

- ±0.25% Test Gauge Accuracy
- 316L Stainless Steel Wetted Parts
- 1.5" or 2.0" Tri-Clamp®

- 2-wire Transmitter
- True Analog 4-20 mA Output
- Output Test Function

- Food Processing
- Dairy and Breweries
- Pharmaceutical

**Specifications**

**Ranges and Resolution**

See table below. Consult factory for special engineering units. Resolution is fixed as indicated in table.

**Accuracy**

Accuracy includes linearity, hysteresis, repeatability  
 Accuracy: ±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**

3.5 digit LCD, 0.5" digit height (indicates to 1999)  
 3 readings per second nominal display update rate

**Controls**

Non-interactive zero and span, ±10% range  
 Output test adjustment: 0-100% range  
 Retransmission zero and span: Internal potentiometers

**Loop Supply Voltage**

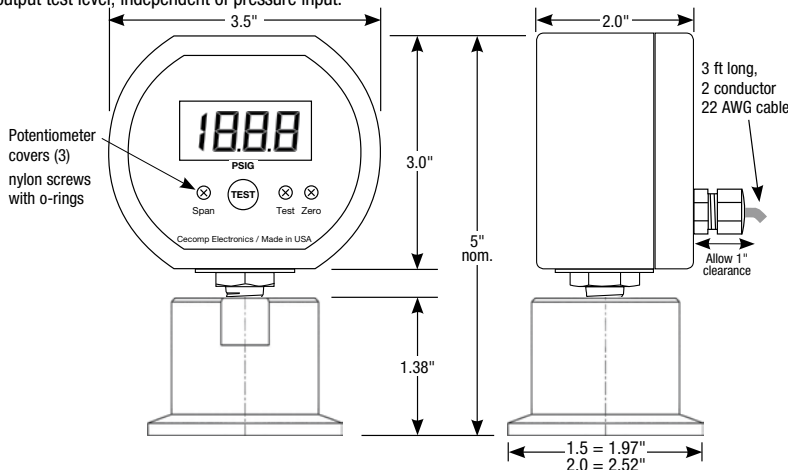
8 to 32 VDC loop power supply. Reverse polarity protected.  
 3 ft, 2-cond. 22 AWG cable with stripped and tinned wire ends  
 Use with API 9046-24 loop power supply

**Output Characteristics**

True analog output, 50 millisecond typical response time  
 Gauge terminal voltage must be above 7.8 VDC at all times.

**Test Function**

Front panel TEST button, when depressed sets loop current and display to output test level, independent of pressure input.



**Sanitary Seal**

3-A certified Tri-Clamp flush diaphragm sanitary seal  
 NEOBEE® M-20 fill  
 All 316L stainless steel construction  
 Optional electropolish passivation

**Weight (approximate)**

1.5" gauge: 2 lbs shipping: 3 lbs  
 2.0" gauge: 2.5 lbs shipping: 3.5 lbs

**Housing and Materials**

NEMA 4X ABS/polycarbonate case, polycarb. label, rear gasket  
 Conformal coating on circuit boards for moisture resistance.

**Maximum Working Pressure**

1.5": 2 X pressure range  
 2.0": 2 X pressure range or 550 psi for 300 psi sensor  
 Maximum pressure dependent on type of clamping device  
 112.5% FS out-of-range display: | --- or | - - - -

**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)  
 Thermal effect due to fill: Up to 1.2 psi from 0 to 70°C  
 Positional effect: Up to 0.14 psi

Quick Link: [cecomp.com/san](http://cecomp.com/san)



NEMA 4X Housing



PSI	Res	inHg	Res	Torr	Res	kPa	Res	kg/cm <sup>2</sup>	Res
15PSIA	.01	30INHG	.1	760TORR	1	100KPAA	.1	1KGCM	.001
15PSIVAC	.01	30INHG	.1	760TORRVAC	1	100KPAVAC	.1	1KGCMVAC	.001
±15PSIG	.1	±30INHGG	.1	1600TORR	1	±100KPAG	.1	±1KGCMG	.001
15PSIG	.01	30INHGG	.1	mbar	Res	100KPAG	.1	1KGCMG	.001
30PSIA	.1	60INHGA	.1	1000MBARA	1	200KPAA	.1	2KGCM	.001
30PSIG	.1	60INHGG	.1	1000MBARVAC	1	200KPAG	.1	2KGCMG	.001
60PSIG	.1	120INHGG	.1	±1000MBARG	1	400KPAG	1	4KGCMG	.01
100PSIA	.1	200INHGA	.1	1000MBARG	1	700KPAA	1	7KGCM	.01
100PSIG	.1	200INHGG	.1	2000MBARA	1	700KPAG	1	7KGCMG	.01
200PSIG	.1	400INHGG	1	2000MBARG	1	1400KPAG	1	14KGCMG	.01
300PSIG	1	600INHGG	1	bar	Res	2000KPAG	1	20KGCMG	.01
oz/in <sup>2</sup>	Res	mmHg	Res	1BARA	.001	cmH <sub>2</sub> O	Res	atm	Res
240ZINA	1	760MMHGA	1	1BARVAC	.001	1000CMH2OA	1	1ATMA	.001
240ZINVAC	1	760MMHG	1	±1BARG	.001	1000CMH2OVAC	1	1ATMVAC	.001
±240ZING	1	±760MMHGG	1	1BARG	.001	±1000CMH2OG	1	±1ATMG	.001
240ZING	1	760MMHGG	1	2BARA	.001	1000CMH2OG	1	1ATMG	.001
480ZINA	1	1600MMHGA	1	2BARG	.001	2000CMH2OA	1	2ATMA	.001
480ZING	1	1600MMHGG	1	4BARG	.01	2000CMH2OG	1	2ATMG	.001
inH <sub>2</sub> O	Res	ftH <sub>2</sub> O	Res	7BARA	.01	g/cm <sup>2</sup>	Res	4ATMG	.01
400INH2OA	1	35FTH2O	.1	7BARG	.01	1000GCM	1	7ATMA	.01
400INH2OVAC	1	70FTH2O	.1	14BARG	.01	1000GCMVAC	1	7ATMG	.01
±400INH2OG	1	140FTH2O	.1	20BARG	.01	±1000GCMG	1	14ATMG	.01
400INH2OG	1	230FTH2O	1			1000GCMG	1	20ATMG	.01
850INH2OA	1	480FTH2O	1			2000GCM	1		
850INH2OG	1	700FTH2O	1			2000GCMG	1		

How to Specify	Size
DSGL115N range - options	1.5" Tri-Clamp
DSGL120N range - options	2.0" Tri-Clamp

Range—see table at left

psi = PSI      mmHg = MMHG      MPa = MPA  
 inHg = INHG      torr = TORR      mbar = MBAR  
 oz/in<sup>2</sup> = ZIN      kg/cm<sup>2</sup> = KGCM      bar = BAR  
 inH<sub>2</sub>O = INH2O      g/cm<sup>2</sup> = GCM      cmH<sub>2</sub>O = CMH2O  
 ftH<sub>2</sub>O = FTH2O      kPa = KPA      atm = ATM  
 G = gauge reference pressure  
 VAC = gauge reference vacuum  
 A = absolute reference

Range codes listed as 2, 20, 200, or 2000 display 1.999, 19.99, 199.9, or 1999 respectively.

**Option—add to end of model number**

-E	Electropolished sanitary fitting
<b>Calibration certificates—order separately</b>	
CD	Calibration data, 5 test points, test date
NC	NIST certificate with traceability documentation, 5 test points and date

NEOBEE—Reg TM Stepan Specialty Products, LLC  
 Tri-Clamp—Reg TM Alfa Laval Inc.

## Types of Gauges

Gauge reference models read zero with the gauge open.


Bipolar ranges read positive pressure and vacuum in the same units, and zero with the gauge port open.

Absolute reference gauges read atmospheric pressure with the gauge port open and zero at full vacuum. With the gauge port open to atmosphere, it is normal for readings to fluctuate due to continuously changing barometric pressure.

## 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.
- ✓ Use a pressure or vacuum range appropriate for the application.
- ✓ Use clamp appropriate for the pressure range of the gauge.
- ✓ Remove system pressures before removing or installing gauge.
- ✓ 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 touch surface of diaphragm.
- ⚠ Gauges are not for oxygen service. Accidental rupture of sensor diaphragm may cause oil inside seal to react with oxygen.
- ✗ NEVER connect the gauge wires directly to 115 VAC or permanent damage will result.

Cecomp maintains a constant effort to upgrade and improve its products. Specifications are subject to change without notice. See [cecomp.com](http://cecomp.com) for latest product information. Consult factory for your specific requirements.

 **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](http://www.P65Warnings.ca.gov)

## Description

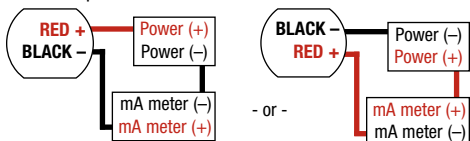
All operating power is supplied by the 4-20 mA current loop. The 2-wire connection allows the DSGL1 to be used as an indicating transmitter in any 4-20 mA current loop application or as a DC powered gauge.

The output is a continuous analog signal based on the transducer output rather than the display. The output is filtered to improve noise immunity and has a response time of about 50 msec. The sensor is a temperature compensated piezoresistive transducer.

The TEST button, when depressed, switches the display and output loop to a preset level determined by the setting of a Test potentiometer. This is useful for testing the 4-20 mA output signal without having to alter system pressure.

## Electrical Connection

Connection to the DSGL1 is made with the 2-wire cable at the gauge rear. Reversing the connections will not harm the gauge but the DSGL1 will not operate with incorrect polarity. See the wiring examples below for connecting to a 4-20 mA current loop.



If the 4-20 mA analog output is not required, the transmitter will function as a low voltage powered pressure gauge when connected to any 8 to 32 VDC power supply. Connect the loop (+) supply to the RED lead and the loop (-) supply to the BLACK lead.



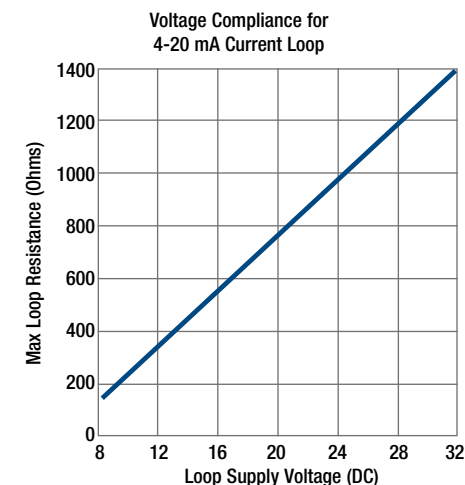
## Loop Voltage

Select a loop power supply voltage and total loop resistance so that when the loop current is 20 mA, the gauge will have at least 8 VDC at its terminals and not exceed 32 VDC.

For correct operation and to avoid erratic or erroneous readings, the gauge terminal voltage must not fall below 8 VDC. Too large a loop resistance will cause the gauge output to "limit" or saturate before reaching its full 20 mA output. The minimum loop supply voltage may be calculated from the formula:

$$V_{min} = 8V + (20mA \times \text{Total loop resistance})$$

If the terminal voltage of the gauge falls below about 7.8 VDC, erratic operation may occur. This is an indication that the loop supply/resistance may not allow adequate headroom for reliable operation. This should never occur in normal use. If it does, examine the loop supply/resistance.



## Operation

The DSGL1 is designed for continuous operation. Warm-up time is negligible. The display will show the system pressure or vacuum, and the loop current also will be proportional to the system pressure/vacuum.

Sensor	Full vacuum	"0" on display	Full pressure
Gauge reference pressure	n/a	4 mA	20 mA
Gauge reference vacuum	20 mA	4 mA	n/a
Absolute reference	4 mA	4 mA	20 mA
Bipolar ±	4 mA	12 mA	20 mA

## Test Function

When the front-panel TEST button is held depressed, the display and loop current are switched, independent of the system pressure, to a test level determined by the setting of the Test potentiometer. This test mode will allow setup and testing of the current loop by switching to this test level whenever desired without having to alter the system pressure.

To set the test output level, see gauge label for location of Test potentiometer. Press and hold the front-panel TEST button and adjust the Test potentiometer to set the display and loop current to the desired test level.

## Calibration Preparation

Gauges are calibrated at the factory using equipment traceable to NIST. Gauges are calibrated in an upright position at normal ambient temperatures (approx. 20°C). There is no need to calibrate the gauge before putting it into service unless the process temperature and gauge position deviate from normal. Calibration should only be performed by qualified individuals using appropriate calibration standards and procedures. Calibration intervals depend on your quality control program requirements, although many customers calibrate annually.

The calibration system must be able to generate and measure pressure/vacuum over the full range of the gauge and should be at least four times more accurate than the gauge being calibrated.

A vacuum pump able to produce a vacuum of 100 microns (0.1 torr or 100 millitorr) or lower is required for vacuum gauges. Warning: application of vacuum to non-vacuum models will result in damage to the sensor.

Allow the gauge to acclimate to the calibration temperature for at least 60 minutes. Calibrate the gauge at the same temperature as the process with the gauge oriented in the same position.

Use a stable DC power supply and an accurate mA meter for calibration of loop powered transmitters.

## Calibration

1. See rear label of gauge for pressure range.
2. Remove the covers on the Zero and Span controls on the front of the gauge.
3. Loop-powered gauges must be connected to 9-32 VDC during the calibration procedure. The supply voltage has negligible effects on the gauge calibration as long as it is within the stated voltage ranges. Over voltage may result in damage.
4. Internal Zero and Span potentiometers adjust the agreement between the display and the analog output. These normally do not need to be adjusted. If the output does need adjustment, remove the rear cover to access the potentiometers. See image below.
5. Zero for gauge reference pressure or vacuum gauges: With the gauge port open to atmosphere, adjust the Zero potentiometer for a display indication of zero. Output should be 4.0 milliamps.

Zero for absolute reference gauges: Apply full vacuum to the gauge. Adjust the Zero potentiometer for a display indication of zero. Output should be 4.0 milliamps.

6. Span for gauge reference pressure gauges and absolute reference gauges: Apply full-scale pressure and adjust the Span potentiometer for a display indication equal to full-scale pressure. Output should be 20.0 milliamps.

Span for gauge reference vacuum gauges: Apply full vacuum to the gauge. Adjust the Span potentiometer for a display indication equal to full-scale vacuum. Output should be 20.0 milliamps.

7. Verify pressure indications at 0%, 25%, 50%, 75%, and 100% of full scale and repeat calibration as needed to achieve best accuracy over desired operating range.
8. Replace the potentiometer covers, rear cover and screws, taking care not to pinch the wires between the case and the rear cover.

