1865
Infusion pump force/pressure transducer

FEATURES

- Silicone pressure/force interface diaphragm
- Force measurement for infusion pump applications
- Pressure measurement for liquid media
- Medical grade materials
- 8-Pin DIP electrical connection
- Laser trimmed
- Choice of voltage or constant current excitation
- One-year warranty

APPLICATIONS

- Infusion pumps
- Anesthesia monitors
- Noncorrosive, nonpressurized media level sensors
- Ventilation systems
- Blood pressure equipment
- Syringe pumps
- Drug delivery systems

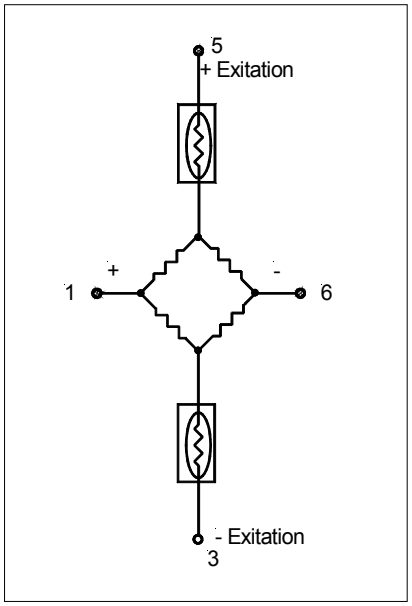
GENERAL DESCRIPTION

The 1865 is a high-performance transducer specifically designed to address the needs of medical and specialized OEM applications. Offering laser-trimmed compensation, the 1865 may be specified to operate with either a constant current or voltage supply.

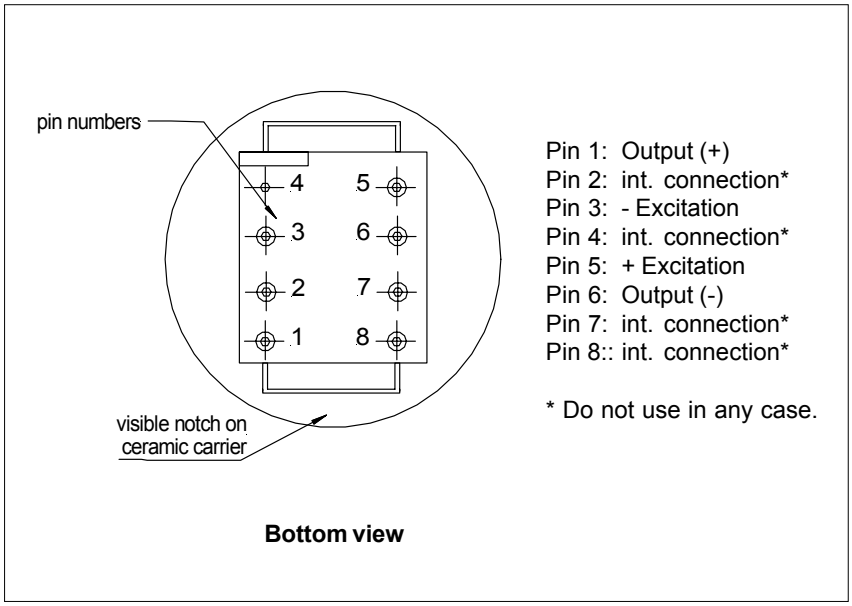
The 1865 employs a solid state piezoresistive pressure trans-ducer mounted in a plastic package.

For applications where force is applied by a flexible membrane to the sensor, such as found in infusion pumps, the 1865's precision height silicone diaphragm provides long life and is a reliable replacement for older force or load cell transducers. Utilizing a silicone rubber diaphragm, the 1865 is compatible with some liquid media applications.

EQUIVALENT CIRCUIT



ELECTRICAL CONNECTION



Pin 1: Output (+)
Pin 2: int. connection*
Pin 3: - Excitation
Pin 4: int. connection*
Pin 5: + Excitation
Pin 6: Output (-)
Pin 7: int. connection*
Pin 8:: int. connection*

* Do not use in any case.

PRESSURE SENSOR CHARACTERISTICS[1]

Maximum ratings (for all devices)

Input exitation:	
Current exitation:	2 mA
Voltage exitation:	15 V
Isoltation resistance (50 V_{DC})	min. 100 MΩ
Proof pressure:	3x rated pressure or 60 psi, what ever is less
Vibration (20 to 2000 Hz):	10 g (RMS)
Shock (11 msec):	100 g
Life:	1 million cycles min.

Environmental specifications (for all devices)

Temperature range	
Compensated	-1 to 54°C
Operating	-28°C to 54°C
Storage	-40°C to +85°C
Humidity limits	0 to 98 %RH

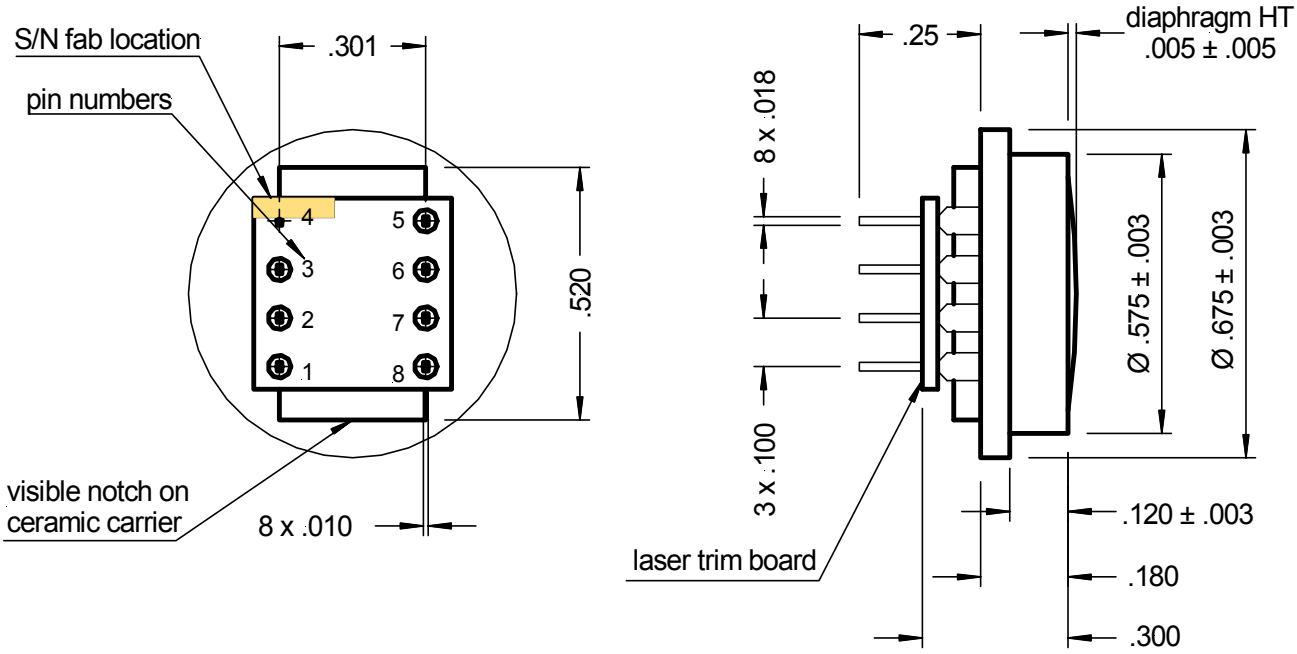
COMMON PERFORMANCE CHARACTERISTICS[1]

Characteristic		Min.	Typ.	Max.	Unit
Zero pressure offset		-2	0	+2	mV
Full-scale span[2]	current exitation	98	100	102	
	voltage exitation	38	40	42	
Non-linearity (BSL)		---	±0.1	±0.25	%FSO
Hysteresis[3]		---	0.0125	0.015	
Temperature effect on offset and span (0-54°C)[4]		---	±0.2	±0.5	
Repeatability		---	±0.0125		
Input impedance[6]	current exitation	2.0	4.0	8.0	kΩ
	voltage exitation	8.0	15.0	40.0	
Output impedance[7]	current exitation	3.5	4.0	6.0	
	voltage exitation	3.5	4.0	6.0	
Common-mode voltage[8]		---	5.0	---	V_{DC}
Response time[9]		---	---	5	msec
Long term stability of offset and span[10]		---	±0.1	±0.3	%FSO per 6 month

Specification notes:

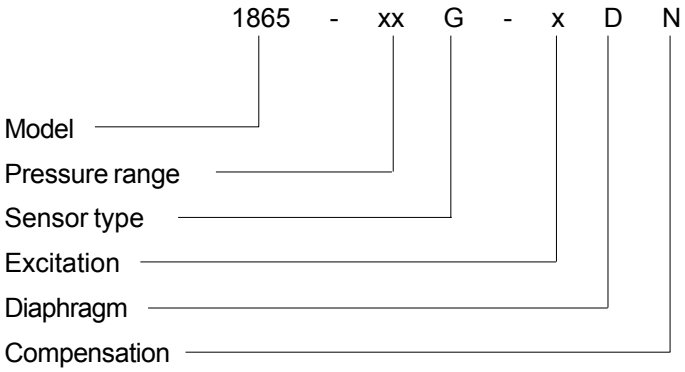
1. Reference conditions: unless otherwise noted: Exitation current 1.5 mA (current versions) or exitation voltage 10 V (voltage versions) t_{amb} = 27°C, humidity 50 %RH
2. Span is the algebraic difference between the output voltage at full-scale pressure and the output at zero pressure. Span is ratiometric to the supply voltage.
3. See Definition of Terms. Hysteresis - the maximum output difference at any point within the operating pressure range for increasing and decreasing pressure.
4. Maximum error band of the offset voltage and the error band of the span, relative to the 27°C reading.
5. Maximum difference in output at any pressure with the operating pressure range and temperature within 0°C to +54°C after:
   a) 1,000 temperature cycles, 0°C to +70°C
   b) 1.5 million pressure cycles, 0 psi to full-scale span
6. Input impedance is the impedance between pins 5 and 3.
7. Output impedance is the impedance between pins 1 and 6.
8. This is the common-mode voltage of the output arms (pins 3 and 5) of a constant voltage driven sensor for V_S = 10 V_{DC}.
9. Response time for a 0 psi to full-scale span pressure step change, 10 % to 90 % rise time.
10. Long term stability over a one year period.

PHYSICAL DIMENSIONS



dimensions in inches

ORDERING INFORMATION



PRESSURE RANGE
01 = 0 to 5 PSI
02 = 0 to 10 PSI
03 = 0 to 15 PSI
05 = 0 to 25 PSI
07 = 0 to 30 PSI

SENSOR TYPE
G = Gage pressure

EXCITATION
L = 1.5 mA
K = 10 V_{DC}

DIAPHRAGM TYP
D = Dimethyl silicone

COMPENSATION
N = Laser trimmed, normalized output