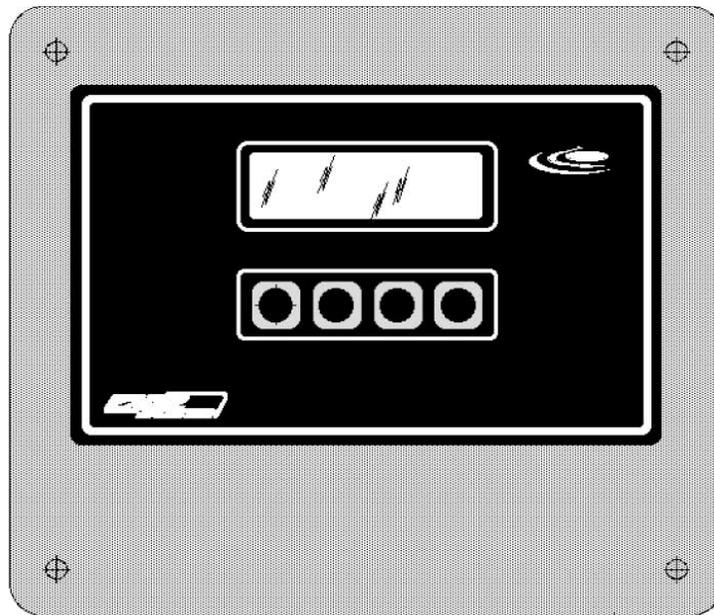




Premier Series Monitor

RP-1000/RP-1200

TECHNICAL REFERENCE MANUAL



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FIRMWARE VERSION \geq 2.32

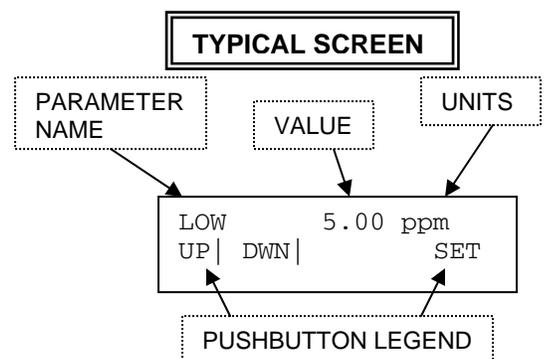
The RP-1000/1200 monitors a pH, ORP, or a fluoride probe and an optional residual probe. Up to four set points (two for each input) are provided. An internal scaled 4-20mA signal is provided for remote monitoring of the pH, ORP, or a fluoride probe. A second analog output for remote monitoring of the residual is available as an option.

PUSHBUTTON LEGEND SUMMARY

SET	From the main operating screen, enter SETUP menus.
ESC	Return to the last menu.
UP	Increase a value (i.e., set point) or select the next parameter.
DWN	Decrease a value (i.e., set point) or select the last parameter.
ADJ	Adjust the value of the parameter displayed.
ALM	Go to the alarm set point menu.
CAL	Go to the calibration menu.
ACK	Acknowledge the alarm condition(s).
CLEAR	Temporarily clear the alarm condition(s).
x:y	Set point x indicates a low or high set point (L or H), and y indicates the relay number (1,2 or 3)
ZRO	Enter the cell input zero menu.
SPAN	Enter the cell span input set menu.
PO1	Calibrate the PO1.
4mA	Set 4mA PO1 or PV1 point.
20mA	Set 20mA PO1 or PV1 point.

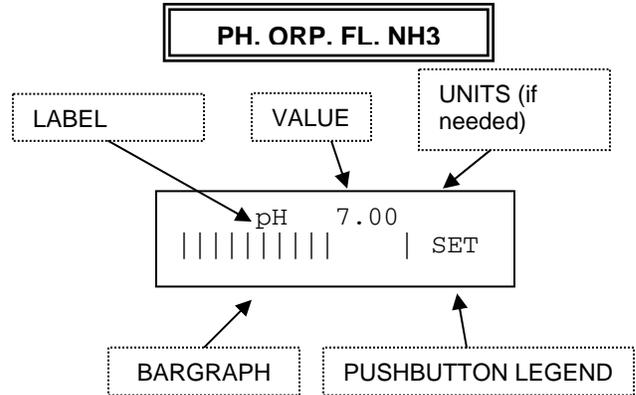
SCREENS

All screens other than the main operating screens are formatted where the top line displays a parameter name, value & units. The bottom line displays a pushbutton legend to aid in guiding one through the instrument setup and operation.

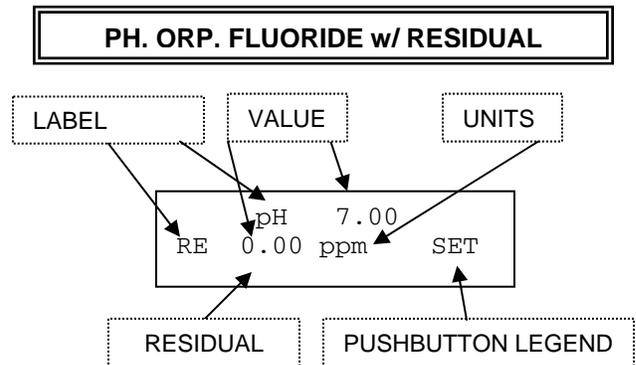


MAIN SCREEN

The basic operation of the RP-1200 is a simple indication of a pH, ORP, fluoride, or ammonia probe output. The screen to the right shows the pH label, value, and units (if needed). On the bottom line is a fifty-element bar graph that represents the analog output.



An optional residual probe can be displayed on the main screen.



- Pressing the SET pushbutton prompts the operator to enter a password.
- If the password entered is correct and before the unit displays the METER SETUP menu.

ADVANCED PARAMETER MENU

To select the instrument as a meter (UPC1000), gas detector (GA-1000), meter, or residual analyzer (RA-1000), do as follows: From the current main operating screen, press SET and enter the password "1?1" and press the ENT pushbutton. Alternatively, if one is in the setup menu, press the right most pushbutton until the password screen is displayed, enter the password "1?1" and press the ENT pushbutton.

Parameter: **MODE**

Press the ADJ pushbutton to set the choice to **METER** (if not set).

Parameter: **TEMPERATURE**

Selects the unit of the temperature display as either degrees Celsius or Fahrenheit.

Parameter: **BUZZER**

Enables (ON) or disables (OFF) the audible alarm.

Parameters: **K1, K2, K3**

Sets the operating mode of the selected relay.

K1-K4	ENERGIZED	DE-ENERGIZED
OFF	NEVER	ALWAYS
LOW	INPUT <= SP	INPUT > SP
LOW /w ACK	INPUT <= SP	INPUT > SP OR Acknowledged by USER
HIGH	INPUT >= SP	INPUT < SP
HIGH /w ACK	INPUT >= SP	INPUT < SP OR Acknowledged by USER

After one is finished, press the ESC pushbutton to return to the main operating screen.

K1 – K3 are used for pH, fluoride, NH3, or ORP set points.

METER (RESIDUAL/ORP/pH/FLUORIDE) SETUP

From the main operating screen, press the SET pushbutton and enter the password (default 000). Press ENT to, if a valid password was entered, enter the main setup menu; three choices are shown: CAL, ALM and PARM. Press ESC to return to the main operating screen after several prompts.

PARAMETER LIST UNDER THE PARM MENU

Press PARM to enter the parameter setup.

Parameter: **PV1 ENABLE** (RES ENABLE)

Enables the residual display on the main screen (the bar graph is replaced). The probe interfaces to the PV1 + input and an internal 24V source. Set this parameter to OFF (NO).

Parameter: **PV1 DP** (RES DP)

Selects the residual decimal point...

Parameter: **PV1 FS** (RES FS)

Sets the residual full-scale... This also sets the optional second 4-20mA analog output full-scale value.

Parameter: **INPUT**

Selects the PV3 probe input as an ORP, FLR (fluoride), pH, etc. Other labels that are specific to the probe input type will change accordingly.

Parameter: **ORP FS, FLR FS, pH FS, NH3 FS, or TTL FS.**

Sets the value that represents an analog output of 20mA.

Parameter: **ORP ZERO, FLR FS, pH ZERO, NH3 ZERO, or TTL ZERO**

Sets the value that represents an analog output of 4mA.

Parameter: **PROBE DAMP**

This parameter sets the probe damping (filtering). The settings are OFF, 1s, 2s, 3s, 5s, 10s, 20s, 30s, 45s, 60s, 2m, 3m, 5m, 10m, 15m, 20m, 30m, 60m. This value is the time it takes to reach 95% of the final probe value. Multiplying the time by 4 yields the time it takes to achieve 100% of the final probe value (i.e., It takes about 8s to achieve a 100% value on the display when the 2s setting is selected).

DECIMAL POINT

S2, located on the RA-1000-CPU board, sets the decimal point as follows:

SWITCH, S2	pH	ORP	FLR (Fluoride)
A	0.0	0	0.00
B	0.0	0	0.00

The decimal point for the CL2 total probe is selected by the PV1 DP setting. This application typically contains a total and free CL2 probe. The latter is connected to PV1 & the 24V source (see diagrams).

ALARM (ALM) SET POINTS

Press the ALM pushbutton under the METER SETUP menu. Up to three, user selectable set points can be used. Parameters K1, K2, & K3 in the ADVANCED PARAMETER MENU select each set point's mode of operation. **K1 – K3 are used for pH, fluoride, or ORP set points.**

The pushbutton legend has the format, "x:y," where 'x' indicates a low or high set point (L or H) and 'y' indicates the relay number (1,2, or 3).

Examples:

L:1 is low-level set point controlling relay 1

H:2 is high-level set point controlling relay 2

ACKNOWLEDGABLE SET POINTS

These are set points in which a screen in the main residual screen is displayed that will require the operator to decide on one of two choices: ACK or CLEAR.

ACK: The set point relay is de-energized & the buzzer (if enabled) is silenced. The set point alarm will not appear until reset by the residual input going out of the set point's active range.

CLEAR: The set point relay is de-energized & the buzzer (if enabled) is silenced. The set point alarm will appear ten seconds later if the residual input does not go out of the set point's active range.

NON-ACKNOWLEDGABLE SET POINTS

The relay will energize or de-energized based on the set point's mode & value. No screen will be displayed indicating the alarm and the buzzer will not sound.

PASSWORD

After one exits the CALIBRATION menu, one is first prompted to change the stored password. If one does not want to change the password, press the NO pushbutton. If the YES pushbutton is pressed, the SET new password screen is entered and now one can set the new password.

CALIBRATION (ALL MODES)

To calibrate from the main operating screen (flow, residual/ORP/pH, or compound loop), press the SET pushbutton, enter the password (default is 000), and press the CAL pushbutton.

The three selections (other than escape) are as follows:

- PV3: Fluoride/ORP/pH/NH3 input.
- PV1: Residual probe calibration.
- PO1: Fluoride/ORP/pH/NH3 output.

PROBE CALIBRATION (BASIC)

Example is based on a residual probe connected to +24V SRC (+) and the +PV1 input (-).

1. Select PV1 (residual).
2. Zero a 0ppm residual by pressing the ZRO pushbutton.
3. Supply a known residual to the sensor probe and wait for a stable ppm display.
4. Press SPAN to set the known residual value in ppm units. Slew-in the correct value and press ENT.
5. Repeat if necessary.
6. *Exit to the calibrate menu by pressing the ESC pushbutton.*

The residual analog input (PV1) can be "normalized" to a 4-20mA generator connected to the PV1 input. *This will not match with the residual probe calibration.*

- Set the mA generator to 4.00mA and press the pushbutton under the ZERO label to set the zero ppm point. The display should read 0ppm.
- Set the mA generator to 20.00mA and press the pushbutton under the SPAN label to set the span maximum point. The display should read the same as the PV1 FS parameter.
- If desired, repeat the above to verify calibration. However, the zero and span points are not interactive so one can skip this step.
- Press the ESC pushbutton to exit to the calibration menu.

CALIBRATION OF pH, ORP or FLUORIDE

Selecting PV3 in the calibration menu will display the screen to the right. Pushbuttons P1 and P2 set calibration points 1 and 2, respectively. Pressing RST restores the default calibration values to (P1) 0.2ppm @ 140mV & (P2) 2.0ppm @ 84mV. Pressing ESC backs to the calibration menu.

0.0ppm	0.00mV		
P1	P2	RST	ESC

Calibrate two points following a procedure documented in the probe manufacturer's manual. P1 (point 1) should be lower than P2 (point 2).

Fluoride: Do not calibrate from 0.0ppm to 0.1ppm of **fluoride**, as the probe is quite non-linear below 0.2.
Ammonia: Do not calibrate a zero ammonia value, select 0.01 instead. Calibrate the lower point using P1 and the higher point using P2.

PO1/PO2 (OUTPUT) CALIBRATION

To calibrate the analog output for channel one or two (PO1 or PO2), one must connect either a DMM (mA input) or other device that can read the PO1/PO2 current output. The device should have, at least, 0.01mA precision. NOTE: PO2 is an optional board installed inside the PS-1000 enclosure.

1. From the calibration menu, press the POx pushbutton to enter the CAL ANALOG OUTPT (output) screen.
2. Connect the DMM to the analog output that is being calibrated (PO1 or PO2) and press the PO1 or PO2 pushbutton to enter that calibration screen (SET ANALOG OUT).
3. Press the 4mA pushbutton and the mA meter should read around 4.00mA.
4. Use the UP & DOWN pushbuttons to set the output to exactly 4.00mA and press set when done. This is the zero point.
5. Press the 20mA pushbutton; the mA meter should read around 20.00mA.
6. Use the UP & DOWN pushbuttons to set the output to exactly 20.00mA and press set when done. This is the span point.
7. The two points are not interactive so one should not need to readjust each point again.
8. Press the EXIT pushbutton to go back to the CAL ANALOG OUTPT menu. One can calibrate the other channel if desired.

END OF CALIBRATION

END OF DOCUMENT

A

B

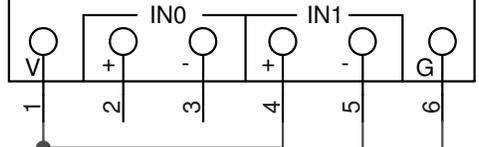
C

D

PS-1000S-DSP

TB10

INPUTS

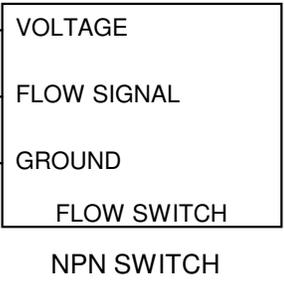


BROWN

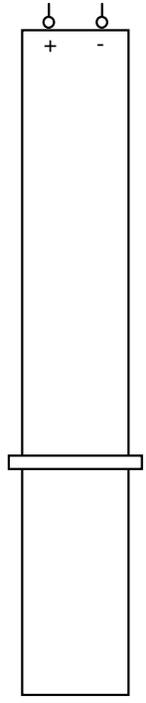
BLACK

BLUE

NPN SWITCH



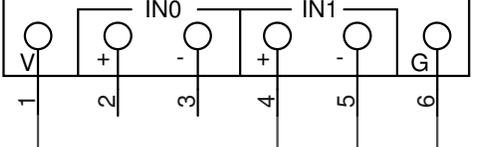
SEE PSC3000 WIRING DIAGRAM FOR PROBE WIRING



PS-1000S-DSP

TB10

INPUTS

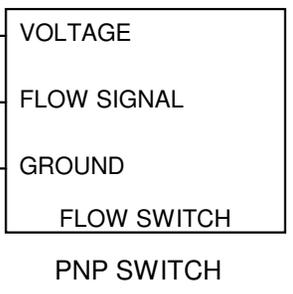


BROWN

BLACK

BLUE

PNP SWITCH



CI2 Probe

BOARD REVISION (REV): 0644 AND ABOVE

PROBE & FLOW SWITCH WIRING

A

B

C

D

A

B

C

D

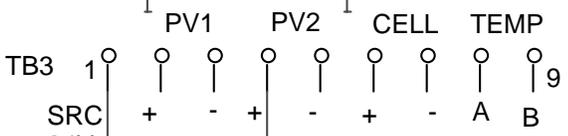
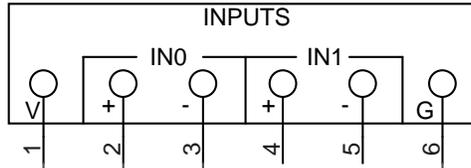
PS-1000S-DSP

PS-1000S-CPU

J2
1x5

TB10
INPUTS

4-20mA



BROWN

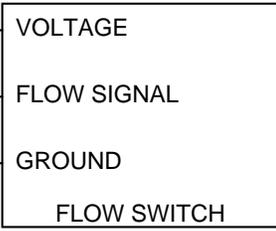
BLACK

BLUE

WHITE/CLEAR/RED

BLACK

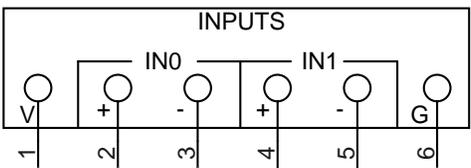
NPN SWITCH



SHIELD IS NOT CONNECTED

PS-1000S-DSP

TB10
INPUTS

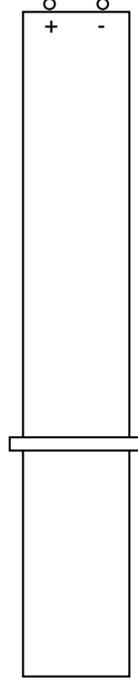
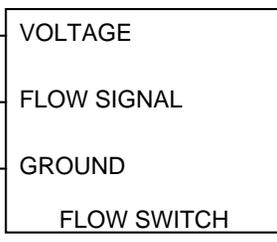


BROWN

BLACK

BLUE

PNP SWITCH



**BOARD REVISION (REV):
0644 AND ABOVE**

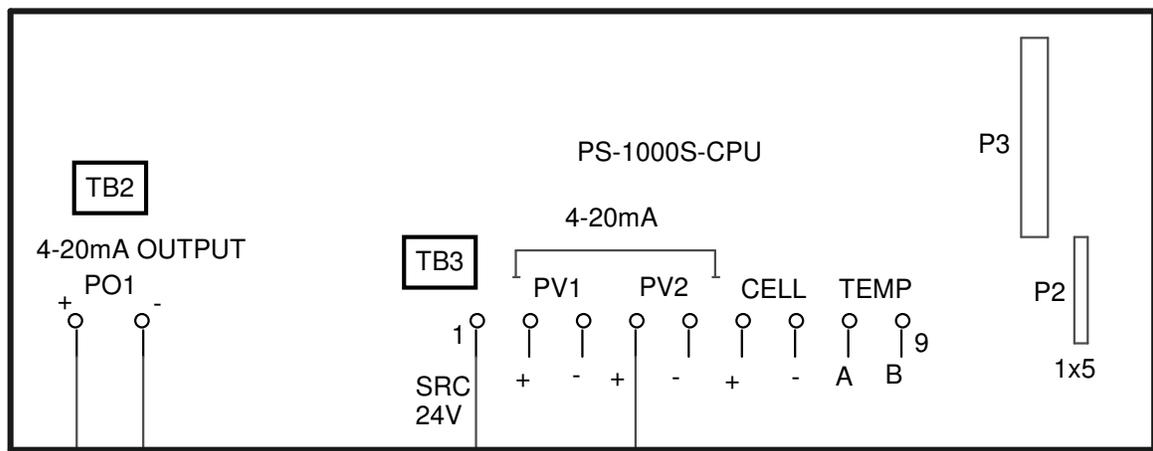
EAGLE MICROSYSTEMS, INC
PROBE & FLOW SWITCH WIRING

A

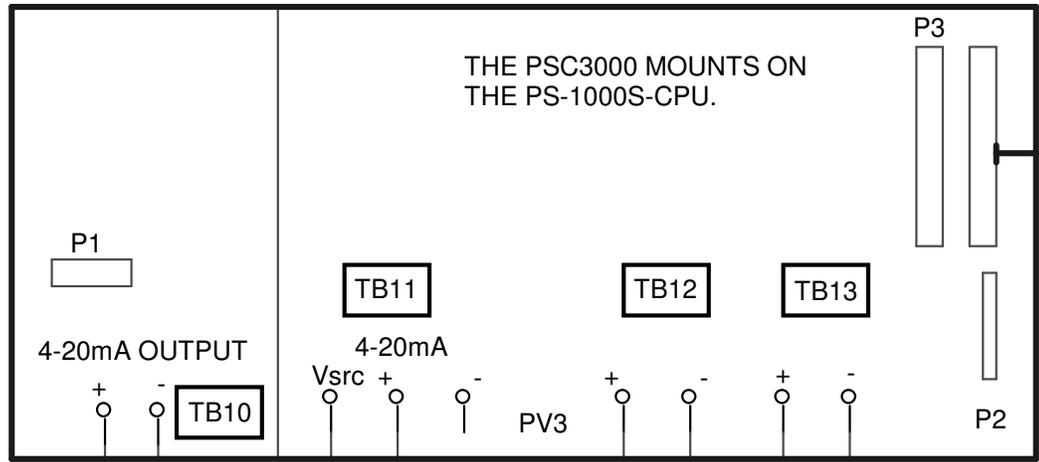
B

C

D

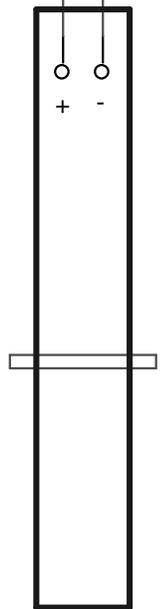
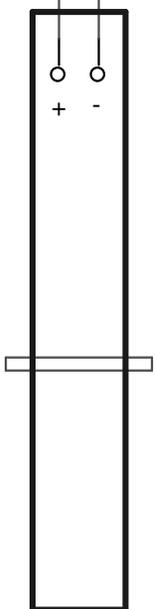


4-20mA LOAD (<=600ohms)
TRACKS PV3



4-20mA LOAD (<=600ohms)
TRACKS PV1

TO DISPLAY
PS-1000S-DSP



The 1000ohm RTD is optional.

Notes:

