OMEGA™

1 YEAR WARRANTY

MADE IN USA

Digital Pressure Gauges with Alarms

DPG1000ADA Series

INSTRUCTION SHEET

M3362/0818

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Ranges and Resolution

See table below. Resolution is fixed as indicated in table.

Dual Alarms, 4-20 mA Output	Range
DPG1000ADA-30V100	–30.0 inHg to 100.0 psig
DPG1000ADA-30INHGVAC	0.00-30.00 InHg Vac
DPG1000ADA-05G	0.00-5.000 psig
DPG1000ADA-15A	0.00-15.00 psia
DPG1000ADA-15G	0.00-15.00 psig
DPG1000ADA-30A	0.0-30.00 psia
DPG1000ADA-30G	0.0-30.00 psig
DPG1000ADA-60G	0.0-60.00 psig
DPG1000ADA-100A	0.0-100.0 psia
DPG1000ADA-100G	0.0-100.0 psig
DPG1000ADA-300G	0-300.0 psig
DPG1000ADA-500G	0-500.0 psig
DPG1000ADA-1KG	0-1000 psig
DPG1000ADA-2KG	0-2000 psig
DPG1000ADA-3KG	0-3000 psig
DPG1000ADA-5KG	0-5000 psig

Alarm Setting (All are field configurable)	Alarm Type
-1N (default if not specified)	HI/LO Normal action
-2N	HI/HI Normal action
-3N	LO/LO Normal action
-1R	HI/LO Reverse action
-2R	HI/HI Reverse action
-3R	LO/LO Reverse action

Accuracy

Accuracy includes linearity, hysteresis, repeatability
±0.25% of full scale ±1 least significant digit
Sensor hysteresis: ±0.015% FS, included in accuracy
Sensor repeatability: ±0.01% FS, included in accuracy

Display

4 readings per second nominal display update rate
4 digit LCD, 0.5" H and 5 character 0.25" H alphanumeric
Alarm 1 and Alarm 2 LCD indicators and bi-color (red/green) LEDs

Controls & Functions

SEL Select and display alarm trip points
TEST Alarm acknowledge, or toggle alarms when in test mode
▲ Increase alarm setpoint when in setpoint adjust mode
▼ Decrease alarm setpoint when in setpoint adjust mode
Multi-level pass code protection for set-up and calibration

Alarm Relay Outputs

Programmable dual form C (SPDT) relay contacts for HI/LO, HI/HI, LO/LO, normal or reverse acting with 1% deadband, or adjustable trip and reset points for each relay, manual or auto acknowledge.

1A/24VDC, 0.5A/115VAC, non-inductive
120 milliseconds typical response time

Calibration

Non-interactive, ±10% of range
All pressure and absolute models: zero, midpoint, span
All vacuum models: –span, –midpoint, zero
Vacuum/pressure models: –span, zero, +midpoint, +span
±15 psi models: –span, –midpoint, zero, +midpoint, +span

Power

8 to 24 VAC 50/60 Hz or 9 to 32 VDC
Gauge is on when power is on
Designed for continuous operation.
1.0 watt maximum power consumption

Weight

9.5 ounces (approx.), shipping wt. 1 pound (approx.)

Housing

Extruded aluminum case, epoxy powder coated, ABS/ polycarbonate bezel, front and rear gaskets, polycarbonate label

Connection, Material, Media Compatibility

1/4" NPT male fitting, all wetted parts are 316L stainless steel

Overpressure, Burst, Vacuum

Ranges using 3000 psig sensor: 5000 psig overpressure
Ranges using 5000 psig sensor: 7500 psig overpressure
All others: 2 X pressure range

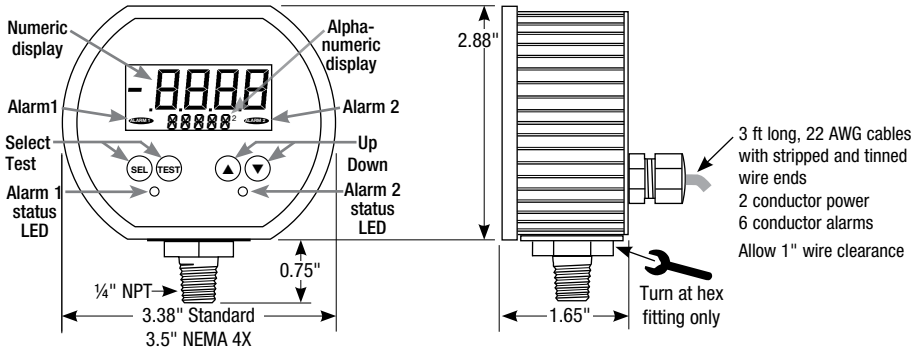
3000 psi, 5000 psi, and 4 digit ranges 112.5% full scale out-of-range display: 1– – – or I –.–.–.–
Under-range display (non-vacuum sensors): –Err

4 X sensor burst pressure rating, or 10,000 psi, whichever is less

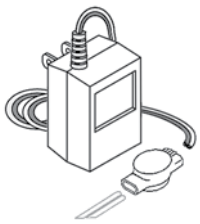
Vacuum service: 15 psia, ±15 psig, 15 psig, 30 psia, 100 psig, 100 psia, 200 psig sensors

Environmental

Storage temperature: –40 to 203°F (–40 to 95°C)
Operating temperature: –4 to 185°F (–20 to 85°C)
Compensated temperature: 32 to 158°F (0 to 70°C)



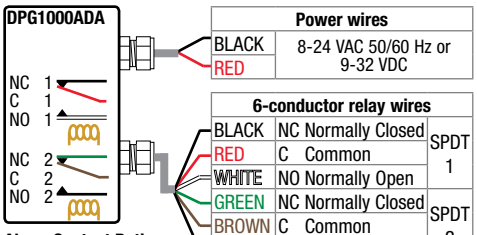
DPG1000-PS Optional Power Supply Kit



The optional power supply kit includes a UL and CSA listed 115 VAC (50/60 Hz) wall-mount power supply with U.S. style 2-prong plug.

Output is 12 VDC at 200 mA and is intended for gauges that accept DC power. The power supply's two-conductor wire is approximately 6 feet long and has plain wire ends.

Also included is a moisture resistant connector to allow easy hookup without having to strip wires. Use a pair of pliers to snap connector onto wires.



Power wires	
BLACK	8-24 VAC 50/60 Hz or 9-32 VDC
RED	

6-conductor relay wires		
BLACK	NC Normally Closed	SPDT 1
RED	C Common	
WHITE	NO Normally Open	
GREEN	NC Normally Closed	SPDT 2
BROWN	C Common	
BLUE	NO Normally Open	

Alarm Contact Ratings
0.5A/115VAC,
1A/24VDC,
non-inductive

WARNING: This product can expose you to chemicals including lead, nickel and chromium, which are known to the State of California to cause cancer or birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

Installation Precautions

- ✔ Read these instructions before using the gauge. Configuration may be easier before installation. Contact the factory for assistance.
- ✔ These products do not contain user-serviceable parts. Contact us for repairs, service, or refurbishment.
- ✔ Gauges must be operated within specified ambient temperature ranges.
- ✔ Outdoor or wash down applications require a NEMA 4X gauge or installation in a NEMA 4X housing.
- ✔ Use a pressure or vacuum range appropriate for the application.
- ✔ Use fittings appropriate for the pressure range of the gauge.
- ✔ Due to the hardness of 316 stainless steel, it is recommended that a thread sealant be used to ensure leak-free operation.
- ✔ For contaminated media use an appropriate screen or filter to keep debris out of gauge port.
- ✔ Remove system pressures before removing or installing gauge.
- ✔ Install or remove gauge using a wrench on the hex fitting only. Do not attempt to turn gauge by forcing the housing.
- ✔ Do not exceed relay current and voltage ratings. Use an appropriate contactor for larger loads. Inductive inrush currents may be up to 5x normal current and may require an RC snubber.
- ✔ Good design practice dictates that positive displacement liquid pumps include protection devices to prevent sensor damage from pressure spikes, acceleration head, and vacuum extremes.
- ✘ Avoid permanent sensor damage! Do not apply vacuum to non-vacuum gauges or hydraulic vacuum to any gauges.
- ✘ Avoid permanent sensor damage! NEVER insert objects into gauge port or blow out with compressed air.
- ⚠ Gauges are not for oxygen service. Accidental rupture of sensor diaphragm may cause silicone oil inside sensor to react with oxygen.
- ✘ NEVER connect the gauge wires directly to 115 VAC or permanent damage will result.

Types of Gauges

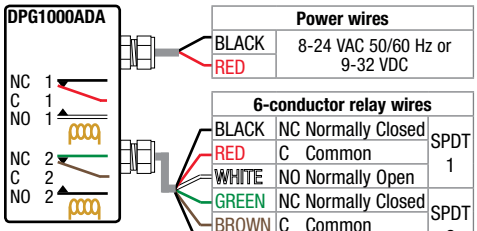
Gauge reference models read zero with the gauge port open.

Compound ranges read vacuum in inches of Mercury, pressure in psig, and zero with the gauge port open.

1000 psi and higher sensors are a sealed-reference type. They read zero with the gauge port open are internally referenced to 14.7 psi. They function like gauge reference sensors.

Absolute reference gauges read zero at full vacuum and atmospheric pressure with the gauge port open. Note that readings of atmospheric pressure vary continuously.

Gauge Wiring Diagram



Power wires	
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6-conductor relay wires		
BLACK	NC Normally Closed	SPDT 1
RED	C Common	
WHITE	NO Normally Open	
GREEN	NC Normally Closed	SPDT 2
BROWN	C Common	
BLUE	NO Normally Open	

Alarm Contact Ratings
0.5A/115VAC,
1A/24VDC,
non-inductive

Gauge Power Connections

The 2-conductor cable RED and BLACK leads is for the gauge power supply. Note the relay cable also has red and black wires. Do not connect power to them.

Connect to 8-24 VAC, 50/60Hz or 9-32 VDC. The gauge will operate on either AC or DC power, either polarity. An unregulated power supply can be used. Note that 24 VAC transformers with small loads may operate at voltages over the 24 VAC limit. The supply voltage, when within the stated ranges, has negligible effect on the gauge calibration. Operation below 9 VDC or 8 VAC may cause erratic or erroneous readings or output.

When operating multiple gauges from the same power supply, refer to the mA rating in the specifications to ensure adequate power. Route the wires away from heat sources and moving equipment.

Power Up

The gauge is powered on whenever a supply voltage is applied. Warm-up time is negligible. The gauge may be left on at all times. All configuration information is stored in non-volatile memory.

When power is first applied, the gauge proceeds through a startup sequence. During the startup sequence, relays are de-energized and the status LEDs are off.

1. The firmware version number is displayed briefly
2. All active display segments are turned on for approx. 1 second.
3. The full scale pressure is indicated for approx. 1 second while the engineering units and FS (full scale) are indicated for 1/2 second on the character display.
4. The display is tested again for approximately 1 second.

The gauge then proceeds to the normal operating mode.

Alarm Contact Rating and Protection

The alarm contacts are rated at 1A/24VDC or 0.5A/115VAC. Using mechanical relay contacts above their rating, or with large inductive loads, will shorten their life. For inductive loads, RC snubbers or arc suppression devices are required to protect the contacts. For large loads a higher capacity contactor is required.

No internal fusing is included in the alarm contact circuits. The alarm outputs should be externally fused by the user in applications where good design practice dictates.

Alarm Types

The factory default configuration is 1% fixed deadband mode, zero tare enabled, and no pass code required for test function.

Alarms may be configured to operate in fixed deadband mode or adjustable hysteresis mode.

In the fixed deadband mode, the alarm set/reset point deadband is factory set to 1% of full-scale. Each alarm may be configured as either HI or LO with a user adjustable alarm set point for each relay.

In the adjustable hysteresis mode, two independent set and reset trip points are user adjustable for each relay. The set or reset state at power up when between trip points is user configurable.

Gauge Configuration

From the normal operating mode, press and hold the **TEST** and ▲ buttons.

Then press the **SEL** button.

Release all buttons when the display indicates CFG.

Before the gauge enters the Configuration mode, the display initially indicates ____ with the first underscore blinking, and CFGPC on the lower display.

Enter the pass code as described below.

Pass Code Entry

A pass code is required to configure the gauge. Additional levels of security may be enabled by defining separate pass codes for calibration, configuration, output test, and set point adjust modes. See Changing the User-Defined Pass Code at the end of this manual to change pass codes.

Functions in user configuration mode
- Restore original factory configuration
- Enable/disable zero tare function
- Choosing 1% deadband or adjustable hysteresis alarm mode
- Operation for blinking alarm LEDs
- Set point modes (high alarm/low alarm or state at power-up)
- Relay action mode (normal/reverse)
- Enable/disable pass code for output test and set point adjust

When the gauge requests a pass code, the display indicates ____ with the first underscore blinking, and either TSTPC, CFGPC, CALPC on the lower display. All three pass codes are initially set to the factory default of **3510**.

Note: During pass code entry the LEDs will be off and the gauge will not respond to changes in pressure. The relays will maintain their prior state. The gauge will automatically revert to the normal operation if no buttons are ressed for approx.y 15 seconds.

Use the ▲ and ▼ buttons to set the left-most digit to 3.

Press and release the **SEL** button to index to the next position. The 3 will remain, and the second position will be blinking.

Use the ▲ and ▼ buttons to select 5.

Press and release the **SEL** button to index to the next position. 3 5 will remain, and the third position will be blinking.

Use the ▲ and ▼ buttons to select 1.

Press and release the **SEL** button to index to the next position. 3 5 1 will remain, and the fourth position will be blinking.

Use the ▲ and ▼ buttons to select 0.

Press and release the **SEL** button to proceed.

If an incorrect pass code was entered, the gauge will to exit to the normal operating mode. Upon successful pass code entry, follow the steps in the appropriate section of this manual.

Note: To exit a mode at any time, press and hold the **SEL** button until the display indicates ----.

Restore Factory Configuration

The upper display will be blank, and the lower display will display either USER_ or FCTRY.

Use the ▲ or ▼ buttons to select either USER_ or FCTRY.

If USER_ is selected, the existing user configuration will be retained and can be modified in the following steps.

If FCTRY is selected, the existing user configuration will be replaced with the factory configuration. It can be modified in the following steps.

When the desired setting is displayed, press and release the **SEL** button to move on to the next parameter.

Zero Tare Configuration

The upper display will be blank, and the lower display will indicate either ZTARE or NOZTR.

Use the ▲ or ▼ buttons to select either ZTARE or NOZTR

If ZTARE is selected, the user will be able to manually zero the gauge from the normal operating mode.

If NOZTR is selected the user will be prevented from zeroing the gauge from the normal operating mode. This is default setting for absolute reference ranges.

When the desired setting is displayed, press and release the **SEL** button to move on to the next parameter.

Alarm Type Selection

The lower display will either indicate DBAND or ADJ_H.

If DBAND is selected, each relay will operate with 1% of full-scale deadband between set and reset.

If ADJ_H is selected, each output relay will have an adjustable set point and an adjustable reset point.

Use the ▲ or the ▼ buttons to select either DBAND or ADJ_H.

When to desired mode is displayed, press and release the **SEL** button to move on to the next parameter.

LED Alarm Annunciator Function Selection

This setting lerts the operator to an alarm conditionby blinking the LEDs. The choices are

Automatically acknowledge: A_ACK
Manually acknowledge: M_ACK
No acknowledgement: NO_AN

Use the ▲ or ▼ buttons to cycle through the three choices.

A_ACK: An alarm condition will be automatically acknowledged when the alarm condition clears. When an alarm condition occurs, the LED for that alarm will begin to blink red until it has been manually acknowledged by a pressing the **TEST** button, or until the alarm condition no longer exists. If an alarm is manually acknowledged, the LED will be steadily red while the alarm condition continues to exist. The LED will be steadily green whenever no alarm condition exists.

M_ACK: An alarm condition must be manually acknowledged. When an alarm condition occurs, the LED for that alarm will blink red if the alarm condition exists or blink green if the alarm condition no longer exists. The LED will continue to blink until it has been manually acknowledged by a pressing the **TEST** button. Once an alarm has been acknowledged, the LED will be steadily red while the alarm condition exists or green when the alarm no longer exists.

NO_AN: The LEDs will not blink. When an alarm condition occurs, the LED associated with that alarm will be steadily red if the alarm condition exists, or green if the alarm condition no longer exists. In addition, the LCD display for ALARM1 and ALARM2 will not be displayed during alarm conditions.

When the lower display indicates the desired annunciator action, press and release the **SEL** button to move on to the next parameter.

Fixed Deadband DBAND Alarm Setup

Alarm 1 Type in DBAND Mode

If ADJ_H was selected, skip to the Relay Power Up State Section.

Use the ▲ or ▼ buttons to select either SP1_L or SP1_H.

If SP1_L is selected, Alarm 1 will be a LOW alarm.

Alarm 1 will be SET when the pressure falls below Setpoint 1.

Alarm 1 will be RESET when the pressure rises above Setpoint 1 plus the deadband. The fixed 1% deadband is .01 x the full scale range of the gauge.

If SP1_H is selected Alarm 1 will be a high alarm.

Alarm 1 will be SET when the pressure rises above Setpoint 1.

Alarm 1 will be RESET when the pressure falls below Setpoint 1 minus the deadband. The fixed 1% deadband is .01 x the full scale range of the gauge.

When the desired alarm type is displayed, press and release the **SEL** button to move to Alarm 2.

Alarm 2 Type in DBAND Mode

Use the ▲ or ▼ buttons to select either SP2_L or SP2_H.

If SP2_L is selected, Alarm 2 will be a LOW alarm.

Alarm 2 will be SET when the pressure falls below Setpoint 1.

Alarm 2 will be RESET when the pressure rises above Setpoint 2 plus the deadband. The fixed 1% deadband is .01 x the full scale range of the gauge.

If SP2_H is selected Alarm 2 will be a high alarm.

Alarm 2 will be SET when the pressure rises above Setpoint 1.

Alarm 2 will be RESET when the pressure falls below Setpoint 2 minus the deadband. The fixed 1% deadband is .01 x the full scale range of the gauge.

When the desired alarm type is displayed, press and release the **SEL** button to move to the next parameter.

Relay Action in dBAND Fixed Deadband Mode

Use the ▲ or the ▼ buttons to select either
Normal Acting (Failsafe): _NOR_
Reverse Acting: _REV_

If NOR_ is selected, the output relay coils will be energized in the RESET state and de-energized in the SET state.

If _REV_ is selected, the output relay coils will be de-energized in the RESET state and energized in the SET state

When the desired alarm type is displayed, press and release the **SEL** button to move to the Output Test and Set Point Adjust Pass Code Protection section.

Adjustable Hysteresis ADJ_H Alarm Setup

Relay Power Up State in ADJ_H Adjustable Hysteresis Mode

This determines the state of the relays if the gauge is powered up while the pressure is between the SET and RESET trip points. For some applications it may not be desirable to have an alarm condition during power-up.

Use the ▲ or the ▼ buttons to select either SP1_L or SP1_H.

If SP1_L is selected and the gauge is powered up while the pressure is between the Relay 1 SET and RESET trip points, Relay 1 will begin in the RESET state.

If SP1_H is selected and the gauge is powered up while the applied pressure is between the Relay 1 SET and RESET trip points, Relay 1 will begin in the SET state.

When the desired alarm state is selected, press and release the **SEL** button to move to Relay 2.

Use the ▲ or the ▼ buttons to select either SP2_L or SP2_H.

If SP2_L is selected and the gauge is powered up while the applied pressure is between the Relay 2 SET and RESET trip points, Relay 2 will begin in the RESET state.

If SP2_H is selected and the gauge is powered up while the applied pressure is between the Relay 2 SET and RESET trip points, Relay 2 will begin in the SET state.

When the desired alarm state is selected, press and release the **SEL** button to move to the next parameter.

Relay 1 Action in ADJ_H Adjustable Hysteresis Mode

Press and release the ▲ or the ▼ buttons to select either
Normal Acting (Failsafe): _NOR1
Reverse Acting: _REV1

If _NOR1 is selected, the output relay coil will be energized in the RESET state and de-energized in the SET state.

If _REV1is selected, the output relay coil will be de-energized in the RESET state and energized in the SET state.

When the desired Alarm 1 action is selected, press and release the **SEL** button to move to Alarm 2.

Use the ▲ or the ▼ buttons to select either
Normal Acting (Failsafe): _NOR2
Reverse Acting: _REV2

If _NOR2 is selected, the output relay coil will be energized in the RESET state and de-energized in the SET state.

If _REV2 is selected, the output relay coil will be de-energized in the RESET state and energized in the SET state.

When the desired Alarm 2 action is selected, press and release the **SEL** button to move to the next parameter.

Output Test & Set Point Adjust Pass Code Protection

This setting determines if a pass code is required to acess the Output Test and Set Point Adjustments.

Use the ▲ or the ▼ buttons to select either TSTPC or NOTPC.

The lower display will indicate TSTPC to enable Output Test and Set Point Adjust Modes pass code protection.

The lower display will indicate NOTPC to disable Output Test and Set Point Adjust Modes pass code protection, press and release the ▼ button.

Press and release the **SEL** button to save the configuration parameters and restart the gauge.

Note: The configuration parameters will not be saved if the procedure is interrupted before completion.

Operation: Fixed Deadband Alarms

Each relay may be independently configured as a high or low alarm in User Setup and operate as shown in the table below.

Normal acting, High alarm SP_H		
Pressure	< Set point – 1%FS	> Set point
Relay coil	On	Off
Alarm 1 continuity	C-NO (Red-White)	C-NC (Red-Black)
Alarm 2 continuity	C-NO (Brown-Blue)	C-NC (Brown-Green)
LED	Green	Red
Normal acting, Low alarm SP_L		
Pressure	< Set point	> Set point + 1%FS
Relay coil	Off	On
Alarm 1 continuity	C-NC (Red-Black)	C-NO (Red-White)
Alarm 2 continuity	C-NC (Brown-Green)	C-NO (Brown-Blue)
LED	Red	Green
Reverse acting, High alarm SP_H		
Pressure	< Set point – 1%FS	> Set point
Relay coil	Off	On
Alarm 1 continuity	C-NC (Red-Black)	C-NO (Red-White)
Alarm 2 continuity	C-NC (Brown-Green)	C-NO (Brown-Blue)
LED	Green	Red
Reverse acting, Low alarm SP_L		
Pressure	< Set point	> Set point + 1%FS
Relay coil	On	Off
Alarm 1 continuity	C-NO (Red-White)	C-NC (Red-Black)
Alarm 2 continuity	C-NO (Brown-Blue)	C-NC (Brown-Green)
LED	Red	Green

The relevant LCD alarm icon will indicate an alarm condition.

The relevant bi-color LED will be illuminated green for a normal condition or red for an alarm condition.

The LED will blink at a slow rate until the alarm is acknowledged unless the annunciator mode was disabled in setup.

Alarms may be configured to be automatically acknowledged when the alarm condition clears or configured to be manually acknowledged by pressing the **TEST** button.

Displaying Trip Points

The applied pressure, the value of Trip Point 1, and the value of Trip Point 2 may be selected for display as follows:

When the applied pressure is being displayed, press and release the **SEL** button.

The Trip Point 1 value will be displayed with TRIP1 on the lower display.

When the Trip Point 1 value is being displayed, press and release the **SEL** button.

The upper display will indicate the Trip Point 2 value with TRIP2 on the lower display.

Press and release the **SEL** button. The upper display will indicate the applied pressure with engineering units on the lower display.

Adjusting Setpoints: Fixed Deadband Alarms

Set Point is defined as the pressure value that will result in a change of state only from a normal to an alarm condition.

Trip Point is defined as the pressure value that will result in a change of state of alarm condition, and includes the effect of deadband when returning from an alarm to a normal condition.

Set Point 1

From the normal operating mode press the **SEL** button to display Trip Point 1.

Press and hold the **TEST** button and press the **SEL** button. Release both buttons when the display indicates ----.

If pass code setpoint protection is enabled, the display initially indicates ____ with the left-most underscore blinking, and with TSTPC on the display. Enter the pass code as described in the Pass Code Entry section.

If pass code setpoint protection is not enabled, the display will indicate Trip Point 1 with TRIP1 blinking at a slow rate on the lower display.

Press and hold the **TEST** button. The display will indicate Set Point 1 with SP1on the lower display.

While holding the **TEST** button, use the ▲ and ▼ buttons to adjust Set Point 1 to the desired value.

Release the **TEST** button to store the Set Point 1 value.

Note: The gauge will not respond to changes in applied pressure while the **TEST** button is pressed. The alarm relays, LEDs, and LCD alarm icons will maintain their prior states until the **TEST** button is released.

To exit the Set Point 1 Adjust mode and return to the normal operating mode, press and release the **SEL** button.

Set Point 2

From the normal operating mode press the **SEL** button twice to display Trip Point 2.

Press and hold the **TEST** button and press the **SEL** button. Release both buttons when the display indicates ----.

If pass code setpoint protection is enabled, the display initially indicates ____ with the left-most underscore blinking, and with TSTPC on the display. Enter the pass code as described in the Pass Code Entry section.

If pass code setpoint protection is not enabled, the display will indicate Trip Point 2 with TRIP2 blinking at a slow rate on the lower display, and the alarm indicators and the retransmission output will correspond to the applied pressure.

Press and hold the **TEST** button. The display will indicate Set Point 2 with SP2 on the lower display.

While holding the **TEST** button, use the ▲ and ▼ buttons to adjust Set Point 2 to the desired value.

Release the **TEST** button to store the Set Point 2 value.

Note: The gauge will not respond to changes in applied pressure while the **TEST** button is pressed. The alarm relays, LEDs, and LCD alarm icons will maintain their prior states until the **TEST**button is released.

To exit the Set Point 2 Adjust mode and return to normal operation, press and release the **SEL** button.

Operation: Adjustable Hysteresis Alarms

In the adjustable hysteresis mode, two independent set and reset points used for each relay and operate as shown below.

Normal (Fail-safe) acting, RESET value less than SET		
Pressure	≤ Low RESET point	≥ High SET point
Relay coil	On	Off
Alarm 1 continuity	C-NO (Red-White)	C-NC (Red-Black)
Alarm 2 continuity	C-NO (Brown-Blue)	C-NC (Brown-Green)
LED	Green	Red
Normal (Fail-safe) acting, SET value less than RESET		
Pressure	≤ Low SET point	≥ High RESET point
Relay coil	Off	On
Alarm 1 continuity	C-NC (Red-Black)	C-NO (Red-White)
Alarm 2 continuity	C-NC (Brown-Green)	C-NO (Brown-Blue)
LED	Red	Green
Reverse acting, RESET value less than SET		
Pressure	≤ Low RESET point	≥ High SET point
Relay coil	Off	On
Alarm 1 continuity	C-NC (Red-Black)	C-NO (Red-White)
Alarm 2 continuity	C-NC (Brown-Green)	C-NO (Brown-Blue)
LED	Green	Red
Reverse acting, SET value less than RESET		
Pressure	≤ Low SET point	≥ High RESET point
Relay coil	On	Off
Alarm 1 continuity	C-NO (Red-White)	C-NC (Red-Black)
Alarm 2 continuity	C-NO (Brown-Blue)	C-NC (Brown-Green)
LED	Red	Green
Power-up relay state when between SET and RESET		
Config. set to SP_L	RESET	
Config. set to SP_H	SET	

The LEDs indicate green for a RESET state and red for a SET state. Refer to the table for output states as a function of applied pressure.

If the gauge is configured for alarms, ALARM1 and ALARM2 will be indicated when alarm conditions exist, and the associated

LEDs will blink to indicate unacknowledged alarm conditions.

Alarms may be configured to be automatically acknowledged when the alarm condition clears or configured to be manually acknowledged by pressing the **TEST** button.

Displaying Trip and Reset Points

The applied pressure, the SET trip points, and the RESET trip points may be selected for display as follows.

While the applied pressure is being displayed, press and release the **SEL** button. The upper display will indicate the value of set point 1 with SET_1 on the lower display.

While set point 1 is being displayed, press and release the **SEL** button. The upper display will indicate the value of reset point 1 with RST_1 on the lower display.

While reset point 1 is being displayed, press and release the SEL button. The upper display will indicate the value of set point 2 with SET_2 on the lower display.

While set point 2 is being displayed, press and release the **SEL** button. The upper display will indicate the value of reset point 2 with RST_2 on the lower display.

While the reset point 2 is being displayed, press and release the **SEL** button. The upper display will indicate the applied pressure and engineering units.

Adjusting Trip and Reset Points, Adjustable Hysteresis Mode

From the normal operating mode press the SEL button to display the desired trip point (SET_1, RST_1, SET_2, or RST_2).

Press and hold the TEST button and press the SEL button. Release both buttons when the display indicates – – – – .

If pass code protection is enabled, before the unit enters the Set Point Adjust Mode, the display initially indicates _ _ _ _ with the left-most underscore blinking, and with TSTPC on the lower display.

Enter the pass code as described in the Pass Code Entry section.

While in the Trip Point Adjust mode with no buttons pressed, the display will indicate the trip point value with its designator (SET_1, RST_1, SET_2, or RST_2) blinking at a slow rate.

To adjust the displayed trip point value, press and hold the TEST button. The display will continue to indicate the trip point value.

Operate the ▲ and ▼ buttons to adjust the trip point to the desired value. The trip point value is stored when the TEST button is released. Note: The relays and indicators will not correspond to the applied pressure value until the TEST button is released.

To exit the Trip Point Adjust mode and return to the normal operating mode, press and release the SEL button.

Zero Tare Mode

If the gauge is not indicating zero with zero pressure applied but is within approximately 3% of full scale pressure of zero, you may tare the gauge to zero. This feature may be enabled or disabled. Absolute ranges are configured with this feature turned off.

From the normal operating mode with the gauge port open to atmosphere, press and hold both the s and t buttons and press the **SEL** button. The relay outputs and the retransmission output will hold the last value, and the visual indicators will be deactivated. Release all buttons when the display indicates 0 0 0 0.

The display will indicate a newly calculated zero tare value with Z OFF on the lower display. Note: If not within approximately 3% of zero, ERR0 will be displayed. Press the **SEL** button to cancel the operation and return to normal operating mode without affecting any existing zero tare value.

To cancel and remove any existing zero tare value, press and release the t button. The display will indicate zero. To restore the newly calculated zero tare value, press and release the ▲ button.

To exit the Zero/Tare mode, press and release the **SEL** button. The gauge will return to normal operation.

Output Test Mode

From the normal operating mode, press and hold the **TEST** button and press the **SEL** button. Release both buttons when the display indicates – – – – or _ _ _ _.

If pass code protection is enabled, the display indicates _ _ _ _ with the left-most underscore blinking, and TSTPC.

Enter the pass code as described in the Pass Code Entry section.

While in the Test mode with no buttons pressed, the display will indicate the pressure with the engineering units blinking at a slow rate.

When the **TEST** button is pressed, the LED indicators and the relays will toggle to their opposite states.

Pressing the ▲ or the ▼ button while holding the **TEST** button will raise or lower the test value. Note that the gauge will not respond to changes in applied pressure while the **TEST** button is held.

When the **TEST** button is released, the display, the LED indicators, and the relay outputs will correspond to the applied pressure.

Press and release the **SEL** button to exit the Output Test mode and return to normal operation.

Calibration Preparation

The gauge is calibrated at the factory using equipment traceable to NIST. There is no need to calibrate the gauge before putting it in service. Calibration should only be performed by qualified individuals using appropriate calibration standards and procedures.

The calibration equipment should be at least four times more accurate than the gauge being calibrated. The calibration system must be able to generate and measure pressure/vacuum over the full range of the gauge. A vacuum pump able to produce a vacuum of 100 microns (0.1 torr or 100 millitorr) or lower is required for vacuum and absolute gauges.

Allow the gauge to equalize to normal room temperature (about 20 minutes minimum) before calibration.

Calibration

To enter the calibration mode from the normal operating mode with applied pressure being displayed, press and hold the **TEST** and the ▼ buttons. Then press the **SEL** button. Release all buttons when the display indicates CAL.

When the gauge enters the calibration mode, the display initially indicates _ _ _ _ with the first underscore blinking, and with CALPC on the lower display.

Enter the pass code as described in the Pass Code Entry section.

Upon successful calibration pass code entry, the upper display will indicate the applied pressure in the configured engineering units.

The lower display of the display will alternate between CAL and the calibration region corresponding to the applied pressure (ZERO, +MID, +SPAN, MID, or SPAN).

Note: To store the calibration parameters and exit calibration mode at any time, press and hold the **SEL** button until the display indicates – – – – .

The pressure calibration procedure adjusts the display indication to correspond to the actual applied pressure.

If the applied pressure is not being displayed, press and release the **SEL** button to step to the pressure calibration sequence, indicated by CAL on the display.

Note: If the **SEL** button is held depressed for longer than 2 seconds, the display will change to indicate – – – – , and the gauge will exit the calibration mode when all buttons are released.

Zero calibration: Apply zero pressure. The lower display will alternate between CAL and ZERO. Use the ▲ and ▼ buttons to adjust the upper display to indicate zero.

Span calibration: Apply full-scale pressure. The lower display will alternate between CAL and +SPAN. Use the ▲ and ▼ buttons to adjust the upper display to indicate the applied pressure value.

Midpoint Non-Linearity calibration: Apply 50% full-scale positive pressure. The lower display will alternate between CAL and +MID. Use the ▲ and ▼ buttons to adjust the upper display to indicate the applied pressure value.

Negative Span calibration (bipolar and compound ranges only): Apply full-scale negative pressure. The lower display will alternate between CAL and SPAN. Use the ▲ and ▼ buttons to adjust the upper display to indicate the applied pressure value.

Negative Midpoint Non-Linearity calibration (bipolar ranges only): Apply 50% full-scale negative pressure. The lower display will alternate between CAL and MID. Use the ▲ and ▼ buttons to adjust the upper display to indicate the applied pressure value.

To store the calibration parameters and exit calibration mode, press and hold the **SEL** button until the display indicates – – – – .

Configuration Pass Code

From the normal operating mode, press and hold the **TEST** and the ▲ buttons. Then press the **SEL** button. Release all buttons when the display indicates CFG.

Calibration Pass Code

From the normal operating mode, press and hold the **TEST** and the ▼ buttons. Then press the **SEL** button. Release all buttons when the display indicates CAL.

Test and Set Point Adjust Pass Code (optional)

From the normal operating mode, press and hold the **TEST** button. Then press the **SEL** button. Release all buttons when the display indicates – – – – .

Before the unit enters the view or change pass code mode, the display initially indicates _ _ _ _ with the first underscore blinking, and with CFGPC, CALPC, or TSTPC on the lower display.

Note: during pass code entry, the LEDs will be off and the gauge will not respond to changes in applied pressure. The output relays will maintain their prior states and the retransmission output will maintain its prior value.

The gauge will automatically revert to normal operation if no buttons are operated for approximately 15 seconds.

Enter Factory Pass Code 1220

Use the ▲ and ▼ buttons to set the left-most digit to 1.

Press and release the **SEL** button to index to the next position. The 1 will remain, and the second position will be blinking.

Use the ▲ and ▼ buttons to select 2.

Press and release the **SEL** button to index to the next position. 1 2 will remain, and the third position will be blinking.

Use the ▲ and ▼ buttons to select 2.

Changing the User-Defined Pass Codes

Press and release the **SEL** button to index to the next position. 1 2 2 will remain, and the fourth position will be blinking.

Use the ▲ and ▼ buttons to select 0.

Press and release the **SEL** button to proceed. Note: If an incorrect pass code was entered, the gauge will exit to the normal operating mode.

Once the correct password has been entered, the display will indicate the existing pass code with CFGPC, CALPC, or TSTPC on the lower display.

Note: while in the pass code change mode, the LEDs will extinguish and the unit will not respond to changes in applied pressure and the output relays will be de-energized.

Operate the ▲ or ▼ button to select the first character of the calibration password.

When the correct first character is being displayed, press and release the **SEL** button to proceed to the next password character.

Repeat he steps until the entire password is complete.

To exit the User-Defined Pass Code change mode, press and hold the **SEL** button. Release the button when the display indicates – – – – and restarts in the normal operating mode.

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WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

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RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

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