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Honeywell

Model 43

Precision Low Profile Load Cell



DESCRIPTION

Model 43 is a low profile “pancake” type load cells. These bonded foil, strain gage load cells are engineered to measure loads from 5 lb to 500,000 lb. The compression-only Model 43 has a load button which is fixed as an integral part of the load cell and cannot be removed or changed. It provides high performance in non-linearity, hysteresis, and repeatability specifications for such applications as tube mills, extruding processes and weighing. Each unit has a welded construction and can be hermetically sealed for added durability. Model 43 is available with optional 0 Vdc to 5 Vdc or 4 mA to 20 mA output.

Approved Approved

FEATURES

- 0.10 % accuracy
- 5 lb to 500000 lb
- mV/V output (standard); 0 Vdc to 5 Vdc or 4 mA to 20 mA (optional)
- Stainless steel
- Double diaphragm design

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Model 43

PERFORMANCE SPECIFICATIONS

Characteristic	Measure
Load ranges[9]	5 lb to 500000 lb
Non-linearity, 5 lb to 25 lb	±0.2 % full scale
Non-linearity, 50 lb to 500000 lb	±0.1 % full scale
Hysteresis, 5 lb to 25 lb	±0.1 % full scale
Hysteresis, 50 lb to 500000 lb	±0.08 % full scale
Non-repeatability, 5 to 25 lb	±0.1 % full scale
Non-repeatability, 50 lb to 500000 lb	±0.03 % full scale
Output (tolerance), 5 lb to 25 lb	2 mV/V ±0.5 % full scale
Output (tolerance), 50 lb to 500000 lb	3 mV/V ±0.5 % full scale
Operation	Compression
Resolution	Infinite
Standard calibration	5-point calibration, compression only

ENVIRONMENTAL SPECIFICATIONS

Characteristic	Measure
Temperature, operating	-54 °C to 121 °C [-65 °F to 250 °F]
Temperature, compensated	15 °C to 71 °C [60 °F to 160 °F]
Temperature effect, zero	0.002 % full scale/°F
Temperature effect, span	0.002 % full scale/°F

ELECTRICAL SPECIFICATIONS

Characteristic	Measure
Strain gage type	Bonded foil
Excitation (calibration)	10 Vdc
Excitation (acceptable)	Up to 15 Vdc or Vac
Insulation resistance	5000 mOhm @ 50 Vdc
Bridge resistance (tolerance)	350 ohm (nominal)
Zero balance (tolerance)	±1 % full scale
Shunt calibration data	Included
Electrical termination (std) 5 lb to 5000 lb	PTIH-10-6P
Electrical termination (std) 7500 lb to 500000 lb	MS3102E-14S-6P
Mating connector 5 lb to 5000 lb (not incl.)	PT06A-10-6S or equiv. (AA111)
Mating connector 7500 to 500000 lb (not incl.)	MS3106A-14S-6S (AA121)

MECHANICAL SPECIFICATIONS

Characteristic	Measure
Maximum allowable load	150 % FS[2]
Weight	See table
Material Less than 200,000 lb	17-4PH stainless steel
Material greater than or equal to 300000 lb	Carbon steel
Deflection	See table
Natural frequency	See table

RANGE CODES

Range Code	Available ranges	Range Code	Available ranges
AT	5 lb	**DV**	10000 lb
AV	10 lb	**EJ**	15000 lb
BL	25 lb	**EL**	20000 lb
BN	50 lb	**EN**	30000 lb
BR	100 lb	**EP**	50000 lb
CN	250 lb	**ER**	75000 lb
CR	500 lb	**ET**	100000 lb
CV	1000 lb	**FJ**	150000 lb
DL	2000 lb	**FL**	200000 lb
DN	3000 lb	**FN**	300000 lb
DP	4000 lb	**FP**	400000 lb
DR	5000 lb	**FR**	500000 lb
DT	7500 lb		

DEFLECTIONS AND RINGING FREQUENCIES

Capacity (lb)	Deflection @ full scale (in)	Natural ringing frequency (Hz)	Weight kg (lb)
5 to 25	0.001	2000	0.36 [0.8]
50 to 1000	0.002	4500	0.68 [1.5]
2000 to 5000	0.002	11000	0.73 [1.6]
7500 to 30000	0.003	9000	2.90 [6.4]
50000 to 100000	0.004	13000	2.99 [6.6]
150000 to 200000	0.004	11000	5.31 [11.7]
300000	0.005	10000	10.8 [23.8]
400000	0.007	8400	12.02 [26.5]
500000	0.007	4800	41.00 [90.4]

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INTERNAL AMPLIFIERS

Amplifier specifications	Voltage output: Option 2a	Voltage output: Option 2c	Voltage output: Option 2t	Current three-wire: Option 2j	Current two-wire: Option 2k	Intrinsically safe amp: Option 2n (2N)***
Output signal	0 V to 5 V	0 V to 5 V or ±5 V @ 45 mA	0 V to 10 V or ±10 V @ 45 mA	4 mA to 20 mA	4 mA to 20 mA	4 mA to 20 mA
Input power (voltage)	±15 V or 26 Vdc to 32 Vdc	11 Vdc to 28 Vdc	15 Vdc to 28 Vdc	22 Vdc to 32 Vdc	15 Vdc to 40 Vdc	9 Vdc to 28 Vdc
Input power (current)	45 mA	40 mA	40 mA	65 mA	4 mA to 28 mA	4 mA to 24 mA
Freq. resp (amp)	3000 Hz	3000 Hz	3000 Hz	2500 Hz	300 Hz	2000 Hz
Power supply rej.	60 db	60 db	60 db	60 db	60 db	60 db
Operating temp.	-20 °F to 185 °F	-20 °F to 185 °F	-20 °F to 185 °F	0 °F to 185 °F	0 °F to 185 °F	-20 °F to 185 °F
Reverse voltage protection	Yes	Yes	Yes	Yes	Yes	Yes
Short cir. protection	Momentary	Momentary	Momentary	Yes	Yes	Yes
Wiring code: connector (std)[4]	A (+) Supply B Output common C Supply return D (+) Output E Shunt cal 1 F Shunt cal 2	A (+) Supply B Output common** C Supply return ** D (+) Output E Shunt cal 1 F Shunt cal 2	A (+) Supply B Output common** C Supply return** D (+) Output E Shunt cal 1 F Shunt cal 2	A (+) Supply B Output common** C Supply return** D (+) Output E Shunt cal 1 F Shunt cal 2	A (+) Supply B No connection C No connection D (+) Output E Case ground F No connection	A (+) Supply B No connection C No connection D (+) Output E Case ground F No connection
Wiring code: cable[4,5,6]	R (+) Supply Bl Output common G Supply return W (+) Output B Shunt cal 1 Br Shunt cal 2	R (+) Supply Bl Output common* G Supply return* W (+) Output B Shunt cal 1 Br Shunt cal 2	R (+) Supply Bl Output common* G Supply return* W (+) Output B Shunt cal 1 Br Shunt cal 2	R (+) Supply Bl Output common* G Supply return* W (+) Output B Shunt cal 1 Br Shunt cal 2	R (+) Supply Bl (+) Output W Case ground	R (+) Supply Bl (+) Output W Case ground

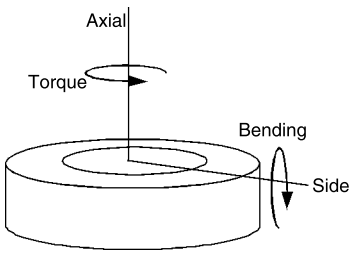
* Black and green wires are internally connected.

** Pins B and C are internally connected.

*** See our Web site (http://measurementsensors.honeywell.com) for the most up-to-date information regarding intrinsically safe approvals, ref. #008-0547-00.

ALLOWABLE MAXIMUM LOADS[2]

Capacity (lb)	Side load (lb)	Bending (lb-in)	Torque (lb-ft)
5 to 25	50 %	40 %	25 %
50 to 1000	45 %	35 %	25 %
2000 to 5000	30 %	25 %	25 %
7500 to 30000	20 %	20 %	15 %
50000 to 100000	20 %	20 %	15 %
150000 to 200000	20 %	20 %	15 %
300000	20 %	20 %	10 %
400000	20 %	20 %	10 %
500000	20 %	20 %	10 %



WIRING CODES

Connector	Unamplified (Std.)
A	(+) excitation
B	(+) excitation
C	(-) excitation
D	(-) excitation
E	(-) output
F	(+) output

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Model 43

OPTION CODES

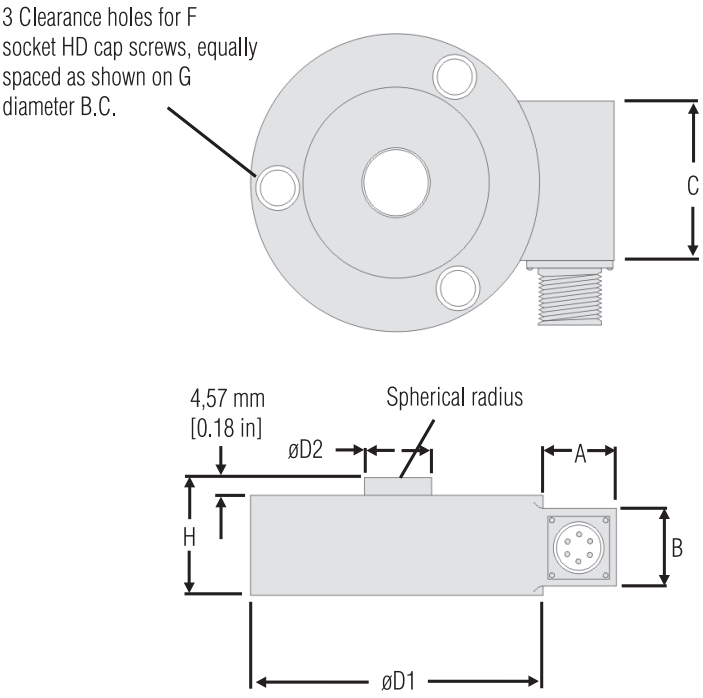
	Many range/option combinations are available in our quick-ship and fast-track manufacture programs. Please see http://measurementsensors.honeywell.com for updated listings.	
Load ranges	5, 10, 25, 50, 100, 250, 500, 1000, 2000, 3000, 4000, 5000, 7500, 10000, 15000, 20000, 30000, 50000, 75000, 100000, 150000, 200000, 300000, 400000, 500000 lb	
Temperature compensation	1a. 60 °F to 160 °F 1b. 30 °F to 130 °F 1c. 0 °F to 185 °F 1d. -20 °F to 130 °F 1e. -20 °F to 200 °F 1f. 70 °F to 250 °F	1g. 70 °F to 325 °F[11] 1h. 70 °F to 400 °F[11] 1i. -65 °F to 250 °F 1j. 0 °C to 50 °C 1k. -20 °C to 85 °C 1m. -25 °C to 110 °C
Internal amplifiers	2a. Four wire, 0 Vdc to 5 Vdc output 2c. 0 Vdc to 5 Vdc 2j. 4 mA to 20 mA (three-wire) output 2k. 4 mA to 20 mA (two-wire)[10]	2n (2N) 4 mA to 20 mA (two-wire) intrinsically safe[10] 2t. 0 Vdc to 10 Vdc output 2u. Unamplified, mV/V output
Internal amplifier enhancements	3a. Input/output isolation[7] 3d. Remote buffered shunt calibration[8]	
Electrical termination	6a. Bendix PTIH-10-6P (or equivalent), 6-pin (max. 250 °F) 6b. MS connector MS3102E-14S-6P (mates with MS3106E-14S-6S) (max. 160 °F) (ranges above 5000 lb)[12] 6e. Integral cable: Teflon	6f. Integral cable: PVC 6g. Integral cable: Neoprene 6h. Integral cable: Silicone 6i. Integral underwater cable 6j. 1/2-14 conduit fitting with 5 ft of 4 conductor PVC cable
Shunt calibration	8a. Precision internal resistor[11]	
Special calibration	9a. 10 point (5 up/5 down) 20 % increments @ 70 °F 9b. 20 point (10 up/10 down) 10 % increments @ 70 °F 9c. ASTM E-74 calibration	
Bridge resistance	12. 5000 ohm (foil) (max. 250 °F)	
Bridge type	31a. Dual bridge	
Zero and span adjustment	14a. No access to pots 14b. Top access to pots	
Electrical connector orientation	15a. Horizontal electrical exit port orientation 15b. Vertical electrical exit port orientation 15c. Radial electrical exit port orientation 15d. Connector on end of cable	
Special calibration	30a. Compression only, positive output	
Shock and vibration	44a. Shock and vibration resistance	
Interfaces	53e. Signature calibration[11] 53t. TEDS IEEE 1451.4 module[8]	

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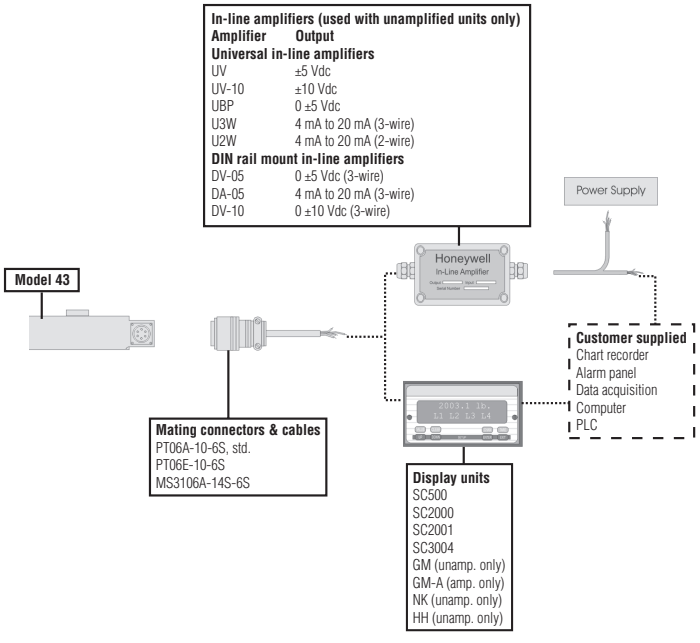
MOUNTING DIMENSIONS

Ranges lb	D1 mm [in]	D2 mm [in]	H mm [in]	F typ. dia.	ØG mm [in] B.C.	A mm [in]	A* mm [in]	B mm [in]	B* mm [in]	C mm [in]
5, 10, 25	63,5 [2.50]	9,4 [0.37]	24,89 [0.98]	#8	50,8 [2.000]	20,83 [0.82]	63,5 [2.5]	19,05 [0.75]	22,86 [0.9]	31,75 [1.25]
50, 100, 250, 500, 1000	76,2 [3.00][1]	14,22 [0.56]	29,97 [1.18]	1/4	57,15 [2.250]	20,83 [0.82]	63,5 [2.5]	19,05 [0.75]	22,86 [0.9]	31,75 [1.25]
2000, 3000, 4000, 5000	88,9 [3.50]	17,53 [0.69]	29,97 [1.18]	5/16	66,68 [2.625]	20,83 [0.82]	63,5 [2.5]	19,05 [0.75]	22,86 [0.9]	31,75 [1.25]
7500, 10000, 15000, 20000, 30000	114,3 [4.50]	38,1 [1.50]	50,8 [2.00]	3/8	96,27 [3.790]	31,75 [1.25]	58,42 [2.3]	38,1 [1.50]	38,1 [1.5]	50,8 [2.00]
50000, 75000, 100000	114,3 [4.50]	38,1 [1.50]	50,8 [2.00]	3/8	96,27 [3.790]	31,75 [1.25]	58,42 [2.3]	38,1 [1.50]	38,1 [1.5]	50,8 [2.00]
150000, 200000	139,7 [5.50]	50,8 [2.00]	55,37 [2.18]	3/8	122,22 [4.812]	31,75 [1.25]	58,42 [2.3]	38,1 [1.50]	38,1 [1.5]	50,8 [2.00]
300000	177,8 [7.00]	63,5 [2.50]	68,1 [2.68]	3/8	152,4 [6.00]	31,75 [1.25]	58,42 [2.3]	38,1 [1.50]	38,1 [1.5]	50,8 [2.00]
400000	190,5 [7.50]	63,5 [2.50]	68,1 [2.68]	3/8	171,45 [6.750]	31,75 [1.25]	58,42 [2.3]	38,1 [1.50]	38,1 [1.5]	50,8 [2.00]
500000	279,4 [11.0]	120,65 [4.75]	114,3 [4.50]	3/4	241,3 [9.500]	31,75 [1.25]	58,42 [2.3]	38,1 [1.50]	38,1 [1.5]	50,8 [2.00]

* Length of load cell with amplified option (see option codes)



TYPICAL SYSTEM DIAGRAM



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NOTES

1. 0.12 mm [3.00 in] diameter has six mounting holes.
2. Allowable maximum loads - maximum load to be applied without damage.[3]
3. Without damage - loading to this level will not cause excessive zero shift or performance degradation. The user must consider fatigue life for long term use and structural integrity. All structurally critical applications (overhead loading, etc.) should always be designed with safety redundant load paths.
4. Interconnecting shunt cal. 1 terminal with shunt cal. 2 terminal provides 50 % (unamplified units), 75 % (4 mA to 20 mA three-wire units) or 80 % (voltage amplified units) of full scale output for quick calibration. Shunt calibration comes standard with internal amplifier option 2a, 2b, 2c, 2t and 2j.
5. O=Orange; Y=Yellow; B=Blue; Bl=Black; R=Red; Br=Brown; W=White; G=Green. Color specifying cable and number or letter specifying connector
6. No mating connector necessary for cable option.
7. Only available with option 2a or 2c.
8. Consult factory for TEDS availability with amplified models.
9. This unit calibrated to Imperial (non-Metric) units.
10. 5000 ohm bridge required.
11. Cannot be used with amplified option.
12. Cannot be used with options 1c, 1e, 1f, 1g, 1h, or 1i.

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