Conductivity, pH/ORP & Disinfection

W100W Series Controllers

The W100W series provide an economical and reliable way to keep your water treatment program under control.

Summary of Key Benefits

- Large display with icon based programming makes setup easy
- Universal sensor input provides extraordinary flexibility; the same controller can be used with almost any type of sensor needed
- Three pH/ORP/ISE models available for use with amplified electrodes, non-amplified electrodes with a BNC connector or non-amplified electrodes without a connector
- Multiple language support allows simple setup no matter where your business takes you
- Three control outputs allow the controller to be used in more places than other entry level models
- Economical wall-mount package for easy installation
- Complete flexibility in the function of each relay
  - On/Off Setpoint
  - Time Proportional Control
  - Pulse Proportional Control (when purchased with 4-20mA or pulse solid state opto outputs)
  - In-range or Out-of-range activation
  - Probe Wash Timer
  - Timer-based activation
  - Activation based upon the state of a contact closure
  - Timed activation triggered by a Water Contactor or Paddlewheel flow meter's accumulated total flow
  - Activate with another output
  - Alarm
  - PID Control (when purchased with 4-20mA or pulse solid state opto outputs)

Typical Applications

- Wastewater neutralization & disinfection
- Food and Beverage disinfection
- Potable water treatment
- Swimming pools & spas
- Cooling tower biocide control
- Metal finishing & printed circuit board
- Irrigation & fertigation
- RO Systems

WALCHEM
IWAKI America Inc.

Specifications

Measurement Performance

	Range	Resolution	Accuracy
0.01 Cell Contacting Conductivity	0-300 µS/cm	0.01 µS/cm, 0.0001 mS/cm, 0.001 mS/m, 0.0001 S/m, 0.01 ppm	± 1% of reading
0.1 Cell Contacting Conductivity	0-3,000 µS/cm	0.1 µS/cm, 0.0001 mS/cm, 0.01 mS/m, 0.0001 S/m, 0.1 ppm	± 1% of reading
1.0 Cell Contacting Conductivity	0-30,000 µS/cm	1 µS/cm, 0.001 mS/cm, 0.1 mS/m, 0.0001 S/m, 1 ppm	± 1% of reading
10.0 Cell Contacting Conductivity	0-300,000 µS/cm	10 µS/cm, 0.01 mS/cm, 1 mS/m, 0.001 S/m, 10 ppm	± 1% of reading
pH	-2 to 16 pH units	0.01 pH units	± 0.01% of reading
ORP/Ion Selective Electrode	-1500 to 1500 mV	0.1 mV	± 1 mV
Disinfection sensors	-2000 to 1500 mV	0.1 mV	± 1 mV
	0 - 2 ppm to 0 - 20,000 ppm	Varies with range and slope	Varies with range and slope
Electrodeless Conductivity	500 - 12,000 µS/cm	1 µS/cm, 0.01 mS/cm, 0.1 mS/m, 0.001 S/m, 1 ppm	± 1% of reading
	3,000-40,000 µS/cm	1 µS/cm, 0.01 mS/cm, 0.1 mS/m, 0.001 S/m, 1 ppm	± 1% of reading
	10,000-150,000 µS/cm	10 µS/cm, 0.1 mS/cm, 1 mS/m, 0.01 S/m, 10 ppm	± 1% of reading
	50,000-500,000 µS/cm	10 µS/cm, 0.1 mS/cm, 1 mS/m, 0.01 S/m, 10 ppm	± 1% of reading
	200,000-2,000,000 µS/cm	100 µS/cm, 0.1 mS/cm, 1 mS/m, 0.1 S/m, 100 ppm	± 1% of reading
Temperature	23 to 500°F (-5 to 260°C)	0.1°F (0.1°C)	± 1% of reading within range

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.

Inputs

Power

100-240 VAC, 50 or 60 Hz, 7A max
Fuse: 6.3 Amp

Digital Input Signals (2)

State-Type

Electrical: Optically-isolated input.
Provides isolated 9V power.
Current consumption when input is closed: 2.3 mA nominal.

Typical response time: <2 seconds

Devices supported: Any isolated dry contact (i.e. relay, reed switch)

Types: Interlock

Low Speed Counter-Type

Electrical: Optically-isolated input.
Provides isolated 9V power.
Current consumption when input is closed: 2.3 mA nominal.
0-10Hz, 50 msec minimum pulse width

Devices supported: Any device with isolated open drain, open collector, transistor or reed switch

Types: Contacting Flowmeter

High-Speed Counter-Type

Electrical: Optically-isolated input.
Provides isolated 9V power.
Current consumption when input is closed: 2.3 mA nominal.
0-500Hz, 1.00 msec minimum pulse width

Devices supported: Any device with isolated open drain, open collector, transistor or reed switch

Types: Paddlewheel Flowmeter

Outputs

Powered Mechanical Relays (0 or 3 model code dependent)

Pre-powered on circuit board switching line voltage
6 A (resistive), 1/8 HP (93W) per relay
All three relays are fused together as one group, total current for this group must not exceed 6A.

Dry Contact Mechanical Relays (0, 1 or 3 model code dependent)

6 A (resistive), 1/8 HP (93W) per relay
Dry contact relays are not fuse protected.

Pulse Outputs (0 or 2 model code dependent)

Opto-isolated, solid-state relay, 200mA, 40V DC
VLOWMAX = 0.05V @ 18mA

4 - 20 mA (0 or 1 model code dependent)

Internally powered, Fully isolated
600 Ohm max resistive load
Resolution 0.0015% of span, Accuracy ± 0.5% of reading

Mechanical (Controller)

Enclosure	Polycarbonate
Enclosure Rating	NEMA 4X (IP65)
Display	128 x 64 graphic backlit display
Ambient. Temperature	-4 to 131°F (-20 to 55°C)
Shipping Temperature	-4 to 176°F (-20 to 80°C)
Shipping weight	26 lbs (11.8 kg) (approximately) varies with model

Agency Certifications

Safety:	UL 61010-1:2012, 3rd Edition CSA C22.2 No.61010-1:2012, 3rd Edition IEC 61010-1:2010 3rd Edition EN 61010-1:2010 3rd Edition
EMC:	IEC 61326-1:2012 EN 61326-1:2013

Note: For EN61000-4-6, EN61000-4-3 the controller met performance criteria B. This equipment is suitable for use in establishments other than domestic and those directly connected to a low voltage (100-240 VAC) power supply network which supplies buildings used for domestic purposes.

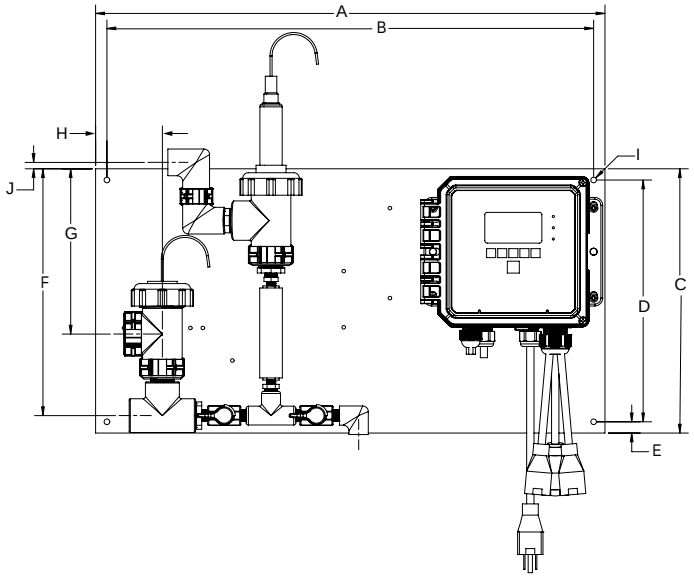
Specifications

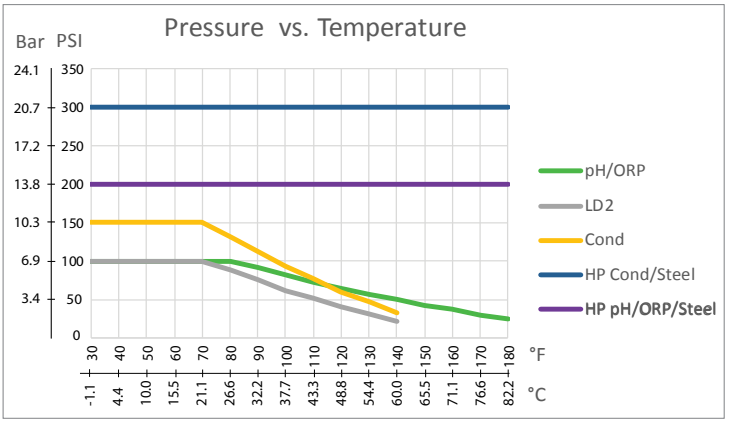
Mechanical (Sensors) (*see graph)

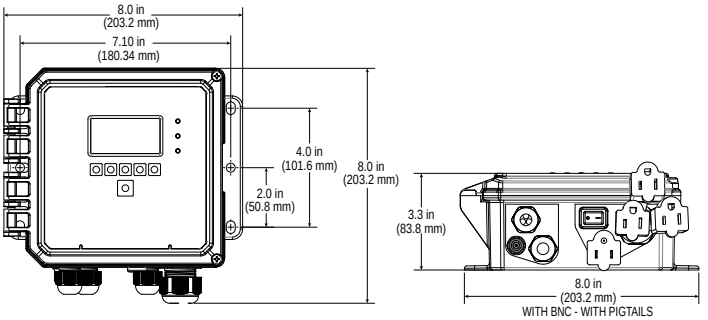
Sensor	Pressure	Temperature	Materials	Process Connections
Electrodeless conductivity	0-150 psi (0-10 bar)*	CPVC: 20-180°F (-5 to 80°C)* PEEK: 20-190°F (-5 to 88°C)	CPVC, FKM in-line o-ring PEEK, 316 SS in-line adapter	1" NPTM submersion 2" NPTM in-line adapter
pH	0-100 psi (0-7 bar)*	50-158°F (10-70°C)*	CPVC, Glass, FKM o-rings, HDPE, Titanium rod, glass-filled PP tee	1" NPTM submersion 3/4" NPTF in-line tee
ORP/Ion Selective Electrode	0-100 psi (0-7 bar)*	32-158°F (0-70°C)*		
Contacting conductivity	0-200 psi (0-14 bar)	32-248°F (0-120°C)	316SS, PEEK	3/4" NPTM
Free Chlorine/Bromine	0-14.7 psi (0-1 bar)	32-113°F (0-45°C)	PVC, Polycarbonate, silicone rubber, SS, PEEK, FKM, Isoplast	1/4" NPTF Inlet 3/4" NPTF Outlet
Extended pH Range Free Chlorine/Bromine	0-14.7 psi (0-1 bar)	32-113°F (0-45°C)		
Total Chlorine	0-14.7 psi (0-1 bar)	32-113°F (0-45°C)		
Chlorine Dioxide	0-14.7 psi (0-1 bar)	32-131°F (0-55°C)		
Ozone	0-14.7 psi (0-1 bar)	32-131°F (0-55°C)		
Peracetic Acid	0-14.7 psi (0-1 bar)	32-131°F (0-55°C)		
Hydrogen Peroxide	0-14.7 psi (0-1 bar)	32-113°F (0-45°C)		
Flow switch manifold	0-150 psi (0-10 bar) up to 100°F (38°C)* 0-50 psi (0-3 bar) at 140°F (60°C)	32-140°F (0-60°C)*	GFRPP, PVC, FKM, Isoplast	3/4" NPTF

Dimensions

WDSW Sensor option H-P shown







Panel Mounted Flow Switch Manifold Dimensions

	A	B	C	D	E	F	G	H	I	J
Tolerances	+/- 0.1", 2.5 mm					+/- 0.3", 8 mm			+/- 0.01", 0.25 mm	+/- 0.3", 8 mm
WPHPW sensor options F, J or K	22.5" 571 mm	21.5" 546 mm	11.75" 298 mm	10.75" 273 mm	0.75" 19 mm	4" 102 mm	1.5" 38 mm	11" 279 mm	0.25" 6.35 mm	
WCNW sensor option E	24" 610 mm	22.5" 571 mm	19" 483 mm	17.5" 445 mm	0.75" 19 mm	14" 356 mm	6" 152 mm	3" 76 mm	0.25" 6.35 mm	
WDSW sensor options H - P	22.5 571 mm	21.5" 546 mm	11.75" 298 mm	10.75" 273 mm	0.50" 13 mm	10.98" 279 mm	7.35" 187 mm	3" 76 mm	0.25" 6.35 mm	0.3" 8 mm

Ordering Information

WCNW (Contacting or Electrodeless Conductivity Sensors)
WPHPW (Amplified pH/ORP/ISE Electrodes)
WPHBW (Non-Amplified pH/ORP/ISE Electrodes with BNC)
WPHNW (Non-Amplified pH/ORP/ISE Electrodes with bare wires)
WDSW (Disinfection Sensors)

Relays/Wiring | Analog Output - Sensors

Relays/Wiring
100H = 3 powered relays, hardwired
100P = 3 powered relays, prewired USA power cord & pigtails
100D = 3 powered relays, prewired DIN power cord, no pigtails
110H = 3 dry relays, hardwired
110P = 3 dry relays, prewired USA power cord, no pigtails
110D = 3 dry relays, prewired DIN power cord, no pigtails
120H = 2 pulse, 1 dry relay, hardwired
120P = 2 pulse, 1 dry relay, prewired with USA power cord, no pigtails
120D = 2 pulse, 1 dry relay, prewired with DIN power cord, no pigtails

Analog Output
N = No analog output
A = One isolated analog (4-20 ma) output

Sensors (WCNW)
N = No sensor
A = Submersion PEEK electrodeless conductivity, 20 ft cable
B = Submersion CPVC electrodeless conductivity, 20 ft cable
C = Inline PEEK electrodeless conductivity, 20 ft cable
D = Inline CPVC electrodeless conductivity, 20 ft cable
E = Inline CPVC electrodeless conductivity w/FS manifold on panel, 3 ft cable
F = Contacting conductivity,1.0 cell constant, 100 psi,10 ft cable
G = Contacting conductivity, 0.1 cell constant,100 psi,10 ft cable
H = Contacting conductivity, 10.0 cell constant,100 psi,10 ft cable
I = Contacting conductivity, 0.01 cell constant,100 psi,10 ft cable
J = Contacting conductivity, 1.0 cell constant, 200 psi,10 ft cable
K = Contacting conductivity, 0.1 cell constant, 200 psi,10 ft cable
L = Contacting conductivity, 10.0 cell constant, 200 psi,10 ft cable
M = Contacting conductivity, 0.01 cell constant, 200 psi,10 ft cable

Sensors (WPHPW)
N = No sensor
A = External preamp, 20 ft cable
B = Submersion pH, no ATC, 20 ft cable
C = Submersion pH, with ATC, 20 ft cable
D = Inline pH, no ATC, 20 ft cable
E = Inline pH, with ATC, 20 ft cable
F = Inline pH, with ATC, with FS manifold on panel, 3 ft cable
G = Submersion flat ORP, 20 ft cable
H = Inline flat ORP, 20 ft cable
I = Inline Rod-Style ORP, 20 ft cable
J = Inline flat ORP with FS manifold on panel, 3 ft cable
K = Inline Rod Style ORP w/ FS manifold on panel, 3 ft cable

Sensors (WDSW)
N = No sensor
A = Free chlorine, 0-20 ppm, 20 ft cable
B = ClO2, 0-20 ppm, 20 ft cable
C = Ozone, 0-10 ppm, 20 ft cable
D = PAA, 0-2000 ppm, 20 ft cable
E = Extended pH range free chlorine, 0-20 ppm, 20 ft cable
F = Total chlorine, 0-20 ppm, 20 ft cable
G = Peroxide, 0-2000 ppm, 20 ft cable
H = Free chlorine with manifold on panel, 0-20 ppm, 3 ft cable
I = ClO2 with manifold on panel, 0-20 ppm, 3 ft cable
J = Ozone with manifold on panel, 0-10 ppm, 3 ft cable
K = PAA with manifold on panel, 0-2000 ppm, 3 ft cable
L = Extended pH range Cl2 with manifold on panel, 0-20 ppm, 3 ft cable
M = Total chlorine with manifold on panel, 0-20 ppm, 3 ft cable
O = Peroxide with manifold on panel, 0-2000 ppm, 3 ft cable
P = No sensor with manifold on panel, 3 ft cable

Sensors (WPHBW or WPHNW)
N = No sensor

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

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