

# FF6 SERIES

004745

Issue 6

## Non-Contact Safety Switches

### DESCRIPTION

Honeywell FF6 Series are magnetically actuated, non-contact, safety limit switches for use in machine guarding applications. They are designed to monitor the position of a guard and provide an input to a safety relay. The rectangular design of both the switch and the magnetic actuator (supplied with each switch) are beneficial where a slim package size is desired. The switch and actuator are each installed with two M4 or #8 screws. The non-contact switch design allows for flexible installation where misalignment of the machine guard may occur. The switch and actuator are sealed to IP67 for wet and dusty environmental applications.

With CE, UKCA and UL certifications, these switches may be installed on machinery for global applications.

### VALUE TO CUSTOMERS

- Non-contact sensing minimizes installation and set-up
- Pre-wired cable with color-coded lead-wires or integral M12 connector simplifies electrical connection
- Actuator may approach the switch from head-on, slide-by, or rotation/hinge for flexible installation

### DIFFERENTIATION

- Non-contact sensing requires no mechanical linkage for actuation
- Up to two safety contacts when actuated for inputs to safety relay
- Optional auxiliary contact closes when actuator moves out of operating range

### FEATURES

- Non-contact design requires no operating force to actuate switch
- ABS plastic housing or 316 stainless steel housing for switch and actuator
- Slim package size of 19,0 mm x 19,0 mm x 82,5 mm [0.75 in x 0.75 in x 3.25 in]
- Choice of 1NC, 1NC/1NO, 2NC, or 2NC/1NO contacts
- Pre-wired cable length of 3 m [9.8 ft] or 6 m [19.7 ft] or an integral M12 quick disconnect with 5 m [16.4 ft] of mating cable
- IP67 environmentally sealed switch and actuator
- CE, UKCA and UL 508 certifications

### POTENTIAL APPLICATIONS

- Equipment and machinery guards
- Can forming and filling (aluminum, plastic, and steel)
- Packaging equipment
- Pick and place assembly equipment
- Plastic molding equipment
- Printing machinery
- Semiconductor equipment
- Textile machinery
- Woodworking equipment



### PORTFOLIO

Honeywell FF6 Series safety switches are part of a comprehensive line of Honeywell electromechanical and non-contact safety switches. For more details on the extensive line of Honeywell safety switches, click [here](#).

**Honeywell**

# NON-CONTACT SAFETY SWITCHES

## FF6 SERIES

**TABLE 1. SPECIFICATIONS**

| Characteristic                              | Parameter   |
|---|---|
| <b>Certifications</b>                       | cULus/UL 508; File E37138, Industrial control<br>CE; DOC A347<br>UKCA<br>Reference standards:<br>EN60947-5-1; Low voltage switchgear and controlgear<br>EN60947-5-3; Low voltage switchgear and controlgear<br>EN61000-6-2; Electromagnetic compatibility, Immunity<br>EN61000-6-4; Electromagnetic compatibility, Emissions<br>EN60204-1; Safety of machinery, General requirements<br>EN62061; Safety of machinery, Functional safety<br>EN ISO 13849-1; Safety of machinery, Safety-related parts of control systems<br>EN ISO 13850; Safety of machinery, Emergency stop function |
| <b>Switch and actuator housing material</b> | FF6: ABS plastic<br>FF6-SS: 316 stainless steel   |
| <b>Termination</b>                          | Pre-wired, color-coded cable: 3 m [9.8 ft] or 6 m [19.7ft];<br>Male M12 quick connect with 5 m [16.4 ft] female quick connect cable   |
| <b>Contacts (when actuator present)</b>     | 1NC, 1NC/1NO, 2NC, 2NC/1NO  |
| <b>Contact design</b>                       | Magnetically actuated   |
| <b>Safety contact rating</b>                | ac style: 230 Vac/2 A<br>dc style: 24 Vdc/1 A   |
| <b>Safety contact sensing distance*</b>     | 10 mm [0.39 in] ON<br>28 mm [1.10 in] OFF   |
| <b>Auxiliary contact rating</b>             | 15 W/10 VA  |
| <b>Auxiliary contact sensing distance*</b>  | 11 mm [0.43 in] OFF<br>21 mm [0.83 in] ON   |
| <b>Internal fuse</b>                        | ac: 2 A fast acting<br>dc: 1 A fast acting  |
| <b>External fuse (customer supplied)</b>    | ac: 1.6 A fast acting<br>dc: 0.8 A fast acting  |
| <b>Environmental sealing</b>                | IP67 for switch and actuator  |
| <b>Operating temperature</b>                | -25°C to 55°C [-13°F to 131°F]  |
| <b>Vibration</b>                            | 10 g, 10 Hz to 50 Hz per IEC 60068-2-6  |
| <b>Shock</b>                                | 30 g, 11 ms per IEC 60068-2-27  |

\* The sensing distance is measured from the front surface of the switch to the front surface of the actuator. When actuated the targets on the surface of the switch and the surface of the actuator are designed to align.

**TABLE 2. CONTACT AND CONNECTION DIAGRAMS: PRE-WIRED SWITCHES\***

| FF6-21-ABS (ac & dc)<br>FF6-21-SS (dc only) | FF6-20 ABS (ac & dc)<br>FF6-20 SS (dc only) | FF6-11 ABS (ac & dc)<br>FF6-11 (dc only) | FF6-10 ABS (ac & dc)<br>FF6-10 SS (ac & dc) | FF6-10-03-SS |
|---|---|--|---|--------------|
|   |   |  |   |              |

\* Contact configurations shown under closed condition for guard device.

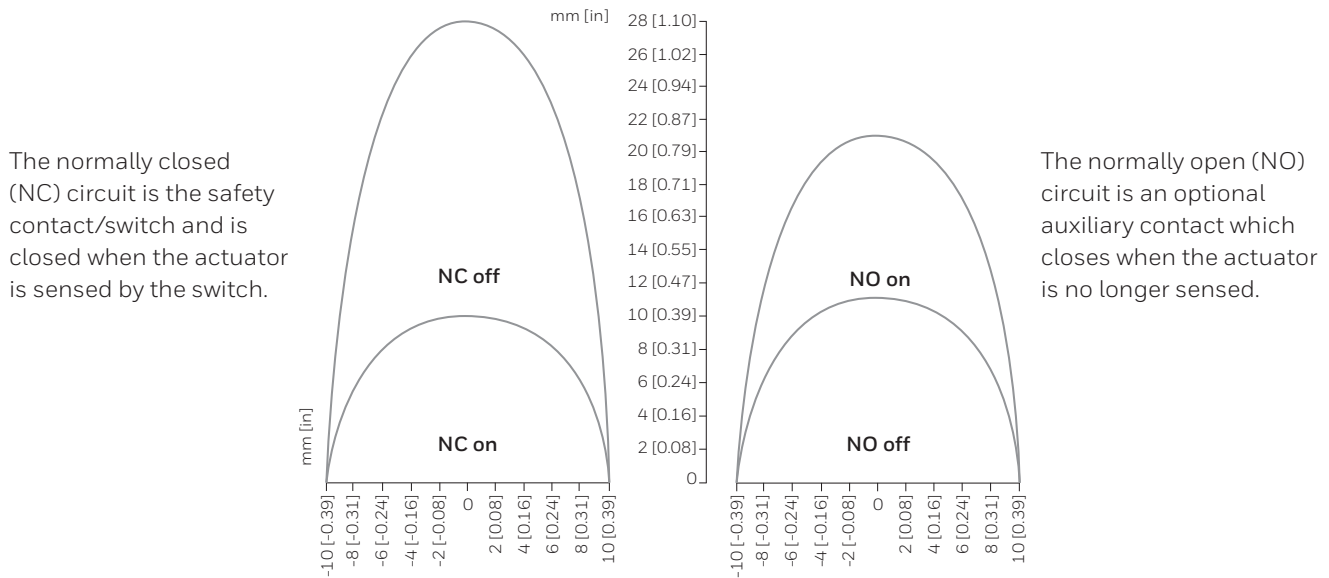
**TABLE 3. CONTACT AND CONNECTION DIAGRAMS: QUICK DISCONNECT SWITCHES\***

| FF6-21-AC-QD05<br>FF6-21-DC-QD05 | FF6-20-AC-QD05<br>FF6-20-DC-QD05 | FF6-11-AC-QD05<br>FF6-11-DC-QD05 | FF6-10-AC-QD05<br>FF6-10-DC-QD05 | FF6-10-AC -QD05-SS |
|----------------------------------|----------------------------------|----------------------------------|----------------------------------|--------------------|
|                                  |                                  |                                  |                                  |                    |

\* Contact configurations shown under closed condition for guard device.

# NON-CONTACT SAFETY SWITCHES FF6 SERIES

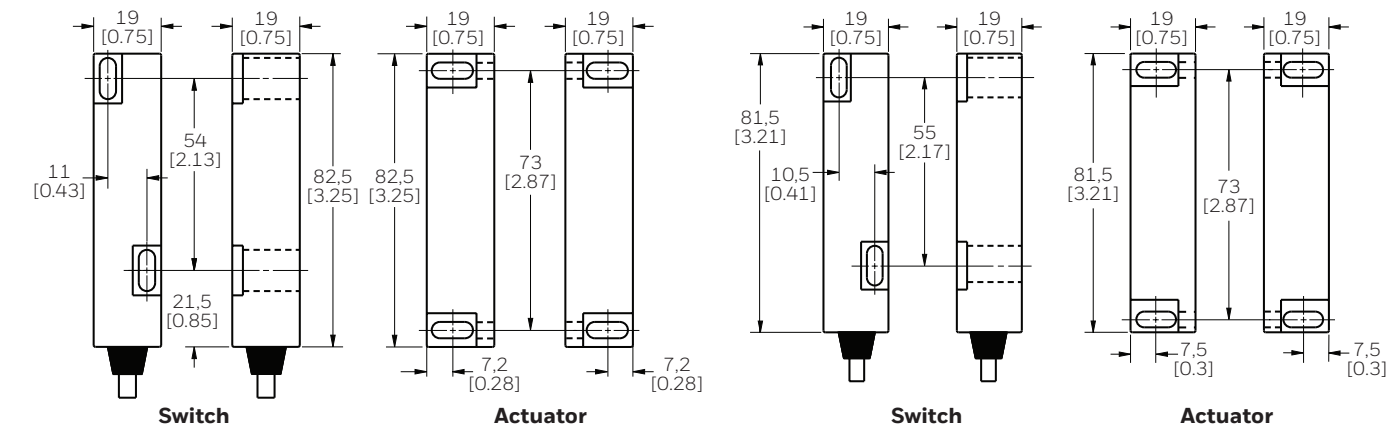
**FIGURE 1. SENSING DISTANCES (mm [in])**



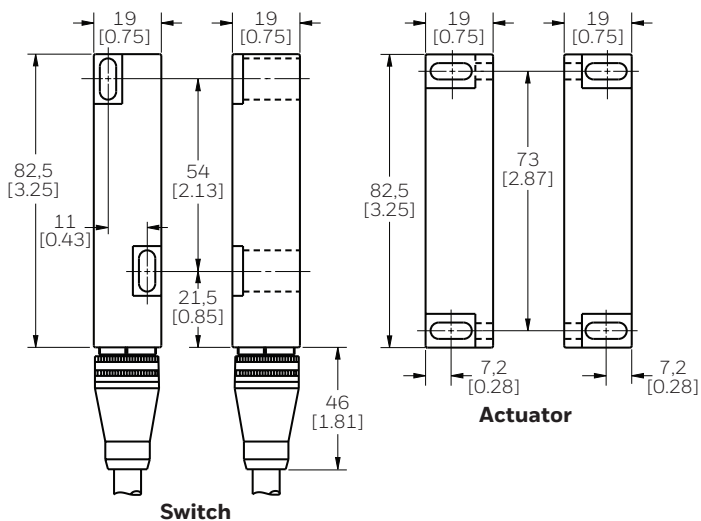
**FIGURE 2. MOUNTING DIMENSIONS (FOR REFERENCE ONLY: mm [in])**

## ABS: Pre-Wired

## Stainless Steel: Pre-Wired



## ABS: Quick Disconnect (with M12 Brad Harrison Connector)



# NON-CONTACT SAFETY SWITCHES

## FF6 SERIES

**TABLE 4. ORDER GUIDE**

| Catalog Listing                | Description  |
|--------------------------------|--|
| <b>ABS Plastic Housing</b>     |  |
| <b>FF6-10-AC-03</b>            | FF6 Series switch and actuator, 1NC safety contact for ac applications, 3 m [9.8 ft] pre-wired cable   |
| <b>FF6-10-AC-06</b>            | FF6 Series switch and actuator, 1NC safety contact for ac applications, 6 m [19.7 ft] pre-wired cable  |
| <b>FF6-10-AC-QD05</b>          | FF6 Series switch and actuator, 1NC safety contact for ac applications, M12 male 4-pin integral connector, 5 m [16.4 ft] cable with integral 4-pin female connector                    |
| <b>FF6-10-DC-03</b>            | FF6 Series switch and actuator, 1NC safety contact for dc applications, 3 m [9.8 ft] pre-wired cable   |
| <b>FF6-10-DC-06</b>            | FF6 Series switch and actuator, 1NC safety contact for dc applications, 6 m [19.7 ft] pre-wired cable  |
| <b>FF6-10-DC-QD05</b>          | FF6 Series switch and actuator, 1NC safety contact for dc applications, M12 male 4-pin integral connector, 5 m [16.4 ft] cable with integral 4-pin female connector                    |
| <b>FF6-11-AC-03</b>            | FF6 Series switch and actuator, 1NC safety and 1NO auxiliary contacts for ac applications, 3 m [9.8 ft] pre-wired cable  |
| <b>FF6-11-AC-06</b>            | FF6 Series switch and actuator, 1NC safety and 1NO auxiliary contacts for ac applications, 6 m [19.7 ft] pre-wired cable   |
| <b>FF6-11-AC-QD05</b>          | FF6 Series switch and actuator, 1NC safety and 1NO auxiliary contacts for ac applications, M12 male 4-pin integral connector, 5 m [16.4 ft] with integral 4-pin female connector       |
| <b>FF6-11-DC-03</b>            | FF6 Series switch and actuator, 1NC safety and 1NO auxiliary contacts for dc applications, 3 m [9.8 ft] pre-wired cable  |
| <b>FF6-11-DC-06</b>            | FF6 Series switch and actuator, 1NC safety and 1NO auxiliary contacts for dc applications, 6 m [19.7 ft] pre-wired cable   |
| <b>FF6-11-DC-QD05</b>          | FF6 Series switch and actuator, 1NC safety and 1NO auxiliary contacts for dc applications, M12 male 4-pin integral connector, 5 m [16.4 ft] cable with integral 4-pin female connector |
| <b>FF6-20-AC-03</b>            | FF6 Series switch and actuator, 2NC safety contacts for ac applications, 3 m [9.8 ft] pre-wired cable  |
| <b>FF6-20-AC-06</b>            | FF6 Series switch and actuator, 2NC safety contacts for ac applications, 6 m [19.7 ft] pre-wired cable   |
| <b>FF6-20-AC-QD05</b>          | FF6 Series switch and actuator, 2NC safety contacts for ac applications, M12 male 4-pin integral connector, 5 m [16.4 ft] cable with integral 4-pin female connector                   |
| <b>FF6-20-DC-03</b>            | FF6 Series switch and actuator, 2NC safety contacts for dc applications, 3 m [9.8 ft] pre-wired cable  |
| <b>FF6-20-DC-06</b>            | FF6 Series switch and actuator, 2NC safety contacts for dc applications, 3 m [9.8 ft] pre-wired cable  |
| <b>FF6-20-DC-QD05</b>          | FF6 Series switch and actuator, 2NC safety contacts for dc applications, M12 male 4-pin integral connector, 5 m [16.4 ft] cable with integral 4-pin female connector                   |
| <b>FF6-21-AC-06</b>            | FF6 Series switch and actuator,  |
| <b>FF6-21-AC-QD05</b>          | FF6 Series switch and actuator, 2NC safety and 1NO auxiliary contacts for ac applications, M12 male 6-pin integral connector, 5 m [16.4 ft] cable with integral 6-pin female connector |
| <b>FF6-21-DC-03</b>            | FF6 Series switch and actuator, 2NC safety and 1NO auxiliary contacts for dc applications, 3 m [9.8 ft] pre-wired cable  |
| <b>FF6-21-DC-06</b>            | FF6 Series switch and actuator, 2NC safety and 1NO auxiliary contacts for dc applications, 6 m [19.7 ft] pre-wired cable   |
| <b>FF6-21-DC-QD05</b>          | FF6 Series switch and actuator, 2NC safety and 1NO auxiliary contacts for ac applications, M12 male 6-pin integral connector, 5 m [16.4 ft] cable with integral 6-pin female connector |
| <b>Stainless Steel Housing</b> |  |
| <b>FF6-10-AC-03-SS</b>         | FF6 Series switch and actuator, 1NC safety contact for ac applications, 3 m [9.8 ft] pre-wired cable   |
| <b>FF6-10-DC-03-SS</b>         | FF6 Series switch and actuator, 1NC safety contact for dc applications, 3 m [9.8 ft] pre-wired cable   |
| <b>FF6-11-DC-03-SS</b>         | FF6 Series switch and actuator, 1NC safety and 1NO auxiliary contacts for dc applications, 3 m [9.8 ft] pre-wired cable  |
| <b>FF6-20-DC-03-SS</b>         | FF6 Series switch and actuator, 2NC safety contacts for dc applications, 3 m [9.8 ft] pre-wired cable  |
| <b>FF6-21-DC-03-SS</b>         | FF6 Series switch and actuator, 2NC safety and 1NO auxiliary contacts for dc applications, 3 m [9.8 ft] pre-wired cable  |

## 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.

While Honeywell may provide application assistance personally, through our literature and the Honeywell web site, it is buyer's sole responsibility 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 writing. However, Honeywell assumes no responsibility for its use.

## FOR MORE INFORMATION

Honeywell Advanced Sensing Technologies services its customers through a worldwide network of sales offices and distributors. For application assistance, current specifications, pricing or the nearest Authorized Distributor, visit [our website](#) or call:

|               |                     |
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## 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.**

## WARNING IF USED IN APPLICATIONS CONCERNING HUMAN SAFETY

- Only use NC direct opening  ("positive opening"/"positive break") contacts, identified by the symbol.
- Do NOT use flexible/adjustable actuators. Only use actuators designed for safety applications.
- Do NOT defeat, tamper, remove, or bypass this switch.
- Hazardous voltage, disconnect power before servicing.
- Strictly adhere to all installation and maintenance instructions
- Consult with local safety agencies and their requirements when designing a machine-control link, interface, and all control elements that affect safety.

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