

## Model 3173

### Tension/Compression Pancake Load Cell



#### DESCRIPTION

The Model 3173 covers the lower capacity ranges of 200 pounds force to 3000 pounds force, while exhibiting the high performance characteristics of stiffness and accuracy. These

load cells are well suited to materials testing machines and other applications requiring a rugged load sensor. Often ideal for high cycle count applications.

#### FEATURES

- English threads
- Enhanced accuracy, 0.07 %
- Low deflection
- Fatigue-resistant design and enhanced performance
- Low full-scale capacity
- Low profile
- Decreased sensitivity to extraneous loading

# Model 3173

## PERFORMANCE SPECIFICATIONS

Characteristic	Measure
Load range <sup>1</sup>	200, 500, 1K, 2K, 3K lb
Accuracy	0.07 %
Non-linearity	±0.05 % of rated output
Hysteresis	±0.05 % of rated output
Repeatability	±0.02 % of rated output
Output @ rated capacity (200 lb to 1K lb)	1.50 mV/V (nominal)
Output @ rated capacity (2K lb to 3K lb)	2.00 mV/V (nominal)
Operation	Tension/compression
Resolution	Infinite
Standard calibration	Tension (+) and compression (-)

## ENVIRONMENTAL SPECIFICATIONS

Characteristic	Measure
Temperature, operating	-54 °C to 93 °C [-65 °F to 200 °F]
Temperature, compensated	21 °C to 77 °C [70 °F to 170 °F]
Temperature effect, zero	±0.002 % of rated output/°F
Temperature effect, output	±0.002 % of reading/°F

## ELECTRICAL SPECIFICATIONS

Characteristic	Measure
Strain gage type	Foil
Excitation (maximum)	20 Vdc or Vac RMS
Insulation resistance	> 5000 mOhm @ 50 Vdc
Input resistance	700 ohm
Output resistance	700 ohm
Zero balance	±1.0 %
Electrical termination	PT02E-10-6P

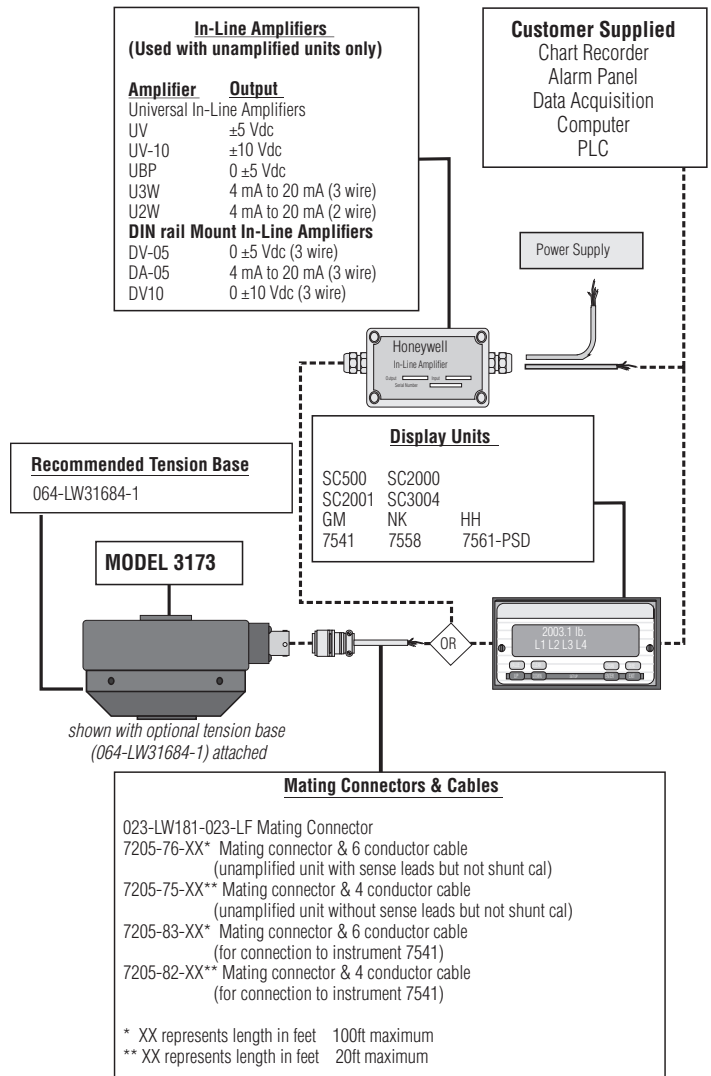
## MECHANICAL SPECIFICATIONS

Characteristic	Measure
Static overload capacity	150 % of nominal capacity
Material	Carbon steel
Fatigue life (0 to full fatigue load)	100 x 10 <sup>6</sup> cycles
Fatigue life (full fatigue tension to compression)	50 x 10 <sup>6</sup> cycles
Natural frequency	See table

## WIRING CODES

Cable	
Red	(+) excitation
Black	(-) excitation
Green	(+) output
White	(-) output

## TYPICAL SYSTEM DIAGRAM



## Tension/Compression Pancake Load Cell

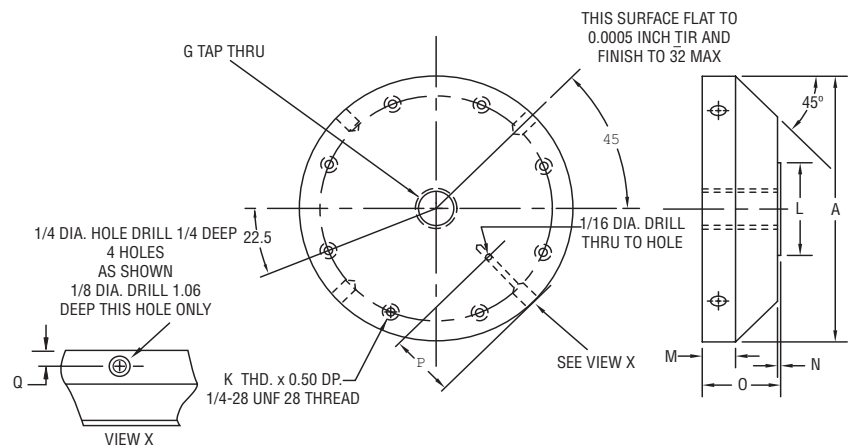
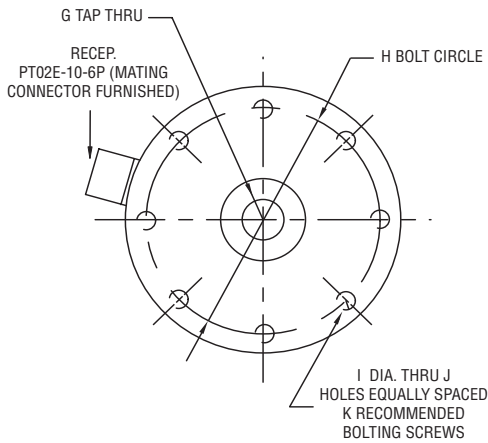
### NATURAL FREQUENCY

Nominal load limit capacity $F_z$		Static extraneous load limits						
lb	N	Static overload capacity (% of nominal capacity)	Fatigue capacity (% of nominal capacity)	Shear $F_x$ or $F_y$ (lb)	Bending $M_x$ or $M_y$ (lb-in)	Torque $M_z$ (lb-in)	Deflection at nominal load limit (in)	Ring frequency (Hz)
200	1K	150	100	4471	185	3477	0.003	1500
500	2K	150	100	15625	466	5208	0.003	2440
1K	5K	150	100	15500	911	7750	0.003	3900
2K	10K	150	100	4000	2133	1523	0.001	5500
3K	15K	150	100	5166	2818	2214	0.001	7200

### MOUNTING DIMENSIONS

Model	Capacity N [lb]	A cm [in]	B cm [in]	C cm [in]	D cm [in]	E cm [in]	F cm [in]	G threads English	H cm [in]	I cm [in]	No. of holes J	Bolting screws K	L cm [in]	M cm [in]	N cm [in]	O cm [in]	P cm [in]	Q cm [in]
3173	900-13.5K [200-3K]	10,47 [4.12]	7,24 [2.85]	3,23 [1.27]	3,48 [1.37]	0,31 [0.12]	0,15 [0.06]	5/8-18 UNF-3B	8.89 [3.5]	0,71 [0.28]	8	1/4-28 hexhead*	3,18 [1.25]	1,27 [0.50]	0,08 [0.03]	2,87 [1.13]	2,21 [0.87]	0,64 [0.25]

\* tighten to 200 in-lbs



Tension bases are recommended for all model 3173 applications. When mounting without the tension base, attention must be given to the mating surface with regard to flatness, hardness and stiffness.

# Model 3173

# Tension/Compression Pancake Load Cell

## NOTES

1. This unit calibrated to Imperial (non-Metric) units.

**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.**

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

### **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 datasheet 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.**

## Find out more

Honeywell serves its customers through a worldwide network of sales offices, representatives and distributors. For application assistance, current specifications, pricing or name of the nearest Authorized Distributor, contact your local sales office. To learn more about Honeywell's test and measurement products, call **+1-614-850-5000**, visit **<http://measurementsensors.honeywell.com>**, or e-mail inquiries to **[info.tm@honeywell.com](mailto:info.tm@honeywell.com)**

Sensing and Control  
Honeywell  
1985 Douglas Drive North  
Golden Valley, MN 55422  
**[honeywell.com](http://honeywell.com)**

# Honeywell

## Models 3174-3176

### Tension/Compression Pancake Load Cell



Model 3174

#### DESCRIPTION

Models 3174, 3175, and 3176 are fatigue-resistant, low-profile tension and compression load cells that are well suited to materials testing machines and other applications requiring a rugged load sensor, while exhibiting the high performance characteristics of stiffness and accuracy.

These load cells are extremely resistant to extraneous bending and side-loading forces. The structure virtually eliminates bending strains at the strain gage, minimizing the primary cause of load cell failures.

#### FEATURES

- English threads
- Enhanced accuracy, up to 0.07 %
- Low deflection
- Fatigue-resistant design and enhanced performance
- Tension/compression capacity
- Low profile
- Low sensitivity to extraneous loading

# Model 3174-3176

## PERFORMANCE SPECIFICATIONS

Characteristic	Measure
Load range <sup>1</sup>	5K, 10K, 20K, 50K, 100K lb
Non-linearity	±0.05 % of rated output
Hysteresis	±0.05 % of rated output
Repeatability	±0.02 % of rated output
Output @ rated capacity	2.00 mV/V (nominal)
Creep	±0.025 % of rated output
Resolution	Infinite
Standard calibration	Tension (+) and compression (-)

## ENVIRONMENTAL SPECIFICATIONS

Characteristic	Measure
Temperature, operating	-54 °C to 93 °C [-65 °F to 200 °F]
Temperature, compensated	21 °C to 77 °C [70 °F to 170 °F]
Temperature effect, zero	±0.002 % of rated output/°F
Temperature effect, output	±0.002 % of reading/°F

## ELECTRICAL SPECIFICATIONS

Characteristic	Measure
Strain gage type	Foil
Excitation (maximum)	20 Vdc or Vac RMS
Insulation resistance	> 5000 mOhm @ 50 Vdc
Bridge resistance	700 ohm
Number of bridges	1
Zero balance	±1.0 %
Electrical termination	PT02E-10-6P

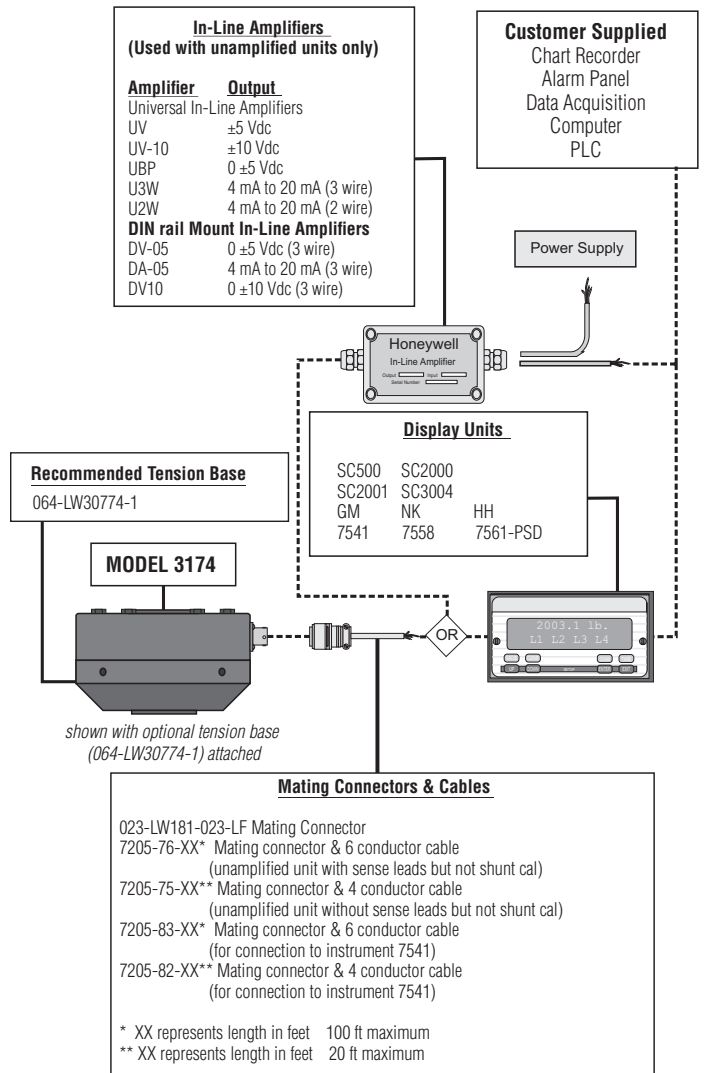
## MECHANICAL SPECIFICATIONS

Characteristic	Measure
Static overload capacity	150 % of nominal capacity
Material	Carbon steel
Fatigue life (0 to full fatigue load)	100 x 10 <sup>6</sup> cycles
Fatigue life (full fatigue tension to compression)	50 x 10 <sup>6</sup> cycles
Natural frequency	See table

## WIRING CODES

Cable	
Red	(+) excitation
Black	(-) excitation
Green	(+) output
White	(-) output

## TYPICAL SYSTEM DIAGRAM

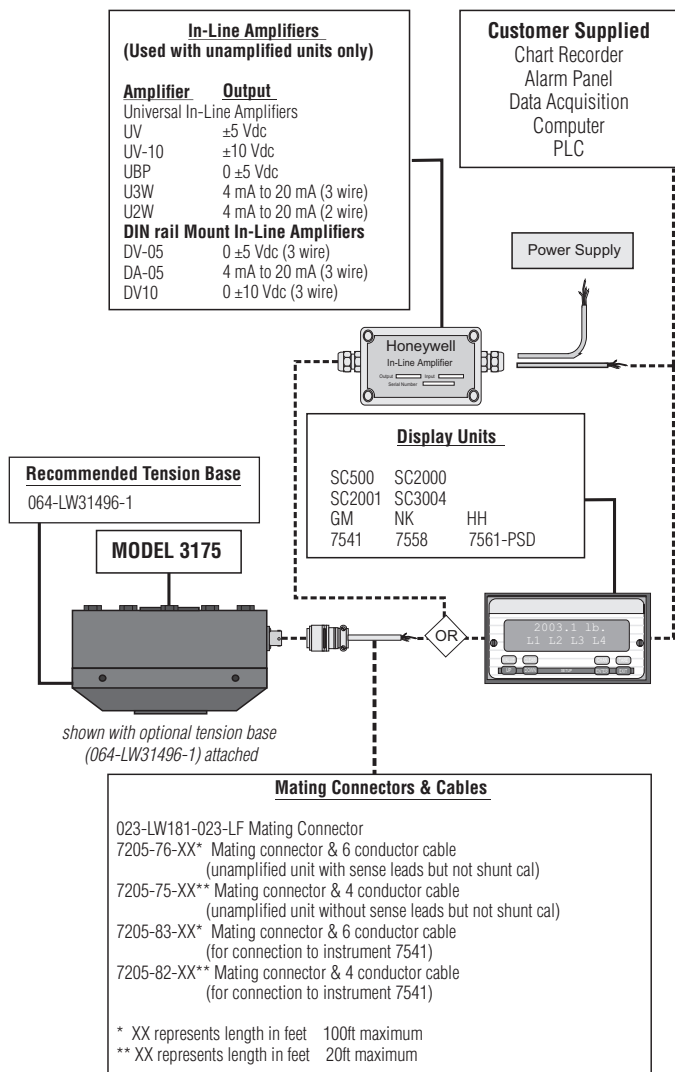


## Tension/Compression Pancake Load Cell

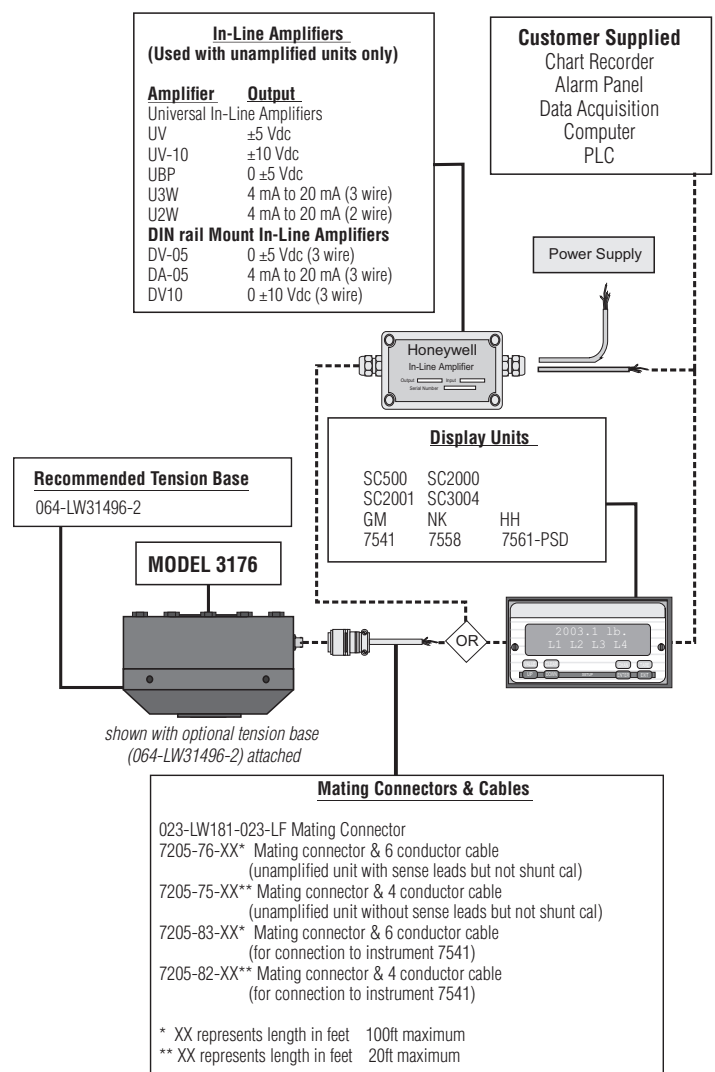
### NATURAL FREQUENCY

Model	Nominal load limit capacity $F_z$		Static extraneous load limits						
	lb	N	Static overload capacity (% of nominal capacity)	Fatigue capacity (% of nominal capacity)	Shear $F_x$ or $F_y$ (lb)	Bending $M_x$ or $M_y$ (lb-in)	Torque $M_z$ (lb-in)	Deflection at nominal load limit (in)	Ringing frequency (Hz)
3174	5K	20K	150	100	11K	9K	12K	0.001	6500
3174	10K	50K	150	100	25K	27K	24K	0.001	7200
3174	20K	100K	150	100	55K	58K	35K	0.001	8600
3175	50K	200K	150	100	32K	33K	67K	0.001	12000
3176	100K	500K	150	100	78K	147K	196K	0.001	15000

### TYPICAL SYSTEM DIAGRAM



### TYPICAL SYSTEM DIAGRAM

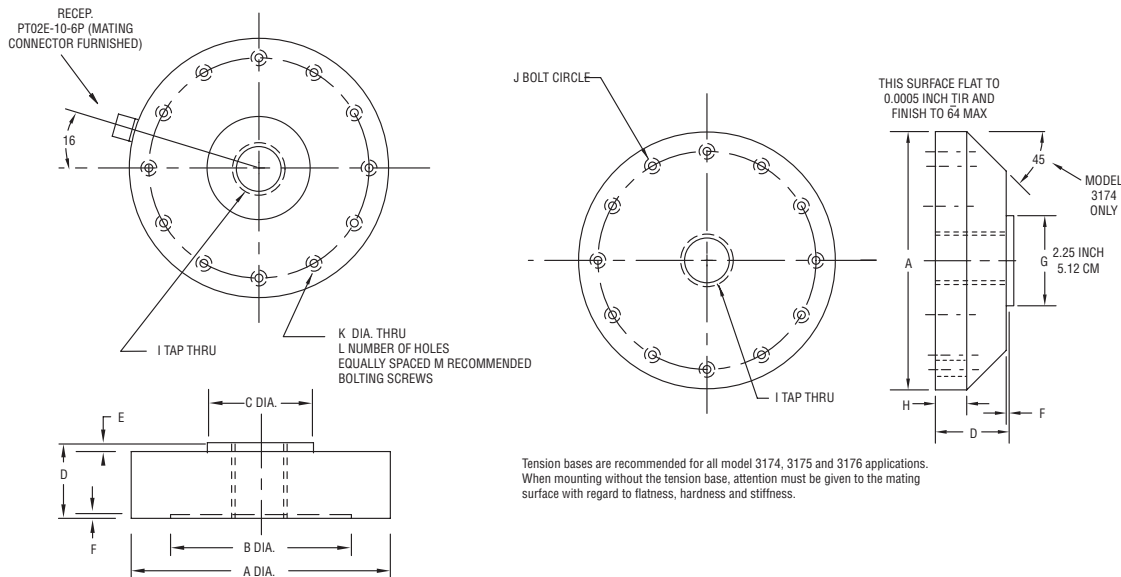


# Model 3174-3176

## MOUNTING DIMENSIONS

Model	Capacity N [lb]	A cm [in]	B cm [in]	C cm [in]	D cm [in]	E cm [in]	F cm [in]	G cm [in]	H cm [in]	Tap thru I English	J cm [in]	K cm [in]	No. of holes L	Bolting M English
3174	20K-100K [5K-20K]	15,39 [6.06]	10,99 [4.33]	6,35 [2.42]	4,45 [1.75]	0,310 [0.12]	0,13 [0.05]	5,72 [2.25]	2,06 [0.81]	1¼-12 UNF-3B	13,02 [5.13]	10,3 [13/32]	12	3/8-24 hex head, 2¼ inches long, tighten to 750 in-lb
3175	200K [50K]	20,32 [8.00]	13,15 [5.18]	7,98 [3.14]	6,35 [2.50]	0,30 [0.12]	0,08 [0.03]	7,98 [3.14]	n/a	1¼-12 UN-3B	16,51 [6.50]	13,50 [17/32]	16	½-20 hex head, 3 3/8 in long, tighten to 120 ft-lb, grade 8 bolts
3176	500K [100K]	27,94 [11.00]	18,02 [7.09]	12,50 [4.92]	8,89 [3.50]	0,30 [0.12]	0,08 [0.03]	12,50 [4.92]	n/a	2¾-8 UN-3B	22,86 [9.00]	16,70 [21/32]	16	5/8-18 hex head, 4 5/8 in long, tighten to 290 ft-lb, grade 8 bolts

\* tighten to 200 in-lbs





# Model 3174-3176

# Tension/Compression Pancake Load Cell

## NOTES

1. This unit calibrated to Imperial (non-Metric) units.

**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.**

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

### **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 datasheet 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.**

## Find out more

Honeywell serves its customers through a worldwide network of sales offices, representatives and distributors. For application assistance, current specifications, pricing or name of the nearest Authorized Distributor, contact your local sales office.

To learn more about Honeywell's test and measurement products, call **+1-614-850-5000**, visit

**<http://measurementsensors.honeywell.com>**,

or e-mail inquiries to **[info.tm@honeywell.com](mailto:info.tm@honeywell.com)**

Sensing and Control

Honeywell

1985 Douglas Drive North  
Golden Valley, MN 55422

**[honeywell.com](http://honeywell.com)**

008619-2-EN IL50 GLO  
July 2013

Copyright © 2013 Honeywell International Inc. All rights reserved.

# Honeywell