



For use in the addition of acids and alkalies to plating solutions, neutralization of waste streams, chemical reactions, cooling tower and boiler feed preparation, process control monitoring and recording.

MODEL 440 pH CONTROLLER / MODEL 443 ORP CONTROLLER - For use indoors



MODEL 440 pH CONTROLLER is designed to provide alkaline or acid addition to cooling towers, plating and chromating solutions and process streams to adjust pH to a desired setpoint. Output connections to the meter will actuate a metering pump or solenoid valve. Readings are indicated on a 5.5" taut-band analog meter. Solid state setpoint actuation avoids troublesome meter contacts. The aluminum case is ideal for panel or wall mounting. Output power is wired to a grounded output receptacle at bottom of case.

- With single or dual set points
- Easy to read 5.5" analog meter

TO ORDER, use Price Code No.		
MODEL	METER FUNCTION	PRICE CODE NO. *
440	pH	56-0045
443	ORP	56-0044

* For 220V/1/50, add **C** to Price Code No.

OPTIONAL	
Dual set point	add 56-0200

MODEL 443 ORP CONTROLLER is designed to provide addition of oxidation/reduction agents to process streams. It is possible to control chlorine or sulfur dioxide gas or liquid sodium hypochlorite, sodium thiosulfate or chromic acid additions and DTC type metal precipitants.

MODEL 436 pH or ORP CONTROLLER - For use in outdoor or corrosive atmospheres



- With single, dual, triple or quad setpoints
- Weatherproof case
- Similar to Models 440 & 443

MODEL 436 pH and ORP CONTROLLERS are designed for outdoor and corrosive atmosphere environments. The case is NEMA 4x rated to protect the instrumentation from corrosion. Combination electrodes are used with both pH and ORP. Function and major features are the same as parallel Models 440 and 443 above.

TO ORDER, use Price Code No.	
MODEL	PRICE CODE NO. *
436-pH	56-0065A
436-ORP	56-0065B

* For 220V/1/50, add **C** to Price Code No.

OPTIONAL	
Dual setpoint	add 56-0200
Viewing window in cover	add 56-0089
Audible alarm (Requires add'l setpoint)	add 56-0139
Automatic temperature compensation	add 56-0179

FEATURE	MODEL 440 pH	MODEL 443 ORP	MODEL 436-pH	MODEL 436-ORP
Accuracy	Meter ± 0.2 pH	Meter ± 15 mv	Meter ± 0.1 pH	Meter ± 5 mv
pH meter (ORP meter)	5.5" taut-band movement			
pH range (ORP range)	0 to 14 pH	0 - 1000 mV, 10 mV div.	0 to 14 pH	0 - 1000 mV, 10 mV div.
Setpoint range	2 to 12 pH	0 - 1000 mV	2-12 pH, accuracy ± 0.2 pH	0 - 1000 mV
Setpoint stability	± 0.05 pH per month	± 5 mV per month	± 0.05 pH per month	± 5 mV per month
Input current	2 picoamperes maximum			
Temperature compensation	0° C to 100° C in 2° C divisions			
pH electrode connector	Teflon® insulated BNC			
Reference electrode connector	Pin jack			
Automatic temp. compensation connector	Standard phone jack			
Electrode to controller distance	100 ft. nominal w/o preamp			
Power requirements	115 V/1/60, 10 watts		115 V/1/60, 8 watts	
Output	Single, 115V AC 5 amp controlled by the setpoint. May be alarm to indicate on or off condition. Front panel indicator light.			
Fuses	One 5 amp on pump circuit (1/6 HP motor load), one 1/4 amp for controller electronics			
Size	4.3 lbs.		13" high x 9" wide x 3" deep	
Weight	Designed for panel or wall mounting.		12 lbs.	
Case	Requires 12-1/8" x 8-1/8" panel cut out. Aluminum with baked enamel finish.		FRP NEMA 4X. Up to four setpoints may be provided. Neoprene door gasket with all inputs and outputs through the bottom of the case.	



2900 MacArthur Blvd. Northbrook, IL. USA 60062 www.serfilco.com (800) 323 - 5431

MODEL 432 MONITOR pH or ORP RECORDER/CONTROLLER - For process, reaction and waste water



- **Two set points: one for recorder, one for recorder/controller, with space for two optional setpoints and timer**

MODEL 432 pH or ORP RECORDER/CONTROLLER has two independent measuring channels - one with analog meter and the other with a chart recorder. Each channel is used with its own probe monitoring two separate locations, or both channels can share a common probe. The Model 432 is available as either a pH or ORP instrument. Two setpoints are standard.

The setpoints may be used as high / low when both acid and alkaline additions are needed as in a neutralization tank. The second probe can then be placed in the effluent stream to record final pH. If

- **Weatherproof FRP NEMA 4x case**
- **Simple installation**
- **Select options and electrodes to suit your needs**

only acid or alkaline is to be added for neutralization, only one setpoint will be connected to the meter and the other can be used as high alarm or recorder.

Hexavalent chrome or cyanide destruct is accomplished by ORP. In this case, only one setpoint is needed and only one reactant is added. Setpoint relays can activate metering pumps, solenoid valves or alarms. Two additional setpoints can be added for maximum versatility. The optional pulse timer prevents over-dispensing of reactant due to a probe or circuitry failure.

TO ORDER, use Price Code Number			
MODEL	POWER	PRICE CODE NO.	SHIPPING WEIGHT
432-pH	115V/1/60	56-0066	25 lbs.
	115V/1/50	56-0066B	
	220V/1/50	56-0066C	
432-ORP	115V/1/60	56-0142	
	115V/1/50	56-0142B	
	220V/1/50	56-0142C	

OPTIONAL	PRICE CODE NO.
Additional setpoints, to 5 total	add 56-0200
Dual channel setpoint for recorder	add 56-0140
Viewing window in cover	add 56-0089
Adjustable pulse timer, 0 to 60 seconds on and off	add 56-0141
Audible alarm (Requires additional setpoints)	add 56-0139

MODEL 437 pH or ORP RECORDING CONTROLLER (Similar to Model 436 except has chart recorder instead of analog meter.)



- **Weatherproof fiberglass enclosure (NEMA 4x standard.)**
- **5 amp control circuit**
- **Dual setpoint option**
- **5 amp control circuit**
- **Timer options**
- **2.6 inch strip chart**
Includes one roll of chart paper.
- **100 ft. electrode extension without preamp**

TO ORDER, use Price Code No.	
MODEL	PRICE CODE NO.
437-pH	56-0178
437-ORP	56-0213

For 220V/1/50, add C to Price Code No.

OPTIONAL	
Dual setpoint	add 56-0200
Window	add 56-0089

shown with window option

FEATURE	MODEL 432-pH		MODEL 432-ORP		MODEL 437-pH	MODEL 437-ORP
	METER	RECORDER	METER	RECORDER		
Accuracy	± 0.1 pH	± 0.1 pH	5 mV	± 5 mV	Does not apply	
Range	0-14 in 0.1 div.	2 to 12 pH	0.00-1,000 mV	0 - 1,000 mV		
Indicator	5.5" taut band movement	2-9/16" press. sens. strip chart	5.5" taut band movement	2-9/16" press. sens. strip chart	2-9/16" pressure sensitive strip chart	
Setpoint accuracy	0.2 pH		20 mV		0.2 pH	20 mV
Setpoint range	2 to 12 pH		0 to 1,000 mV		2 to 12 pH	0 to 1000 mV
Setpoint stability	± 0.05 pH per month		± 5 mV per month		± 0.05 pH per month	± 5 mV per month
Setpoint dead band	0.05 pH		5 mV		0.05 pH	5 mV
Setpoint pilot light						
Cabinet size	16" high x 14" wide x 8" deep					
Temperature compensation	115 VAC / 1 / 60Hz, 10 watts					
Power requirements						



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MODEL 400 pH MONITOR RECORDER - For continuous pH recording of waste or process streams



- **Benchtop or panel mount**
- **Compact 5.5" high x 3.5" wide x 7" deep**
- **Rugged— die cast metal with epoxy coating**
- **Inkless 30 day chart**
(First roll included)

MODEL 400 pH MONITOR RECORDER weighs in at under 5 lbs., small enough to fit in a briefcase. The compact Model 400 pH recorder features inkless pressure sensitive paper which lasts up to 30 days. Teflon® insulated input circuit assures accurate measurement in severe conditions and allows the use of an electrode up to 100 ft. away without a pre-amp. Controls are conveniently located on the face of the instrument. Panel mount hardware included.

TO ORDER, use Price Code Number			
MODEL	POWER	PRICE CODE NO.	SHIPPING WEIGHT
400	115V/1/60	56-0046	5 lbs.
	220V/1/60	56-0046B	
	220V/1/50	56-0046C	

MODELS 434 and 111 ANALOG pH MONITORS



MODEL 434 pH MONITOR

MODEL 434 MONITOR has the same reliable circuitry found in our laboratory instruments. Its NEMA4X case provides excellent corrosion-proof and chemical resistant protection.

MODEL 111 MONITOR is identical in function to Model 434, but is designed for panel mount. The same reliable monitor is used where weather resistant feature is not needed.



MODEL 111 pH MONITOR

TO ORDER	
MODEL	PRICE CODE NO.
434	56-0176
111	56-0177

FEATURE	MODEL 400	MODEL 434	MODEL 111
Accuracy	± 0.1 pH	0.05 pH when within 2 pH of a buffer solution, 0.1 pH when beyond 2 pH of a buffer solution.	
pH range	2 to 12 pH	0 to 14 scale with 0.1 pH divisions	
Display	2-9/16" chart	5.5" taut band meter	
Input current	2 picoamperes maximum	2 picoamperes maximum	
Temperature compensation	0° C to 100° C in 2° C divisions	0° C to 100° C in 2° C divisions	
pH electrode connector	BNC	BNC	
Power requirements	115V/1/60, 8 watts	115V/1/60, 10 watts	
Size	5-1/2" high x 3-1/2" wide x 7" deep	10" high x 8" wide x 5" deep	8" high x 8-1/2" wide x 2" deep

CONTROLLER AND RECORDER ACCESSORIES

ITEM AND DESCRIPTION	APPLICABLE TO MODEL NOS.	PRICE CODE NO.
DUAL CONTROL OPTION - Includes a second DPDT relay and a second setpoint control. Valuable when adding to solutions. - Specify this option when second setpoint is to be wired to the recorder - useful as an alarm or to control the addition of a final neutralization treatment. - Specify this option when second setpoint is to be used as an over-range safety shutoff in the event fouling of the electrode poses a problem. The recorder setpoint is connected in series with the controller setpoint. The recorder setpoint is then adjusted 1 or 2 pH units beyond that of the controller.	436, 437, 440, 443	56-0200
	432, 436, 437	56-0201
	432	56-0202
ADJUSTABLE CYCLE TIMER - A solid state timer which will start timing when the setpoint is reached. At any preset point between 0 and 50 minutes, the timer will reverse the output relay. This safety feature is designed to stop an acid pump in a closed system in the event of a mechanical or electrode failure.	432	56-0203
	432, 436, 437, 440	56-0204
BNC to BNC EXTENSION CABLE (to 100 ft. maximum)	400, 432, 436, 440, 443	Base 56-0207 + 56-0207A per ft.
pH / ORP CHART PAPER (inkless 30 day)- 50 divisions, 63 foot roll	400, 432, 437	56-0211
ELECTRODE FILLING SOLUTION		56-0304A



**For pH and ORP controllers, recorders, and monitors
Models 111, 400, 432, 434, 436, 437, 440 and digital**

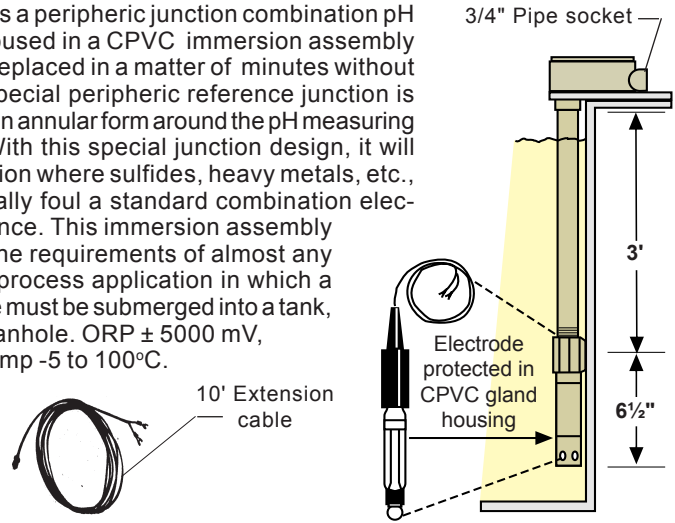
Combination pH electrodes have an all glass seal design allowing high temperature operation, easier cleaning and less carry over between solutions. The small silver-silver chloride internals provide rapid temperature equilibrium and the low

bulb impedance allows rapid response even at low sample temperatures. These electrodes are designed for all pH meters having a zero potential near pH 7. For portable or lab use electrodes, see Bulletin A-303.

IMMERSION ASSEMBLY WITH REPLACEABLE ELECTRODES

- **Double junction design**
- **Sealed peripheric junction combination pH electrode** with extension cable and spade lug connections
- **Annular non-fouling reference junction**
- **Removable guard** for ease of cleaning
- **Permits use where high solution currents prevail**
- **Easy mounting**
CPVC 36" x 3/4" NPT pipe extension and terminal with terminal strip for No. 6 spade lug connector and junction box. 10' extension cable (BNC to spade lug). Available with 8" x 3" x 1/2" PVC mounting bracket.
- **CPVC electrode gland**

Features a peripheric junction combination pH electrode housed in a CPVC immersion assembly and can be replaced in a matter of minutes without tools. The special peripheric reference junction is designed in an annular form around the pH measuring electrode. With this special junction design, it will allow operation where sulfides, heavy metals, etc., would normally foul a standard combination electrode reference. This immersion assembly will satisfy the requirements of almost any continuous process application in which a pH electrode must be submerged into a tank, trough or manhole. ORP ± 5000 mV, pH 0-14, Temp -5 to 100°C.



TO ORDER, use Price Code No.	
DESCRIPTION	PRICE CODE NO.
IMMERSION ASSEMBLY with double junction pH electrode	56-0301
with double junction ORP electrode	56-0302

OPTIONAL & REPLACEMENT EQUIPMENT		
DESCRIPTION		PRICE CODE NO.
Replacement electrodes with 36" leads & spade lug connector	pH	56-0115 56-0086
	ORP	56-0539
Immersion pipe (3/4" MNPT) & terminal box, CPVC		56-0540
Electrode gland housing, CPVC		56-0311
10' extension cable - BNC x spade lug		56-0568
PVC mounting bracket, 8" x 3" x 1/2"		

DISPOSABLE COMBINATION ELECTRODE ASSEMBLY

A single junction probe features both the pH measuring and reference constructed in a single stem for a single probe convenience. The sealed reference needs no pressurization or filling during entire probe life. The combination pH electrode is potted permanently into the PVC housing with a 3/4" NPT fitting. 1" outside diameter

x 6" overall length. pH 0 to 14. Temperature - 5 to 80 °C. To 100 PSI.

DESCRIPTION	PRICE CODE NO.
In-line general purpose, 3/4" MNPT with 10 ft. BNC cable. (Fig. 1)	56-0305
Refillable immersion general purpose - extra life, 3/4" FNPT w/10' BNC to spade. May be used with immersion pipe above. (Fig. 2)	56-0541
Drum pH probe assembly - 42" long (Fig. 3)	56-0543
Extension cable BNC (female) by BNC (male) 10 ft.	56-0542

