Falcon Digital Pressure Gauges with Dual Alarms

DPG1000ADA

Electrical Specifications

Ranges and Resolution

Bold: Standard ranges, price adder for all others
abs: Absolute reference (atmospheric pressure to zero at full vacuum)
vac: Vacuum gauge, minus sign not used unless specified
Resolution is fixed as indicated in table below

Contact factory for other engineering units	**120.0 inHg**	1600 mmHg	35.0 bar	1.000 kg/cm² abs
	199.9 inHg abs	760 torr abs	70.0 bar	1.000 kg/cm² vac
	199.9 inHg	1600 torr abs	140.0 bar	±1.000 kg/cm²
3.00 psig	50.0 oz/in²	2100 mmH_2O	199.9 bar	1.000 kg/cm²
5.00 psig	80.0 oz/in²	3500 mmH_2O	350 bar	1.999 kg/cm² abs
15.00 psi abs	240 oz/in² abs	199.9 cmH_2O	19.99 kPa	1.999 kg/cm²
15.00 psig vac	240 oz/in² vac	350 cmH_2O	35.0 kPa	4.00 kg/cm²
±15.00 psig	±240 oz/in²	1000 cmH_2O	100.0 kPa abs	7.00 kg/cm² abs
15.00 psig	240 oz/in²	2100 cmH_2O	100.0 kPa vac	7.00 kg/cm²
30.0 psi abs	85.0 inH_2O	199.9 mbar	±100.0 kPa	14.00 kg/cm²
30.0 psig	140.0 inH_2O	350 mbar	100.0 kPa	19.99 kg/cm²
60.0 psig	400 inH_2O abs	1000 mbar abs	199.9 kPa abs	35.0 kg/cm²
100.0 psi abs	400 inH_2O vac	1000 mbar vac	199.9 kPa	70.0 kg/cm²
100.0 psig	±400 inH_2O	±1000 mbar	400 kPa	140.0 kg/cm²
199.9 psig	400 inH_2O	1000 mbar	700 kPa abs	199.9 kg/cm²
300 psig	850 inH_2O	1999 mbar abs	700 kPa	350 kg/cm²
500 psig	7.00 ftH_2O	1999 mbar	1500 kPa	1.000 atm abs
1000 psig	12.00 ftH_2O	4000 mbar	1999 kPa	±1.000 atm
1999 psig	35.0 ftH_2O	1.000 bar abs	3500 kPa	1.000 atm
3000 psig	70.0 ftH_2O	1.000 bar vac	5000 kPa	4.00 atm
5000 psig	140.0 ftH_2O	±1.000 bar	3.50 MPa	7.00 atm
6.00 inHg	230 ftH_2O	1.000 bar	7.00 MPa	14.00 atm
10.00 inHg	480 ftH_2O	1.999 bar abs	14.00 MPa	19.99 atm
30.0 inHg abs	150.0 mmHg	1.999 bar	19.99 MPa	35.0 atm
30.0 inHg vac	260 mmHg	4.00 bar	35.0 MPa	70.0 atm
±30.0 inHg	760 mmHg abs	7.00 bar abs	1000 g/cm² abs	135.0 atm
30.0 inHg	760 mmHg vac	7.00 bar	1000 g/cm²	199.9 atm
60.0 inHg abs	760 mmHg	14.00 bar	2100 g/cm² abs	340 atm
60.0 inHg	1600 mmHg abs	19.99 bar	2100 g/cm²	

Accuracy (linearity, hysteresis, repeatability)

Standard: ±0.25% of full scale ±1 least significant digit
Optional:
-HA ±0.1% FS ±1LSD (most ranges)
-4A ±0.4% FS ±1LSD
CD Factory calibration data
NC NIST traceable test report and calibration data

Display (update rate, type, size)

3 readings per second nominal display update rate
Ranges up to 1999: 3½ digit LCD, ½" digit height
3000 and 5000 psi ranges: 4 digit LCD, 0.4" digit height

Controls

Non-interactive zero and span, ±10% range
Test calibration level: 0-100% range
Setpoint 1 and Setpoint 2: 0-100% range

Alarm Deadband (hysteresis)

1% of of full scale

Alarm Outputs

Dual form C (SPDT) relay contacts; 1A/24VDC, 0.5A/115VAC, non-inductive
Setpoint 1 and Setpoint 2 settings via top-accessible multiturn potentiometers
HI (SP1), LO (SP2) alarms normal action (failsafe) configuration standard
3 ft long, 6-conductor 22 AWG cable
Optional HI/HI, LO/LO, normal or reverse acting

Alarm Indicators

Bi-color (red/green) LEDs on front panel

Alarm Response Time

100 milliseconds typical

Test Function

Front panel TEST button, when depressed toggles SP1 and SP2 alarms to opposite states

Power

Any AC source of 8 to 24 VAC 50/60 Hz or any DC source of 9 to 32 VDC
1.0 watt maximum, 3 ft long, 22 AWG cables
Order optional **WMPSK** 12 VDC wall mount power supply kit to operate on 115 VAC

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- ***±0.25% Test Gauge Accuracy***
- ***316 Stainless Steel Wetted Parts***
- ***Dual SPDT Alarms***
- ***Bi-Color (Red/Green) Alarm LEDs***
- ***Alarm Test Function***



DPG1000ADA
100.0 psig range

Mechanical Specifications

Size

3.38" W x 2.88" H x 1.65" D housing
Add approximately 0.75" to height for pressure fitting
Add approximately 1" to depth for strain relief and wire clearance

Weight (approximate)

Gauge: 9 ounces
Shipping weight: 1 pound

Material

Extruded aluminum case, epoxy powder coated
Polycarbonate cover. Front and rear gaskets

Color

Light gray body, light gray/blue front

Pressure/Vacuum Connection and Material

¼" NPT male, 316 stainless steel

Media Compatibility

All wetted parts are 316 SS
Compatible with most liquids and gases

Overpressure

3000 psig range and metric equivalents: 5000 psig
5000 psig range and metric equivalents: 7500 psig
All others 2x rated pressure minimum

Burst Pressure

4x rated pressure minimum or 10,000 psi, whichever is less

Environmental Specifications

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)

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DPG1000ADA

Falcon Digital Pressure Gauges with Dual Alarms

Description

The **DPG1000ADA** circuitry includes dual mechanical relay alarm outputs with fully adjustable setpoints in a standard HI/LO alarm configuration. The **DPG1000ADA** alarms are easy to set up and use. Bi-color LEDs on the front panel (green = normal, red = alarm) provide a visual indication of alarm status. Setpoint 1 and Setpoint 2 buttons allow viewing the setpoints on the gauge display without disrupting normal operation. To test system installation and operation, a front-panel TEST button, when pressed, toggles the alarm output status independent of system pressure.

Installation and Precautions

Install or remove gauge using wrench on hex fitting only. Do not turn using housing or any other part of the gauge. Use fittings appropriate for the pressure range of the gauge. Do not apply vacuum to gauges not designed for vacuum operation. Due to the hardness of 316 stainless steel, it is recommended that a thread sealant be used to ensure leak-free operation.

NEVER insert objects into the gauge port or blow out with compressed air. Permanent damage not covered by warranty will result to the sensor.

Electrical Connection

NEVER connect the gauge power wires directly to 115 VAC or permanent damage not covered by warranty will result.

The **DPG1000ADA** can be powered by:

AC source: 8 to 24 VAC 50/60 Hz

DC source: 9 to 32 VDC

Connection to the **DPG1000ADA** is made with the two cables at the gauge rear. The smaller two-conductor cable with one RED and one BLACK lead is for the gauge power supply. However, since the **DPG1000ADA** will operate on either AC or DC power, there is no need to observe polarity; simply connect an AC supply of 8 to 24 VAC, 50/60 Hz, or a DC supply of 9 to 32 VDC to the two wires to activate the gauge. Never allow the gauge supply voltage fall below 8 VAC RMS if AC power is used, or 9 VDC if DC power is used. Operation with less than these values may cause erratic or erroneous readings or alarm operation.

The larger 6-conductor cable is for the alarm relay contact outputs. This cable's color code is as follows:

SETPOINT 1		**SETPOINT 2**	
Normally Closed (NC)	**BLACK**	Normally Closed (NC)	**GREEN**
Common (C)	**RED**	Common (C)	**BROWN**
Normally Open (NO)	**WHITE**	Normally Open (NO)	**BLUE**

Operation

The gauge is powered on whenever a supply voltage is applied. In normal operation, the system pressure is displayed on the gauge LCD. In addition, the **DPG1000ADA** circuitry compares the system pressure to two independent setpoint levels; Setpoint 1 and Setpoint 2. These setpoints are adjustable via top-accessible controls and may be viewed by pressing either the SP1 or SP2 buttons. Pressing SP1 or SP2 will switch the display to show, and allow adjusting of, the corresponding setpoint only, normal operation of the alarm outputs is not otherwise affected.

Alarm status is easily seen on the two alarm indicator LEDs in the corner of the SP1 and SP2 buttons. A GREEN indication is a "clear" or non-alarm condition. RED is an abnormal or alarm condition. If a particular setpoint is configured as a HI alarm, the **DPG1000ADA** will provide a RED alarm indication when the system pressure exceeds the setpoint.

If a particular setpoint is configured as a LO alarm, the **DPG1000ADA** will provide a RED alarm indication when the system pressure falls below the setpoint. Alarm configurations are set at the factory at time of manufacture and may be ordered as HI/LO, HI/HI, or LO/LO configurations.

For system setup, testing, and troubleshooting, the TEST button is provided. This button, when pressed, toggles the current state of the alarm outputs. Therefore, the alarm outputs may be "exercised" on demand without the need to vary the system pressure to test devices, annunciators, etc. connected to these outputs.

Using the Alarm Outputs

Normal (Failsafe) vs. Reverse Action - With **Normal** or **Failsafe** configuration (alarm options 1N, 2N, or 3N), the alarm output relays will be CLOSED (relay energized) for a clear or non-alarm condition and OPEN (relay not energized) for an alarm condition. This is primarily for users who desire an alarm condition should the gauge lose power. In the wiring diagrams, the normally closed and normally open designations refer to standard relay terminology; i.e., the relay contact status with the relay coil not energized.

Therefore, with the **Normal (Failsafe)** configuration, in a green or non-alarm condition the relay will be energized so that continuity can be expected between the common and normally open leads. In a red or alarm condition, the relay will be open (not energized), so that continuity can be expected between the common and normally closed leads.

Users who do not want an alarm indication when the gauge power is off should specify **Reverse** action (alarm options 1R, 2R, or 3R). In this case, the relay will be open (not energized) in the non-alarm condition and closed for the alarm condition. In this case, continuity can be expected from common to normally closed in the green (non-alarm) condition and from common to normally open in the red (alarm) condition.

Understanding Deadband - The alarm circuit setpoints have built-in deadbands, also known as hysteresis, of 1% of span as standard. This means, for example, the deadband is approximately 1 psi in a 0 to 100 psi gauge.

This deadband serves to eliminate output oscillation or "chatter" in the process due to minor fluctuations in pressure. If, for example, the system pressure in a 0-100 psi system is 40.0 psi, and Setpoint 1 is set to 50.0 psi (HI alarm), the alarm indication will trip if the pressure exceeds 50.0 psi. After the HI alarm has tripped, pressing the SP1 button will show that the alarm indication will "release" at 1 psi lower (approximately 49 psi).

Contact Rating and Protection - The contacts of the alarm relays are rated at 1A/24VDC or 0.5A/115VAC. Using mechanical relay contacts above their rating, or with large inductive loads, will shorten their useful life. In circuits other than low-level switching or pilot duty, the user should consider whether external contact protection such as snubber networks or arc suppression networks are required to protect the contacts.

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

Alarm Setpoints

Lift calibration label on the top of the unit to access individual controls to adjust Setpoint 1 and Setpoint 2. See gauge label for locations.

To adjust alarm Setpoint 1, press and hold the SP1 button. When holding the SP1 button, the display will show the current setting for Setpoint 1. Turn the top-accessible Setpoint 1 control. Repeat the procedure by pressing the SP2 button to adjust Setpoint 2.

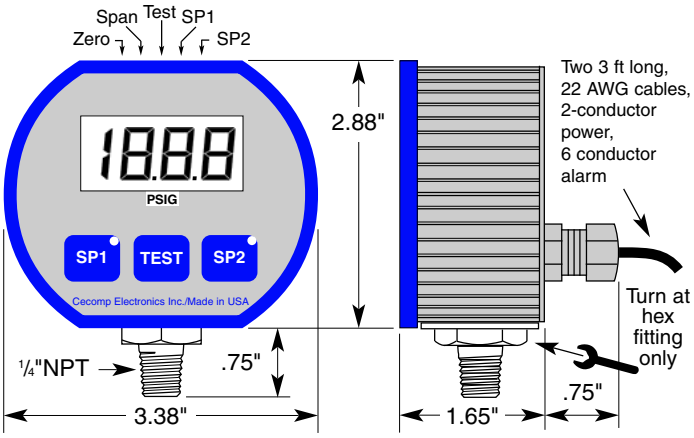
Calibration

Lift calibration label on the top of the unit to access individual controls to adjust the zero and span of the display.

GAUGE reference units may be re-zeroed without affecting the span calibration. The gauge port must be open to the ambient with no pressure or vacuum applied. Adjust the Zero control until the gauge reads zero with the minus (–) sign occasionally flashing.

Span calibration should only be attempted if the user has access to a pressure reference of known accuracy. The quality of the calibration is only as good as the accuracy of the calibration equipment and ideally should be at least four times the gauge accuracy. Zero calibration must be done before span calibration. Record readings at three to five points over the range of gauge and adjust span control to minimize error and meet specifications.

ABSOLUTE reference gauges require vacuum generation and atmospheric pressure measurement equipment for accurate calibration and thus are more difficult to calibrate in the field. Gauges may be returned to Cecomp Electronics for factory certified recalibration. NIST traceability is available.



Cecomp Electronics maintains a constant effort to upgrade and improve its products, therefore specifications are subject to change.

MODEL DESIGNATION SYSTEM

DPG1000ADA range units ref - alarm

Pressure/Vacuum Range

Units

G=Gauge, **A**=Absolute, **VAC**=Vacuum

Alarm Options

1N = Hi/Lo Normal action (Std)
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

Example: DPG1000ADA500PSIG-1N = DPG1000ADA 500 psig, HI/LO normal action alarms

Pressure

Cecomp maintains a constant effort to upgrade and improve its products. Specifications are subject to change without notice. Consult factory for your specific requirements.