

## MICRO SWITCH Key Actuated Safety Switches

GKM Series

004750

Issue 5

**Datasheet**



### DESCRIPTION

When the application requires a miniature key-operated safety interlocking limit switch for machine guarding, Honeywell provides the GKM Series. The compact housing size of 34 mm L x 16 mm W x 70 mm H is optimal where there is limited space available on machinery. The double-insulated plastic housing and rugged stainless steel actuator key are better suited for demanding environments. The unique design of the switch allows the actuator key to be inserted from the top or the side. The switch can be mounted from the front or back as required. As with the Honeywell safety limit switches, all normally closed contacts are positive opening (→). Direct mechanical linkage within the switch force the normally closed contacts open when the actuator key is removed from the switch, opening the circuit. The switches are available with either a cable connection or an integral four-pin M12 connector.

### FEATURES

- Red switch body for easy safety recognition
- Common 22 mm mounting centers which accept M4 or #8 mounting hardware
- Prewired cable or M12 connector for electrical termination
- Positive opening action of normally closed contacts (→) to EN/IEC 60947-5-1-3 specification
- Switch chamber IP67 environmentally sealed for indoor or outdoor applications
- CE and UL certifications
- Designed and agency evaluated for safety functions up to and including a SIL3 level

### POTENTIAL APPLICATIONS

- Safety interlock for small doors and apertures on machinery
- Safety interlock for multiple doors on machinery with daisy chain option (twin connectors)

### DIFFERENTIATION

- Miniature package size of 34 mm L x 16 mm W x 70 mm H
- Switch design with dual entry (side or top) for actuator key
- Daisy-chain capability for monitoring multiple gates on machinery
- Rigid or flexible stainless steel actuator keys


### PORTFOLIO

In addition to the GKM Series safety interlocking limit switches, Honeywell offers other safety interlocking limit switches. These include the EN50047 plastic body GKE Series, plastic body GKN Series, EN50041 metal body GKB Series, and metal body solenoid (trapped key) GKL/R Series. Non-interlocking safety limit switches include the GSS Series, FF Series non-contact switches, and the 1CPS Series and 2CPS Series cable/rope pull safety limit switches.

# Key-Actuated Safety Switches, GKM Series

**Table 1. Performance Specifications**

| Characteristic   | Parameter  |
|--|--|
| <b>Description</b>                                       | Dual entry key-operated safety interlock switch  |
| <b>Agency certifications</b>                             | CE, DOC 141 (EN60947-1 and EN 60947-5-1)<br>cULus, UL508 (File E37138)<br>SIRA, Functional Safety Certificate (IEC 61508-2:2010)   |
| <b>Housing material</b>                                  | Red glass-filled polyester body, black glass-filled polyamide actuator housing   |
| <b>Actuator key material</b>                             | Stainless steel  |
| <b>Electrical connection</b>                             | Side or bottom exit cable (UL rated 105 °C with PVC jacket and cores four conductor 0.5 mm <sup>2</sup> , 20 AWG).<br>Side or bottom exit integral M12 Micro 4-pin dc-style connector,<br>Side and bottom exit (twin connectors) integral M12 Micro 4-pin dc style connectors for daisy chaining and monitoring multiple doors |
| <b>Contact/switch options<sup>1</sup></b>                | 1NC/1NO slow action BBM, 2NC slow action   |
| <b>Contact design</b>                                    | Double break, electrically separated (Zb)  |
| <b>Contact material</b>                                  | Silver alloy (standard), gold-plated (low energy applications)   |
| <b>Electrical ratings</b>                                | See Table 2  |
| <b>Utilization category</b>                              | AC-15, B300; DC-13, Q300   |
| <b>Rated operational voltage (U<sub>e</sub>)</b>         | 240 Vac, 250 Vdc   |
| <b>Rated operational current (I<sub>e</sub>)</b>         | 1.5 A, 0.27 A  |
| <b>Thermal current (I<sub>th</sub>)</b>                  | 5 A, GKME Series 2 A   |
| <b>Rated insulation (U<sub>i</sub>)</b>                  | 500 V  |
| <b>Rated impulse withstand voltage (U<sub>imp</sub>)</b> | 2500 V   |
| <b>Short circuit protection device (SCPD)</b>            | Class RK5 fuse, rated at 4.5A  |
| <b>Pollution degree</b>                                  | 3  |
| <b>Environmental sealing</b>                             | IP 66/67, GKME Series (twin connectors) IP66 per EN60529; NEMA 1, 12, 13   |
| <b>Operating temperature</b>                             | -25 °C to 85 °C (-13 °F to 185 °F)   |
| <b>Shock</b>   | 50 G per IEC 60068-2-27  |
| <b>Vibration</b>   | 10 G per IEC 60068-2-6   |
| <b>MCTF (Mechanical life)</b>                            | >1,000,000 cycles with single-sided confidence limit of 95%  |
| <b>MCTF (Electrical life)</b>                            | 32,000 cycles  |
| <b>SIL Capability<sup>2</sup></b>                        | SIL3 capable with HFT=1, SIL2 capable with HFT=0 with reference to IEC 61508-2:2010 Functional Safety  |
| <b>Proof test interval</b>                               | 1 year   |

<sup>1</sup>All normally closed contacts are positive opening 

<sup>2</sup>HFT (Hardware Fault Tolerance).

**Table 2. Electrical Ratings**

| Electrical Ratings for Body Style A, B, C, D |  |   |  | Electrical Ratings for Body Style E (Twin Conn.) |   |
|--|--|---|--|--|---|
| Standard Silver Contacts                     |  | Gold Plate Contacts   |  | Standard Silver Contacts                         | Gold Plate Contacts   |
| <b>AC</b>                                    | <b>DC</b>                                    | $I_{th} = 5 A$<br>$1 V, 10 \mu A \text{ min.}$<br>$50 V, 100 mA \text{ max.}$ |  | $30 Vdc, 2 A \text{ max.}$<br>$I_{th} = 2 A$     | $1 Vdc, 10 \mu A \text{ min.}$<br>$30 Vdc, 100 mA \text{ max.}$<br>$I_{th} = 2 A$ |
| B300   | AC15 Q300 DC13                               |   |  |  |   |
| U <sub>e</sub>                               | I <sub>e</sub> U <sub>e</sub> I <sub>e</sub> |   |  |  |   |
| Volts  | Amps Volts Amps                              |   |  |  |   |
| 120  | 3 125 0.55                                   |   |  |  |   |
| 240  | 1.5 250 0.27                                 |   |  |  |   |

# Key-Actuated Safety Switches, GKM Series

Figure 1. Product Nomenclature

|  | <b>GKM</b>  | <b>D</b>              | <b>0</b>               | <b>3</b>                        |          |  |
|--|-------------|-----------------------|------------------------|---------------------------------|----------|--|
|  | Switch Type | Body Style            | Electrical Termination | Circuitry                       |          |  |
| <b>GKM Series Dual-Entry, Key-Operated Safety Switch</b> | <b>A</b>    | Side exit cable       | <b>0</b>               | M12 micro connector, 4-pin male | <b>3</b> | 1NC/1NO, BBM slow action               |
|  | <b>B</b>    | Bottom exit cable     | <b>1</b>               | 1 m, four conductor cable       | <b>6</b> | 2NC, slow action                       |
|  | <b>C</b>    | Side exit connector   | <b>2</b>               | 2 m, four conductor cable       | <b>7</b> | 2NC, gold contacts slow action         |
|  | <b>D</b>    | Bottom exit connector | <b>3</b>               | 3 m, four conductor cable       | <b>9</b> | 1NC/1NO, BBM gold contacts slow action |
|  | <b>E</b>    | Twin connectors       |                        |                                 |          |  |

| Keys <sup>1</sup> Listing | Key style            |
|---------------------------|----------------------|
| GKZ51M                    | Straight             |
| GKZ52M                    | 90°                  |
| GKZ53M                    | Side/side adjustable |
| GKZ54M                    | Up/down adjustable   |
| GKZ55M                    | Multi-directional    |

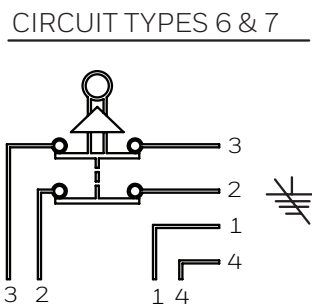
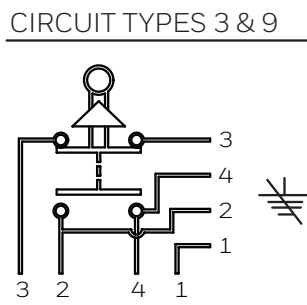
<sup>1</sup> A key actuator (ordered separately) is required for each switch.

NOTE: not all combinations of model code are available. Please contact your Honeywell provider/representative for assistance.

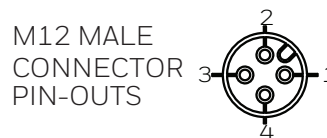
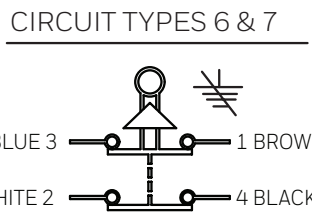
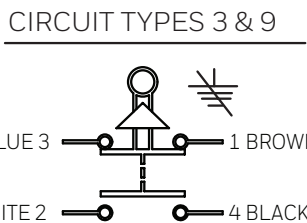
Figure 2. Wiring

## CIRCUIT DIAGRAMS<sup>2</sup>

### TWIN CONNECTORS



### CABLE/LEADWIRE OR CONNECTOR



<sup>2</sup>Refer to circuitry in Figure 1 (Product nomenclature).

# Key-Actuated Safety Switches, GKM Series

Figure 3. Product Dimensions • Body Style B

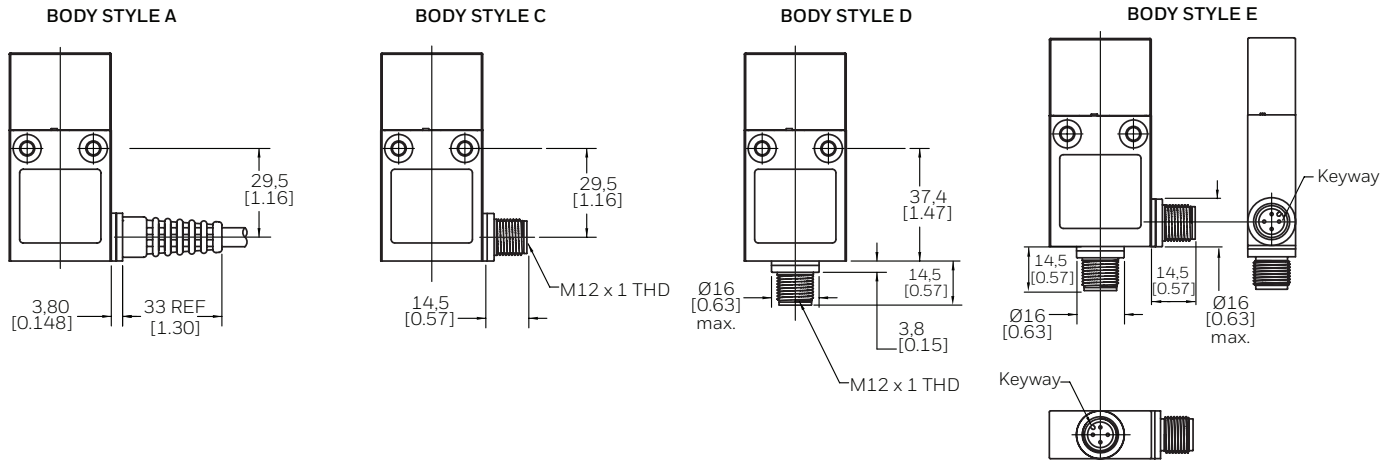
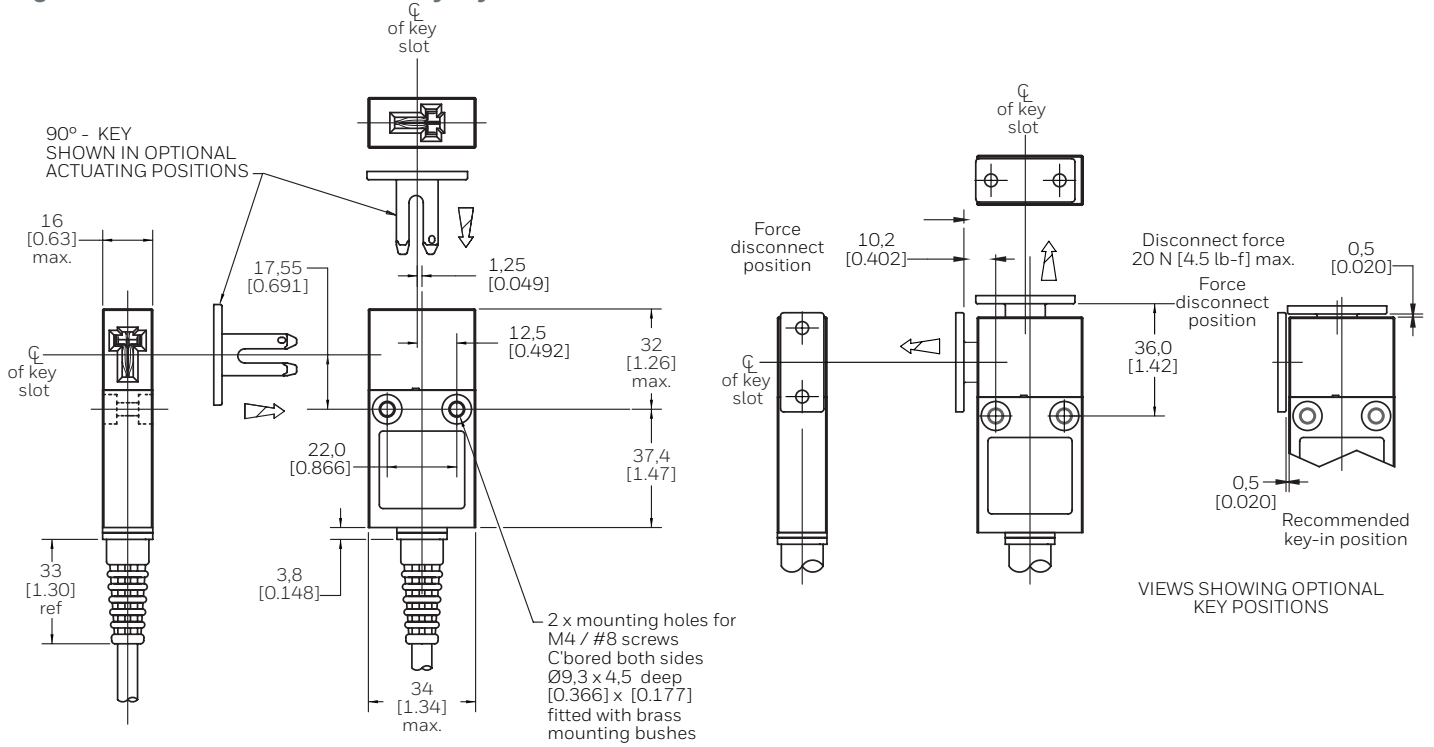
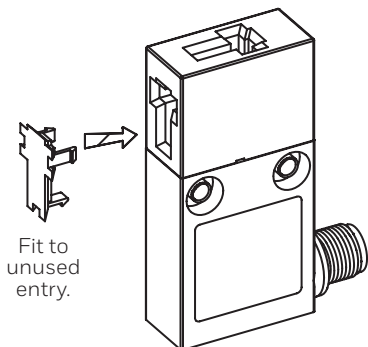


Figure 4. Slot Dust Cover



# Key-Actuated Safety Switches, GKM Series

Figure 5. Key Dimensions, continued

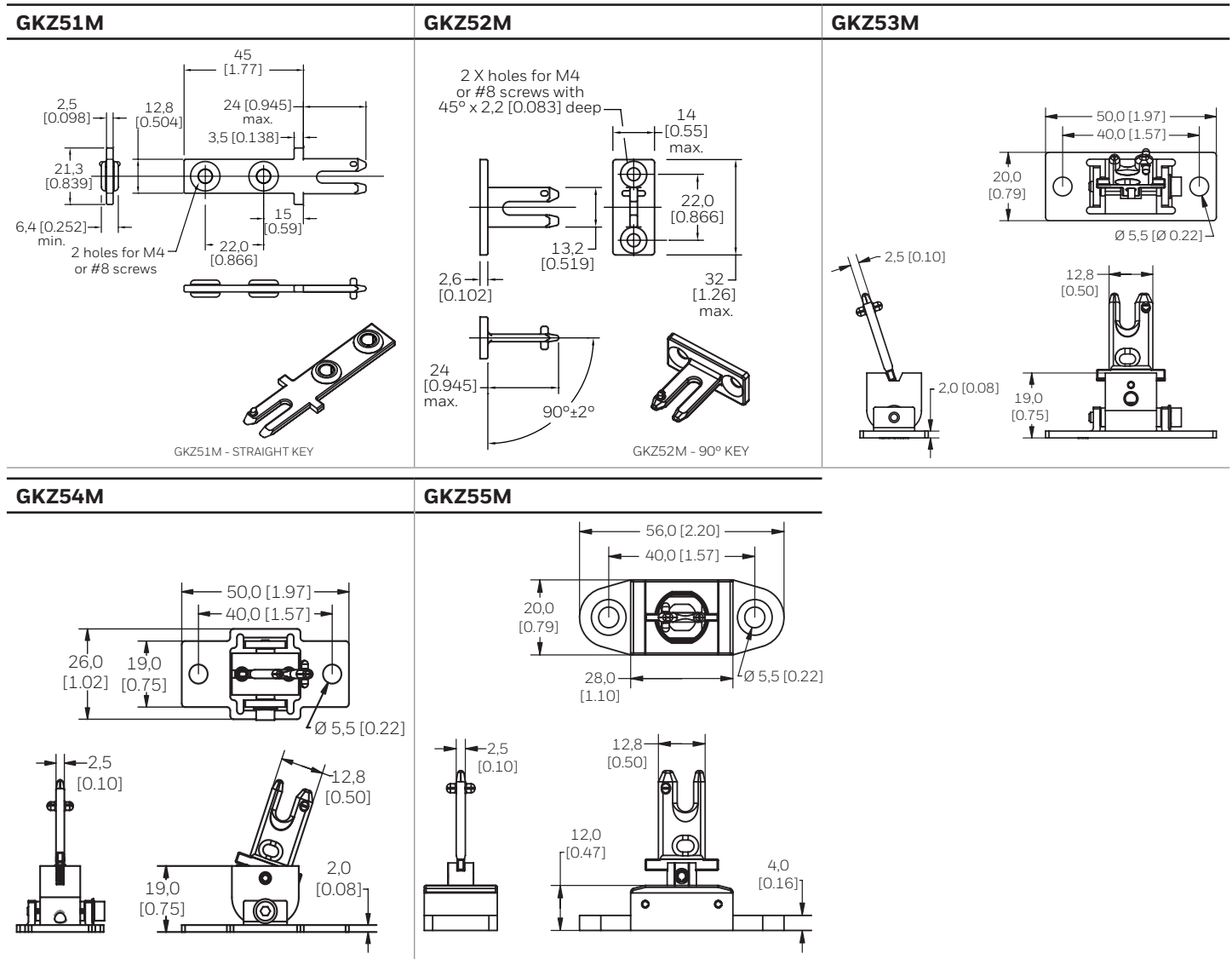


Table 3. Minimum Actuating Radius

| Catalog Listing, Description       | Key opening of switch (vertical) min. radius | Key opening of switch (horizontal) min. radius |
|------------------------------------|--|--|
| GKZ51M, Straight key               | 225 mm [8.9 in]                              | 160 mm [6.3 in]                                |
| GKZ52M, 90° key (right angle)      | 225 mm [8.9 in]                              | 160 mm [6.3 in]                                |
| GKZ53M, Adjustable key (side-side) | 32 mm [1.26 in]                              | 160 mm [6.3 in]                                |
| GKZ54M, Adjustable key (up-down)   | 225 mm [8.9 in]                              | 45 mm [1.77 in]                                |
| GKZ55M, Multi-directional key      | 18° max. all directions                      | 18° max. all directions                        |

# Key-Actuated Safety Switches, GKM Series

Table 4. Order Guide

|   | Catalog Listing <sup>1</sup> | Body Style                   | Contacts                 | Contact Material | Electrical Connection                 |
|---|------------------------------|------------------------------|--------------------------|------------------|---------------------------------------|
|    | GKMA13                       | Side exit cable              | 1NC/1NO slow action, BBM | Silver           | 1 meter cable                         |
|   | GKMA19                       | Side exit cable              | 1NC/1NO slow action, BBM | Gold plated      | 1 meter cable                         |
|   | GKMA23                       | Side exit cable              | 1NC/1NO slow action, BBM | Silver           | 2 meter cable                         |
|   | GKMA33                       | Side exit cable              | 1NC/1NO slow action, BBM | Silver           | 3 meter cable                         |
|   | GKMA16                       | Side exit cable              | 2NC slow action          | Silver           | 1 meter cable                         |
|   | GKMA36                       | Side exit cable              | 2NC slow action          | Silver           | 3 meter cable                         |
|    | GKMB13                       | Bottom exit cable            | 1NC/1NO slow action, BBM | Silver           | 1 meter cable                         |
|   | GKMB19                       | Bottom exit cable            | 1NC/1NO slow action, BBM | Gold plated      | 1 meter cable                         |
|   | GKMB23                       | Bottom exit cable            | 1NC/1NO slow action, BBM | Silver           | 2 meter cable                         |
|   | GKMB33                       | Bottom exit cable            | 1NC/1NO slow action, BBM | Silver           | 3 meter cable                         |
|   | GKMB39                       | Bottom exit cable            | 1NC/1NO slow action, BBM | Gold plated      | 3 meter cable                         |
|   | GKMB16                       | Bottom exit cable            | 2NC slow action          | Silver           | 1 meter cable                         |
|   | GKMB17                       | Bottom exit cable            | 2NC slow action          | Gold plated      | 1 meter cable                         |
|   | GKMB36                       | Bottom exit cable            | 2NC slow action          | Silver           | 3 meter cable                         |
|   | GKMB37                       | Bottom exit cable            | 2NC slow action          | Gold plated      | 3 meter cable                         |
|   | GKMB56                       | Bottom exit cable            | 2NC slow action          | Silver           | 5 meter cable                         |
|   | GKMC03                       | Side exit connector          | 1NC/1NO slow action, BBM | Silver           | M12 Micro connector, 4-pin male       |
|   | GKMC09                       | Side exit connector          | 1NC/1NO slow action, BBM | Gold plated      | M12 Micro connector, 4-pin male       |
|   | GKMC06                       | Side exit connector          | 2NC slow action          | Silver           | M12 Micro connector, 4-pin male       |
|   | GKMC07                       | Side exit connector          | 2NC slow action          | Gold plated      | M12 Micro connector, 4-pin male       |
|  | GKMD03                       | Bottom exit connector        | 1NC/1NO slow action, BBM | Silver           | M12 Micro connector, 4-pin male       |
|   | GKMD09                       | Bottom exit connector        | 1NC/1NO slow action, BBM | Gold plated      | M12 Micro connector, 4-pin male       |
|   | GKMD06                       | Bottom exit connector        | 2NC slow action          | Silver           | M12 Micro connector, 4-pin male       |
|   | GKMD07                       | Bottom exit connector        | 2NC slow action          | Gold plated      | M12 Micro connector, 4-pin male       |
|  | GKME03                       | Bottom & side exit connector | 1NC/1NO slow action, BBM | Silver           | Twin M12 Micro connectors, 4-pin male |
|   | GKME09                       | Bottom & side exit connector | 1NC/1NO slow action, BBM | Gold plated      | Twin M12 Micro connectors, 4-pin male |
|   | GKME06                       | Bottom & side exit connector | 2NC slow action          | Silver           | Twin M12 Micro connectors, 4-pin male |
|   | GKME07                       | Bottom & side exit connector | 2NC slow action          | Gold plated      | Twin M12 Micro connectors, 4-pin male |

<sup>1</sup> An actuator key (ordered separately) is required for each switch. Select actuator key by reviewing product nomenclature tree and dimensional diagrams on page 5.

## ADDITIONAL MATERIALS

The following associated literature is available on the Honeywell web site at [sensing.honeywell.com](http://sensing.honeywell.com):

- Product installation instructions
- Product range guide

### Find out more

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

To learn more about Honeywell's products, call **+1-815-235-6847** or **1-800-537-6945**, visit **[sensing.honeywell.com](http://sensing.honeywell.com)**, or e-mail inquiries to **[info.sc@honeywell.com](mailto:info.sc@honeywell.com)**

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## **WARNING** **IMPROPER INSTALLATION**

- Consult with local safety agencies and their requirements when designing a machine-control link, interface and all control elements that affect safety.
- Strictly adhere to all installation instructions.

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

## **WARNING** **MISUSE OF DOCUMENTATION**

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- 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.**

### Warranty/Remedy

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship during the applicable warranty period. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgment 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 that Honeywell, in its sole discretion, finds defective. **The foregoing is buyer's sole remedy and is in lieu of all other 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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