

Model LP

Force Sensing Clevis Pin



DESCRIPTION

Model LP load pins are designed to be installed where pins or bolts are carrying a load. Applications which involve the use of shackle pins, clevis pins and pulley shafts are prime examples of where force sensing clevis pins can provide accurate, real time monitoring of load forces. The Model LP features welded stain-

less steel construction and is available with a standard PTIH-10-6P connector or an optional submersible cable. These rugged clevis pins provide excellent long term stability and reliable operation under severe operating conditions.

FEATURES

- 2000 lb to 200000 lb range
- Up to 1 % accuracy
- All welded stainless steel construction
- Amplified output available
- Intrinsically safe available (2N option only)⁸
- CE approved⁹

Model LP

PERFORMANCE SPECIFICATIONS

Characteristic	Measure
Load ranges ¹⁰	2000, 3000, 5000, 6000, 10000, 12500, 20000, 30000, 50000, 75000, 100000, 125000, 150000, and 200000 lb
Linearity (max.)	from ± 0.5 % full scale (consult factory)
Hysteresis	from ± 0.5 % full scale (consult factory)
Non-repeatability	± 0.15 % full scale
Tolerance on output	1 mV/V nominal

ENVIRONMENTAL SPECIFICATIONS

Characteristic	Measure
Temperature, operating	-54 °C to 93 °C [-65 °F to 250 °F]
Temperature, compensated	15 °C to 54 °C [60 °F to 160 °F]
Temperature effect, zero	0.003 % full scale/°F
Temperature effect, span	0.008 % of load/°F

ELECTRICAL SPECIFICATIONS

Characteristic	Measure
Strain gage type	Foil
Excitation (calibration)	10 Vdc
Bridge resistance	5000 ohm
Electrical termination (std)	PTIH-10-6P
Mating connector (not incl.)	PT06A-10-6S or equivalent (AA111)

MECHANICAL SPECIFICATIONS

Characteristic	Measure
Maximum allowable load	200 % FS ¹
Case material	17-4 PH stainless steel

WIRING CODES

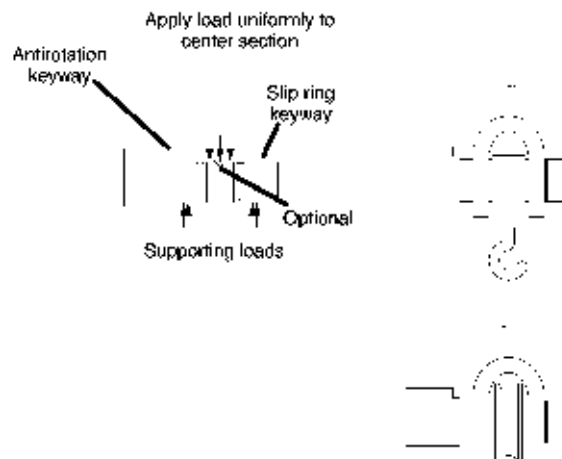
Connector	Unamplified (Std.)
A	(+) excitation
B	(+) excitation
C	(-) excitation
D	(-) excitation
E	(-) output
F	(+) output

RANGE CODES

Range Code	Available ranges	Range Code	Available ranges
DL	2000 lb	EN	30000 lb
DN	3000 lb	EP	50000 lb
DR	5000 lb	ER	75000 lb
DS	6000 lb	ET	100000 lb
DV	10000 lb	FH	125000 lb
DW	12500 lb	FJ	150000 lb
EL	20000 lb	FL	200000 lb

INSTALLATION

Standard uses for clevis pins include tongue and yoke shackles and tension pulleys. Clevis pins are also often ideal for use in web tension applications. Consult factory for web tension measurement kits from 200 lb to 500000 lb.



INTERNAL AMPLIFIERS

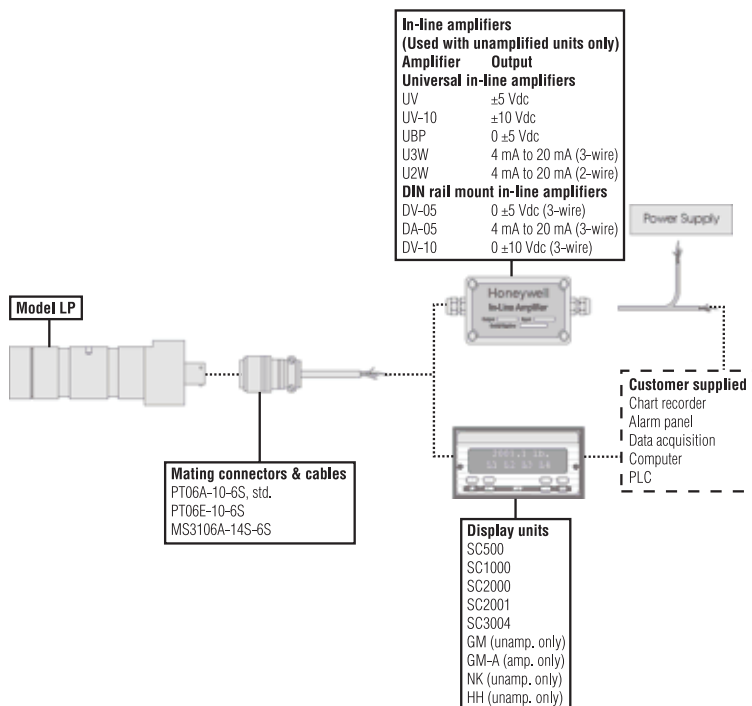
Amplifier specifications	Voltage output: Option 2a	Voltage output: Option 2c	Voltage output: Option 2t	Current three-wire: Option 2j	Current two-wire: Option 2k	Intrinsically safe amp: Option 2n (2N)***
Output signal	0 V to 5 V	0 V to 5 V or ± 5 V @ 45 mA	0 V to 10 V or ± 10 V @ 45 mA	4 mA to 20 mA	4 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 BI Output common G Supply return W (+) Output B Shunt cal 1 Br Shunt cal 2	R (+) Supply BI Output common* G Supply return* W (+) Output B Shunt cal 1 Br Shunt cal 2	R (+) Supply BI Output common* G Supply return* W (+) Output B Shunt cal 1 Br Shunt cal 2	R (+) Supply BI Output common* G Supply return* W (+) Output B Shunt cal 1 Br Shunt cal 2	R (+) Supply BI (+) Output W Case ground	R (+) Supply BI (+) Output W Case ground

* Black and green wires are internally connected.

** Pins B and C are internally connected.

*** See our Web site for the most up-to-date information regarding intrinsically safe approvals, ref. #008-0547-00.

TYPICAL SYSTEM DIAGRAM



Model LP

OPTION CODES

	Many range/option combinations are available in our quick-ship and fast-track manufacture programs. Please see http://sensing.honeywell.com/TMSensor-ship for updated listings.	
Load ranges	2k, 3k, 5k, 6k, 10k, 12.5k, 15k, 20k, 30k, 50k, 75k, 100k, 125k, 150k, 200k 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 ³ 1i. -65 °F to 250 °F ³ 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 output 2j. 4 mA to 20 mA (three-wire) output 2k. 4 mA to 20 mA (two-wire) output ¹¹	2n (2N) 4 mA to 20 mA (two-wire) intrinsically safe ¹¹ 2t. 0 Vdc to 10 Vdc 2u. Unamplified, mV/V output
Electrical amp enhancements	3a. Input/output isolation ² 3d. Remote buffered shunt calibration	
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) 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 four conductor PVC cable 6q. Molded integral cable: Polyurethane 6v. Phoenix connector at end of cable 15d. Connector on end of cable
Shunt calibration	8a. Precision internal resistor ³	
Special calibration	9e. CE mark 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	12b. 5000 ohm (foil)	
Zero and span adjustment	14a. No access to zero and span adjustment	
Special calibration	30a. Compression only (+) output 30b. Tension and compression (+,-) output 30c. Compression only (-) output	
Shock and vibration	44a. Shock and vibration resistance	
Interfaces	53e. Signature calibration ³ 53t. TEDS IEEE 1451.4 module ⁷	

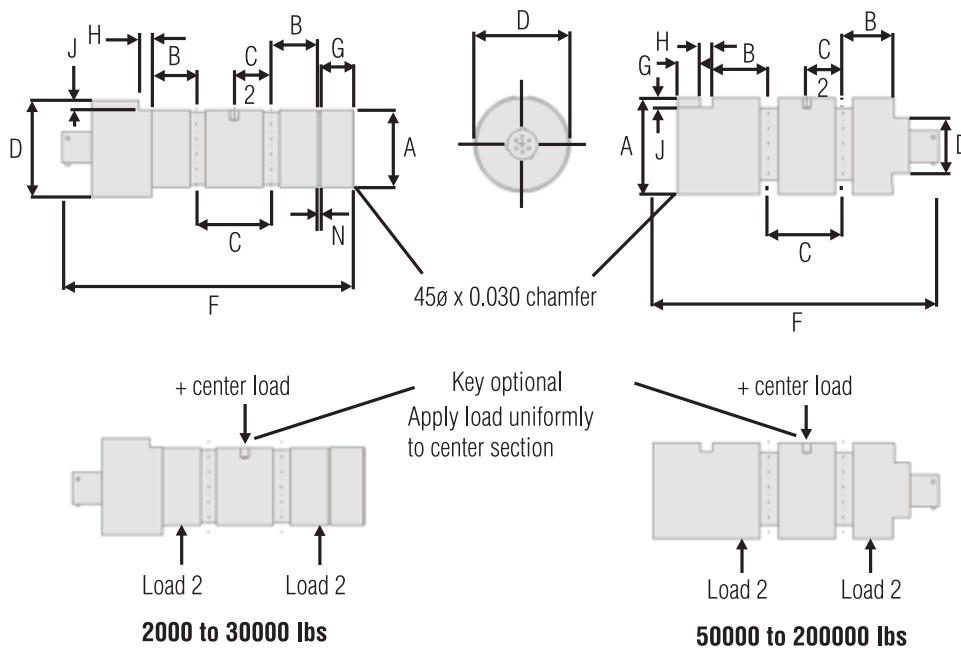
MOUNTING DIMENSIONS

Capacity lb	A mm [in]**	B mm [in]	C mm [in]	D mm [in]	F mm [in]	G mm [in]	H mm [in]	J mm [in]	Key mm [in]	SRG*	N mm [in]
2000, 3000	12,7 [0.500]	12,7 [0.50]	19,05 [0.75]	38,1 [1.50]	101,09 [3.98]	6,35 [0.25]	5,08 [0.20]	6,35 [0.25]	NA	11,89 [0.468]	0,99 [0.039]
5000, 6000	19,05 [0.750]	14,99 [0.59]	25,4 [1.00]	38,1 [1.50]	113,79 [4.48]	7,87 [0.31]	5,08 [0.20]	6,35 [0.25]	3,96 [0.156]	17,88 [0.704]	1,17 [0.046]
10000, 12500	25,4 [1.00]	16 [0.63]	25,4 [1.00]	38,1 [1.50]	120,4 [4.74]	12,7 [0.50]	5,08 [0.20]	6,35 [0.25]	5,56 [0.219]	23,88 [0.940]	1,17 [0.046]
15000, 20000	31,75 [1.250]	20,57 [0.81]	35,05 [1.38]	50,8 [2.00]	144,53 [5.69]	16 [0.63]	6,86 [0.27]	6,35 [0.25]	5,56 [0.219]	29,87 [1.176]	1,42 [0.056]
30000	38,1 [1.50]	23,88 [0.94]	41,40 [1.63]	50,8 [2.00]	157,48 [6.20]	16 [0.63]	6,86 [0.27]	6,35 [0.25]	7,14 [0.281]	35,71 [1.406]	1,42 [0.056]

Capacity lb	A mm [in]**	B mm [in]	C mm [in]	D mm [in]	F mm [in]	G mm [in]	H mm [in]	J mm [in]	Key mm [in]
50000	50,8 [2.000]	25,4 [1.00]	50,8 [2.00]	38,1 [1.50]	167,89 [6.61]	19,05 [0.75]	6,76 [0.266]	9,65 [0.38]	7,14 [0.281]
75000	63,5 [2.500]	31,75 [1.25]	63,5 [2.50]	50,8 [2.00]	193,29 [7.61]	19,05 [0.75]	6,76 [0.266]	12,7 [0.50]	7,14 [0.281]
100000	69,85 [2.750]	37,34 [1.47]	69,85 [2.69]	50,8 [2.00]	219,20 [8.63]	25,4 [1.00]	10,31 [0.406]	12,7 [0.50]	10,31 [0.406]
125000	76,2 [3.000]	36,58 [1.44]	76,2 [3.00]	50,8 [2.00]	225,55 [8.88]	25,4 [1.00]	10,31 [0.406]	16 [0.63]	10,31 [0.406]
150000	88,9 [3.500]	44,45 [1.75]	88,9 [3.50]	50,8 [2.00]	263,65 [10.38]	31,75 [1.25]	13,49 [0.531]	16 [0.63]	13,49 [0.531]
200000	101,6 [4.000]	57,15 [2.25]	101,6 [4.00]	50,8 [2.00]	301,75 [11.88]	31,75 [1.25]	13,49 [0.531]	19,05 [0.75]	13,49 [0.531]

*SRG - Snap ring groove diameter

**Tolerance = +0.000 in/-0.002 in



NOTES

1. Allowable maximum loads – Maximum load to be applied without damage.
2. Only available with option 2b or 2c.
3. Not available with amplified option.
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. Consult factory for TEDS availability with amplified models.
8. Range dependent; consult factory. Termination dependent; consult factory.
9. Internal amp and termination dependent; consult factory.
10. This unit calibrated to Imperial (non-Metric) units.
11. 5000 ohm bridge required.

Warranty. Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer's sole remedy and is in lieu of all warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

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For more information about Sensing and Control products, visit www.honeywell.com/sensing or call +1-815-235-6847

Email inquiries to info.sc@honeywell.com

WARNING **PERSONAL INJURY**

- DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

WARNING **MISUSE OF DOCUMENTATION**

- The information presented in this catalogue is for reference only. DO NOT USE this document as product installation information.
- Complete installation, operation and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.