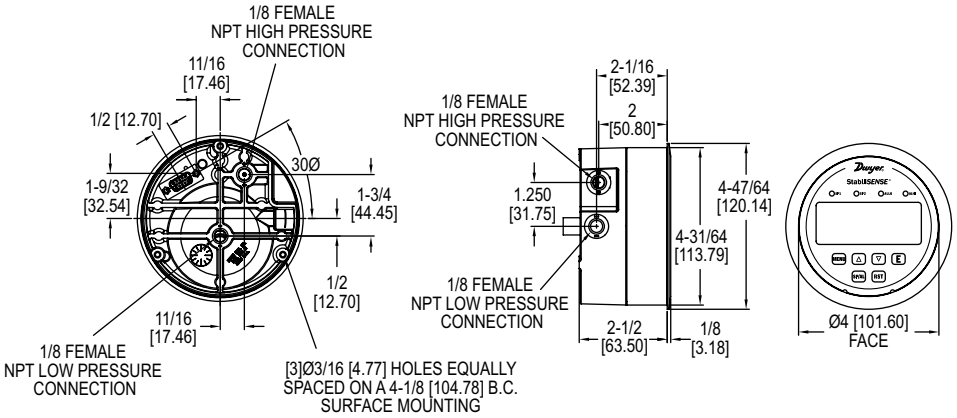
Series RPMC Stabili*SENSE*™ Critical Room Pressure Monitor

Specifications - Installation and Operating Instructions



The **Series RPMC Stabili*SENSE*™ Critical Room Pressure Monitor** is designed for critical low differential pressure applications that require stringent pressure monitoring and alarming. The Series RPMC can be configured to monitor positive or negative pressure in protected environments and clean manufacturing areas. The RPMC is a complete system with a graphic user interface which enables access to pressure, security, calibration, and alarm setup. The RPMC Stabili*SENSE*™ critical room pressure monitor has a brushed stainless steel bezel that allows for easy cleaning.

The RPMC Stabili*SENSE*™ critical room pressure monitor has built-in status indication LEDs that will appear green when between user-defined pressure set range and will appear orange when outside of the pressure set range. 2 SPDT independent control relays with adjustable deadbands are also provided along with a 4-20 mA process output.

FEATURES/BENEFITS

- Long term stable pressure measurement
- 2 SPDT relays allow for capability of local alarming and alarming to control system
- Automatic or manual alarm reset
- Visual LED alarms provide immediate local alert allowing corrective action to be taken quicker to eliminate the problem from becoming widespread
- Stores peak and valley process readings
- Same installation diameter as Magnehelic® gage which simplifies field upgrade to RPMC Stabili*SENSE*™ critical room pressure monitor
- Password protected setup menu ensures no errors by untrained personnel

INSTALLATION LOCATION: Select a clean, dry location free from shock and vibration where temperature limits will not be exceeded. Distance from the transmitter to the receiver is limited only by total loop resistance. See ELECTRICAL CONNECTIONS. Tubing feeding pressure to the instrument can be practically any length required, but long lengths will increase response time slightly.

POSITION: All standard models are calibrated for use in a vertical mounting position. Standard models will perform properly at other angles but should be spanned and zeroed in the position in which they will be used. WARM-UP: It is recommended to power up the RPMC Stabili*SENSE*™ unit and allow a 1-hour warm-up period before taking measurements. This will stabilize the measurements and provide the best accuracy.

PRESSURE CONNECTIONS: For installation convenience two sets of 1/8″ female NPT pressure ports are supplied. Be sure to seal the unused ports with pipe plugs, included.

Positive Pressure - Connect tubing to HIGH PRESSURE port and vent LOW PRESSURE port to atmosphere.

Negative (Vacuum) Pressure - Connect tubing to LOW PRESSURE port and vent HIGH PRESSURE port to atmosphere. (When operating this device in a dusty environment, install an optional A-331 Filter Vent Plug in the vented port to keep interior clean).

Differential Pressure - Connect tubing from the higher source to HIGH PRESSURE port and from the lower source to LOW PRESSURE port.

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Measurement Technology: Capacitance cell.
Wetted Materials: Consult factory.
Housing Material: Die cast aluminum case and SS bezel.
Accuracy: ±0.25% RSS (includes non-linearity: ±0.24%, hysteresis: ±0.05% and non-repeatability: ±0.05%), or ±0.5% RSS (includes non-linearity: ±0.49%, hysteresis: ±0.05% and non-repeatability: ±0.05%).
Pressure Limits: 2 psi.
Compensated Temperature Limits: 32 to 140°F (0 to 60°C).
Thermal Effects: 0.030%/°F (0.050/°C) from 77°F (25°C).
Power Requirements: 12-28 VDC, 12-28 VAC 50 to 400 Hz.
Power Consumption: 3 VA max.
Output Signal: 4-20 mA DC into 900 Ω max.
Zero and Span Adjustments: Accessible via menus.
Response Time: 8 ms.
Display: Backlit 4 digit LCD 0.4″ height LED indicators for set point and alarm status.
Electrical Connections: 15 pin male high density D-sub connection. 18″ (46 cm) cable with 10 conductors included.
Process Connections: 1/8″ female NPT. Side or back connections.
Mounting Orientation: Mount unit in vertical plane. Size: 4-3/4″ (120.7 mm) OD x 2-21/32 (67.5 mm).
Weight: 1.90 lb (862 g).
Agency Approvals: CE.

SWITCH SPECIFICATIONS

Switch Type: 2 SPDT relays.
Electrical Rating: 1 A @ 30 VAC/VDC.
Set Point Adjustment: Adjustable via keypad on face.

MOUNTING: The RPMC Stabili*SENSE*™ critical room pressure monitor may be either panel (flush) mounted or surface mounted.

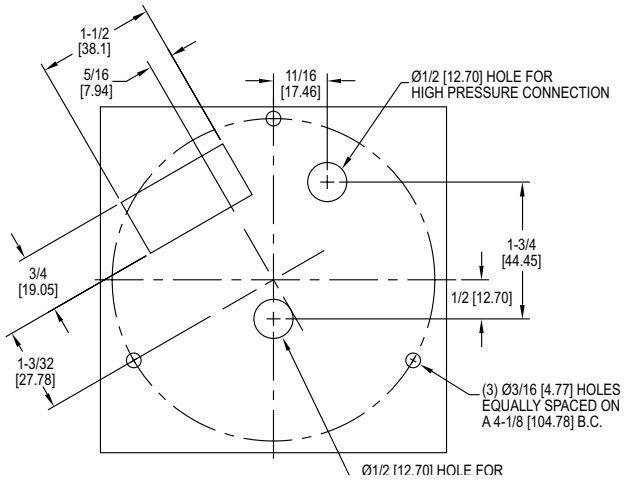


Figure A

Panel Mounting - Provide a 4-3/4″ (120.7 mm) OD x 2-21/32 (67.5 mm) opening in panel. Insert gage and secure with supplied mounting hardware.

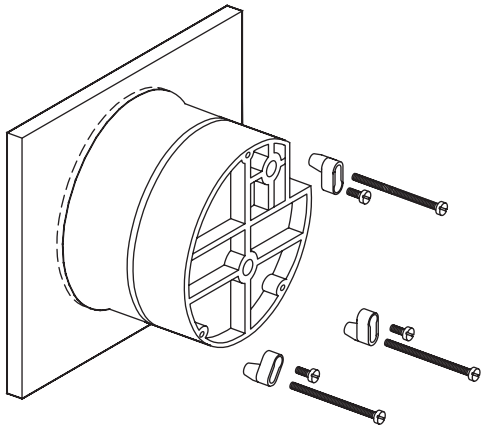


Figure B

Surface Mounting - Drill (3) 3/16″ (4.76 mm) diameter holes for mounting and cut a 9/16″ x 1-1/2″ (14.3 x 38.1 mm) opening for access to terminal block as indicated in Figure B. If rear pressure connections are to be used, also provide 1/2″ diameter holes as shown in Figure A and Figure C. Insert 6-32 machine screws from rear of mounting surface, thread into tapped holes on back of transmitter and tighten.

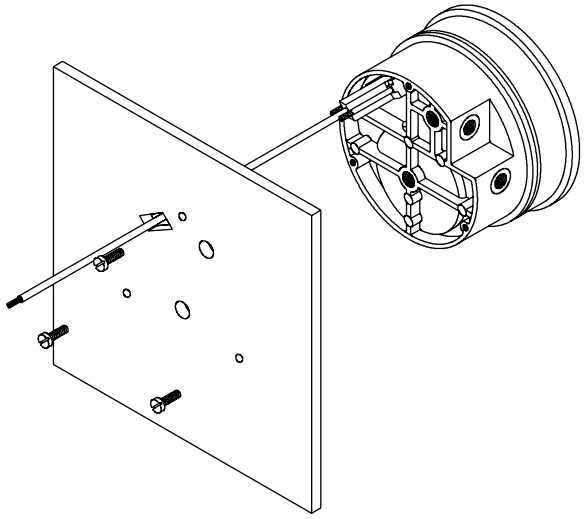
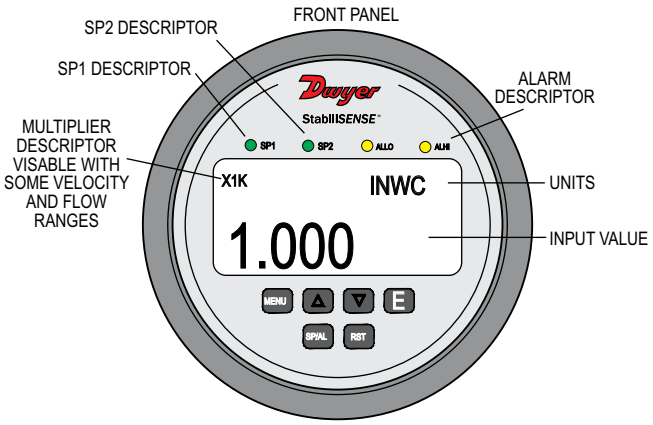


Figure C

WIRING The RPMC uses a standard 15 pin male high density D-Sub connector available from most electronic distributors. A pre-wired 18″ cable is included with each unit. See below table for cable color wiring information.

Function	15 PIN Connector Terminal	Cable Color
12-24 VAC/VDC Power	1	Brown
12-24 VAC/VDC Power	6	Yellow
4-20 mA XMTR Output -	2	Black
4-20 mA XMTR Output +	11	Red
SP1 Relay N/O	12	Vilolet
SP1 Relay Com	13	Grey
SP1 RELAY N/C	14	White
SP2 or Alarm Relay N/O	15	Blue
SP2 or Alarm Relay Com	10	Green
SP2 or Alarm Relay N/C	5	Orange

NOTES:
1. If 12-24 VDC power is used, the polarity is unimportant.
2. Wire in accordance with an equivalent national standard or code. Use copper conductors only rated for 60°C.
3. All terminals are rated CLASS 2.
4. ISOLATION: All inputs and outputs to each other: 500 VAC.
5. 4-20 mA transmitter – Check the specifications for the device receiving this signal for input resistance. Typical 250 to 600 Ω, 600 Ω maximum.



KEY FUNCTIONS			
Keys	**Home Position Function**	**Main Menu Function**	**Sub Menu Function**
SP/AL SP/AL	Sequences the display through SET POINT and ALARM settings	Return to home position	Return to home position
MENU MENU	Allows access to the menus	Return to home position	Return to previous menu
△ UP ARROW		Sequences through menus	Increments a value
▽ DOWN ARROW		Sequences through menus	Decrements a value
E ENTER	Displays full-scale range of unit	Enter into SUB MENU	Changes a value or setting. Press ENTER and display will blink. Adjust with UP or DOWN arrows. Press ENTER to store. Display will stop blinking.
RST RESET	Clears or resets an Alarm (alarm set for manual reset)		Peak/Valley SUB MENU resets display to present value.

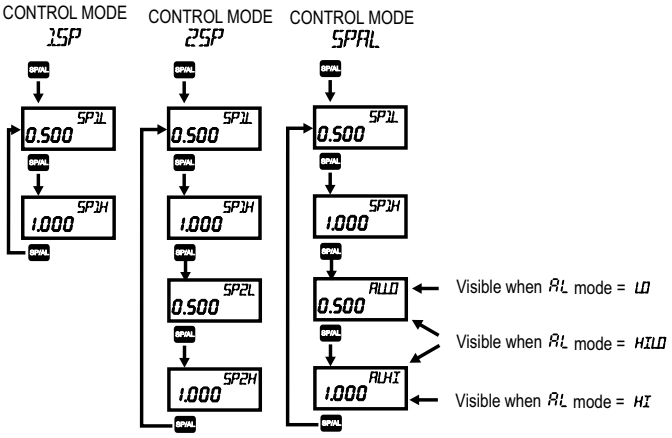
LED and Display Behavior - The RPMC Stabili*SENSE*™ critical room pressure monitor is designed to provide the room pressure status of the room being monitored to personnel with visual indication of the LED status lights and backlit 4 digit LCD. All LEDs on the front of the RPMC are defined by the alarm setpoints in “AL (Alarm Type) SUB MENU”.

The desired measurement should be between ALLO and ALHI settings, which would equate to SP1 and SP2 LEDs lighting up a green color. If the measurement is below ALLO or above ALHI, the corresponding LED will blink an orange color and the 4 digit LCD will flash the number segments. Please refer to the table below for the operation and LED functions.

LED Light	Reading below ALLO	Reading between ALLO to ALHI	Reading above ALHI
SP1 LED Light	LED OFF	LED ON, Solid Green	LED OFF
SP2 LED Light	LED OFF	Reading below ALLO	LED OFF
ALLO LED Light	Blink, Orange	LED OFF	LED OFF
ALHI LED Light	LED OFF	LED OFF	Blink, Orange
4 Digit LCD	Flash Segments	Normal, Solid Segments	Flash Segments

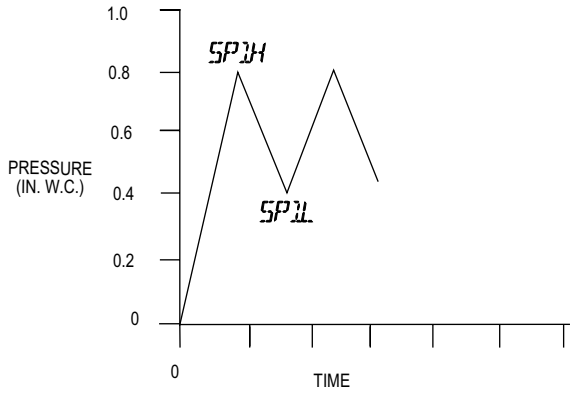
SETTING SET POINTS AND ALARMS

The SP/AL hot key provides direct access to the Set Point and Alarm MENU. The Set Point and Alarm MENUS that are displayed are based upon the Control (CtrL) SUB MENU.



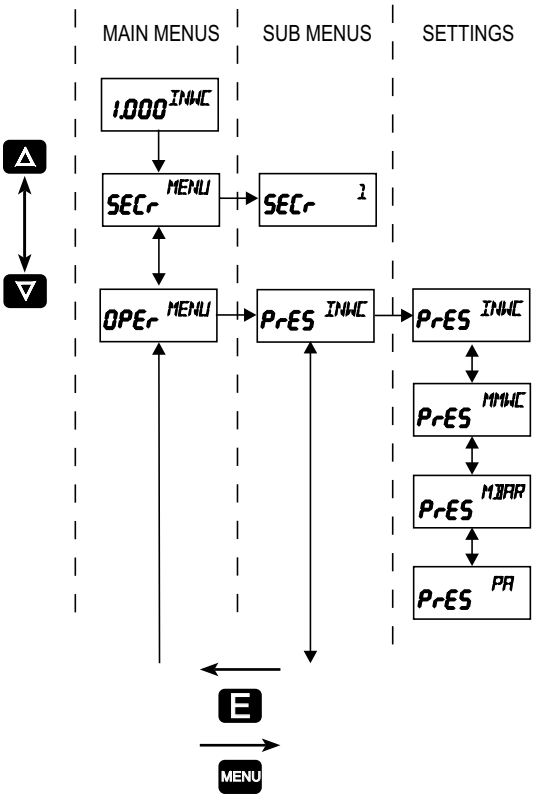
SET POINT ADJUSTMENT

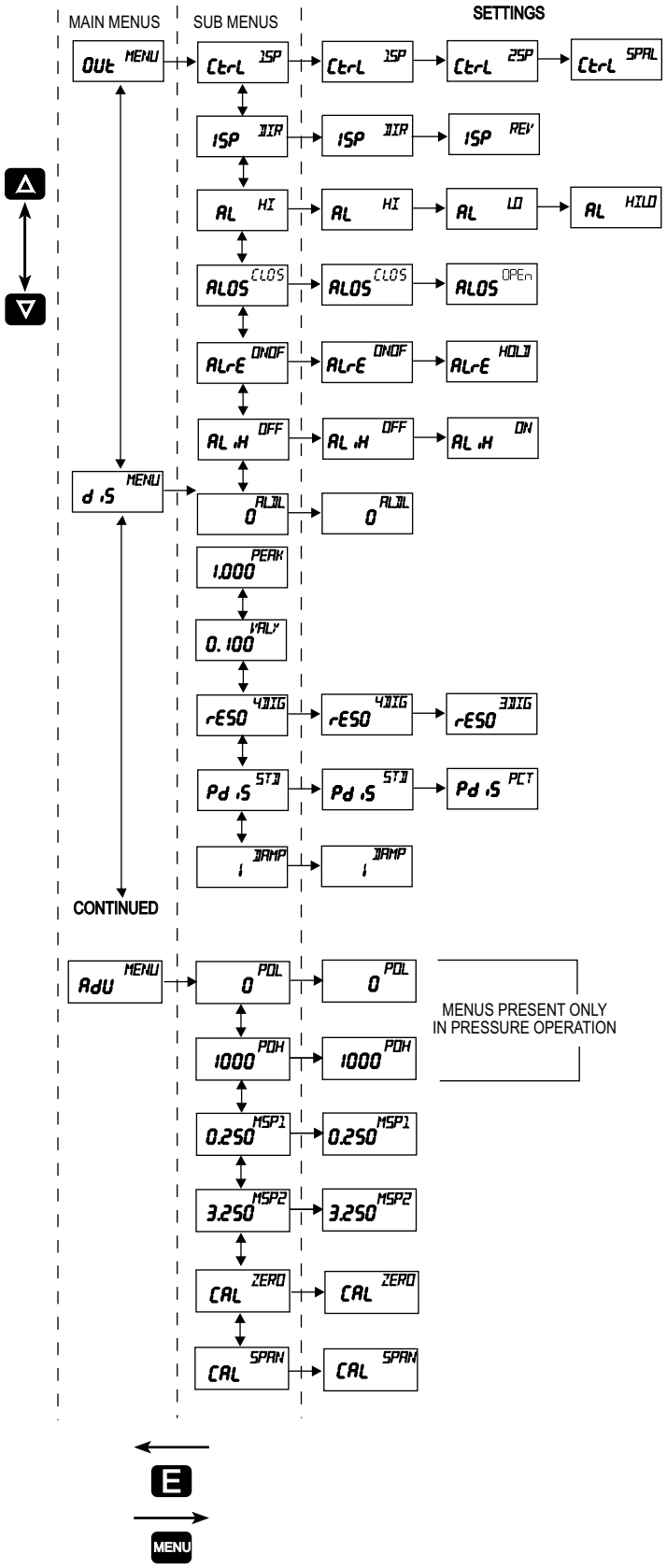
Adjusting the RPMC Set Points is quick and simple. Instead of setting a set point and deadband, simply adjust SP1H or SP2H for the desired relay turn on point, and then adjust SP1L or SP2L for the desired relay turn off point.



In the above graph, an instrument with a 1.0″ range would have the SP1 relay turn on at 0.8″ and off at 0.4″. SP1H sets the relay turn on point, and SP1L sets the relay turn off point. The relays outputs normally function in the direct acting mode, which means the relays turn on with an increase in pressure. SP1 may be configured to act as a reverse acting relay (refer to the 1SP SUB MENU setting, page 15). When set for reverse acting, SP1H sets the relay turn OFF point, and SP1L sets the relay turn ON point. SP2 is always direct acting.

Menu Map





Main Menu Selections (Upper Right Display Reads *MENU***)**

SECr Security - Lock out access to Set Point and Alarm settings, or lock out access to all settings.

OPEr Operation - Selection of Pressure engineering units.

OUt Output - Select a Single Set Point, 2 Set Points, or a Set Point and an Alarm mode of operation.

d.S Display - Monitor and adjust display related settings: Peak, Valley, display resolution, % output and dampening.

AdU Advanced functions - Modify advanced function parameters, transmitter output scaling, Maintenance Set Point settings and calibration.

MAIN MENUS and SUB MENUS

SECr **(Security) MAIN MENU**

SECr is the only SUB MENU in the security MENU. When the security SUB MENU is selected, the present security level is displayed in the upper right hand display. To change the security level, adjust the number displayed to the number shown in the following table for the desired security level.

Security Level Displayed	Access	Password Value to Enter
1	All menus access	10
2	Menu Access SP/AL Locked	70
3	SP/AL Access Menus Locked	90
4	All settings locked	111

OPEr **Operation MAIN MENU**

The *OPEr* MENU verifies the measurement type of the instrument, *PrES* - Pressure.

PrES **(Pressure) SUB MENU**

For pressure measurement, the following units are available:

INWC - Inches of water column
MMWC - Millimeters of water column
MBAR - Millibar
PA - Pascal

INWC	MMWC	MBAR	PA
0.1000	2.540	0.2491	24.91
0.2500	6.350	0.6227	62.27
0.5000	12.70	1.245	124.5
1.000	25.40	2.491	249.1
2.500	63.50	6.227	622.7

Table 1: Pressure range vs. available units

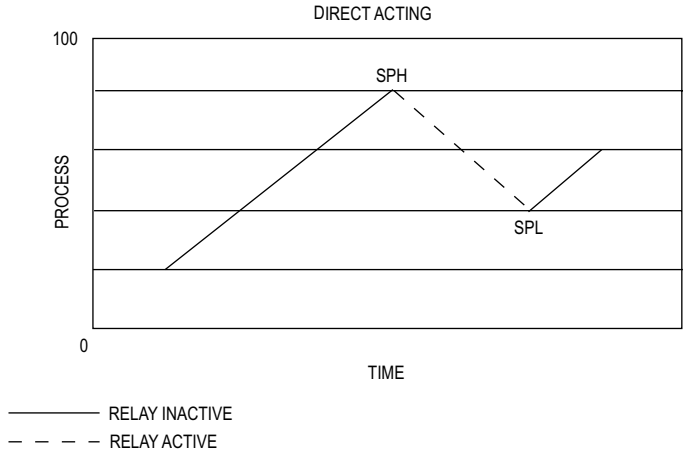
Note: *OVFL* (over flow) or UnFL (under flow) will appear when the ranges have been exceeded above or below full-scale by 2%.

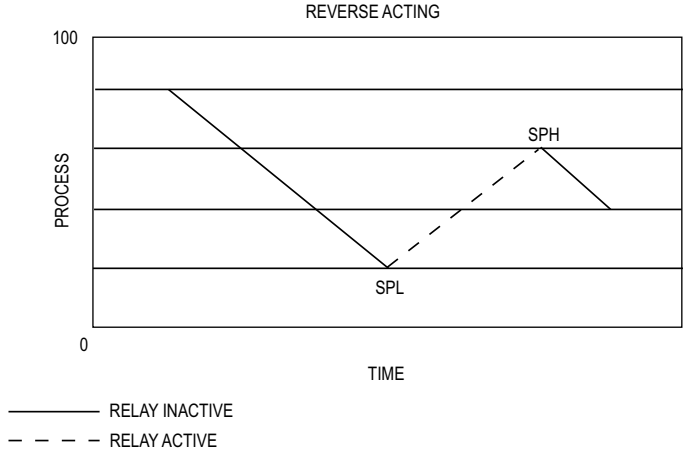
CtrL **(Control) SUB MENU**

1SP - Single set point
2SP - Two fully independent set points
SPAL - Single set point and alarm

1SP **(SP1 Reverse or Direct Acting) SUB MENU**

DIR - Direct. Relay turns on with increasing pressure
REV - Reverse. Relay turns on with decreasing pressure



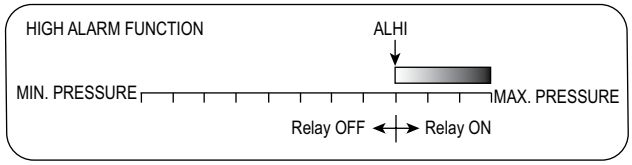


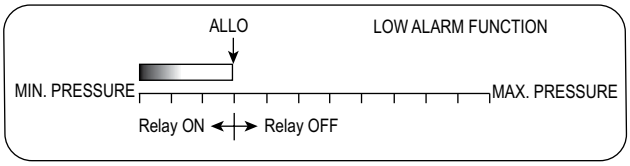
The following alarm function SUB MENUS are activated when CtrL is set to SPAL:

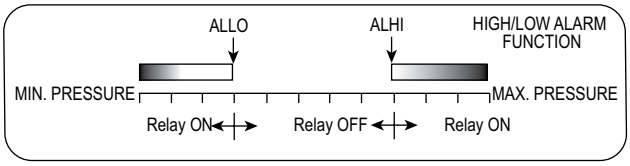
AL **(Alarm Type) SUB MENU**

HI - High alarm
LO - Low alarm
HILO - For a high/low guardband type alarm

ALARM ADJUSTMENT
Alarm settings are dependent upon the selected alarm mode. The RPMC differential pressure controller alarm may be configured as a High Alarm, Low Alarm, or High/Low Alarm. Alarm settings are all absolute and may be set to anywhere within the range of the instrument. The dead bands of the alarms are fixed at 1% of full-scale.







ALOS **(Alarm Output State) SUB MENU**

CLOS - Alarm relay contacts close upon alarm condition
OPEN - Alarm relay contacts open upon alarm condition

ALrE **(Alarm Reset) SUB MENU**

ONOF - Automatic reset
HOLD - Manual reset. An alarm is reset by the RESET key on the front panel.

AL.H **(Low Alarm Inhibit) SUB MENU**

ON - Alarm inhibit is on
OFF - Alarm inhibit is off

If *AL.H* is selected *ON*, a low alarm condition is suspended upon power up until the process value passes through the alarm set point once.

ALDL **(Alarm Delay) SUB MENU**

Sets the amount of time an alarm condition must be continuously met before the alarm condition is recognized. The alarm delay is adjustable from 0-3600 seconds.

d.S **(Display) MAIN MENU**

PEAK - Peak value
VAL 4 - Valley value
ZERO - Zero
rESO - Resolution
Pd.S - Process display
DAMP - Dampening level

PEAK **(Peak) SUB MENU**

The Peak feature stores the highest pressure reading the instrument has measured since the last reset or power up. At power up *PEAK* is reset to the present pressure reading. To manually reset the *PEAK* value, press the RESET key while in the *PEAK* SUB MENU.

VAL 4 **(Valley) SUB MENU**

The valley feature stores the lowest pressure reading the instrument has measured since the last reset or power up. At power up *VAL 4* is reset to the present pressure reading. To manually reset the *VAL 4* value, press the RESET key while in the *VAL 4* SUB MENU.

rESO **(Resolution) SUB MENU**

The RPMC Stabili*SENSE*™ critical room pressure monitor is capable of displaying four digits of resolution. However, at very low pressures the instability of the pressure may cause fluctuations in the least significant digit causing the least significant digit to be of little value. Three digit resolution (*3DIG*) can only be active when there is at least one digit to the right of a decimal.

3DIG - Set display for 3 digit resolution
4DIG - Set display for 4 digit resolution

Pd.S **(Process Display) SUB MENU**

STD - Display reads pressure, velocity, or flow values
PCT - Display reads % of full-scale value

When the display is reading percent, *PCT* is displayed in the upper right of the display. The percent display is only available in pressure operation.

DAMP **(Dampening) SUB MENU**

Adjust from 1-16

Dampening stabilizes the display from instabilities due to things such as vibration and excessive pressure fluctuations. The dampening setting adjusts the amount of readings that are averaged for each display update. Adjust the dampening value until the display reads a stable value for the application.

AdU **(Advanced) MAIN MENU**

POL - Process output low
POH - Process output high
MSP1 - Maintenance set point 1
MSP2 - Maintenance set point 2
ZERO - Zero calibration
SPAN - Span calibration

POL **and** *POH* **(Process Output Low and High) SUB MENUS**

Process output low and high are used to scale the 4-20 mA output. Set *POL* to the desired display reading for 4 mA output, and set *POH* to the desired display reading for 20 mA output. *POH* must be higher than *POL*. *POL* may be adjusted 2% BELOW minimum scale up to *POH*. *POH* may be adjusted from *POL* to 2% ABOVE maximum scale.

MSP1 **and** *MSP2* **(Maintenance Set Point 1 and 2) SUB MENUS**

Adjust for the desired maintenance set points when the unit is placed in the maintenance mode. The deadband is fixed at 2% of full-scale. To enter or leave the maintenance mode, press and hold the for 8 seconds.

ZERO **and** *SPAN* **(Calibration of Zero and Span) SUB MENUS**

The lower display reads *CAL* in this mode.

ZERO **Calibration**
Note: For accurate calibration, do not apply any pressure when performing this function.

With the display reading ZERO, press the ENTER key. The upper display will blink. Press ENTER again to complete the zeroing of the instrument or press the MENU key to cancel.

SPAN **Calibration**
With the display set to *SPAN*, apply full-scale pressure to the unit. Press the ENTER key. The upper display will blink. Press ENTER again to complete the calibration or press the MENU key to cancel.

CE APPROVAL
Note: For EN61000-4-3, with an applied RF field of 10 V/M between 200-800 MHZ, accuracy is increased to ±8%.

MAINTENANCE/REPAIR
Upon final installation of the Series RPMC, no routine maintenance is required. The Series RPMC is not field serviceable and is not possible to repair the unit. Field repair should not be attempted and may void warranty.

WARRANTY/RETURN
Refer to “Terms and Conditions of Sale” in our catalog and on our website. Contact customer service to receive a Return Materials Authorization number before shipping the product back for repair. Be sure to include a brief description of the problem plus any additional application notes.

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