

Conductivity, pH/ORP & Disinfection



W100 Series Water Treatment Controllers

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

Typical Applications

- Wastewater Neutralization & Disinfection
- Food and Beverage Disinfection
- Potable Water Treatment
- Swimming Pools & Spa
- Cooling Tower Biocide Control
- Metal Finishing & Printed Circuit Board
- Irrigation & Fertigation
- RO Systems

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
- Optional analog (4-20mA) output for recording, datalogging or connector to SCADA systems
- 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)
 - Probe Wash Timer
 - Timer-based activation
 - PID Control (when purchased with 4-20mA or pulse solid state opto outputs)

W A L C H E M

IWAKI America Inc.

SPECIFICATIONS

MEASUREMENT PERFORMANCE

| | Range | Resolution | Accuracy |
|-----------------------------------|------------------------------------|--|-----------------------------------|
| 0.01 Cell Contacting Conductivity | 0-300 $\mu\text{S/cm}$ | 0.01 $\mu\text{S/cm}$, 0.0001 mS/cm, 0.001 mS/m, 0.0001 S/m, 0.01 ppm | $\pm 1\%$ of reading |
| 0.1 Cell Contacting Conductivity | 0-3,000 $\mu\text{S/cm}$ | 0.1 $\mu\text{S/cm}$, 0.0001 mS/cm, 0.01 mS/m, 0.0001 S/m, 0.1 ppm | $\pm 1\%$ of reading |
| 1.0 Cell Contacting Conductivity | 0-30,000 $\mu\text{S/cm}$ | 1 $\mu\text{S/cm}$, 0.001 mS/cm, 0.1 mS/m, 0.0001 S/m, 1 ppm | $\pm 1\%$ of reading |
| 10.0 Cell Contacting Conductivity | 0-300,000 $\mu\text{S/cm}$ | 10 $\mu\text{S/cm}$, 0.01 mS/cm, 1 mS/m, 0.001 S/m, 10 ppm | $\pm 1\%$ of reading |
| pH | -2 to 16 pH units | 0.01 pH units | $\pm 0.01\%$ 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 $\mu\text{S/cm}$ | 1 $\mu\text{S/cm}$, 0.01 mS/cm, 0.1 mS/m, 0.001 S/m, 1 ppm | $\pm 1\%$ of reading |
| | 3,000-40,000 $\mu\text{S/cm}$ | 1 $\mu\text{S/cm}$, 0.01 mS/cm, 0.1 mS/m, 0.001 S/m, 1 ppm | $\pm 1\%$ of reading |
| | 10,000-150,000 $\mu\text{S/cm}$ | 10 $\mu\text{S/cm}$, 0.1 mS/cm, 1 mS/m, 0.01 S/m, 10 ppm | $\pm 1\%$ of reading |
| | 50,000-500,000 $\mu\text{S/cm}$ | 10 $\mu\text{S/cm}$, 0.1 mS/cm, 1 mS/m, 0.01 S/m, 10 ppm | $\pm 1\%$ of reading |
| | 200,000-2,000,000 $\mu\text{S/cm}$ | 100 $\mu\text{S/cm}$, 0.1 mS/cm, 1 mS/m, 0.1 S/m, 100 ppm | $\pm 1\%$ of reading |
| Temperature | 23 to 500°F (-5 to 260°C) | 0.1°F (0.1°C) | $\pm 1\%$ 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 $\pm 0.5\%$ 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+Rev:2016
CSA C22.2 No.61010-1:2012, 3rd Ed.+U1;U2
IEC 61010-1:2010 3rd Edition
EN 61010-1:2010 3rd Edition
BS EN 61010-1:2010+A1:2019

EMC: IEC 61326-1:2012
EN 61326-1:2013
BS EN 61326-1:2013

Note: For EN61000-4-6, EN61000-4-3 the controller met performance criteria B.

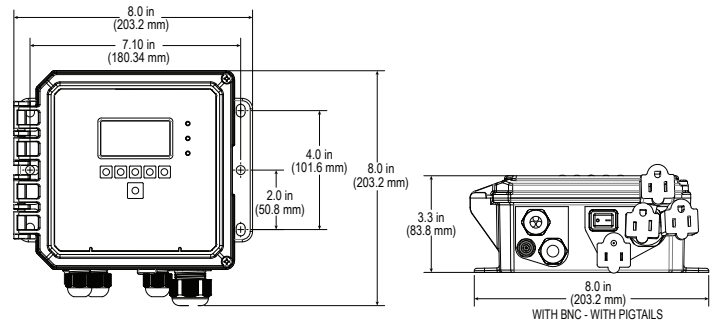
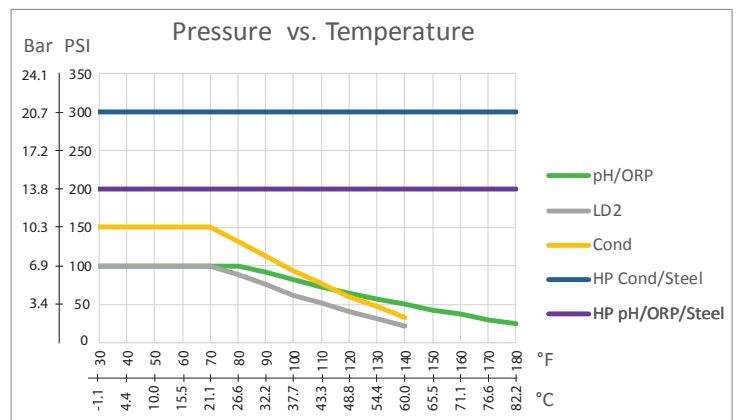
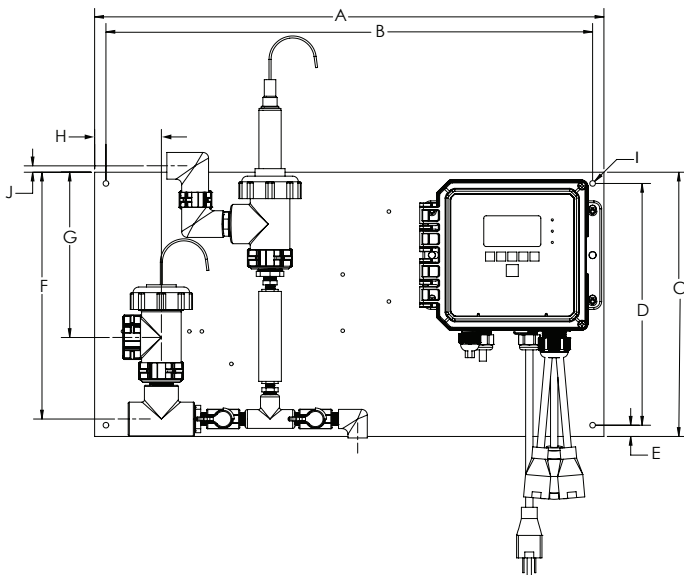
This equipment is suitable for use in establishments other than domestic and those directly connected to a low voltage (100-240 VAC) power supply network which supplies buildings used for domestic purposes.

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)* | | |

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



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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

METERING PUMPS

The E-Class is the most innovative and comprehensive metering pump product line in the world. Over 50 years of pump experience and a commitment to superior mechanical design has led to development of many industry firsts, including 360 stroke-per-minute technology, IP67 waterproof construction, and the world's highest capacity solenoid metering pumps.



ACCESSORIES

To complete your system, Walchem provides high quality accessories that are required for cooling tower, boiler, potable water, and wastewater applications. All of Walchem's accessories are carefully designed and selected for compatibility with our pumps and controllers to enable our customers to provide a complete system solution.



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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