

# IDEM BPF/BMF Series Non-Contact RFID Coded Safety Switches



**BPF-U-413103**  
**BMF-U-414103**

## Actuator Operating Direction



## Description

IDEM's BPF/BMF Series of non-contact RFID Coded Safety Switches has been designed to provide interlock protection on hinged, sliding or removable guard doors.

These switches are particularly advantageous when poor guard alignment exists, when high-level anti-tamper is required, where high-hygiene requirements exist (e.g. in food industry hosedown applications) or where long mechanical life is required.

When used in combination with a dual channel safety relay or control device, Non-Contact Safety Switches can be used to provide protection up to Category 4 and PLe to ISO13849-1.

## Features

- Designed to provide a safety interlock on hinged, sliding or removable guard doors
- Suitable for use in extreme temperature or moisture environments
- Wide (>6mm [0.24 in]) sensing distance
- High tolerance for misalignment after sensing
- Supplied factory coded either uniquely (U types) or by a master code (M types)
- Provide a high level of anti-tamper protection
- Suitable for use in high-hygiene requirement areas (e.g. food industry hosedown)
- No moving or touching parts for long mechanical life
- Designed to conform to EN60947-5-3
- For use as directed by ISO14119 and EN ISO12100

## BPF/BMF Series Non-Contact RFID Coded Safety Switches Selection Guide

Part Number	Price	Body Material	Coding	Connection	Cable Length (Dim A)	Circuits
<b>Polyester Housing</b>						
<b><u>BPF-M-413001</u></b>	\$145.00	Polyester	Master coded RFID	Pigtail	5m [16.4 ft]	2 NC safety outputs 1 NO monitoring output
<b><u>BPF-M-413002</u></b>	\$159.00	Polyester	Master coded RFID	Pigtail	10m [32.8 ft]	2 NC safety outputs 1 NO monitoring output
<b><u>BPF-M-413003</u></b>	\$165.00	Polyester	Master coded RFID	8-pin M12 quick-disconnect	250mm [9.8 in]	2 NC safety outputs 1 NO monitoring output
<b><u>BPF-U-413101</u></b>	\$145.00	Polyester	Uniquely coded RFID	Pigtail	5m [16.4 ft]	2 NC safety outputs 1 NO monitoring output
<b><u>BPF-U-413102</u></b>	\$159.00	Polyester	Uniquely coded RFID	Pigtail	10m [32.8 ft]	2 NC safety outputs 1 NO monitoring output
<b><u>BPF-U-413103</u></b>	\$165.00	Polyester	Uniquely coded RFID	8-pin M12 quick-disconnect	250mm [9.8 in]	2 NC safety outputs 1 NO monitoring output
<b>Stainless Steel Housing</b>						
<b><u>BMF-M-414001</u></b>	\$279.00	316 stainless steel	Master coded RFID	Pigtail	5m [16.4 ft]	2 NC safety outputs 1 NO monitoring output
<b><u>BMF-M-414002</u></b>	\$297.00	316 stainless steel	Master coded RFID	Pigtail	10m [32.8 ft]	2 NC safety outputs 1 NO monitoring output
<b><u>BMF-M-414003</u></b>	\$305.00	316 stainless steel	Master coded RFID	8-pin M12 quick-disconnect	250mm [9.8 in]	2 NC safety outputs 1 NO monitoring output
<b><u>BMF-U-414101</u></b>	\$279.00	316 stainless steel	Uniquely coded RFID	Pigtail	5m [16.4 ft]	2 NC safety outputs 1 NO monitoring output
<b><u>BMF-U-414102</u></b>	\$297.00	316 stainless steel	Uniquely coded RFID	Pigtail	10m [32.8 ft]	2 NC safety outputs 1 NO monitoring output
<b><u>BMF-U-414103</u></b>	\$305.00	316 stainless steel	Uniquely coded RFID	8-pin M12 quick-disconnect	250mm [9.8 in]	2 NC safety outputs 1 NO monitoring output

## BPF Series Non-Contact Master Coded RFID Safety Switch Actuator Replacement

Part Number	Price	Body Material	Coding
<b><u>BPF-413200</u></b>	\$39.50	Polyester	Master coded RFID

## BMF Series Non-Contact Master Coded RFID Safety Switch Actuator Replacement

Part Number	Price	Body Material	Coding
<b><u>BMF-414200</u></b>	\$68.00	316 stainless steel	Master coded RFID

## Female Quick Disconnect Lead

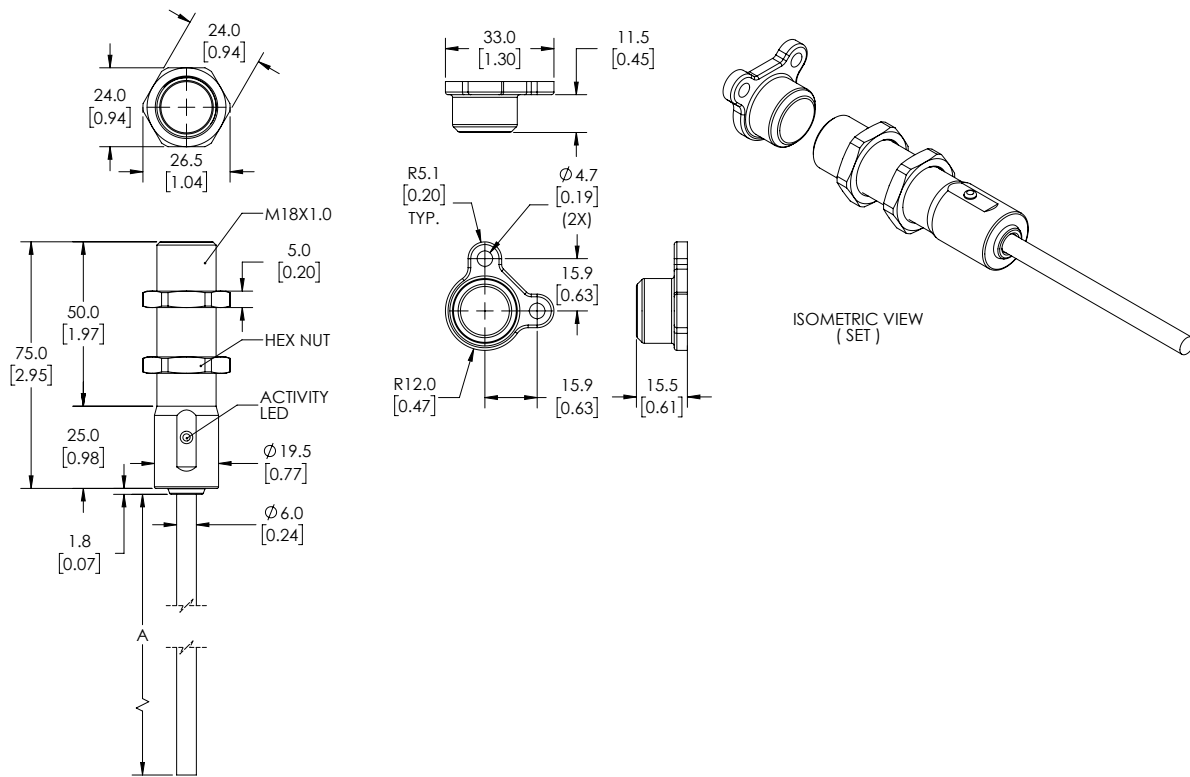
Part Number	Price	Description	Exit Type/Cable Length
<b><u>140101</u></b>	\$59.00	Female QD Lead	M12 Female 5m [16.4 ft], 8-pin
<b><u>140102</u></b>	\$88.00	Female QD Lead	M12 Female 10m [32.8 ft], 8-pin



# IDEM BPF/BMF Series Non-Contact RFID Coded Safety Switches

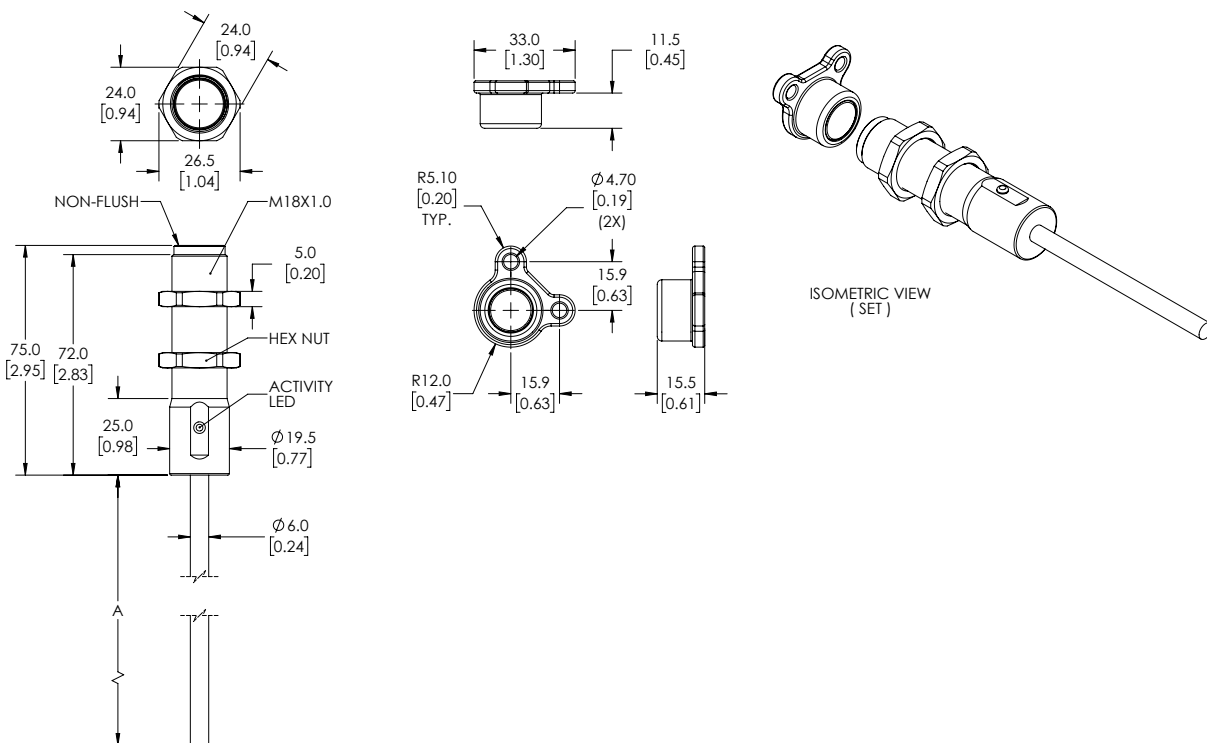
## Dimensions (BPF Series)

mm [in]



## Dimensions (BMF Series)

mm [in]

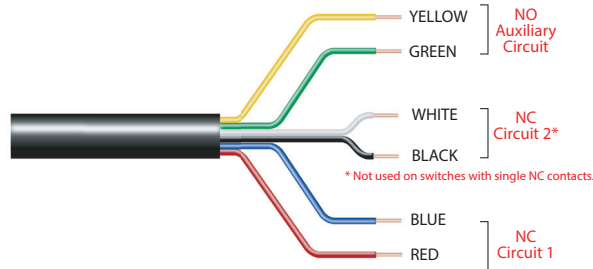


# IDEM Non-Contact Safety Switches

## Electrical Connections and Dimensions

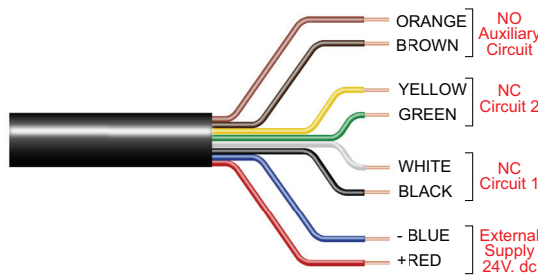
### Electrical Connections

#### Magnetic Switches



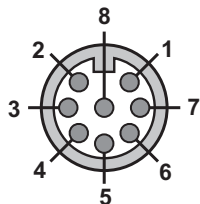
Magnetic Switches - Electrical Connections		
Quick Disconnect Connector Pin Out	Lead Color	Type of Circuit (Actuator Present)
4	Yellow	Auxiliary (NO)
6	Green	Auxiliary (NO)
7	Black	NC2
1	White	NC2
2	Red	NC1
3	Blue	NC1

#### Coded Magnetic and RFID Switches



Coded Magnetic Switches - Electrical Connections			
Quick Disconnect Connector Pin Out	Lead Color	Type of Circuit (Actuator Present)	Output Types (Solid State)
8	Orange	Auxiliary (NO)	200 mA max. 24 VDC
5	Brown	Auxiliary (NO)	
4	Yellow	NC2 +	200 mA max. 24 VDC (Optocoupler)
6	Green	NC2 -	
7	Black	NC1 +	200 mA max. 24 VDC (Optocoupler)
1	White	NC1 -	
2	Red	Supply +24 VDC	Supply 24 VDC +10% / -15%
3	Blue	Supply 0VDC	

#### Connection Colors

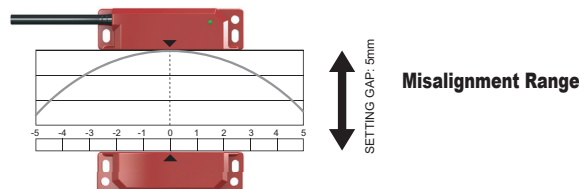


Pin View from Switch  
M12 Male

# IDEM Non-Contact Safety Switches Specifications

Non-contact Safety Switches Specifications			
	Non-Contact Magnetic Switches	Non-Contact Coded Magnetic Switches	Non-Contact RFID Coded Switches
<b>Safety Classification and Reliability Data</b>			
Switching Reliability (B10d)	3.3 x 10 <sup>6</sup> operations at 100mA load	No mechanical parts implemented	No mechanical parts implemented
ISO 13849-1	Up to Category 4		
ISO 13849-1	Up to PLe depending upon system architecture		
EN 62061	Up to SIL3 depending upon system architecture		
Safety Data - Annual Usage	8 cycles per hour / 24 hours per day / 365 days		
PFHd	2.8 x 10 <sup>-10</sup>	2.6 x 10 <sup>-10</sup>	4.77 x 10 <sup>-10</sup>
Proof Test Interval (Life)	20 years		
MTTFd	470 years	866 years	1100 years
Agency Approvals	CE, cULus		
<b>Electrical and General Specifications</b>			
Contact Ratings: Safety Contact NC	MPR: Voltage free: 250VAC, 0.5 A max.	24VDC, 0.2 A max (optocoupler)	24VDC, 0.2 A max (optocoupler)
	LPR, LMR, SPR, SMR, SMR-F: Voltage free: 250VAC, 1.0 A max.		
	CPR, CMR, CMR-F, WPR: Voltage free: 250VAC, 2.0 A max.		
	BPR, BMR: 240VAC, 24VAC/DC, 1.0 A max.		
Contact Ratings: Monitoring (Auxiliary) Contact NO	Voltage free: 24VDC, 0.2 A max.	24VDC, 0.2A max.	24VDC, 0.2A max.
Recommended Fuses (NC Circuits)	MPR: Fuse externally 0.4 A (F)	NA	NA
	LPR, LMR, SPR, SMR, SMR-F, CMR, CMR-F: Fuse externally 0.8 A (F)		
	CPR, WPR: Fuse externally 1.6 A (F)		
	BPR, BMR: Fuse externally 0.5 A (F)		
Contact Release Time	<2ms	NA	NA
Initial Contact Resistance	<0.5 Ω	NA	NA
Minimum Switched Current	10 DC, 1mA		
Dielectric Withstand	250VAC		
Insulation Resistance	100 Megohms		
Recommended Setting Gap	5mm [0.20 in]		
NC Switching Distance	Sao (assured ON) 8mm [0.31 in] close; Sar (assured OFF) 20mm [0.79 in] open		
NC Switching Operation	For all switches the NC circuits are closed when the guard is closed and the actuator is present.		
NO Switching Operation	Opens before NC circuits close		
Tolerance to Misalignment	5mm [0.20 in] in any direction from 5mm [0.20 in] setting gap (See Misalignment Range drawing on this page)		
Switching Frequency	1.0 Hz Max.		
Approach Speed	200mm [7.87 in] per minute to 1000mm [39.37] per second		
Body Material - Polyester	CPR, LPR, MPR, SPR, WPR, BPR	CPC, LPC, MPC, SPC, WPC	LPF, SPF, BPF
Body Material - 316 Stainless Steel	CMR, CMR-F, LMR, SMR, SMR-F, BMR	CMC, CMC-F, LMC, SMC, SMC-F	LMF, BMF
Operating Temperature Range	Polyester: -25° to +80°C (-13° to +176° F)		
	316 Stainless Steel: -25° to +105° C [-13° to +221° F]	316 Stainless Steel: -25° to +105° C [-13° to +221° F]	-25° to +80° C [-13° to +176° F]
Storage Temperature (Low)	-55° to -40° C [-67° to -40° F]		
Enclosure Protection	IP67, IP69K (QC versions are IP67 due to connector)		
Shock Resistance	IEC 68-2-27 11ms 30g		
Vibration Resistance	IEC 68-2-6 10-55 Hz 1mm [0.04 in]		
Cable Type	PVC, 6.5 mm outside diameter max.	PVC, 6.5 mm outside diameter max.	PVC, 6mm [0.24 in] outer diameter max.
Mounting Bolts (recommended)	2 x M4; Tightening torque: 1.0 N•m [0.74 lb•ft]		

Note: Always mount onto non-ferrous materials.



# Safety Products



*Warning: Safety products sold by AutomationDirect are Safety components only. The purchaser/installer is solely responsible for the application of these components and ensuring all necessary steps have been taken to assure each application and use meets all performance and applicable safety requirements and/or local, national and/or international safety codes as required by the application. AutomationDirect cannot certify that our products, used solely or in conjunction with other AutomationDirect or other vendors' products, will assure safety for any application. Any person using or applying any products sold by AutomationDirect is responsible for learning the safety requirements for their individual application and applying them, and therefore assumes all risks, and accepts full and complete responsibility, for the selection and suitability of the product for their respective application.*

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