

## OVERVIEW

The WDP410/420/440 Series Dual Input pH/ORP on-line process controllers are designed for a broad range of industrial, commercial, and municipal water treatment applications. WDP controllers are easily configured to accurately measure pH or mV (ORP) values from Walchem's WEL and WDS differential combination electrodes, or any conventional combination electrode.

A versatile output configuration allows you to program up to four outputs in a variety of control modes. Select from on/off mechanical relays or pulse proportional control for direct connection to metering pumps. The easy-to-use menu format and pre-wired, pre-mounted panel system options make set-up and installation quick and simple.

Integrated datalogging is available to validate system performance. A USB memory stick is all that's needed to extract data and event logs that include electrode measurements, temperature and relay status. Download log files from the USB stick to a PC at your convenience. It couldn't be easier!



## SUMMARY OF KEY BENEFITS



### Dual Input Reduces Cost

Dual pH or ORP electrode inputs allow one controller to take the place of two, reducing cost and space requirements, and simplifying installation.



### Versatility for a Broad Range of Applications

Select from pH or ORP measurements and from five output options. Use *In-Range* to control a solenoid valve to dump a batch treatment tank when measurement value is within limits, or program for *Out-of-Range Alarm* in waste treatment applications when the measurement value is too high or low.



### Ideal for Harsh Environments

The NEMA 4X enclosure, combined with Walchem's WEL and WDS electrodes, provides a waterproof system with no BNC connectors exposed to wet or corrosive environments.



### Built-in Safety Features

Programmable output limit timers prevent run-away chemical addition. Digital Interlock Input may be used from a flow switch or level input to prevent chemical addition based on a stagnant sample, or control of an empty batch tank.



### Simple, Integrated Data Collection

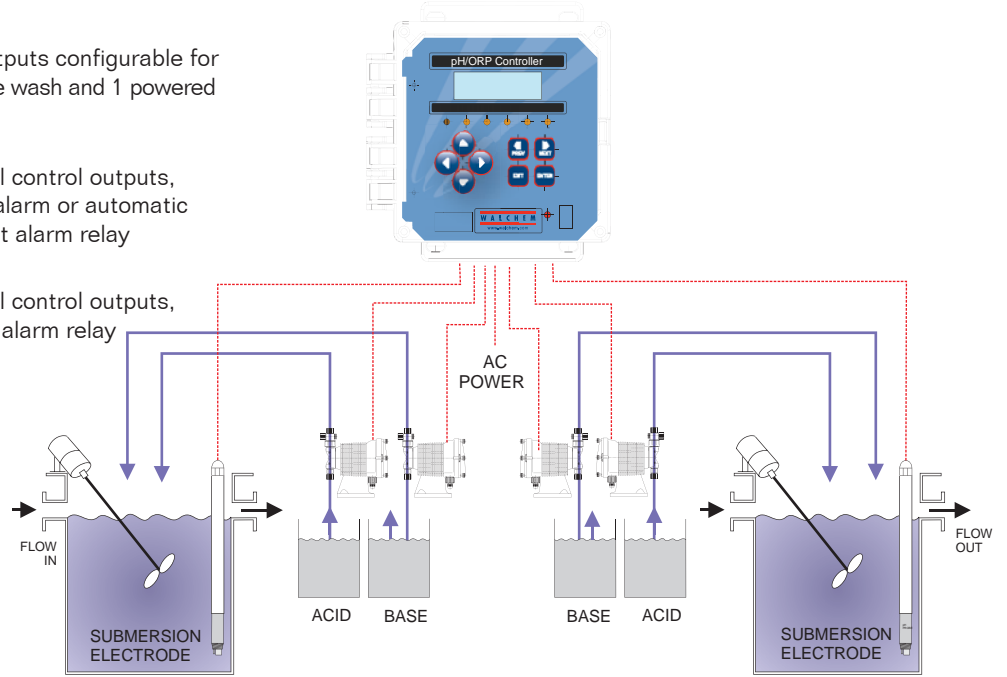
Download stored data from the controller to a USB stick with the press of a button. Use the data to simply and easily validate system performance, document compliance, and reduce liability. The data and event logs show pH/ORP and temperature values, as well as accumulated chemical feed and relay activation times.



» **WDP410 Series** 4 powered relay outputs configurable for on/off control, alarms or automatic probe wash and 1 powered dedicated diagnostic alarm relay

» **WDP420 Series** 2 pulse proportional control outputs, 2 dry contact relay outputs for on/off, alarm or automatic probe wash and 1 dedicated dry contact alarm relay

» **WDP440 Series** 4 pulse proportional control outputs, and 1 dedicated dry contact diagnostic alarm relay



## WDP410/420/440 Series | Standard Features

### » pH or ORP Measurement

- Configurable via a software menu setting.
- Reduces inventory requirements.

### » Versatile relay configuration

- Control outputs can be set as high or low set points via keypad. Auxiliary outputs can be set as:
  - High alarm
  - Low alarm
  - In-range output
  - Out-of-range alarm
  - Probe wash

### » Probe wash feature

- For applications that require frequent electrode cleaning, automatic probe wash stretches out reliable measurement life between maintenance interruptions.

### » 4-20mA Output

- Internally powered and fully isolated, for connection to WebAlert, PLC or other devices.

### » Self diagnostics

- Software and electronics are constantly monitored without having to take the controller off-line.

### » Auto buffer recognition

- Software selectable for U.S. or European calibration standards.

### » Self test

- Menu selectable self-test simulates pH and temperature signals, allowing for quick diagnostics of sensor or controller problems.

### » Differential pH



WDP and WPH Series controllers are a perfect match with Walchem's WEL pH/ORP sensors - offering an extremely reliable differential measurement technique immune to any possible ground loop problems. Together, they provide a true NEMA 4X system with no BNC connector exposed to wet or corrosive conditions. WEL pH/ORP electrodes are easily removed and replaced without any tools.

## Optional USB Features

» Integrated datalogging collects analytical measurements at 10 minute intervals and captures all relay activations.



Download Stored Data

Copy user-defined settings



Easily create charts and graphs that demonstrate system performance



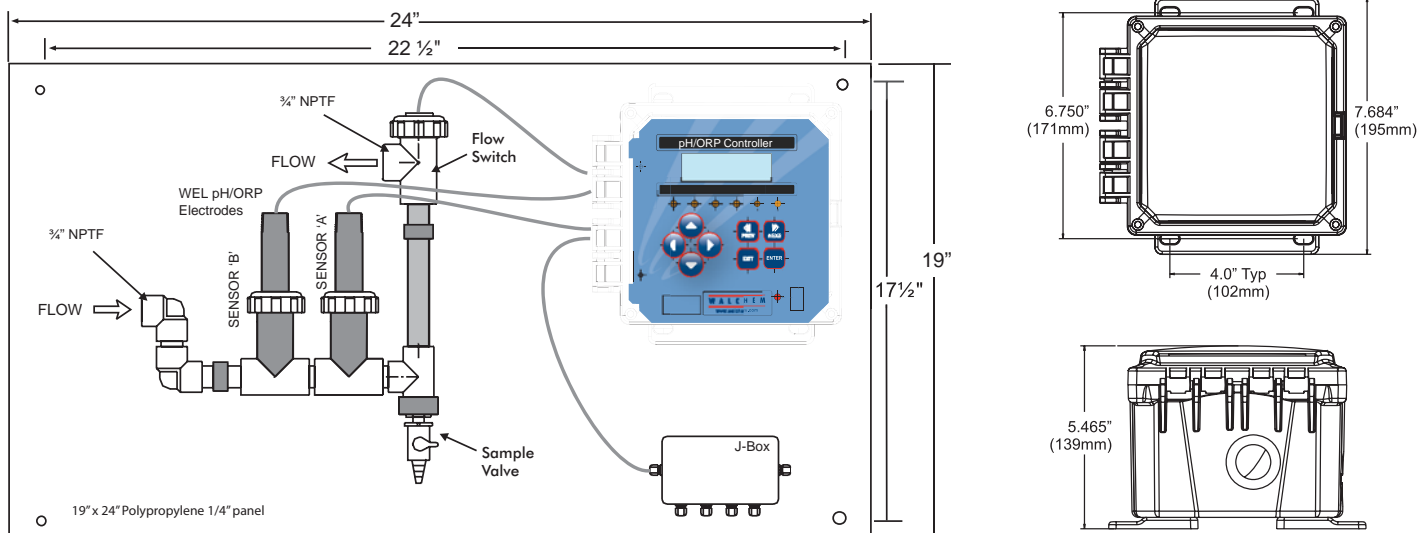
Identify system upsets faster by knowing exactly what happened and when



Use stored data to validate system performance



Programming a new controller is complete in seconds!



## Inputs

### Power

100-240 VAC, 50/60 Hz, 8A  
Fuse: 1.0 ampere, 5 x 20 mm

### Signals

pH/ORP:  $\pm 1500$  mV

### Temperature compensation

(optional, pH only): Pt100 or Pt1000

### Interlock (optional):

Isolated, dry contact closure required (i.e. flow, level, etc.)

## Measurement Performance

### Range

-2 to 16 pH  
 $\pm 1500$  mV (ORP)

### Resolution

0.0015 pH units (.01 pH displayed)  
92  $\mu$ V (1mV displayed) (ORP)

### Accuracy (calibrated)

$\pm 0.01$  pH  
 $\pm 1$ mV (ORP)

### Temperature Range

32 to 212°F (0 to 100°C)

### Resolution

$\pm 0.09$ °F (.05°C)

### Accuracy

$\pm 0.9$ °F (0.5°C)

## WEL pH/ORP Electrode (optional)

Temperature Range 50 to 158°F (10 to 70°C)

Operating Pressure 0 to 100 psi

### Materials of construction

Electrode body CPVC  
Electrode reference HDPE  
O-rings FKM  
Electrode Glass (pH) Platinum (ORP)  
Optional ground rod Titanium  
1" NPTM pipe submersion connection  
3/4" threaded NPTF tee in-line connection

## Outputs

### Powered Relays

Internally powered relays switching line voltage  
6A (resistive), 1/8 HP  
All relays are fused together as one group, total current for this group must not exceed 6A

### Pulse Outputs

Opto-isolated, Solid state relay  
150 mA, 40 VDC Max.  
VLOWMAX = .13V @ 18 mA

### Dry contact relays

6 A (resistive), 1/8 HP  
Dry contact relays are not fuse protected

	CTRL1	CTRL2	CTRL3	CTRL4	ALARM
WDP410	Powered				
WDP420	Pulse		Dry		
WDP440	Pulse				Dry

### 4 - 20 mA 1 or 2 (optional)

Internally powered  
Fully isolated  
600 Ohm max resistive load  
Resolution .001% of span  
Accuracy  $\pm 1\%$  of reading

## Mechanical (controller)

### Enclosure

Polycarbonate

### NEMA Rating

NEMA 4X (IP65)

### Display

2 x 16 character backlit liquid crystal

### Ambient

### Temperature

32 to 122°F (0 to 50°C)

### Shipping weight

7 lbs (3 kg) (approximately)

## ORDER INFORMATION

WDP4  0 —       
control voltage output options USB

### CONTROL OUTPUTS

- 1 = 4 On/Off relays & 1 powered dedicated alarm relay
- 2 = 2 pulse proportional outputs & 2 on/off dry contact relays & 1 dry contact dedicated alarm
- 4 = 4 pulse proportional outputs & 1 dry contact dedicated alarm

### VOLTAGE

- 1 = 120 VAC, prewired, 6" pigtails (WDP410) or 10 ft. cables for E Class pumps (WPH420/440)
- 5 = Hardwired, cable glands

### OUTPUT

- N = No data output
- 4 = Single isolated 4-20 mA output
- 2 = 2 4-20 mA outputs

### OPTIONS

- 2 = 2 WEL submersion style flat pH electrodes (without auto temp comp)
- 5 = 2 WEL submersion style ORP electrode
- 6 = 1 WEL submersion style flat pH electrode (without auto temp comp) & 1 WEL submersion ORP electrode
- 7 = 1 WEL in-line style flat pH electrode (without auto temp comp, tee included) & 1 WEL in-line ORP electrode (tee included)
- 8 = Flow switch manifold with 2 WEL in-line electrodes; 1 pH (without auto temp comp) & 1 ORP mounted on 19" x 24" polypropylene panel
- 8T=Identical to option #8 above, with auto temp comp

### USB FEATURES

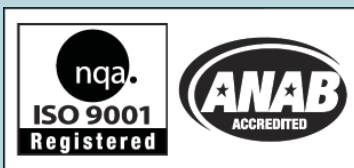
- N = Software upgrade capability only
- U = Integrated datalogging, event/reset logging, and configuration file import/export

## Agency Certifications

UL	ANSI/UL 61010-1:2004, 2nd Edition*
CAN/CSA	C22.2 No.61010-1:2004 2nd Edition*
CE Safety	EN 61010-1 2nd Edition (2001)*
CE EMC	EN 61326 :1998 Annex A*

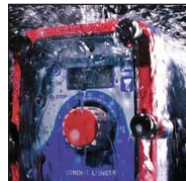
Note: For EN61000-4-6, -3 the controller met performance criteria B.

\*Class A equipment: Equipment 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.



### Webmaster®ONE

WebMasterONE is the most advanced online cooling tower and boiler controller in the water treatment industry. The flexible multi-I/O platform allows you to control multiple cooling towers, boilers, closed loops, and condensate lines with just one controller. An extensive assortment of integrated communications and data handling features are included that enable water treatment professional to provide more effective water management services to their customers.



### 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.



### WIND WebMaster® Industrial Water Controllers

Walchem's WebMaster Industrial (WIND) Controller sets a new standard for Industrial Water Treatment Controllers. WIND has a flexible multi-I/O platform, a wide range of analytical sensor measurement capabilities, and an extensive assortment of integrated communications and data handling features.



### WebAlert® Remote Monitor

Walchem's WebAlert is the first stand alone remote monitoring device that can web enable your installed equipment without having to replace or upgrade it.

## 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](http://www.walchem.com)

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