Contacting Conductivity Sensors

Contacting conductivity sensors measure conductivity of a solution via electrodes. They are ideal for use in cooling towers and boilers, reverse osmosis equipment, and other non-oily applications. A variety of cell constants are available to handle a range of conductivities. They are available in several different configurations:

Cooling Tower Contacting Conductivity Sensors

These cell constant 1.0 sensors are designed for cooling towers with water up to 30,000 µS/cm (range varies with solution temperature, see next page). Lower pressure (up to 150 PSI, 10 bar) polypropylene sensors are available with graphite or stainless steel electrodes, and may be installed inline or submersion. High pressure (up to 300 PSI, 20 bar) inline sensors are constructed from stainless steel and PEEK.

WebMaster controllers require active sensors. These sensors contain electronics to convert the sensor signal to a voltage that these controllers can read. W400 series controllers use passive sensors that have cables dressed specifically for them. W100, W900 and W600 series controller's passive sensors are dressed differently.

Performance specifications vary with the type of controller, refer to the controller brochure. Typical cooling tower temperatures are 0 to 70°C, 32 to 158°F.

Boiler Contacting Conductivity Sensors

These cell constant 1.0 sensors are designed for boilers with water up to 30,000 µS/cm (range varies with solution temperature, see next page) and pressures up to 250 PSI, 16.7 bar). These inline sensors are constructed from stainless steel and PEEK.

For the W100, W900 and W600 series controllers, a cell constant 10.0 sensor is available designed for boilers with water up to 300,000 µS/cm (range varies with solution temperature, see below).

WebMaster controllers require active sensors. These sensors contain electronics to convert the sensor signal to a voltage that these controllers can read. W400, W600, W900 and W100 series controllers use passive sensors.

Performance specifications vary with the type of controller, refer to the controller brochure. Typical boiler temperatures are 0 to 205°C, 32 to 401°F.

Electrodeless Conductivity

Electrodeless conductivity sensors measure conductivity of a solution utilizing encapsulated, non-contacting, toroidal technology.

They may be installed in a variety of very harsh chemical control applications, including oily cleaner baths, chromates, rinse tanks, fume scrubbers and other concentrated chemicals up to a conductivity of 1000 mS/cm (range varies with solution temperature, see below). The non-contacting, toroidal sensor technology is immune to thin coatings and the contamination and calibration problems that direct contacting sensors are prone to.

- CPVC or PEEK construction
- In-line or submersion

W400 and WebMaster controllers require active sensors. These sensors contain electronics to convert the sensor signal to a voltage that these controllers can read. Each sensor is specific for the range of conductivity that it can detect (range varies with solution temperature, see below).

Temperature °C	0	10	15	20	25	30	35	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
Range Multiplier %	181.3	139.9	124.2	111.1	100.0	90.6	82.5	75.5	64.3	55.6	48.9	43.5	39.2	35.7	32.8	30.4	28.5	26.9	25.5	24.4	23.6	22.9

Note: Conductivity ranges above apply at 25°C. At higher temperatures, the range is reduced per the range multiplier chart.

Specifications and Ordering Information

Applications: Cooling Tower | Cooling Tower / General | General

COMPATIBLE CONTROLLERS	P/N	Description	Cond Range	Temp Range	Pressure Rating	Materials	Process Connections	Cable Length	Cell Constant	Temp. Element
WCNW1,WCTW1, WBLW1W1, W600, W900	191638-03	Sensor, Electrodeless Conductivity, CPVC	500 µS-2000 mS	20-180°F†	0-150 PSI†	CPVC	1" NPTM submersion, 2" NPTM inline	3 ft (Max 120 ft)	6.286	RTD, PT1000
	191638-20							20 ft (Max 120 ft)		
	191639-03	Sensor, Electrodeless Conductivity, PEEK	500 µS-2000 mS	32-190°F	0-140 PSI	PEEK	1" NPTM submersion, 2" NPTM inline	3 ft (Max 120 ft)	6.286	RTD, PT1000
	191639-20							20 ft (Max 120 ft)		
WebMaster, WEC/WDEC4	191190	Sensor, Electrodeless Conductivity, CPVC, Active	0.1-1 mS	20-158°F†	0-150 PSI†	CPVC	1" NPTM submersion, 2" NPTM inline	20 ft (Max 250 ft)	N/A	Thermistor, 100K
	190988	Sensor, Electrodeless Conductivity, CPVC, Active	1-10 mS	20-158°F†	0-150 PSI†	CPVC	1" NPTM submersion, 2" NPTM inline	20 ft (Max 250 ft)	N/A	Thermistor, 100K
	191108	Sensor, Electrodeless Conductivity, CPVC, Active	10-100 mS	20-158°F†	0-150 PSI†	CPVC	1" NPTM submersion, 2" NPTM inline	20 ft (Max 250 ft)	N/A	Thermistor, 100K
	191113	Sensor, Electrodeless Conductivity, CPVC, Active	100-1000 mS	20-158°F†	0-150 PSI†	CPVC	1" NPTM submersion, 2" NPTM inline	20 ft (Max 250 ft)	N/A	Thermistor, 100K
	191191	Sensor, Electrodeless Conductivity, PEEK, Active	0.1-1 mS	20-190°F	0-250 PSI	PEEK	1" NPTM submersion, 2" NPTM inline	20 ft (Max 250 ft)	N/A	Thermistor, 100K
	191192	Sensor, Electrodeless Conductivity, PEEK, Active	1-10 mS	20-190°F	0-250 PSI	PEEK	1" NPTM submersion, 2" NPTM inline	20 ft (Max 250 ft)	N/A	Thermistor, 100K
	191193	Sensor, Electrodeless Conductivity, PEEK, Active	10-100 mS	20-190°F	0-250 PSI	PEEK	1" NPTM submersion, 2" NPTM inline	20 ft (Max 250 ft)	N/A	Thermistor, 100K
	191194	Sensor, Electrodeless Conductivity, PEEK, Active	100-1000 mS	20-190°F	0-250 PSI	PEEK	1" NPTM submersion, 2" NPTM inline	20 ft (Max 250 ft)	N/A	Thermistor, 100K
*	191474	Sensor, Electrodeless Conductivity, CPVC, Active	1-10 mS	20-158°F†	0-150 PSI†	CPVC	1" NPTM submersion, 2" NPTM inline	20 ft (Max 250 ft)	N/A	Thermistor, 10K
WEC3	102730	Sensor, Electrodeless Conductivity, PEEK, Donut shape	500 µS-1000 mS	20-250°F	-15-250 PSI	PEEK	3/4" NPTM submersion, 2" NPTM inline	20 ft (Max 120 ft)	N/A	Thermistor, 100K
	190954	Sensor, Electrodeless Conductivity, CPVC	500 µS-1000 mS	20-180°F†	0-150 PSI†	CPVC	1" NPTM submersion, 2" NPTM inline	20 ft (Max 120 ft)	N/A	Thermistor, 100K
	191145	Sensor, Electrodeless Conductivity, PEEK	500 µS-1000 mS	20-250°F	-15-250 PSI	PEEK	1" NPTM submersion, 2" NPTM inline	20 ft (Max 120 ft)	N/A	Thermistor, 100K

* Compatible with WECT/WEDT4

† See graph on page 4

W100/W600/W900 Contacting Conductivity

General Purpose Contacting Conductivity Sensors (for W100, W900 and W600 Series Controllers ONLY)

These passive sensors are available in a variety of cell constants for use in conductivities up to 300,000 µS/cm (range varies with solution temperature, see below). Typical applications include RO systems and boiler condensate monitoring. They may be mounted inline or submersion, using either polypropylene (0-100 °C, 100 PSI/6.9 bar) or stainless steel (0-120 °C, 200 PSI/13.8 bar) ½" NPT mounting fittings. These inline sensors are constructed from stainless steel and PTFE with EPR o-rings.

Temperature °C	0	10	15	20	25	30	35	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
Range Multiplier %	181.3	139.9	124.2	111.1	100.0	90.6	82.5	75.5	64.3	55.6	48.9	43.5	39.2	35.7	32.8	30.4	28.5	26.9	25.5	24.4	23.6	22.9

Note: Conductivity ranges above apply at 25°C. At higher temperatures, the range is reduced per the range multiplier chart.

Specifications and Ordering Information

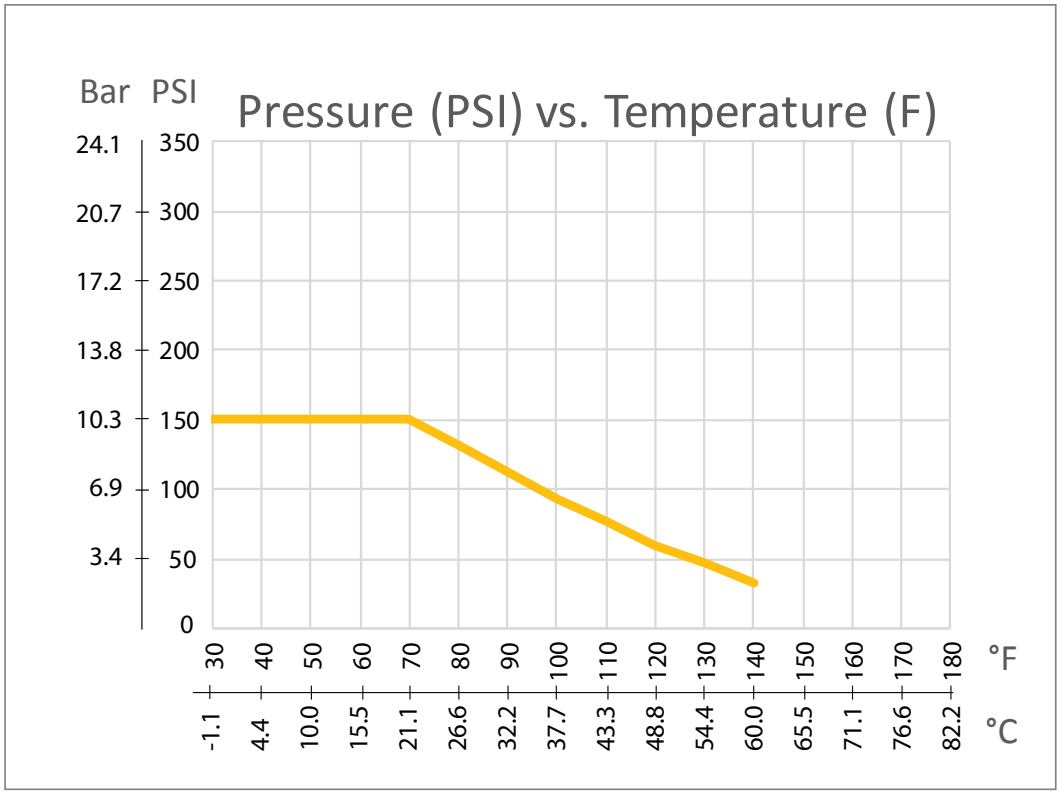
Applications: Cooling Tower | Boiler | Condensate / General | General

COMPATIBLE CONTROLLERS	P/N	Description	Cond Range[1]	Temp Range	Pressure Rating	Materials	Process Connections	Cable Length (Max 250 ft)	Cell Constant	Temp. Element
W600 W900 WCTW1 and WCT6	191646-03	Sensor, Contacting Conductivity, Tower, Graphite	0-30 mS	32-140°F†	0-150 PSI†	PP, Graphite	1" NPTM submersion, 3/4" NPTF inline	3 ft	1.0	Thermistor, 10K
	191646-20							20 ft		
	191693-10	Sensor, Contacting Conductivity, Tower, High Pressure	0-30 mS	32-140°F	0-300 PSI	316SS, PEEK	3/4" NPTM	10 ft	1.0	Thermistor, 10K
	191647-03	Sensor, Contacting Conductivity, Tower, 316 SS Electrodes	0-30 mS	32-140°F†	0-150 PSI†	PP, 316SS	1" NPTM submersion, 3/4" NPTF inline	3 ft	1.0	Thermistor, 10K
	191647-20							20 ft		
WCT4/WDT4	190986-05	Sensor, Contacting Conductivity, Tower, Graphite	0-30 mS	32-140°F†	0-150 PSI†	PP, Graphite	1" NPTM submersion, 3/4" NPTF inline	5 ft	1.0	Thermistor, 10K
	190986							20 ft		
	191097-05	Sensor, Contacting Conductivity, Tower, 316 SS Electrodes	0-30 mS	32-140°F†	0-150 PSI†	PP, 316SS	1" NPTM submersion, 3/4" NPTF inline	5 ft	1.0	Thermistor, 10K
	191097							20 ft		
*	103061	Sensor, Contacting Conductivity, Tower, High Pressure	0-30 mS	32-140°F	0-300 PSI	316SS, PEEK	3/4" NPTM	6 ft	1.0	Thermistor, 10K
WEBMASTER	190984-05	Sensor, Contacting Conductivity, Tower, Graphite, Active	0-30 mS	32-140°F†	0-150 PSI†	PP, Graphite	1" NPTM submersion, 3/4" NPTF inline	5 ft	1.0	Thermistor, 10K
	190984							20 ft		
	191091	Sensor, Contacting Conductivity, Tower, High Pressure, Active, w/J-Box	0-30 mS	32-140°F	0-300 PSI	316SS, PEEK	3/4" NPTM	N/A	1.0	Thermistor, 10K
	191096-05	Sensor, Contacting Conductivity, Tower, 316SS Electrode, Active	0-30 mS	32-140°F†	0-150 PSI†	PP, 316SS	1" NPTM submersion, 3/4" NPTF inline	5 ft	1.0	Thermistor, 10K
	191096							20 ft		
	191087	Sensor, Contacting Conductivity, Boiler, ATC, Active, w/J-Box	0-30 mS	32-401°F	0-250 PSI	316SS, PEEK	3/4" NPTM	N/A	1.0	RTD, PT1000
*	190768	Sensor, Contacting Conductivity, Boiler, ATC	0-30 mS	32-401°F	0-250 PSI	316SS, PEEK	3/4" NPTM	6 inches	1.0	RTD, PT1000
WBL4	190762	Sensor, Contacting Conductivity, Boiler, ATC, w/J-Box	0-30 mS	32-401°F	0-250 PSI	316SS, PEEK	3/4" NPTM	N/A	1.0	RTD, PT1000
*	190762-NT	Sensor, Contacting Conductivity, Boiler, No ATC, w/J-Box	0-30 mS	32-401°F	0-250 PSI	316SS, PEEK	3/4" NPTM	N/A	1.0	N/A
	103262	Sensor, Contacting Conductivity, Boiler, No ATC	0-30 mS	32-401°F	0-250 PSI	316SS, PEEK	3/4" NPTM	6 inches	1.0	N/A
W900 W600 WBLW1	191694	Sensor, Contacting Conductivity, Boiler, ATC	0-30 mS	32-401°F	0-250 PSI	316SS, PEEK	3/4" NPTM	6 inches	1.0	RTD, PT1000
	191695	Sensor, Contacting Conductivity, Boiler, No ATC	0-30 mS	32-401°F	0-250 PSI	316SS, PEEK	3/4" NPTM	6 inches	1.0	N/A
	191696	Sensor, Contacting Conductivity, Boiler, ATC	0-300 mS	32-401°F	0-250 PSI	316SS, PEEK	3/4" NPTM	6 inches	10	RTD, PT1000
W900 WCNW1/ WBLW1	103904-10	Sensor, Contacting Conductivity — PP Fitting	0-3 mS	32-212°F	0-100 PSI	316SS, PTFE	1/2" NPTM	10 ft	0.1	RTD, PT1000
		Sensor, Contacting Conductivity — SS Fitting		32-248°F	0-200 PSI					
W600 WCNW1	103903-10	Sensor, Contacting Conductivity — PP Fitting	0-0.3 mS	32-212°F	0-100 PSI	316SS, PTFE	1/2" NPTM	10 ft	0.01	RTD, PT1000
		Sensor, Contacting Conductivity — SS Fitting		32-248°F	0-200 PSI					
	103905-10	Sensor, Contacting Conductivity — PP Fitting	0-30 mS	32-212°F	0-100 PSI	316SS, PTFE	1/2" NPTM	10 ft	1.0	RTD, PT1000
		Sensor, Contacting Conductivity — SS Fitting		32-248°F	0-200 PSI					
	103906-10	Sensor, Contacting Conductivity — PP Fitting	0-300 mS	32-212°F	0-100 PSI	316SS, PTFE	1/2" NPTM	10 ft	10.0	RTD, PT1000
		Sensor, Contacting Conductivity — SS Fitting		32-248°F	0-200 PSI					

* Also compatible with WebMaster w/Preamp

Note 1: 1 mS = 1000µS

† See graph on page 4



This chart applies to those parts in the charts on pages 2 & 3 that have '†' in the Temp Range and Pressure Rating columns.

ABOUT US

Walchem integrates its advanced sensing, instrumentation, fluid pumping and communications technologies to deliver reliable and innovative solutions to the global water treatment market. Our in-house engineering is driven by quality, technology and innovation. For more information on the entire Walchem product line, visit: www.walchem.com

180555.H March 2018

WALCHEM
IWAKI America Inc.
Walchem, Iwaki America Inc.
Five Boynton Road Hopping Brook Park
Holliston, MA 01746 USA
Phone: 508-429-1110 www.walchem.com