. pH range 2-12 pH, and conductivity range is 0-5,000 µS.

CONTROLLER OPTIONS (optional, select one)

-BASIC As shown above

-DELUXE -Basic plus communications card (RS-232) and four 4-20mA inputs

-WEB -Deluxe plus Network/Internet communication interface

-EZWEB -WEB plus Broadband Internet two-way hub that is independent of any site infrastructure and can have up to four 2000 series controllers linked to it. Also functions a local WiFi Hotspot for those with password. Requires one year service agreement part number 1268977.

ADVANCED ADD-ON REMOTE NODE OPTIONS (optional)

NRLY Four additional relays with enclosure (1 per 2800 Series Controller)

NpH pH/ORP node for a pH or ORP sensor.

2KIN-V1 Card to connect controller to LON based systems or gateways.

N420I 4-20 ma input node for up to four 4-20 ma inputs.

NDIG Digital input node for up to four digital inputs.

NCON Conductivity node for makeup water or closed loop control (node only).

NCKT Conductivity node for makeup water or closed loop control with PVC sensor, tee and enclosure. Maximum water pressure and temperature is 140 psi @ 100°F (9.7 bar @ 38°C).

NOTE: NOT FOR USE WITH MULTIPLE COOLING TOWERS.

SEE 2000e SERIES CAPABILITIES SHEET FOR FURTHER INFO.

MOUNTING OPTIONS (optional)

MP Mounting Plate (12 X 21 in.).

SOFTWARE AND REMOTE COMMUNICATIONS

LRWS W*indows*-based software program for computer to communicate with 2000 Series.

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PART NO.	DESCRIPTION	LIST	CD
1269035	2812e-BASIC	3857	W
1269036	2812e-DELUXE	4582	W
1269037	2812e-WEB	4832	W
1269038	2812e-EZWEB	5807	W
	(EZWEB requires 1 year service agreement, part no. 1268977)		
	This controller model is available on a mounting plate. Call factory for part numbers.	121	W

PART NO.	REPLACEMENT PARTS	LIST	CD
1166418	O-Ring, for sensor and/or flow sight, set of 10	10	R
1169740	Red Ring replacement Kit set of two	50	R
1107004	Reed Switch w/ 20 ft of cable	48	R
1167266	Flow Sight set of five	65	R
1167234	Flow Float set of five	75	R
1169202	Sensor, Conductivity 4 elec w/ 20 ft of cable	256	W
1240472	Sensor, pH 1520e, 2350e, 2412e w/15 ft cable	389	W
1268640	Plumbing, 1512e/2412e/2430e/2812e/2830e	212	R

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LAKEWOOD INSTRUMENTS
MODEL 2830e MICROPROCESSOR-BASED
ORP & CONDUCTIVITY COOLING TOWER CONTROLLER

LONWORKS® Technology is the latest in microprocessor capability that gives the user the highest level of application flexibility. A large graphic screen, multiple inputs and very easy setup with easy field upgrades characterize this new technology.

(Shown with Mounting Plate Option)

BENEFITS

- Multiple control options in a single economical package.
- Very accurate control of chemical feed and cycles of concentration.
- Very low maintenance.
- Tolerant to power surges and brownouts.
- Power cord, plug outlets and detached plumbing make installation easy. There is plenty of protected room inside the enclosure for electrician wiring.
- Very accurate monitoring of the evaporated water.
- Feeds chemical AFTER blowdown.
- Has expansion slots to add additional control, such as chiller loop monitor and cycles of concentration based on incoming makeup water.

FEATURES

- Power On/Off switch is included.
- 4-electrode conductivity with 20 ft of cable includes fouling compensation and alarm.
- Differential ORP sensor with 15 ft of cable has diagnostics to indicate fouled reference or open pt band.
- Integral flowsight & flow switch lockout.
- Records both makeup (MTR1) and blowdown (MTR2) water meter totals.
- Configure blowdown water meter (MTR2) as second makeup meter.
- Blowdown Relay options:
  - Bleed x gallons for every x gallons makeup
  - Bleed x minutes for every x gallons of makeup
  - Bleed by setpoint
  - Bleed by cycles of concentration or multiple setpoint with NCON/NCKT Option
- **SEVEN** user-selectable and programmable relays with these control options:
  - Feed by setpoint, direct or reverse (from any input);
  - Water meter actuated feed. MTR1, MTR2 or sum;
  - Feed after blowdown by percent of bleed time;
  - Feed by percentage of time;
  - Schedule feed timer;
  - General alarm contact.
- Three security levels:
  - View only
  - Operator
  - Technician
- Includes two different languages.
  - English/Spanish

SPECIFICATIONS

Inputs

Power	120 VAC 50/60 HZ
Sensor	4 electrode Conductivity ORP combination glass electrode
Temperature comp.	Automatic
Flow switch	Dry contact
Water Meter Inputs (2)	Contacting Head, Paddle Wheel, or Turbine.

Outputs

Relays	Eight, 3 Amps @ 120 VAC, 12 Amps total
4-20 mA	Two, isolated or non-isolated w/-35L option

Sensor/Plumbing

Pressure	140 psi (9.7 bar) @ 100°F(38°C)
Max. Temperature	140°F (60°C)
Min. Flow	1 gpm (3.8 Lpm)

Controller

Conductivity Range	0-5,000 µS (other ranges optional)
Conductivity Accuracy	± 40 µS
Conductivity Resolution	10 µS
ORP Range	-1000 to +1000 mV
ORP Accuracy	± 5 mV
ORP Resolution	1 mV
Deadband	Adjustable
Setpoints	Direct or Reverse
Feed timer	Adjustable
Keypad	16 tactile push-button
Display	Illumin. 128x64 pixel LCD
Ambient Temperature	32-158°F (0-70°C)
Enclosure Rating	NEMA 4X

Intertek

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ORDERING INFORMATION

2830e LONWORKS Technology-based ORP and conductivity controller with plumbing and flow switch. Eight relays are integral to the system. One is dedicated to blowdown. The others may be configured for ORP setpoint (direct or reverse), inhibitor feed on conductivity, water meter, percent of time, or schedule feed. ORP range is -1000 to +1000 mV and conductivity range is 0-5,000 µS.

CONTROLLER OPTIONS (optional, select one)

-BASIC As shown above

-DELUXE -Basic plus communications card (RS-232) and four 4-20mA inputs

-WEB -Deluxe plus Network/Internet communication interface

-EZWEB -WEB plus Broadband Internet two-way hub that is independent of any site infrastructure and can have up to four 2000 series controllers linked to it. Also functions a local WiFi Hotspot for those with password. Requires one year service agreement part number 1268977.

ADVANCED ADD-ON REMOTE NODE OPTIONS (optional)

NRLY Four additional relays with enclosure (1 per 2800 Series Controller)

NpH pH/ORP node for a pH or ORP sensor.

2KIN-V1 Card to connect controller to LON based systems or gateways.

N420I 4-20 ma input node for up to four 4-20 ma inputs.

NDIG Digital input node for up to four digital inputs.

NCON Conductivity node for makeup water or closed loop control (node only).

NCKT Conductivity node for makeup water or closed loop control with PVC sensor, tee and enclosure. Maximum water pressure and temperature is 140 psi @ 100°F (9.7 bar @ 38°C).

NOTE: NOT FOR USE WITH MULTIPLE COOLING TOWERS.

SEE 2000e SERIES CAPABILITIES SHEET FOR FURTHER INFO.

MOUNTING OPTIONS (optional)

MP Mounting Plate (12 X 21 in.).

SOFTWARE AND REMOTE COMMUNICATIONS

LRWS W*indows*-based software program for computer to communicate with 2000 Series.

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PART NO.	DESCRIPTION	LIST	CD
1269039	2830e-BASIC	3857	W
1269040	2830e-DELUXE	4582	W
1269041	2830e-WEB	4832	W
1269042	2830e-EZWEB	5807	W
	(EZWEB requires 1 year service agreement, part no. 1268977)		
	This controller model is available on a mounting plate. Call factory for part numbers.	121	W

PART NO.	REPLACEMENT PARTS	LIST	CD
1166418	O-Ring, for sensor and/or flow sight, set of 10	10	R
1169740	Red Ring replacement Kit set of two	50	R
1107004	Reed Switch w/ 20 ft of cable	48	R
1167266	Flow Sight set of five	65	R
1167234	Flow Float set of five	75	R
1169202	Sensor, Conductivity 4 elec w/ 20 ft of cable	256	W
1240473	Sensor, ORP 1530e. 2330e, 2430e w/ 15 ft of cable	389	W
1268640	Plumbing, 1512e/2412e/2430e/2812e/2830e	212	R

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LAKEWOOD INSTRUMENTS
MODEL 2832e MICROPROCESSOR-BASED
ORP, pH & CONDUCTIVITY COOLING TOWER CONTROLLER

LONWORKS® Technology is the latest in microprocessor capability that gives the user the highest level of application flexibility. A large graphic screen, multiple inputs and very easy setup with easy field upgrades characterize this new technology.

(Shown with Mounting Plate Option)

BENEFITS

- Multiple control options in a single economical package.
- Very accurate control of chemical feed and cycles of concentration.
- Very low maintenance.
- Tolerant to power surges and brownouts.
- Power cord, plug outlets and detached plumbing make installation easy. There is plenty of protected room inside the enclosure for electrician wiring.
- Very accurate monitoring of the evaporated water.
- Feeds chemical AFTER blowdown.
- Has expansion slots to add additional control, such as chiller loop monitor and cycles of concentration based on incoming makeup water.

FEATURES

- Power On/Off switch is included.
- 4-electrode conductivity with 20 ft of cable includes fouling compensation and alarm.
- Differential ORP sensor with 15 ft of cable has diagnostics to indicate fouled reference or open pt band.
- Differential pH sensor with 15 ft of cable includes diagnostics to indicate fouled reference or broken glass.
- Integral flowsight & flow switch lockout.
- Records both makeup (MTR1) and blowdown (MTR2) water meter totals.
- Configure blowdown water meter (MTR2) as second makeup meter.
- Blowdown Relay options:
  - Bleed x gallons for every x gallons makeup
  - Bleed x minutes for every x gallons of makeup
  - Bleed by setpoint
  - Bleed by cycles of concentration or multiple setpoint with NCON/NCKT Option
- **SEVEN** user-selectable and programmable relays with these control options:
  - Feed by setpoint, direct or reverse (from any input);
  - Water meter actuated feed. MTR1, MTR2 or sum;
  - Feed after blowdown by percent of bleed time;
  - Feed by percentage of time;
  - Schedule feed timer;
  - General alarm contact.
- Three security levels:
  - View only
  - Operator
  - Technician
- Includes two different languages.
  - English/Spanish

SPECIFICATIONS

Inputs

Power	120 VAC 50/60 HZ
Sensor	4 electrode Conductivity ORP and pH combination glass electrodes
Temperature comp.	Automatic
Flow switch	Dry contact
Water Meter Inputs (2)	Contacting Head, Paddle Wheel, or Turbine.

Outputs

Relays	Eight, 3 Amps @ 120 VAC, 12 Amps total
4-20 mA	Two, isolated or non-isolated w/-35L option

Sensor/Plumbing

Pressure	140 psi (9.7 bar) @ 100°F (38°C)
Max. Temperature	140°F (60°C)
Min. Flow	1 gpm (3.8 Lpm)

Controller

Conductivity Range	0-5,000 µS (other ranges optional)
Conductivity Accuracy	± 40 µS
Conductivity Resolution	10 µS
ORP Range	-1000 to +1000 mV
ORP Accuracy	± 5 mV
ORP Resolution	1 mV
pH Range	2-12 pH
pH Accuracy	± 0.05
pH Resolution	0.01 pH
Deadband	Adjustable
Setpoints	Direct or Reverse
Feed timer	Adjustable
Keypad	16 tactile push-button
Display	Illumin. 128x64 pixel LCD
Ambient Temperature	32-158°F (0-70°C)
Enclosure Rating	NEMA 4X

Intertek

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ORDERING INFORMATION

2832e LONWORKS Technology-based ORP, pH, and conductivity controller with plumbing and flow switch. Eight relays are integral to the system. One is dedicated to blowdown. The others may be configured for ORP, pH (acid or caustic), inhibitor feed on conductivity, water meter, percent of time, or schedule feed. ORP range is -1000 to +1000 mV, pH range 2-12 pH, and conductivity range is 0-5,000 µS.

CONTROLLER OPTIONS (optional, select one)

-BASIC As shown above

-DELUXE -Basic plus communications card (RS-232) and four 4-20mA inputs

-WEB -Deluxe plus Network/Internet communication interface

-EZWEB -WEB plus Broadband Internet two-way hub that is independent of any site infrastructure and can have up to four 2000 series controllers linked to it. Also functions a local WiFi Hotspot for those with password. Requires one year service agreement part number 1268977.

ADVANCED ADD-ON REMOTE NODE OPTIONS (optional)

NRLY Four additional relays with enclosure (1 per 2800 Series Controller)

NpH pH/ORP node for a pH or ORP sensor.

2KIN-V1 Card to connect controller to LON based systems or gateways.

N420I 4-20 ma input node for up to four 4-20 ma inputs.

NDIG Digital input node for up to four digital inputs.

NCON Conductivity node for makeup water or closed loop control (node only).

NCKT Conductivity node for makeup water or closed loop control with PVC sensor, tee and enclosure. Maximum water pressure and temperature is 140 psi @ 100°F (9.7 bar @ 38°C).

NOTE: NOT FOR USE WITH MULTIPLE COOLING TOWERS.

SEE 2000e SERIES CAPABILITIES SHEET FOR FURTHER INFO.

MOUNTING OPTIONS (optional)

MP Mounting Plate (12 X 21 in.).

SOFTWARE AND REMOTE COMMUNICATIONS

LRWS W*indows*-based software program for computer to communicate with 2000 Series.

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MODEL 2832e

PART NO.	DESCRIPTION	LIST	CD
1269031	2832e-BASIC	4775	W
1269032	2832e-DELUXE	5500	W
1269033	2832e-WEB	5750	W
1269034	2832e-EZWEB	6725	W
	(EZWEB requires 1 year service agreement, part no. 1268977)		
	This controller model is available on a mounting plate. Call factory for part numbers.	121	W

PART NO.	REPLACEMENT PARTS	LIST	CD
1166418	O-Ring, for sensor and/or flow sight, set of 10	10	R
1169740	Red Ring replacement Kit set of two	50	R
1107004	Reed Switch w/ 20 ft of cable	48	R
1167266	Flow Sight set of five	65	R
1167234	Flow Float set of five	75	R
1169202	Sensor, Conductivity 4 elec w/ 20 ft of cable	256	W
1240473	Sensor, ORP 1530e. 2330e, 2430e w/ 15 ft of cable	389	W
1240472	Sensor, pH 1520e, 2350e, 2412e w/15 ft cable	389	W
1268942	Plumbing, 2400e, 2832e w/pH/cond/ORP	240	R

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LAKEWOOD INSTRUMENTS
MODEL 2875e MICROPROCESSOR-BASED
CONDUCTIVITY COOLING TOWER CONTROLLER

LONWORKS® Technology is the latest in microprocessor capability that gives the user the highest level of application flexibility. A large graphic screen, multiple inputs and very easy setup with easy field upgrades characterize this new technology.

(Shown with Mounting Plate Option)

BENEFITS

- Multiple control options in a single economical package.
- Very accurate control of chemical feed and cycles of concentration.
- Very low maintenance.
- Tolerant to power surges and brownouts.
- Power cord, plug outlets and detached plumbing make installation easy. There is plenty of protected room inside the enclosure for electrician wiring.
- Very accurate monitoring of the evaporated water.
- Feeds chemical AFTER blowdown.
- Has expansion slots to add additional control, such as chiller loop monitor and cycles of concentration based on incoming makeup water.

FEATURES

- Power On/Off switch is included.
- 4-electrode conductivity with 20 ft of cable includes fouling compensation and alarm.
- Integral flowsight & flow switch lockout.
- Records both makeup (MTR1) and blowdown (MTR2) water meter totals.
- Configure blowdown water meter (MTR2) as second makeup meter.
- Blowdown Relay options:
  - Bleed x gallons for every x gallons makeup
  - Bleed x minutes for every x gallons of makeup
  - Bleed by setpoint
  - Bleed by cycles of concentration or multiple setpoint with NCON/NCKT Option
- **SEVEN** user-selectable and programmable relays with these control options:
  - Feed by setpoint, direct or reverse;
  - Water meter actuated feed.
  - MTR1, MTR2 or sum;
  - Feed after blowdown by percent of bleed time;
  - Feed by percentage of time;
  - Schedule feed timer;
  - General alarm contact.
- Three security levels:
  - View only
  - Operator
  - Technician
- Includes two different languages.
  - English/Spanish

SPECIFICATIONS

Inputs

Power	120 VAC 50/60 HZ
Sensor	4 electrode Conductivity Temperature comp. Automatic
Flow switch	Dry contact
Water Meter Inputs (2)	Contacting Head, Paddle Wheel, or Turbine.

Outputs

Relays	Eight, 3 Amps @ 120 VAC, 12 Amps total
4-20 mA	Two, isolated or non-isolated w/-35L option

Sensor/Plumbing

Pressure	140 psi (9.7 bar) @ 100°F(38°C)
Max. Temperature	140°F (60°C)
Min. Flow	1 gpm (3.8 Lpm)

Controller

Conductivity Range	0-5,000 µS (other ranges optional)
Conductivity Accuracy	± 40 µS
Conductivity Resolution	10 µS
Deadband	Adjustable
Setpoints	Direct or Reverse
Feed timer	Adjustable
Keypad	16 tactile push-button
Display	Illumin. 128x64 pixel LCD
Ambient Temperature	32-158°F (0-70°C)
Enclosure Rating	NEMA 4X

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ORDERING INFORMATION

2875e LONWORKS Technology-based conductivity controller with plumbing and flow switch. Eight relays are integral to the system. One is dedicated to blowdown. The others may be configured for chemical feed on conductivity, water meter, percent of time, percent of blowdown time, schedule feed, or based on selectable alarms. Conductivity range is 0-5,000 µS.

CONTROLLER OPTIONS (optional, select one)

-BASIC As shown above

-DELUXE -Basic plus communications card (RS-232) and four 4-20mA inputs

-WEB -Deluxe plus Network/Internet communication interface

-EZWEB -WEB plus Broadband Internet two-way hub that is independent of any site infrastructure and can have up to four 2000 series controllers linked to it. Also functions a local WiFi Hotspot for those with password. Requires one year service agreement part number 1268977.

ADVANCED ADD-ON REMOTE NODE OPTIONS (optional)

NRLY Four additional relays with enclosure (1 per 2800 Series Controller)

NpH pH/ORP node for a pH or ORP sensor.

2KIN-V1 Card to connect controller to LON based systems or gateways.

N420I 4-20 ma input node for up to four 4-20 ma inputs.

NDIG Digital input node for up to four digital inputs.

NCON Conductivity node for makeup water or closed loop control (node only).

NCKT Conductivity node for makeup water or closed loop control with PVC sensor, tee and enclosure. Maximum water pressure and temperature is 140 psi @ 100°F (9.7 bar @ 38°C).

NOTE: NOT FOR USE WITH MULTIPLE COOLING TOWERS.

SEE 2000e SERIES CAPABILITIES SHEET FOR FURTHER INFO.

MOUNTING OPTIONS (optional)

MP Mounting Plate (12 X 21 in.).

SOFTWARE AND REMOTE COMMUNICATIONS

LRWS W*indows*-based software program for computer to communicate with 2000 Series.

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MODEL 2875e

PART NO.	DESCRIPTION	LIST	CD
1269020	2875e-BASIC	3180	W
1269021	2875e-DELUXE	3905	W
1269022	2875e-WEB	4155	W
1269023	2875e-EZWEB	5130	W
	(EZWEB requires 1 year service agreement, part no. 1268977)		
	This controller model is available on a mounting plate. Call factory for part numbers.	121	W

PART NO.	REPLACEMENT PARTS	LIST	CD
1166418	O-Ring, for sensor and/or flow sight, set of 10	10	R
1169740	Red Ring replacement Kit set of two	50	R
1107004	Reed Switch w/ 20 ft of cable	48	R
1167266	Flow Sight set of five	65	R
1167234	Flow Float set of five	75	R
1169202	Sensor, Conductivity 4 elec w/ 20 ft of cable	256	W
1107003	Plumbing, with 20' FS, remote plumbing	173	R

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COOLING TOWER ACCESSORIES

AND

REPLACEMENT PARTS

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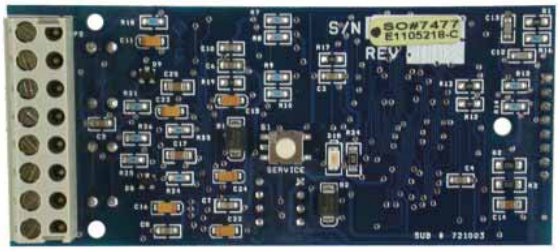
2000 SERIES OPTIONS AND NODES

	**NIN** **PART NO. 1220810** The NIN is the Network Interface Node. It is used to connect any external nodes to a 2000 series controller. Includes three standoffs for mounting. This option is included with the 2800e series.
	**35L** **PART NO. 1109657** The 35L option card provides two channels of isolated or non-isolated 4-20 mA output from a 2000 series controller. Includes three standoffs for mounting.
	**RS2L** **PART NO. 1109658** The RS2L option card provides an RS232 communications output for use with the WEBNode, modem, or direct connect to a computer. This option card comes with a 9-pin DCE connector, a 25-pin DTE connector, a 25 ft phone cable, and the LRWS software package. Includes three standoffs for mounting.
	**2KIN-V1** **PART NO. 1235230** The 2KIN-V1 option card allows a 2000 series controller to be attached to a LonWorks twisted pair network using FTT 10. It is one-way communications to the controller. Includes three standoffs for mounting.

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	**NCON** **PART NO. 1168513** The Node, Conductivity (NCON) is a single channel of conductivity input to a 2000 series controller. A maximum of four NCON options can be used. A conductivity sensor must be ordered separately. The NIN option card is required for operation.
	**NPH** **PART NO. 1104522** The Node pH (NpH) is a single channel of pH or ORP input to a 2000 series controller. A maximum of four NpH options can be used. A pH or ORP sensor must be ordered separately. The NIN option card is required for operation.
	**NDIG** **PART NO. 1165667** The Node, Digital Input (NDIG) is four channels of digital input to a 2000 series controller. The first two channels can be used as additional water meter inputs. This node can be used for drum switch inputs. A maximum of two NDIG options can be used for a total of eight digital inputs. The NIN option card is required for operation.
	**N420I** **PART NO. 1169706** The Node, 4-20 mA Input (N420I) is four channels of 4-20 mA input to a 2000 series controller. A maximum of two N420I options can be used for a total of 8 channels of 4-20 mA input. The NIN option card is required for operation.

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	**NRLY W/RECEPTACLES** **PART NO. 1268833** The Node, Relay (NRLY) is four relay outputs in a NEMA 4X enclosure from a 2000 series controller with a power cord and receptacles. The relays are pre-wired for 120 vac output. The NRLY power cord and receptacles can be removed for conduit connections and dry contacts. A maximum of two NRLY options can be used. The NIN option card is required for operation.
	**NCKT** **PART NO. 1169439** The Node, Conductivity Kit (NCKT) is a four-electrode conductivity sensor, a 3/4 inch solvent-weld plumbing assembly, and an NCON with a NEMA 4X enclosure.
	**PS** **PART NO. 1107251** The Power Supply (PS) is used to provide the +24 vdc to the 2000 series add-on nodes such as the NCON, NRLY, NpH, or NDIG. A PS is required if more than two nodes are attached to a 2000 series controller. This power supply is <u>not</u> necessary when using nodes with a 2800e series controller.

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	**WEBNODE** **PART NO. 1268972** The Lakewood Instruments WebNode connects the 2000 series -RS2L option card to Ethernet networks using the IP protocol family and the Transmission Control Protocol (TCP).
	**EZWEB WIRELESS** **PART NO. 1268976** The Lakewood Instruments EZWEB WIRELESS Internet Interface consists of a (Plug and Play) integrated HUB /Router and an EVDO Rev A (3G) wireless connection and connects up to four WEBNodes to the internet through a static IP. It also allows a wireless WLAN connection to the internet. The EZWEB requires a 1 year service agreement, part number 1268977.
	**CABLE AND CONNECTORS KIT** **PART NO. 1169333** **PHONE CABLE 25 FT.** **PART NO. 1166336** **9-PIN DCE CONNECTOR** **PART NO. 1167764** **25-PIN DTE CONNECTOR** **PART NO. 1167765** The phone cable and connectors kit includes the phone cable and both the 25-pin DTE connector and the 9-pin DCE connector for use with the RS2L option card.

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LAKEWOOD INSTRUMENTS
WEBNODE FOR 2000 SERIES CONTROLLERS

The Lakewood Instruments WebNode connects the 2000 series -RS2L option card to Ethernet networks using the IP protocol family and the Transmission Control Protocol (TCP). The WebNode contains a Web (http) server that allows presentation of custom content.

FEATURES

- Compatible with ALL existing 2000 series controllers with the RS2L option.
- Plug and Play, minimal setup for intranet connections.
- Accessible via Internet through pre-assigned ports (with firewall access).
- Built in Web server hardware to prevent network port access by un-authorized sources.
- 99% of standard LRWS functions are available (Requires installation of LRWS and com port re-director software).
- The unit's configuration is stored in nonvolatile memory and is retained without power.
- Only one person at a time may access the controller. This eliminates the possibility of several people simultaneously attempting to configure the 2000 series controller.

BENEFITS

- Simple, easy to access these devices from a local network or a remote location.
- Self contained web page, not hosted by manufacturer.
- Web page is accessible by an IP-based application (i.e. a web browser) over an IP network from any place in the world.
- Removes RS232 cable length limitations by using Ethernet or IP/TCP networks.
- No access fees

SPECIFICATIONS

Serial Interface	RS232. Baud rate software selectable (300 to 19200bps)
Serial Line Formats	7 or 8 data bits, 1-2 Stop bits, Parity: odd, even, none
Modem Control`	CTS, RTS
Flow Control	XON/XOFF (software), CTS/RTS (hardware), None
Network Interface	RJ45 Ethernet 10Base-T or 100Base-TX (Auto-sensing)
Compatibility	Ethernet: Version 2.0/IEEE 802.3
Internal Web Server	Serves static web pages and Java applets
Protocols Supported	ARP, UDP/IP, TCP/IP, Telnet, ICMP, SNMP, DHCP, BOOTP, TFTP, Auto IP, SMTP, and HTTP
LEDs	10Base-T & 100Base-TX Activity, Full/half duplex.
Weight	2.2oz
Material	Case: Flame Retardant
Temperature	Operating range: -40°C to +85°C (-40°F to 185°F)
Relative Humidity	Operating: 5% to 95% non-condensing
Input Power	+9 to +24VDC

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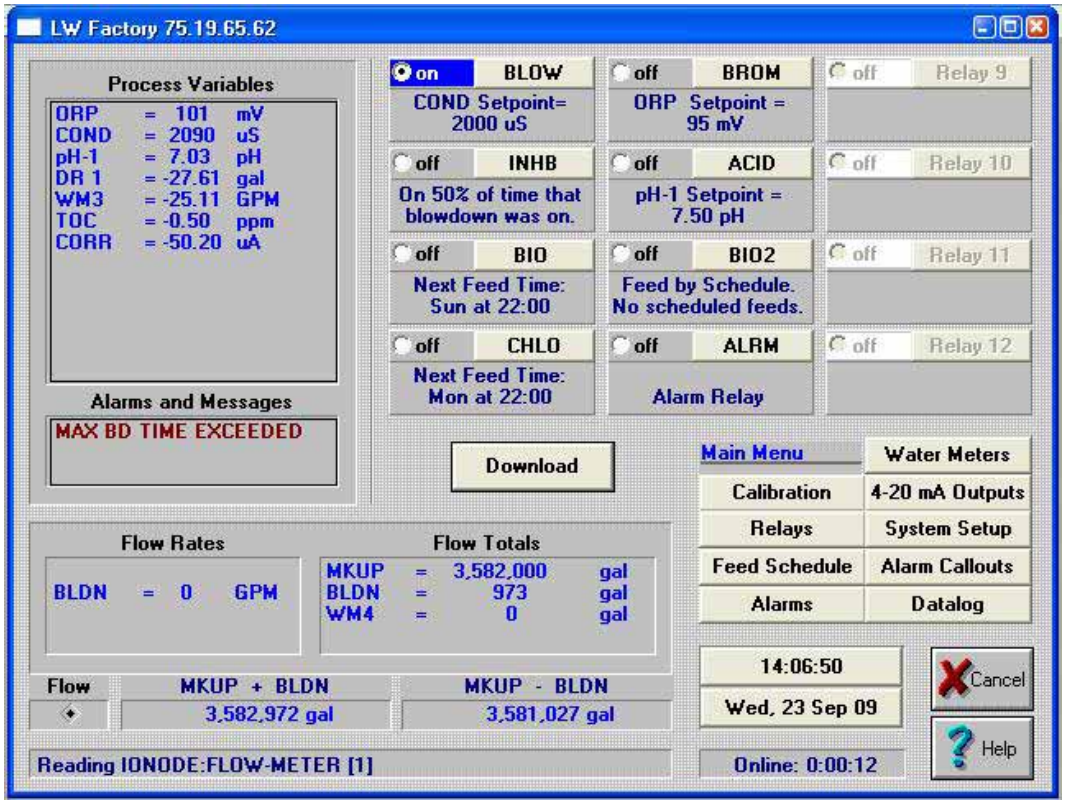
LAKEWOOD REMOTE WINDOWS SOFTWARE (LRWS) FOR MODEL 2000 SERIES CONTROLLERS



LAKEWOOD REMOTE

Lakewood Remote is a *Windows*-based program that accesses all the features of Lakewood 2000 Series controllers remotely. Communication is direct-connect via RS-232, remotely over phone lines with a modem, or over the internet or intranet with the use of the WEBNode. A user-selectable password is required to access any feature beyond viewing.

Lakewood Remote allows access to multiple controllers, phone numbers, addresses, and passwords. Using standard *Windows*-format mouse-click buttons, all features of the controller can be accessed. The datalog stored in the controller can be downloaded into a comma- delimited file. This can be used by *Lakewood Graph* or imported into other applications, such as spreadsheets.

LAKEWOOD GRAPH

Lakewood Graph is a *Windows*-based program that takes delimited datalog files created by *Lakewood Remote* and plots the data on a time line.

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SPECIFICATIONS

Platform required:

- 386 with 4M of RAM.
- Any machine that can run *Windows 3.1, 95, 98, NT, 2000, XP, VISTA*.
- 2M of hard drive space.
- Modem is optional.

Direct Connect RS-232:

- 1200, 2400, 4800, 9600 or 19200 baud.
- 8 data bits, 1 stop bit, NO parity.

Modem Requirements:

- Hayes AT command set
- 14,400 baud or higher.

Internet or Intranet Requirements:

- WEBNode
- IP protocol family and the Transmission Control Protocol (TCP).
- .netframework.

Datalog:

- 1 hour of 1 minute intervals.
- 28 days of hourly intervals.
- Both logs include process minimum, maximum, average pump run times and water meter totals.
- Minimum, maximum and average pump run times reset at the top of the hour.
- Downloaded by *Lakewood Remote* into a file of comma-delimited ASCII data that can be used by *Lakewood Graph* or imported into other applications, such as spreadsheets.

Security:

- View-only mode unless correct password is entered.
- 8-digit password can be changed only at the controller.

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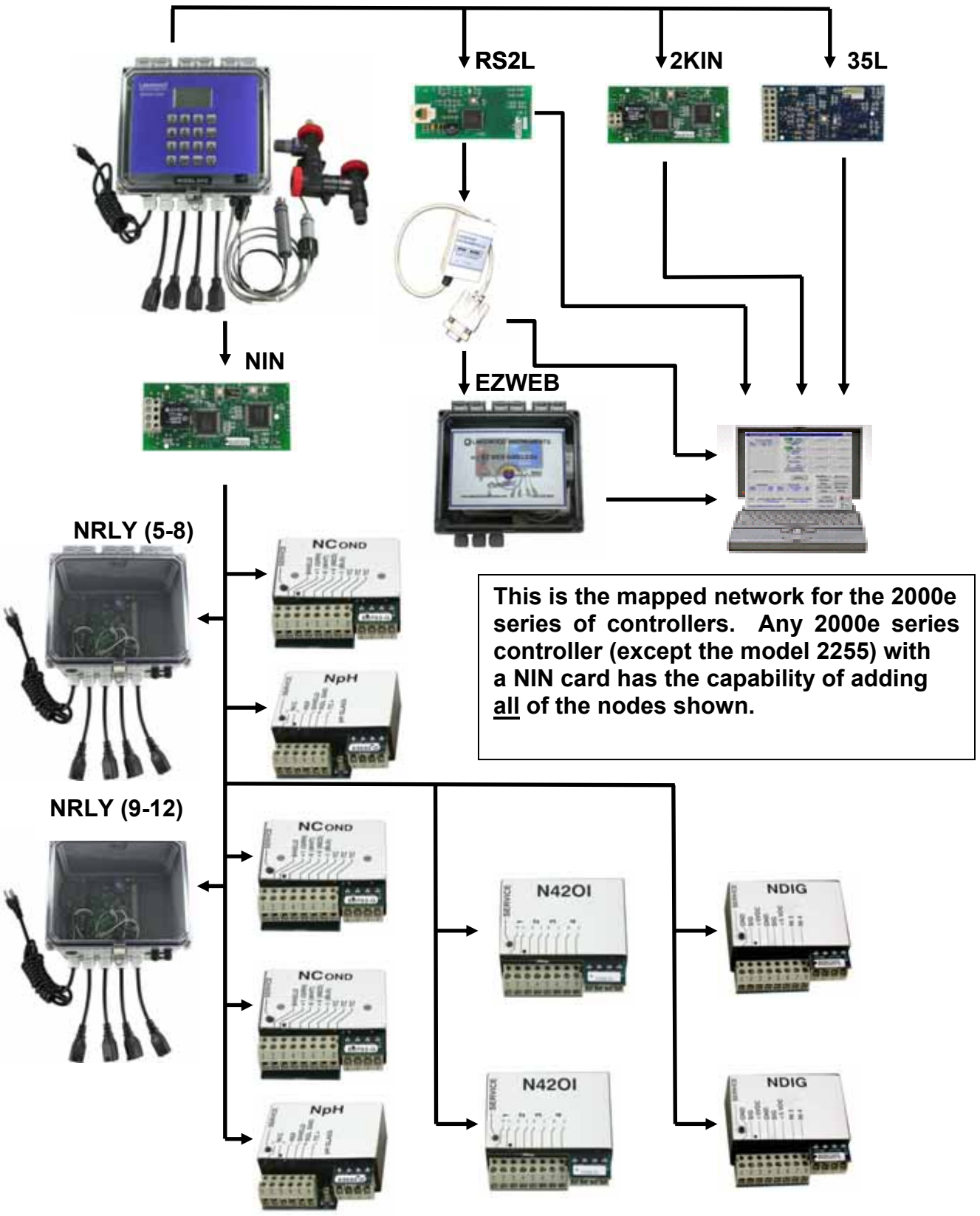
2000e SERIES CAPABILITIES



This is the mapped network for the 2000e series of controllers. Any 2000e series controller (except the model 2255) with a NIN card has the capability of adding <u>all</u> of the nodes shown.

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2000 SERIES ADD-ON OPTIONS AND NODES

PART NO.	DESCRIPTION	LIST	CD
1168513	NCON, Conductivity Node used to add conductivity sensors	$485	R
1104522	NpH, pH and ORP Node used to add pH/ORP sensors	485	R
1165667	NDIG, Digital Input Node used to add digital inputs	485	R
1169706	N420I, 4-20 mA Input Node used to add 4-20 ma inputs	485	R
1268833	NRLY, Relay Node used to add four additional relays	575	R
1220810	NIN, Network Interface card	205	R
1109657	35L, dual channel 4-20mA output card	205	R
1109658	RS2L, RS232 communications option card	205	R
1235230	2KIN-V1, LonWorks Card	205	R
1169439	NCKT, Conductivity Node, sensor and tee prepackaged kit can be used for make-up conductivity.	876	W
1107251	PS (+24VDC supply required for 3 or more nodes)	34	R
1268972	WEBNODE, kit includes connector and phone cable	250	R
1268976	EZWEB WIRELESS system	650	R
1268977	EZWEB WIRELESS Service 1 year subscription	CALL	N
1167979	LRWS, Lakewood Remote Windows Software	NC	R
1169333	Kit, Connectors and Cable	48	R
1166336	Cable, phone, 25ft	16	R
1167765	Connector, 25 Pin DTE	16	R
1167764	Connector, 9 Pin DCE	16	R

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COOLING TOWER ACCESSORIES AND REPL. PARTS

	**O-Ring** **Set Of Ten** **Part No.1166418** EPDM O-Rings (AS568-911) For Use With Lakewood Instruments Cooling Tower Ph, Conductivity, ORP Sensors, And Flow Sights. These O-Rings Are Sold In Packages Of 10.
	**Red Ring Replacement** **Set Of Two** **Part No. 1169740** The Red Ring Replacement Kit Comes With Everything Needed Except Glue, To Replace The Red Locking Ring On A Lakewood Instruments Plumbing Assembly. These Kits Are Sold In Sets Of Two.
	**Reed Switch** **Part No. 1167235** This Reed Switch Assembly Comes With 16 Inches Of Cable For Use With Flow Switch Plumbing Assemblies That Are Attached To The Lakewood Instruments Controller Enclosures.
	**Reed Switch 20 ft.** **Part No. 1107004** This Reed Switch Assembly Comes With 20 Feet Of Cable For Use With Flow Switch Plumbing Assemblies That Are **NOT** Attached To The Lakewood Instruments Controller Enclosure.
	**Flow Float, Set Of Five** **Part No. 1167234** The Flow Float Is Used In The Lakewood Instruments Flow Switch Plumbing Assemblies. The Flow Float Activates The Reed Switch And Provides A Visual Indicator Of Flow. The Floats Are Sold In Sets Of Five.
	**Flow Sight, Set Of Five** **Part No. 1167266** The Flow Sight (With O–Ring) Is Part Of The Flow Switch Plumbing Assembly. The Flow Sight Allows A Visible Indication Of The Condition Of The Flow Float. The Sights Are Sold In Sets Of Five. NOTE: Color May Vary.

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	**2 electrode Conductivity Sensor** **20 Foot** **Part No. 1167158** The 2 Electrode Conductivity Cooling Tower Sensor. This Sensor Is Used On The Following Models: 101-161RS, 101-161RSFS, 140, 1512e, 1575, And 1575e. Also Available With A 4 Foot Body For Submersion Applications. Part No. 1169207.
	**2 electrode Conductivity Sensor** **Part No. 1167157** The 2 Electrode Conductivity Cooling Tower Sensor. This Sensor Is Used On The Following Models: 101, 111, 151, 161, 173, 175, 211, 215, 222C, 412, And 420.
	**4 electrode Conductivity Sensor** **Part No. 1167286** The 4 Electrode Cooling Tower Conductivity Sensor With 30 Inches Of Cable For Use With The Models 224C, 1400, 2175, 2412, 2430, And NCKT.
	**4 electrode Conductivity Sensor** **20 Foot** **Part No. 1169202** The 4 Electrode Cooling Tower Conductivity Sensor With 20 Ft. Of Cable For Use With The Models 2175e, 2412e, 2430e, 2175-N4, 2412-N4, 2430-N4, 2812e, 2830e, 2832e, And 2875e. Also Available With A 4 Foot Body For Submersion Applications. Part No. 1169201.

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	**Sensor ORP** **Part No. 1169065** This ORP Sensor Is Used On Models 330, 2330, 2430.
	**Sensor pH** **Part No. 1167155** This pH Sensor Is Used On Models 350, 2350, And The Newer Model 2412. Older Model 2412 Controllers Can Be Upgraded In The Field To Use This Sensor.
	**Sensor pH w/15 ft cable** **Part No. 1240472** The pH Sensor with 15 foot cable and solution ground is used on the Model 1520e, 2350e, 2412e, 2812e, and 2832e.
	**Sensor ORP w/15 ft cable** **Part No. 1240473** The ORP Sensor with 15 foot cable and solution ground is used on the Model 1530e, 2330e, 2430e, 2830e, and 2832e.
	**Sensor pH** **Part No. 1167153** The Sensor Ph Is Used On Models 412, 420, 1400, And Older Model 2412 Controllers. Used In Conjunction With The pH Reference Sensor Part No. 1167154.

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Sensor pH Reference
Part No. 1167154

This Refillable pH Reference Sensor Is Used On Models 412, 420, 1400 And Older Model 2412 Controllers. Used In Conjunction With The pH Sensor Part Number 1167153. The Refill Kit Is The Model 8042 Part Number 1169064.

Remote Input RTD
Part no. 1224302

The Remote Input RTD Is Used Where Extreme Variations In Water Temperature Cause Inaccurate Conductivity Readings. The RTD Is 500 Ohm NTC. Can Be Used With The Models 101, 111, 151, 161, 140, 173, 175, 211, 215, 412, 420, 1400, 1575, 1575e, 2175, 2412, And 2430.

8042
Part no. 1169064

8042 Is A Refill Solution Kit For Ph Reference Sensor 1167154. It Contains 8 Oz. Of KCL Solution

"SPAD"
Sensor Passive Activity Detector
Part No. 1269090 5VDC
Part No. 1269103 24VDC

The **S**ensor **P**assive **A**ctivity **D**etector, **SPAD** for short, is used as an alternative or as a backup to a mechanical flow switch. It is designed to detect the operation of external equipment, such as a recirculation pump. This allows the determination of flow based on the operation of a system pump instead of, or in addition to, the flow through a pipe. The SPAD can be used with any Lakewood Instruments controller (Must specify appropriate model below.). SPADs are externally mounted with no inter-connections to pumps required. Includes 20 feet of cable.
SPAD, 5V, (Models 140, 150, 1520/30e, and 1575e)
SPAD, 24V, (Models 1512e and 2000 series)

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	**Plumbing 100** **Part No. 1167214** The Replacement Plumbing Assembly With 3/4 Inch NPT Connections For Use With The Model 101, 111, 151, 161, 140, And 1575e W/ Cooling Tower Conductivity Sensors. Does Not Include Flow Switch.
	**Plumbing FS** **Part No. 1167215** The Replacement Plumbing Assembly Comes With Flow Sight, Float, Reed Switch, And 3/4 Inch NPT Connections For Use With The Model 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** The Replacement Plumbing Assembly Comes With Flow Sight, Float, Reed Switch, And 3/4 Inch NPT Connections For Use With The Models 101-RSFS, 111-RSFS, 151-RSFS, 161-RSFS, 140 W/ FS, 1575e W/ FS, And 2175e Cooling Tower Controllers.
	**Plumbing FS 20 ft. Right Exit.** **Part No. 1230562** The Replacement Plumbing Assembly Comes With Flow Sight, Float, Reed Switch, And 3/4 Inch NPT Connections For Use With The Models 101-RSFS, 111-RSFS, 151-RSFS, 161-RSFS, 140 W/ FS, 1575e W/ FS, And 2175e Cooling Tower Controllers. This plumbing assembly exits to the right.

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	**Plumbing Tee** **Part No. 1169440** This Replacement Plumbing Assembly Is Designed For 3/4 Inch Solvent Weld Connections. Used With Lakewood Instruments Cooling Tower Conductivity Sensors.
	**Plumbing 2330, 2350** **Part No. 1169066** The Replacement Plumbing Assembly Comes With Flow Sight, Float, Reed Switch, Solution Ground, And 3/4 Inch NPT Connections For Use With The Model 2330, Or 2350 Cooling Tower Controllers.
	**Plumbing 330, 350** **Part No. 1167233** The Replacement Plumbing Assembly Comes With Flow Sight, Float, Reed Switch, Solution Ground And 3/4 Inch NPT Connections For Use With The Model 330, Or 350 Cooling Tower Controllers.
	**Plumbing 2412, 2430** **Part No. 1167067** The Replacement Plumbing Assembly Comes With Flow Sight, Float, Reed Switch, Solution Ground And 3/4 Inch NPT Connections For Use With The Model 2412, Or 2430 Cooling Tower Controllers.
	**Plumbing 412** **Part No. 1167217** The Replacement Plumbing Assembly Comes With Flow Sight, Float, Reed Switch, Solution Ground And 3/4 Inch NPT Connections For Use With The Model 412 Cooling Tower Controller.

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	**Plumbing 420** **Part No. 1169324** The Replacement Plumbing Assembly Comes With Flow Sight, Float, Reed Switch, Solution Ground And 3/4 Inch NPT Connections For Use With The Model 420 Cooling Tower Controller.
	**Plumbing SE** **Part No. 1234634** The Replacement Plumbing Assembly Comes With Flow Sight, Float, Reed Switch, Solution Ground And 3/4 Inch NPT Connections For Use With The Model 420 Cooling Tower Controller.
	**Plumbing 1400** **Part No. 1167218** The Replacement Plumbing Assembly With **90˚ Bend** Comes With Flow Sight, Float, Reed Switch, Solution Ground And 3/4 Inch NPT Connections. Used On The Model 1400 Cooling Tower Controller.
	**Plumbing 1400 N4** **Part No. 1167220** The Replacement Plumbing Assembly With **0˚ Bend** Comes With Flow Sight, Float, Reed Switch, Solution Ground And 3/4 Inch NPT Connections. Used On The Model 2412-N4, And 2430-N4 Cooling Tower Controllers.

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	**Plumbing 1400 COR** **Part No. 1167219** The Replacement Plumbing Assembly With **90˚ Bend** Comes With Flow Sight, Float, Reed Switch, Solution Ground, 3/4 Inch NPT Connections, And An Extra Tee For Use With A Corrosion Sensor. Used On The Model 1400 Cooling Tower Controller With Corrosion Monitor.
	**Plumbing 1400 COR** **Part No. 1167221** The Replacement Plumbing Assembly With **0˚ Bend** Comes With Flow Sight, Float, Reed Switch, Solution Ground 3/4 Inch NPT Connections, And An Extra Tee For Use With A Corrosion Sensor. Used On The Model 1400 Cooling Tower Controller With Corrosion Monitor.
	**Plumbing 1520/30e, 2330e, 2350e** **Part No. 1240477** The Replacement Plumbing Assembly Comes With Flow Sight, Float, Reed Switch, And 3/4 Inch NPT Connections. For Use With The Model 1520e, 1530e, 2330e, or 2350e Cooling Tower Controllers. Does Not Include Solution Ground.
	**Plumbing 1512e, 2412e, 2430e** **Part No. 1268640** The Replacement Plumbing Assembly Comes With Flow Sight, Float, Reed Switch, And 3/4 Inch NPT Connections. For Use With The Model 1512e, 2412e, or 2430e Cooling Tower Controllers.

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Plumbing 2400e w/pH, Conductivity, and ORP
Part No. 1268942

The Replacement Plumbing Assembly Comes With Flow Sight, Float, Reed Switch, And 3/4 Inch NPT Connections. For Use With The Model 2832e Cooling Tower Controllers.

DS DRUM SWITCH
PART NO. 1167511

The Lakewood Instruments Drum Level Switch Can Be Used As Either A High Or A Low Level Indicator.

Applications:
- Chemical Drum Monitor
- Waste Water Tank Level
- Can Be Used With The 2000 Series NDIG
- Can Be Used With The 1500 Series

Features:
- Normally Open Or Normally Closed Contacts
- 4 Ft Body Length

pH Transmitter
Part no. 1263221

The pH Transmitter Converts The pH Signal From A pH Sensor To A 4-20 Ma Signal For Use With The Model 1520e.

pH / ORP Simulator
Part No. 1263402

The pH / ORP Simulator Is Used To Simulate pH Or ORP Input To A Controller. The Simulator Is Powered By A 9v Battery And Comes With A Coaxial Cable With BNC Connectors.

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	**EZ Service Kit** **Part No. 1268992** The EZ Service Kit includes: a flow sight, a float, spare fuses, o-rings, o-lube, tie wraps, spade lugs, a small screwdriver, a wire brush, a pH simulator shunt, and test terminal blocks for the 2000 and 1500 series cooling tower controllers.
	**pH/ORP Preamplifier** **Part no. 1167124** The pH/ORP Preamplifier Is Used To Convert The pH/ORP Signal From A pH/ORP Sensor Into A Voltage For Use By The Following Models Of Controllers: 330-RP, 350-RP, 350S, 352, 353, 820, 830, 1020, 1400, And 1720-R.
	**Conductivity Preamplifier** **Part no. 1167230** The Conductivity Preamplifier Is Used To Convert The Conductivity Signal From A Conductivity Sensor Into A Voltage For Use By The Following Models Of Controllers: 250-RP, 250-2, 260-RP, 260-2, 843, 1040, And 1400.
	**-35 Card, 4-20 mA Output Card** **Part no. 1167114** The -35 Card Is Used To Provide One Channel of 4-20 mA Output From The Following Models Of Controllers: 101, 111, 151, 161, 211, 215, 222, 224, 240, 250, 260, 267, 330, 350, 352, 353, 398, 412, 420, 820, 830, and 840. (This card is **NOT** used with the 2000 series.)

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COOLING TOWER ACCESSORIES AND REPLACEMENT PARTS

PART NO.	DESCRIPTION	LIST	CD
1166418	O-Ring, for sensor and/or flow sight, set of 10	$10	R
1169740	Red Ring replacement Kit set of two	50	R
1167235	Reed Switch	36	R
1107004	Reed Switch w/20 ft of cable	48	R
1167234	Flow Float set of five	75	R
1167266	Flow Sight set of five	65	R
1167158	Sensor, Conductivity 2 elec 20 ft	218	W
1169207	Sensor, Conductivity, 2 elec 4ft body (NOT PICTURED)	245	W
1167157	Sensor, Conductivity 2 elec w/2 ft Cable	187	W
1167286	Sensor, Conductivity 4 elec	225	W
1169202	Sensor, Conductivity 4 elec w/ 20 ft of cable	256	W
1169201	Sensor, Conductivity, 4 elec 4ft body (NOT PICTURED)	295	W
1169065	Sensor, ORP 330. 2330, 2430	295	W
1167155	Sensor, pH 350, 2350, 2412	268	W
1240472	Sensor, pH 1520e, 2350e, 2412e w/15 ft of cable	389	W
1240473	Sensor, ORP 1530e, 2330e, 2430e w/15 ft of cable	389	W
1167153	Sensor, pH electrode 412, 2412	231	W
1167154	Sensor, pH Reference 412, 2412	225	W
1224302	Remote input RTD, 500 NTC (Temperature input)	85	R
1169064	8042 (refill solution for 67154)	47	R
1269090	SPAD, 5 VDC	173	R
1269103	SPAD. 24 VDC	173	R
1167214	Plumbing, tee, 3/4 inch NPT	85	R
1167215	Plumbing, FS, plumbing on box	158	R
1107003	Plumbing, with 20' FS, remote plumbing	173	R
1230562	Plumbing, with 20' FS, remote plumbing, Right Exit	173	R
1169440	Plumbing, tee	84	R
1169066	Plumbing, 2330, 2350	183	R
1167233	Plumbing, 330/350	181	R
1167067	Plumbing, 2412/2430	216	R
1167217	Plumbing, 412	268	R
1169324	Plumbing, 420	268	R
1234634	Plumbing, SE	268	R
1167218	Plumbing,1400 w/90° bend	268	R
1167220	Plumbing, N4, 1400 w/0° bend	268	R
1167219	Plumbing,1400 COR w/90° bend	289	R
1167221	Plumbing, 1400 COR w/0° bend	289	R
1240477	Plumbing, 1520/30e, 2330e, 2350e w/ 20ft flow switch	180	R
1268640	Plumbing, 1512e, 2412e, 2430e	212	R
1268942	Plumbing, 2400e w/ pH, conductivity, and ORP	240	R
1167511	Drum Switch	195	R
1263221	pH transmitter	266	R
1263402	pH/ORP simulator	147	R
1268992	EZ Service Kit	27	R
1167124	pH/ORP preamplifier	273	R
1167230	Conductivity preamplifier	273	R
1167114	-35, 4-20 mA output card	220	R

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MISCELLANEOUS PLUMBING ACCESSORIES

9050 CORROSION COUPON RACK
PART NO. 1167416

The 9050 Is A PVC Four Coupon Holder System. The 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 Brass Regulator And Valves. The Coupon Holder Is ¾ 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

The Coupon Holder Is ¾ 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

The 9102 Is A PVC Inlet Plumbing Assembly With 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). The Connections Are ¾ Inch NPT.

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9160 CORPORATION STOP
PART NO. 1167423

The 9160 Is A Corporation Stop That Will Effectively Disperse Chemicals Such As Acid In The Center Of A Pipe. Process And Chemical Inlet Connections Are 1 Inch NPT. The Quill Diameter Is ½ Inch. The Quill Material Is 316ss. The Quill Adjustment Valve And Process Connections Are Brass. The Chemical Inlet Valve Is PVC Schedule 80. Also Available In Carpenter 20, Part Number 1167424.

9176 CHEMICAL INJECTION MANIFOLD
PART NO. 1167426

The 9176 Injection Manifold Is Designed For Use With Four (4) Chemical Injection Points Including Acid. A Sample Valve, Shut Off Valve, And Quick Release Unions Are Included For Easy Removal.
The Material Is PVC, Schedule 40 And 80. There Are Four ½ FNPT, PVC, Injection Tees, One Is Schedule 80 For Acid. The Maximum Pressure Is 140 Psi @ 100°F (9.7 Bar @ 38°C)
The Maximum Temperature Is 140°F (60°C).

MISC PLUMBING ACCESSORIES

PART NO.	DESCRIPTION	LIST	CD
1167500	Coupon Holder, PVC ¾" NPT	$49	R
1167416	9050, PVC corrosion coupon rack	379	R
1167419	9102, Controller inlet and shut-off valve with sample cock	93	R
1167423	9160, 316 S.S. corporation stop. 1" NPT. CPVC shut off valve	225	R
1167424	9160C20, Carpenter20 corp stop. 1" NPT. CPVC shut off valve	325	R
1167426	9176, PVC injection manifold for up to 4 chemical pumps	219	R

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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 only measures approximately 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 has the benefit of ensuring that 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.

95 Series Specifications

Valve

Sizes	1/4, 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)
Max Pressure	145 psi CPVC; 232 psi Brass; 232 psi Stainless
Max Temperature	140°F (60°C)
Max Delta-P	100 psi to fully close

Actuator

Housing Material	ABS
Rating	IP67
Max Torque	2 Nm
Ambient Temp	-4°F to 113°F (-20°C to 45°C)
Power Supply	120/240 vac
Max Power	5 W
Current	25 ±5 mA
Running Time	5 - 7 seconds

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ORDERING INFORMATION
VALVE ASSEMBLY MODEL NUMBER

SIZE	CPVC	CHROME/BRASS	SS
¼ INCH	95SP25	95SB25	95SS25
½ inch	95SP50	95SB50	95SS50
¾ inch	95SP75	95SB75	95SS75
1 inch	95SP100	95SB100	95SS100

95 SERIES "SPRITE" MOTORIZED BALL VALVES

PART NO.	DESCRIPTION	LIST	CD
1269071	95SP25, ¼" CPVC MOTORIZED BALL VALVE	$236	R
1269072	95SP50, ½" CPVC MOTORIZED BALL VALVE	236	R
1269073	95SP75, ¾" CPVC MOTORIZED BALL VALVE	236	R
1269074	95SP100, 1" CPVC MOTORIZED BALL VALVE	236	R
1269075	95SB25, ¼" chrome-plated brass MOTORIZED BALL VALVE	236	R
1269076	95SB50, ½" chrome-plated brass MOTORIZED BALL VALVE	236	R
1269077	95SB75, ¾"chrome-plated brass MOTORIZED BALL VALVE	242	R
1269078	95SB100, 1" chrome-plated brass MOTORIZED BALL VALVE	242	R
1269079	95SS25, ¼" 316 SS MOTORIZED BALL VALVE	236	R
1269080	95SS50, ½" 316 SS MOTORIZED BALL VALVE	236	R
1269081	95SS75, ¾" 316 SS MOTORIZED BALL VALVE	252	R
1269082	95SS100, 1" 316 SS MOTORIZED BALL VALVE	252	R

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9500 Series
COOLING WATER BLOWDOWN VALVES

950X series
PLASTIC VALVE ASSEMBLIES

Body	PVC
Sizes	½ to 2 inch
Guide	316 SS
Flow Control	Set screw
Diaphragm	Buna-N
Differential Pressure	10 psi to open
Max Pressure	50 psi (3.4 bar)
Max Temperature	120°F (49°C)

Supplied with 120 VAC to 24 VAC power supply

951X SERIES
BRASS VALVE ASSEMBLIES

Body	Brass
Sizes	½ to 1 inch
Diaphragm	Viton
Differential Pressure	10 psi to open
Max Pressure	235 psi (16.2 bar)
Max Temperature	180°F (82°C)
Power	120 VAC

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FLOW RANGE

VALVE SIZE		
½ inch	1-10 gpm	
¾ inch	5-15 gpm	Flow range rough
1 inch	10-40 gpm	approximation for
1½ inch	15-80 gpm	pressure differentials from
2 inch	20-150 gpm	1 to 50 psi (0.01 to 3.4 bar).

ORDERING INFORMATION
VALVE ASSEMBLY MODEL and PART NUMBER

SIZE	PLASTIC	BRASS
½ inch	9501 (1167433)	9511 (1166666)
¾ inch	9502 (1167434)	9512 (1166667)
1 inch	9503 (1167435)	9513 (1166668)
1½ inch	9504 (1167436)	-
2 inch	9505 (1167437)	-

9500 SERIES COOLING WATER BLEED VALVES

PART NO.	DESCRIPTION	LIST	CD
1167433	**9501, ½" plastic diaphragm bleed valve**	**$62**	**R**
1167434	**9502, ¾" plastic diaphragm bleed valve**	**62**	**R**
1167435	**9503, 1" plastic diaphragm bleed valve**	**62**	**R**
1167436	**9504, 1½" plastic diaphragm bleed valve**	**185**	**R**
1167437	**9505, 2" plastic diaphragm bleed valve**	**177**	**R**
1166666	**9511, ½" brass diaphragm bleed valve**	**187**	**R**
1166667	**9512, ¾" brass diaphragm bleed valve**	**212**	**R**
1166668	**9513, 1" brass diaphragm bleed valve**	**435**	**R**

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9600 Series Y Strainers

960X SERIES
STEEL Y STRAINER

Body	CAST IRON
Sizes	½ to 1 inch
Screen	20 mesh inch stainless steel
Max Pressure	250 psi @ 100F
Max Temperature	120°F (49°C)

961X SERIES
PLASTIC Y STRAINER

Body	PVC
Sizes	½ to 1 inch
Screen	1/32" perforated plastic
Max Pressure	150 psi @ 70F
Max Temperature	150°F

ORDERING INFORMATION
STRAINER MODEL and PART NUMBER

SIZE	STEEL	PLASTIC
1/2 INCH	9601 (1166675)	9611 (1166682)
3/4 INCH	9602 (1166676)	9612 (1166683)
1 INCH	9603 (1166677)	9613 (1166684)

PART NO.	DESCRIPTION	LIST	CD
1166675	9601, 1/2" steel wye strainer	$29	R
1166676	9602, 3/4" steel wye strainer	33	R
1166677	9603, 1" steel wye strainer	40	R
1166682	9611, 1/2" plastic wye strainer	77	R
1166683	9612, 3/4" plastic wye strainer	92	R
1166684	9613, 1"plastic wye strainer	108	R

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WATER METERS

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AUTOTROL™ TURBINE WATER METER

1TM-NPT shown

Flow Sensor Specifications

	MODEL 1TM 1 inch (25 mm)	**MODEL 2TM 2 inch (51 mm)**
Flow rate range	0.25 – 25 gpm (0.06 – 9.5 m^3 /h)	5 – 255 gpm (0.45 – 60 m^3/h)
Materials of construction: Housing Turbine (Impeller) Bearings Shaft	 30% Glass-Filled PPO† Polypropylene Polyimide 302 SS	 30% Glass Filled PPO† Polypropylene Carbon Graphite No shaft—thrust bearing
Accuracy	± 3% of reading	± 3% of reading
Pressure Drop	1.5 psi @ 30 gpm (10.3 kPa @ 7 m^3/h)	2.5 psi @ 150 gpm (17.2 kPa @ 34 m^3/h)
Maximum water temp.	100°F (38°C)	100°F (38°C)
Maximum temp.	122°F (50°C)	122°F (50°C)
Maximum pressure	127 psi (875 kPa)	100 psi (689 kPa)
Available cable lengths	25, 50 ft (7.6, 15.2 m)	25, 50 ft (7.6, 15.2 m)
Maximum cable length – kit form	1,000 ft. (305 m)	1,000 ft. (305 m)

† PPO – Polyphenylene Oxide

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ORDERING INFORMATION

1033238	1TM-ESW	1 inch turbine meter with solvent weld PVC adapters
3023532	1TM-NPT	1 inch turbine meter with 1 inch NPT stainless steel adapter
1034080	2TM-ESW	2 inch turbine meter with solvent weld PVC adapters
3023536	2TM-NPT	2 inch turbine meter with 2 inch NPT stainless steel adapter
1033317	400B418-701	1 inch turbine meter only
1033358	480B78G1	2 inch turbine meter only

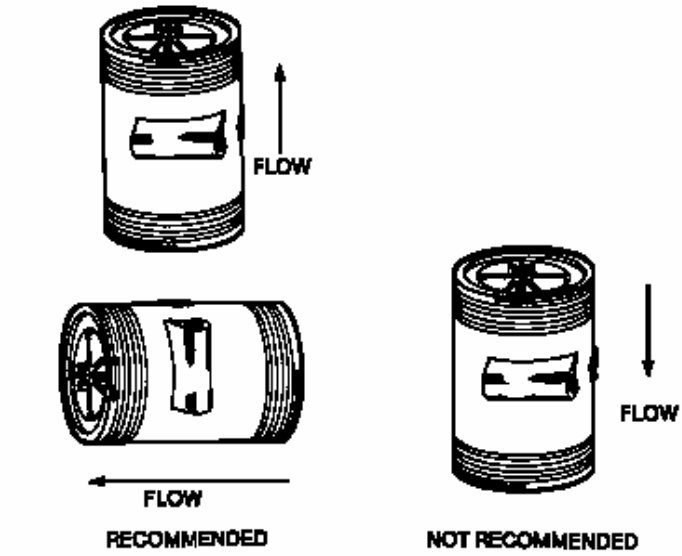
WATER METER CABLE (ORDER ONE CABLE FOR EACH TURBINE)

1033354	49C25	25 ft cable with Hall Effect sensor
1033355	49C50	50 ft cable with Hall Effect sensor
1230307	49CKT	25 ft cable with Hall Effect sensor and junction box

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 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.



<u>CAUTIONS</u>:

- ***AUTOTROL TURBINE WATER METERS <u>ARE NOT</u> 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***

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	**1TM-NPT** **PART NO.** 3023532 The 1TM-NPT Is A 1 Inch Turbine Water Meter With Stainless Steel NPT Adapter Fittings. The Flow Rate Is .25 – 40 Gpm. Max Water Temp 100 F (38 C), Max Temp 122 (50 C) And Max Pressure 127 Psi (875 KPA). The 1TM-NPT Comes With All Of The Parts Shown. Hall Effect Cable Sold Separately.
	**1TM-ESW** **PART NO. 1033238** The 1TM-ESW Is A 1 Inch Turbine Water Meter With PVC Solvent Weld Adapter Fittings. The Flow Rate Is .25 – 40 Gpm. Max Water Temp 100 F (38 C), Max Temp 122 (50 C) And Max Pressure 127 Psi (875 KPA). The 1TM-ESW Comes With All Of The Parts Shown. Hall Effect Cable Sold Separately.
	**2TM-NPT** **PART NO. 3023536** The 2TM-NPT Is A 2 Inch Turbine Water Meter With Stainless Steel NPT Adapter Fittings. The Flow Rate Is 2 – 250 Gpm. Max Water Temp 100 F (38 C), Max Temp 122 (50 C) And Max Pressure 100 Psi (689 KPA). The 2TM-NPT Comes With All Of The Parts Shown. Hall Effect Cable Sold Separately.
	**2TM-ESW** **PART NO. 1034080** The 2TM-ESW Is A 2 Inch Turbine Water Meter With PVC Solvent Weld Adapter Fittings. The Flow Rate Is 2 – 250 Gpm. Max Water Temp 100 F (38 C), Max Temp 122 (50 C) And Max Pressure 100 Psi (689 KPA). The 2TM-ESW Comes With All Of The Parts Shown. Hall Effect Cable Sold Separately.

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49C25
PART NO. 1033354

The 49C25 Is The Hall Effect Sensor With 25 Ft Of Cable For Use With The Autotrol Turbine Water Meters.

49C50
PART NO. 1033355

The 49C50 Is The Hall Effect Sensor With 50 Ft Of Cable For Use With The Autotrol Turbine Water Meters.

PART NO.	DESCRIPTION	LIST	CD
	TURBINES		
1033238	1TM-ESW, 1" Turbine Meter With PVC Fittings	$95	R
3023532	1TM-NPT, 1" Turbine Meter With NPT Fittings	113	R
1034080	2TM-ESW, 2" Turbine Meter With PVC Fittings	308	R
3023536	2TM-NPT, 2" Turbine Meter With NPT Fittings	333	R
	SENSOR CABLES (1 Required For Each Turbine)		
1033354	49C25, 25 Ft Cable For Turbine Meter	$56	R
1033355	49C50, 50 Ft Cable For Turbine Meter	106	R
	1 INCH TURBINE METER REPLACEMENT PARTS		
1033317	1 Inch Replacement Turbine Meter, 400B418-701	$72	R
1030541	Gasket 1 Inch	4	R
3014631	Turbine Nut 1 Inch for NPT Stainless Steel	14	R
1034385	Turbine Nut 1 Inch for ESW PVC	4	R
3014557	Adapter 1 Inch NPT Stainless Steel	16	R
1030579	Adapter 1 Inch ESW PVC	11	R
	2 INCH TURBINE METER REPLACEMENT PARTS		
1033358	2 Inch Replacement Turbine Meter, 480B78G1	$199	R
3030498	Gasket 2 Inch	10	R
1030664	Turbine Nut 2 Inch for NPT SS and PVC ESW	22	R
3014558	Adapter 2 Inch NPT Stainless Steel	29	R
1030666	Adapter 2 Inch ESW PVC	22	R

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MJR SERIES
CONTACTING HEAD WATER METERS

The MJR Series Pulse Meters offer pulse output from a reed switch sensor. This allows the two-wire contact type closure to operate metering pumps, remote indicators and controls.

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

Case	Cast Bronze
Magnet	Ceramic permanent
Internals	Engineered thermoplastic

Temperature	105°F (40°C)
Max Pressure	150 psi (10.3 bar)
Accuracy	½ to 1% of reading

Max Current	50 mA
Max Voltage	24 VDC
Cable length	12 ft

Flow Rates (GPM)

	¾ inch	1 inch	1½ inch	2 inch
Min	0.25	0.30	0.50	1.00
Max	20	50	100	130

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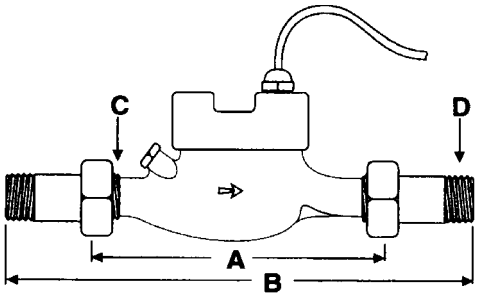
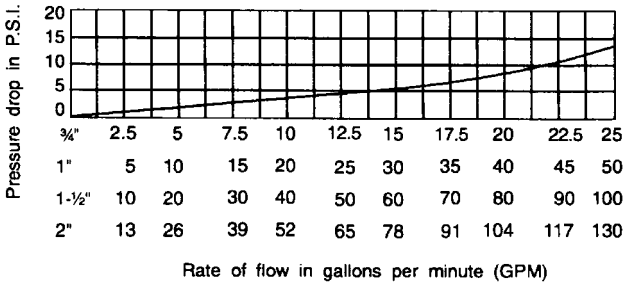


Dimensions

	¾"	1"	1-½"	2"
A (body)	7-½"	10-¾"	12-5/8"	10-5/8"
B (w/couplings)	12-5/8"	16-1/8"	18-½"	16-7/8"
C (IPS thread)	1"	1-¼"	2"	2-½"
D (NPT thread)	¾"	1"	1-½"	2"

Typical Pressure Drop Curve



ORDERING INFORMATION

PART NO.	DESCRIPTION	LIST	CD
1169381	MJR3/4-1, ¾ inch MNPT brass, 1 GPC	$237	R
1169385	MJR3/4-10, ¾ inch MNPT brass, 10 GPC	237	R
1166729	MJR3/4-100, ¾ inch MNPT brass, 100 GPC	237	R
1169382	MJR1-1, 1 inch MNPT brass, 1 GPC	330	R
1169386	MJR1-10, 1 inch MNPT brass, 10 GPC	330	R
1166730	MJR1-100, 1 inch MNPT brass, 100 GPC	330	R
1169383	MJR1 1/2-1, 1 1/2 inch MNPT brass, 1 GPC	606	R
1169387	MJR1 1/2-10, 1 1/2 inch MNPT brass, 10 GPC	606	R
1166731	MJR1 1/2-100, 1 1/2 inch MNPT brass, 100 GPC	606	R
1169384	MJR2-1, 2 inch MNPT brass, 1 GPC	762	R
1169388	MJR2-10, 2 inch MNPT brass, 10 GPC	762	R
1166732	MJR2-100, 2 inch MNPT brass, 100 GPC	762	R

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WTC SERIES
TURBINE WATER METER

The Series WTC Turbine Meters offer accurate, economical reading of high flows with low head loss.

Specifications

Materials	
Meter Body	Painted Carbon Steel
Turbine Insert	Delrin
Turbine Rotor	Delrin
Shafts	Tungsten Carbide
Bearings	Sapphire journal
Pressure	200 psi (13.8 bar)
Temperature	140°F (60°C)
Accuracy	± 1%

Flow Rates (gpm)

	2 inch	3 inch	4 inch
Min	2	3	6
Max	150	400	600

Ordering Information

PART NO.	DESCRIPTION	LIST	CD
1167646	**WTC-2, 2 inch turbine water meter, 10 inch length**	**$799**	**R**
1167647	**WTC-3, 3 inch turbine water meter, 12 inch length**	**1001**	**R**
1104233	**WTC-4, 4 inch turbine water meter, 14 inch length**	**1,219**	**R**

Available for the Model 2000 Series product line only.
For special applications please contact Lakewood Instruments.

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CONDENSATE CONTROLLERS

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LAKEWOOD INSTRUMENTS
MODEL 1575e
WATER TREATMENT CONTROLLER

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 new technology. The Model 1575e is CSA and ANSI/UL and CE 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 the tactile sensing and life expectancy of the keypad.
- LED indicators for power, alarm and relay status.

BENEFITS

- Easy to program with the Lakewood plain English, intuitive, and 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 µS or 10-100 µS	**Timers**	Max. blowdown time exceeded and relay run time exceeded
Conductivity sensor	2 electrode		
Conductivity Resolution	± 10 µS	**Output Signal**	One 4 – 20 mA, isolated or non-isolated optionally powered output for conductivity
Temperature comp.	500NTC,NONE		
Accuracy & repeatability	± 1.0%		
Deadband/Setpoint	Programmable	**Input Signal**	One 4-20 mA, non-isolated internally powered input for conductivity
Auto/Manual outputs	Menu selectable		
Keypad	16 tactile push-buttons		
Display	illuminated 128x64 pixel LCD	**Output relays**	4, 3 selectable use, 1 blowdown
		Relay ratings	3A each, 10A total
Drum Switch Inputs	2 digital contact inputs	**Power**	120/240 VAC 50/60 Hz
Water meter inputs (2)	Contact head, paddle wheel or turbine	**Ambient**	32° - 120°F (0 - 49°C)
		Enclosure	NEMA 4X CSA and ANSI/UL

Sensors/Plumbing	Condensate
Max Pressure	70 psi (4.8 bar)
Max Temp	392°F (200°C)
Min flow	1 gpm (3.785 Lpm)

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Condensate Sensor Options

540K.1-4-TC500

-10I

-10R

540K.01-TC500

Ordering Information

PART NO.	DESCRIPTION	LIST	CD
1229239	1575e Controller Only, No Sensor	$1,054	W

PART NO.	CONDENSATE SENSORS	LIST	CD
1104591	540K.1-4-10I-10, with ¾ Inch NPT Inline, 10-100µs	$529	R
1168617	540K.1-4-10R-18, with 1.0 Inch NPT Retractable, 10-100µs	685	R
1104592	540K.01-4-10I-10, with ¾ Inch NPT Inline, 1-10µs	975	R
1169642	540K.01-4-10R-18, with 1.0 Inch NPT Retractable, 1-10µs	1,130	R

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

PART NO.	CONDENSATE SENSOR REPLACEMENT TIPS	LIST	CD
1169054	540K.1-TC500 10-100µS	$379	R
1169055	540K.01-TC500 1-10µS	825	R

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LAKEWOOD INSTRUMENTS
MODEL 1520/30e
pH or ORP WATER TREATMENT CONTROLLER

The Model 1520/30e uses the latest in microprocessor capability, giving the user a high level of application flexibility in pH or ORP control. The user in the field can configure this controller to operate as a pH or an ORP controller. A large illuminated graphics screen, multiple inputs, and very easy setup characterize this new 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.
- 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 the tactile sensing and life expectancy of the keypad.
- LED indicators for power, alarm and relay status.

BENEFITS

- Easy to program with the Lakewood plain English, intuitive, and user friendly menu interface.
- Controller can be used in process, cooling tower, waste water, or condensate applications 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	**Drum Switch Inputs**	2 digital contact inputs
ORP range	-1000 to +1000 mV	**Water meter inputs (2)**	Contact head, paddle wheel or turbine
Sensor Types	Solution ground, Signal differential, or Single-ended	**Timer**	Relay run time exceeded
		Output Signal	One 4 – 20 mA, isolated or non-isolated optionally powered output for pH/ORP
Resolution	± .10 pH or 1 mV		
Temperature comp.	Selectable		
Accuracy & repeatability	± 1.0%	**Output relays**	4 selectable use
Deadband/Setpoint	Adjustable	**Relay ratings**	3A each, 10A total
Auto/Manual outputs	Menu selectable	**Power**	120/240 VAC 50/60 Hz
Keypad	16 tactile push-buttons	**Ambient**	32° - 120°F (0 - 49°C)
Display	illuminated 128x64 pixel LCD	**Enclosure**	NEMA 4X CSA and ANSI/UL

Sensors	Condensate
Max Pressure	70 psi (4.8 bar)
Max Temp	230°F (110°C)
Min flow	1 gpm (3.785 Lpm)

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ORDERING OPTIONS

Condensate Sensor Options

1165305 520-4-7I-10-STD
Condensate Ph Sensor
With ¾ In NPT Inline
Fitting

1167983 520-4-7R-18-STD
Condensate Ph Sensor
With 1.0 In NPT Retractable

Ordering Information

PART NO.	DESCRIPTION	LIST	CD
1240475	**1520/30e controller only, no sensor**	**$1,201**	**W**

PART NO.	CONDENSATE SENSORS	LIST	CD
1165305	**520-4-7I-10-STD**	**$474**	**R**
1167983	**520-4-7R-18-STD**	**629**	**R**

PART NO.	REPLACEMENT PARTS	LIST	CD
1263221	**pH transmitter**	**$266**	**R**
1167304	**5207-STD Replacement pH Sensor Tip**	**323**	**R**

Note: All cable lengths are 15 feet.

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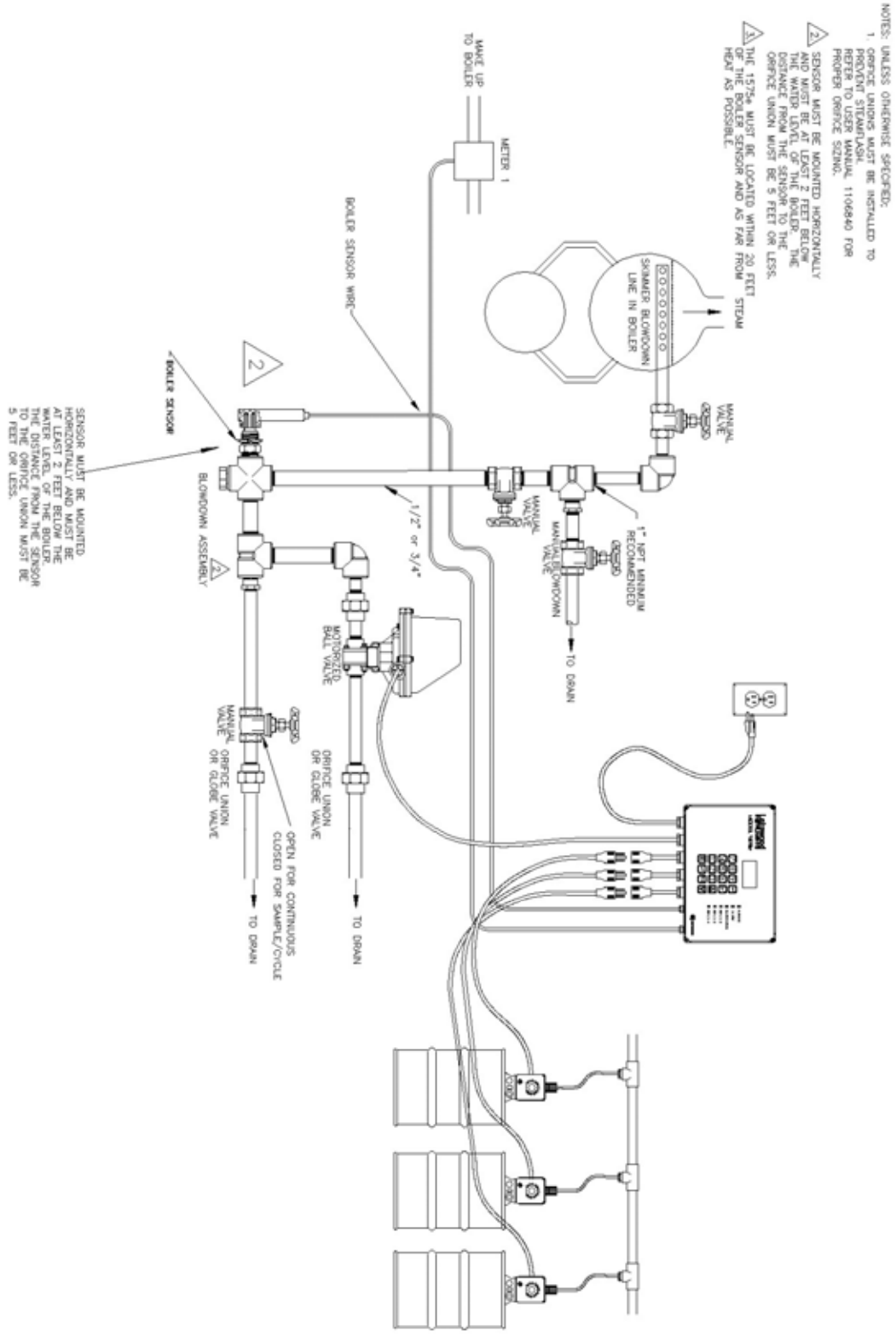
BOILER CONTROLLERS



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LAKEWOOD INSTRUMENTS
MODEL 150
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 new technology.

This controller can be used in the Continuous Sample, Sample/Cycle, or **Sample/Hold** modes to control the boiler water conductivity.

PART NUMBER 1269089 SHOWN
Boiler Water Treatment Controller

FEATURES

- Use this Controller for conductivity control of boilers. It can be used for Continuous Sample, Sample/Cycle, or Sample/Hold control of boiler conductivity.
- 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 the tactile sensing and life expectancy of the keypad.
- LED indicators for power, alarm and relay status.
- The display is lit by two LEDs when any key is pressed.

BENEFITS

- Easy to program, the Model 150 Controller uses an intuitive menu and a numeric keypad for programming.
- No add-on options. Flow switch input, 4-20mA output, and three boiler conductivity control methods; Continuous Sample, Sample/Cycle, and Sample/Hold are standard.
- Single circuit board design improves reliability.
- Multiple methods of chemical feed for application flexibility.

SPECIFICATIONS

Conductivity range	100-10,000 µS	**Water meter input**	Contact head, paddle wheel or turbine
Conductivity sensor	2 electrode	**Timer**	Max. blowdown time exceeded, relay time exceeded
Conductivity Resolution	± 10 µS	**Output Signal**	One 4 – 20 mA, non-isolated powered output
Accuracy & repeatability	± 1.0%	**Relay ratings**	3A each, 10A total
Deadband/Setpoint	Adjustable	**Power**	120/240 VAC 50/60 Hz
Auto/Manual outputs	Menu selectable	**Ambient**	32° - 120°F (0 - 49°C)
Output relays	2 selectable use and 1 for blowdown	**Enclosure**	NEMA 4X
Keypad	16 tactile push-buttons		
Display	16 X 2 Character		

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ORDERING OPTIONS

Boiler System Options

1168374 SR2
Boiler Water Sensor with 20 Ft Cable and Conduit Elbow.
3/4 INCH NPT Connection.

1167244 Orifice Union
1/2 INCH NPT

Orifice Plates, ½ in NPT
1166354 1/8 inch opening
1166355 1/16 inch opening

1268608 MBV1
1/2 INCH NPT
Motorized ball valve
OR
1268614 MBV2
3/4 INCH NPT
Motorized ball valve

Ordering Information

PART NO.	DESCRIPTION	LIST	CD
1269089	150 Controller only, no sensor	$762	W
1269092	150, SR2, Union, Orifice plate, MBV1	2,032	W
1269093	150, SR2, PLKT	1,513	W

PART NO.	BOILER OPTIONS (AND/OR REPLACEMENT PARTS)	LIST	CD
1168374	SR2, 2-electrode boiler sensor, conduit elbow, and 20 ft cable.	$296	W
1229843	SR2HD, 2-elec harsh duty sensor, conduit elbow, and 20 ft cable	501	W
1166355	Orifice Plate, ½ inch NPT, 1/16	27	R
1166356	Orifice Plate, ½ inch NPT, ¼	27	R
1166354	Orifice Plate, ½ inch NPT, 1/8	27	R
1167972	Orifice Plate, ½ inch NPT, 3/8	27	R
1167244	Orifice Union, ½ inch NPT	79	R
1167245	Orifice Union, 3/4 inch NPT	89	R
1268608	MBV1 ½ inch NPT Motorized ball valve	912	W
1268614	MBV2 3/4 inch NPT Motorized ball valve	1,040	W
1167295	PL5, ½ sample/cycle plumbing assembly	185	W
1168601	PL575, ¾ sample/cycle plumbing assembly	205	W
1167297	PL6, ½ continuous plumbing assembly	412	W
1167296	PL675, ¾ continuous plumbing assembly	432	W
1167520	GV, Globe valve	435	R
1233981	PLKT Plumbing kit. sample/cycle and continuous sample kit. Includes unions, orifice plates, cross, tee, and manual block valve only. Does not include piping.	487	W

PART NO.	REPLACEMENT SENSOR	LIST	CD
1167162	2 electrode boiler sensor	$246	W
1229841	2 electrode harsh duty boiler sensor	461	W

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LAKEWOOD INSTRUMENTS
MODEL 1575e
WATER TREATMENT CONTROLLER

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 new technology. The Model 1575e is CSA and ANSI/UL and CE 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 the tactile sensing and life expectancy of the keypad.
- LED indicators for power, alarm and relay status.

BENEFITS

- Easy to program with the Lakewood plain English, intuitive, and 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	500-8000 μS for boilers	**Timers**	Max. blowdown time exceeded and relay run time exceeded
Conductivity sensor	2 electrode		
Conductivity Resolution	± 10 μS (conductivity <5000 μS) ±100 μS (conductivity > 5000 μS)	**Output Signal**	One 4 – 20 mA, isolated or non-isolated optionally powered output for conductivity
Temperature comp.	NONE,500NTC	**Input Signal**	One 4-20 mA, non-isolated internally powered input for conductivity
Accuracy & repeatability	± 1.0%		
Deadband/Setpoint	Programmable		
Auto/Manual outputs	Menu selectable	**Output relays**	4, 3 selectable use, 1 blowdown
Keypad	16 tactile push-buttons	**Relay ratings**	3A each, 10A total
Display	illuminated 128x64 pixel LCD	**Power**	120/240 VAC 50/60 Hz
		Ambient	32° - 120°F (0 - 49°C)
Drum Switch Inputs	2 digital contact inputs	**Enclosure**	NEMA 4X
Water meter inputs (2)	Contact head, paddle wheel or turbine		CSA and ANSI/UL

Sensors/Plumbing	Boiler
Max Pressure	600 psi (41.3 bar)
Max Temp	486°F (252°C)

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ORDERING OPTIONS

Boiler System Options

1168374 SR2
Boiler Water Sensor with 20 Ft Cable and Conduit Elbow.
3/4 INCH NPT Connection.

1167244 Orifice Union
1/2 INCH NPT

Orifice Plates, ½ in NPT
1166354 1/8 inch opening
1166355 1/16 inch opening

1268608 MBV1
1/2 INCH NPT
Motorized ball valve
OR
1268614 MBV2
3/4 INCH NPT
Motorized ball valve

Ordering Information

PART NO.	DESCRIPTION	LIST	CD
1229239	1575e Controller only, no sensor	$1,054	W
1229244	1575e, SR2, Union, Orifice plate, MBV1	2,324	W
1229243	1575e, SR2, PLKT	1,805	W

PART NO.	BOILER OPTIONS (AND/OR REPLACEMENT PARTS)	LIST	CD
1168374	SR2, 2-electrode boiler sensor, conduit elbow, and 20 ft cable.	$296	W
1229843	SR2HD, 2-elec harsh duty sensor, conduit elbow, and 20 ft cable	501	W
1166355	Orifice Plate, ½ inch NPT, 1/16	27	R
1166356	Orifice Plate, ½ inch NPT, ¼	27	R
1166354	Orifice Plate, ½ inch NPT, 1/8	27	R
1167972	Orifice Plate, ½ inch NPT, 3/8	27	R
1167244	Orifice Union, ½ inch NPT	79	R
1167245	Orifice Union, 3/4 inch NPT	89	R
1268608	MBV1 ½ inch NPT Motorized ball valve	912	W
1268614	MBV2 3/4 inch NPT Motorized ball valve	1,040	W
1167295	PL5, ½ sample/cycle plumbing assembly	185	W
1168601	PL575, ¾ sample/cycle plumbing assembly	205	W
1167297	PL6, ½ continuous plumbing assembly	412	W
1167296	PL675, ¾ continuous plumbing assembly	432	W
1167520	GV, Globe valve	435	R
1233981	PLKT Plumbing kit. sample/cycle and continuous sample kit. Includes unions, orifice plates, cross, tee, and manual block valve only. Does not include piping.	487	W

PART NO.	REPLACEMENT SENSOR	LIST	CD
1167162	2 electrode boiler sensor	$246	W
1229841	2 electrode harsh duty boiler sensor	461	W

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LAKEWOOD INSTRUMENTS MODEL 2250e MICROPROCESSOR-BASED BOILER CONTROLLER

LONWORKS® is the latest in microprocessor technology that gives the user the highest level of application flexibility. A large graphic screen, multiple inputs and very easy setup, with easy field upgrade characterize this new technology.

FEATURES

- Enclosure is NEMA 4X rated.
- Steam flashing detector and compensation.
- Cycle sample or continuous conductivity control of blowdown.
- Use cycle sample for blowdown less than 1,000 lb./hr.
- Use continuous for blowdown greater than 1,000 lb./hr.
- Can feed chemical according to water meter percent of bleed or percent on-time.
- Interactive communications software datalog and control with **-RS2L** option.
- Power On/Off switch is included.
- Four different languages.
  English Spanish (standard)
  English French (optional)
  English German (optional)

BENEFITS

- Accurate control of boiler conductivity.
- Control results in fuel savings by preventing excessive blowdown.
- Prevents carryover due to excessive conductivity.
- Two water/flow meter inputs provided.

SPECIFICATIONS

Inputs

Power	120/240 VAC 50/60 HZ
Sensor Input	2 and 4 electrode Conductivity
Temperature comp.	Selectable or disable
Flow switch	Dry contact
Water Meter Inputs (2)	Contacting Head, Paddle Wheel, or Turbine

Outputs

Relays	Four, 3 Amps @ 120 VAC
4-20 mA	Two, isolated or non-isolated w/-35L option

Sensor (SR2)

Pressure	600 psi (41.4 bar)
Max. Temperature	486°F (252°C)
Body	Carbon Steel
Electrode	416 SS
Insulator	PEEK
Connection	¾ inch MNPT

Controller

Conductivity Range	500-8,000 (other ranges available)
Conductivity Accuracy	± 40 µS
Conductivity Resolution	10 µS
Deadband	Adjustable
Conductivity Setpoint	Cycle sample or continuous
Sample Time	Adjustable
Cycle Time	Adjustable
Keypad	16 tactile push-button
Display	Illuminated 128x64 pixel LCD
Ambient Temperature	32-158°F (0-70°C)
Enclosure Rating	NEMA 4X CSA and ANSI/UL

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ORDERING INFORMATION

2250e LONWORKS Technology-based cycle sample or continuous blowdown conductivity controller. Range is 0-8,000 µS, has HIGH/LOW alarms, water meter inputs and chemical feed relays. Requires **SR2** or **SR4**, below, and **PL5** or **PL6** is recommended.

CONTROLLER OPTIONS (optional, select one or more)

-35L Two 4-20 mA output configurable for remote data acquisition of conductivity.

-RS2L Communications node with LRWS program.

-NIN Network interface node. Allows 2 NRLY, 1 Makeup NCON, 4 sensor nodes (NpH or NCON), 2 N420I, and / or 2 NDIG to be added.

NRLY Four additional relays with enclosure, also available with receptacles and power cord.

-PS +24 volt power supply required for 3 or more nodes.

LANGUAGE OPTIONS (optional, choose one, English and Spanish Standard)

-EF English and French.
-EG English and German.

SENSOR OPTIONS (required, select one below)

SR2 Boiler water sensor with condulet, ¾ inch NPT; rated to 600 psi @ 486°F (41.4 bar @ 252°C). This sensor cannot be used after a sample cooler.

SR4 4-electrode sensor with ¾ inch NPT; rated to 250 psi @ 392°F (17.2 bar @ 374°C).

PLUMBING (recommended, need one of the below per boiler)

PL5 Plumbing for cycle/sample assembly ½ inch (1/8 & 1/16 orifice plates and union).

PL6 Plumbing for continuous sample assembly, ½ inch (1/8 & 1/16 orifice plates & union).

PL575 Plumbing for cycle/sample assembly ¾ inch (1/8 & 1/16 orifice plates and union).

PL675 Plumbing for continuous sample assembly ¾ inch (1/8 & 1/16 orifice plates & union).

PLKT Plumbing kit. Continuous and sample cycle. Orifice plates and unions, cross, tee, manual block valve. No piping.

GV ½ inch forged globe valve for flow metering instead of an orifice plate and union.

*NOTE: Two **GV** options are required for continuous sample and one for cycle sample if the orifice plate and union are not used.*

BLOWDOWN VALVE OPTIONS (optional, select one only)

MBV1 Motorized ½ inch blowdown valve rated to 400 psi @ 480°F (27.6 bar @ 249°C).

MBV2 Motorized ¾ inch blowdown valve rated to 400 psi @ 480°F (27.6 bar @ 249°C).

SOFTWARE AND REMOTE COMMUNICATIONS

LRWS W*indows*-based software program for computer to communicate with 2000 Series.

WEBNode IP/TCP device for use with 2000 Series controllers.

EZWeb Wireless internet interface for use with WEBNode and 2000 Series controllers.

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MODEL 2250e

PART NO.	DESCRIPTION	LIST	CD
1268648	2250e-RTC	$1,903	W
1268840	2250e-RTC-35L	2,108	W
1268841	2250e-RTC-RS2L	2,108	W
1268842	2250e-RTC-RS2L-35L	2,313	W
1268843	2250e-RTC-35L-NIN	2,313	W
1268844	2250e-RTC-RS2L-NIN	2,313	W
1268845	2250e-RTC-RS2L-35L-NIN	2,518	W

PART NO.	BOILER OPTIONS (AND/OR REPLACEMENT PARTS)	LIST	CD
1168374	SR2, 2 electrode boiler sensor, conduit elbow, and 20 ft cable	$296	W
1229843	SR2HD, 2-elec harsh duty sensor, conduit elbow, and 20 ft cable	501	W
1168375	SR4, 4 electrode sensor with 20 ft cable	825	W
1167295	PL5, ½ sample/cycle plumbing	185	W
1168601	PL575, ¾ sample/cycle plumbing	205	W
1167297	PL6, ½ continuous plumbing	412	W
1167296	PL675, ¾ continuous plumbing	432	W
1233981	PLKT Plumbing kit. sample/cycle and continuous sample kit. Includes unions, orifice plates, cross, tee, and manual block valve only. Does not include piping.	487	W
1167520	GV, Globe valve	435	R
1268608	MBV1, ½ inch motorized ball valve	912	W
1268614	MBV2, ¾ inch motorized ball valve	1,040	W

PART NO.	REPLACEMENT SENSORS	LIST	CD
1167162	2 electrode boiler sensor	$246	W
1229841	2 electrode harsh duty boiler sensor	461	W
1168074	4 electrode sensor (543M-STD)	612	R

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LAKEWOOD INSTRUMENTS MODEL 2855e
MICROPROCESSOR-BASED MULTI-BOILER CONTROLLER

The Lakewood Model 2855e Multi-Boiler Controller uses LONWORKS®. Technology for accurate control of your boiler system. The system will allow control of one to eight boilers using the cycle sample or continuous sample method. Two water meter inputs are available which can be used to feed chemicals. Each conductivity input contains its own microcontroller which talks directly to the relay that controls the motorized ball valve for each boiler. The 2855e can be programmed with *LRWS* (*Lakewood Remote Windows Software*) or from the keypad of the controller. *LRWS* allows data to be accumulated on all boilers, water meter inputs, chemical pump on time and more. *LRWS* will also allow the user to make graphs of the downloaded information, print conductivity values or export information for use with data-logging spreadsheets.

FEATURES

- Enclosure is NEMA 4X rated.
- Power On/Off switch is included.
- Steam flashing detector and compensation.
- Control and monitor 1 to 8 boilers.
- Future boilers can be added to an existing system.
- Boiler input(s) can be substituted to monitor condensate.
- Cycle sample or continuous conductivity control of blowdown.
- Use Cycle sample for blowdown less than 1,000 lb/hr, continuous for blowdown greater than 1,000 lb/hr.
- Two water/flow meter inputs provided.
- Can feed chemical according to water meter, percent of bleed, or percent on-time.
- Interactive communications software datalog and control with RS2L option.
- Includes two different languages.
  English Spanish (standard)

BENEFITS

- Accurate control of boiler conductivity.
- Control results in fuel savings by preventing excessive blowdown.
- Prevents carryover due to excessive conductivity.
- One controller can monitor and datalog up to 8 Boilers.

SPECIFICATIONS

Controller Inputs

Power	120 VAC 50/60 HZ
Network Inputs	One to Eight boilers, One NRLY and up to 8 NCON's
Water Meter Inputs (2)	Contacting head, Paddle Wheel, or turbine.

Outputs

2855 Relays	Four for alarms or chemfeed 3 Amps @ 120 VAC
NRLY	Four in each NRLY, 3 Amps @ 120 VAC

Sensor (SR2)

Pressure	600 psi (41.4 bar)
Max. Temperature	486°F (252°C)
Body	Carbon Steel
Electrode	416 SS
Insulator	PEEK
Connection	¾ inch MNPT

NCON, Conductivity Node

Conductivity Range	500-10,000 µS
Conductivity Accuracy	1% of full scale
Conductivity Resolution	1% of reading
Ambient Temperature	32-158°F (0-70°C)
Temperature comp.	Selectable or disable
Power	24 VDC

NRLY, Relay Node

Ambient Temperature	32-158°F (0-70°C)
Enclosure	NEMA 4X
Power	24 VDC

Controller

Deadband	Adjustable
Conductivity Setpoint	Cycle sample or continuous
Sample Time	Adjustable
Cycle Time	Adjustable
Keypad	16 tactile push-button
Display	Illuminated 128x64 pixel LCD
Ambient Temperature	32-158°F (0-70°C)
Enclosure	NEMA 4X

Intertek

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Maximum Setup for an 8 Boiler Sample/cycle Control Shown

2855e LonWorks Technology based multi-boiler cycle sample or continuous blowdown conductivity controller. Standard range is 500-10,000 µS and can control up to 8 boilers. The controller has a total of 8 relays, the first 4 of which are configurable for HIGH/LOW alarms or feed chemical based on 2 makeup sources, the second 4 relays are used for boiler blowdown control. For 5-8 boilers, a **NRLY** will need to be purchased. Requires one **SR2N** or **SR4N** and a **PL5**, **PL6** or **GV** per boiler (**NIN** included).

CONTROLLER OPTIONS (optional, select one or more)

-RS2L Communications node with LRWS program.

NRLY Four additional relays with enclosure, also available with receptacles and power cord.

SENSOR WITH NODE OPTIONS (required, select one below)

SR2N Boiler water sensor with **NCON** and enclosure, ¾ inch NPT; rated to 600 psi @ 486°F (41.4 bar @ 252°C). This sensor cannot be used after a sample cooler.

SR4N 4-electrode sensor with **NCON** and enclosure, ¾ inch NPT; rated to 250 psi @ 392°F (17.2 bar @ 374°C).

PLUMBING (recommended, need one of the below per boiler)

PL5 Plumbing for cycle/sample assembly ½ inch (1/8 & 1/16 orifice plates and union).

PL6 Plumbing for continuous sample assembly, ½ inch (1/8 & 1/16 orifice plates & union).

PL575 Plumbing for cycle/sample assembly ¾ inch (1/8 & 1/16 orifice plates and union).

PL675 Plumbing for continuous sample assembly ¾ inch (1/8 & 1/16 orifice plates & union).

PLKT Plumbing kit. Continuous and sample cycle. Orifice plates and unions, cross, tee, manual block valve. No piping.

GV ½ inch forged globe valve for flow metering instead of an orifice plate and union.

***NOTE**: Two **GV** options are required for continuous sample and one for cycle sample if the orifice plate and union are not used.*

BLOWDOWN VALVE OPTIONS (optional, select one only)

MBV1 Motorized ½ inch blowdown valve rated to 400 psi @ 480°F (27.6 bar @ 249°C).

MBV2 Motorized ¾ inch blowdown valve rated to 400 psi @ 480°F (27.6 bar @ 249°C).

SOFTWARE AND REMOTE COMMUNICATIONS

LRWS W*indows*-based software program for computer to communicate with 2000 Series.

WEBNode IP/TCP device for use with 2000 Series controllers.

EZWeb Wireless internet interface for use with WEBNode and 2000 Series controllers.

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PART NO.	DESCRIPTION	LIST	CD
1269052	2855e-RTC	$2,765	W
1269053	2855e-RTC-RS2L	2,970	W
	The following models include: model 2855e-RTC, the appropriate number of SR2N boiler sensors, PL5 or PL6 plumbing assemblies, MBV1 motorized ball valves, NRLY relay nodes. For use under the following conditions: 120 vac, <400 psi operating pressure, 1/2 inch piping, using a hot (>200F) sample. If a mixture of sample/cycle and continuous sample boiler systems are needed, please contact the factory.		
1269054	2855e-SC-1B 1 boiler controller sample/cycle control	$4,650	W
1269055	2855e-SC-2B 2 boiler controller sample/cycle control	6,535	W
1269056	2855e-SC-3B 3 boiler controller sample/cycle control	8,420	W
1269057	2855e-SC-4B 4 boiler controller sample/cycle control	10,305	W
1269058	2855e-SC-5B 5 boiler controller sample/cycle control	12,765	W
1269059	2855e-SC-6B 6 boiler controller sample/cycle control	14,650	W
1269060	2855e-SC-7B 7 boiler controller sample/cycle control	16,535	W
1269061	2855e-SC-8B 8 boiler controller sample/cycle control	18,420	W
1269062	2855e-C-1B 1 boiler controller continuous sample control	$4,897	W
1269063	2855e-C-2B 2 boiler controller continuous sample control	6,989	W
1269064	2855e-C-3B 3 boiler controller continuous sample control	9,101	W
1269065	2855e-C-4B 4 boiler controller continuous sample control	11,213	W
1269066	2855e-C-5B 5 boiler controller continuous sample control	13,900	W
1269067	2855e-C-6B 6 boiler controller continuous sample control	16,012	W
1269068	2855e-C-7B 7 boiler controller continuous sample control	18,124	W
1269069	2855e-C-8B 8 boiler controller continuous sample control	20,236	W
1169993	SR2N, 2 electrode sensor with 20 ft cable and cond node	826	W
1235438	SR2NHD, 2-elec harsh duty sensor, 20 ft cable, cond node	1,038	W
1169994	SR4N, 4 electrode sensor with 20 ft cable and cond node	1,573	W
1268833	NRLY relay node	575	R
1167295	PL5, ½ sample/cycle plumbing	185	W
1168601	PL575, ¾ sample/cycle plumbing	205	W
1167297	PL6, ½ continuous plumbing	412	W
1167296	PL675, ¾ continuous plumbing	432	W
1233981	PLKT Plumbing kit. sample/cycle and continuous sample kit. Includes unions, orifice plates, cross, tee, and manual block valve only. Does not include piping.	487	W
1167520	GV, Globe valve	435	R
1268608	MBV1, ½ inch motorized ball valve	912	W
1268614	MBV2, ¾ inch motorized ball valve	1,040	W

PART NO.	REPLACEMENT PARTS	LIST	CD
1167162	2 electrode boiler sensor	$246	W
1229841	2 electrode harsh duty boiler sensor	461	W
1168074	4 electrode sensor (543M-STD)	612	R
1168513	NCON conductivity node	485	R

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BOILER ACCESSORIES

AND

REPLACEMENT PARTS

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Boiler Sensor SR2
Part no.1168374

The SR2, 2 electrode sensor with conduit elbow and 20 foot cable. The SR2 is used for monitoring conductivity in a boiler blowdown line.
The SR2 **cannot** be used after a sample cooler.

Body	Carbon Steel
Electrodes	416 SS
Max Pressure	600 psi (41.4 bar)
Max Temperature	486°F (252°C)
Cable	20 ft High temp
Process thread	¾ inch MNPT
Conduit connection	¾ inch MNPT

Boiler Sensor SR2N
Part no. 1169993

The SR2N, 2 electrode sensor with 20 foot cable and conductivity node. The SR2N is used for monitoring conductivity in a boiler blowdown line.
The SR2N **cannot** be used after a sample cooler.
For model 2255 and 2855e only.

Body	Carbon Steel
Electrodes	416 SS
Max Pressure	600 psi (41.4 bar)
Max Temperature	486°F (252°C)
Cable	20 ft High temp
Process thread	¾ inch MNPT
Conduit connection	¾ inch MNPT

Boiler Sensor SR2HD
Part No. 1229843

The SR2HD, 2 electrode sensor with conduit elbow and 20 foot cable. The SR2HD is used for monitoring conductivity in a boiler blowdown line where a harsh or high amine environment exists.
The SR2HD **cannot** be used after a sample cooler.

Body	Carbon Steel
Electrodes	416 SS
Max Pressure	600 psi (41.4 bar)
Max Temperature	486°F (252°C)
Cable	20 ft High temp
Process thread	¾ inch MNPT
Conduit connection	¾ inch MNPT

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Boiler Sensor SR2NHD
Part No. 1235438

The SR2NHD, 2 electrode sensor with 20 foot cable and conductivity node. The SR2NHD is used for monitoring conductivity in a boiler blowdown line where a harsh or high
amine environment exists.
The SR2NHD **cannot** be used after a sample cooler.
For model 2255 and 2855e only.

Body	Carbon Steel
Electrodes	416 SS
Max Pressure	600 psi (41.4 bar)
Max Temperature	486°F (252°C)
Cable	20 ft High temp
Process thread	¾ inch MNPT
Conduit connection	¾ inch MNPT

Boiler Sensor SR2P
Part No. 1169878

The SR2P, 2 electrode sensor with conductivity preamp. The SR2P is used for monitoring conductivity in a boiler blowdown line. The SR2P **cannot** be used after a sample cooler.
For model 250/260-2 only.

Body	Carbon Steel
Electrodes	416 SS
Max Pressure	600 psi (41.4 bar)
Max Temperature	486°F (252°C)
Cable	20 ft High temp
Process thread	¾ inch MNPT
Conduit connection	¾ inch MNPT

Boiler Sensor SR4
Part No. 1168375

The SR4, 4 electrode sensor with 20 foot cable. The SR4 can be in the boiler blowdown line or with a sample cooler. The SR4 can only be used with the model 2250 AND 2250e.

Body	316 SS
Electrodes	Titanium
Max Pressure	250 psi (17.2 bar)
Max Temperature	392°F (200°C)
Cable	20 ft High temp
Process thread	¾ inch MNPT
Conduit connection	¾ inch FNPT
Temperature comp	4K NTC

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Boiler Sensor SR4N
Part No. 1169994

The SR4N, 4 electrode sensor with 20 foot cable and conductivity node. The SR4N can be in the boiler blowdown line or with a sample cooler. The SR4 can only be used with the model 2255 and 2855e.

Body	316 SS
Electrodes	Titanium
Max Pressure	250 psi (17.2 bar)
Max Temperature	392°F (200°C)
Cable	20 ft High temp
Process thread	¾ inch MNPT
Conduit connection	¾ inch FNPT
Temperature comp	4K NTC

Boiler Sensor SR4P
Part No. 1167455

The SR4P, 4 electrode sensor with 20 foot cable and conductivity preamp. The SR4P is used for monitoring conductivity in a boiler blowdown line. For model 250/260-2 only.

Body	316 SS
Electrodes	Titanium
Max Pressure	250 psi (17.2 bar)
Max Temperature	392°F (200°C)
Cable	20 ft High temp
Process thread	¾ inch MNPT
Conduit connection	¾ inch FNPT
Temperature comp	4K NTC

4 Electrode Boiler Sensor (543-M-STD)
Part No. 1168074

The 4 ELECTRODE BOILER SENSOR can be in the boiler blowdown line or with a sample cooler. The Boiler Sensor 4 Electrode can only be used with the 2250 and 2250e.

Body	316 SS
Electrodes	Titanium
Max Pressure	250 psi (17.2 bar)
Max Temperature	392°F (200°C)
Cable	20 ft High temp
Process thread	¾ inch MNPT
Conduit connection	¾ inch FNPT
Temperature comp	4K NTC

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2 Electrode Boiler Sensor
Part no.1167162

The 2-ELECTRODE BOILER SENSOR is used for monitoring conductivity in a boiler blowdown line.
The 2-electrode boiler sensor cannot be used after a sample cooler.

Body	Carbon Steel
Electrodes	416 SS
Max Pressure	600 psi (41.4 bar)
Max Temperature	486°F (252°C)
Cable	20 ft High temp
Process thread	¾ inch MNPT
Conduit connection	¾ inch MNPT

2 Electrode Harsh Duty Boiler Sensor
Part no.1229841

The 2-ELECTRODE HARSH DUTY BOILER SENSOR is used for monitoring conductivity in a boiler blowdown line where a harsh or high amine environment exists.
The 2 electrode harsh duty boiler sensor **cannot** be used after a sample cooler.

Body	Carbon Steel
Electrodes	416 SS
Max Pressure	600 psi (41.4 bar)
Max Temperature	486°F (252°C)
Cable	20 ft High temp
Process thread	¾ inch MNPT
Conduit connection	¾ inch MNPT

PLKT Plumbing Kit
Part no.1233981

The PLKT plumbing kit can be used for sample / cycle and continuous sample kit. Includes unions, orifice plates, cross, tee, and a manual block valve only. The PLKT plumbing kit does not include piping.

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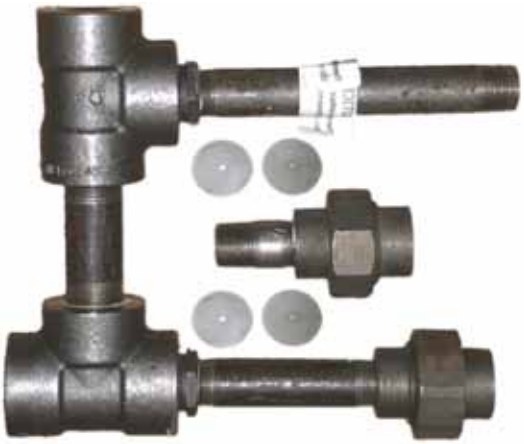
PL5
Part no. 1167295

The PL5 ½ inch cycle sample plumbing is 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.

PL575
Part no. 1168601

The PL575 3/4 inch cycle sample plumbing is used as a cycle sample method in boilers. The orifice restricts flow near the boiler sensor to prevent steam flashing during a sample. The PL675 can also be used as a PL575.



PL6
Part no. 1167297

The PL6 ½ inch continuous plumbing is used for a 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 the conductivity is above set point.

PL675
Part no. 1167296

The PL675 3/4 inch continuous plumbing is used for a 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 the conductivity is above set point.

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GV
Part no. 1167520

The GV is a ½ inch NPT Globe Valve and is used for throttling or metering the flow restriction near the boiler sensor to prevent steam flashing.

ORIFICE PLATES

The ORIFICE PLATES for 1 / 2 and 3 / 4 inch NPT union, restrict flow near the boiler sensor to prevent steam flashing during a sample.

FOR ½ INCH UNIONS

1/16	**inch**	**Part no. 1166355**
1/4	**inch**	**Part no. 1166356**
1/8	**inch**	**Part no. 1166354**
3/8	**inch**	**Part no. 1167972**

FOR 3/4 INCH UNIONS

1/16	**inch**	**Part no. 1168998**
1/4	**inch**	**Part no. 1169000**
1/8	**inch**	**Part no. 1168999**
3/8	**inch**	**Part no. 1169001**

ORIFICE UNION 1/2 INCH NPT
Part no. 1167244

ORIFICE UNION 3/4 INCH NPT
Part no. 1167245

The ORIFICE UNION is a specially milled union for 1/2 and 3/4 inch orifice plates.

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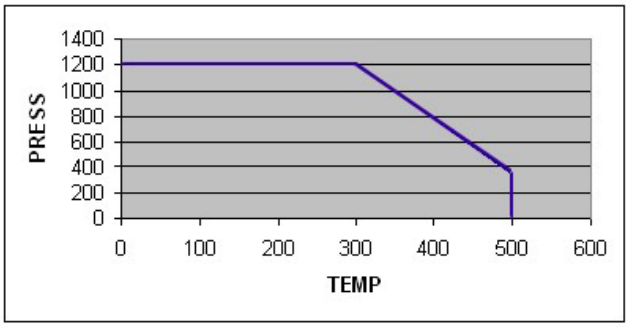
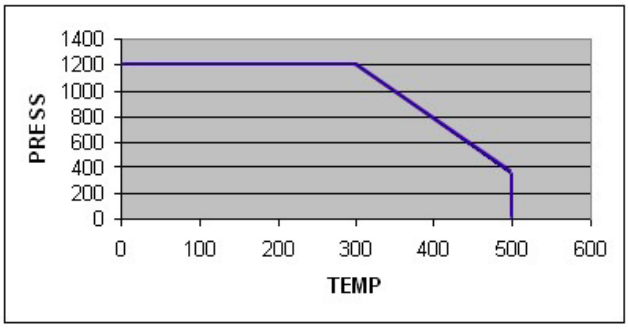
MBV1
Part no. 1268608

- Size 1 / 2 inch NPT
- Body Carbon Steel
- Rating 400 psi (27.58 bar) @ 486°F (252°C)
- Seals Jamesbury XTREME®
- Ball 316 SS



MBV2
Part no. 1268614

- Size 3 / 4 inch NPT
- Body Carbon Steel
- Rating 400 psi (27.58 bar) @ 486°F (252°C)
- Seals Jamesbury XTREME®
- Ball 316 SS



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BOILER CONTROLLER REPLACEMENT PARTS

PART NO.	DESCRIPTION	LIST	CD
1168374	SR2, 2 electrode boiler sensor, conduit elbow and 20 ft cable	$296	W
1229843	SR2HD, 2 electrode harsh duty sensor, conduit elbow, 20 ft cable	501	W
1169993	SR2N, 2 electrode sensor, 20 ft cable, conductivity node (2255 only)	826	W
1235438	SR2NHD, 2 electrode harsh duty sensor, 20 ft cable, conductivity node (2255 only)	1,038	W
1169878	SR2P, 2 electrode sensor with 20 ft cable, preamp (250/260-2 only)	588	W
1168375	SR4, 4 electrode sensor with 20 ft cable	825	W
1169994	SR4N, 4 electrode sensor, 20 ft cable, conductivity node (2255 only)	1,573	W
1167455	SR4P, 4 electrode sensor with 20 ft cable, preamp (250/260-2 only)	1,381	W
1167162	2 electrode boiler sensor replacement	246	W
1229841	2 electrode harsh duty boiler sensor replacement	461	W
1168074	4 electrode sensor (543M-STD)	612	R
1167295	PL5, ½ sample/cycle plumbing	185	W
1168601	PL575, ¾ sample/cycle plumbing ¾	205	W
1167297	PL6, ½ continuous plumbing	412	W
1167296	PL675, ¾ continuous plumbing	432	W
1233981	PLKT Plumbing kit. sample/cycle and continuous sample kit. Includes unions, orifice plates, cross, tee, and manual block valve only. Does not include piping.	487	W
1167520	GV, Globe valve	435	R
1166355	Orifice plate, 1/2NPT, 1/16	27	R
1166356	Orifice plate, 1/2NPT, 1/4	27	R
1166354	Orifice plate, 1/2NPT, 1/8	27	R
1167972	Orifice plate, 1/2NPT, 3/8	27	R
1168998	Orifice plate, 3/4NPT, 1/16	27	R
1169000	Orifice plate, 3/4NPT, 1/4	27	R
1168999	Orifice plate, 3/4NPT, 1/8	27	R
1169001	Orifice plate, 3/4NPT, 3/8	27	R
1167244	Orifice Union 1/2NPT	79	R
1167245	Orifice Union 3/4NPT	89	R
1268608	MBV1, ½ inch motorized ball valve	912	W
1268614	MBV2, ¾ inch motorized ball valve	1,040	W
1107251	PS (+24VDC supply required for 3 or more nodes)	34	R

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FLOW AND PROCESS CONTROLLERS

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491 - 495 VERSAMETER
FLOW TOTALIZER/RATE

491 SM Single Flow Meter
Flow Totalizer/Flow Rate Indicator for One Flow Stream

The 491 SM meters both flow rate and total flow in a single pipe by means of a sensor installed in the flow stream. In a typical installation, the digital signal output on the 491 SM might be connected to a chemical feed pump, to pulse the pump to proportionally feed chemicals into the stream.

492 DM Double Flow Meter
Flow Totalizer/Flow Rate Indicator for Two Flow Streams

The 492 DM measures flow total and rate in up to two pipes, sequentially displays readings from each of the two sensors on the display, and transmits this data via two outputs, one for each flow stream. The 492 DM could, for example, be connected to a programmable logic controller for use in a data communication system.

493 ARS Auto Reset Meter
Flow Totalizer/Flow Rate Indicator
Flow Controller Based on Flow Volume

In addition to metering flow total and rate in a single stream, the 493 ARS features a power relay which can operate an external device, such as a valve or a pump at a present flow volume. Along with this volume setting, the relay can also be programmed to be activated for a preset time. The 493 ARS can be used as a batch controller or a pump pulser, to initiate the regeneration of a single-tank softener or filter, or for any number of other water management functions based on flow volume.

494 HL High / Low Flow Meter
Flow Totalizer/Flow Rate Indicator
Flow Controller Based on High and/or Low Flow Rates

Along with its single-stream flow total and flow rate monitoring capabilities, the 494 HL can also control a number of different water management functions, with flow rate as the controlling parameter. When the flow rate either exceeds or drops below certain present high and/or low limits, a relay is activated in the 494 HL which, depending on the application, might operate a flow alarm, a pump or a valve.

495 DMA Double Meter Accessory
Flow Totalizer/Flow Rate Indicator for Two Streams
Flow Controller Based on Flow Volume

The Model 495 DMA for Cooling Towers is a dedicated unit designed specifically for cooling tower use. It both monitors and controls the volume of bleed-off water from the tower, while simultaneously monitoring the volume of makeup water to the tower. The controller responds to a preset bleed-off volume setpoint that is easily selected and programmed into the unit.

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SPECIFICATIONS

	491SM	492DM	493ARS	494HL	495 DMA
Incoming Power	120/240 VAC, ¼ Amp slow blow fuse				
Pulse Outputs	One	Two	One	One	One
	Optically isolated transistor All outputs are 24 VDC, 20 mA (maximum) capable				
Number of relays	None	None	One	One	One
Relay Power	None	None	5 Amp slow blow fuse		
Units of Measure	Flow total and flow rate may be displayed in: Gallons and GPM, Cubic Feet and GPM Liters and LPM, Cubic Meters and m^3/h				
NOVRAM	All units feature battery-free Non-volatile Random Access Memory				
Standards	All models meet or exceed NEMA showering arc (ICS 2-230), surge withstand (IEEE 587-1980 Category B) and electrostatic discharge (MIL-STD 88B)				

ORDERING INFORMATION

491SM
492DM
493ARS
494HL
495

UNITS OF MEASURE OPTIONS (Required, select one only)
-UGG Gallons and gpm
-UCF Cubic feet and gpm
-ULL Liters and Lpm
-UCM Cubic Meters and m^3/h

FLOW METER INPUT TYPE (Required, select one or 2 if with 492DM or 495DMA)
-FSA Flow sensor Autotrol
-FSO Flow sensor other

TURBINE WATER METER (requires cable below)
1TM-ESW 1 inch turbine meter with solvent weld PVC adapters
1TM-NPT 1 inch turbine meter with 1 inch NPT brass adapter
2TM-ESW 2 inch turbine meter with solvent weld PVC adapters
2TM-NPT 2 inch turbine meter with 2 inch NPT brass adapter
400B418-701 1 inch turbine meter only (replacement for 1 inch meters above)
480B78G1 2 inch turbine meter only (replacement for 2 inch meters above)

WATER METER CABLE (order one cable for each turbine)
49C25 25 ft cable with Hall effect sensor
49C50 50 ft cable with Hall effect sensor
49CKT 25 ft cable with hall effect sensor and junction box

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PART NO.	DESCRIPTION	LIST	CD
1168350	491SM-UGG-FSA	$805	W
1168351	491SM-UGG-FSO	805	W
1168352	492DM-UGG-FSA	805	W
1168353	492DM-UGG-FSO	805	W
1168354	493ARS-UGG-FSA	805	W
1168355	493ARS-UGG-FSO	805	W
1168356	494HL-UGG-FSA	805	W
1168357	494HL-UGG-FSO	805	W
1104964	495-UCF-FSA	805	W
1104965	495-UCF-FSO	805	W
1104966	495-UCM-FSA	805	W
1104967	495-UCM-FSO	805	W
1168358	495-UGG-FSA	805	W
1168359	495-UGG-FSO	805	W
1104968	495-ULL-FSA	805	W
1104969	495-ULL-FSO	805	W

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LAKEWOOD INSTRUMENTS
MODEL 1520/30e
pH or ORP WATER TREATMENT CONTROLLER

The Model 1520/30e uses the latest in microprocessor capability, giving the user a high level of application flexibility in pH or ORP control. The user in the field can configure this controller to operate as a pH or an ORP controller. A large illuminated graphics screen, multiple inputs, and very easy setup characterize this new 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.
- 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 the tactile sensing and life expectancy of the keypad.
- LED indicators for power, alarm and relay status.

BENEFITS

- Easy to program with the Lakewood plain English, intuitive, and user friendly menu interface.
- Controller can be used in process, cooling tower, waste water, or condensate applications 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	**Drum Switch Inputs**	2 digital contact inputs
ORP range	-1000 to +1000 mV	**Water meter inputs (2)**	Contact head, paddle wheel or turbine
Sensor Types	Solution ground, Signal differential, or Single-ended	**Timer**	Relay run time exceeded
		Output Signal	One 4 – 20 mA, isolated or non-isolated optionally powered output for pH/ORP
Resolution	± .10 pH or 1 mV		
Temperature comp.	Automatic		
Accuracy & repeatability	± 1.0%	**Output relays**	4 selectable use
Deadband/Setpoint	Adjustable	**Relay ratings**	3A each, 10A total
Auto/Manual outputs	Menu selectable	**Power**	120/240 VAC 50/60 Hz
Keypad	16 tactile push-buttons	**Ambient**	32° - 120°F (0 - 49°C)
Display	illuminated 128x64 pixel LCD	**Enclosure**	NEMA 4X CSA and ANSI/UL

Sensors	Process/Wastewater
Max Pressure	70 psi (4.8 bar)
Max Temp	Up to 230°F (110°C)
Min flow	1 gpm (3.785)

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ORDERING OPTIONS

pH and ORP SENSORS

The 1520/30e 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 your needs.

The 1520E Uses the Lakewood Instruments 520 Series Sensors For pH Part Number **1167302** pH Replacement Sensor Tip Shown

The 1530E Uses the Lakewood Instruments 530 Series Sensors For ORP Part Number **1167318** ORP Replacement Sensor Tip Shown

Ordering Information

PART NO.	pH/ORP PROCESS CONTROLLER	LIST	CD
1240475	**1520/30e controller only, no sensor**	**$1,201**	**W**

SEE THE 520 SERIES FOR PROCESS pH SENSORS AND THE 530 SERIES FOR PROCESS ORP SENSORS.

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LAKEWOOD INSTRUMENTS MODEL 2175Pe MICROPROCESSOR-BASED CONDUCTIVITY CONTROLLER

LONWORKS® Technology is the latest in microprocessor capability that gives the user the highest level of application flexibility. A large illuminated graphics screen, multiple inputs and very easy setup with easy field upgrade characterize this new technology. The unit does not include plumbing or a sensor. For use with process-type conductivity sensors (order separately).

FEATURES

- Enclosure is NEMA 4X rated.
- Power On/Off switch included.
- 4-electrode conductivity input includes fouling compensation and alarm.
- Input for flow switch lockout.
- Two water meter inputs, MTR1 and MTR2.
- Conductivity Blowdown Relay options:
  - Bleed x gallons for every x gallons makeup
  - Bleed x minutes for every x gallons makeup
  - Bleed by setpoint
  - Bleed by cycles of concentration with **NCON/NCKT** Option
  - Bleed by multi-setpoint selected with **NCON/NCKT** Option
- Three user-selectable relay options (four additional with **NRLY**):
  - Feed by setpoint, direct or reverse;
  - Water meter actuated feed. MTR1, 2 or sum;
  - Feed after blowdown by % of bleed time;
  - Feed by percentage of time;
  - Feed by schedule;
  - General alarm contact.
- Three security levels:
  - View only
  - Operator
  - Technician
- Four different languages.
  - English Spanish (standard)
  - English French (optional)
  - English German (optional)

SPECIFICATIONS

Inputs	
Power	120/240 VAC 50/60 HZ
Sensor	4-electrode Conductivity
Temperature comp.	None, 500 NTC, 4K NTC, 10K NTC, 100 PTC, 1K PTC, 3K PTC and 10K PTC
Flow / level switch	Dry contact
Water Meter Inputs (2)	Contacting Head, Paddle Wheel, or Turbine.
Outputs	
Relays	3 Amps @ 120 VAC
4-20 mA	Two, isolated or non-isolated w/-35L option

Controller	
Conductivity Range	1-100,000 µS (varies with sensor)
Conductivity Accuracy	± 40 µS
Conductivity Resolution	Varies with range
Deadband	Adjustable
Setpoints	Direct or Reverse (user configurable)
Feed timer	Adjustable
Temperature comp.	Adjustable
Keypad	16 Tactile push-buttons
Display	Illuminated 128x64 pixel LCD
Ambient Temperature	32-158°F (0-70°C)
Enclosure	NEMA 4X CSA and ANSI/UL

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ORDERING INFORMATION

2175Pe LONWORKS Technology-based conductivity controller. The 2175Pe has built-in options for feed on conductivity, by feed schedule, blowdown or makeup, Percent of Time and Percent of Blowdown. Conductivity range is 1-100,000 µS dependent upon sensor. Controller includes power cord and outlet receptacles. Requires Conductivity sensor with **-4** option.

CONTROLLER OPTIONS (optional, select one or more)

-RS2L Communications node with LRWS program.
-35L Two 4-20 mA output configurable for remote data acquisition of conductivity.
-NIN Network interface node. Allows 2 NRLY, 1 Makeup NCON, 4 sensor nodes (NpH or NCON), 2 N420I and or 2 NDIG to be added.
2KIN-V1 Card to connect controller to LONWORKS based systems or gateways.
-PS +24 volt power supply required for 3 or more nodes.

ENCLOSURE

NEMA 4X Comes with ½ inch conduit knockouts.

LANGUAGE OPTIONS (optional, choose one, English and Spanish Standard)

-EF English and French.
-EG English and German.

REMOTE NODE OPTIONS (optional, MUST purchase -NIN **Option)**

NRLY Four additional relays with enclosure (2 per 2000 Series Controller), also available with receptacles and power cord
NpH pH/ORP node for a pH or ORP sensor.
N420I 4-20 ma input node for up to four 4-20 ma inputs.
NDIG Digital input node for up to four digital inputs.
NCON Conductivity node for makeup water or closed loop control (node only).
NCKT Conductivity node for makeup water or closed loop control with PVC sensor, tee and enclosure. Maximum water pressure and temperature is 140 psi @ 100°F (9.7 bar @ 38°C).

Refer to the 2000 series introduction section for more information.

NOTE: NOT FOR USE WITH MULTIPLE COOLING TOWERS.

SOFTWARE AND REMOTE COMMUNICATIONS

LRWS W*indows*-based software program for computer to communicate with 2000 Series.
WEBNode IP/TCP device for use with 2000 Series controllers.
EZWeb Wireless internet interface for use with WEBNode and 2000 Series controllers.

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MODEL 2175Pe

PART NO.	DESCRIPTION	LIST	CD
1268870	2175Pe-RTC	$1,903	W
1268871	2175Pe-RTC-35L	2,108	W
1268872	2175Pe-RTC-35L-NIN	2,313	W
1268873	2175Pe-RTC-NIN	2,108	W
1268874	2175Pe-RTC-RS2L	2,108	W
1268875	2175Pe-RTC-RS2L-35L	2,313	W
1268876	2175Pe-RTC-RS2L-NIN	2,313	W
1268877	2175Pe-RTC-RS2L-35L-NIN	2,518	W

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LAKEWOOD INSTRUMENTS MODEL 2330Pe
MICROPROCESSOR BASED ORP CONTROLLER

LONWORKS® Technology is the latest in microprocessor capability that gives the user the highest level of application flexibility. A large illuminated graphics screen, multiple inputs and very easy setup with easy field upgrade characterize this new technology. The unit does not include plumbing or a sensor. For use with process-type ORP sensors (order separately).

FEATURES

- Enclosure is NEMA 4X rated.
- Power On/Off switch included.
- Differential ORP sensor input with diagnostics indicate fouled reference or open PT band.
- Input for flow switch lockout.
- Two water meter inputs, MTR1 and MTR2.
- Four user-selectable relay options (four additional with **NRLY**):
  - Feed by setpoint, direct or reverse;
  - Water meter actuated feed. MTR1, MTR2 or sum;
  - Feed by percentage of time;
  - Feed by schedule;
  - General alarm contact.
- Three security levels:
  - View only
  - Operator
  - Technician
- Four different languages.
  - English Spanish (standard)
  - English French (optional)
  - English German (optional)

SPECIFICATIONS

Inputs	
Power	120/240VAC 50/60HZ
Sensor	ORP glass electrode w/BNC
Temperature comp.	None, 500 NTC, 4K NTC, 10K NTC, 100 PTC, 1K PTC, 3K PTC and 10K PTC
Flow / level switch	Dry contact
Water Meter Inputs (2)	Contacting Head, Paddle Wheel, or Turbine.
Outputs	
Relays	3 Amps @ 120 VAC
4-20 mA	Two, isolated or non-isolated w/-35L option

Controller	
ORP Range	-1000 to +1000 mV
ORP Accuracy	± 5 mV
ORP Resolution	1 mV
Deadband	Adjustable
Setpoints	Direct or Reverse (configurable in the field)
Feed timer	Adjustable
Keypad	16 Tactile push-button
Display	Illuminated 128x64 pixel LCD
Ambient Temperature	32-158°F (0-70°C)
Enclosure	NEMA 4X CSA and ANSI/UL

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ORDERING INFORMATION

2330Pe LONWORKS Technology-based ORP controller. Four relays are integral to the system. The relays may be configured for ORP HIGH/LOW setpoints and alarms. ORP range is -1000 to +1000 mV. Controller includes power cord and outlet receptacles. Requires sensor (530-4 Series).

CONTROLLER OPTIONS (optional, select one or more)

-RS2L Communications node with LRWS program.
-35L Two 4-20 mA output configurable for remote data acquisition of ORP.
-NIN Network interface node. Allows 2 NRLY, 1 Makeup NCON, 4 sensor nodes (NpH or NCON), 2 N420I and or 2 NDIG to be added.
2KIN-V1 Card to connect controller to LON based systems or gateways.
-PS +24 volt power supply required for 3 or more nodes.

ENCLOSURE

NEMA 4X Comes with ½ inch conduit knockouts.

LANGUAGE OPTIONS (optional, choose one, English and Spanish Standard)

-EF English and French.
-EG English and German.

REMOTE NODE OPTIONS (optional, MUST purchase -NIN **Option)**

NRLY Four additional relays with enclosure (2 per 2000 Series Controller), also available with receptacles and power cord
NpH pH/ORP node for a pH or ORP sensor.
N420I 4-20 ma input node for up to four 4-20 ma inputs.
NDIG Digital input node for up to four digital inputs.
NCON Conductivity node for makeup water or closed loop control (node only).
NCKT Conductivity node for makeup water or closed loop control with PVC sensor, tee and enclosure. Maximum water pressure and temperature is 140 psi @ 100°F (9.7 bar @ 38°C).

Refer to the 2000 series introduction section for more information.

NOTE: NOT FOR USE WITH MULTIPLE COOLING TOWERS.

SOFTWARE AND REMOTE COMMUNICATIONS

LRWS W*indows*-based software program for computer to communicate with 2000 Series.
WEBNode IP/TCP device for use with 2000 Series controllers.
EZWeb Wireless internet interface for use with WEBNode and 2000 Series controllers.

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MODEL 2330Pe

PART NO.	DESCRIPTION	LIST	CD
1268878	2330Pe-RTC	$2,029	W
1268879	2330Pe-RTC-35L	2,234	W
1268880	2330Pe-RTC-35L-NIN	2,439	W
1268881	2330Pe-RTC-NIN	2,234	W
1268882	2330Pe-RTC-RS2L	2,234	W
1268883	2330Pe-RTC-RS2L-NIN	2,439	W
1268884	2330Pe-RTC-RS2L-35L	2,439	W
1268885	2330Pe-RTC-RS2L-35L-NIN	2,644	W

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LAKEWOOD INSTRUMENTS MODEL 2350Pe
MICROPROCESSOR-BASED pH CONTROLLER

LONWORKS® Technology is the latest in microprocessor capability that gives the user the highest level of application flexibility. A large illuminated graphics screen, multiple inputs and very easy setup with easy field upgrade characterize this new technology. The unit does not include plumbing or a sensor. For use with process-type pH sensors (order separately).

FEATURES

- Enclosure is NEMA 4X rated.
- Power On/Off switch is included.
- Differential pH sensor input with diagnostics to indicate fouled reference or broken glass.
- Input for flow switch lockout.
- Two water meter inputs, MTR1 and MTR2.
- Four user-selectable relay options (four additional with **NRLY**):
  - Feed by setpoint, direct or reverse;
  - Water meter actuated feed. MTR1, MTR2 or sum;
  - Feed by percentage of time;
  - Feed by schedule;
  - General alarm contact.
- Three security levels:
  - View only
  - Operator
  - Technician
- Four different languages.
  - English Spanish (standard)
  - English French (optional)
  - English German (optional)

SPECIFICATIONS

Inputs	
Power	120/240 VAC 50/60 Hz
Sensor	pH glass electrode w/BNC
Temperature comp.	None, 500 NTC, 4K NTC, 10K NTC, 100 PTC, 1K PTC, 3K PTC and 10K PTC
Flow / level switch	Dry contact
Water Meter Inputs (2)	Contacting Head, Paddle Wheel, or Turbine
Outputs	
Relays	3 Amps @ 120 VAC
4-20 mA	Two, isolated or non-isolated w/-35L option

Controller	
pH Range	0-14 pH
pH Accuracy	± 0.05 pH
pH Resolution	0.01 pH
Deadband	Adjustable
Setpoints	Direct or Reverse (configurable in the field)
Feed timer	Adjustable
Keypad	16 Tactile push-buttons
Display	Illuminated 128x64 pixel LCD
Ambient Temperature	32-158°F (0-70°C)
Enclosure	NEMA 4X CSA and ANSI/UL

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ORDERING INFORMATION

2350Pe LONWORKS Technology-based pH controller with 4 selectable relays for HIGH/LOW setpoints or alarms. pH range is 0-14 pH. Controller includes power cord and outlet receptacles. Requires pH sensor (520-4 Series) which must be ordered separately.

CONTROLLER OPTIONS (optional, select one or more)

-RS2L Communications node with LRWS program.
-35L Two 4-20 mA output configurable for remote data acquisition of pH.
-NIN Network interface node. Allows 2 NRLY, 1 Makeup NCON, 4 sensor nodes (NpH or NCON), 2 N420I and or 2 NDIG to be added.
2KIN-V1 Card to connect controller to LON based systems or gateways.
-PS +24 volt power supply required for 3 or more nodes.

ENCLOSURE

NEMA 4X Comes with ½ inch conduit knockouts.

LANGUAGE OPTIONS (optional, choose one, English and Spanish Standard)

-EF English and French.
-EG English and German.

REMOTE NODE OPTIONS (optional, MUST purchase -NIN **Option)**

NRLY Four additional relays with enclosure (2 per 2000 Series Controller), also available with receptacles and power cord
NpH pH/ORP node for a pH or ORP sensor.
N420I 4-20 ma input node for up to four 4-20 ma inputs.
NDIG Digital input node for up to four digital inputs.
NCON Conductivity node for makeup water or closed loop control (node only).
NCKT Conductivity node for makeup water or closed loop control with PVC sensor, tee and enclosure. Maximum water pressure and temperature is 140 psi @ 100°F (9.7 bar @ 38°C).

Refer to the 2000 series introduction section for more information.

NOTE: NOT FOR USE WITH MULTIPLE COOLING TOWERS.

SOFTWARE AND REMOTE COMMUNICATIONS

LRWS W*indows*-based software program for computer to communicate with 2000 Series.
WEBNode IP/TCP device for use with 2000 Series controllers.
EZWeb Wireless internet interface for use with WEBNode and 2000 Series controllers.

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MODEL 2350Pe

PART NO.	DESCRIPTION	LIST	CD
1268886	2350Pe-RTC	$2,029	W
1268887	2350Pe-RTC-35L	2,234	W
1268888	2350Pe-RTC-35L-NIN	2,439	W
1268889	2350Pe-RTC-NIN	2,234	W
1268890	2350Pe-RTC-RS2L	2,234	W
1268891	2350Pe-RTC-RS2L-35L	2,439	W
1268892	2350Pe-RTC-RS2L-NIN	2,439	W
1268893	2350Pe-RTC-RS2L-35L-NIN	2,644	W

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LAKEWOOD INSTRUMENTS MODEL 2412Pe MICROPROCESSOR-BASED CONDUCTIVITY AND pH CONTROLLER

LONWORKS® Technology is the latest in microprocessor capability that gives the user the highest level of application flexibility. A large illuminated graphics screen, multiple inputs and very easy setup with easy field upgrade characterize this new technology. The unit does not include plumbing or a sensor. For use with process-type pH and conductivity sensors (order separately).

FEATURES

- Enclosure is NEMA 4X rated.
- Power On/Off switch is included.
- 4-electrode conductivity input includes fouling compensation and alarm.
- Differential pH sensor input with diagnostics indicate fouled reference or broken glass.
- Input for flowswitch lockout.
- Two water meter inputs, MTR1 and MTR2.
- Conductivity Blowdown Relay options:
  - Bleed x gallons for every x gallons makeup
  - Bleed x minutes for every x gallons makeup
  - Bleed by setpoint
  - Bleed by cycles of concentration with **NCON/NCKT** Option
  - Bleed by multi-setpoint selected with **NCON/NCKT** Option
- Three user-selectable relay options (four additional with **NRLY**):
  - Feed by setpoint, direct or reverse;
  - Water meter actuated feed. MTR1, MTR2, or sum;
  - Feed after blowdown by % of bleed time;
  - Feed by percentage of time;
  - Feed by schedule;
  - General alarm contact.
- Three security levels:
  - View only, Operator, Technician
- Four different languages.
  - English Spanish (standard)
  - English French (optional)
  - English German (optional)

SPECIFICATIONS

Inputs

Power	120/240 VAC 50/60 Hz
Sensor	2 or 4-electrode Conductivity pH glass Electrode w/BNC
Temp. comp.	None, 500 NTC, 4K NTC, 10K NTC, 100 PTC, 1K PTC, 3K PTC and 10K PTC
Flow / level switch	Dry contact
Water Meter Inputs (2)	Contacting Head, Paddle Wheel, or Turbine

Outputs

Relays	3 Amps @ 120 VAC
4-20 mA	Two, isolated or non-isolated w/-35L option

Controller

Conductivity Range	1-100,000 µS (varies with sensor)
Conductivity Accuracy	± 40 µS
Conductivity Resolution	Varies with range
pH Range	0-14 pH
pH Accuracy	± 0.05 pH
pH Resolution	0.01 pH
Deadband	Adjustable
Setpoints	Direct or Reverse (field configurable)
Feed timer	Adjustable
Keypad	16 Tactile push-buttons
Display	Illuminated 128x64 pixel LCD
Ambient Temperature	32-158°F (0-70°C)
Enclosure	NEMA 4X CSA and ANSI/UL

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ORDERING INFORMATION

2412Pe LONWORKS Technology-based controller with 4 selectable relays for HIGH/LOW setpoints or alarms. pH range is 0-14 pH, conductivity range is 1-100,000 depending on sensors. Controller includes power cord and outlet receptacles. Requires pH sensor (520-4 Series) and conductivity sensor (540-4 series or 543-4 series) which must be ordered separately.

CONTROLLER OPTIONS (optional, select one or more)

-RS2L Communications node with LRWS program.
-35L Two 4-20 mA output configurable for data acquisition of conductivity and pH.
-NIN Network interface node. Allows 2 NRLY, 1 Makeup NCON, 4 sensor nodes (NpH or NCON), 2 N420I and or 2 NDIG to be added.
2KIN-V1 Card to connect controller to LON based systems or gateways.
-PS +24 volt power supply required for 3 or more nodes.

ENCLOSURE

NEMA 4X Comes with ½ inch conduit knockouts.

LANGUAGE OPTIONS (optional, choose one, English and Spanish Standard)

-EF English and French.
-EG English and German.

REMOTE NODE OPTIONS (optional, MUST purchase -NIN **Option)**

NRLY Four additional relays with enclosure (2 per 2000 Series Controller), also available with receptacles and power cord
NpH pH/ORP node for a pH or ORP sensor.
N420I 4-20 ma input node for up to four 4-20 ma inputs.
NDIG Digital input node for up to four digital inputs.
NCON Conductivity node for makeup water or closed loop control (node only).
NCKT Conductivity node for makeup water or closed loop control with PVC sensor, tee and enclosure. Maximum water pressure and temperature is 140 psi @ 100°F (9.7 bar @ 38°C).

Refer to the 2000 series introduction section for more information.

NOTE: <u>NOT</u> FOR USE WITH MULTIPLE COOLING TOWERS.

SOFTWARE AND REMOTE COMMUNICATIONS

LRWS W*indows*-based software program for computer to communicate with 2000 Series.
WEBNode IP/TCP device for use with 2000 Series controllers.
EZWeb Wireless internet interface for use with WEBNode and 2000 Series controllers.

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MODEL 2412Pe

PART NO.	DESCRIPTION	LIST	CD
1268894	2412Pe-RTC	$2,029	W
1268895	2412Pe-RTC-35L	2,234	W
1268896	2412Pe-RTC-35L-NIN	2,439	W
1268897	2412Pe-RTC-NIN	2,234	W
1268898	2412Pe-RTC-RS2L	2,234	W
1268899	2412Pe-RTC-RS2L-35L	2,439	W
1268900	2412Pe-RTC-RS2L-NIN	2,439	W
1268901	2412Pe-RTC-RS2L-35L-NIN	2,644	W

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LAKEWOOD INSTRUMENTS MODEL 2430Pe MICROPROCESSOR-BASED CONDUCTIVITY AND ORP CONTROLLER

LONWORKS® Technology is the latest in microprocessor capability that gives the user the highest level of application flexibility. A large illuminated graphics screen, multiple inputs and very easy setup with easy field upgrade characterize this new technology. The unit does not include plumbing or sensors. For use with process-type conductivity and ORP sensors (order separately).

FEATURES

- Enclosure is NEMA 4X rated.
- Power On/Off switch is included.
- 4-electrode conductivity input includes fouling compensation and alarm.
- Differential ORP sensor input with diagnostics indicate fouled reference or open PT band.
- Input for flow switch lockout.
- Two water meter inputs, MTR1 and MTR2.
- Conductivity Blowdown Relay options:
  - Bleed x gallons for every x gallons makeup
  - Bleed x minutes for every x gallons makeup
  - Bleed by setpoint
  - Bleed by cycles of concentration with **NCON/NCKT** Option
  - Bleed by multi-setpoint selected with **NCON/NCKT** Option
- Three user-selectable relay options (four additional with **NRLY**):
  - Feed by setpoint, direct or reverse;
  - Water meter actuated feed. MTR1, MTR2 or sum;
  - Feed after blowdown by % of bleed time;
  - Feed by percentage of time;
  - Feed by schedule;
  - General alarm contact.
- Three security levels:
  - View only, Operator, Technician
- Four different languages.
  - English Spanish (standard)
  - English French (optional)
  - English German(optional)

SPECIFICATIONS

Inputs	
Power	120/240 VAC 50/60 Hz
Sensor	2 or 4-electrode Conductivity and ORP glass Electrode w/BNC
Temperature comp.	None, 500 NTC, 4K NTC, 10K NTC, 100 PTC, 1K PTC, 3K PTC and 10K PTC
Flow / level switch	Dry contact
Water Meter Inputs (2)	Contacting Head, Paddle Wheel, or Turbine
Outputs	
Relays	3 Amps @ 120 VAC
4-20 mA	Two, isolated or non-isolated w/-35L option

Controller	
Conductivity Range	1-100,000 µS (varies with sensor)
Conductivity Accuracy	± 40 µS
Conductivity Resolution	Varies with range
ORP Range	-1000 to +1000 mV
ORP Accuracy	± 5 mV
ORP Resolution	1 mV
Deadband	Adjustable
Setpoints	Direct or Reverse (field configurable)
Feed timer	Adjustable
Keypad	16 Tactile push-buttons
Display	Illum. 128x64 pixel LCD
Ambient Temperature	32-158°F (0-70°C)
Enclosure	NEMA 4X CSA and ANSI/UL

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ORDERING INFORMATION

2430Pe LONWORKS Technology-based controller with 4 selectable relays for HIGH/LOW setpoints or alarms. Controller includes power cord and outlet receptacles. Requires ORP and conductivity sensors (530-4, and 540-4 or 543-4 series) which must be ordered separately.

CONTROLLER OPTIONS (optional, select one or more)

-RS2L Communications node with LRWS program.
-35L Two 4-20 mA output configurable for data acquisition of conductivity and ORP.
-NIN Network interface node. Allows 2 NRLY, 1 Makeup NCON, 4 sensor nodes (NpH or NCON), 2 N420I and or 2 NDIG to be added.
2KIN-V1 Card to connect controller to LON based systems or gateways.
-PS +24 volt power supply required for 3 or more nodes.

ENCLOSURE

NEMA 4X Comes with ½ inch conduit knockouts.

LANGUAGE OPTIONS (optional, choose one, English and Spanish Standard)

-EF English and French.
-EG English and German.

REMOTE NODE OPTIONS (optional, MUST purchase -NIN **Option)**

NRLY Four additional relays with enclosure (2 per 2000 Series Controller), also available with receptacles and power cord
NpH pH/ORP node for a pH or ORP sensor.
N420I 4-20 ma input node for up to four 4-20 ma inputs.
NDIG Digital input node for up to four digital inputs.
NCON Conductivity node for makeup water or closed loop control (node only).
NCKT Conductivity node for makeup water or closed loop control with PVC sensor, tee and enclosure. Maximum water pressure and temperature is 140 psi @ 100°F (9.7 bar @ 38°C).

Refer to the 2000 series introduction section for more information.

NOTE: NOT FOR USE WITH MULTIPLE COOLING TOWERS.

SOFTWARE AND REMOTE COMMUNICATIONS

LRWS W*indows*-based software program for computer to communicate with 2000 Series.
WEBNode IP/TCP device for use with 2000 Series controllers.
EZWeb Wireless internet interface for use with WEBNode and 2000 Series controllers.

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MODEL 2430Pe

PART NO.	DESCRIPTION	LIST	CD
1268902	2430Pe-RTC	$2,029	W
1268903	2430Pe-RTC-35L	2,234	W
1268904	2430Pe-RTC-35L-NIN	2,439	W
1268905	2430Pe-RTC-NIN	2,234	W
1268906	2430Pe-RTC-RS2L	2,234	W
1268907	2430Pe-RTC-RS2L-35L	2,439	W
1268908	2430Pe-RTC-RS2L-NIN	2,439	W
1268909	2430Pe-RTC-RS2L-35L-NIN	2,644	W

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LAKEWOOD INSTRUMENTS MODEL 2450
REVERSE OSMOSIS MONITOR

The Model 2450 uses LONWORKS® Technology that is the latest in microprocessor capability, giving the user the highest level of application flexibility. A large illuminated graphics screen, multiple inputs and very easy setup with easy field upgrades characterize this new technology. Water meters and sensors are purchased separately.

FEATURES

- Uses 2-electrode or 4-electrode conductivity sensors.
- Uses differential pH sensor with ¾ inch MNPT process connection. pH input can also be configurable for an ORP sensor.
- Two water meter inputs for Permeate and Concentrate flow rates.
- RS232 output for remote monitoring, control and data acquisition (-RS2L).
- Includes –RTC card
- 4-20 mA output for (-35L and -35L2, select any four, two per –35L and -35L2 card):
  pH, conductivity, temperature,
  concentrate flow, permeate flow,
  percent recovery.
- Input for CIP lockout.
- System run timer.
- Five (5) Count down timers
  Lubrication interval
  Check CIP
  Check Filters
  Check Membranes
  Check Sensor
- Four (4) relays have user-selectable options:
  pH setpoint;
  conductivity setpoint;
  temperature setpoint
  permeate flow setpoint;
  concentrate flow setpoint;
  percent recovery setpoint;
  various alarms.

SPECIFICATIONS

Inputs	
Power	120/240 VAC 50/60 Hz
Sensor	2 or 4-electrode Conductivity pH or ORP differential
Temperature comp.	None, 500 NTC, 4K NTC
CIP switch	Dry contact
Water Meter Inputs (2)	Paddle Wheel or Turbine, Open collector Type
Outputs	
Relays	3 Amps @ 120 VAC
4-20 mA	Four, isolated or non-isolated w -35L and –35L2 options
RS232	Requires Windows-based PC w/-RS2L

Monitor	
pH Range	0-14 pH
pH Accuracy	± 0.05 pH
pH Resolution	0.01 pH
ORP Range	-1000 to +1000 mV
ORP Accuracy	± 5 mV
ORP Resolution	1 mV
Conductivity Range	1-10, 10-100, or 100-1000 µS (with proper sensor)
Conductivity Accuracy	± 1 or ± 10 µS (with proper sensor)
Conductivity Resolution	1 or 10 µS (with proper sensor)
Deadband	Adjustable
Setpoints	Direct or Reverse (configurable in the field)
Keypad	Numeric
Display	Illuminated 128x64 pixel LCD
Ambient Temperature	32-158°F (0-70°C)
Enclosure	ABS Plastic

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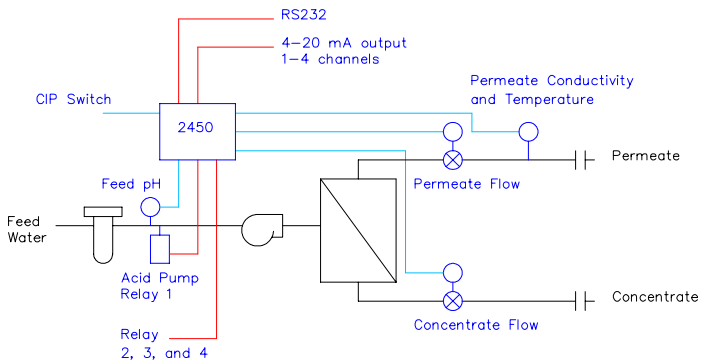

ORDERING INFORMATION

2450 LONWORKS Technology-based Reverse Osmosis Monitor including the Real Time Clock. Sensors and water meters are ordered separately.

CONTROLLER OPTIONS (optional; select no more than two)

-35L Two 4-20 mA outputs.

-35L2 Two additional 4-20mA outputs. This option is used in conjunction with the –35L card for a total of four 4-20 mA outputs.

-RS2L Communications node with the LRWS program.

LANGUAGE OPTIONS (optional, choose one, English and Spanish Standard)

-EF English and French.

-EG English and German.

SENSOR OPTIONS

520-4-7I-10-STD	pH sensor 0-14 pH, ¾ inch NPT
530-4-7I-10	ORP sensor, ¾ inch NPT
540K0.1-4-10I-10-TC 500	Conductivity Sensor 0-10 µS, ¾ inch NPT
540K.1-4-10I-10-TC 500	Conductivity Sensor 0-100 µS, ¾ inch NPT
543-L-4-8I-10-STD	Conductivity Sensor 0-1000 µS, 1 inch NPT
543-M-4-8I-10-STD	Conductivity Sensor 500-100,000 µS, 1 inch NPT

AUTOTROL TURBINE WATER METER OPTIONS

1TM-NPT	1 inch turbine water meter with brass pipe thread adapters.
1TM-ESW	1 inch turbine water meter with PVC solvent weld adapters.
2TM-NPT	2 inch turbine water meter with brass pipe thread adapters.
2TM-ESW	2 inch turbine water meter with PVC solvent weld adapters.
49C25	25 ft cable for turbine meters.
49C50	50 ft cable for turbine meters.

MOUNTING OPTIONS (optional, select one only)

PM	Panel mount 6¼ inch square cutout.
BM	Bracket for pipe mounting.

SOFTWARE AND REMOTE COMMUNICATIONS

LRWS W*indows*-based software program for computer to communicate with 2000 Series.

WEBNode IP/TCP device for use with 2000 Series controllers.

EZWeb Wireless internet interface for use with WEBNode and 2000 Series controllers.

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MODEL 2450

PART NO.	DESCRIPTION	LIST	CD
1109898	2450 (with RTC)	$2,206	W
1169339	2450-RS2L (with RTC)	2,411	W
1105346	2450-35L-RS2L (with RTC)	2,616	W
1105347	2450-35L (with RTC)	2,411	W
1104453	2450-35L-35L2 (with RTC)	2,616	W

PART NO.	Accessories	LIST	CD
1107018	520-RO	$474	R
1107021	543-M-RO	791	R
1107022	543-L-RO	791	R
1107020	540K.1-RO	529	R
1107019	540K.01-RO	975	R
3023532	1TM-NPT	113	R
1033238	1TM-ESW	95	R
3023536	2TM-NPT	333	R
1034080	2TM-ESW	308	R
1033354	49C25	56	R
1033355	49C50	106	R
1167979	LRWS, Registered Lakewood Remote Windows Software	NC	R
1109658	RS2L, RS232 communications option	205	R
1109657	35L, dual channel 4-20mA output card	205	R
1222111	35L2, dual channel 4-20mA output card, second card	205	R
1109695	2450 Manual	5	R
1109690	LRWS Manual	5	R

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PROCESS SENSORS

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Lakewood Instruments
Model 520 Series pH Sensors

5205 Replacement Tip CPVC

5207 Replacement Tip 316 SS

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 different body materials, three mounting options and three different glass electrodes, Lakewood Instruments can supply pH sensors to fit your needs.

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

-STD is the STANDARD glass bulb type electrode for use in systems with low fouling potential and minimal abrasives. pH range is 0-12, Max Temperature† is 230°F (110°C)†
For replacement tips specify electrode type and total length in inches

-HS is the HIGH SODIUM glass bulb type electrode for use in systems with a high pH and high concentration of sodium ions. This sensor compensates for sodium ion errors. pH range is 0-14, Max Temperature† is 212°F (100°C)†
For replacement tips specify electrode type and total length in inches

-DG is the extra strength DOME glass bulb type electrode for use in systems with slightly fouling or slightly abrasive water. pH range is 0-12, Max Temperature† is 212°F (100°C)†
For replacement tips specify electrode type and total length in inches

TEMPERATURE COMPENSATOR: 10K PTC

† Temperature rating of sensors depends on the combination of the body and glass electrode. Use the lower temperature of the sensor's body or glass electrode to determine sensors temperature specification.

* **The maximum pressure rating for the 5I, 5R, 7I and 7R options with the teflon ferrules is 70 psi.**

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ENCLOSURES

- 0 FOR PVC
Used on the 2 wire transmitter only

- 0 FOR 316 SS
Used on the 2 wire transmitter only

- 1 NEMA-4X w/amplifier
* for use with Model 350-RP, 352, 820 and 1020 controllers.

- 5 NEMA-4X

- 2 CL I, II w/amplifier
* For use with Model 350-RP, 352, 820 and 1020 controllers.

- 3 CL I, II
CAN BE USED WITH NPH

INLINE MOUNTING OPTIONS

- 5I 1 1/2 Inch NPT CPVC Compression

- 7I 3/4 Inch NPT 316 SS Swagelock

- 5R 1 1/2 Inch NPT CPVC Ball Valve

- 7R 1 Inch NPT 316 SS Ball valve

ORDERING INFORMATION

Select one item from each column below.

pH Sensor	Cable Length or Enclosure	Material, Inline Fitting	Body Length	Electrode Type
520	**-0** 1/2 inch NPT adapter	**-5S** CPVC no fitting	**-10** inch†	**-STD**
	-1 NEMA-4X w/amplifier*	**-5I** CPVC w/compress fitting 11/2 inch NPT	**-18** inch	**-DG**
	-2 Aluminum encl w/amp*	**-5R** CPVC w/ball valve 11/2 inch NPT	**-48** inch	**-HS**
	-3 Aluminum enclosure	**-7S** 316 SS no fitting		
	-4 180 inch of cable	**-7I** 316 SS w/Swagelock fitting 3/4 inch NPT		
	-5 NEMA-4X enclosure	**-7R** 316 SS w/ball valve 1inch NPT		
Example				
520	-4	-5R	-18	-STD

† 10 inch body not available with **-5R or -7R** Option.

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PART NO.	DESCRIPTION	LIST	CD
1168554	520-0-5I-18-STD	$546	R
1105043	520-0-5I-10-STD	518	R
1168555	520-0-5R-18-STD	673	R
1104459	520-0-5S-18-STD	440	R
1168556	520-0-5S-48-STD	501	R
1105044	520-0-5S-10-STD	413	R
1109968	520-0-7I-10-STD	507	R
1228783	520-0-7I-10-DG	601	R
1168560	520-0-7I-18-STD	540	R
1168561	520-0-7R-18-STD	663	R
1168562	520-0-7S-48-STD	524	R
1105046	520-0-7S-10-STD	429	R
1105282	520-1-5I-10-STD	851	R
1109797	520-1-5I-18-DG	975	R
1168436	520-1-5I-18-HS	975	R
1168102	520-1-5I-18-STD	879	R
1255042	520-1-5I-48-STD	941	R
1167935	520-1-5R-18-STD	1,007	R
1169578	520-1-5S-48-DG	931	R
1169660	520-1-5S-48-HS	931	R
1167071	520-1-5S-48-STD	835	R
1169695	520-1-5S-18-STD	774	R
1168576	520-1-7I-18-STD	875	R
1169879	520-1-7I-10-STD	841	R
1169880	520-1-7R-18-HS	1,091	R
1168577	520-1-7R-18-STD	996	R
1168578	520-1-7S-48-STD	858	R
1167993	520-2-5I-18-STD	880	R
1168581	520-2-5R-18-STD	1,007	R
1166591	520-2-7I-10-STD	841	R
1165340	520-2-7R-48-STD	1,057	R
1167992	520-2-7R-18-STD	996	R
1167991	520-2-7S-48-STD	841	R
1168564	520-3-5I-18-STD	601	R
1105047	520-3-5I-10-STD	573	R
1168565	520-3-5R-18-STD	729	R
1168566	520-3-5S-48-STD	556	R
1105048	520-3-5S-10-STD	468	R
1167450	520-3-7I-18-HS	691	R
1168570	520-3-7I-18-STD	596	R
1105049	520-3-7I-10-STD	563	R
1104450	520-3-7R-18-DG	812	R
1168571	520-3-7R-18-STD	719	R
1168572	520-3-7S-48-STD	580	R
1105050	520-3-7S-10-STD	485	R
1169666	520-4-5I-18-DG	607	R
1167986	520-4-5I-18-STD	513	R

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PART NO.	DESCRIPTION	LIST	CD
1105051	520-4-5I-10-STD	$485	R
1167988	520-4-5R-18-STD	639	R
1109615	520-4-5S-18-STD	406	R
1167989	520-4-5S-48-STD	468	R
1105052	520-4-5S-10-STD	379	R
1228083	520-4-7I-10-HS	568	R
1165305	520-4-7I-10-STD	474	R
1167984	520-4-7I-18-STD	506	R
1240143	520-4-7I-48-STD	568	R
1167983	520-4-7R-18-STD	629	R
1109944	520-4-7S-48-DG	585	R
1167982	520-4-7S-48-STD	490	R
1169876	520-4-7S-10-STD	395	R
1168586	520-5-5I-18-STD	601	R
1105054	520-5-5I-10-STD	573	R
1168587	520-5-5R-18-STD	729	R
1104404	520-5-5S-18-STD	495	R
1168588	520-5-5S-48-STD	556	R
1105055	520-5-5S-10-STD	468	R
1268639	520-5-5S-10-HS	563	R
1168592	520-5-7I-18-STD	596	R
1105056	520-5-7I-10-STD	563	R
1168593	520-5-7R-18-STD	719	R
1168594	520-5-7S-48-STD	580	R
1105057	520-5-7S-10-STD	486	R
1239903	520-6-5I-18-STD	513	R
1169704	520-6-5S-48-HS	563	R
1167125	520-6-5S-48-STD	468	R
1167126	520-6-5S-18-STD	406	R
1169646	520-6-7R-18-STD	629	R
1167129	520-6-7S-48-STD	490	R
1167130	520-6-7S-18-STD	429	R

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PART NO.	REPLACEMENT PARTS	LIST	CD
1169452	5205-DG (specify length when ordering)	$418	R
1169453	5205-HS (specify length when ordering)	418	R
1167302	5205-STD (specify length when ordering)	323	R
1169460	5207-DG (specify length when ordering)	418	R
1169462	5207-HS (specify length when ordering)	418	R
1167304	5207-STD (specify length when ordering)	323	R
1167261	Fitting, 5l	98	R
1167090	Fitting, 5R	216	R
1167374	Fitting, 7l	72	R
1167375	Fitting, 7R	185	R
1167124	Preamp, pH/ORP	273	R
1166317	Cable, 4 conductor /ft, 20 ft minimum order	1	R
1169780	Cable, pH, BNC / 4Conductor, 5ft	91	R
1169781	Cable, pH, BNC / 4Conductor, 10ft	91	R

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Lakewood Instruments
530 Series ORP Sensors

5305 Replacement Tip CPVC

5307 Replacement Tip 316 SS

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 different body materials and three mounting options, Lakewood Instruments can supply ORP sensors to fit your needs.

Specifications

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

Close up of the stainless steel sensor tip shown

Range on ORP sensors is -1000 to +1000 mV

For replacement tips specify total length in inches

*** The maximum pressure rating for the 5I, 5R, 7I and 7R options with the teflon ferrules is 70 psi.**

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ENCLOSURES

- 0 FOR PVC
Used on the 2 wire transmitter only

- 0 FOR 316 SS
Used on the 2 wire transmitter

- 1 NEMA-4X w/amplifier
* for use with Model 353 and 830 controllers.

- 5 NEMA-4X

- 2 CL I, II w/amplifier
* for use with Model 353, 830 controllers.

- 3 CL I, II
CAN BE USED WITH NPH

INLINE MOUNTING OPTIONS

- 5I 1 1/2 Inch NPT CPVC Compression

- 7I 3/4 Inch NPT 316 SS Swagelock

- 5R 1 1/2 Inch NPT CPVC Ball Valve

- 7R 1 Inch NPT 316 SS Ball valve

ORDERING INFORMATION

Select one item from each column below.

pH Sensor	Cable Length or Enclosure	Material, Inline Fitting	Body Length	Electrode Type
530	**-0** 1/2 inch NPT adapter	**-5S** CPVC no fitting	**-10** inch†	**-STD**
	-1 NEMA-4X w/amplifier*	**-5I** CPVC w/compress fitting 11/2 inch NPT	**-18** inch	**-DG**
	-2 Aluminum encl w/amp*	**-5R** CPVC w/ball valve 11/2 inch NPT	**-48** inch	**-HS**
	-3 Aluminum enclosure	**-7S** 316 SS no fitting		**-FG**
	-4 180 inch of cable	**-7I** 316 SS w/Swagelock fitting 3/4 inch NPT		
	-5 NEMA-4X enclosure	**-7R** 316 SS w/ball valve 1 1/2 inch NPT		

Example

530	-4	-5R	-18	-STD

† 10 inch body not available with **-5R or -7R** Option.

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PART NO.	DESCRIPTION	LIST	CD
1169239	530-0-5I-18	$624	R
1105067	530-0-5I-10	596	R
1169240	530-0-5R-18	750	R
1169241	530-0-5S-48	580	R
1105068	530-0-5S-10	490	R
1169243	530-0-7I-18	619	R
1105069	530-0-7I-10	585	R
1169244	530-0-7R-18	740	R
1169245	530-0-7S-48	601	R
1105070	530-0-7S-10	507	R
1169246	530-1-5I-18	957	R
1169247	530-1-5R-18	1,085	R
1167078	530-1-5S-48	880	R
1169013	530-1-7I-18	952	R
1169249	530-1-7R-18	1,075	R
1229305	530-1-7S-18	875	R
1169250	530-1-7S-48	936	R
1169251	530-2-5I-18	957	R
1169252	530-2-5R-18	1,085	R
1169253	530-2-5S-48	914	R
1169255	530-2-7I-18	952	R
1169256	530-2-7R-18	1,075	R
1169257	530-2-7S-48	936	R
1169258	530-3-5I-18	679	R
1105071	530-3-5I-10	652	R
1169259	530-3-5R-18	806	R
1169260	530-3-5S-48	635	R
1105072	530-3-5S-10	546	R
1169262	530-3-7I-18	674	R
1105073	530-3-7I-10	640	R
1169263	530-3-7R-18	796	R
1169264	530-3-7S-48	657	R
1105074	530-3-7S-10	563	R
1169194	530-4-5I-18	590	R
1169668	530-4-5I-10	563	R
1169265	530-4-5R-18	719	R
1169266	530-4-5S-48	546	R
1169664	530-4-5S-10	456	R
1169268	530-4-7I-18	585	R
1169889	530-4-7I-10	551	R
1169269	530-4-7R-18	707	R
1169270	530-4-7S-48	568	R
1105075	530-4-7S-10	474	R
1169271	530-5-5I-18	679	R
1105076	530-5-5I-10	652	R
1169272	530-5-5R-18	807	R
1169273	530-5-5S-48	635	R
1105077	530-5-5S-10	546	R

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PART NO.	DESCRIPTION	LIST	CD
1169275	530-5-7I-18	$674	R
1105078	530-5-7I-10	640	R
1169276	530-5-7R-18	796	R
1105079	530-5-7S-10	563	R
1167144	530-6-5S-48	546	R
1167145	530-6-5S-18	485	R
1167148	530-6-7S-48	568	R
1167149	530-6-7S-18	507	R

PART NO.	REPLACEMENT PARTS	LIST	CD
1167318	5305 (specify length when ordering)	$401	R
1106786	5307 (specify length when ordering)	401	R
1167261	Fitting, 5I	98	R
1167090	Fitting, 5R	216	R
1167374	Fitting, 7I or 10I	72	R
1167375	Fitting, 7R or 10r	185	R
1167124	Preamp, pH/ORP	273	R
1166317	Cable, 4 conductor /ft, 20 ft minimum order	1	R
1169780	Cable, pH, BNC / 4Conductor, 5ft	91	R
1169781	Cable, pH, BNC / 4Conductor, 10ft	91	R

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LAKEWOOD INSTRUMENTS
SERIES 540
2-ELECTRODE CONDUCTIVITY SENSORS

540K.1 SENSOR TIP

540K.01 SENSOR TIP WITH SS BODY

The Model 540 Conductivity Sensor offers a reliable and 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 to 10 µS or 10 to 100 µS conductivity ranges. These sturdy sensors can withstand temperatures up to 392°F (200°C) and will serve for a long period of time.

BENEFITS

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

SPECIFICATIONS

Length(s) body	10 inch or 18 inch
Diameter, OD	¾ inch
Material	316 SS
Temp. ranges	0-392°F (200°C)
Temp. comp.	500 NTC
Cell constants	0.01 or 0.1
Cable lengths	20 ft max.
Cable insulation	TFE
Pressure Trend Swagelock	70 psi (4.8 bar)
Insulator mat.	PVDF
Range K.1	10-100 µS
Range K.01	1-10 µS

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ENCLOSURES

-1 NEMA-4X w/amplifier*

- 2 CL I, II w/amplifier*

-3 CL I, II
CAN BE USED WITH NCON

INLINE MOUNTING OPTIONS

(All sensors have ¾ inch NPT on sensor tip)

- 10I 3/4 inch NPT 316 SS Swagelock

- 10R 1 inch NPT 316 SS Ball valve

ORDERING INFORMATION

Select one item from each column below.

Sensor	Cable Length or Enclosure	Material, Inline Fitting	Body Length	Temp Comp
540K.1	**- 1** NEMA-4X w/amplifier*	**- 10S** 316 SS no fitting	**- 10** inch†	**- TC500**
540K.01	**- 2** Aluminum enclosure w/amp*	**- 10I** 316 SS w/Swagelock fitting ¾ inch NPT	**- 18** inch	
	- 3 Aluminum enclosure	**- 10R** 316 SS w/ball valve 1 inch NPT		
	- 4 240 inch of cable			

EXAMPLE

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

* Amplifier options **-1** and **-2** are only available with Model 843 controllers.

† 10 inch body not available with **-10R** Option.

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MODEL 540K.1 SERIES

PART NO.	DESCRIPTION	LIST	CD
1105089	540K.1-1-10I-10-TC500	$897	R
1169775	540K.1-1-10I-18-TC500	931	R
1166617	540K.1-1-10R-18-TC500	1,052	R
1105090	540K.1-1-10S-10-TC500	819	R
1166619	540K.1-1-10S-18-TC500	851	R
1105091	540K.1-2-10I-10-TC500	897	R
1166620	540K.1-2-10I-18-TC500	931	R
1169831	540K.1-2-10R-18-TC500	1,052	R
1105092	540K.1-2-10S-10-TC500	819	R
1166713	540K.1-2-10S-18-TC500	851	R
1105093	540K.1-3-10I-10-TC500	619	R
1169881	540K.1-3-10I-18-TC500	652	R
1166727	540K.1-3-10R-18-TC500	774	R
1105094	540K.1-3-10S-10-TC500	540	R
1167086	540K.1-3-10S-18-TC500	573	R
1104591	540K.1-4-10I-10-TC500	529	R
1169602	540K.1-4-10I-18-TC500	563	R
1168617	540K.1-4-10R-18-TC500	685	R
1105096	540K.1-4-10S-10-TC500	451	R
1167087	540K.1-4-10S-18-TC500	485	R

PART NO.	REPLACEMENT PARTS	LIST	CD
1169054	540K.1-TC500	$379	R
1167374	Fitting, 10I	72	R
1167375	Fitting, 10R	185	R
1166317	Cable, 4 conductor /ft, 20 ft minimum order (price per foot)	1	R
1167230	Preamp, Conductivity	273	R

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MODEL 540K.01 SERIES

PART NO.	DESCRIPTION	LIST	CD
1167080	540K.01-1-10I-18-TC500	$1,375	R
1105082	540K.01-1-10I-10-TC500	1,342	R
1167421	540K.01-1-10R-18-TC500	1,498	R
1167438	540K.01-1-10S-18-TC500	1,297	R
1105083	540K.01-1-10S-10-TC500	1,264	R
1165078	540K.01-2-10I-18-TC500	1,375	R
1105084	540K.01-2-10I-10-TC500	1,342	R
1169665	540K.01-2-10R-18-TC500	1,498	R
1165080	540K.01-2-10S-18-TC500	1,297	R
1105085	540K.01-2-10S-10-TC500	1,264	R
1167440	540K.01-3-10I-18-TC500	1,097	R
1105086	540K.01-3-10I-10-TC500	1,063	R
1167446	540K.01-3-10R-18-TC500	1,220	R
1104592	540K.01-4-10I-10-TC500	975	R
1167084	540K.01-4-10I-18-TC500	1008	R
1169642	540K.01-4-10R-18-TC500	1,130	R

PART NO.	REPLACEMENT PARTS	LIST	CD
1169055	540K.01-TC500	$825	R
1167374	Fitting, 10I	72	R
1167375	Fitting, 10R	185	R
1166317	Cable, 4 conductor /ft, 20 ft minimum order (price per foot)	1	R
1167230	Preamp, Conductivity	273	R

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543 SERIES
4-ELECTRODE CONDUCTIVITY SENSORS

543-M REPLACEMENT TIP

543-LL REPLACEMENT TIP

543-L REPLACEMENT TIP

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)

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

*** The maximum pressure rating for the 8I and 8R options with the Teflon ferrule is 70 psi**

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ENCLOSURES

-1 NEMA-4X w/amplifier*

- 5 NEMA-4X

- 2 CL I, II w/amplifier*

- 3 CL I, II
CAN BE USED WITH NCON

INLINE MOUNTING OPTIONS

(All sensors have ¾ inch NPT on sensor tip)

- 8I 1 inch NPT 316 SS Swagelock

- 8R 1½ inch NPT 316 SS Ball valve

ORDERING INFORMATION

Select one item from each column below.

Sensor	Cable Length or Enclosure	Material, Inline Fitting	Body Length
543-M	**- 0** ½ inch NPT adapter[#]	**- 5S** CPVC no fitting	**- 10** inch[†]
543-L	**- 1** NEMA-4X w/amplifier*	**- 8S** 316 SS no fitting	**- 18** inch
543-LL	**- 2** Aluminum encl. w/amp*	**- 8I** 316 SS w/Swagelock fitting 1 inch NPT	**- 48** inch
	- 3 Aluminum enclosure	**- 8R** 316 SS w/ball valve 1½ inch NPT	
	- 4 240 inch of cable		
	- 5 NEMA-4X enclosure		

EXAMPLE

543-M	**-4**	**-8R**	**-18**

[#] For use with the model 1743 two-wire transmitter.

* Amplifier options **-1** and **-2** are only available with Model 843 controllers.

† 10 inch body is not available with **-8R** Option.

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MODEL 543 M SERIES

PART NO.	DESCRIPTION	LIST	CD
1104238	543-M-0-8I-10	$825	R
1105215	543-M-0-5S-10	713	R
1169090	543-M-0-8S-48	835	R
1169088	543-M-0-5S-48	802	R
1168105	543-M-0-8R-18	1,099	R
1168104	543-M-0-8I-18	869	R
1104476	543-M-1-5S-18	1,075	R
1104356	543-M-1-8S-10	1,097	R
1104970	543-M-1-5S-10	1,047	R
1104973	543-M-1-8I-10	1,192	R
1169095	543-M-1-8R-18	1,467	R
1169094	543-M-1-8I-18	1,236	R
1169093	543-M-1-8S-48	1,202	R
1169091	543-M-1-5S-48	1,136	R
1104974	543-M-2-8I-10	1,192	R
1105039	543-M-2-8S-10	1,091	R
1169099	543-M-2-8R-18	1,467	R
1169098	543-M-2-8I-18	1,236	R
1169097	543-M-2-8S-48	1,202	R
1109896	543-M-3-8R-18	1,189	R
1105040	543-M-3-5S-10	769	R
1105041	543-M-3-5S-18	796	R
1105042	543-M-3-5S-48	858	R
1105225	543-M-3-8I-10	913	R
1105226	543-M-3-8I-18	957	R
1105227	543-M-3-8S-10	812	R
1105228	543-M-3-8S-18	858	R
1105229	543-M-3-8S-48	924	R
1166602	543-M-4-5S-10	679	R
1105230	543-M-4-5S-18	707	R
1169101	543-M-4-5S-48	769	R
1104578	543-M-4-8I-10	791	R
1168103	543-M-4-8I-18	835	R
1169104	543-M-4-8R-18	1,066	R
1105233	543-M-4-8S-10	691	R
1105234	543-M-4-8S-18	735	R
1169103	543-M-4-8S-48	802	R

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PART NO.	DESCRIPTION	LIST	CD
1109802	543-M-5-8I-18	$957	R
1105236	543-M-5-5S-10	769	R
1105237	543-M-5-5S-18	796	R
1105238	543-M-5-5S-48	858	R
1105242	543-M-5-8I-10	913	R
1105243	543-M-5-8R-18	1,189	R
1105244	543-M-5-8S-10	813	R
1105245	543-M-5-8S-18	858	R
1105246	543-M-5-8S-48	924	R

PART NO.	REPLACEMENT PARTS	LIST	CD
1168074	543M-STD	$612	R
1169168	Fitting, 8I	93	R
1169058	Fitting, 8R	311	R
1168893	Adapter, 543 to 3/4 NPT	27	R
1166317	Cable, 4 conductor /ft, 20 ft minimum order (price per foot)	1	R
1167230	Preamp, Conductivity	273	R

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PART NO.	DESCRIPTION	LIST	CD
1105140	543-L-0-5S-10	$713	R
1105142	543-L-0-8I-10	825	R
1105143	543-L-0-8S-10	724	R
1169109	543-L-0-8R-18	1,099	R
1169108	543-L-0-8I-18	869	R
1169107	543-L-0-8S-48	835	R
1169105	543-L-0-5S-48	802	R
1105144	543-L-1-5S-10	1,047	R
1105146	543-L-1-8I-10	1,192	R
1105147	543-L-1-8S-10	1,091	R
1169114	543-L-1-8R-18	1,467	R
1169113	543-L-1-8I-18	1,236	R
1169112	543-L-1-8S-48	1,202	R
1169110	543-L-1-5S-48	1,136	R
1104240	543-L-2-8I-10	1,192	R
1105148	543-L-2-8S-10	1,091	R
1169118	543-L-2-8R-18	1,467	R
1169117	543-L-2-8I-18	1,236	R
1169116	543-L-2-8S-48	1,202	R
1105149	543-L-3-8R-18	1,189	R
1105150	543-L-3-5S-10	769	R
1105151	543-L-3-5S-18	796	R
1105152	543-L-3-5S-48	858	R
1105156	543-L-3-8I-10	914	R
1105157	543-L-3-8I-18	957	R
1105158	543-L-3-8S-10	813	R
1105159	543-L-3-8S-18	858	R
1105160	543-L-3-8S-48	924	R
1105161	543-L-4-5S-10	679	R
1105162	543-L-4-5S-18	707	R
1169120	543-L-4-5S-48	769	R
1105165	543-L-4-8I-10	791	R
1169123	543-L-4-8I-18	835	R
1169124	543-L-4-8R-18	1,066	R
1105166	543-L-4-8S-10	691	R
1105167	543-L-4-8S-18	735	R
1169122	543-L-4-8S-48	802	R

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MODEL 543 L SERIES

PART NO.	DESCRIPTION	LIST	CD
1105169	543-L-5-5S-10	$769	R
1105170	543-L-5-5S-18	796	R
1105171	543-L-5-5S-48	858	R
1104430	543-L-5-8I-18	957	R
1105168	543-L-5-8I-10	916	R
1109654	543-L-5-8R-18	1,189	R
1105175	543-L-5-8S-10	813	R
1104859	543-L-5-8S-18	858	R
1105176	543-L-5-8S-48	924	R

PART NO.	REPLACEMENT PARTS	LIST	CD
1168075	543L-STD	$612	R
1169168	Fitting, 8I	93	R
1169058	Fitting, 8R	311	R
1168893	Adapter, 543 to 3/4 NPT	27	R
1166317	Cable, 4 conductor /ft, 20 ft minimum order (price per foot)	1	R
1167230	Preamp, Conductivity	273	R

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MODEL 543 LL SERIES

PART NO.	DESCRIPTION	LIST	CD
1105177	543-LL-0-5S-10	$735	R
1105179	543-LL-0-8I-10	846	R
1105180	543-LL-0-8S-10	746	R
1169129	543-LL-0-8R-18	1,123	R
1109128	543-LL-0-8I-18	890	R
1169127	543-LL-0-8S-48	858	R
1169125	543-LL-0-5S-48	825	R
1105182	543-LL-3-8R-18	1,211	R
1105183	543-LL-3-5S-10	791	R
1105184	543-LL-3-5S-18	819	R
1105185	543-LL-3-5S-48	880	R
1105189	543-LL-3-8I-10	936	R
1105190	543-LL-3-8I-18	980	R
1105191	543-LL-3-8S-10	835	R
1105192	543-LL-3-8S-18	880	R
1105193	543-LL-3-8S-48	950	R
1105195	543-LL-4-5S-10	701	R
1105196	543-LL-4-5S-18	730	R
1169130	543-LL-4-5S-48	791	R
1105199	543-LL-4-8I-10	812	R
1169133	543-LL-4-8I-18	858	R
1169134	543-LL-4-8R-18	1,089	R
1105200	543-LL-4-8S-10	713	R
1105201	543-LL-4-8S-18	757	R
1169132	543-LL-4-8S-48	825	R

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MODEL 543 LL SERIES

PART NO.	DESCRIPTION	LIST	CD
1105203	543-LL-5-8R-18	$1,211	R
1105204	543-LL-5-5S-10	791	R
1105205	543-LL-5-5S-18	819	R
1105206	543-LL-5-5S-48	880	R
1105210	543-LL-5-8I-10	936	R
1105211	543-LL-5-8I-18	980	R
1105212	543-LL-5-8S-10	835	R
1105213	543-LL-5-8S-18	880	R
1105214	543-LL-5-8S-48	946	R

PART NO.	REPLACEMENT PARTS	LIST	CD
1168076	543LL-STD	$635	R
1169168	Fitting, 8I	93	R
1169058	Fitting, 8R	311	R
1168893	Adapter, 543 to 3/4 NPT	27	R
1166317	Cable, 4 conductor /ft, 20 ft minimum order (per per foot)	1	R
1167230	Preamp, Conductivity	273	R

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CHEMICAL FEED SYSTEMS

AND

PUMPS

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CUSTOM PANEL SYSTEMS
FOR COOLING WATER CONTROL

(Custom Panel shown with Model 2832e and options)

Lakewood Instruments Custom Panel Systems are used to create a complete chemical injection system for use in numerous applications.

Standard features include ¾" PVC plumbing, sample valve, isolation valves, and a strainer. The panel is made of ½ inch polyethylene and measures 60.5 inches high by 54 inches wide.

Pumps, controllers, and sensor tees are ordered separately.

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CUSTOM PANEL SYSTEMS

Using the Custom Panel Selection Guide:

A custom panel model number is in the following format:
P-_ _ - _ _ _ _ - _ _ _ _ - _ _ _ _ _

Select one item from each section to form the model number.

Product Designator: This will always be "**P**".

Pump Type selector Pulsatron: Select the number of Pulsatron pumps to be used.

Pump Type selector XP series: Select the number of XP series pumps to be used

Flow Assembly with flow switch: This selection must agree with the controller that is purchased.

Injection Tees: Select the number of chemical injection tees required.

Pump Mounting: Select "**1**" to have the pumps mounted at the factory.

Flow Meter: Select "**M**" to include a 1-10 GPM rotameter.

Coupon Station: Select the number of coupon stations.

Mounting Rails: Select "**R**" to include mounting rails.

Back Flow Check Valve: Select "**V**" to include a back flow check valve.

Receptacle Box: Receptacle boxes are not normally required; select the number of boxes required.

Junction Box: Junction boxes are used for conduit connections; select the number of junction boxes required.

Controller Series: For Lakewood Instruments controllers select "**L**"; for no controller select "**X**".

Wireless Internet Device: If an EZWEB Wireless will be mounted to the panel select "**1**".

Relay Node: If a relay node will be mounted to the panel select "**1**".

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Custom Panel Systems

These custom panel systems will receive a Code “F” discount structure.

CUSTOM PANEL SYSTEM Selection Guide P - _ _ - _ _ _ _ - __ _ _ - _ _ _ _ _

Option	Price	Code	Description
PRODUCT DESIGNATOR	$ 947	P	= Panel Mount System
PUMP TYPE SELECTOR PULSATRON	N/C	0	= No Pumps
	N/C	1	= One Pump
	N/C	2	= Two Pumps
	N/C	3	= Three Pumps
	N/C	4	= Four Pumps
	N/C	5	= Five Pumps
PUMP TYPE SELECTOR XP SERIES	N/C	0	= No Pumps
	N/C	1	= One Pump
	N/C	2	= Two Pumps
	N/C	3	= Three Pumps
	N/C	4	= Four Pumps
	N/C	5	= Five Pumps
FLOW ASSEMBLY WITH FLOW SWITCH	N/C	X	= No Flow Assembly
	N/C	0	= No Sensor Tee
	N/C	1	= One Sensor Tee
	N/C	2	= Two Sensor Tees
	$ 28	3	= Three Sensor Tees
INJECTION TEES	N/C	X	= No Injection Tee
	N/C	1	= One Injection Tee
	N/C	2	= Two Injection Tees
	N/C	3	= Three Injection Tees
	$ 28	4	= Four Injection Tees
	$ 60	5	= Five Injection Tees
PUMP MOUNTING	N/C	X	= Not Mounted
	N/C	1	= Mounted
FLOW METER	N/C	X	= No Flow Meter
	$ 369	M	= Flow Meter
COUPON STATION (coupons are not included)	N/C	C0	= No Corrosion Coupon Station
	$ 379	C1	= 1 Corrosion Coupon Station
	$ 474	C2	= 2 Corrosion Coupon Stations
	$ 568	C3	= 3 Corrosion Coupon Stations
	$ 663	C4	= 4 Corrosion Coupon Stations
MOUNTING RAILS	N/C	X	= No Mounting Rails
	$ 144	R	= Mounting Rails
BACK FLOW CHECK VALVE	N/C	X	= No Check Valve
	$ 107	V	= 3/4" Back Flow Check Valve
RECEPTACLE BOX	N/C	X	= No Receptacle Box
	$ 190	1	= One Receptacle Box
	$ 379	2	= Two Receptacle Boxes
JUNCTION BOX (Conduit Only)	N/C	X	= No Junction Box
	$ 77	1	= One Junction Box
	$ 155	2	= Two Junction Boxes
	$ 229	3	= Three Junction Boxes
	$ 306	4	= Four Junction Boxes
CONTROLLER SERIES	N/C	X	= None To be mounted on panel
	N/C	L	= Lakewood controller purchased separately
WIRELESS INTERNET DEVICE	N/C	X	= None To be mounted on panel
	N/C	1	= Panel Mounted (works with 2000 Series only) purchased separately
RELAY NODE	N/C	X	= None To be mounted on panel
	N/C	1	= Panel Mounted (works with 2000 Series only) purchased separately

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PULSAtron

AND

CHEM-TECH

METERING PUMPS

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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 you will need to fill out a credit application. Payment terms with accounts are net 30 days. Contact us for more details.

Contact us at:

1-800-228-0839 phone
(414) 355-3508 fax
csd@lakewoodinstruments.com

Visit our website at www.lakewoodinstruments.com to download manuals, cutsheets, and the pricelist/catalog in .PDF format and to download the latest version of the LRWS 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 return is subject to inspection and final acceptance by the Quality Control Department. Customs and specials will not be accepted for return.

All Prices are shown as List price.
Lakewood Instruments,LLC will only honor pricing shown in this supplement.
Standard distributor or Pulsafeeder pricing and discounts do not apply and will not be honored.
For Reseller purposes, all products in the supplement are coded a "F". Please call Lakewood Instruments to receive the appropriate multipliers

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PULSAtron®

Series A Plus

Electronic Metering Pumps

PULSAFEEDER®
A Unit of IDEX Corporation

Key Features

- **Manual Control** by on-line adjustable stroke rate and stroke length.
- **Agency approved** for demanding **OUTDOOR** and indoor applications.
- **Highly Reliable** timing circuit.
- **Water Resistant** excellent for outdoor and indoor applications.
- **Internally Dampened To Reduce Noise,** very acceptable for household installations.
- **Guided Ball Check Valve Systems,** to reduce back flow and enhance outstanding priming characteristics.
- **Premium Standard Wetted Component Materials.**
- **Few Moving Parts** and **Wall Mountable.**
- **Safe & Easy Priming** with durable leak-free **bleed valve assembly** (standard).
- **Optional Control:** External pace with auto/manual selection.

Complete Economical Selection

Seven distinct models are available, having pressure capabilities to 250 PSIG, and flow capacities to 48 GPD, with a turndown ratio of 100:1. Metering performance is reproducible to within ± 3% of maximum capacity.

Please refer to the reverse side for Series A PLUS specifications.

Operating Benefits

Reliable metering performance. Our guided check valves, with their state-of-the-art seat and ball designs, provide precise seating, and excellent priming and suction lift characteristics. Our timing circuit is highly reliable and, by design, virtually unaffected by temperature, EMI and other electrical disturbances.

Rated "hot" for continuous duty. Series A PLUS pumps continue to meet their specifications for pressure and capacity even during extended use. That's because of our high quality solenoid and special enclosure that effectively dissipates heat.

High viscosity capability. A straight flow path and ample clearance between the diaphragm and head enable standard PULSAtron pumps to handle viscous chemicals up to a viscosity of 1000 CPS.

Leak-free, sealless, liquid end. Our diaphragms are of superior construction—PTFE-faced, bonded to a composite of Hypalon and fabric layers, and reinforced with a metal insert for optimum flexibility and durability.

System Compatibility

A wide variety of chemicals can be pumped. Liquid end materials include glass-filled polypropylene (GFPPL), PVC, Polyvinylidene Fluoride (PVDF), PTFE, Hypalon, Viton, ceramic, alloys and 316SS.

Immediate installation and start-up. Included as standard accessories with all models are an injection/back pressure valve assembly and a foot valve/strainer assembly*, including discharge and suction tubing.

Safe and easy priming and valve maintenance. Included as a standard accessory is a bleed valve assembly, including return tubing (available only on those models with tubing connections).

Quick and economical liquid end maintenance. Available for every model is a unique KOPkit®, a convenient, economically priced, package containing new cartridge check valves and other important spare parts.

For additional information about PULSAtron's full-featured Series MP & Series E Plus, refer to Technical Sheet No. EMP-027 & EMP-021, about the mid-range Series E & Series D refer to Technical Sheet No. EMP-022 & EMP-023. For information about the economical Series C PLUS & Series C, refer to Technical Sheet No. EMP-026 & EMP-024.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

IDEX CORPORATION

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PULSAtron Series A Plus Specifications

Series A PLUS - Six model selections. Digit 1 and 2 (LB) signify product class, digit 3 and 4 signify pressure . ow.

Pressure and Flow Rate Capacity

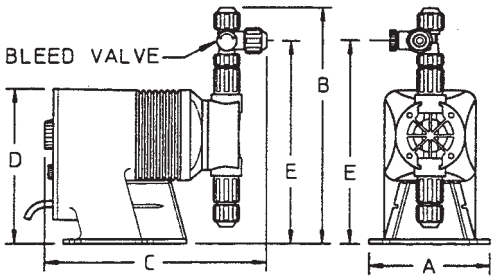
MODEL		LBC2	LB02	LBC3	LB03	LB04	LB64	LBC4
Capacity	GPH	0.25	0.25	0.42	0.50	1.00	1.25	2.00
nominal	GPD	6	6	10	12	24	30	48
(max.)	LPH	0.9	0.9	1.6	1.9	3.8	4.7	7.6
Pressure	PSIG	250	150	250	150	100	100	50
(max.)	BAR	17	10	17	10	7	7	3.3
Connections:	Tubing	1/4" ID X 3/8" OD 3/8" ID X 1/2" OD						
	Piping	1/4" FNPT						
Reproducibiilty		+/- 3% at maximum capacity						
Viscosity Max CPS		1000						
Stroke Frequency		125 Strokes Per Minute (SPM) maximum						
Stroke Frequency Turn-		10:1						
Stroke Length Turn-		10:1						
Power Input		115 VAC/50-60 HZ/1 ph 230 VAC/50-60 HZ/1 ph						
Average Current Draw		0.6 Amps @ 115 VAC, 0.3 Amps @ 230 VAC						
Peak Input Power		130 Watts						
Average Input Power @		50 Watts						

Liquid End Materials

Series	Pump Head	Diaphragm	Check Valves		Fittings	Bleed Valves	Injection Valve Assembly Foot Valve Assebly	Tubing
			Seats/O-Rings	Balls				
A Plus	GFPPL PVC PDVF 316SS	PTFE-faced Hypalon-backed	PTFE, Hypalon, Viton	Ceramic, PTFE, 316 SS Alloy C	GFPPL PVC PVDF	Same as fitting and check valve selected, except 316 SS	Same as fitting and check valve selected	Clear PVC White PE

Important: Material Code— GFPPL = Glass-. lled Polypropylene, PVC = Polyvinyl Chloride, PE = Polyethylene, PVDF = Polyvinylidene Fluoride. Hypalon and Viton are registered trademarks of E.I. DuPont Company. PVC wetted end recommended for sodium hypochlorite.

Dimensions



Series A PLUS Dimensions (inches)						
Model No.	A	B	C	D	E	Shipping Weight
LB02	5.0	9.6	9.5	6.5	8.2	10
LBC2	5.0	9.9	9.5	6.5	8.5	10
LBC3	5.0	9.9	9.5	6.5	8.5	10
LB03	5.0	9.9	9.5	6.5	8.5	10
LB04	5.0	9.9	9.5	6.5	8.5	10
LB64	5.0	9.9	9.5	6.5	8.5	10
LBC4	5.0	9.9	9.5	6.5	8.5	10

NOTE: Inches X 2.54 = cm

PULSAFEEDER®

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An ISO Certified Company

IDEX CORPORATION

PULSAtron Series A Plus Selection Guide

LB _ _ - _ _ _ _ - _ _ _

MODELS:	$ 452	**C2**	= 0.25 gph / 6 gpd (0.9 lph) max pres.: 250 PSI (17 BAR)
	$ 452	**C3**	= 0.42 gph / 10 gpd (1.6 lph) max pres.: 250 PSI (17 BAR)
	$ 452	**02**	= 0.25 gph / 6 gpd (0.9 lph) max pres.: 150 PSI (10 BAR)
	$ 452	**03**	= 0.50 gph / 12 gpd (1.9 lph) max pres.: 150 PSI (10 BAR)
	$ 452	**04**	= 1.00 gph / 24 gpd (3.8 lph) max pres.: 100 PSI (7 BAR)
	$ 452	**64**	= 1.25 gph / 30 gpd (4.7 lph) max pres.: 100 PSI (7 BAR)
	$ 452	**C4**	= 2.00 gph / 48 gpd (7.6 lph) max pres.: 50 PSI (3.3 BAR)
CONTROLS:	N/C	**S**	= Manual
	$ 99	**E**	= External Pacing w/ Auto/Manual Switch
	$ 99	**G**	= External Pacing w/ Prime Button
	$ 87	**P**	= Stop Function Option
ELECTRICAL:	N/C	**A**	= 115 Volt / 50-60Hz
	N/C	**1**	= 115 Volt / 50-60Hz (without agency approvals)
	$ 22	**B**	= 230 Volt / 50-60Hz / 1ph with 6' (1.8m) 3-wire US Plug
	$ 22	**2**	= 230 Volt / 50-60Hz (without agency approvals)
LIQUID END MATERIALS: Pump Head & Fittings/Seats & O-rings/Balls	N/C	**PHC**	= GFPPL / Hypalon / Ceramic
	$ 13	**PTC**	= GFPPL / TFE / Ceramic
	$ 7	**PVC**	= GFPPL / Viton / Ceramic
	$ 68	**KTC**	= PVDF / TFE / Ceramic
	N/C	**VHC**	= PVC / Hypalon / Ceramic
	$ 13	**VTC**	= PVC / TFE / Ceramic (models <= 150 psi)
	$ 13	**WTC**	= PVC / TFE / Ceramic (models > 150 psi)

See page 6 for additional liquid end materials.

CONNECTION SIZES:	N/C	**1**	= Tubing .25" I.D. x .38" O.D. / .25" Ball, 0 - 1.88 GPH
	N/C	**3**	= Tubing .38" I.D. x .50" O.D. / .38" Ball, 1.63 - 10 GPH
	$ 108	**9**	= Degas Head: .25" I.D. x .38" O.D. / 0-1.83 GPH
	N/C	**J**	= Tubing, .25" I.D. x .38" O.D./ .19 Ball; 0 - 1.04 GPH
		METRIC:	
	N/C	**R**	= G 1/2 A Threads, .25" Ball, 0 - 7.10 LPH
	N/C	**Y**	= 6 x 12mm, .25" Ball, 0 - 7.10 LPH

Please Refer to page 7 for additional connection sizes. **All pumps with tubing connections come with the following items (except for LMH8, LPH8, LEH8, HV series pumps and pumps >150PSI in PVC): 4' Suction, 4' Return, 8' dischage tubing, footvalve/strainer assy., injection valve and bleed valve**

SUFFIX CODES:	N/C	**XXX**	= No Additional Options
	$ 117	**130**	= PVDF Tubing
	$ 74	**500**	= Five Function Valve
	$ 169	**520**	= Five Function Degas Valve
	$ 200	**ITS**	= 15 gal. ITS Tank System
	N/C	**CZXXX**	= CE Approval (5 digits used for this suffix code)

See Spec sheet for additional details

A completed model number should look like 'LB03SA-PTC1-XXX'

PULSAtron® Series C

Electronic Metering Pumps

PULSAFEEDER®
A Unit of IDEX Corporation

Key Features

- ***Automatic Control*** by external pacing with prime switch (optional).
- ***Manual Control*** by on-line adjustable stroke length (fixed stroke rate).
- ***Liquid Low Level Option*** available to prevent loss of prime.
- ***Agency approved*** for demanding ***OUTDOOR*** and indoor applications.
- ***Highly Reliable*** timing circuit.
- ***Water Resistant*** excellent for ***OUTDOOR*** and indoor applications.
- ***Internally Dampened To Reduce Noise,*** very acceptable for household installations.
- ***Guided Ball Check Valve Systems,*** to reduce back flow and enhance outstanding priming characteristics.
- ***Premium Standard Wetted Component Materials.***
- ***Few Moving Parts*** and ***Wall Mountable.***
- ***Safe & Easy Priming*** with durable leak-free **bleed valve assembly** (standard).

Complete Economical Selection

Four distinct models are available, having pressure capabilities to 80 PSIG, and flow capacities to 30 GPD, with a turndown ratio of 10:1. Metering performance is reproducible to within ± 3% of maximum capacity.

Please refer to the reverse side for Series C specifications.

Operating Benefits

Reliable metering performance. Our guided check valves, with their state-of-the-art seat and ball designs, provide precise seating, and excellent priming and suction lift characteristics. Our timing circuit is highly reliable and, by design, virtually unaffected by temperature, EMI and other electrical disturbances.

Rated "hot" for continuous duty. Series C pumps continue to meet their specifications for pressure and capacity even during extended use. That's because of our high quality solenoid and special enclosure that effectively dissipates heat.

High viscosity capability. A straight flow path and ample clearance between the diaphragm and head enable standard PULSAtron pumps to handle viscous chemicals up to a viscosity of 1000 CPS.

Leak-free, sealless, liquid end. Our diaphragms are of superior construction—PTFE-faced, bonded to a composite of Hypalon and fabric layers, and reinforced with a metal insert for optimum flexibility and durability.

For additional information about PULSAtron's full-featured Series MP & Series E PLUS, refer to Technical Sheet No. EMP-027 & EMP-021, about the mid-range Series E, Series D & Series A PLUS refer to Technical Sheet No. EMP-022, EMP-023 & EMP-025. For information about the economical Series C PLUS refer to Technical Sheet No. EMP-026 & EMP-024.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

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System Compatibility

A wide variety of chemicals can be pumped. Liquid end materials include glass-filled polypropylene (GFPPL), PVC, styrene-acrylonitrile (SAN), Polyvinylidene Fluoride (PVDF), PTFE, Hypalon, Viton, ceramic, alloys and 316SS.

Immediate installation and start-up. Included as standard accessories with all models are an injection/back pressure valve assembly and a foot valve/strainer assembly*, including discharge and suction tubing.

Safe and easy priming and valve maintenance. Included as a standard accessory is a bleed valve assembly, including return tubing (available only on those models with tubing connections).

Quick and economical liquid end maintenance. Available for every model is a unique KOPkit®, a convenient, economically priced, package containing new cartridge check valves and other important spare parts.

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PULSAtron Series C Specifications

Series C - Four model selections. Digit 1 and 2 (LC) signify product class, digit 3 and 4 signify pressure flow. For full model selection information refer to Price Schedule EMP-PS LP.

Pressure and Flow Rate Capacity

Capacity, nominal	GPH	0.25	0.50	1.00	1.25
	GPD	6	12	24	30
	LPH	0.9	1.9	3.8	4.7
Pressure, max PSIG/Bar					
805.6		LC02	LC03	LC04	LC54

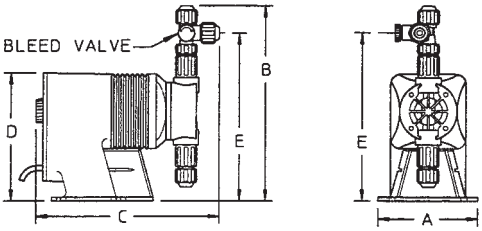
Connections: Tubing	1/4" ID X 3/8" OD 3/8" ID X 1/2" OD 3/16" ID X 5/16" OD
Piping	1/4" FNPT
Reproducibility at max. capacity	+/- 3%
Viscosity Max CPS	1000
Stroke Frequency Max SPM	125
Stroke Length Turn-Down Ratio	5:1
Power Input	115 VAC/50-60 HZ/1 ph 230 VAC/50-60 HZ/1 ph
Average Current Draw @ 115 VAC: Amps @ 230 VAC: Amps	 0.6 0.3
Peak Input Power Watts	130
Average Input Power @ max SPM: Watts	50

Liquid End Materials

Series	Pump Head	Diaphragm	Check Valves		Fittings	Bleed Valve	Injection Valve Assembly Foot Valve Assembly	Tubing
			Seats/O-Rings	Balls				
C	GFPPL PVC SAN PVDF 316 SS	PTFE-faced Hypalon-backed	PTFE, Hypalon, Viton	Ceramic, PTFE, 316SS, Alloy C	GFPPL PVC PVDF	Same as fitting and check valve selected, except 316SS	Same as fitting and check valve selected	Clear PVC White PE

Important: Material Code— GFPPL = Glass-filled Polypropylene, PVC = Polyvinyl Chloride, SAN = Styrene-Acrylonitrile, PE = Polyethylene, PVDF = Polyvinylidene Fluoride. Hypalon and Viton are registered trademarks of E.I. DuPont Company. PVC wetted end recommended for sodium hypochlorite.

Dimensions



Series C Dimensions (inches)						
Model No.	A	B	C	D	E	Shipping Weight (lbs.)
LC02	5.0	9.6	9.5	6.5	8.2	10
LC03	5.0	9.9	9.5	6.5	8.5	10
LC04	5.0	9.9	9.5	6.5	8.5	10
LC54	5.0	9.9	9.5	6.5	8.5	10

Note: Inches x 2.54=cm

KOPkit®

Available for every model, the KOPkit provides an economically priced package of parts required for routine maintenance. The kit typically contains new valve cartridges with o-rings, head, diaphragm, secondary o-ring seal, head screws and washers.

For further KOPkit information, refer to Technical Sheet No. GB-045.

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Brochure No. EMP-024
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PULSAtron Series C Selection Guide

LC _ _ - _ _ _ _ - _ _ _

MODELS:	$ 368	**02**	= 0.25 gph / 6 gpd (0.9 lph) max pres.: 80 PSI (5.6 BAR)
	$ 368	**03**	= 0.50 gph / 12 gpd (1.9 lph) max pres.: 80 PSI (5.6 BAR)
	$ 368	**04**	= 1.00 gph / 24 gpd (3.8 lph) max pres.: 80 PSI (5.6 BAR)
	$ 368	**54**	= 1.25 gph / 30 gpd (4.7 lph) max pres.: 80 PSI (5.6 BAR)
CONTROLS:	N/C	**S**	= Manual
	$ 99	**E**	= External Pacing w/ Auto/Manual Switch
	$ 99	**G**	= External Pacing w/ Prime Button
	$ 87	**P**	= Stop Function Option
ELECTRICAL:	N/C	**A**	= 115 Volt / 50-60Hz
	N/C	**1**	= 115 Volt / 50-60Hz (without agency approvals)
	$ 22	**B**	= 230 Volt / 50-60Hz / 1ph with 6' (1.8m) 3-wire US Plug
	$ 22	**2**	= 230 Volt / 50-60Hz (without agency approvals)
LIQUID END MATERIALS: Pump Head & Fittings/Seats & O-rings/Balls	N/C	**PHC**	= GFPPL / Hypalon / Ceramic
	$ 13	**PTC**	= GFPPL / TFE / Ceramic
	N/C	**VHC**	= PVC / Hypalon / Ceramic
	$ 13	**VTC**	= PVC / TFE / Ceramic
	$ 7	**VVC**	= PVC / Viton / Ceramic

See page 6 for additional liquid end materials.

CONNECTION SIZES:	N/C	**1**	= Tubing .25" I.D. x .38" O.D. / .25" Ball, 0 - 1.88 GPH
	N/C	**A**	= Tubing .38" I.D. x .50" O.D. / .25" Ball, 0 - 1.88 GPH
	N/C	**J**	= Tubing, .25" I.D. x .38" O.D./ .19 Ball; 0 - 1.04 GPH
		METRIC:	
	N/C	**P**	= 4 x 6mm, .25" Ball, 0 - 3.94 LPH
	N/C	**U**	= 6 x 10mm, .25" Ball, 0 - 7.10 LPH

Please Refer to page 7 for additional connection sizes. All pumps with tubing connections come with the following items (except for LMH8, LPH8, LEH8, HV series pumps and pumps >150PSI in PVC): 4' Suction, 4' Return, 8' dischage tubing, footvalve/strainer assy., injection valve and bleed valve.

SUFFIX CODES:	N/C	**XXX**	= No Additional Options
	$ 117	**130**	= PVDF Tubing
	$ 74	**500**	= Five Function Valve
	$ 169	**520**	= Five Function Degas Valve
	$ 200	**ITS**	= 15 gal. ITS Tank System
	N/C	**CZXXX**	= CE Approval (5 digits used for this suffix code)

See Spec sheet for additional details

A completed model number should look like 'LC03SA-PTC1-XXX'

PULSAtron®
Series C PLUS

Electronic Metering Pumps

PULSAFEEDER®
A Unit of IDEX Corporation

Key Features

- ***Manual Control*** by on-line adjustable stroke rate and stroke length.
- ***Agency approved*** for demanding ***OUTDOOR*** and indoor applications.
- ***Highly Reliable*** timing circuit.
- ***Water Resistant*** excellent for ***OUTDOOR*** and indoor applications.
- ***Internally Dampened To Reduce Noise,*** very acceptable for household installations.
- ***Guided Ball Check Valve Systems,*** to reduce back flow and enhance outstanding priming characteristics.
- ***Premium Standard Wetted Component Materials.***
- ***Few Moving Parts*** and ***Wall Mountable.***
- ***Safe & Easy Priming*** with durable leak-free **bleed valve assembly** (standard).
- ***Optional Control:*** External pace with auto/manual selection.

Complete Economical Selection

Four distinct models are available, having pressure capabilities to 80 PSIG, and flow capacities to 30 GPD, with a turndown ratio of 100:1. Metering performance is reproducible to within ± 3% of maximum capacity.

Please refer to the reverse side for Series C PLUS specifications.

Operating Benefits

Reliable metering performance. Our guided check valves, with their state-of-the-art seat and ball designs, provide precise seating, and excellent priming and suction lift characteristics. Our timing circuit is highly reliable and, by design, virtually unaffected by temperature, EMI and other electrical disturbances.

Rated "hot" for continuous duty. Series C PLUS pumps continue to meet their specifications for pressure and capacity even during extended use. That's because of our high quality solenoid and special enclosure that effectively dissipates heat.

High viscosity capability. A straight flow path and ample clearance between the diaphragm and head enable standard PULSAtron pumps to handle viscous chemicals up to a viscosity of 1000 CPS.

Leak-free, sealless, liquid end. Our diaphragms are of superior construction—PTFE-faced, bonded to a composite of Hypalon and fabric layers, and reinforced with a metal insert for optimum flexibility and durability.

System Compatibility

A wide variety of chemicals can be pumped. Liquid end materials include glass-filled polypropylene (GFPPL), PVC, Polyvinylidene Fluoride (PVDF), PTFE, Hypalon, Viton, ceramic, alloys and 316SS.

Immediate installation and start-up. Included as standard accessories with all models are an injection/back pressure valve assembly and a foot valve/strainer assembly*, including discharge and suction tubing.

Safe and easy priming and valve maintenance. Included as a standard accessory is a bleed valve assembly, including return tubing (available only on those models with tubing connections).

Quick and economical liquid end maintenance. Available for every model is a unique KOPkit®, a convenient, economically priced, package containing new cartridge check valves and other important spare parts.

For additional information about PULSAtron's full-featured Series MP & Series E PLUS, refer to Technical Sheet No. EMP-027 & EMP-021, about the mid-range Series E, Series D & Series A PLUS refer to Technical Sheet No. EMP-022, EMP-023 & EMP-025. For information about the economical Series C, refer to Technical Sheet No. EMP-024.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

IDEX CORPORATION

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PULSAtron Series C PLUS Specifications

Series C PLUS - Four model selections. Digit 1 and 2 (LD) signify product class, digit 3 and 4 signify pressure flow. For full model selection information refer to Price Schedule EMP-PS LP.

Pressure and Flow Rate Capacity

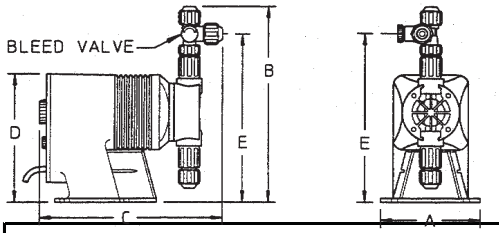
MODEL		LD02	LD03	LD04	LD54
Capacity	GPH	0.25	0.50	1.00	1.25
nominal	GPD	6	12	24	30
(max.)	LPH	0.9	1.9	3.8	4.7
Pressure	PSIG	80	80	80	80
(max.)	BAR	5.6	5.6	5.6	5.6
Connections:	Tubing	1/4" ID X 3/8" OD 3/8" ID X 1/2" OD			
	Piping	1/4" FNPT			
Reproducibiilty		+/- 3% at maximum capacity			
Viscosity Max CPS		1000 CPS			
Stroke Frequency		125 Strokes Per Minute (SPM) maximum			
Stroke Frequency Turn-Down		10:1			
Stroke Length Turn-Down		10:1			
Power Input		115 VAC/50-60 HZ/1 ph 230 VAC/50-60 HZ/1 ph			
Average Current Draw		0.6 Amps @ 115 VAC, 0.3 Amps @ 230 VAC			
Peak Input Power		130 Watts			
Average Input Power @ max		50 Watts			

Liquid End Materilas

Series	Pump Head	Diapragm	Check Valves		Fittings	Bleed Valve	Injection Valve Assembly Foot Valve	Tubing
			Seats/Orings	Balls				
C Plus	GFPPL PVC PVDF 316 SS	PTFE-faced Hypalon-backed	PTFE Hypalon Viton	Ceramic PTFE 316 SS Alloy C	GFPPL PVC PVDF	Same as fitting and check valve selected, except 316SS	Same as fitting and check valve selected	Clear PVC White PE

Important: Material Code— GFPPL = Glass-filled Polypropylene, PVC = Polyvinyl Chloride, PE = Polyethylene, PVDF = Polyvinylidene Fluoride. Hypalon and Viton are registered trademarks of E.I. DuPont Company. PVC wetted end recommended for sodium hypochlorite.

Dimensions



Series C PLUS Dimensions (inches)						
Model No.	A	B	C	D	E	Shipping Weight
LD02	5.0	9.6	9.5	6.5	8.2	10
LD03	5.0	9.9	9.5	6.5	8.5	10
LD04	5.0	9.9	9.5	6.5	8.5	10
LD54	5.0	9.9	9.5	6.5	8.5	10

NOTE: Inches X 2.54 = cm

KOPkit®

Available for every model, the KOPkit provides an economically priced package of parts required for routine maintenance. The kit typically contains new valve cartridges with o-rings, head, diaphragm, secondary o-ring seal, head screws and washers.

For further KOPkit information, refer to Technical Sheet No. GB-045.

PULSAtron Series C Plus Selection Guide

LD _ _ - _ _ _ _ - _ _ _

MODELS:	$ 413	**02**	= 0.25 gph / 6 gpd (0.9 lph) max pres.: 80 PSI (5.6 BAR)
	$ 413	**03**	= 0.50 gph / 12 gpd (1.9 lph) max pres.: 80 PSI (5.6 BAR)
	$ 413	**04**	= 1.00 gph / 24 gpd (3.8 lph) max pres.: 80 PSI (5.6 BAR)
	$ 413	**54**	= 1.25 gph / 30 gpd (4.7 lph) max pres.: 80 PSI (5.6 BAR)
CONTROLS:	N/C	**S**	= Manual
	$ 99	**E**	= External Pacing w/ Auto/Manual Switch
	$ 99	**G**	= External Pacing w/ Prime Button
	$ 87	**P**	= Stop Function Option
ELECTRICAL:	N/C	**A**	= 115 Volt / 50-60Hz
	N/C	**1**	= 115 Volt / 50-60Hz (without agency approvals)
	$ 22	**B**	= 230 Volt / 50-60Hz / 1ph with 6' (1.8m) 3-wire US Plug
	$ 22	**2**	= 230 Volt / 50-60Hz (without agency approvals)
LIQUID END MATERIALS: Pump Head & Fittings/Seats & O-rings/Balls	N/C	**PHC**	= GFPPL / Hypalon / Ceramic
	$ 13	**PTC**	= GFPPL / TFE / Ceramic
	$ 68	**KTC**	= PVDF / TFE / Ceramic
	N/C	**VHC**	= PVC / Hypalon / Ceramic
	$ 13	**VTC**	= PVC / TFE / Ceramic

See page 6 for additional liquid end materials.

CONNECTION SIZES:	N/C	**1**	= Tubing .25" I.D. x .38" O.D. / .25" Ball, 0 - 1.88 GPH
	N/C	**A**	= Tubing .38" I.D. x .50" O.D. / .25" Ball, 0 - 1.88 GPH
	N/C	**J**	= Tubing, .25" I.D. x .38" O.D./ .19 Ball; 0 - 1.04 GPH
		METRIC:	
	N/C	**R**	= G 1/2 A Threads, .25" Ball, 0 - 7.10 LPH
	N/C	**Y**	= 6 x 12mm, .25" Ball, 0 - 7.10 LPH

Please Refer to page 7 for additional connection sizes. **All pumps with tubing connections come with the following items (except for LMH8, LPH8, LEH8, HV series pumps and pumps >150PSI in PVC): 4' Suction, 4' Return, 8' dischage tubing, footvalve/strainer assy., injection valve and bleed valve.**

SUFFIX CODES:	N/C	**XXX**	= No Additional Options
	$ 117	**130**	= PVDF Tubing
	$ 74	**500**	= Five Function Valve
	$ 169	**520**	= Five Function Degas Valve
	$ 200	**ITS**	= 15 gal. ITS Tank System
	N/C	**CZXXX**	= CE Approval (5 digits used for this suffix code)

See Spec sheet for additional details

A completed model number should look like 'LD03SA-PTC1-XXX'

PULSAtron® Series E

Electronic Metering Pumps

PULSAFEEDER®
A Unit of IDEX Corporation

Key Features

- ***Manual Control*** by on-line adjustable stroke rate and stroke length.
- ***Agency approved*** for demanding ***OUTDOOR*** and indoor applications.
- ***Highly Reliable*** timing circuit.
- ***Water Resistant*** excellent for ***OUTDOOR*** and indoor applications.
- ***Internally Dampened To Reduce Noise,*** very acceptable for household installations.
- ***Guided Ball Check Valve Systems,*** to reduce back flow and enhance outstanding priming characteristics.
- ***Premium Standard Wetted Component Materials.***
- ***Few Moving Parts*** and ***Wall Mountable.***
- ***Safe & Easy Priming*** with durable leak-free **bleed valve assembly** (standard).

Complete Economical Selection

Nineteen distinct models are available, having pressure capabilities to 300 PSIG @ 3 GPD, and flow capacities to 600 GPD @ 30PSIG, with a turndown ratio of 100:1. Metering performance is reproducible to within ± 3% of maximum capacity.

Please refer to the reverse side for Series E specifications.

Operating Benefits

Reliable metering performance. Our guided check valves, with their state-of-the-art seat and ball designs, provide precise seating, and excellent priming and suction lift characteristics. Our timing circuit is highly reliable and, by design, virtually unaffected by temperature, EMI and other electrical disturbances.

Rated "hot" for continuous duty. Series E pumps continue to meet their specifications for pressure and capacity even during extended use. That's because of our high quality solenoid and special enclosure that effectively dissipates heat.

High viscosity capability. A straight flow path and ample clearance between the diaphragm and head enable standard PULSAtron pumps to handle viscous chemicals up to a viscosity of 3000 CPS. For higher vicosity applications, larger, spring-loaded connections are available.

Leak-free, sealless, liquid end. Our diaphragms are of superior construction—PTFE-faced, bonded to a composite of Hypalon and fabric layers, and reinforced with a metal insert for optimum flexibility and durability.

System Compatibility

A wide variety of chemicals can be pumped.
Liquid end materials include glass-filled polypropylene (GFPPL), PVC, Polyvinylidene Fluoride (PVDF), PTFE, Hypalon, Viton, ceramic, alloys and 316SS.

Immediate installation and start-up.
Included as standard accessories with all models are an injection/back pressure valve assembly and a foot valve/ strainer assembly*, including discharge and suction tubing (*not avail. with high viscosity connections for >3000 CPS).

Safe and easy priming and valve maintenance.
Included as a standard accessory is a bleed valve assembly, including return tubing (available only on those models with tubing connections and ≤ 240 GPD).

Quick and economical liquid end maintenance.
Available for every model is a unique KOPkit®, a convenient, economically priced, package containing new cartridge check valves and other important spare parts.

C INTERTEK ETL LISTED US INTERTEK ETL SANITATION LISTED CE

For additional information about PULSAtron's full-featured Series MP & Series E PLUS, refer to Technical Sheet No. EMP-027 & EMP-021, about the mid-range Series D & Series A PLUS refer to Technical Sheet No. EMP-023 & EMP-025. For information about the economical Series C PLUS & Series C, refer to Technical Sheet No. EMP-026 & EMP-024.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

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PULSAtron Series E Specifications

Pressure and Flow Rate Capacity

MODEL		LEK2	LE12	LE02	LE33	LE13	LE03	LEK3	LEF4	LE34	LE14	LEH4	LEG4	LE44	LEK5	LEH5	LEH6	LEK7	LEH7	LEJ7	LEH8
Capacity	GPH	0.13	0.21	0.25	0.50	0.50	0.50	0.60	0.85	0.90	1.00	1.70	1.75	1.85	2.50	3.15	5.00	8.00	10.00	10.00	25.00
nominal	GPD	3	5	6	12	12	12	14	20	22	24	41	42	44	60	76	120	192	240	240	600
(max.)	LPH	0.5	0.8	0.9	1.9	1.9	1.9	2.3	3.2	3.4	3.8	6.4	6.6	7	9.5	11.9	18.9	30.3	37.9	37.9	94.6
Pressure	PSIG	300	250	150	250	150	100	100	250	150	100	250	150	100	150	150	100	50	35	80	30
(max.)	BAR	21	17	10	17	10	7	7	17	10	7	17	10	7	10	10	7	3.3	2.4	5.5	2
Connections:	Tubing	1/4" ID X 3/8" OD 3/8" ID X 1/2" OD													3/8" ID X 1/2" OD 1/2" ID X 3/4" OD (LPH8 ONLY)						
	Piping	1/4" FNPT													1/4" FNPT 1/2" FNPT						
Reproducibiilty		+/- 3% at maximum capacity																			
Viscosity Max CPS		For viscosity up to 3000 CPS, select connection size 3, 4, B or C with 316SS ball material. Flow rate will determine connection/ball size. Greater than 3000 CPS require spring loaded ball checks. See Selection Guide for proper connection.																			
Stroke Frequency		125 Strokes Per Minute (SPM) maximum																			
Stroke Frequency Turn-Down		10:1																			
Stroke Length Turn-Down		10:1																			
Power Input		115 VAC/50-60 HZ/1 ph																			
		230 VAC/50-60 HZ/1 ph																			
Average Current Draw		1.0 Amps @ 115 VAC, 0.5 Amps @ 230 VAC																			
Peak Input Power		300 Watts																			
Average Input Power @ max		130 Watts																			

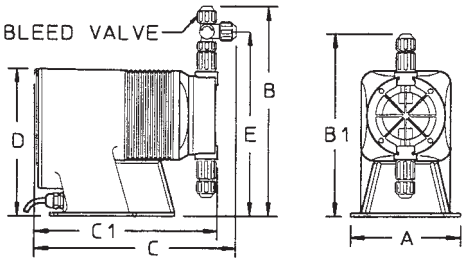
Important: Series E - 19 model selections. Digit 1 and 2 (LE) signify product class, digit 3 and 4 signify pressure/flow. For full model selection information refer to Metering Pumpsa and Control Systems Product List.

Liquid End Materials

Series	Pump Head	Diapragm	Check Valves		Fittings	Bleed Valve	Injection Valve Assembly Foot Valve	Tubing
			Seats/Orings	Balls				
E	GFPPL PVC PVDF 316 SS	PTFE-faced Hypalon-backed	PTFE Hypalon Viton	Ceramic PTFE 316 SS Alloy C	GFPPL PVC PVDF	Same as fitting and check valve selected, except 316SS	Same as fitting and check valve selected	Clear PVC White PE

Important: Material Code— GFPPL = Glass-filled Polypropylene, PVC = Polyvinyl Chloride, PE = Polyethylene, PVDF = Polyvinylidene Fluoride. Hypalon and Viton are registered trademarks of E.I. DuPont Company. PVC wetted end recommended for sodium hypochlorite.

Dimensions



Series E Dimensions (inches)																		
Model No.	A	B	B1	C	C1	D	E	Shpg Wt	Model No.	A	B	B1	C	C1	D	E	Shpg Wt
LE02	5	9.6	-	9.5	-	6.4	8.2	7	LEH4	6.2	10.9	-	11.2	-	8.2	9.5	18
LE03	5	9.8	-	9.5	-	6.4	8.4	7	LEH5	6.2	11.3	-	11.2	-	8.2	9.9	18
LE12	5	9.6	-	9.5	-	6.4	8.2	7	LEH6	6.2	11.3	-	11.2	-	8.2	9.9	18
LE13	5	9.8	-	9.5	-	6.4	8.4	7	LEH7	6.1	11.7	-	11.2	-	8.2	10.3	18
LE14	5	9.8	-	9.5	-	6.4	8.4	7	LEH8*	6.1	-	10.9	-	10.6	8.2	-	23
LE33	5.4	10.6	-	11.2	-	7.5	9.2	12	LEK2	5.4	10.3	-	10.8	-	7.5	8.9	10
LE34	5.4	10.6	-	11.2	-	7.5	9.2	12	LEK3	5.4	10.6	-	10.7	-	7.5	9.2	10
LE44	5.4	10.6	-	11.2	-	7.5	9.2	12	LEK5	5.4	10.9	-	11.7	-	7.5	9.5	15
LEF4	5.4	10.6	-	11.7	-	7.5	9.2	15	LEK7	6.1	11.7	-	11.2	-	8.2	10.3	18
LEG4	5.4	10.6	-	11.7	-	7.5	9.2	15	LEJ7	6.1	10.0	-	10.7	-	-	-	18

NOTE: Inches X 2.54 = cm

* the LPH8 is designed without a bleed valve available

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Brochure No. EMP-022 K09

PULSAtron Series E Selection Guide

LE_ _ | S | _ - _ _ _ | _ - _ _ _

MODELS:	$ 568	**K2**	= 0.13 gph / 3 gpd (0.5 lph) max pres.: 300 PSI (21 BAR)
	$ 552	**12**	= 0.21 gph 5 gpd (0.8 lph) max pres.: 250 PSI (17 BAR)
	$ 624	**33**	= 0.50 gph / 12 gpd (1.9 lph) max pres.: 250 PSI (17 BAR)
	$ 893	**F4**	= 0.85 gph / 20 gpd (3.2 lph) max pres.: 250 PSI (17 BAR)
	$ 1,193	**H4**	= 1.70 gph / 41 gpd (6.4 lph) max pres.: 250 PSI (17 BAR)
	$ 458	**02**	= 0.25 gph / 6 gpd (0.9 lph) max pres.: 150 PSI (10 BAR)
	$ 522	**13**	= 0.50 gph / 12 gpd (1.9 lph) max pres.: 150 PSI (10 BAR)
	$ 656	**34**	= 0.90 gph / 22 gpd (3.4 lph) max pres.: 150 PSI (10 BAR)
	$ 949	**G4**	= 1.75 gph / 42 gpd (6.6 lph) max pres.: 150 PSI (10 BAR)
	$ 1,002	**K5**	= 2.50 gph / 60 gpd (9.5 lph) max pres.: 150 PSI (10 BAR)
	$ 1,286	**H5**	= 3.15 gph / 76 gpd (11.9 lph) max pres.: 150 PSI (10 BAR)
	$ 475	**03**	= 0.50 gph / 12 gpd (1.9 lph) max pres.: 100 PSI (7 BAR)
	$ 545	**K3**	= 0.60 gph / 14 gpd (2.3 lph) max pres.: 100 PSI (7 BAR)
	$ 530	**14**	= 1.00 gph / 24 gpd (3.8 lph) max pres.: 100 PSI (7 BAR)
	$ 686	**44**	= 1.85 gph / 44 gpd (7.0 lph) max pres.: 100 PSI (7 BAR)
	$ 971	**H6**	= 5.00 gph / 120 gpd (18.9 lph) max pres.: 100 PSI (7 BAR)
	$ 1,077	**K7**	= 8.00 gph / 192 gpd (30.3 lph) max pres.: 50 PSI (3.3 BAR)
	$ 1,107	**H7**	= 10.0 gph / 240 gpd (37.9 lph) max pres.: 35 PSI (2.4 BAR)
	$ 1,163	**J7**	= 10.0 gph / 240 gpd (37.9 lph) max pres.: 80 PSI (5.5 BAR)
	$ 1,632	**H8**	= 25.0 gph / 600 gpd (94.6 lph) max pres.: 30 PSI (2 BAR)

CONTROLS:	N/C	**S**	= No Options Available

ELECTRICAL:	N/C	**A**	= 115 Volt / 50-60Hz
	N/C	**1**	= 115 Volt / 50-60Hz (without agency approvals)
	$ 22	**B**	= 230 Volt / 50-60Hz / 1ph with 6' (1.8m) 3-wire US Plug
	$ 22	**2**	= 230 Volt / 50-60Hz (without agency approvals)

LIQUID END	N/C	**PHC**	= GFPPL / Hypalon / Ceramic
MATERIALS:	$ 13	**PTC**	= GFPPL / TFE / Ceramic
Pump Head &	$ 68	**KTC**	= PVDF / TFE / Ceramic (not available on J7 or H8)
Fittings/Seats	N/C	**VHC**	= PVC / Hypalon / Ceramic (not available on H7, H8, K7)
& O-rings/Balls	$ 13	**VTC**	= PVC / TFE / Ceramic (models <= 150 psi excluding H7, H8, K7)
	$ 13	**WTC**	= PVC / TFE / Ceramic (models > 150 psi and H7, H8, K7)
	$ 248	**ATS**	= 316 S.S. / TFE / 316 S.S. (must use FNPT piping connection) (not available on J7 or H8)

See page 6 for additional liquid end materials.

CONNECTION	N/C	**1**	= Tubing .25" I.D. x .38" O.D. / .25" Ball, 0 - 1.88 GPH
SIZES:	N/C	**3**	= Tubing .38" I.D. x .50" O.D. / .38" Ball, 1.63 - 10 GPH
		METRIC:	
	N/C	**M**	= G 1/2 A Threads, .38" Ball, 6.15 - 37.85 LPH
	N/C	**P**	= 4 x 6mm, .25" Ball, 0 - 3.94 LPH

Please Refer to page 7 for additional connection sizes. All pumps with tubing connections come with the following items (except for LMH8, LPH8, LEH8, HV series pumps and pumps >150PSI in PVC): 4' Suction, 4' Return, 8' dischage tubing, footvalve/strainer assy., injection valve and bleed valve.

SUFFIX	N/C	**XXX**	= No Additional Options
CODES:	$ 117	**130**	= PVDF Tubing
	$ 74	**500**	= Five Function Valve
	$ 169	**520**	= Five Function Degas Valve
	$ 200	**ITS**	= 15 gal. ITS Tank System (ITS Tank not available on LM, LP, LT, and LE: H4, H5, H6, H7, H8, J7, K7 models)
	N/C	**CZXXX**	= CE Approval (5 digits used for this suffix code)

See Spec sheet for additional details

A completed model number should look like 'LE33SA-PTC1-XXX'

PULSAtron®

Series MP

Electronic Metering Pumps

PULSAFEEDER®
A Unit of IDEX Corporation

Key Features

- **Automatic Control,** Fully scalable 4-20mA current signal that can also be calibrated to precisely match the current signal reading of the sending device.
- **Flow Verification** on select sizes can disable the pump and activate alarm if flow is interrupted for any reason.
- **Flow Totalization** accurately reports the volume of chemical pumped at the touch of a button in either Gallons or Liters. Factory preset to pump rating, manual calibration volume can be input to fine tune reporting.
- **Relay Output** for computer interface or AC power allows for external control.
- **Simple Prompts** in plain language allow for easy-to-understand instructions for programming. Available in four languages, English, French, German and Spanish.
- **Alarm Signals** for signal loss, full count, circuit failure, pulse overflow and pulse rate high. Liquid low level indicator capability is standard.
- **Timed Sequences** can be set for selected intervals and rate for repetitive metering.
- **Pulse Signals** can be multiplied or divided by 1 to 999 allowing for pumps to handle peak requirements.
- **Flow Rate** is dsplayed as GPH, GPD or LPH.
- **Large easy to read backlit LCD** display keeps you informed with the data that you need.

Complete Economical Selection

Nineteen distinct models are available, having pressure capabilities to 300 PSIG @ 3 GPD, and flow capacities to 504 GPD @ 20 PSIG, with a turndown ratio of 1000:1. Metering performance is reproducible to within ± 2% of maximum capacity.

Operating Benefits

Reliable metering performance. Our guided check valves, with their state-of-the-art seat and ball designs, provide precise seating, and excellent priming and suction lift characteristics. Our timing circuit is highly reliable and, by design, virtually unaffected by temperature, EMI and other electrical disturbances.

Rated "hot" for continuous duty. Series MP pumps continue to meet their specifications for pressure and capacity even during extended use. That's because of our high quality solenoid and special enclosure that effectively dissipates heat.

High viscosity capability. A straight flow path and ample clearance between the diaphragm and head enable standard PULSAtron pumps to handle viscous chemicals up to a viscosity of 3000 CPS. For higher vicosity applications, larger, spring-loaded connections are available.

Leak-free, sealless, liquid end. Our diaphragms are of superior construction—PTFE-faced, bonded to a composite of Hypalon and fabric layers, and reinforced with a metal insert for optimum flexibility and durability.

System Compatibility

A wide variety of chemicals can be pumped. Liquid end materials include glass-filled polyproylene (GFPPL), PVC, Polyvinylidene Fluoride (PVDF), PTFE, Hypalon, Viton, ceramic, alloys and 316SS.

Immediate installation and start-up. Included as standard accessories with all models are an injection/back pressure valve assembly and a foot valve/strainer assembly*, including discharge and suction tubing (*not avail. with high viscosity connections for >3000 CPS).

Safe and easy priming and valve maintenance. Included as a standard accessory is a bleed valve assembly, including return tubing (available only on those models with tubing connections and ≤240 GPD).

Quick and economical liquid end maintenance. Available for every model is a unique KOPkit®, a convenient, economically priced, package containing new cartridge check valves and other important spare parts.

For additional information about PULSAtron's full-featured Series E PLUS refer to Technical Sheet No. EMP-021, about the mid-range Series E, Series D & Series A PLUS refer to Technical Sheet No. EMP-022, EMP-023 & EMP-025. For information about the economical Series C PLUS & Series C, refer to Technical Sheet No. EMP-026 & EMP-024.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

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IDEX CORPORATION

PULSAtron Series MP Specifications

Pressure and Flow Rate Capacity

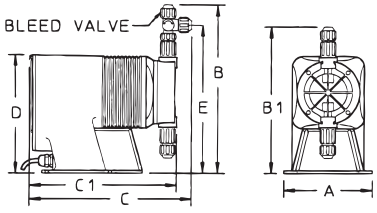
MODEL		LMK2	LMB2	LMA2	LMD3	LMB3	LMA3	LMK3	LMF4	LMD4	LMB4	LMH4	LMG4	LME4	LMK5	LMH5	LMH6	LMK7	LMH7	LMH8
Capacity	GPH	0.13	0.21	0.25	0.50	0.50	0.50	0.60	0.85	0.90	1.00	1.70	1.75	1.85	2.50	3.15	5.00	8.00	10.00	21.00
nominal	GPD	3	5	6	12	12	12	14	20	22	24	41	42	44	60	76	120	192	240	504
(max.)	LPH	0.5	0.8	0.9	1.9	1.9	1.9	2.3	3.2	3.4	3.8	6.4	6.6	7.0	9.5	11.9	18.9	30.3	37.9	79.5
Pressure	PSIG	300	250	150	250	150	100	100	250	150	100	250	150	100	150	150	100	50	35	20
(max.)	BAR	21	17	10	17	10	7	7	17	10	7	17	10	7	10	10	7	3.3	2.4	1.3
Connections	Tubing	1/4" ID X 3/8" OD 3/8" ID X 1/2" OD													3/8" ID X 1/2" OD 1/2" ID X 3/4" OD (LPH8 ONLY) FLOW VERIFICATION (See Note)					
	Piping	1/4" FNPT													1/4" FNPT 1/2" FNPT					
Reproducibiilty		+/- 2% at maximum capacity																		
Viscosity Max CPS		For viscosity up to 3000 CPS, select connection size 3, 4, B or C with 316SS ball material. Flow rate will determine connection/ball size. Greater than 3000 CPS require spring loaded ball checks. See Selection Guide for proper connection.																		
Controls		6-Station Membrane Switch																		
Status Display		High Resolution Backlit LCD																		
LED Indicator Lights, Panel Mount		Power On - Green, Pulsing - Green Flashing, Stop - Red																		
Stroke Frequency		125 Strokes Per Minute (SPM) maximum																		
External Stroke Frequency Control (Automatic)		4-20 mADC, 20-4 mADC External Pacing																		
Output Relay (Signal Level Option)		24 VDC, 10 mA																		
Output Relay (Power Option)		250 VAC, 50/60 HZ, 0.5A																		
Stroke Frequency Turn-Down Ratio		100:1																		
Stroke Length Turn-Down Ratio		10:1																		
Power Input		115 VAC/50-60 HZ/1 ph 230 VAC/50-60 HZ/1 ph																		
Average Current Draw		1.0 Amps @ 115 VAC, 0.5 Amps @ 230 VAC																		
Peak Input Power		300 Watts																		
Average Input Power @ max SPM		130 Watts																		

Note: Flow Verification: Available on K3, B4 and E4 with connection code 1; H6, K7 and H7 with connection code H; 1/4" ID x 3/8" OD only.

Liquid End Materials

Series	Pump Head	Diaphragm	Check Valves		Fittings	Bleed Valves	Injection Valve Assembly Foot Valve Assebly	Tubing
			Seats/O-Rings	Balls				
MP	GFPPL PVC PDVF 316SS	PTFE-faced Hypalon-backed	PTFE, Hypalon, Viton	Ceramic, PTFE, 316 SS Alloy C	GFPPL PVC PVDF	Same as fitting and check valve selected, except 316 SS	Same as fitting and check valve selected	Clear PVC White PE

Dimensions



Series MP Dimensions (inches)																		
Model No.	A	B	B1	C	C1	D	E	Shpg Wt	Model No.	A	B	B1	C	C1	D	E	Shpg Wt
LMA2	5.4	10.3	-	10.8	-	7.5	8.9	13	LMH4	6.2	10.9	-	11.2	-	8.2	9.5	21
LMA3	5.4	10.6	-	10.7	-	7.5	9.2	13	LMH5	6.2	11.3	-	11.2	-	8.2	9.9	21
LMB2	5.4	10.3	-	10.8	-	7.5	8.9	13	LMH6	6.2	11.3	-	11.2	-	8.2	9.9	21
LMB3	5.4	10.6	-	10.7	-	7.5	9.2	13	LMH7	6.1	11.7	-	11.2	-	8.2	10.3	21
LMB4	5.4	10.6	-	10.7	-	7.5	9.2	13	LMH8*	6.1	-	10.9	-	10.6	8.2	-	25
LMD3	5.4	10.6	-	11.2	-	7.5	9.2	15	LMK2	5.4	10.3	-	10.8	-	7.5	8.9	13
LMD4	5.4	10.6	-	11.2	-	7.5	9.2	15	LMK3	5.4	10.6	-	10.7	-	7.5	9.2	13
LME4	5.4	10.6	-	11.2	-	7.5	9.2	15	LMK5	5.4	10.9	-	11.7	-	7.5	9.5	18
LMF4	5.4	10.6	-	11.7	-	7.5	9.2	18	LMK7	6.1	11.7	-	11.2	-	8.2	10.3	21
LMG4	5.4	10.6	-	11.7	-	7.5	9.2	18									

NOTE: Inches X 2.54 = cm
* the LMH8 is designed without a bleed valve available

PULSAtron Series MP Selection Guide

LM_ _ _ _ _ - _ _ _ _ - _ _ _

MODELS:	$ 923	**K2**	= 0.13 gph / 3 gpd (0.5 lph) max pres.: 300 PSI (21 BAR)
	$ 923	**B2**	= 0.21 gph / 5 gpd (0.8 lph) max pres.: 250 PSI (17 BAR)
	$ 1,005	**D3**	= 0.50 gph / 12 gpd (1.9 lph) max pres.: 250 PSI (17 BAR)
	$ 1,294	**F4**	= 0.85 gph / 20 gpd (3.2 lph) max pres.: 250 PSI (17 BAR)
	$ 1,609	**H4**	= 1.70 gph / 41 gpd (6.4 lph) max pres.: 250 PSI (17 BAR)
	$ 919	**A2**	= 0.25 gph / 6 gpd (0.9 lph) max pres.: 150 PSI (10 BAR)
	$ 949	**B3**	= 0.50 gph / 12 gpd (1.9 lph) max pres.: 150 PSI (10 BAR)
	$ 1,047	**D4**	= 0.90 gph / 22 gpd (3.4 lph) max pres.: 150 PSI (10 BAR)
	$ 1,353	**G4**	= 1.75 gph / 42 gpd (6.6 lph) max pres.: 150 PSI (10 BAR)
	$ 1,353	**K5**	= 2.50 gph / 60 gpd (9.5 lph) max pres.: 150 PSI (10 BAR)
	$ 1,640	**H5**	= 3.15 gph / 76 gpd (11.9 lph) max pres.: 150 PSI (10 BAR)
	$ 900	**A3**	= 0.50 gph / 12 gpd (1.9 lph) max pres.: 100 PSI (7 BAR)
	$ 900	**K3**	= 0.60 gph / 14 gpd (2.3 lph) max pres.: 100 PSI (7 BAR)
	$ 954	**B4**	= 1.00 gph / 24 gpd (3.8 lph) max pres.: 100 PSI (7 BAR)
	$ 1,074	**E4**	= 1.85 gph / 44 gpd (7.0 lph) max pres.: 100 PSI (7 BAR)
	$ 1,469	**H6**	= 5.00 gph / 120 gpd (18.9 lph) max pres.: 100 PSI (7 BAR)
	$ 1,573	**K7**	= 8.00 gph / 192 gpd (30.3 lph) max pres.: 50 PSI (3.3 BAR)
	$ 1,600	**H7**	= 10.0 gph / 240 gpd (37.9 lph) max pres.: 35 PSI (2.4 BAR)
	$ 2,269	**H8**	= 21.0 gph / 504 gpd (79.5 lph) max pres.: 20 PSI (1.3 BAR)

CONTROLS:	N/C	**T**	= Signal Level Output Relay
	$ 43	**K**	= Power Level Output Relay

ELECTRICAL:	N/C	**A**	= 115 Volt / 50-60Hz
	N/C	**1**	= 115 Volt / 50-60Hz (without agency approvals)
	$ 22	**B**	= 230 Volt / 50-60Hz / 1ph with 6' (1.8m) 3-wire US Plug
	$ 22	**2**	= 230 Volt / 50-60Hz (without agency approvals)

LIQUID END MATERIALS: Pump Head & Fittings/Seats & O-rings/Balls	$ 13	**PTC**	= GFPPL / TFE / Ceramic
	$ 68	**KTC**	= PVDF / TFE / Ceramic (not available on H8)
	N/C	**VHC**	= PVC / Hypalon / Ceramic (not available on H7, H8, K7)
	$ 13	**VTC**	= PVC / TFE / Ceramic (models <= 150 psi excluding H7, H8, K7)
	$ 13	**WTC**	= PVC / TFE / Ceramic (models > 150 psi and H7, H8, K7)
	$ 7	**VVC**	= PVC / Viton / Ceramic (not available on H8)
	$ 248	**ATS**	= 316 S.S. / TFE / 316 S.S. (must use FNPT piping connection) (not available on H8)

See page 6 for additional liquid end materials.

CONNECTION SIZES:	N/C	**1**	= Tubing .25" I.D. x .38" O.D. / .25" Ball, 0 - 1.88 GPH
	N/C	**3**	= Tubing .38" I.D. x .50" O.D. / .38" Ball, 1.63 - 10 GPH
	$ 108	**9**	= Degas Head: .25" I.D. x .38" O.D. / 0-1.83 GPH
	N/C	**J**	= Tubing, .25" I.D. x .38" O.D. / .19 Ball; 0 - 1.04 GPH
		METRIC:	
	N/C	**M**	= G 1/2 A Threads, .38" Ball, 6.15 - 37.85 LPH
	N/C	**R**	= G 1/2 A Threads, .25" Ball, 0 - 7.10 LPH
	N/C	**Y**	= 6 x 12mm, .25" Ball, 0 - 7.10 LPH

Please Refer to page 7 for additional connection sizes. All pumps with tubing connections come with the following items (except for LMH8, LPH8, LEH8, HV series pumps and pumps >150PSI in PVC): 4' Suction, 4' Return, 8' dischage tubing, footvalve/strainer assy., injection valve and bleed valve.

SUFFIX CODES:	N/C	**XXX**	= No Additional Options
	$ 117	**130**	= PVDF Tubing
	$ 74	**500**	= Five Function Valve
	$ 169	**520**	= Five Function Degas Valve
	$ 435	**FVE**	= Flow Verification / EPDM (not available on pumps greater than 100 psi)
	$ 435	**FVV**	= Flow Verification / Viton (not available on pumps greater than 100 psi)
	$ 200	**ITS**	= 15 gal. ITS Tank System (ITS Tank not available on LM, LP, LT, and LE: H4, H5, H6, H7, H8, J7, K7 models)
	N/C	**CZXXX**	= CE Approval (5 digits used for this suffix code)

See Spec sheet for additional details

A completed model number should look like 'LMB3TA-PTC1-XXX'

CHEM-TECH

PULSAFEEDER

XP SERIES

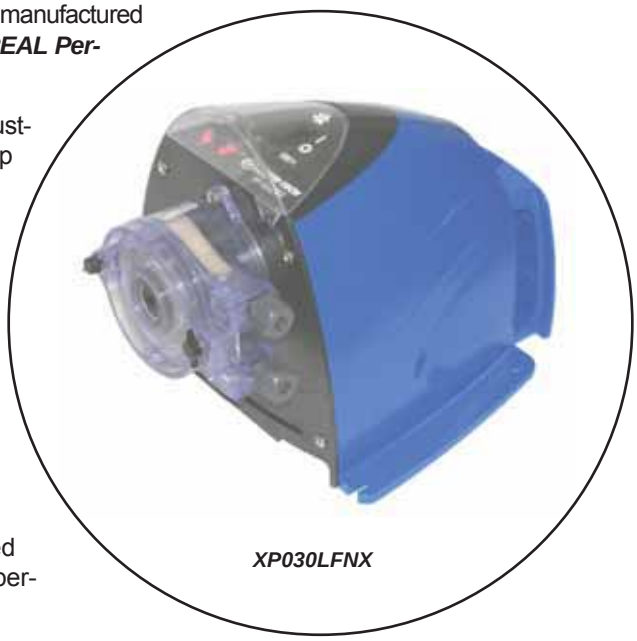
The ***Chem-Tech XP Series*** with peristaltic technology delivers worry-free dosing in a modern design. Each and every component of the ***XP Series*** is designed and manufactured for optimum reliability and durability for ***REAL Performance***.

The electronic timing circuit in the adjustable 'A' Models provides ***reliable*** pump control, without relying on mechanical adjustment components that wear out over time.

The intuitive interface and controls provide ***easy*** operation and the peristaltic design is virtually maintenance-free.

Tailor-made for the water conditioning market, the ***XP Series*** offer ***affordable*** solutions in both initial cost and operation.

A rugged gear train and computer-aided peristaltic design ensure ***long-lasting*** performance.



XP030LFNX

Easy tube change-out

Inherently Degassing

Extended Tube Life

Self Priming

Rugged Gear Train

Adjustable Model

Pulse Input Model

Flow Switch Activated Model

Duplex Heads

Fixed Models – Simple and straight-forward fixed-rate pumps for applications where economy and ease-of-use are required. With 5 tube sizes to choose from, the F Models can deliver up to 80 USgpd and pressures up to 125 psi.

Adjustable Models – Built upon the solid F Model platform, the A Models incorporate an electronic timer module to provide a 20:1 turndown control for enhanced flexibility.

Pulse Input Models – These pumps feature an internal timer which accepts pulses from a contacting head water meter.They are adjustable to run the pumps from .1 to 1 second, .2 to 10 seconds or from 1.0 to 60 seconds per pulse.

Flow Switch Activated Models – This model is activated when the flow rate through the included 3/4" NPT flow switch reaches 1 GPM. The pump is deactivated when the flow rate is less than 1 GPM.

Dry Contact Input Models – The pump activates upon closure of a dry contact switch, and deactivates when opened. The pump is equipped with a 6' lead for connection to the switch, supplied by the customer.

Tubing Materials – Our standard Norprene tube material is available in Low Pressure ratings which offer extended tubing life, and High Pressure ratings to meet demanding system requirements. The optional Fluran material tubing offers greater chemical resistance; contact Technical Service for compatibility.

Duplex Head Models – These models utilize two pump heads to deliver twice the flow, or the rated flow of two different chemicals simultaneously.

Chem-Tech XP Series Selection Guide

XP___ – – – –

	Pump Size	Flow	Pressure Rating - PSI (Bar) Single Head Options 'H' Tube	'L' Tube	'F' Tube	Duplex 'L' Tube	Tube Size	Motor Speed (RPM)
MODELS:	XP004	4 GPD (0.6 LPH)	125 (8.6)	80 (5.5)	60 (4.1)	80 (5.5)	2	30
	XP007	7 GPD (1.1 LPH)						50
	XP009	9 GPD (1.4 LPH)	110 (7.6)	70 (4.8)	50 (3.4)	70 (4.8)	3	30
	XP015	15 GPD (2.4 LPH)						50
	XP014	14 GPD (2.3 LPH)	100 (5.9)	50 (3.4)	40 (2.8)	50 (3.4)	4	30
	XP023	23 GPD (3.6 LPH)						50
	XP030	30 GPD (4.7 LPH)	80 (5.5)	40 (2.8)		40 (2.8)	6	30
	XP050	50 GPD (7.9 LPH)						50
	XP048	48 GPD (7.5 LPH)		25 (1.7)		25 (1.7)	8	30
	XP080	80 GPD (12.6 LPH)						50

ELECTRICAL:	L	115V, 60Hz
	H	230V, 50/60Hz
	R	230V, 50Hz with Grounded Right Angle European Plug
	Note: 50Hz pumps will produce 5/6 of the rated flow	

DRIVE:	F	Fixed Rate, On / Off Only
	A	Adjustable 20:1 Turndown, On / Off with Current Interrupter Timer
	G	Duplex Head - Fixed Rate, On / Off Only, 'L' Tube
	B	Duplex Head - Adjustable, On / Off with Current Interrupter Timer, 'L' Tube
	1	Pulse Input, .1 to 1 Second Timer
	2	Pulse Input, .2 to 10 Second Timer
	3	Pulse Input, 1 to 60 Second Timer
	4	Dry Contact Input - Fixed Rate Pump
	5	Dry Contact Input - Adjustable Pump
	6	Flow Switch Activated with 3/4" NPT Flow Switch - Fixed Rate Pump
	7	Flow Switch Activated with 3/4" NPT Flow Switch - Adjustable Rate Pump
	8	7 Day - 8 Event Electronic Timer - Fixed Rate Pump

TUBING:	L	Low Pressure Norprene with 1/4" Tube Fittings
	H	High Pressure Norprene with 1/4" Tube Fittings
	3	Low Pressure Norprene with 3/8" Tube Fittings
	4	High Pressure Norprene with 3/8" Tube Fittings
	F	Fluran, Acid resistant tubing with 1/4" Tube Fittings (Does not include strainer & injector accessories)
	G	Fluran, Acid resistant tubing with 3/8" Tube Fittings (Does not include strainer & injector accessories)

SYSTEM:	X	Pump Only
	1	15 Gallon Tank System
	3	35 Gallon Tank System
	T	15 Gallon ITS System

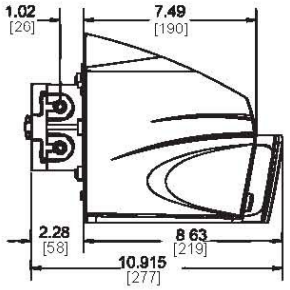
A completed model should look like "XP030LFLX"

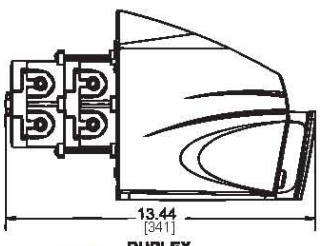
Specifications		Optional
Max. Viscosity	300 Cps	
Enclosure	NEMA 3R / IP31 (In Horizontal Position)	
Temperature Limitations	104ºF / 40ºC max.	
Electrical Requirements	1/6 HP, 115V / 60 Hz	230V / 60Hz or 230V / 50Hz
Shipping Weight	8 lbs. / 3.63kg.	

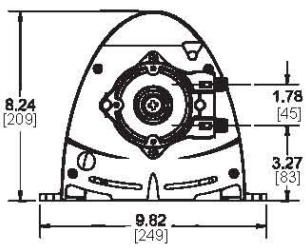
* Specifications subject to change without notice

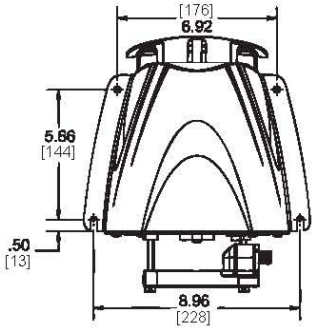
Dimensions

*All dimensions expressed as inches [mm]









DUPLEX

An ISO Certified Company

PULSAFEEDER

IDEX FLUID & METERING

Chem-Tech XP Series Selection Guide

XP_ _ _ – – – –

	Price	Pump Size	Flow	Pressure Rating - PSI (Bar) Single Head Options 'H' Tube	'L' Tube	'F' Tube	Duplex 'L' Tube	Tube Size	Motor Speed (RPM)
MODELS:	$398	**XP004**	4 GPD (0.6 LPH)	125 (8.6)	80 (5.5)	60 (4.1)	80 (5.5)	2	30
		XP007	7 GPD (1.1 LPH)						50
		XP009	9 GPD (1.4 LPH)	110 (7.6)	70 (4.8)	50 (3.4)	70 (4.8)	3	30
		XP015	15 GPD (2.4 LPH)						50
		XP014	14 GPD (2.3 LPH)	100 (5.9)	50 (3.4)	40 (2.8)	50 (3.4)	4	30
		XP023	23 GPD (3.6 LPH)						50
		XP030	30 GPD (4.7 LPH)	80 (5.5)	40 (2.8)		40 (2.8)	6	30
		XP050	50 GPD (7.9 LPH)						50
		XP048	48 GPD (7.5 LPH)		25 (1.7)		25 (1.7)	8	30
		XP080	80 GPD (12.6 LPH)						50

	Price		
ELECTRICAL:	N/C	**L**	115V, 60Hz
	N/C	**H**	230V, 50/60Hz
	$20	**R**	230V, 50Hzwith Grounded Right Angle European Plug
	Note: 50Hz pumps will produce 5/6 of the rated flow		

DRIVE:	N/C	**F**	Fixed Rate, On / Off Only
	$177	**A**	Adjustable 20:1 Turndown, On / Off with Current Interrupter Timer
	$263	**G**	Duplex Head - Fixed Rate, On / Off Only, 'L' Tube
	$440	**B**	Duplex Head - Adjustable, On / Off with Current Interrupter Timer, 'L' Tube
	$205	**1**	Pulse Input, .1 to 1 Second Timer
	$205	**2**	Pulse Input, .2 to 10 Second Timer
	$205	**3**	Pulse Input, 1 to 60 Second Timer
	$205	**4**	Dry Contact Input - Fixed Rate Pump
	$205	**5**	Dry Contact Input - Adjustable Pump
	$288	**6**	Flow Switch Activated with 3/4" NPT Flow Switch - Fixed Rate Pump
	$465	**7**	Flow Switch Activated with 3/4" NPT Flow Switch - Adjustable Rate Pump
	$120	**8**	7 Day - 8 Event Electronic Timer - Fixed Rate Pump

TUBING:	N/C	**L**	Low Pressure Norprene with 1/4" Tube Fittings
	N/C	**H**	High Pressure Norprene with 1/4" Tube Fittings
	$36	**3**	Low Pressure Norprene with 3/8" Tube Fittings
	$36	**4**	High Pressure Norprene with 3/8" Tube Fittings
	$53	**F**	Fluran, Acid resistant tubing with 1/4" Tube Fittings (Doesnot include strainer & injector accessories)
	$89	**G**	Fluran, Acid resistant tubing with 3/8" Tube Fittings (Doesnot include strainer & injector accessories)

SYSTEM:	N/C	**X**	Pump Only
	$171	**1**	15 Gallon Tank System
	$269	**3**	35 Gallon Tank System
	$183	**T**	15 Gallon ITS System

A completed model should look like "XP030LFLX"

CHEM-TECH

PULSAFEEDER

XPV SERIES

Variable Speed

Fully Scalable 4-20mA Input

Hall Effect Input

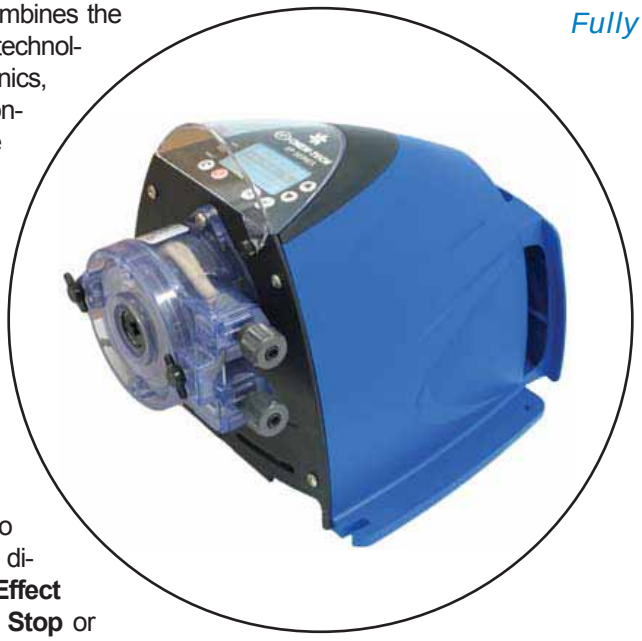
Flow Totalization

Cycle Timer

Daily Timer

LCD Display

Contacting Head
Water Meter Input



The Chem-Tech XPV Series pump combines the best in variable speed peristaltic pump technology with state of the art control electronics, providing unparalleled performance, control and value. The XPV represents the leading edge of microprocessor performance management, that allows a variety of choices of input signal types, and onboard timer programs to customize this pump to any application. Of course, this pump is as rugged and reliable as it's xed speed siblings, the XPF and the XPA.

The electronic management system matches the **Variable Speed** motor to the real-time dosing requirements as directed by either a **4-20mA** signal, **Hall Effect** or **Dry Contact** pulse input, **External Stop** or manual operation in **Fixed Speed** mode. The pump can even be programmed with a **Cycle Timer** to run automatically at set intervals, or with a **Daily Timer** to add chemical based on days of the week.

The large **LCD Display** allows for simple, intuitive program selections, and clearly displays operating parameters. The **Flow Totalization** menu accurately reports the volume of chemical pumped at the touch of a button.

Tubing Materials - Our standard Norprene tube material is available in Low Pressure ratings which offer extended tubing life, and High Pressure ratings to meet demanding system requirements. The optional Fluran material tubing offers greater chemical resistance; contact Technical Service for compatibility.

Duplex Head Models -These models utilize two pump heads to deliver twice the ow, or the rated ow of two different chemicals simultaneously.

Chem-Tech XPV Series Selection Guide

XP_ _ _ – – – – –

	Pump Size	Flow	Pressure Rating - PSI (Bar) 'H' Tube	'L' Tube	'F' Tube	Tube Size	Speed (RPM)
MODELS:	XP008	8 GPD (1.3 LPH)	125 (8.6)	80 (5.5)	60 (4.1)	2	65 Max.
	XP017	17 GPD (2.7 LPH)	110 (7.6)	70 (4.8)	50 (3.4)	3	
	XP033	33 GPD (5.2 LPH)	100 (5.9)	50 (3.4)	40 (2.8)	4	
	XP055	55 GPD (8.7 LPH)	80 (5.5)	40 (2.8)		6	60 Max.
	XP100	100 GPD (15.8 LPH)		25 (1.7)		8	

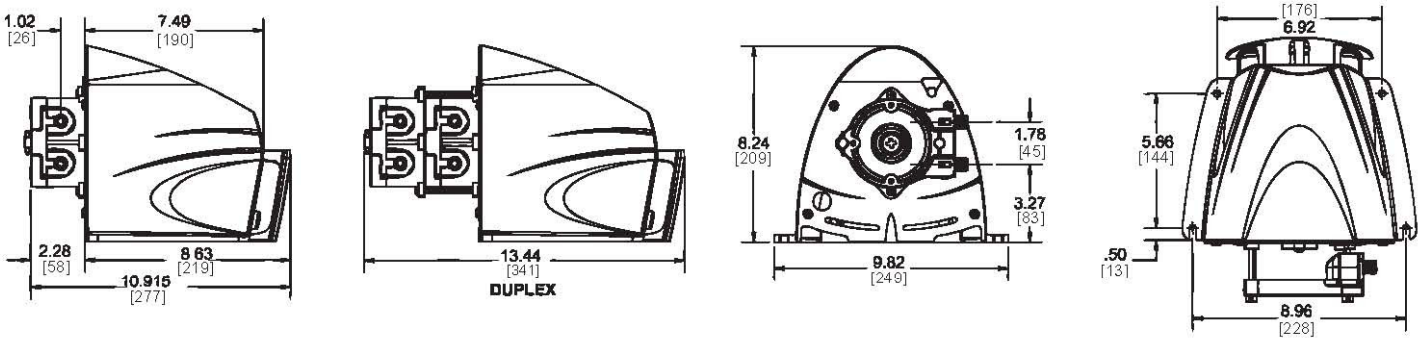
ELECTRICAL:	L	115V, 60Hz
	H	230V, 60/50Hz
	R	230V, 60/50Hz with Grounded Right Angle European Plug
DRIVE:	V	Variable Input Control with I/O Cable
	G	Duplex Head - Low Pressure Norprene with 1/4" Tube Fitting
TUBING:	L	Low Pressure Norprene with 1/4" Tube Fittings
	H	High Pressure Norprene with 1/4" Tube Fittings
	3	Low Pressure Norprene with 3/8" Tube Fittings
	4	High Pressure Norprene with 3/8" Tube Fittings
	F	Fluran, Acid resistant tubing with 1/4" Tube Fittings (Does not include strainer & injector accessories)
	G	Fluran, Acid resistant tubing with 3/8" Tube Fittings (Does not include strainer & injector accessories)
SYSTEM:	X	Pump Only
	1	15 Gallon Tank System
	3	35 Gallon Tank System
	T	15 Gallon ITS System

A completed model should look like "XP033LVLX"

Specifications		Optional
Turndown Ratio	100:1	
Max. Viscosity	300 Cps	
Enclosure	NEMA 3R / IP31 (In Horizontal Position)	
Temperature Limitations	104°F / 40°C max.	
Electrical Requirements	115V / 60 Hz	230V / 50/60Hz
Shipping Weight	8 lbs. / 3.63kg.	

* Specifications subject to change without notice

Dimensions *All dimensions expressed as inches [mm]



An ISO Certified Company

PULSAFEEDER

IDEX FLUID & METERING

Chem-Tech XPV Series Selection Guide (Code "R")

XP_ _ _ – – – –

	Price	Pump Size	Flow	Pressure Rating - PSI (Bar)				Tube Size	Speed (RPM)
				Single Head Options			Duplex		
				'H' Tube	'L' Tube	'F' Tube	'L' Tube		
MODELS:	$866	**XP008**	8 GPD (1.3 LPH)	125 (8.6)	80 (5.5)	60 (4.1)	80 (5.5)	2	65 Max.
		XP017	17 GPD (2.7 LPH)	110 (7.6)	70 (4.8)	50 (3.4)	70 (4.8)	3	
		XP033	33 GPD (5.2 LPH)	100 (5.9)	50 (3.4)	40 (2.8)	50 (3.4)	4	
		XP055	55 GPD (8.7 LPH)	80 (5.5)	40 (2.8)		40 (2.8)	6	60 Max.
		XP100	100 GPD (15.8 LPH)		25 (1.7)		25 (1.7)	8	

ELECTRICAL:	N/C	**L**	115V, 60Hz
	N/C	**H**	230V, 60/50Hz
	$25	**R**	230V, 60/50Hz with Grounded Right Angle European Plug
DRIVE:	N/C	**V**	Variable Input Control with I/O Cable
	$188	**G**	Duplex Head - Low Pressure Norprene with 1/4" Tube Fitting
TUBING:	N/C	**L**	Low Pressure Norprene with 1/4" Tube Fittings
	N/C	**H**	High Pressure Norprene with 1/4" Tube Fittings
	$20	**3**	Low Pressure Norprene with 3/8" Tube Fittings
	$20	**4**	High Pressure Norprene with 3/8" Tube Fittings
	$29	**F**	Fluran, Acid resistant tubing with 1/4" Tube Fittings (Doesnot include strainer & injector accessories)
	$49	**G**	Fluran, Acid resistant tubing with 3/8" Tube Fittings (Doesnot include strainer & injector accessories)
SYSTEM:	N/C	**X**	Pump Only
	$123	**1**	15 Gallon Tank System
	$193	**3**	35 Gallon Tank System
	$131	**T**	15 Gallon ITS System

A completed model should look like "XP033LVLX"

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 warranty 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 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 preferred method of return. If you choose to re-pack the returned items, any damage that results in shipping will be billed to the repair/evaluation purchase order. Receipt and use of this form does not guarantee full or partial credit will be issued.

All returns should be sent to the attention of the TECHNICAL SERVICE DEPARTMENT. When returning any item, be sure to include the RGA number and a complete DESCRIPTION of what appears to be wrong. Include the name of the contact person, their telephone number and a return shipping address. All replacements will be sent to you via UPS at no charge.

FRIEGHT 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. We will forward such information to the carrier specified. All shipments are ex works 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 manufacture items will be accepted for restocking. Custom products or Engineered Systems will not be accepted. All parts returned for re-stock credit must be received at our facility in a salable condition. Any visual or physical damage that has occurred in shipping or during prior installation will be billed to the repair/evaluation purchase order.

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

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For more information:
Call toll free in the USA (800) 228-0839 or visit www.lakewoodinstruments.com

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USA
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(414) 355-3508 Fax

NOTES:	
1. This price list supersedes all previous price lists.	4. Prices are subject to change without notice.
2. Prices include standard packaging for air, overland USA truck, or containerized ocean freight.	5. All prices in U.S. dollars (USD$).
3. Prices are Ex-Works, Milwaukee, Wisconsin 53224 USA	6. Price List effective January 1, 2011.

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