

# Installation Instructions for the Magnetoresistive Sensor ICs Nanopower Series

## 50094459

Rev. A

**Table 1A. Electrical Specifications (Vs = 1.65 V to 5.5 V, Ta = -40 °C to 85 °C [-40 °F to 185 °F], Typ. at 1.8 V, 25 °C [77 °F] unless otherwise specified.)**

| Characteristic                             | Condition               | Min.      | Typ.      | Max.   | Unit |
|--|-------------------------|-----------|-----------|--------|------|
| Supply voltage (Vs)                        | Vs reference to ground  | 1.65      | 1.8       | 5.5    | V    |
| Awake current:<br>SM351LT<br>SM353LT       | —                       | —<br>0.3  | 1<br>0.8  | 5<br>5 | mA   |
| Awake time                                 | —                       | —         | 15        | —      | µs   |
| Sleep current                              | —                       | —         | 0.2       | 8      | µA   |
|  | Vs = 1.65 V             | —         | 0.16      | 0.8    |      |
|  | Vs = 1.8 V              | —         | 0.2       | 1      |      |
|  | Vs = 5.5 Vdc            | —         | 2.6       | 8      |      |
| Sleep time                                 | —                       | 30        | 100       | 180    | ms   |
| Average current:<br>SM351LT<br>SM353LT     | 0.015% duty cycle, typ. | —         | 360       | 6640   | nA   |
|  |                         | —         | 310       | 6350   |      |
| Output voltage:<br>low (VoL)<br>high (VoH) | load current = 100 µA   | 0         | 0.03      | 0.15   | V    |
|  |                         | Vs - 0.15 | Vs - 0.03 | Vs     |      |

**Table 1B. Electrical Specifications (Vs = 1.8 V, Ta = 25 °C [77 °F].)**

| Characteristic                         | Condition               | Min. | Typ. | Max. | Unit |
|--|-------------------------|------|------|------|------|
| Awake current:<br>SM351LT<br>SM353LT   | —                       | —    | 1    | 1.12 | mA   |
|  |                         | —    | 0.8  | 0.87 |      |
| Awake time                             | —                       | —    | 15   | —    | µs   |
| Sleep current                          | —                       | —    | 0.2  | 0.59 | µA   |
| Sleep time                             | —                       | 90   | 100  | 120  | ms   |
| Average current:<br>SM351LT<br>SM353LT | 0.015% duty cycle, typ. | —    | 350  | 620  | nA   |
|  |                         | —    | 350  | 600  |      |

# Magneto-resistive Sensor ICs Nanopower Series

Rev. A  
50094459

**Table 2. Magnetic Specifications ( $V_s = 1.65\text{ V to }5.5\text{ V}$ ,  $T_a = -40\text{ }^\circ\text{C to }85\text{ }^\circ\text{C}$  [-40 °F to 185 °F])**

| Characteristic     | Min. | Typ. | Max. | Unit  |
|--------------------|------|------|------|-------|
| SM351LT:           |      |      |      |       |
| operate (positive) | 3    | 7    | 11   | Gauss |
| release (positive) | 2    | 5    | —    |       |
| hysteresis         | *    | 2    | —    |       |
| SM353LT:           |      |      |      |       |
| operate (positive) | 6    | 14   | 20   | Gauss |
| release (positive) | 3    | 10   | —    |       |
| hysteresis         | *    | 4    | —    |       |

\*At 1.65 V and -40 °C, the hysteresis can reach 0.1 Gauss.

## NOTICE

The magnetic field strength (Gauss) required to cause the switch to change state (operate and release) will be as specified in the magnetic characteristics. To test the switch against the specified magnetic characteristics, the switch must be placed in a uniform magnetic field.

## NOTICE

These magneto-resistive sensor ICs may have an initial output in either the ON or OFF state if powered up with an applied magnetic field in the differential zone (applied magnetic field >Brp and <Bop). Honeywell recommends allowing 10 μs for output voltage to stabilize after supply voltage has reached its final rated value.

**Table 3. Absolute Maximum Ratings**

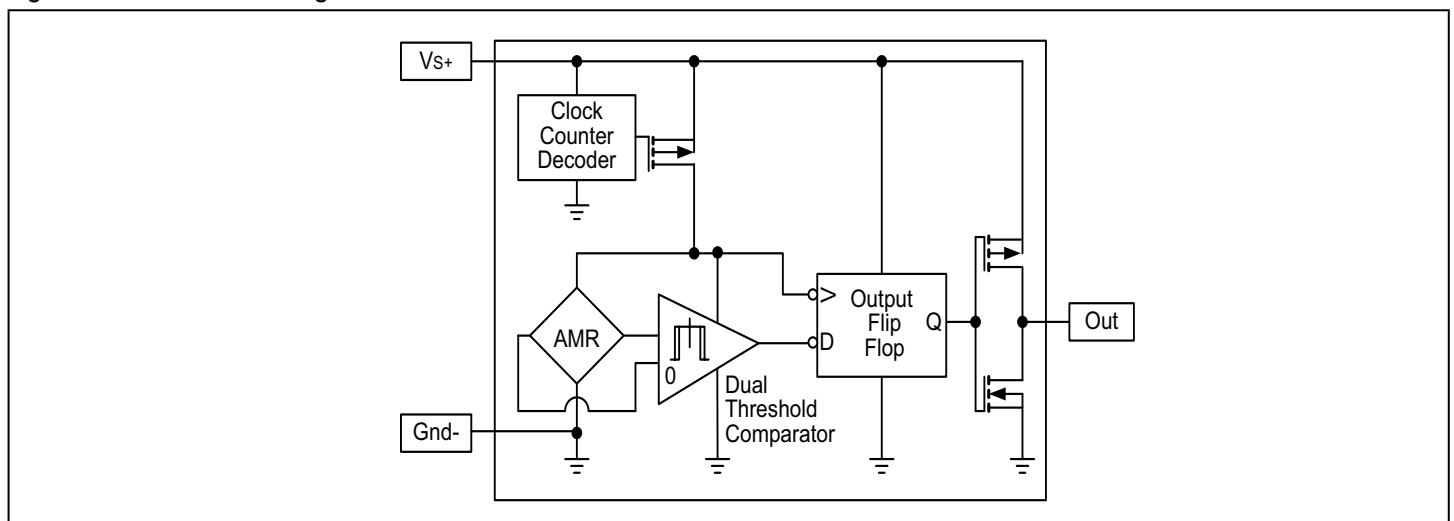
| Characteristic           | Condition                 | Min.      | Typ. | Max       | Unit    |
|--------------------------|---------------------------|-----------|------|-----------|---------|
| Operating temperature    | ambient                   | -40 [-40] | —    | 85 [185]  | °C [°F] |
| Soldering temperature    | ambient applied for <10 s | —         | —    | 265 [509] | °C [°F] |
| Supply voltage ( $V_s$ ) | —                         | -0.5      | —    | 5.5       | V       |
| Output (load) current    | —                         | —         | 100  | 150       | μA      |

## NOTICE

Absolute maximum ratings are the extreme limits that the device will withstand without damage to the device. However, the electrical and mechanical characteristics are not guaranteed as the maximum limits (above recommended operating conditions) are approached, nor will the device necessarily operate at absolute maximum ratings.



**Figure 1. Block/Electrical Diagram**



# Magneto-resistive Sensor ICs Nanopower Series

Rev. A  
50094459

Figure 2. SM351LT Typical Performance Characteristics

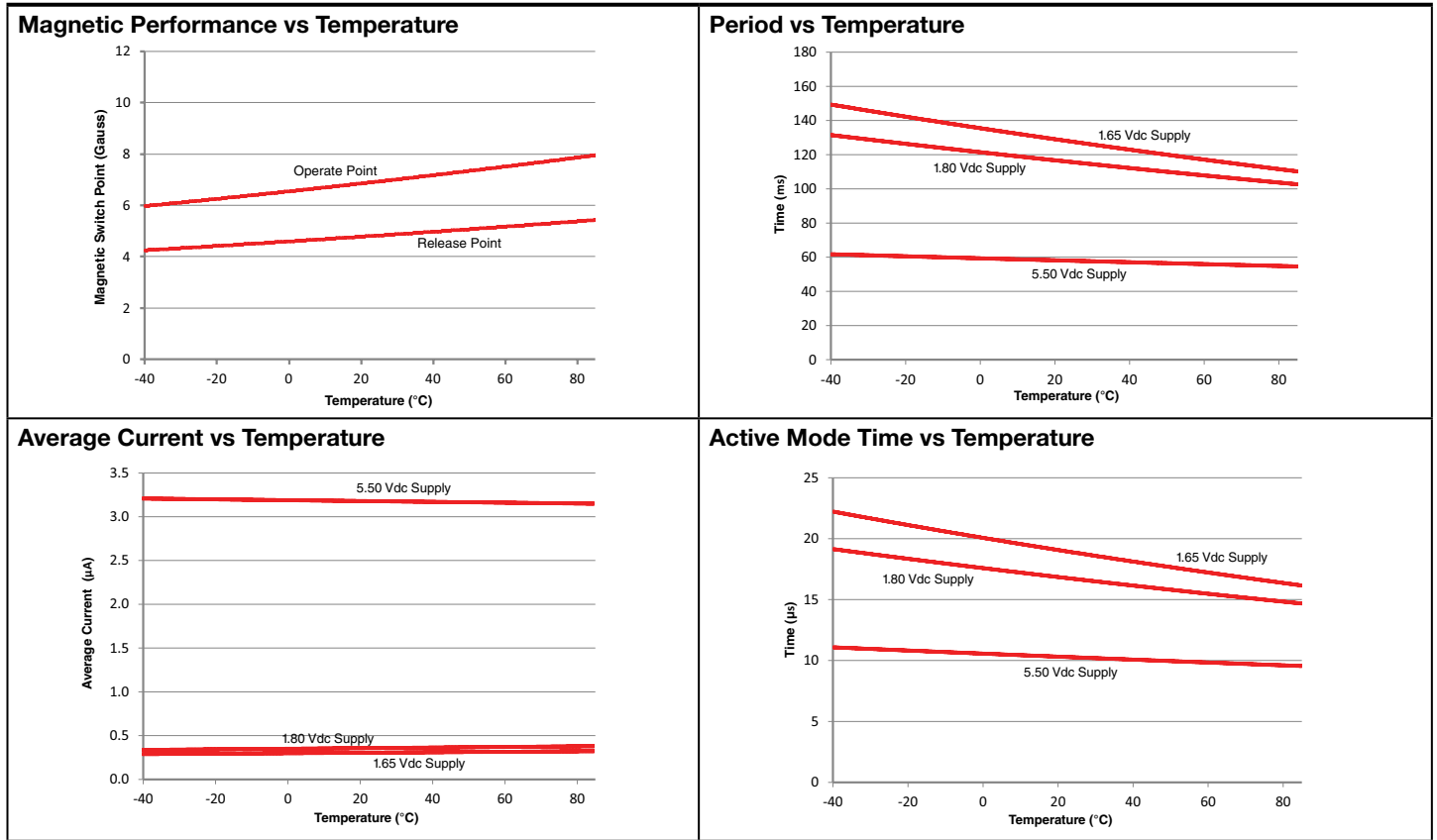
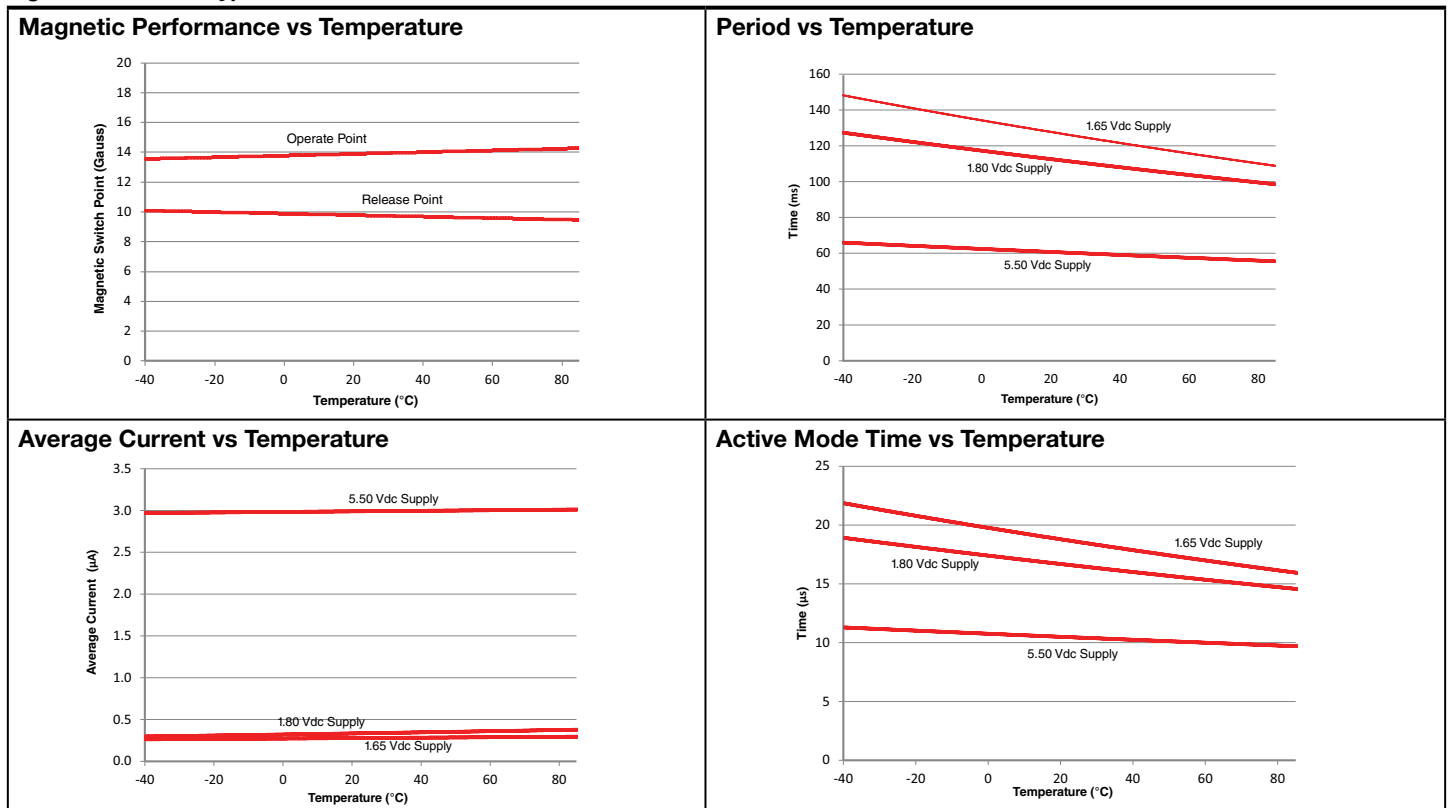


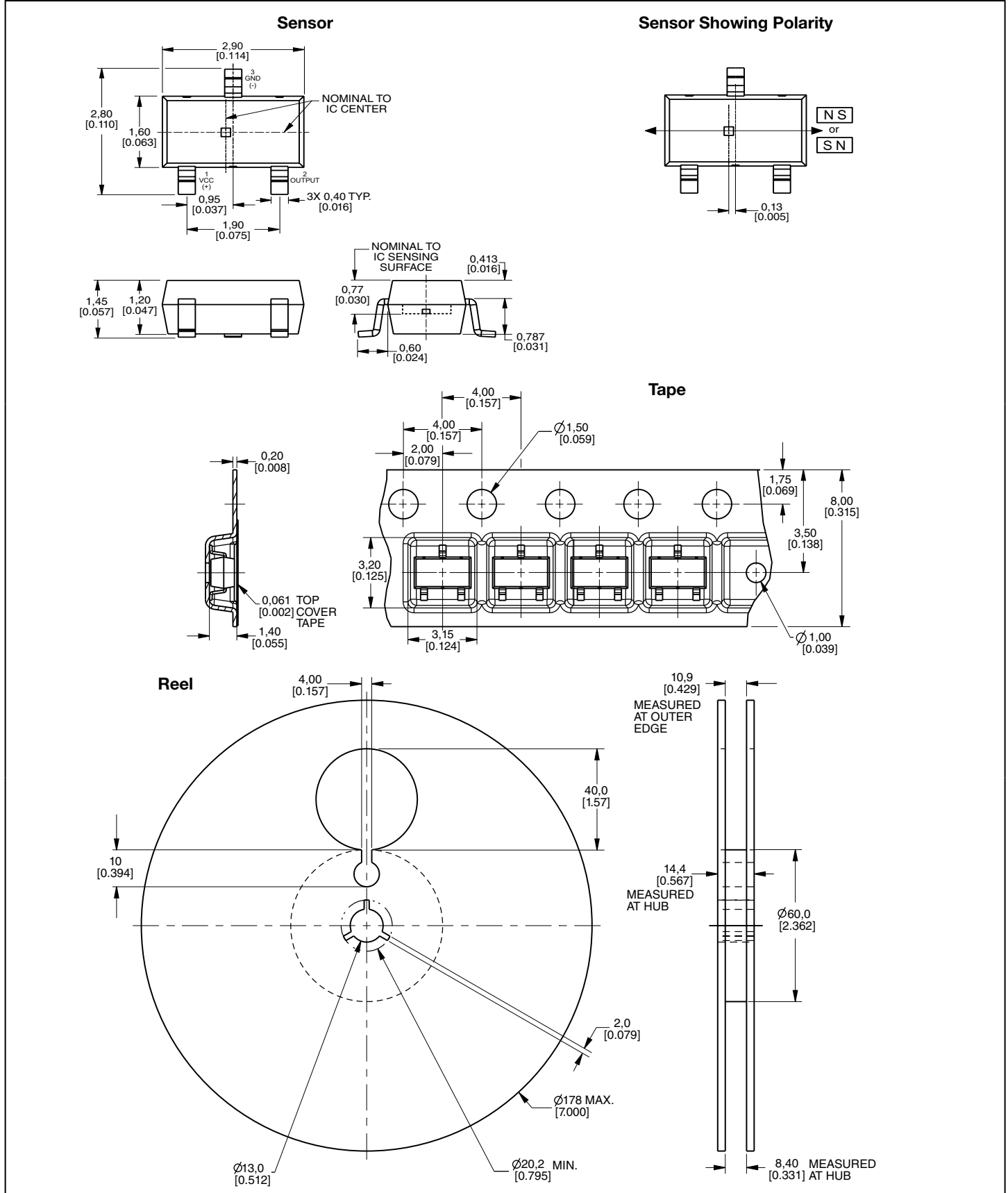
Figure 3. SM353LT Typical Performance Characteristics



# Magneto-resistive Sensor ICs Nanopower Series

Rev. A  
50094459

Figure 4. Mounting and Tape/Reel Dimensions (For reference only. mm/[in.] )



# Magnetoresistive Sensor ICs Nanopower Series

Rev. A

**50094459**

## **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.**

### **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.

### **SALES AND SERVICE**

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 or:

E-mail: [info.sc@honeywell.com](mailto:info.sc@honeywell.com)

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

Phone and Fax:

|               |                         |
|---------------|-------------------------|
| Asia Pacific  | +65 6355-2828           |
|               | +65 6445-3033 Fax       |
| Europe        | +44 (0) 1698 481481     |
|               | +44 (0) 1698 481676 Fax |
| Latin America | +1-305-805-8188         |
|               | +1-305-883-8257 Fax     |
| USA/Canada    | +1-800-537-6945         |
|               | +1-815-235-6847         |
|               | +1-815-235-6545 Fax     |

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

50094459-A-EN IL50  
April 2014  
© 2014 Honeywell International Inc. All rights reserved.

**Honeywell**