Conductivity, pH/ORP & Disinfection

NEW!! W600 Series Controllers

The W600 series provides reliable, flexible and powerful control for your water treatment program.

Summary of Key Benefits

- Large touchscreen 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
- Optional dual analog (4-20 mA) input for Fluorometers or nearly any other process value
- Multiple language support allows simple setup no matter where your business takes you
- Six control outputs allow the controller to be used in more applications
- Economical wall-mount package for easy installation
- On-screen graphing of sensor values and control output status
- Complete flexibility in the function of each relay
  - On/Off Setpoint
  - Time Proportional Control
  - Pulse Proportional Control (when purchased with solid-state relays)
  - In-Range or Out-of-Range activation
  - Probe wash
  - 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
  - Activate as a percent of another output's on-time
  - Alarm
  - For Cooling Tower and Boiler applications:
    - Biocide Timer
    - Boiler blowdown on conductivity using intermittent sampling
- Datalogging
- Ethernet option for remote access via the Internet or LAN

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	-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

Sensor Input Signals (0, 1 or 2 depending on model code)

Contacting Conductivity: 0.01, 0.1, 1.0, or 10.0 cell constant, or
Electrodeless Conductivity or
Disinfection or
Amplified pH or ORP which requires a preamplified signal. Walchem WEL or WDS series recommended. ±5VDC power available for external preamps.

Each sensor input card contains a temperature input.
Temperature: 100 or 1000 ohm RTD, 10K or 100K Thermistor

Analog (4-20 mA) Sensor Input (0, 2 or 4 depending on model code)

2-wire loop powered and self-powered transmitters supported
3-wire and 4-wire transmitters supported
Each sensor input board has two channels: Channel 1, 130 ohm input resistance and Channel 2, 280 ohm input resistance
Available Power: Two independent isolated 24 VDC ± 15% supplies per board. 1.5 W maximum for each channel. 2W (83 mA at 24 VDC) total power consumption for all channels (four total channels if two boards are installed; 2W is equivalent to 2 Little Dipper sensors)

Digital Input Signals (6):

State-Type Digital Inputs
Electrical: Optically isolated and providing an electrically isolated 9V power with a nominal 2.3mA current when the digital input switch is closed. Typical response time: < 2 seconds. Devices supported: Any isolated dry contact (i.e. relay, reed switch). Types: Interlock

Low Speed Counter-Type Digital Inputs
Electrical: Optically isolated and providing an electrically isolated 9V power with a nominal 2.3mA current when the digital input switch is closed, 0-10 Hz, 50 msec minimum width. Devices supported: Any device with isolated open drain, open collector, transistor or reed switch. Types: Contacting Flowmeter

High Speed Counter-Type Digital Inputs
Electrical: Optically isolated and providing an electrically isolated 9V power with a nominal 2.3mA current when the digital input switch is closed, 0-250 Hz, 1.25 msec minimum width. Devices supported: Any device with isolated open drain, open collector, transistor or reed switch. Types: Paddlewheel Flowmeter

Outputs

Powered Mechanical Relays (0 or 6 model code dependent)
Pre-powered on circuit board switching line voltage
All relays are fused together as one group, total current must not exceed 6A (resistive), 1/8 HP (93W)

Dry Contact Mechanical Relays (0, 2 or 4 model code dependent)
6 A (resistive), 1/8 HP (93W)
Dry contact relays are not fuse protected.

Pulse Outputs (0, 2 or 4 model code dependent)
Opto-isolated, solid-state relay, 200mA, 40V DC
VLOWMAX = 0.05V @ 18mA

4 - 20 mA (0 or 2 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 Material	Polycarbonate
Enclosure Rating	NEMA 4X (IP65)
Dimensions	9.5 x 8 x 4" (241 x 203 x 102 mm)
Display	320 x 240 pixel monochrome backlit display with touchscreen
Ambient Temperature	-4 to 131°F (-20 to 55°C)
Storage Temperature	-4 to 176°F (-20 to 80°C)

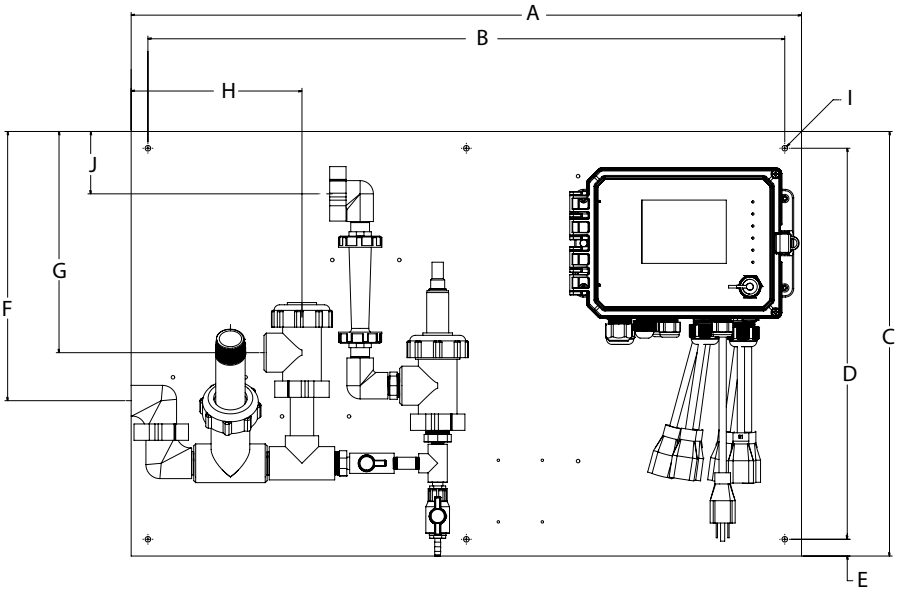
Agency Certifications

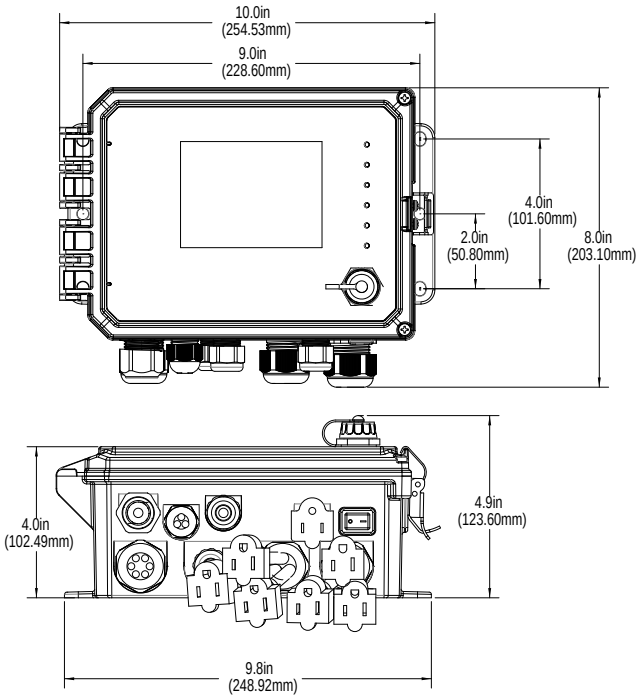
Safety:	UL 61010-1:2012, 3rd Edition CSA C22.2 No.61010-1:2012, 3rd Edition IEC 61010-1:2010 3rd Edition EN 61010-1:2010 3rd Edition
EMC:	IEC 61326-1:2005 EN 61326-1:2006

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

Dimensions





Panel Mounted Flow Switch Manifold Dimensions

W600	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
W600-CT-BN/FN	13", 330 mm	12", 305 mm	11.75", 298 mm	10.75", 273 mm	0.5", 12.7 mm	7", 178 mm	2", 51 mm	1.5", 38 mm	0.25", 6.35 mm	
W600-CT-BA/BB/ BC/BD/FA/FB/ FC/FD	22.5", 571 mm	21.5", 546 mm	11.75", 298 mm	10.75", 273 mm	0.5", 12.7 mm	4", 102 mm	1.5", 38 mm	11", 279 mm	0.25", 6.35 mm	
W600-CT-DN	22.5", 571 mm	21.5", 546 mm	11.75", 298 mm	10.75", 273 mm	0.5", 12.7 mm	7", 178 mm	7", 178 mm	10", 254 mm	0.25", 6.35 mm	
W600-CT-DE/DF	22.5", 571 mm	21.5", 546 mm	11.75", 298 mm	10.75", 273 mm	0.5", 12.7 mm	4", 102 mm	2", 51 mm	10", 254 mm	0.25", 6.35 mm	
W600-CT-HN	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	
W600-CT-HA	24", 610 mm	22.5", 571 mm	19", 483 mm	17.5", 445 mm	0.75", 19 mm	11", 279 mm	6", 152 mm	3", 76 mm	0.25", 6.35 mm	
W600-PH-PN/PX	22.5", 571 mm	21.5", 546 mm	11.75", 298 mm	10.75", 273 mm	0.5", 12.7 mm	4", 102 mm	1.5", 38 mm	11", 279 mm	0.25", 6.35 mm	
W600-PH-QN/QX	22.5", 571 mm	21.5", 546 mm	11.75", 298 mm	10.75", 273 mm	0.5", 12.7 mm	7", 178 mm	4", 102 mm	1.5", 38 mm	0.25", 6.35 mm	
W600-DS-PN	24", 610 mm	22.5", 571 mm	19", 483 mm	17.5", 445 mm	0.75", 19 mm	15", 381 mm	10", 254 mm	1.5", 38 mm	0.25", 6.35 mm	3", 76 mm
W600-DS-PX	30", 762 mm	28.5", 724 mm	19", 483 mm	17.5", 445 mm	0.75", 19 mm	12", 305 mm	10", 254 mm	8", 203 mm	0.25", 6.35 mm	3", 76 mm

Mechanical (Sensors)

Sensor	Pressure	Temperature	Materials	Process Connections
Electrodeless conductivity	0-140 psi (0 to 9.6 bar)	CPVC: 32-158°F (0 to 70°C) PEEK: 32-190°F (0 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 to 6.9 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	0-100 psi (0 to 6.9 bar)	32-158°F (0-70°C)		
Contacting conductivity	0-200 psi (0 to 13.8 bar)	32-248°F (0-120°C)	316SS, PEEK	3/4" NPTM
Free Chlorine/Bromine	0-14.7 psi (0 to 1.0 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 to 1.0 bar)	32-113°F (0-45°C)		
Total Chlorine	0-14.7 psi (0 to 1.0 bar)	32-113°F (0-45°C)		
Chlorine Dioxide	0-14.7 psi (0 to 1.0 bar)	32-131°F (0-55°C)		
Ozone	0-14.7 psi (0 to 1.0 bar)	32-131°F (0-55°C)		
Peracetic Acid	0-14.7 psi (0 to 1.0 bar)	32-131°F (0-55°C)		
Hydrogen Peroxide	0-14.7 psi (0 to 1.0 bar)	32-113°F (0-45°C)		
Flow switch manifold	0-150 psi (0 to 10.3 bar) up to 100°F (38°C) 0-50 psi (0 to 3.4 bar) at 140°F (60°C)	32-140°F (0-60°C)	GFRPP, PVC, FKM, Isoplast	3/4" NPTF

Ordering Information

WCT (Cooling Tower)
WBL (Boiler)
WPH (pH)
WDS (Disinfection)
WCN (Conductivity)

Relays/Wiring | Input Cards | Analog Outputs | Ethernet - Sensors

Relays/Wiring

600H	6 powered relays, Hardwired
600P	6 powered relays, Prewired with USA cords and pigtails
600D	6 powered relays, Prewired with DIN power cord, no pigtails
610H	2 powered 4 dry relays, Hardwired
610P	2 powered 4 dry relays, Prewired with USA cord and 2 pigtails
610D	2 powered 4 dry relays, Prewired with DIN power cord, no pigtails
620H	2 opto 4 dry relays, Hardwired
620P	2 opto 4 dry relays, Prewired with USA cord and two 20 ft. pulse cables
620D	2 opto 4 dry relays, Prewired with DIN power cord, no pigtails
640H	4 opto 2 dry relays, Hardwired
640P	4 opto 2 dry relays, Prewired with USA cord and four 20 ft. pulse cables
640D	4 opto 2 dry relays, Prewired with DIN power cord, no pigtails

Input Cards

NN	No sensor input cards
SN	One sensor input card
SS	Two sensor input cards
AN	One dual analog input card
AA	Two dual analog input cards
SA	One sensor input card and one analog input card

Analog Outputs

N	No analog outputs
A	One dual isolated analog output card

Ethernet

N	No Ethernet
E	Ethernet card

WCT Cooling Tower Sensors

NN	No sensor
AN	Inline graphite contacting conductivity
BN	Graphite contacting conductivity + Flow Switch manifold on panel
CN	High pressure contacting conductivity
DN	High pressure contacting conductivity + Flow Switch manifold on panel
EN	Inline 316SS contacting conductivity
FN	316SS contacting conductivity + Flow Switch manifold on panel
GN	Inline electrodeless conductivity
HN	Electrodeless conductivity + Flow Switch manifold on panel
BA	Graphite contacting conductivity + Flow Switch manifold on panel + WEL-PHF no ATC
BB	Graphite contacting conductivity + Flow Switch manifold on panel + WEL-MVR no ATC
BC	Graphite contacting conductivity + Flow Switch manifold on panel + WEL-MVF no ATC
BD	Graphite contacting conductivity + Flow Switch manifold on panel + LD
FA	316SS contacting conductivity + Flow Switch manifold on panel + WEL-PHF no ATC
FB	316SS contacting conductivity + Flow Switch manifold on panel + WEL-MVR no ATC
FC	316SS contacting conductivity + Flow Switch manifold on panel + WEL-MVF no ATC
FD	316SS contacting conductivity + Flow Switch manifold on panel + LD
DE	High pressure contacting conductivity + Flow Switch manifold on panel + pH and 190783
DF	High pressure contacting conductivity + Flow Switch manifold on panel + ORP and 190783
HA	Electrodeless conductivity + Flow Switch manifold on panel + WEL-PHF no ATC
HB	Electrodeless conductivity + Flow Switch manifold on panel + WEL-MVR no ATC
HC	Electrodeless conductivity + Flow Switch manifold on panel + WEL-MVF no ATC
HD	Electrodeless conductivity + Flow Switch manifold on panel + LD

WBL Boiler Sensors

NN	No sensor
AN	Boiler sensor with ATC, 250 psi, 1.0 cell constant, 20 ft. cable
BN	Boiler sensor without ATC, 250 psi, 1.0 cell constant, 20 ft. cable
CN	Condensate sensor with ATC, 200 psi, 0.1 cell constant, 10 ft. cable
DN	Boiler sensor with ATC, 250 psi, 10 cell constant, 20 ft. cable
AA	Two K=1.0 boiler sensors with ATC, 250 psi, 20 ft. cables
BB	Two K=1.0 boiler sensor without ATC, 250 psi, 20 ft. cables
CC	Two K=0.1 condensate sensors with ATC, 200 psi, 10 ft. cables
DD	Two K=10 Boiler sensors with ATC, 250 psi, 20 ft. cables
AB	K=1.0 boiler sensor with ATC and K=1.0 boiler sensor without ATC, 250 psi, 20 ft. cables
AC	K=1.0 boiler sensor with ATC, 20 ft. and K=0.1 condensate sensor with ATC, 250 psi, 10 ft. cable
AD	K=1.0 boiler sensor with ATC and K=10 boiler sensor with ATC, 250 psi, 20 ft. cables
BC	Boiler sensor without ATC, 20 ft. and condensate sensor with ATC, 10 ft. cable
BD	Boiler sensor without ATC and K=10 boiler sensor with ATC, 250 psi, 20 ft. cables
CD	Condensate sensor with ATC, 10 ft. cable and K=10 boiler sensor with ATC, 250 psi, 20 ft. cable

WPH pH/ORP Sensors/Manifold

NN	No sensors or flow switch manifold
PN	Single low pressure manifold on panel**
QN	Single high pressure manifold on panel with 190783*
PX	Dual low pressure manifold on panel**
QX	Dual high pressure manifold on panel with two 190783*

*Order 102029 pH and/or 102963 ORP electrodes separately
**Order WEL electrode(s) and preamplifier housing(s) separately

WDIS Disinfection Sensors/Manifold

NN	No sensors or flow switch manifold
PN	Single DIS manifold on panel*
PX	DIS manifold plus pH/ORP/cooling tower cond tee on panel**
FN	Single DIS flow cell/cable, no sensor*
FF	Two DIS flow cell/cable, no sensors*

*Order disinfection sensor(s) separately
**Order disinfection sensor and WEL electrode and preamplifier housing or cooling tower conductivity sensor separately

WCN Conductivity Sensors

NN	No sensors or flow switch manifold*

*Order conductivity sensor separately

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