

APPENDIX

Using the DPG1000 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 - In the DPG1000 alarm circuits, the 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.

Gauge Range Selection

Ranges of mechanical gauges are traditionally chosen so the working range is in the middle of the scale. Digital gauges provide the best performance when used in the upper half of their range. For example, if your working pressure is from 400 to 500 psig, select a 500 psig digital gauge. Cecomp's transducers are specified in psi. When non-standard engineering units are ordered, convert the range from psi to the units desired, and round off the number as shown in the table below. Other engineering units not shown below can generally be accommodated within the limitations of the available transducers and the 3½ digit or 4 digit displays.

Sensor Cavity Volume

Sensor cavity volume is approximately 0.01 to 0.02 cubic inches. The volume change over the range of the sensor is negligible.

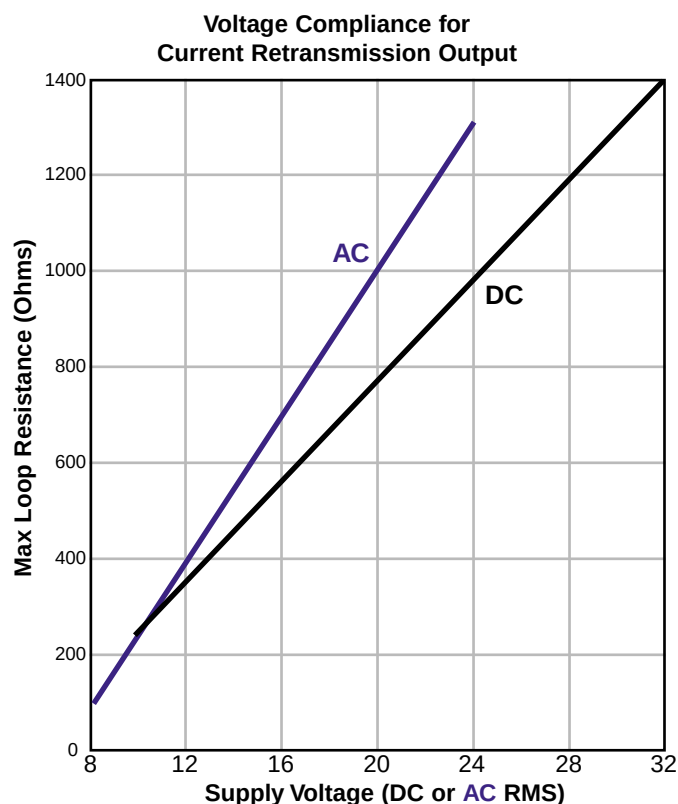
Using the Retransmission Outputs

The retransmission outputs are driven by the transducer rather than the display and thus are true analog outputs. Outputs are filtered to improve noise immunity and have a response time of about 50 msec. The outputs are easy to use if a few system considerations are observed.

Voltage Retransmission - When using the 0-2 V retransmission option, do not allow the resistive load on the output to fall below 5K ohms. Also, avoid large capacitive loads (greater than 1000 pF) such as those caused by long runs of shielded cable. For long retransmission runs, use the 4-20 mA option instead.

Current Retransmission - Be sure to observe the output compliance (voltage drive) capabilities of the gauge. The compliance, and therefore the maximum loop resistance the output can drive, is a function of the supply voltage to the gauge. See the graph shown below for maximum loop resistance vs. supply voltage. Too large a loop resistance will cause the gauge output to "limit" or saturate before reaching its full 20 mA output.

System Grounding with Retransmission - For gauges with retransmission, the power supply (-) lead is tied to the retransmission output ground. Therefore, if a DC supply is used, the power supply (-) lead should be considered common with the retransmission output (-) connection.



Typical gauge ranges when non-standard engineering units are ordered														
PSI	Ref	Inches Hg	Inches H ₂ O	Oz/in ²	Feet H ₂ O	kPa	mm Hg	Torr*	mbar*	bar	kg/cm ²	atm	cm H ₂ O	mm H ₂ O
3	G	6	85	50	7	20	150		200				200	2000
5	G	10	140	80	10	35	260		350				350	
10	G	20	300	160	23	70	500		700				700	
15	G, A, VAC	30	400	240	35	100	760	760	1000	1	1	1	1000	
30	G or A	60	850	500	70	200	1500	1500	2000	2	2	2	2000	
50	G	100	1400		120	350			3500	3.5	3.5	3.5		
100	G or A	200			200	700			7000	7	7	7		
300	G				700	2000				20	21	20		
500	G					3500				35	35	34		
1000	G					7000				69	70	65		
3000	G									205	210	200		
5000	G									345	350	340		

*Absolute reference is generally used for vacuum applications with these units.