

PROCON

**MODEL 900P
LOW PRESSURE MONITOR**

1/13/00
Rev 01

-INCHES OF WATER-

-STATUS-

SETPNT
PRIMARY

SETPNT
SECNDRY

ALARM

SETUP

-INPUT-

PROCON

PRESSURE MONITOR

**PROCON
MODEL 900P
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i i i **NOTICE** i i i

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**PROCON
MODEL 900P
LOW PRESSURE MONITOR**

The Model 900P is a microprocessor based Low Pressure Monitor with outputs for Alarm and/or Control purposes. The following are highlights of some of the main features:

- * DIFFERENTIAL PRESSURE INPUT
- * TWO PROGRAMMABLE ALARM/CONTROL RELAYS
- * TWO PROGRAMMABLE ALARM/CONTROL OUTPUT TRANSISTORS (OCT)
- * ACCESS CODE PARAMETER PROTECTION
- * EEPROM PARAMETER MEMORY
- * AUDIO ALARM/ANNUNCIATOR
- * SEPARATE ALARM AND RANGE SETTINGS
- * ALL PARAMETERS SET IN SOFTWARE-NO POTS OR SWITCHES
- * WET STATION ENCLOSURE
- * BRIGHT FOUR DIGIT LED DISPLAY
- * SMOOTH FACE CONSTRUCTION
- * QUICK DISCONNECT REAR TERMINALS

The following table lists the models that are available:

MODEL	VOLTAGE
900PA	24 VAC
900PB	120 VAC

The controller reads Differential Pressure between a Reference and High Pressure input. The Raw Pressure reading is automatically temperature compensated.

Two Form C (N/O-C-N/C) Relays are provided that may be programmed to act as either alarm or control relays. The relays are individually assignable to any function.

| | | **WARNING** | | |

THE ABSOLUTE MAXIMUM PRESSURE INPUT TO THE UNIT IS 5 PSIG. IF THIS VALUE IS EXCEEDED, THE UNIT WILL BE DAMAGED. THE USER IS FULLY RESPONSIBLE FOR ANY DAMAGES DUE TO EXCESSIVE PRESSURE INPUT.

DISPLAYS

There is a 4 digit display on the face. The meaning of the display is dependant on the current mode of the monitor. The monitor has three display modes; NORMAL, SETUP, and ALARM. During the NORMAL mode, the display shows current system pressure. During the SETUP mode, the display will indicate a combination of alpha numeric characters to aid the user in correctly setting up the system. During alarm modes, the display will indicate alarm codes that will allow the user to easily identify the alarm.

STATUS LEDS

Four discrete LEDs are provided to indicate the current system status. They are labeled SETPOINT PRIMARY, SETPOINT SECONDARY, SETUP and ALARM.

SETPOINT PRIMARY - This LED indicates that the current pressure is above the Primary Setpoint setting.

SETPOINT SECONDARY - This LED indicates that the current pressure is above the Secondary Setpoint setting.

ALARM - This LED indicates that the system is in an ALARM mode. The seven segment display indicates the specific alarm that has occurred.

SETUP - This LED indicates that the system is in the SETUP mode. In this mode, the system parameters are selected.

KEYPAD

The four keys marked UP, DOWN, SETUP & RETURN/SIL are used to operate and program the unit. All keys are accompanied by an audio 'click' to provide feedback for the operator when a key is depressed. The following is a listing of each of the keys and their functions:

UP - This is a multifunction key whose function varies with the current system mode.

SETUP - In the SETUP mode, depressing the UP key will cause the display to advance. Depressing the key once and releasing will allow the accurate setting of the least significant digit. Holding the key down will activate the automatic, rapid incrementing of the display.

NORMAL - In the NORMAL mode, depressing the UP key will cause the Primary Setpoint to be displayed. While viewing the primary setpoint, $\$P=$ will alternately flash to indicate the meaning of the display. The Primary Setpoint will only be displayed as long as the UP key is depressed.

DOWN - This is a multifunction key whose function varies with the current system mode.

SETUP - In the SETUP mode, depressing the DOWN key will cause the display to decrease. Depressing the key once and releasing will allow the accurate setting of the least significant digit. Holding the key down will activate the automatic, rapid decrementing of the display.

NORMAL - In the NORMAL mode, depressing the DOWN key will cause the Secondary Setpoint to be displayed. While viewing the Secondary Setpoint, $\$S=$ will alternately flash to indicate the meaning of the display. The Secondary Setpoint will only be displayed as long as the DOWN key is depressed.

SETUP - This key is used to put the system into the SETUP mode and advance through the parameters. Depressing the key once, will place the unit in the SETUP mode. (Note: If access code protection is selected, an additional step is required, see access code). Depressing the key after entering the SETUP mode, will allow the user to scroll through the SETUP parameters.

RETURN/SIL - This is a multifunction key. Its function varies with the current system mode.

SETUP MODE - In the SETUP mode, depressing this key will cause the system to exit the mode. During the process, the unit automatically enters a SAVE mode. This causes the parameters to be written into the EEPROM. This is a permanent (10 year minimum life) memory that does not require battery backup.

ALARM MODE - If an ALARM occurs, this key serves as an alarm silence key. Depressing the key once will cancel the audio annunciation and eliminate the alarm alpha numeric code from the seven segment display.

Subsequently, the key may be used to toggle the viewing of the alarm for reference. In all cases, the ALARM LED continues to flash to indicate that the system is operating in an alarm mode.

SETUP

The controller may be configured to implement a variety of control and monitoring functions. The SETUP mode allows the user to both adjust and program the unit. The following is a listing of the code prompts that will appear in the display when in the SETUP mode. The code will alternately flash with the selected value to indicate to the user the parameter that is currently being viewed or set.

The UP and DOWN keys are used to increment or decrement the specific values. Note: these values are permanently saved in the system EEPROM memory when exiting this mode.

<u>CODE</u>	<u>DESCRIPTION</u>	<u>SETTING RANGE</u>
SP	SETPOINT-PRIMARY	.00 to 1.00 inches H ₂ O
SS	SETPOINT-SECONDARY	.00 to 1.00 inches H ₂ O
HI	HIGH ALARM	.00 to 1.00 inches H ₂ O
LO	LOW ALARM	.00 to 1.00 inches H ₂ O
Ad	LOW ALARM DELAY	:00 to 0:59 seconds
CP	PRESSURE CALIBRATION OFFSET	+ or - 0.25 inches H ₂ O
AC	ACCESS CODE	0 to 9999
RL1	RELAY LOGIC RELAY 1	0 to 9
RL2	RELAY LOGIC RELAY 2	0 to 9
AL1	AUXILIARY LOGIC 1	0 to 9
AL2	AUXILIARY LOGIC 2	0 to 9

The alarms may be eliminated by setting their values to zero. The low alarm delay allows a programmable delay between the occurrence of a low alarm and the activation of the low alarm. If the low alarm clears in this time, the alarm will not activate.

The calibration parameters allows for the digital offset of the displayed reading. If an error is detected in the system that causes a variation between the actual value and the displayed value, the error may be set to adjust the display for that value.

The Relay Logic and Auxiliary Logic parameters utilize the selection of a code that varies from 0 to 9 to define the specific action of the output. The Relay Logic controls the output of the two relays. The Auxiliary Logic controls the output of the two Open Collector Transistor (OCT) Auxiliary outputs.

The Relay Logic and Auxiliary Logic parameters utilize the selection of a code that varies from 0 to 8 to define the specific action of the output. The Relay Logic controls the output

of the two relays. The Auxiliary Logic controls the output of the two Open Collector Transistor (OCT) Auxiliary outputs.

The four outputs RL1 through AL2 can be set to one of ten different functions. The following gives the available settings and their description:

<u>OUTPUT SETTING</u>	<u>DESCRIPTION</u>
0	Output Disabled
1	High Alarm
2	Low Alarm
3	Below Primary Setpoint
4	Above Primary Setpoint
5	Below Secondary Setpoint
6	Above Secondary Setpoint
7	Input 1 Active
8	Input 2 Active
9	Input 3 Active

Output Disabled - With this setting, the output will not turn on.

High Alarm - With this setting, the output will be on whenever the High alarm is active.

Low Alarm - With this setting, the output will be on whenever the Low Alarm is active.

Below Primary Setpoint - With this setting, the output will be on whenever the current pressure is below the Primary Setpoint setting.

Above Primary Setpoint - With this setting, the output will be on whenever the current pressure is above the Primary Setpoint setting.

Below Secondary Setpoint - With this setting, the output will be on whenever the current pressure is below the Secondary Setpoint setting.

Above Secondary Setpoint - With this setting, the output will be on whenever the current pressure is above the Secondary Setpoint setting.

Input 1 Active - With this setting, the output will be on whenever the Input 1 switch is closed.

Input 2 Active - With this setting, the output will be on whenever the Input 2 switch is closed.

Input 3 Active - With this setting, the output will be on whenever the Input 3 switch is closed.

ALARMS

A number of alarms are available. When an alarm is activated, an audio tone will sound, the display will alternately flash an alpha numeric code to indicate the alarm and the 'ALARM' LED will light.

The alarm silence key may be utilized to terminate the audio portion of the alarm, as well as, toggle the alpha numeric display on and off. In this way, the user may recall the alarm that is active or eliminated while working with the system.

The following is a listing of each of the alarms and their mnemonic:

SYSTEM – This is a catch all indicator for the miscellaneous diagnostics. An example would be the malfunction of the EEPROM SAVE routine. This would simply indicate to the user that something has gone wrong and he should either repeat the command or reset the unit. The mnemonic 'SYS' will alternately flash in the display.

HIGH – This alarm indicates that the Pressure has exceeded the High Alarm Setpoint. The mnemonic 'HI' will alternately flash in the display.

LO – This alarm indicates that the Pressure has dropped below the Low Alarm Setpoint. The Pressure must remain below the Low Alarm Setpoint for the duration set in the Ad= parameter for the alarm to be active. The mnemonic 'LO' will alternately flash in the display.

OPERATION

The unit monitors the pressure difference between the HIGH -and LOW -inputs. In order to be meaningful, this measurement must be compensated based on the temperature of the sensor. For this purpose, the temperature of the sensor is monitored through an onboard temperature sensor.

The system uses a high resolution A/D converter to maximize the accuracy over the full temperature range.

The unit may be utilized as a control device by selecting a value in the 'SP' parameter (Setpoint-Primary). The RL -and AL -parameters enable the outputs to be active above or below the SP -setting.

Additionally, a second control point may be set by selecting a value in the 'SS' parameter (Setpoint-Secondary). The RL -and AL -parameters enable the outputs to be active above or below the SS -setting.

Note: The two output relays may be assigned to any configuration utilizing the 'RL1' and 'RL2' parameters. The two Auxiliary output open collector transistors (OCT) may be assigned to any configuration utilizing the 'AL1' and 'AL2' parameters.

For monitoring purposes, the High and Low Pressure Alarms may be programmed. If their values are set to zero, their function is eliminated. If a value is placed in these parameters, an alarm will be activated whenever the Pressure exceeds the HIGH setting or falls below the LOW setting. Also, the Low Pressure Alarm has a time delay feature that is selectable through the Ad -parameter. If an Output Relay/OCT has been selected to track any of these alarms, that relay or transistor will be activated when the alarm is sounded.

Three switch inputs are provided for control purposes. Any of the RL -or AL -outputs can be set to turn on when the input switches close.

ACCESS CODE

In some cases, it may be desirable to restrict the access to the setup functions. Thus, an "Access Code" system is incorporated in the design. In the SETUP mode the parameter Δ AC= may be set. If Δ AC= is set to 0000, the function is eliminated and the system operates as previously described.

The Access Code is simply any number from 0001 to 9999 as programmed into the system by the customer's authorized personnel. Once this code is entered, any attempt to use the SETUP key to gain access to the setup functions will cause "Code" to appear in the process display. The UP and DOWN keys are then used to set the proper code number. A second mode key entry is then required. Any other entry, the wrong code number, or no action for 30 seconds will return the unit to the normal operating mode.

BACKDOOR CODE

A special code has been incorporated into the software to insure factory access to all functions no matter what the customer has done with the access codes. This code is 500.

MANUAL REVISIONS

<u>Revision #</u>	<u>Program #</u>	<u>Engineering #</u>	<u>Revisions Made</u>
Rev 01	DT500PB	DT900PA DT900PB	Origination

LIMITED WARRANTY

WARRANTY: JPC CONTROLS WARRANTS ITS NEW PRODUCTS TO BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP UNDER THE SERVICE FOR WHICH THEY ARE INTENDED. THIS WARRANTY IS EFFECTIVE FOR TWELVE MONTHS FROM THE DATE OF SHIPMENT.

EXCLUSIONS: THIS WARRANTY IS **IN LIEU OF** ANY OTHER WARRANTY EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF **MERCHANTABILITY** OR FITNESS FOR A PARTICULAR PURPOSE.

JPC CONTROLS IS NOT LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

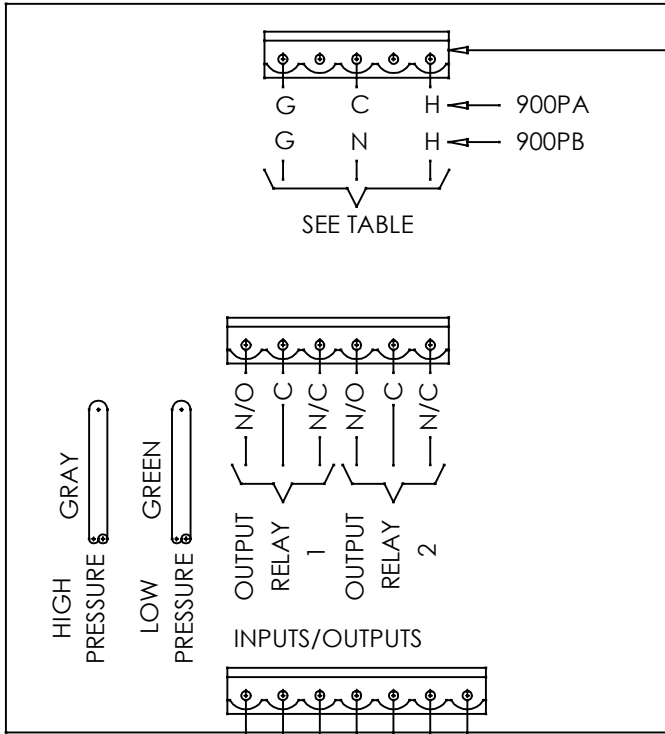
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REMEDIES: THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY SHALL BE: (1) THE REPAIR OR REPLACEMENT OF DEFECTIVE PARTS OR PRODUCTS, WITHOUT CHARGE. (2) AT THE OPTION OF **JPC CONTROLS**, THE REFUND OF THE PURCHASE PRICE.

SPECIFICATIONS

**MODEL 900P
PRESSURE MONITOR**

PRESSURE RANGE	0.00 - 1.00 inches H ₂ O
PRESSURE RESOLUTION	.01 inches H ₂ O
ABSOLUTE MAX PRESSURE	5 PSIG
MEASURING TIME	2 Conversions/Sec
DISPLAY	Four 0.56 Inch High, Seven Segment, LED Uniplanar numerals. Four Discrete LEDs (Red, Green, Amber).
ANNUNCIATOR	Audio Tone, ~ 2500 HZ
SETUP MEMORY	EEPROM, All Parameters
MEMORY RETENTION	10 Years w/o Power
SENSOR	Internal, Strain Guage
CONTROL	On/Off Relay
OPERATING TEMP RANGE	20 to 50 Degrees C
STORAGE TEMP RANGE	-40 to 60 Degrees C
CONSTRUCTION	Enclosure - Kydex, Black Face - Lexan, Back Printed
SIZE	8.25 x 3 3/4 x 5.25 inches (HxWxD) 210 x 94 x 133mm
WEIGHT	≤ 3 Lbs. (1.8 kg)
CONNECTION	Rear, Weidmueller, .200 CC 1/8" O.D. Tubing
OUTPUT	Open Collector Transistor, 100 mA. max. 12 VDC provided Relay - Optically isolated 5 amp, 120 VAC
POWER	900PA - 6 VA, 24 VAC \pm 10%, 50/60 HZ 900PB - 6 VA, 120 VAC \pm 10%, 50/60 HZ

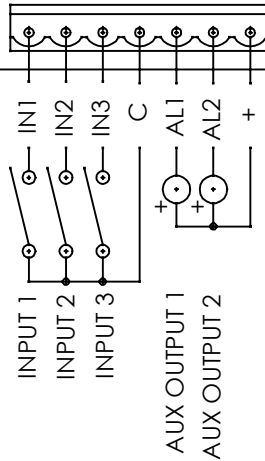


WEIDMULLER CONNECTOR
(TYPICAL)

MODEL	VOLTAGE
900PA	24 VAC
900PB	120 VAC

MATING CONNECTORS ARE WEIDMULLER TERMINAL TYPE BL
 BL5 - 5 PIN, CATALOG NO. 12594.6
 BL6 - 6 PIN, CATALOG NO. 12595.6
 BL7 - 7 PIN, CATALOG NO. 12596.6

NOTE: + TERMINAL RATED 12 - 20 VDC UNREGULATED (100mA).



CAUTION

PNEUMATIC PRESSURE NOT TO
EXCEED 5 PSIG

TOLERANCES UNLESS OTHERWISE
SPECIFIED

JPC CONTROLS

102 COMPASS PT. DR. STE. D, ST. CHARLES, MO 63301
(636) 946-3300 Fax (636) 724-2492 www.jpccontrols.com

PROCON 900PA/900PB PRESSURE MONITOR
REAR PANEL

ALL DIMENSIONS ARE IN INCHES

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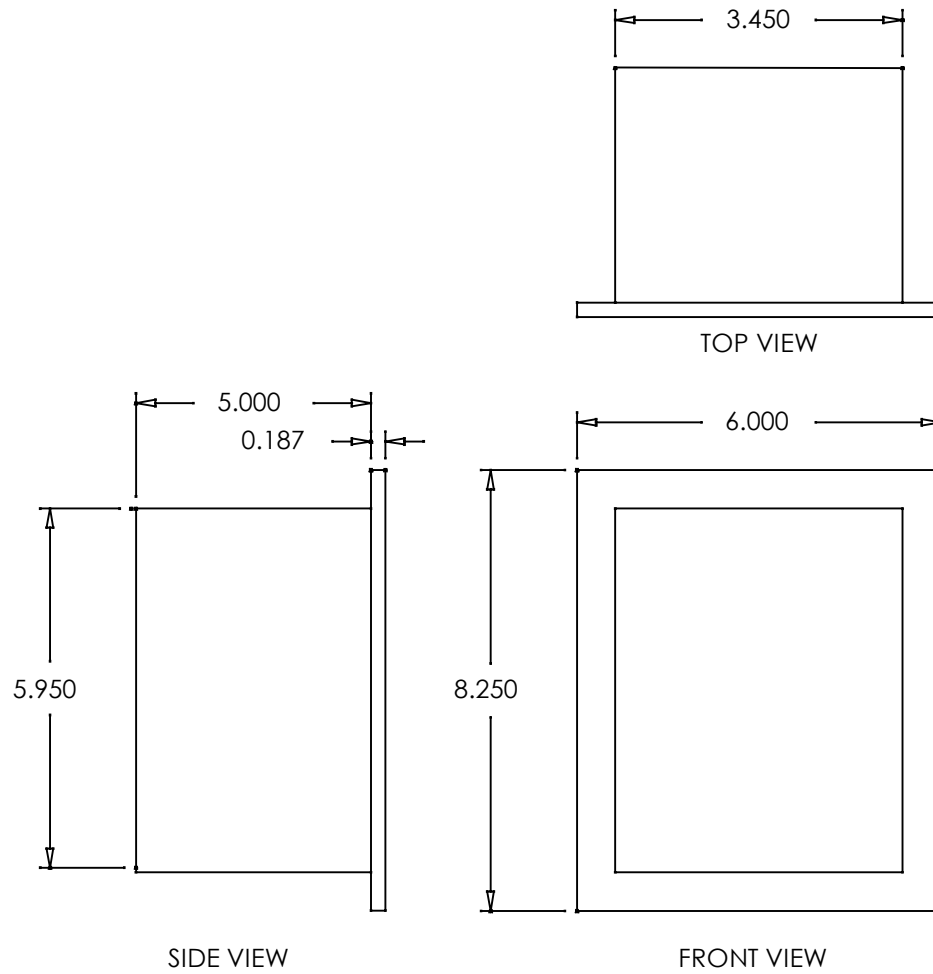
1 OF 1

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090003

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TOLERANCES UNLESS OTHERWISE SPECIFIED	JPC CONTROLS 102 COMPASS PT. DR. STE. D. ST. CHARLES, MO 63301 (636) 946-3300 Fax (636) 724-2492 www.jpcccontrols.com								
	PROCON 900PA/900PB PRESSURE MONITOR PHYSICAL DIMENSIONS								
	APPROVAL		DWN BY	MPJ	DATE	02/18/02	SCALE	NONE	CHKD BY
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