

## OVERVIEW

The WPH410/420 Series pH/ORP on-line process controllers are designed for a broad range of industrial, commercial, and municipal water treatment applications. WPH 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



### 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.



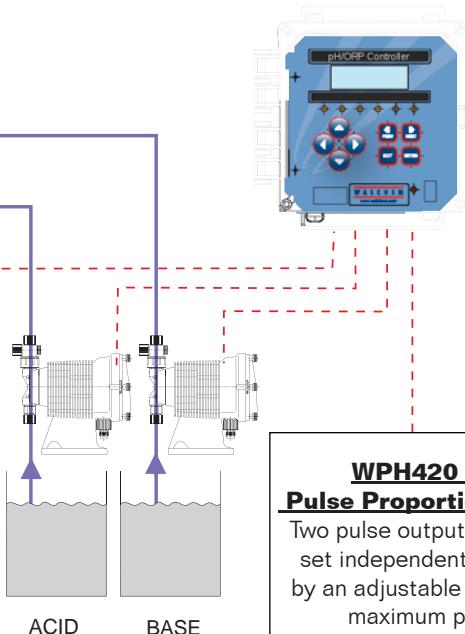
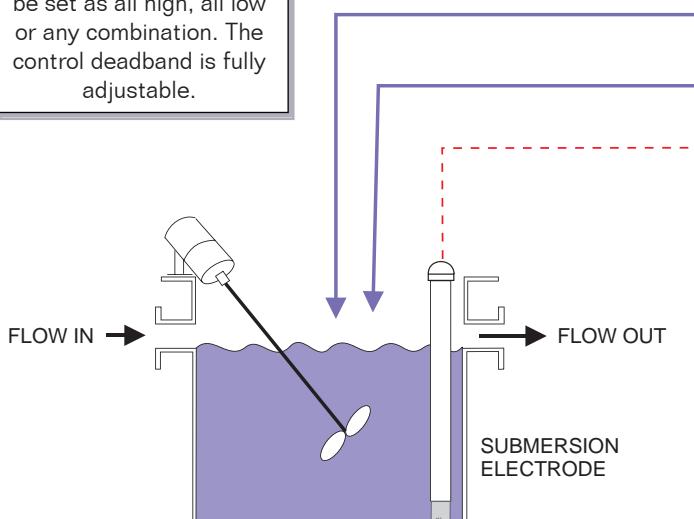
### Simple, Integrated Data Collection

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.



### **WPH410 Series On/Off Control**

Four control relays may be set as all high, all low or any combination. The control deadband is fully adjustable.



### **WPH420 Series Pulse Proportional Control**

Two pulse outputs that may be set independently, enhanced by an adjustable minimum and maximum pulse per minute setting.

## **WPH410/420 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



Easily create  
charts and graphs  
that demonstrate system  
performance



Identify system upsets  
faster by knowing  
exactly what  
happened and when



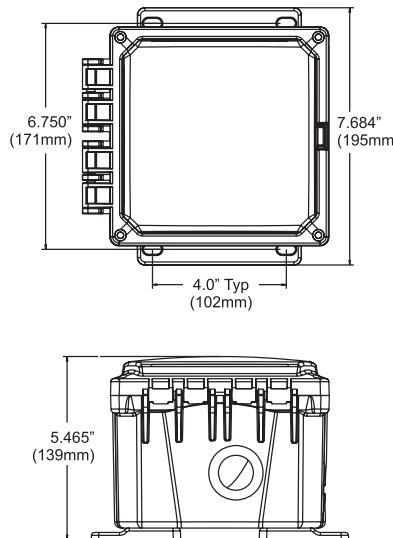
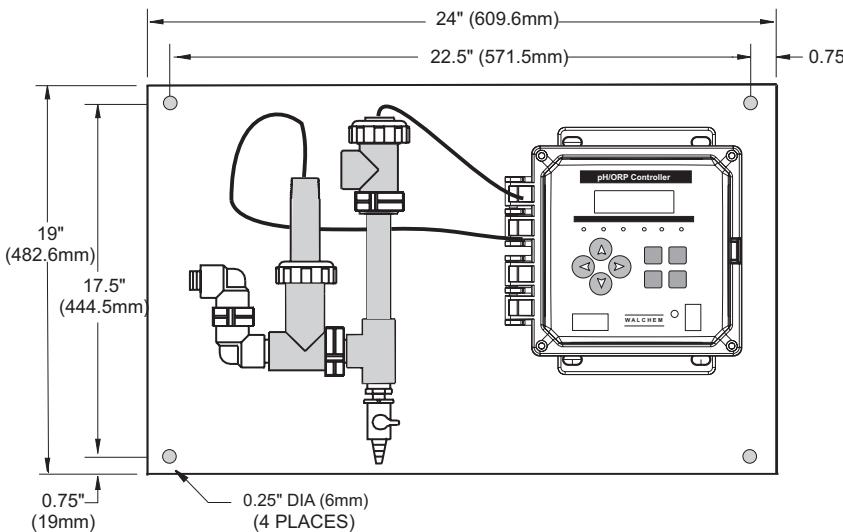
Use stored data to  
validate system  
performance

Copy user-programmed  
settings



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 (0.05°C)
Accuracy	$\pm 0.9$ °F (0.5°C)

## 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)

## 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.

## 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
WPH410	Powered				Dry
WPH420	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 $\pm 5$ VDC, 5mA
pH/ORP Preamp Power	

## 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	

## ORDER INFORMATION

WPH4  0 –        
 control      voltage      output      options      USB

### CONTROL OUTPUTS

- 1 = Two powered, three dry contact relays
- 2 = Two proportional relays, three dry contact relays

### VOLTAGE

- 1 = 120 VAC, prewired, 6" pigtails (WPH410) or 10 ft. cables (WPH420 only)
- 3 = 120 VAC, prewired, 10 ft. cables with connectors for EW pumps
- 5 = Hardwired, cable glands

### OUTPUT

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

### OPTIONS

- 1 = Prewired preamp with 10 ft. cable (electrode not included. Electrode should have BNC connector)
- 2 = Submersion flat pH electrode w/integral preamp (WEL-PHF-21)
- 3 = In-line flat pH electrode w/integral preamp (WEL-PHF-22) includes 3/4" NPTF mounting tee
- 4 = In-line flat pH electrode w/integral preamp (WEL-PHF-22) includes 3/4" flow switch manifold & 'U' adapter mounted on polypro panel
- 4T=In-line flat pH electrode with ATC and integral preamp (WEL-PHF-12), 3/4" flow switch manifold & 'U' adapter mounted on polypro panel
- 5= Submersion ORP electrode w/integral preamp (WEL-MVF-21)
- 6 = In-line ORP electrode w/integral preamp (WEL-MVF-22), includes 3/4" NPTF mounting tee
- 6R= In-line rod style ORP electrode w/integral preamp (WEL-MVR-22), includes 3/4" NPTF mounting tee
- 7 = In-line ORP electrode w/integral preamp (WEL-MVF-22), 3/4" flow switch manifold and 'U' adapter mounted on polypro panel
- 7R= In-line rod style ORP electrode w / integral preamp (WEL-MVR-22), 3/4" flow switch manifold and 'U' adapter mounted on polypro panel

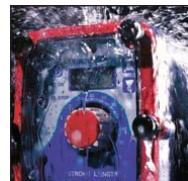
### USB FEATURES

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



### Webmaster<sup>®</sup>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<sup>®</sup> 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<sup>®</sup> 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)



**W A L C H E M**

An Iwaki America Company

Walchem, An Iwaki America Incorporated Company  
Five Boynton Road Hopping Brook Park  
Holliston, MA 01746 USA  
Phone: 508-429-1110  
Fax: 508-429-7433  
[www.walchem.com](http://www.walchem.com)