

Model 43 Precision Low Profile Load Cell

Order Code AL112

■ 5 to 500,000 lb.

■ mV/V Output

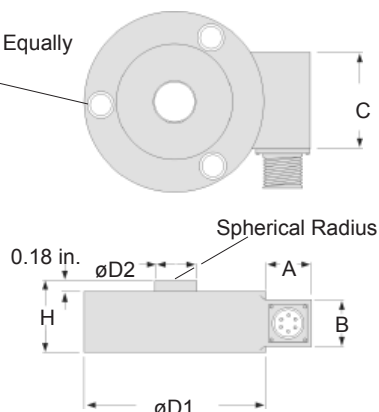
■ Stainless Steel

■ Double Diaphragm Design

■ 0.10% Accuracy



3 Clearance Holes for F
Socket HD Cap Screws, Equally
Spaced as Shown on G
Diameter B.C.



Wiring Code

Connector/ Unamplified (Std.)

A	(+) Excitation
B	(+) Excitation
C	(-) Excitation
D	(-) Excitation
E	(-) Output
F	(+) Output

Dimensions

Ranges (lb.)	D1 (in.)	D2 (in.)	H (in.)	F Typ.Dia.	øG (in.) B.C.	A (in.)	A* (in.)	B (in.)	B* (in.)	C (in.)
5; 10; 25	2.50	0.37	0.98	#8	2.000	0.82	2.5	0.75	0.90	1.25
50; 100; 250; 500; 1000	3.00 (note 1)	0.56	1.18	1/4	2.250	0.82	2.5	0.75	0.90	1.25
2000; 3000; 4000; 5000	3.50	0.69	1.18	5/16	2.625	0.82	2.5	0.75	0.90	1.25
7500; 10,000; 15,000; 20,000; 30,000	4.50	1.50	2.00	3/8	3.790	1.25	2.3	1.50	1.50	2.00
50,000; 75,000; 100,000	4.50	1.50	2.00	3/8	3.790	1.25	2.3	1.50	1.50	2.00
150,000; 200,000	5.50	2.00	2.18	3/8	4.812	1.25	2.3	1.50	1.50	2.00
300,000	7.00	2.50	2.68	3/8	6.000	1.25	2.3	1.50	1.50	2.00
400,000	7.50	2.50	2.68	3/8	6.750	1.25	2.3	1.50	1.50	2.00
500,000	11.00	4.75	4.50	3/4	9.500	1.25	2.3	1.50	1.50	2.00

* Length of load cell with amplified option (see options chart)

Performance

Load Ranges.....	5 to 500,000 lb.
Non-Linearity	
5 to 25 lb.....	+/- 0.2% Full Scale
50 to 500,000 lb.....	+/- 0.1% Full Scale
Hysteresis	
5 to 25 lb.....	+/- 0.1% Full Scale
50 to 500,000 lb.....	+/- 0.08% Full Scale
Non-Repeatability	
5 to 25 lb.....	+/- 0.1% Full Scale
50 to 500,000 lb.....	+/- 0.03% Full Scale
Output (tolerance)	
5 to 25 lb.....	2 mV/V +/- 0.5% Full Scale
50 to 500,000 lb.....	3 mV/V +/- 0.5% Full Scale
Operation.....	Compression
Resolution.....	Infinite
Standard Calibration.....	5 point calibration, compression only

Environmental

Temperature, Operating.....	-65° to 250° F
Temperature, Compensated.....	60° to 160° F
Temperature, Effect	
Zero.....	0.002% Full Scale/ °F
Span.....	0.002% Full Scale/ °F

Model 43

Electrical

Strain Gage Type.....	Bonded Foil
Excitation (calibration).....	10 VDC
Excitation (acceptable).....	Up to 15 VDC or AC
Insulation Resistance.....	5000 Megohms @ 50 VDC
Bridge Resistance (tolerance).....	350 Ohms
Zero Balance (tolerance).....	+/- 1% Full Scale
Shunt Calibration Data.....	Included
Electrical Termination (std)	
5 to 5,000 lb.....	PTIH-10-6P
7,500 to 500,000 lb.....	MS3106A-14S-6S
Mating Connector (not incl.)	
5 to 5,000 lb.....	PT06A-10-6S
7,500 to 500,000 lb.....	MS3106A-14S-6S

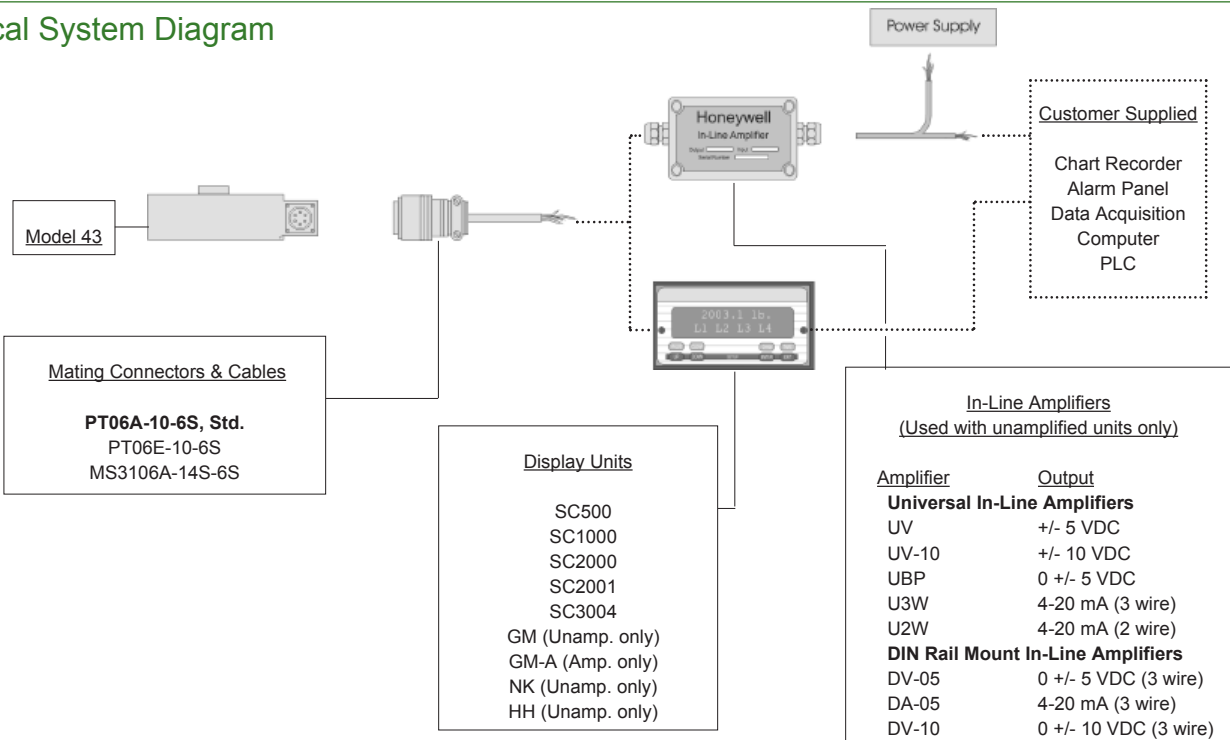
Mechanical

Maximum Allowable Load.....	150% F.S. (note 2)
Weight.....	See table
Material.....	17-4PH Stainless Steel
Life Cycles (approx.).....	> 10 million cycles
Deflection.....	See table
Natural Frequency.....	See table

Deflections and Ringing Frequencies

Capacity (lb.)	Deflection @ Full Scale (in.)	Ringing Frequency (Hz)	Weight (lb)
5 to 25	0.001	2,000	0.8
50 to 1,000	0.002	4,500	1.5
2,000 to 5,000	0.002	11,000	1.6
7,500 to 30,000	0.003	9,000	6.4
50,000 to 100,000	0.004	13,000	6.6
150,000 to 200,000	0.004	11,000	11.7
300,000	0.005	10,000	23.8
400,000	0.007	8,400	26.5
500,000	0.007	4,800	90.4

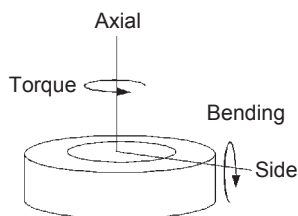
Typical System Diagram



Model 43

Allowable Maximum Loads

(note 2)



Capacity (lb.)	Side Load (lb.)	Bending (lb.-in.)	Torque (lb.-ft.)
5 to 25	50%	40%	25%
50 to 1,000	45%	35%	25%
2,000 to 5,000	30%	25%	25%
7,500 to 30,000	20%	20%	15%
50,000 to 100,000	20%	20%	15%
150,000 to 200,000	20%	20%	15%
300,000	20%	20%	10%
400,000	20%	20%	10%
500,000	20%	20%	10%

Internal Amplifiers

Amplifier Specifications	Voltage Output Option 2a	Voltage Output Option 2c	Voltage Output Option 2t	Current 3 Wire Option 2j	Current 2 Wire Option 2k	Intrinsically Safe Option 2n (2N)***
Output Signal	0-5V	0-5V or +/- 5V @ 45mA	0-10V or +/- 10V @ 45mA	4-20 mA	4-20 mA	4-20 mA
Input Power (Voltage)	+/-15V or 26-32VDC	11-28 VDC	15-28 VDC	22-32 VDC	15-40 VDC	9-28 VDC
Input Power (Current)	45 mA	40 mA	40 mA	65 mA	4-28 mA	4-24 mA
Frequency Response	3000 Hz	3000 Hz	3000 Hz	2500 Hz	300 Hz	2000 Hz
Power Supply Rejection	60 db	60 db	60 db	60 db	60 db	60 db
Operating Temperature	-20° to 185° F	-20° to 185° F	-20° to 185° F	0° to 185° F	0° to 185° F	-20° to 185° F
Reverse Voltage Protection	Yes	Yes	Yes	Yes	Yes	Yes
Short Circuit Protection	Momentary	Momentary	Momentary	Yes	Yes	Yes
Wiring Code: Connector (Std.) (note 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 (note 4) (note 5) (note 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 Sensotec website for most up-to-date information regarding Intrinsically Safe approvals ref. #008-0547-00.

Range Codes

Range	Range Code	Range	Range Code
5 lb.	AT	7500 lb.	DT
10 lb.	AV	10,000 lb.	DV
25 lb.	BL	15,000 lb.	EJ
50 lb.	BN	20,000 lb.	EL
100 lb.	BR	30,000 lb.	EN
250 lb.	CN	50,000 lb.	EP
500 lb.	CR	75,000 lb.	ER
1000 lb.	CV	100,000 lb.	ET
2000 lb.	DL	150,000 lb.	FJ
3000 lb.	DN	200,000 lb.	FL
4000 lb.	DP	300,000 lb.	FN
5000 lb.	DR	400,000 lb.	FP
		500,000 lb.	FR

Options

	Built to Order	Built from Scratch
Load Range	5 to 500,000 lb.	
Temperature Compensation	1a. 60° to 160° F 1b. 30° to 130° F 1c. 0° to 185° F 1d. -20° to 130° F 1e. -20° to 200° F 1f. 70° to 250° F	1g. 70° to 325° F 1i. -65° to 250° F
Internal Amplifiers	2u. Unamplified, mV/V output 2a. 4 wire 0-5VDC output 2c. 0-5VDC 2j. 4-20mA (3-wire) output 2k. 4-20mA (2-wire) 2t. 0-10 VDC output 2n(2N). 4-20mA (2-wire) Intrinsically safe	
Internal Amp Enhancements	3a. Input/ Output Isolation (note 7) 3d. Remote Buffered Shunt Calibration	
Electrical Termination	6a. Bendix PTIH-10-6P – (or equivalent) 6 pin (max. 250°F) 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	
Special Calibration	9a. 10 point (5 up/5 down) 20% increments @ 70° F 9b. 20 point (10 up/10 down) 10% increments @ 70°F	
Bridge Resistance	12. 5,000 Ohms (foil) (max. 250°F)	
Bridge Type	31a. Dual bridge.	
Potentiometers	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 (+) Output	
Shock & Vibration	44a. Shock and vibration resistance	
Interfaces	53e. Signature Calibration 53t. T.E.D.S. IEEE 1451-4 Module (note 8)	

Supplied as standard

Special Customer Requirements (Consult Factory)

Operation temperature -60° to 400°F
Lightning protection
Barometric compensation
OEM labels
Case pressure
Radiation proof
Cable orientation
Fatigue rating
Different cable lengths
Venting
Different materials
Electro-static discharge immunity
Different threads
Special wiring codes

Notes

- 3.00 in. diameter has six mounting holes.
- Allowable Maximum Loads- Maximum load to be applied without damage (note 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.
- Interconnecting shunt cal. 1 terminal with shunt cal. 2 terminal provides 50% (unamplified units), 75% (4-20mA 3-wire units) or 80% (voltage amplified units) of full scale output for quick calibration. Shunt Calibration comes standard with internal amplifier options 2a, 2b, 2c, 2t and 2j.
- 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
- No mating connector necessary for cable option.
- Only available with options 2a or 2c.
- Consult factory for TEDS availability with amplified models.



How to Order

Combine the order code, the range code and the options code.

Sample Code: **AL112** **CV** **6h**
Order Code Range Code Options Code