



DC030NDR5



Actual product appearance may vary.

Pressure Sensors: Measurement Type: Bidirectional Gage, Differential; Signal Conditioning: Amplified; Pressure Range: ± 30.0 in H₂O; Port Style: Barbed

Features

- Ultra Low Pressure Sensing, down to 1" H₂O
- ASIC Enhanced
- Available in Gage and Differential Pressure Ranges
- Available in Ratiometric and Regulated
- Temperature Compensated over 0 °C to 50 °C [32 °F to 122 °F]
- Combined Linearity and Hysteresis error <0.25% Span

Potential Applications

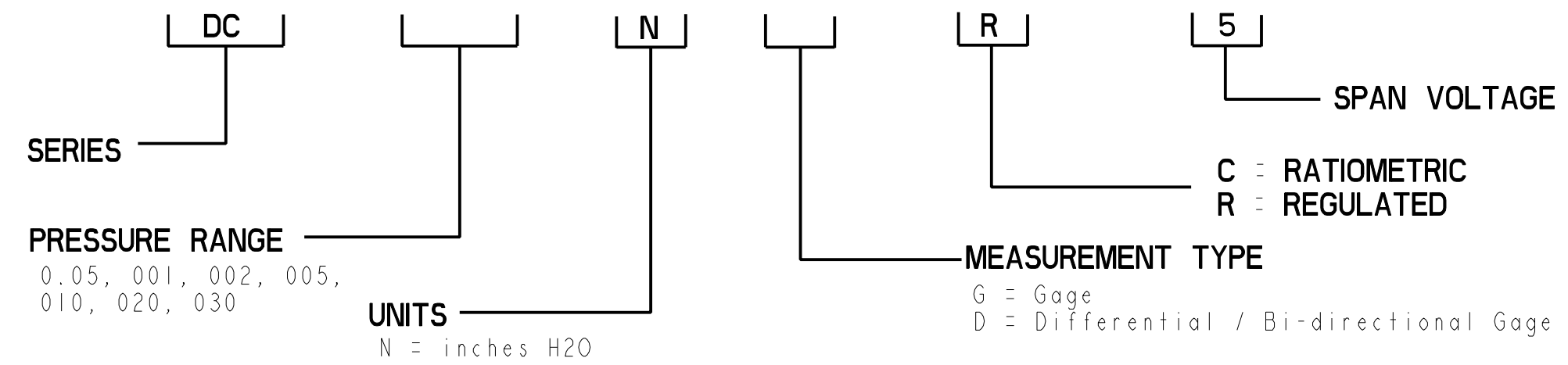
- Medical Instrumentation
- HVAC
- Environmental Controls
- Portable Monitors

Description

The DC pressure sensor combines our SURSENSE™ precision high sensitivity silicon sensing capabilities with the latest in ASIC technology to produce one of the most precise, reliable pressure sensors in the market. The SURSENSE technology provides Dynamic Self Compensation which substantially reduces offset errors due to changes in temperature, stability to warmup, long term instability and position sensitivity. When operated with a fixed 5.0 Vdc supply the DC sensors provides a ratiometric 0.25 Vdc to 4.25 Vdc output (4.0 Vdc span). Regulated voltage units are also available for applications involving variable supply voltages (see electrical specifications).

Product Specifications	
Measurement Type	Differential, Bidirectional Gage
Signal Conditioning	Amplified
Pressure Range	± 30.0 in H ₂ O
Maximum Overpressure	450 in H ₂ O
Supply Voltage	7.0 Vdc to 30.0 Vdc
Compensated	Yes
Output Calibration	Yes
Termination	PCB
Port Style	Barbed
Package Style	Honeywell DI-DC
Typical Sensitivity	0.166 V/in H ₂ O
Full Scale Span	± 2.0 V typ.
Null Offset	3.5 Vdc typ.

Total Error (% Full Scale)	± 1.0 % typ., ± 2.0 % max. (See Note 1)
Accuracy (% Best Fit Straight Line)	± 0.25 % (See Note 2)
Offset Position Sensitivity	± 1 mV
Operating Temperature Range	-25 °C to 85 °C [-13 °F to 185 °F]
Compensated Temperature Range	0 °C to 50 °C [32 °F to 122 °F]
Storage Temperature Range	-40 °C to 125 °C [-40 °F to 257 °F]
Media Compatibility	Port 1: Dry gases only. Media must be compatible with epoxy-based adhesive. Port 2: Wetted materials. Media must be compatible with nylon housing, epoxy adhesive and silicon.
UNSPSC Code	411121
UNSPSC Commodity	411121 Transducers
Life	Percentage of Full Scale includes: zero calibration, temperature effect on zero and span, nonlinearity, hysteresis, repeatability, and stability over the compensated temperature range.
Availability	Global
Series Name	DC



NOTES

1 REFERENCE CONDITIONS (UNLESS OTHERWISE NOTED): SUPPLY VOLTAGE, $V_s = 15$ Vdc, $T_A = 25^\circ\text{C}$, COMMON MODE LINE PRESSURE = 0 PSIG. PRESSURE MEASUREMENTS ARE WITH PRESSURE APPLIED TO PORT 2

2 HI/LO SPAN IS THE ALGEBRAIC DIFFERENCE BETWEEN OFFSET OUTPUT AND HI OR LO OUTPUTS

3 SHIFT IS RELATIVE TO 25°C

4 SHIFT IS WITHIN THE FIRST HOUR OF EXCITATION APPLIED TO THE DEVICE

5 LINEARITY IS DETERMINED USING BEST STRAIGHT LINE CURVE FIT THROUGH ZERO, 1/2 FULL SCALE, AND FULL SCALE; HYSTERESIS IS MECHANICAL ONLY

6 SPAN IS THE ALGEBRAIC DIFFERENCE OF OUTPUT END POINTS (OUTPUT AT SPECIFIED HI AND LOW OUTPUT LIMITS)

7 TOTAL ERROR INCLUDES OFFSET & SPAN ERRORS, ZERO CALIBRATION, TEMPERATURE EFFECT ON ZERO AND SPAN, NONLINEARITY, HYSTERESIS, REPEATABILITY AND STABILITY OVER COMPENSATED TEMPERATURE RANGE.

8 ACCURACY INCLUDES NONLINEARITY, HYSTERESIS AND REPEATABILITY.

ELECTRICAL SPECIFICATIONS

PARAMETER	PRESSURE RANGE (in H2O)	MIN	NOM	MAX	UNITS
DIFFERENTIAL	OFFSET VOLTAGE (NULL AT 0 in H2O)		3.500		V
	SPAN (HI SPAN - LO SPAN)		5.000		
	SPAN (P1 > P2)	ALL	-2.500		
	SPAN (P2 > P1)		2.500		
GAGE	OFFSET VOLTAGE (NULL AT 0 in H2O)		0.250		V
	FULL SCALE OUTPUT (P2 > P1)		5.250		
	SPAN (FULL SCALE OUTPUT - OFFSET)		5.000		
TOTAL ERROR	0.05, 01, 02		+/- 2	+/- 3	%SPAN
	05, 10, 20, 30		+/- 1	+/- 2	%SPAN
OFFSET WARM-UP SHIFT	0.05, 01, 02		20		mV
	05, 10, 20, 30		20		mV
OFFSET POSITION SENSITIVITY (+/- 1g)	0.05, 01, 02		10		mV
	05		5		
	10, 20, 30		1		
OFFSET LONG TERM DRIFT (ONE YEAR)	ALL		100		mV
ACCURACY	ALL		0.05		%FS

MAXIMUM RATINGS

PARAMETER	PRESSURE RANGE (in H2O)	MIN	MAX	UNITS
OPERATING TEMPERATURE RANGE		-25	85	$^\circ\text{C}$
STORAGE TEMPERATURE	ALL	-45	125	$^\circ\text{C}$
PROOF PRESSURE (VERIFIED BY TEST)	ALL	5		PSIG
BURST PRESSURE (VERIFIED BY DESIGN)	0.05, 01, 02		100	in H2O
	05, 10		150	
	20		300	
	30		450	
EXCITATION VOLTAGE	ALL	3	16	V
COMMON MODE PRESSURE	ALL		50	PSIG

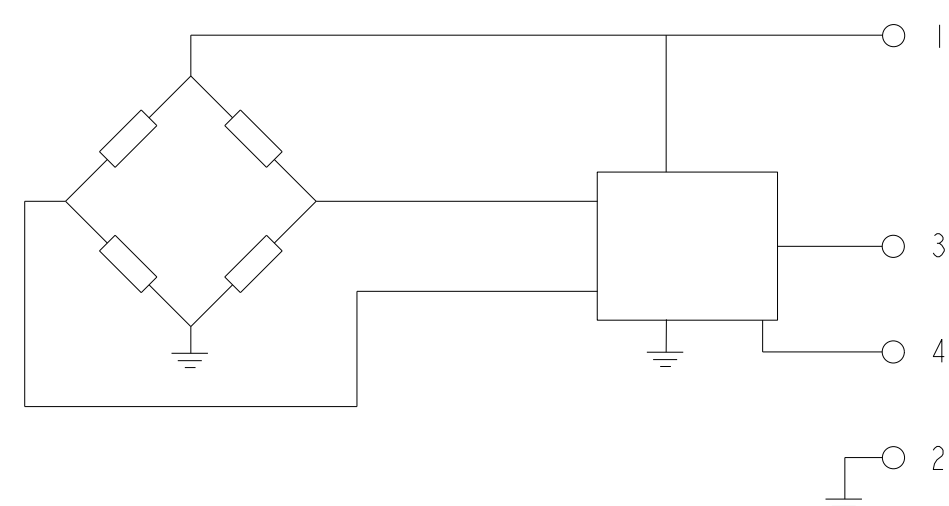
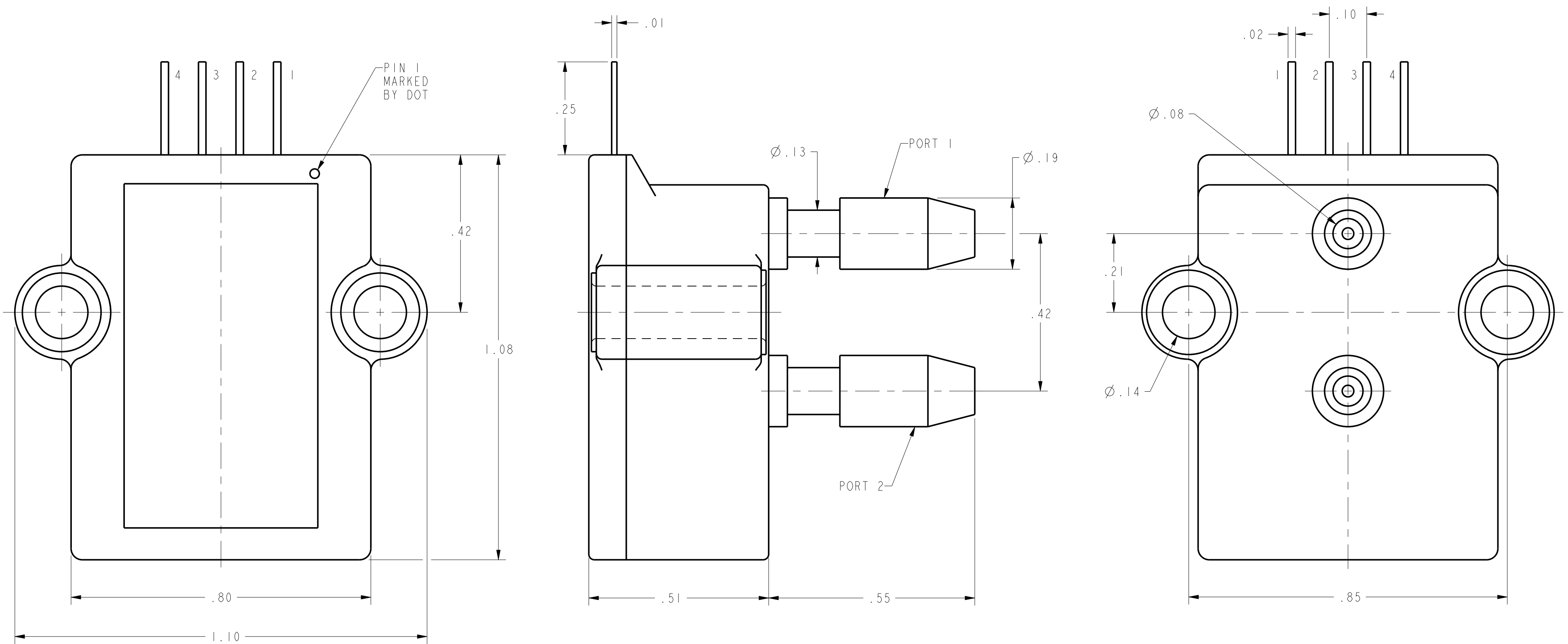
PRESSURE COMPATIBILITY:

MEASURES DIFFERENTIAL OR GAGE PRESSURE ONLY WITH POSITIVE PRESSURE TO PORT 2. THERE WILL BE A SMALL OUTPUT VOLTAGE BETWEEN THE ACTUAL OFFSET VOLTAGE AND GROUND PROPORTIONAL TO VACUUM IF APPLIED TO PORT 2

RATIOMETRIC OUTPUT:

THE OUTPUT VOLTAGE OF THE SENSOR IS NOMINALLY RATIOMETRIC, PROPORTIONAL, TO THE EXCITATION VOLTAGE. FOR THIS MODEL SENSOR ALL SPECIFICATIONS WILL CHANGE PROPORTIONALLY TO ANY CHANGES IN THE EXCITATION VOLTAGE. THE EXCITATION MAY VARY BETWEEN 3 TO 16 VOLTS. ALL SPECIFICATIONS WILL NOMINALLY BE CHANGED BY A RATIO OF $V_{\text{EXCITATION}}/5.0$ VOLTS. FOR EXAMPLE: IF THE EXCITATION VOLTAGE IS 3.0 VOLTS THEN BOTH THE FULL SCALE OUTPUT VOLTAGE AND THE OFFSET VOLTAGE WOULD BE 3/5TH THE SPECIFIED VALUE

MEDIA CAPABILITY, WETTED MATERIALS (APPLY CLEAN DRY AIR ONLY)	
PRESSURE PORT 2 (HIGH)	SILICON DIAPHRAGM, GLASS FILLED NYLON, AND ALUMINA CERAMIC. PRESSURE MEASURING PORT
PRESSURE PORT 1 (LOW)	SILICON DIAPHRAGM, GLASS FILLED NYLON, AND ALUMINA CERAMIC. THE VENT PORT



EQUIVALENT CIRCUIT

PIN OUT	
1	$V_{\text{EXCITATION}}$
2	COMMON
3	V_{OUTPUT}
4	NOT FOR CUSTOMER USE. DO NOT CONNECT.

CATALOG LISTINGS

- DC0R5NGR5
- DC001NGR5
- DC002NGR5
- DC005NGR5
- DC010NGR5
- DC020NGR5
- DC0R5NDR5
- DC001NDR5
- DC002NDR5
- DC005NDR5
- DC020NDR5
- DC030NDR5

DESIGN UNITS: INCH	
NO PLACES	x ± 0.400
ONE PLACE	.x ± 0.030
TWO PLACE	.xx ± 0.015
THREE PLACE	.xxx ± 0.005
FOUR PLACE	.xxxx ± 0.0005
ANGLES	x ± 3

DESIGN UNITS: INCH TOLERANCES UNLESS NOTED: NO PLACES x ± 0.400 ONE PLACE .x ± 0.030 TWO PLACE .xx ± 0.015 THREE PLACE .xxx ± 0.005 FOUR PLACE .xxxx ± 0.0005 ANGLES x ± 3	DRAWN SK 12OCT06 CHECK CMH 12OCT06 THIS DRAWING COVERS A PROPRIETARY ITEM AND IS THE PROPERTY OF HONEYWELL. THIS DRAWING IS NOT TO BE COPIED OR USED WITHOUT THE PERMISSION OF HONEYWELL.	TITLE Pressure Sensor	SIZE D TYPE I DRAWING NAME DC SERIES CHART 5 REV D
THIRD ANGLE PROJECTION	INTERPRET PER ASME Y14.5M-1994 OTHER HONEYWELL ENGINEERING STANDARDS MAY APPLY.	Pro/ENGINEER 3D SCALE 5:1	SHEET 1 OF 1