

Proximity Sensors

Inductive Sensors

Inductive Proximity Sensors are used when the target or object to be sensed is metal. Inductive types are the most widely used proximity sensors for industrial applications.

Typical Applications

- Parts Detection
- Parts Counting
- Positioning
- Broken Tool Detection
- Indexing
- Robotics and Conveyors
- Motion and Speed Control
- Punch Press Feed and Ejection Control
- Parts Inspection
- Parts Diverting

Capacitive Sensors

Capacitive Sensors can sense conducting and non-conducting materials in solid, powder or liquid form. The higher the dielectric constant of the target material, the greater the sensing range.

Typical Applications

- Liquid Level Control
- Package Inspection (Content and Fill Level)
- Plastic Pellet Detection
- Wire Break Detection

Inductive and Capacitive Proximity Sensors Identification Codes

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Product Group	—			Type/Size of Housing	Output	Type of Output	—			Sensing Distance	—		Options	—		
1	K	=	Non-contact proximity sensor	7	Example				10	Dash						
2	I	=	Inductive		03 = 3 mm dia				11-13	Sensing distance						
	C	=	Capacitive		40 = 40 mm dia					Example:						
3	B	=	Flush/shielded		format for other shapes:					1.5 = 1.5 mm						
	N	=	Non-flush/Non-shielded		digits 5, 6 and 7					002 = 2.0 mm						
	A	=	Adjustable flush/non-flush via sensitivity control		S03 = 3.5 mm slot sensor					040 = 40.0 mm						
	V	=	Sensor amplifier		Q05 = 5 x 5 x 25 mm								14	Dash		
4	Dash				Q08 = 8 x 8 x 40 mm side sensing								15	K = Short circuit protection		
5	M	=	Metric threaded metal barrel		Q80 = 8 x 8 x 40 mm middle sensing								16	L = LED		
	T	=	Metric threaded plastic barrel		Q12 = 12 x 12 x 55 mm								17	Cable length in meters		
	D	=	Cylindrical metal smooth barrel		B40 = Bar sensor									Example: 2 = 2 meters		
	R	=	Cylindrical plastic smooth barrel		E50 = 50 x 25 x 55 mm									6 = 6 meters		
	Q	=	Rectangular metal housing		E28 = 28 x 16 x 11 mm									S = Socket		
	P	=	PG threaded metal barrel		E40 = 40 x 26 x 12 mm									E = Sensor with extended sensing range		
	E	=	Rectangular plastic housing		N40 = 40 x 40 x 40 mm									V = Short body housing		
	S	=	Slot type sensor		N04 = 40 x 40 x 72.5 mm									P = Potentiometer		
	N	=	DIN standard housing		N44 = 40 x 40 x 112 mm									PU = Polyurethane cable		
	B	=	Bar sensor		E68 = 68 x 30 x 15 mm									SD = Plug with terminals according to DIN standard usually comes with plug fitted		
6	If the housing is cylindrical or barrel, the two digit code refers to the diameter in millimeters.				E80 = 80 x 30 x 20 mm									SM = Mini socket snap fit (quick disconnect)		
						8	P = PNP							S8 = M8 quick disconnect screw type		
							N = NPN							S12 = M12 quick disconnect screw type		
							A = AC2-wire							SM8 = M8 quick disconnect universal snap and screw		
							E = Namur							N = Stainless steel		
							Z = DC2-wire							F = High switching frequency		
							M = AC/DC-multivoltage							C = High chemical resistance surface		
							R = Relay							T = High temperature		
							Q = Triac									
							T = Thyristor AC3-wire									
							G = Push/Pull									
							D = NPN/PNP									
								9	S = Normally open							
									O = Normally closed							
									P = Programmable switch selectable NO/NC							
									A = Analog							
									U = Complementary 4-wire NO/NC							

Inductive Proximity Sensors

4mm dia. - Smooth Metal Barrel
 M4, M5, M8, M12, M18, M30 - Threaded Metal Barrel
 All with potted - in Cable - 6 Feet Long
 Input Voltage: 10-30 Volts DC - 3 Wire
 Output Type: NPN (sinking) or PNP (sourcing)
 - Normally Open



- NEMA 4
- Temperature range -13°F + 158°F
- Short circuit protected
- Reverse polarity protected
- Transient noise protected
- LED function, Output energized

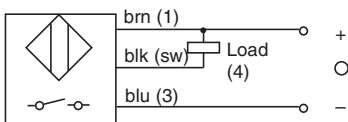


Sensor Selection

Type and Construction	Sensing Range	Mounting	Switching Function	Switching Freq. Hz	Output Current	Model	Part Number
4mm Dia.	0.8 mm	Flush	NPN/NO	3000	200 mA	KIB-D04NS/0.8 KL2PU	650-2399-004
Smooth Metal Barrel	0.8 mm	Flush	PNP/NO	3000	200 mA	KIB-D04PS/0.8 KL2PU	650-2999-004
M4 x 0.5	0.6 mm	Flush	NPN/NO	3000	100 mA	KIB-M04NS/0.6 KL2	650-2399-018
Threaded Metal Barrel	0.6 mm	Flush	PNP/NO	3000	100 mA	KIB-M04PS/0.6 KL2	650-2999-020
M5 x 0.5	1 mm	Flush	NPN/NO	3000	200 mA	KIB-M05NS/001 KL2	650-2399-003
Threaded Metal Barrel	1 mm	Flush	PNP/NO	3000	200 mA	KIB-M05PS/001 KL2	650-2999-003
	1.5 mm	Flush	NPN/NO	1000	200 mA	KIB-M08NS/1.5 KL2	693-2301-001
M8 x 1	1.5 mm	Flush	PNP/NO	1000	200 mA	KIB-M08PS/1.5 KL2	693-2901-001
Threaded Metal Barrel	2 mm	Non-Flush	NPN/NO	1000	200 mA	KIN-M08NS/002 KL2	650-2316-003
	2 mm	Non-Flush	PNP/NO	1000	200 mA	KIN-M08PS/002 KL2	650-2916-003
	2 mm	Flush	NPN/NO	800	200 mA	KIB-M12NS/002 KL2	693-2303-001
M12 x 1	2 mm	Flush	PNP/NO	800	200 mA	KIB-M12PS/002 KL2	693-2903-001
Threaded Metal Barrel	4 mm	Non-Flush	NPN/NO	400	200 mA	KIN-M12NS/004 KL2	693-2304-001
	4 mm	Non-Flush	PNP/NO	400	200 mA	KIN-M12PS/004 KL2	693-2904-001
M18 x 1	5 mm	Flush	NPN/NO	500	200 mA	KIB-M18NS/005 KL2	693-2305-001
Threaded Metal Barrel	5 mm	Flush	PNP/NO	500	200 mA	KIB-M18PS/005 KL2	693-2905-001
Input Voltage	8 mm	Non-Flush	NPN/NO	200	200 mA	KIN-M18NS/008 KL2	693-2306-001
10-60 VDC	8 mm	Non-Flush	PNP/NO	200	200 mA	KIN-M18PS/008 KL2	693-2906-001
M30 x 1.5	10 mm	Flush	NPN/NO	300	200 mA	KIB-M30NS/010 KL2	650-2307-135
Threaded Metal Barrel	10 mm	Flush	PNP/NO	300	200 mA	KIB-M30PS/010 KL2	650-2907-068
Input Voltage	15 mm	Non-Flush	NPN/NO	100	200 mA	KIN-M30NS/015 KL2	650-2308-001
10-60 VDC	15 mm	Non-Flush	PNP/NO	100	200 mA	KIN-M30PS/015 KL2	650-2908-002

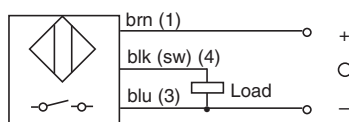
mm x .03937 = inches

Wiring Diagrams



NPN – Normally Open

During operation, output NPN transistor is switched to negative.



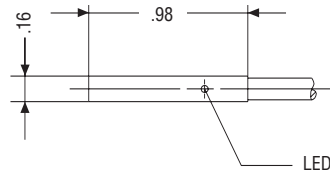
PNP – Normally Open

During operation, output of PNP transistor is switched to positive.

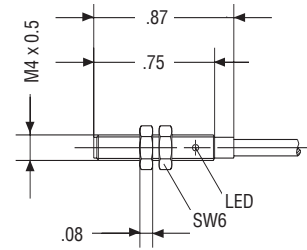
brn = Brown
 blk = Black
 blu = Blue
 sw = Switch

For Brackets see Page 23.

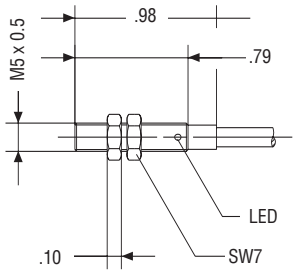
Mechanical Data (Dimensions are in inches)



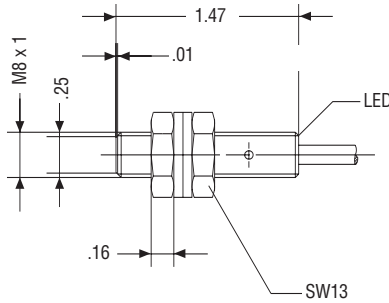
4 mm Dia.



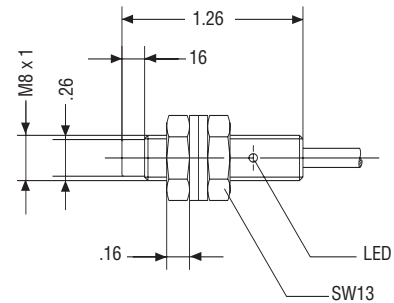
M4 x 0.5



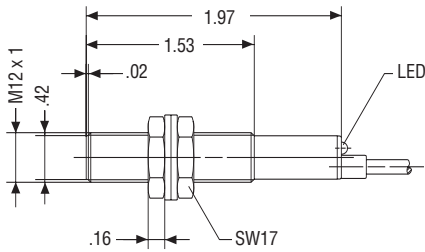
M5 x 0.5



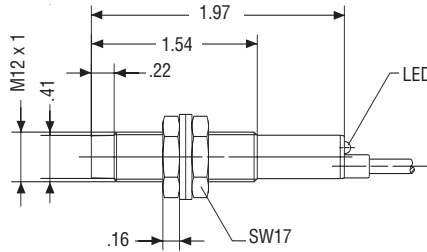
M8 x 1 Flush



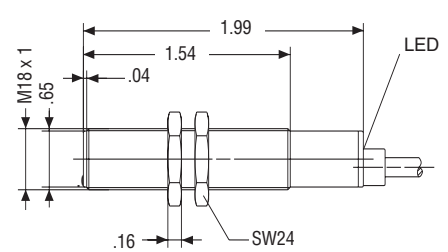
M8 x 1 Non-Flush



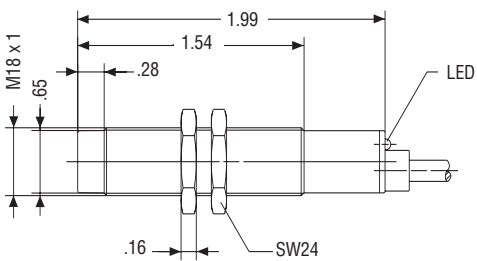
M12 x 1 Flush



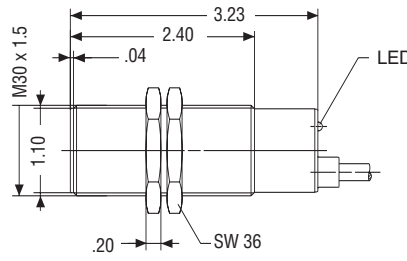
M12 x 1 Non-Flush



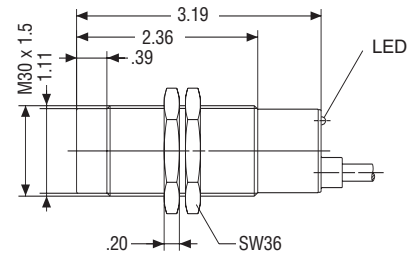
M18 x 1 Flush



M18 x 1 Non-Flush



M30 x 1.5 Flush



M30 x 1.5 Non-Flush

Inductive Proximity Sensors

M8, M12, M18, M30 - Threaded Metal Barrel
M12 x 1 Quick Disconnect/M8 x 1 Quick Disconnect
Input Voltage: 10-30 Volts DC-3 Wire
Output Types: NPN (sinking) or PNP (sourcing)
- Normally Open

- NEMA 4
- Temperature range -13°F + 158°F
- Short circuit protected
- Reverse polarity protected
- Transient noise protected
- LED function, Output energized



Sensor Selection

Type and Construction	Sensing Range	Mounting	Switching Function	Switching Freq. Hz	Output Current	Model	Part Number
M8 x 1*	1.5 mm	Flush	NPN/NO	1000	200 mA	KIB-M08NS/1.5 KLSM8*	693-2342-001
Threaded Metal Barrel	1.5 mm	Flush	PNP/NO	1000	200 mA	KIB-M08PS/1.5 KLSM8*	693-2942-001
Quick Disconnect	2 mm	Non-Flush	NPN/NO	1000	200 mA	KIN-M08NS/002 KLSM8*	650-2342-004
* USE M8 QD	2 mm	Non-Flush	PNP/NO	1000	200 mA	KIN-M08PS/002 KLSM8*	650-2942-006
M12 x 1	2 mm	Flush	NPN/NO	800	200 mA	KIB-M12NS/002 KLS12	693-2343-001
Threaded Metal Barrel	2 mm	Flush	PNP/NO	800	200 mA	KIB-M12PS/002 KLS12	693-2943-001
Quick Disconnect	4 mm	Non-Flush	NPN/NO	400	200 mA	KIN-M12NS/004 KLS12	693-2344-001
	4 mm	Non-Flush	PNP/NO	400	200 mA	KIN-M12PS/004 KLS12	693-2944-001
M18 x 1	5 mm	Flush	NPN/NO	500	200 mA	KIB-M18NS/005 KLS12	693-2305-004
Threaded Metal Barrel	5 mm	Flush	PNP/NO	500	200 mA	KIB-M18PS/005 KLS12	693-2905-004
Quick Disconnect	8 mm	Non-Flush	NPN/NO	200	200 mA	KIN-M18NS/008 KLS12	693-2306-004
10-60 VDC	8 mm	Non-Flush	PNP/NO	200	200 mA	KIN-M18PS/008 KLS12	693-2906-004
M30 x 1							
Threaded Metal Barrel	10 mm	Flush	PNP/NO	300	200 mA	KIB-M30PS/010 KLS12	650-2939-004
Quick Disconnect							
10-60 VDC	15 mm	Non-Flush	PNP/NO	100	200 mA	KIN-M30PS/015 KLS12	650-2935-005

mm x .03937 = inches

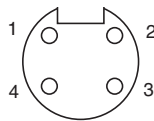
Quick Disconnect Selection (Available in 2M or 5M Cable Lengths)

M12 x 1

Quick Disconnects with Lock Nuts

Terminal Code

- 1 = brown
- 2 = black
- 3 = blue

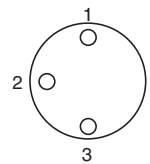


M8 x 1

Quick Disconnects with Lock Nuts

Terminal Code

- 1 = brown
- 2 = black
- 3 = blue



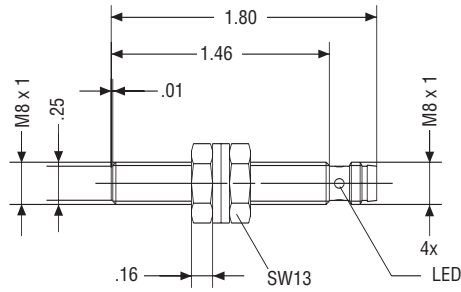
For M12 and M18 Sensors

For M8 Sensors

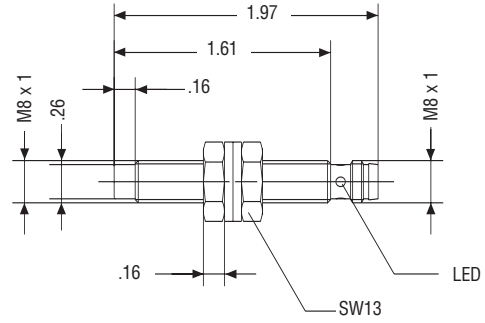
Cable Length	Model	Part #	3-wire	3-wire
2 Meters	WDK-M12US/S00-2	413-9100-280	GDK-M08US/S00-2.5PU 413-9100-261	WDK-M08US/S00-2.5PU 413-9100-278
5 Meters	WDK-M12US/S00-5	413-9100-281	GDK-M08US/S00-5PU 413-9100-263	WDK-M08US/S00-5PU 413-9100-279

For Brackets see Page 23.

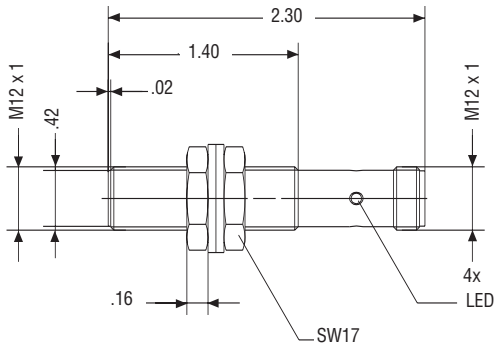
Mechanical Data (Dimensions are in inches)



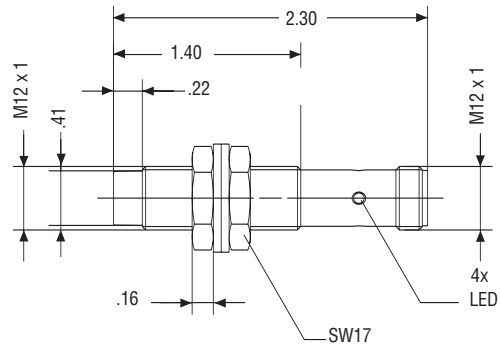
M8 x 1 Flush



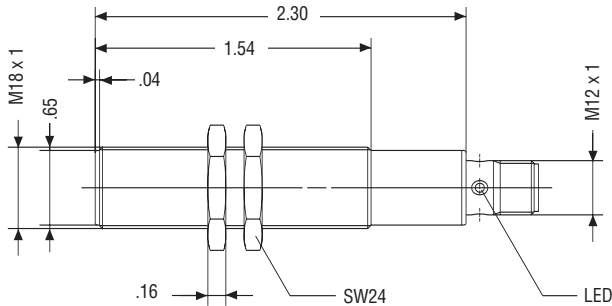
M8 x 1 Non-Flush



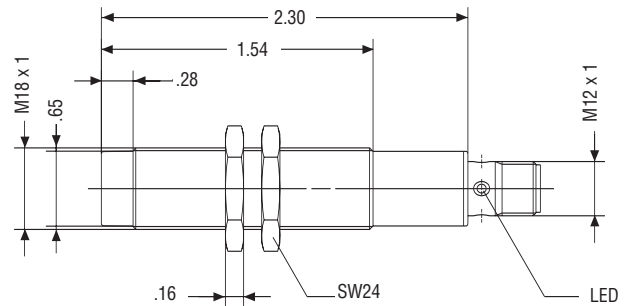
M12 x 1 Flush



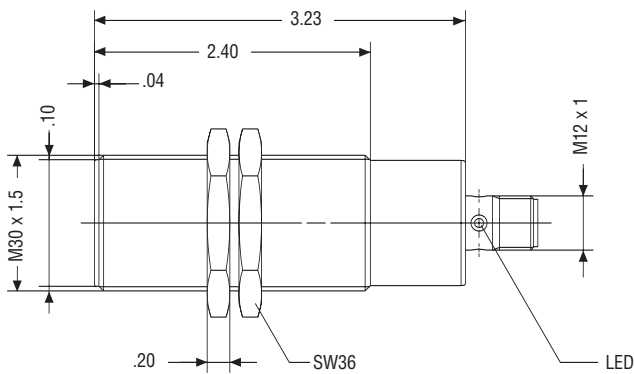
M12 x 1 Non-Flush



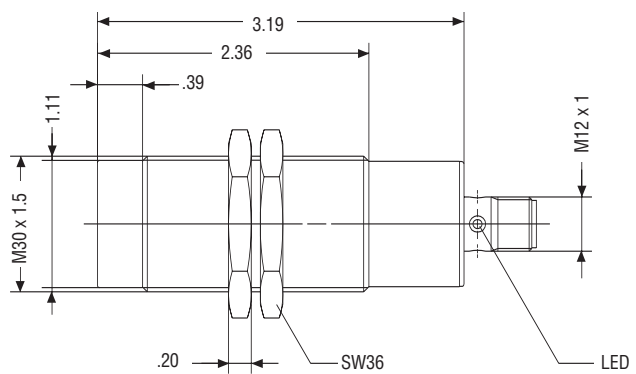
M18 x 1 Flush



M18 x 1 Non-Flush



M30 x 1.5 Flush



M30 x 1.5 Non-Flush

Inductive Proximity Sensors

2 Wire AC

M12, M18, M30 - Threaded Metal Barrel

With Potted - in Cable - 6 Feet Long

M18 - Threaded Metal Barrel

With M12 x 1 Quick Disconnect

Input Voltage: 2 Wire AC

Output: Normally Open

- NEMA 4
- Temperature range -13°F + 158°F
- Cable length, 2 meters (standard length)
- LED function, Output energized on cable version only
- Switching frequency 10 hertz



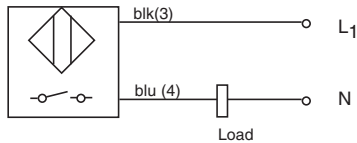
Sensor Selection

Type and Construction	Sensing Range	Mounting	Switching Function	Input Voltage	Output Current	Model	Part Number
M12 x 1 Integral Cable	2 mm	Flush	NO	90-250 VAC	4/180 mA	KIB-M12AS/002 L2	650-3503-001
Threaded Metal Barrel	4 mm	Non-Flush	NO	90-250 VAC	4/180 mA	KIN-M12AS/004 L2	650-3504-001
M18 x 1 Integral Cable	5 mm	Flush	NO	20-250 VAC	4/400 mA	KIB-M18AS/005 L2	650-3505-004
Threaded Metal Barrel	8 mm	Non-Flush	NO	20-250 VAC	4/400 mA	KIN-M18AS/008 L2	650-3506-002
M30 x 1.5 Integral Cable	10 mm	Flush	NO	20-250 VAC	4/400 mA	KIB-M30AS/010 L2	650-3507-378
Threaded Metal Barrel	15 mm	Non-Flush	NO	20-250 VAC	4/400 mA	KIN-M30AS/015 L2	650-3508-246

mm x .3937 = inches

Wiring Diagram

For Sensors with Integral Cable



**AC – 2-wire
Normally Open**

During operation, a thyristor which is positioned above a rectifier bridge applies the load to the operating voltage.

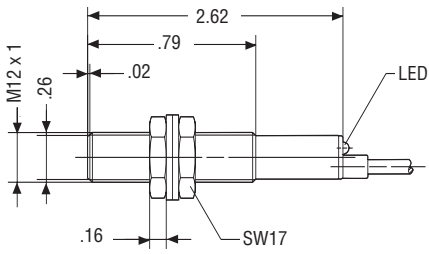
blk = black

blu = blue

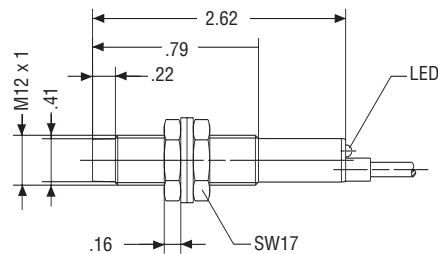
For Brackets see Page 23.

Mechanical Data (Dimensions are in inches)

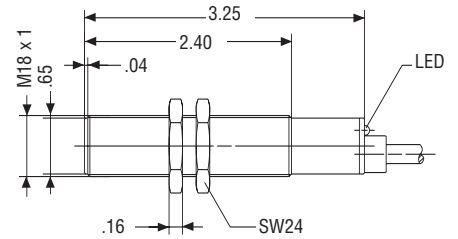
2 Wire AC



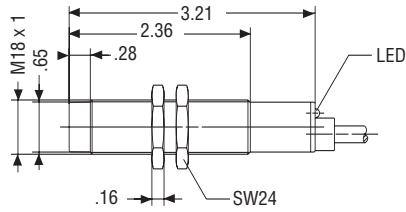
M12 x 1 Flush



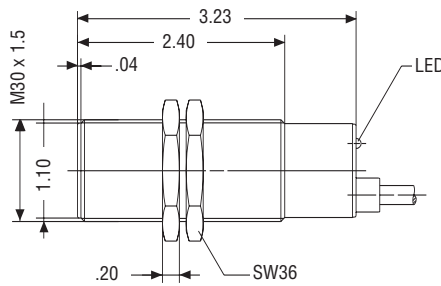
M12 x 1 Non-Flush



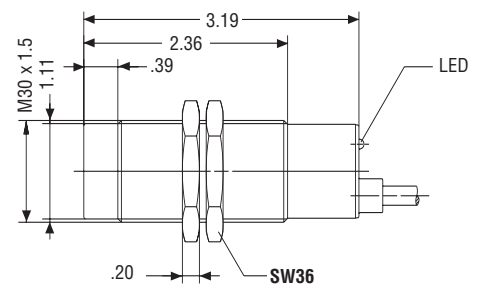
M18 x 1 Flush



M18 x 1 Non-Flush

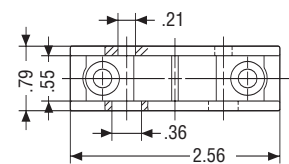
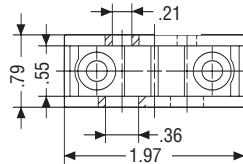
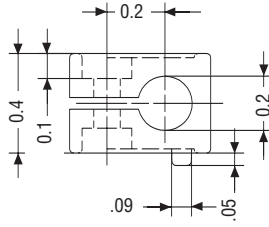
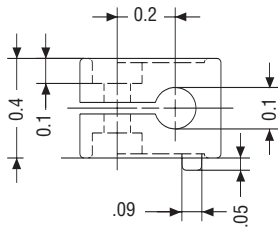
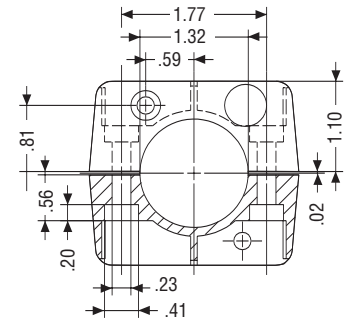
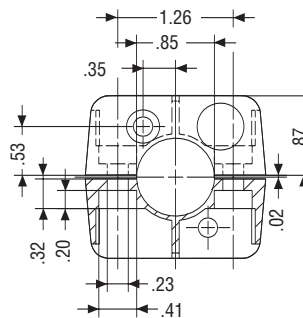
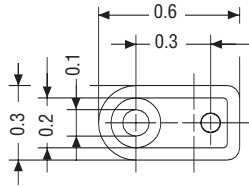
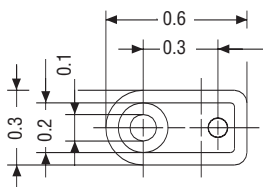


M30 x 1.5 Flush



M30 x 1.5 Non-Flush

Brackets



Model BKB-D04PA
Part # 596-0223-069

Model BKS-D05PA
Part # 596-0223-070

Model BKS-D22PA
Part # 596-0223-040

Model BKS-D34PA
Part # 596-0223-041