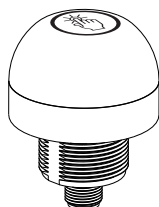


EZ-LIGHT® Touch K50 Series Illuminated Multipurpose Buttons



Datasheet

General Purpose Multicolor Indicator with Independent Momentary Touch Button Output



- Rugged, cost-effective, and easy-to-install multicolor indicator with touch button
- Waterproof IP69K construction for washdown environments
- Three independent colors in one unit—Color 3 overrides Colors 1 and 2, Color 2 overrides Color 1
- Available with PNP and NPN inputs/outputs, depending on model
- Ergonomically designed to eliminate hand, wrist, and arm stresses associated with repeated switch operation; require no physical force to operate
- Can be actuated with bare hands or in gloves
- 12 V dc to 30 V dc operation



WARNING: Not To Be Used for Personnel Protection

Never use this device as a sensing device for personnel **protection**. Doing so could lead to serious injury or death. This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition.

Models

Model ¹	I/O Type	Output State	Color 1	Color 2	Color 3	Connection
K50APTGRYF2Q	PNP	N.O.	Green	Red	Yellow	Integral 8-pin M12/Euro-style male quick disconnect (QD)
K50RPTGRYF2Q		N.C.				
K50ANTGRYF2Q	NPN	N.O.				
K50RNTGRYF2Q		N.C.				

Indicator and Output Behavior

Table 1: PNP Models

Input Actions				Touch Button Actions		
Input #1: Pin 3 Green Wire	Input #2: Pin 8 Red Wire	Input #3: Pin 4 Yellow Wire	LED Color	Output Type	Touch	Output: Pin 1 White Wire
Open or -Vdc	Open or -Vdc	Open or -Vdc	Light Off	N.O.	Not touched	PNP Output Off
+V dc	Open or -Vdc	Open or -Vdc	Color #1 On		Touched	PNP Output On
+V dc	+V dc	Open or -Vdc	Color #2 On	N.C.	Not touched	PNP Output On
+V dc	+V dc	+V dc	Color #3 On		Touched	PNP Output Off
Open or -Vdc	+V dc	Open or -Vdc	Color #2 On			
Open or -Vdc	+V dc	+V dc	Color #3 On			
Open or -Vdc	Open or -Vdc	+V dc	Color #3 On			
+V dc	Open or -Vdc	+V dc	Color #3 On			

¹

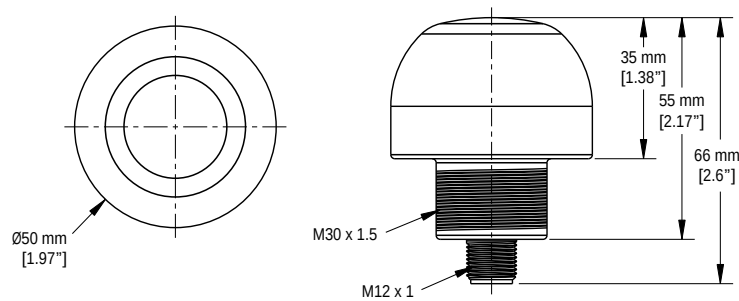
- To order the 2 m (6.5 ft) PVC cable model, omit the suffix "Q" in the model number. For example, K50APTGRYF2.
- To order the 150 mm (6 in) PVC cable model with an 8-pin M12/Euro-style quick disconnect, replace the suffix "Q" with "QP" in the model number. For example, K50APTGRYF2QP.
- Models with a quick disconnect require a mating cordset.



Table 2: NPN Models

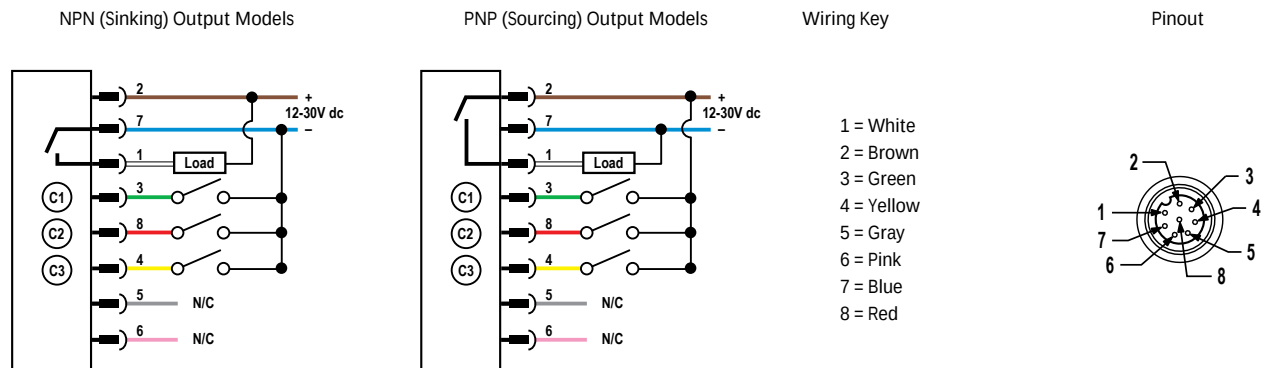
Input Actions				Touch Button Actions		
Input #1: Pin 3 Green Wire	Input #2: Pin 8 Red Wire	Input #3: Pin 4 Yellow Wire	LED Color	Output Type	Touch	Output: Pin 1 White Wire
Open or +V dc	Open or +V dc	Open or +V dc	Light Off	N.O.	Not touched	NPN Output Off
-Vdc	Open or +V dc	Open or +V dc	Color #1 On		Touched	NPN Output On
-Vdc	-Vdc	Open or +V dc	Color #2 On	N.C.	Not touched	NPN Output On
-Vdc	-Vdc	-Vdc	Color #3 On		Touched	NPN Output Off
Open or +V dc	-Vdc	Open or +V dc	Color #2 On			
Open or +V dc	-Vdc	-Vdc	Color #3 On			
Open or +V dc	Open or +V dc	-Vdc	Color #3 On			
-Vdc	Open or +V dc	-Vdc	Color #3 On			

Dimensions



All measurements are listed in millimeters [inches], unless noted otherwise.

Wiring Diagram



Specifications

Supply Voltage
12 V dc to 30 V dc

Supply Current
< 75 mA max current at 12 V dc (exclusive of load)
< 50 mA max current at 30 V dc (exclusive of load)

Supply Protection Circuitry
Protected against reverse polarity and transient voltages

Connections
8-pin integral M12/Euro-style QD, 2 m (6.5 ft) PVC integral cable, or 8-pin 150 mm (6 in) M12/Euro-style PVC cable QD

Mounting
M30 × 1.5 Threaded base Max torque 4.5 N·m (40 in·lbf)

Power-Up Delay
300 milliseconds

Output Rating

Maximum load: 150 mA
 ON-state saturation voltage: < 2 V dc at 10 mA; < 2.5 V dc at 150 mA
 OFF-state leakage current: <10 µA at 30 V dc

Environmental Rating

IEC IP67, IP69K per DIN 40050-9.
 Cabled models also meet IP69K if the cable and cable entrance are protected from high-pressure spray.

Output Response Time

50 milliseconds On and Off

Operating Conditions

-40 °C to +50 °C (-40 °F to +122 °F)
 90% at 50 °C maximum relative humidity (non-condensing)

Storage

-40 °C to +70 °C (-40 °F to +158 °F)

Construction

Housing: polycarbonate
 Translucent dome: polycarbonate
 Mounting nut: PBT

Vibration and Mechanical Shock

All models meet Mil. Std. 202F requirements method 201A (vibration: 10 Hz to 60 Hz max., double amplitude 0.06 in. maximum acceleration 10G). Also meets IEC 947-5-2; 30G 11 ms duration, half sine wave.

Certifications**Indicator Lumens**

Color	Typical Wavelength	Typical Intensity (lm)
Green	525 nm	29
Red	625 nm	13
Yellow	591 nm	24

Required Overcurrent Protection

WARNING: Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

Overcurrent protection is required to be provided by end product application per the supplied table.

Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.

Supply wiring leads < 24 AWG shall not be spliced.

For additional product support, go to www.bannerengineering.com.

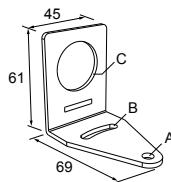
Supply Wiring (AWG)	Required Overcurrent Protection (Amps)
20	5.0
22	3.0
24	2.0
26	1.0
28	0.8
30	0.5

Accessories

Brackets

SMB30A

- Right-angle bracket with curved slot for versatile orientation
- Clearance for M6 (¼ in) hardware
- Mounting hole for 30 mm sensor
- 12-ga. stainless steel

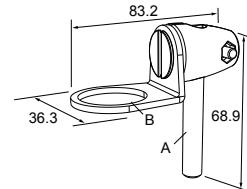


Hole center spacing: A to B=40

Hole size: A=Ø 6.3, B= 27.1 x 6.3, C=Ø 30.5

SMB30FA

- Swivel bracket with tilt and pan movement for precise adjustment
- Mounting hole for 30 mm sensor
- 12-ga. 304 stainless steel
- Easy sensor mounting to extrude rail T-slot
- Metric and inch size bolt available

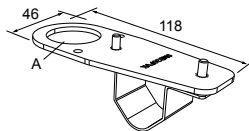


Bolt thread: SMB30FA, A= 3/8 - 16 x 2 in; SMB30FAM10, A= M10 - 1.5 x 50

Hole size: B= Ø 30.1

SMB30FVK

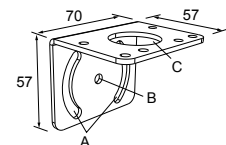
- V-clamp, flat bracket and fasteners for mounting to pipe or extensions
- Clamp accommodates 28 mm dia. tubing or 1 in. square extrusions
- 30 mm hole for mounting sensors



Hole size: A= Ø 31

SMB30MM

- 12-ga. stainless steel bracket with curved mounting slots for versatile orientation
- Clearance for M6 (¼ in) hardware
- Mounting hole for 30 mm sensor

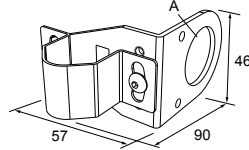


Hole center spacing: A = 51, A to B = 25.4

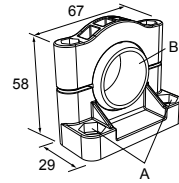
Hole size: A = 42.6 x 7, B = Ø 6.4, C = Ø 30.1

SMB30RAVK

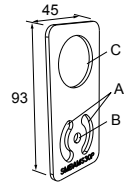
- V-clamp, right-angle bracket and fasteners for mounting sensors to pipe or extrusion
- Clamp accommodates 28 mm dia. tubing or 1 in. square extrusions
- 30 mm hole for mounting sensors

Hole size: A = $\varnothing$ 30.5**SMB30SC**

- Swivel bracket with 30 mm mounting hole for sensor
- Black reinforced thermoplastic polyester
- Stainless steel mounting and swivel locking hardware included

Hole center spacing: A= $\varnothing$ 50.8Hole size: A= $\varnothing$ 7.0, B= $\varnothing$ 30.0**SMBAMS30P**

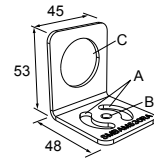
- Flat SMBAMS series bracket
- 30 mm hole for mounting sensors
- Articulation slots for 90°+ rotation
- 12-ga. 300 series stainless steel



Hole center spacing: A=26.0, A to B=13.0

Hole size: A=26.8 x 7.0, B= $\varnothing$ 6.5, C= $\varnothing$ 31.0**SMBAMS30RA**

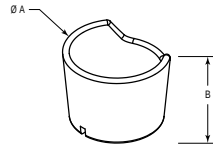
- Right-angle SMBAMS series bracket
- 30 mm hole for mounting sensors
- Articulation slots for 90°+ rotation
- 12-ga. (2.6 mm) cold-rolled steel



Hole center spacing: A=26.0, A to B=13.0

Hole size: A=26.8 x 7.0, B= $\varnothing$ 6.5, C= $\varnothing$ 31.0**TC-K50-CL**

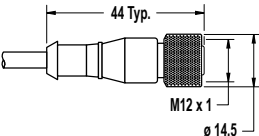
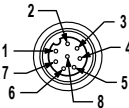
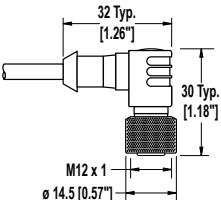
- Touch cover



Diameter: A = 67 mm

Height: B = 42.5 mm

Cordsets

8-Pin Threaded M12/Euro-Style Cordsets with Open-Shield				
Model	Length	Style	Dimensions	Pinout (Female)
MQDC2S-806	1.83 m (6 ft)	Straight		 1 = White 2 = Brown 3 = Green 4 = Yellow 5 = Gray 6 = Pink 7 = Blue 8 = Red
MQDC2S-815	4.57 m (15 ft)			
MQDC2S-830	9.14 m (30 ft)			
MQDC2S-850	15.2 m (50 ft)			
MQDC2S-806RA	1.83 m (6 ft)	Right-Angle		
MQDC2S-815RA	4.57 m (15 ft)			
MQDC2S-830RA	9.14 m (30 ft)			
MQDC2S-850RA	15.2 m (50 ft)			

1 = White
 2 = Brown
 3 = Green
 4 = Yellow
 5 = Gray
 6 = Pink
 7 = Blue
 8 = Red

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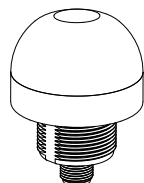
www.bannerengineering.com.

EZ-LIGHT K50 Modbus Series Pick-to-Light Sensors

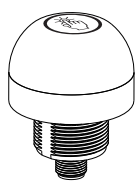


Datasheet

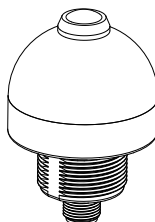
Compact, single-point devices for error-proofing of bin-picking operations



Fixed field and polarized retroreflective models



Capacitive touch models



Push button models

- Rugged, cost-effective, and easy-to-install solutions for error-proofing and parts-verification applications
- Illuminated dome provides easy-to-see job light status
- Choose either polarized retroreflective, fixed-field, touch, or push button models
- Fully encapsulated IP67 construction
- Modbus RTU communication minimizes the cabling requirements

Models	Sensing Mode	Range	Colors	Connection
K50FF25GRYS1Q	Fixed field, infrared, 880 nm	25 mm cutoff	Green, Red, Yellow	Integral 4-pin M12/Euro-style male quick disconnect (QD)
K50FF25GRYS1QP				150 mm (6 in) pigtail PVC cable with a 4-pin M12/Euro-style male quick disconnect (QD)
K50FF50GRYS1Q		50 mm cutoff		Integral 4-pin M12/Euro-style male quick disconnect (QD)
K50FF50GRYS1QP				150 mm (6 in) pigtail PVC cable with a 4-pin M12/Euro-style male quick disconnect (QD)
K50FF100GRYS1Q		100 mm cutoff		Integral 4-pin M12/Euro-style male quick disconnect (QD)
K50FF100GRYS1QP				150 mm (6 in) pigtail PVC cable with a 4-pin M12/Euro-style male quick disconnect (QD)
K50LPGRYS1Q	Polarized Retroreflective, visible red, 680 nm	2 m (6 ft)		Integral 4-pin M12/Euro-style male quick disconnect (QD)
K50LPGRYS1QP				150 mm (6 in) pigtail PVC cable with a 4-pin M12/Euro-style male quick disconnect (QD)
K50TGRYS1Q	Capacitive Touch	N/A		Integral 4-pin M12/Euro-style male quick disconnect (QD)
K50TGRYS1QP				150 mm (6 in) pigtail PVC cable with a 4-pin M12/Euro-style male quick disconnect (QD)
K50PBGRYS1Q	Push Button			Integral 4-pin M12/Euro-style male quick disconnect (QD)
K50PBGRYS1QP				150 mm (6 in) pigtail PVC cable with a 4-pin M12/Euro-style male quick disconnect (QD)

Wiring

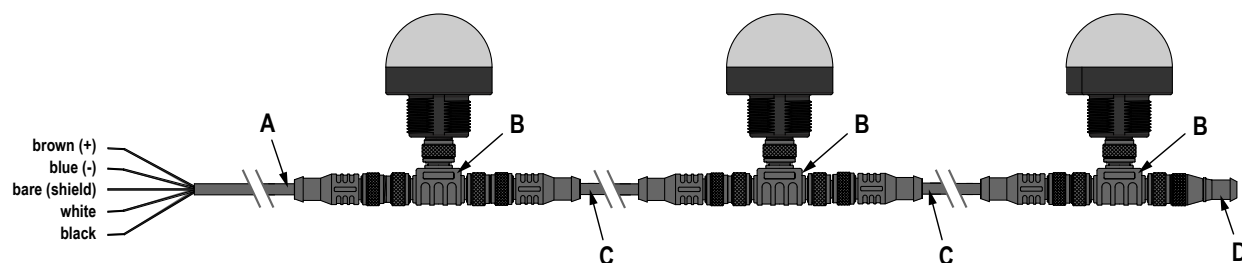
4-pin M12/Euro-style Quick Disconnect Fitting (Male)	Pins	Wire Color	Sensor Connection
	1	Brown	Power IN (+), 12 to 30 V dc
	2	White	RS-485 +
	3	Blue	Ground (-)
	4	Black	RS-485 (-)

- For cables, use Turck's BL ident® cables or their equivalent. For example:
 - RK 4.5T-2-RS 4.5T/S2501 2 meter double-ended male/female
 - RK 4.5T-1-RS 4.5T/S2501 1 meter double-ended male/female



- RK 4.5T-2/S2501 single ended 2 meter female
- For tees, use Turck RSC 2RKC 57
- For terminators, use Banner model EZL-RTM-M or EZL-RTM-F

Typical Installation



- A Single-ended cable
- B Tee
- C Double-ended cable
- D Terminator. Contains a 120 Ohm termination resistor connected across pins 2 and 4. Use the terminator for long cables or long lines of cascaded units to prevent signal reflections from occurring on the communication lines.

	Pin	Wire Color
	1	Brown
	2	White
	3	Blue
	4	Black
	5	Bare (Shield). Connect the shield to ground at the power supply connection.

Modbus RTU Registers

The EZ-LIGHT uses the holding registers table for providing read/write access to configuration data. The holding registers are defined in the 40000-49999 address range.

The input registers table is used for providing read-only access to system status data. The input registers are defined in the 30000-39999 address range. EZ-Light employs a direct addressing scheme. For example, the input register at address 30000 is accessed by reading address 30000 (0x7530) directly; the starting address is not an offset.

Supported Modbus RTU Functions

Functions	Output Status
03	Reading holding registers
04	Read input registers
06	Write single registers
08	See Diagnostics, Function 8 (0x08) on page 5 for supported commands.
16 (0x10)	Write multiple registers
23 (0x17)	Read/write multiple registers

Holding Registers

Address	Description	Holding Register Representation
40001	Modbus slave address	1 (default) through 247

Address	Description	Holding Register Representation
40002	Baud	0 = 9.6k 1 = 19.2k (default) 2 = 38.4k
40003	Parity	0 = even (default) 1 = odd 2 = none
40004	Stop bits	1 = 1 stop bit (default) 2 = 2 stop bits
40005	Configuration Select	0 = No selectable configuration 1 = Function F2 configuration 2 = Function C3 configuration 3 = Function E5 configuration
40006	Modbus Settings Policy	0 = Apply After Power Cycle (default) 1 = Apply After Write Exception: Writing 'Configuration Select' takes effect immediately. The maximum time to program a new configuration is two seconds.
40100	Job 1 Input Register	0 = Job Inactive (power on value) 1 = Job Active
40101 *	Job 2 Input Register	0 = Job Inactive (power on value) 1 = Job Active
40102 *	Job 3 Input Register	0 = Job Inactive (power on value) 1 = Job Active

* Not in all configurations.

Function F2 Configuration

Three job lights, independent output; lights are independent of output. Color 2 overrides color 1, and color 3 overrides colors 1 and 2.

Job input 1	Job input 2	Job Input 3	FF 'Hand / Pick' Configuration #182186	LP 'Block' Configuration #183942	Touch / Push Button Configuration #188525	Sensor Output	Sensor Color
Not active	Not active	Not active	Not detected	Unblocked	No touch or push button inactive	Not active	Light off
Active	Not active	Not active	Not detected	Unblocked		Not active	Job 1 light on
Active	Not active	Not active	Detected	Blocked	Touch or push button active	Active	Job 1 light on
Not active	Active	Not active	Not detected	Unblocked	No touch or push button inactive	Not active	Job 2 light on
Not active	Active	Not active	Detected	Blocked	Touch or push button active	Active	Job 2 light on
Not active	Not active	Active	Not detected	Unblocked	No touch or push button inactive	Not active	Job 3 light on
Not active	Not active	Active	Detected	Blocked	Touch or push button active	Active	Job 3 light on
Active	Active	Not active	Not detected	Unblocked	No touch or push button inactive	Not active	Job 2 light on
Active	Active	Not active	Detected	Blocked	Touch or push button active	Active	Job 2 light on
Active	Not active	Active	Not detected	Unblocked	No touch or push button inactive	Not active	Job 3 light on
Active	Not active	Active	Detected	Blocked	Touch or push button active	Active	Job 3 light on
Not active	Active	Active	Not detected	Unblocked	No touch or push button inactive	Not active	Job 3 light on
Not active	Active	Active	Detected	Blocked	Touch or push button active	Active	Job 3 light on
Active	Active	Active	Not detected	Unblocked	No touch or push button inactive	Not active	Job 3 light on
Active	Active	Active	Detected	Blocked	Touch or push button active	Active	Job 3 light on

Function C3

Three colors used for Job, Mis-pick, and Acknowledge lights. The Acknowledge light overrides the Job light and incorporates a 500 ms leading-edge output/indicator light OFF delay. Time-out is initiated at the onset of the signal. If the target is present for longer than 500 ms and then removed, the output/indicator immediately turns off. The output and indicator lights' (Mis-pick and Acknowledge) time-outs track together.

Job input	FF 'Hand/Pick' Configuration #183940	LP 'Block' Configuration #183943	Touch/Push Button Configuration #188523	Sensor Output	Sensor Color
Not active	Not detected	Unblocked	No touch or push button inactive	Not active	Light off
Not active	Detected	Blocked	Touch or push button active	Active	Red Mis-pick light on
Active	Not detected	Unblocked	No touch or push button inactive	Not active	Green Job light on
Active	Detected	Blocked	Touch or push button active	Active	Yellow Acknowledge light on

Function E5

Three colors: two Job lights and one Sense light. Both Job lights override the Sense light; and Job light 1 overrides Job light 2.

Job input 1	Job input 2	FF 'Hand/Pick' Configuration #184292	LP 'Block' Configuration #184293	Touch/Push Button Configuration #188524	Sensor Output	Sensor Color
Not active	Not active	Not detected	Unblocked	No touch or push button inactive	Not active	Light off
Not active	Not active	Detected	Blocked	Touch or push button active	Active	Yellow Sense light on
Active	Not active	Not detected	Unblocked	No touch or push button inactive	Not active	Green Job 1 light on
Active	Not active	Detected	Blocked	Touch or push button active	Active	Green Job 1 light on
Not active	Active	Not detected	Unblocked	No touch or push button inactive	Active	Red Job 2 light on
Not active	Active	Detected	Blocked	Touch or push button active	Active	Red Job 2 light on
Active	Active	Not detected	Unblocked	No touch or push button inactive	Not active	Red Job 2 light on
Active	Active	Detected	Blocked	Touch or push button active	Active	Red Job 2 light on

Input Registers

Address	Description	Input Register Representation
30001	Sensor output status	0 = Not Sensed, 1 = Sensed
The following information registers (31000–31022) must be read as a block; they cannot be read as single registers.		
31000	Low word firmware part number	Example: 0x0002A734 (hex) = 173876 (dec) High word = 0x0002, Low word = 0xA734
31001	High word firmware part number	
31002	Firmware version	Bits 7–4 = Major Version Bits 3–0 = Minor Version. Example: 0x0012 is version 1.2
31003	Build number	0–0xFFFF (hex) = 0–65535 (dec)
31004	Low word model number	Example: 0x00016D43 (hex) = 93507 (dec) High word = 0x0001, Low word = 0x6D43
31005	High word model number	
31006	Model version	Bits 7–4 = Major Version Bits 3–0 = Minor Version. Example: 0x0012 is version 1.2

Address	Description	Input Register Representation
31007	Low word configuration number	Example: 0x0002C7AA (hex) = 182186 (dec) High word = 0x0002, Low word = 0xC7AA (hex)
31008	High word configuration number	
31009	Configuration version	Bits 7-4=Major Version, Bits 3-0=Minor Version. Example:0x0012 is version 1.2
31013–31013	Date code, 8 bytes	
31014	Low Word Flash Config 1 Part Number	Example: 0x0002C7AA (hex) = 182186 (dec) High word=0x0002, Low word: 0xC7AA 0xFFFFFFFF (hex) = No flash configuration
31015	High Word Flash Config 1 Part Number	
31016	Flash Config 1 Version	Bits 7–4 = Major Version Bits 3–0 = Minor Version 0x00FF = No flash version
31017	Low Word Flash Config 2 Part Number	Example: 0x0002CE84 (hex) = 183940 (dec) High word = 0x0002, Low word = 0xCE84 0xFFFFFFFF (hex) = No flash configuration
31018	High Word Flash Config 2 Part Number	
31019	Flash Config 2 Version	Bits 7–4 = Major Version Bits 3–0 = Minor Version 0x00FF = No flash version
31020	Low Word Flash Config 3 Part Number	Example: 0x0002CFE4 (hex) = 184292 (dec) High word = 0x0002, Low word = 0xCFE4 0xFFFFFFFF (hex) = No flash configuration
31021	High Word Flash Config 3 Part Number	
31022	Flash Config 3 Version	Bits 7–4 = Major Version Bits 3–0 = Minor Version 0x00FF = No flash version
32000	Bus Message Count	Returns same value as Diagnostic Function sub-function 11 (0x0B)
32001	Bus Communication Error Count	Returns same value as Diagnostic Function sub-function 12 (0x0C)
32002	Bus Exception Error Count	Returns same value as Diagnostic Function sub-function 13 (0x0D)
32003	Server Message Count	Returns same value as Diagnostic Function sub-function 14 (0x0E)
32004	Server NAK Count	Returns same value as Diagnostic Function sub-function 16 (0x10)
32005	Bus Character Overrun Count	Returns same value as Diagnostic Function sub-function 18 (0x12)
32006	Buffer Overrun Count	Returns the number of times a buffer overrun has occurred.

Diagnostics, Function 8 (0x08)

Subfunction	Description	
0	Return Query Data	
1	Restart Communications Option	Not supported
2	Return Diagnostic Register	Returns value of 0, any other value is an internal error condition
10 (0x0A)	Clear Counters and Diagnostic Register	
11 (0x0B)	Return Bus Message Count	
12 (0x0C)	Return Bus Communication Error Count	
13 (0x0D)	Return Bus Exception Error Count	
14 (0x0E)	Return Server Message Count	
15 (0x0F)	Return Server No Response Count	Not supported

Subfunction	Description	
16 (0X10)	Return Server NAK Count	
17 (0X11)	Return Server Busy Count	Not supported
18 (0x12)	Return Bus Character Overrun Count	
20 (0x14)	Clear Overrun Counter and Flag	

Example Commands and Responses

For these examples, the slave address is 1.

Write Color 1 Active

Master	01109CA4000102000122BD	
Response	01109CA400016E7A	

Write Color 1 Inactive

Master	01109CA40001020000E37D	
Response	01109CA400016E7A	

Read Device Status Registers

Master	0104753100023A08	Command to read both output and sensor status registers
Possible Responses	01040400000000FB84	Output Inactive, button not pressed
	010404000100016B84	Output Active, button pressed
	01040400010000AA44	Output Active, button not pressed

Write Configuration Registers

Master	01109C410003060001000100001BC3	Write three registers: Slave address 1, 19200 baud, Even parity
Response	01109C410003FE4C	

Read Configuration Registers

Master	01039C4100037B8F	Command to read all three configuration registers
Response	0103060001000100004D75	Response with slave address 1, 19200 baud, even parity

Read Information Registers

Master	010479180017295F	Command to read all info registers
Response	01042EA7340002001000026D4300010010CFE4000200106AF319E27D1240E4C7AA00020010CE8400020010CFE400020010C652	

Specifications

Supply Voltage and Current

12 to 30 V dc

Fixed field and polarized retroreflective models: 100 mA at 12 V dc;
110 mA at 30 V dc

Touch and push button models: 100 mA at 12 V dc; 65 mA at 30 V dc

Supply Protection Circuitry

Protected against reverse polarity and transient voltages

Light Intensity

Color	Wavelength (nm)	Typical Intensity (Lumen)		
		K50FF/LP	K50PB	K50T
Green	525	17	38	39
Red	625	6	13	16
Yellow	590	4	10	13

Environmental Rating

IEC IP67

Operating Conditions

-40 °C to +50 °C (-40 °F to +122 °F)

90% at +50 °C maximum relative humidity (non-condensing)

Storage: -40 °C to +70 °C (-40 °F to +158 °F)

Communication

Interface: RS-485 Serial

Baud Rates: 9.6k, 19.2k (default), or 38.4k

Data format: 8 data bits, no parity (default), 1 stop bit (even or odd parity available)

Protocol: Modbus RTU

Construction

Housing: polycarbonate

Translucent dome: polycarbonate

Mounting Nut: PBT

Connections

Integral 4-pin M12/Euro-style male quick disconnect (QD); or 150 mm (6 in) pigtail PVC cable with a 4-pin M12/Euro-style male quick disconnect (QD)

Vibration and Mechanical Shock

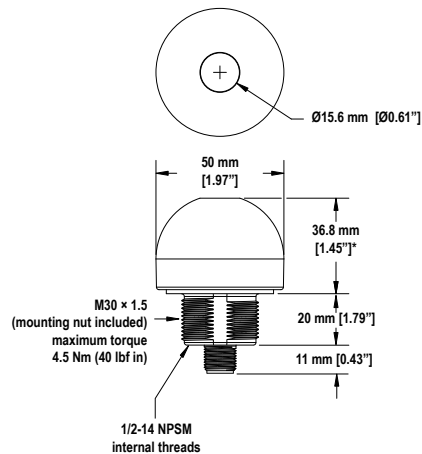
All models meet Mil Std. 202F requirements. Method 201A (vibration: 10 Hz to 60 Hz max., double amplitude 0.06 inch, maximum acceleration 10G). Also meets IEC 947-5-2 requirements: 30G 11 ms duration, half sine wave.

Certifications



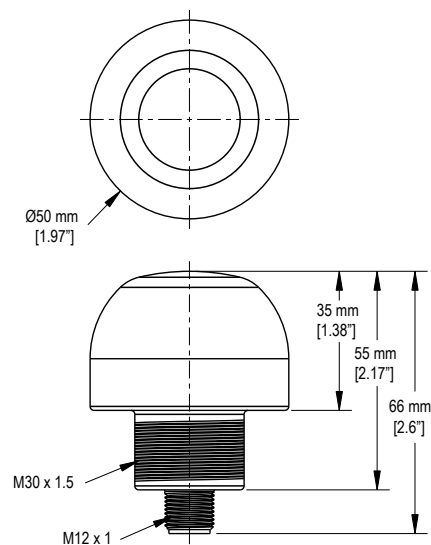
Dimensions

Fixed Field, Polarized Retroreflective, and Push Button Models



* For push-button models, this dimensions is 44.2 mm (1.74 in).

Capacitance Touch Button Models



All measurements are listed in millimeters (inches), unless noted otherwise.

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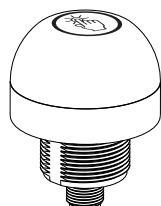
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EZ-LIGHT® Touch Gen 2 K50 Series Illuminated Buttons

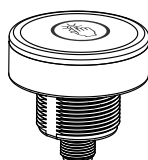


Datasheet

Lighted Touch Button with Bipolar Outputs



Standard Model



Compact Model

- Excellent immunity to false triggering by water spray, detergents, oils, and other foreign materials
- Rugged, cost-effective, and easy-to-install touch button with multicolor light
- Momentary versions remain activated as long as touch is present
- Latching versions start up not activated and toggle between activated and not activated on successive touches
- Waterproof IEC IP69K construction for washdown environments
- Ergonomically designed to eliminate hand, wrist, and arm stresses associated with repeated switch operation; require no physical force to operate
- Can be actuated with bare hands or gloves
- 12 V dc to 30 V dc operation
- Compact models available for lower profile applications



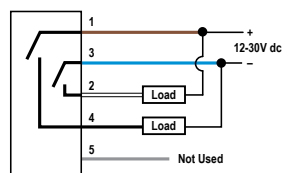
WARNING: Not To Be Used for Personnel Protection

Never use this device as a sensing device for personnel **protection**. Doing so could lead to serious injury or death. This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition.

Models

Model ¹	Function	Output	Light (not activated)	Light (activated)	Connection
K50ALBT2XGHQ	Latching	Bipolar, N.O.	-	Green	Integral 5-pin M12/ Euro-style male quick disconnect (QD)
K50RLBT2XGHQ		Bipolar, N.C.			
K50ABT2XGHQ	Momentary	Bipolar, N.O.			
K50RBT2XGHQ		Bipolar, N.C.			
K50ALBT2GGHQ	Latching	Bipolar, N.O.	Green	Green	
K50RLBT2GGHQ		Bipolar, N.C.			
K50ABT2GGHQ	Momentary	Bipolar, N.O.			
K50RBT2GGHQ		Bipolar, N.C.			
K50ALBT2RGHQ	Latching	Bipolar, N.O.	Red	Green	
K50RLBT2RGHQ		Bipolar, N.C.			
K50ABT2RGHQ	Momentary	Bipolar, N.O.			
K50RBT2RGHQ		Bipolar, N.C.			

Wiring Diagrams



Color Key

- 1 = Brown
- 2 = White
- 3 = Blue
- 4 = Black
- 5 = Gray

¹

- To order the 150 mm (6 in) PVC cable model with a 5-pin M12/Euro-style quick disconnect, replace the suffix "Q" with "QP" in the model number. For example, K50ALBT2XGHQP.
- To order the 2 m (6.5 ft) PVC cable model, omit the suffix "Q" in the model number. For example K50ALBT2XGH.
- To order a compact model, add suffix "C" after K50 in model number. For example, K50CALBT2XGHQ.
- Models with a quick disconnect require a mating cordset.





Note: Cabled wiring diagrams are shown. Quick disconnect (QD) wiring diagrams are functionally identical.

Specifications

Supply Voltage

12 V dc to 30 V dc

Supply Current

< 75 mA max current at 12 V dc (exclusive of load)
< 50 mA max current at 30 V dc (exclusive of load)

Supply Protection Circuitry

Protected against reverse polarity and transient voltages

Output Rating

Maximum load: 150 mA
On-state saturation voltage: < 2 V dc at 10 mA; < 2.5 V dc at 150 mA
Off-state leakage current: <10 µA at 30 V dc

Operating Conditions

−40 °C to +50 °C (−40 °F to +122 °F)
90% at 50 °C maximum relative humidity (non-condensing)

Storage

−40 °C to +70 °C (−40 °F to +158 °F)

Environmental Rating

IEC IP67, IP69K per DIN 40050-9.
Cabled models also meet IP69K if the cable and cable entrance are protected from high-pressure spray.

Vibration and Mechanical Shock

Vibration 10 Hz to 55 Hz 1.0 mm p-p amplitude per IEC 60068-2-6
Shock 30G 11 ms duration, half sine wave per IEC 60068-2-27

Output Response Time

Momentary models: 50 milliseconds On and Off
Latching models: 150 milliseconds On and Off

Power-Up Delay

300 milliseconds
Latching models start up in a 'not activated' state

Connections

5-pin integral M12/Euro-style QD, 2 m (6.5 ft) PVC integral cable, or 5-pin 150 mm (6 in) M12/Euro-style PVC cable QD

Certifications



Indicator Lumens

Color	Typical Wavelength	Typical Intensity (lm)
Green	525 nm	29
Red	625 nm	13

Construction

Housing: polycarbonate
Translucent dome: polycarbonate
Mounting nut: PBT

Mounting

M30 × 1.5 threaded base max. torque 4.5 N·m (40 in·lbf)

Required Overcurrent Protection



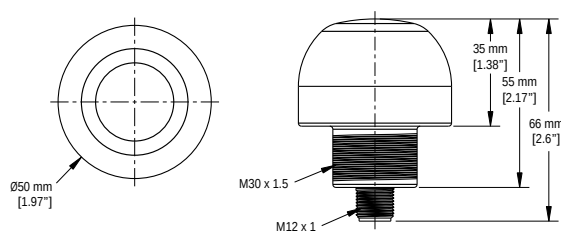
WARNING: Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

Overcurrent protection is required to be provided by end product application per the supplied table.
Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.
Supply wiring leads < 24 AWG shall not be spliced.
For additional product support, go to www.bannerengineering.com.

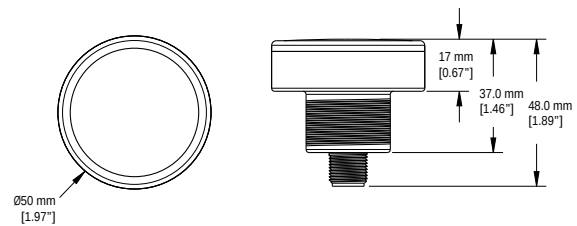
Supply Wiring (AWG)	Required Overcurrent Protection (Amps)
20	5.0
22	3.0
24	2.0
26	1.0
28	0.8
30	0.5

Dimensions

Standard Models



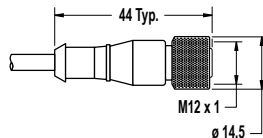
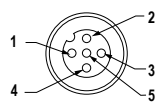
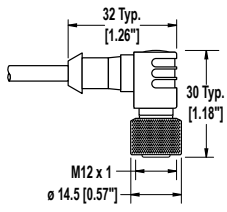
Compact Models

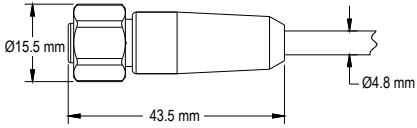
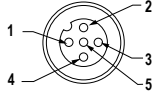


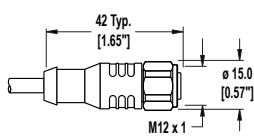
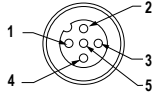
All measurements are listed in millimeters [inches], unless noted otherwise.

Accessories

Cordsets

5-Pin Threaded M12/Euro-Style Cordsets—Single Ended					
Model	Length	Style	Dimensions	Pinout (Female)	
MQDC1-501.5	0.50 m (1.5 ft)	Straight		 1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray	
MQDC1-506	1.83 m (6 ft)				
MQDC1-515	4.57 m (15 ft)				
MQDC1-530	9.14 m (30 ft)				
MQDC1-506RA	1.83 m (6 ft)	Right-Angle			
MQDC1-515RA	4.57 m (15 ft)				
MQDC1-530RA	9.14 m (30 ft)				

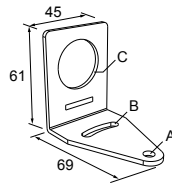
5-Pin Threaded M12/Euro-Style Cordsets—Washdown Stainless Steel				
Model	Length	Style	Dimensions	Pinout (Female)
MQDC-WDSS-0506	1.83 m (6 ft)	Straight		 1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray
MQDC-WDSS-0515	4.57 m (15 ft)			
MQDC-WDSS-0530	9.14 m (30 ft)			

5-Pin Threaded M12/Euro-Style Cordsets—Washdown, with Shield				
Model	Length	Style	Dimensions	Pinout (Female)
MQDCWD-506	1.83 m (6 ft)	Straight		 1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray
MQDCWD-530	9.14 m (30 ft)			

Brackets

SMB30A

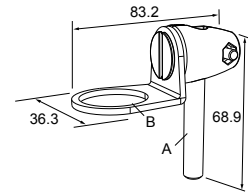
- Right-angle bracket with curved slot for versatile orientation
- Clearance for M6 (¼ in) hardware
- Mounting hole for 30 mm sensor
- 12-ga. stainless steel



Hole center spacing: A to B=40
Hole size: A=Ø 6.3, B= 27.1 x 6.3, C=Ø 30.5

SMB30FA

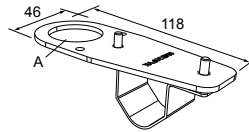
- Swivel bracket with tilt and pan movement for precise adjustment
- Mounting hole for 30 mm sensor
- 12-ga. 304 stainless steel
- Easy sensor mounting to extrude rail T-slot
- Metric and inch size bolt available



Bolt thread: SMB30FA, A= 3/8 - 16 x 2 in; SMB30FAM10, A= M10 - 1.5 x 50
Hole size: B= Ø 30.1

SMB30FVK

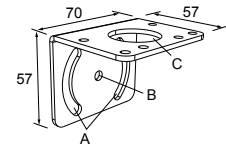
- V-clamp, flat bracket and fasteners for mounting to pipe or extensions
- Clamp accommodates 28 mm dia. tubing or 1 in. square extrusions
- 30 mm hole for mounting sensors



Hole size: A= Ø 31

SMB30MM

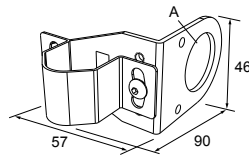
- 12-ga. stainless steel bracket with curved mounting slots for versatile orientation
- Clearance for M6 (¼ in) hardware
- Mounting hole for 30 mm sensor



Hole center spacing: A = 51, A to B = 25.4
Hole size: A = 42.6 x 7, B = Ø 6.4, C = Ø 30.1

SMB30RAVK

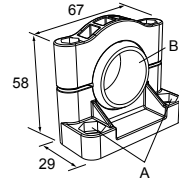
- V-clamp, right-angle bracket and fasteners for mounting sensors to pipe or extrusion
- Clamp accommodates 28 mm dia. tubing or 1 in. square extrusions
- 30 mm hole for mounting sensors



Hole size: A = Ø 30.5

SMB30SC

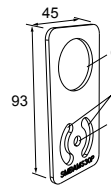
- Swivel bracket with 30 mm mounting hole for sensor
- Black reinforced thermoplastic polyester
- Stainless steel mounting and swivel locking hardware included



Hole center spacing: A=Ø 50.8
Hole size: A=Ø 7.0, B=Ø 30.0

SMBAMS30P

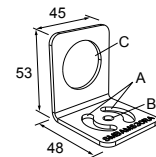
- Flat SMBAMS series bracket
- 30 mm hole for mounting sensors
- Articulation slots for 90°+ rotation
- 12-ga. 300 series stainless steel



Hole center spacing: A=26.0, A to B=13.0
Hole size: A=26.8 x 7.0, B=Ø 6.5, C=Ø 31.0

SMBAMS30RA

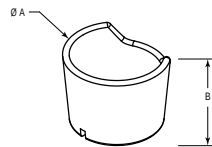
- Right-angle SMBAMS series bracket
- 30 mm hole for mounting sensors
- Articulation slots for 90°+ rotation
- 12-ga. (2.6 mm) cold-rolled steel



Hole center spacing: A=26.0, A to B=13.0
Hole size: A=26.8 x 7.0, B=Ø 6.5, C=Ø 31.0

TC-K50-CL

- Touch cover



Diameter: A = 67 mm
Height: B = 42.5 mm

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FCC Part 15 and CAN ICES-3 (B)/NMB-3(B)

This device complies with part 15 of the FCC Rules and CAN ICES-3 (B)/NMB-3(B). Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules and CAN ICES-3 (B)/NMB-3(B). These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

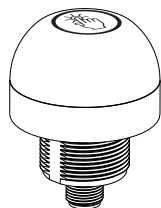
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the manufacturer.

EZ-LIGHT® Touch Gen 2 K50 Series Illuminated Multipurpose Buttons



Datasheet

General Purpose Multicolor Indicator with Independent Momentary Touch Button Output



Standard Model



Compact Model

- Excellent immunity to false triggering by water spray, detergents, oils, and other foreign materials
- Rugged, cost-effective, and easy-to-install multicolor indicator with touch button
- Waterproof IEC IP69K construction for washdown environments
- Three independent colors in one unit—Color 3 overrides Colors 1 and 2, Color 2 overrides Color 1
- Available with PNP and NPN inputs/outputs, depending on model
- Ergonomically designed to eliminate hand, wrist, and arm stresses associated with repeated switch operation; require no physical force to operate
- Can be actuated with bare hands or gloves
- 12 V dc to 30 V dc operation
- Compact models available for lower profile applications



WARNING: Not To Be Used for Personnel Protection

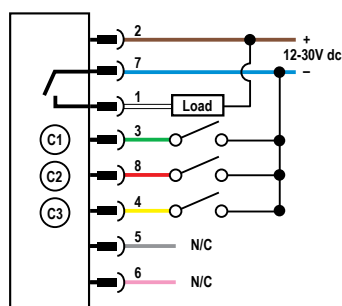
Never use this device as a sensing device for personnel **protection**. Doing so could lead to serious injury or death. This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition.

Models

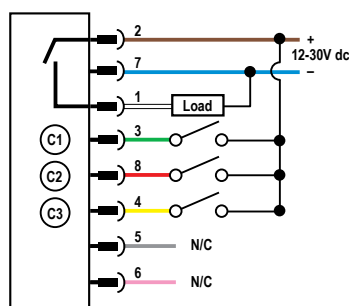
Model ¹	I/O Type	Output State	Color 1	Color 2	Color 3	Connection
K50APT2GRYF2Q	PNP	N.O.	Green	Red	Yellow	Integral 8-pin M12/Euro-style male quick disconnect (QD)
K50RPT2GRYF2Q		N.C.				
K50ANT2GRYF2Q	NPN	N.O.				
K50RNT2GRYF2Q		N.C.				

Wiring Diagram

NPN (Sinking) Output Models



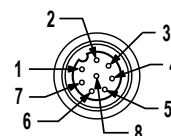
PNP (Sourcing) Output Models



Wiring Key

- 1 = White
- 2 = Brown
- 3 = Green
- 4 = Yellow
- 5 = Gray
- 6 = Pink
- 7 = Blue
- 8 = Red

Pinout



¹

- To order the 2 m (6.5 ft) PVC cable model, omit the suffix "Q" in the model number. For example, K50APT2GRYF2.
- To order the 150 mm (6 in) PVC cable model with an 8-pin M12/Euro-style quick disconnect, replace the suffix "Q" with "QP" in the model number. For example, K50APT2GRYF2QP.
- To order a compact model, add the suffix "C" after K50 in the model number. For example, K50CAPT2GXDQ.
- Models with a quick disconnect require a mating cordset.



Indicator and Output Behavior

Table 1: PNP Models

Input Actions				Touch Button Actions		
Input #1: Pin 3 Green Wire	Input #2: Pin 8 Red Wire	Input #3: Pin 4 Yellow Wire	LED Color	Output Type	Touch	Output: Pin 1 White Wire
Open or -Vdc	Open or -Vdc	Open or -Vdc	Light Off	N.O.	Not touched	PNP Output Off
+V dc	Open or -Vdc	Open or -Vdc	Color #1 On		Touched	PNP Output On
+V dc	+V dc	Open or -Vdc	Color #2 On	N.C.	Not touched	PNP Output On
+V dc	+V dc	+V dc	Color #3 On		Touched	PNP Output Off
Open or -Vdc	+V dc	Open or -Vdc	Color #2 On			
Open or -Vdc	+V dc	+V dc	Color #3 On			
Open or -Vdc	Open or -Vdc	+V dc	Color #3 On			
+V dc	Open or -Vdc	+V dc	Color #3 On			

Table 2: NPN Models

Input Actions				Touch Button Actions		
Input #1: Pin 3 Green Wire	Input #2: Pin 8 Red Wire	Input #3: Pin 4 Yellow Wire	LED Color	Output Type	Touch	Output: Pin 1 White Wire
Open or +V dc	Open or +V dc	Open or +V dc	Light Off	N.O.	Not touched	NPN Output Off
-Vdc	Open or +V dc	Open or +V dc	Color #1 On		Touched	NPN Output On
-Vdc	-Vdc	Open or +V dc	Color #2 On	N.C.	Not touched	NPN Output On
-Vdc	-Vdc	-Vdc	Color #3 On		Touched	NPN Output Off
Open or +V dc	-Vdc	Open or +V dc	Color #2 On			
Open or +V dc	-Vdc	-Vdc	Color #3 On			
Open or +V dc	Open or +V dc	-Vdc	Color #3 On			
-Vdc	Open or +V dc	-Vdc	Color #3 On			

Specifications

Supply Voltage

12 V dc to 30 V dc

Supply Current

< 75 mA max current at 12 V dc (exclusive of load)
< 50 mA max current at 30 V dc (exclusive of load)

Supply Protection Circuitry

Protected against reverse polarity and transient voltages

Output Rating

Maximum load: 150 mA
ON-state saturation voltage: < 2 V dc at 10 mA; < 2.5 V dc at 150 mA
OFF-state leakage current: <10 µA at 30 V dc

Environmental Rating

IEC IP67, IP69K per DIN 40050-9.
Cabled models also meet IP69K if the cable and cable entrance are protected from high-pressure spray.

Output Response Time

50 milliseconds On and Off

Connections

8-pin integral M12/Euro-style QD, 2 m (6.5 ft) PVC integral cable, or 8-pin 150 mm (6 in) M12/Euro-style PVC cable QD

Mounting

M30 × 1.5 threaded base max. torque 4.5 N·m (40 in-lbf)

Power-Up Delay

300 milliseconds

Indicator Lumens

Color	Typical Wavelength	Typical Intensity (lm)
Green	525 nm	29
Red	625 nm	13
Yellow	591 nm	24

Operating Conditions

–40 °C to +50 °C (–40 °F to +122 °F)
90% at 50 °C maximum relative humidity (non-condensing)

Storage

–40 °C to +70 °C (–40 °F to +158 °F)

Construction

Housing: polycarbonate
Translucent dome: polycarbonate
Mounting nut: PBT

Vibration and Mechanical Shock

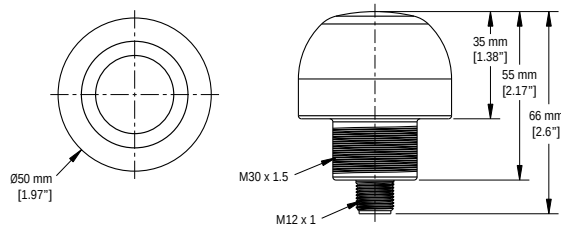
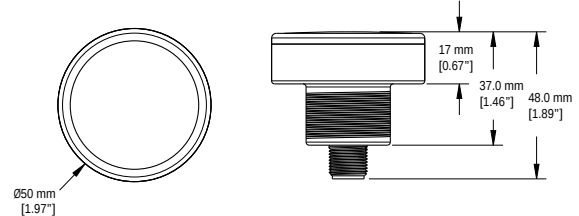
Vibration 10 Hz to 55 Hz 1.0 mm p-p amplitude per IEC 60068-2-6
Shock 30G 11 ms duration, half sine wave per IEC 60068-2-27

Certifications**Required Overcurrent Protection**

WARNING: Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

Overcurrent protection is required to be provided by end product application per the supplied table.
Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.
Supply wiring leads < 24 AWG shall not be spliced.
For additional product support, go to www.bannerengineering.com.

Supply Wiring (AWG)	Required Overcurrent Protection (Amps)
20	5.0
22	3.0
24	2.0
26	1.0
28	0.8
30	0.5

Dimensions**Standard Models****Compact Models**

All measurements are listed in millimeters [inches], unless noted otherwise.

Accessories**Cordsets**

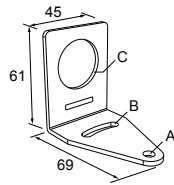
8-Pin Threaded M12/Euro-Style Cordsets with Open-Shield				
Model	Length	Style	Dimensions	Pinout (Female)
MQDC2S-806	1.83 m (6 ft)	Straight		
MQDC2S-815	4.57 m (15 ft)			
MQDC2S-830	9.14 m (30 ft)			
MQDC2S-850	15.2 m (50 ft)	Right-Angle		
MQDC2S-806RA	1.83 m (6 ft)			
MQDC2S-815RA	4.57 m (15 ft)			
MQDC2S-830RA	9.14 m (30 ft)			
MQDC2S-850RA	15.2 m (50 ft)			

1 = White
2 = Brown
3 = Green
4 = Yellow
5 = Gray
6 = Pink
7 = Blue
8 = Red

Brackets

SMB30A

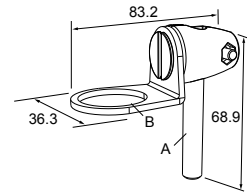
- Right-angle bracket with curved slot for versatile orientation
- Clearance for M6 (¼ in) hardware
- Mounting hole for 30 mm sensor
- 12-ga. stainless steel



Hole center spacing: A to B=40
Hole size: A=Ø 6.3, B= 27.1 x 6.3, C=Ø 30.5

SMB30FA

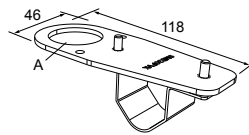
- Swivel bracket with tilt and pan movement for precise adjustment
- Mounting hole for 30 mm sensor
- 12-ga. 304 stainless steel
- Easy sensor mounting to extrude rail T-slot
- Metric and inch size bolt available



Bolt thread: SMB30FA, A= 3/8 - 16 x 2 in; SMB30FAM10, A= M10 - 1.5 x 50
Hole size: B= Ø 30.1

SMB30FVK

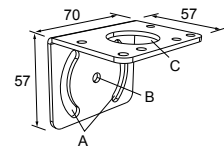
- V-clamp, flat bracket and fasteners for mounting to pipe or extensions
- Clamp accommodates 28 mm dia. tubing or 1 in. square extrusions
- 30 mm hole for mounting sensors



Hole size: A= Ø 31

SMB30MM

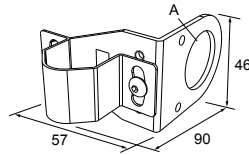
- 12-ga. stainless steel bracket with curved mounting slots for versatile orientation
- Clearance for M6 (¼ in) hardware
- Mounting hole for 30 mm sensor



Hole center spacing: A = 51, A to B = 25.4
Hole size: A = 42.6 x 7, B = Ø 6.4, C = Ø 30.1

SMB30RAVK

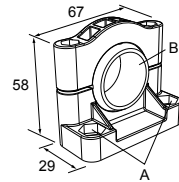
- V-clamp, right-angle bracket and fasteners for mounting sensors to pipe or extrusion
- Clamp accommodates 28 mm dia. tubing or 1 in. square extrusions
- 30 mm hole for mounting sensors



Hole size: A = Ø 30.5

SMB30SC

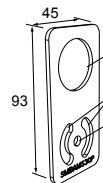
- Swivel bracket with 30 mm mounting hole for sensor
- Black reinforced thermoplastic polyester
- Stainless steel mounting and swivel locking hardware included



Hole center spacing: A=Ø 50.8
Hole size: A=Ø 7.0, B=Ø 30.0

SMBAMS30P

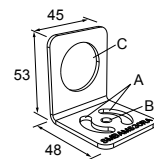
- Flat SMBAMS series bracket
- 30 mm hole for mounting sensors
- Articulation slots for 90°+ rotation
- 12-ga. 300 series stainless steel



Hole center spacing: A=26.0, A to B=13.0
Hole size: A=26.8 x 7.0, B=Ø 6.5, C=Ø 31.0

SMBAMS30RA

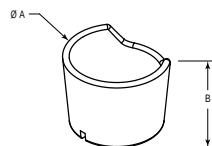
- Right-angle SMBAMS series bracket
- 30 mm hole for mounting sensors
- Articulation slots for 90°+ rotation
- 12-ga. (2.6 mm) cold-rolled steel



Hole center spacing: A=26.0, A to B=13.0
Hole size: A=26.8 x 7.0, B=Ø 6.5, C=Ø 31.0

TC-K50-CL

- Touch cover



Diameter: A = 67 mm
Height: B = 42.5 mm

Banner Engineering Corp. Limited Warranty

Banner Engineering Corp. warrants its products to be free from defects in material and workmanship for one year following the date of shipment. Banner Engineering Corp. will repair or replace, free of charge, any product of its manufacture which, at the time it is returned to the factory, is found to have been defective during the warranty period. This warranty does not cover damage or liability for misuse, abuse, or the improper application or installation of the Banner product.

THIS LIMITED WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED (INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE), AND WHETHER ARISING UNDER COURSE OF PERFORMANCE, COURSE OF DEALING OR TRADE USAGE.

This Warranty is exclusive and limited to repair or, at the discretion of Banner Engineering Corp., replacement. IN NO EVENT SHALL BANNER ENGINEERING CORP. BE LIABLE TO BUYER OR ANY OTHER PERSON OR ENTITY FOR ANY EXTRA COSTS, EXPENSES, LOSSES, LOSS OF PROFITS, OR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES RESULTING FROM ANY PRODUCT DEFECT OR FROM THE USE OR INABILITY TO USE THE PRODUCT, WHETHER ARISING IN CONTRACT OR WARRANTY, STATUTE, TORT, STRICT LIABILITY, NEGLIGENCE, OR OTHERWISE.

Banner Engineering Corp. reserves the right to change, modify or improve the design of the product without assuming any obligations or liabilities relating to any product previously manufactured by Banner Engineering Corp. Any misuse, abuse, or improper application or installation of this product or use of the product for personal protection applications when the product is identified as not intended for such purposes will void the product warranty. Any modifications to this product without prior express approval by Banner Engineering Corp will void the product warranties. All specifications published in this document are subject to change; Banner reserves the right to modify product specifications or update documentation at any time. Specifications and product information in English supersede that which is provided in any other language. For the most recent version of any documentation, refer to: www.bannerengineering.com.

FCC Part 15 and CAN ICES-3 (B)/NMB-3(B)

This device complies with part 15 of the FCC Rules and CAN ICES-3 (B)/NMB-3(B). Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules and CAN ICES-3 (B)/NMB-3(B). These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

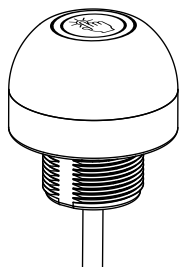
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the manufacturer.

EZ-LIGHT® Touch Gen 2 K50 FDA-Grade Illuminated Multipurpose Buttons



Datasheet

General Purpose Multicolor Indicator with Independent Momentary Touch Button Output



- FDA-grade materials; rated to IEC IP67, IP68, and IP69K
- Laser marked information withstands aggressive cleaning procedures
- Excellent immunity to false triggering by water spray, detergents, oils, and other foreign materials
- Rugged, cost-effective, and easy-to-install multicolor indicator with touch button
- Three independent colors in one unit—Color 3 overrides Colors 1 and 2, Color 2 overrides Color 1
- Available with PNP and NPN inputs/outputs, depending on model
- Ergonomically designed to eliminate hand, wrist, and arm stresses associated with repeated switch operation; require no physical force to operate
- Can be actuated with bare hands or in gloves
- 12 V to 30 V dc operation



WARNING: Not To Be Used for Personnel Protection

Never use this device as a sensing device for personnel protection. Doing so could lead to serious injury or death. This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition.

Models

Model ¹	I/O Type	Output State	Color 1	Color 2	Color 3	Connection
K50APT2FGRYF2QP	PNP	N.O.	Green	Red	Yellow	150 mm (6 in) PVC cable with a 8-pin M12/Euro-style male, stainless steel, quick disconnect (QD)
K50RPT2FGRYF2QP		N.C.				
K50ANT2FGRYF2QP	NPN	N.O.				
K50RNT2FGRYF2QP		N.C.				

Indicator and Output Behavior

Table 1: PNP Models

Input Actions				Touch Button Actions		
Input #1: Pin 3 Green Wire	Input #2: Pin 8 Red Wire	Input #3: Pin 4 Yellow Wire	LED Color	Output Type	Touch	Output: Pin 1 White Wire
Open or -Vdc	Open or -Vdc	Open or -Vdc	Light Off	N.O.	Not touched	PNP Output Off
+V dc	Open or -Vdc	Open or -Vdc	Color #1 On		Touched	PNP Output On
+V dc	+V dc	Open or -Vdc	Color #2 On	N.C.	Not touched	PNP Output On
+V dc	+V dc	+V dc	Color #3 On		Touched	PNP Output Off
Open or -Vdc	+V dc	Open or -Vdc	Color #2 On			
Open or -Vdc	+V dc	+V dc	Color #3 On			
Open or -Vdc	Open or -Vdc	+V dc	Color #3 On			
+V dc	Open or -Vdc	+V dc	Color #3 On			

¹

To order the 2 m (6.5 ft) PVC cable model, omit the suffix "QP" in the model number. For example, K50APT2FGRYF2.



Table 2: NPN Models

Input Actions				Touch Button Actions		
Input #1: Pin 3 Green Wire	Input #2: Pin 8 Red Wire	Input #3: Pin 4 Yellow Wire	LED Color	Output Type	Touch	Output: Pin 1 White Wire
Open or +V dc	Open or +V dc	Open or +V dc	Light Off	N.O.	Not touched	NPN Output Off
-Vdc	Open or +V dc	Open or +V dc	Color #1 On		Touched	NPN Output On
-Vdc	-Vdc	Open or +V dc	Color #2 On	N.C.	Not touched	NPN Output On
-Vdc	-Vdc	-Vdc	Color #3 On		Touched	NPN Output Off
Open or +V dc	-Vdc	Open or +V dc	Color #2 On			
Open or +V dc	-Vdc	-Vdc	Color #3 On			
Open or +V dc	Open or +V dc	-Vdc	Color #3 On			
-Vdc	Open or +V dc	-Vdc	Color #3 On			

Specifications

Supply Voltage
12 V to 30 V dc

Supply Current
< 75 mA max current at 12 V dc (exclusive of load)
< 50 mA max current at 30 V dc (exclusive of load)

Supply Protection Circuitry
Protected against reverse polarity and transient voltages

Output Rating
Maximum load: 150 mA
ON-state saturation voltage: < 2 V at 10 mA dc; < 2.5 V at 150 mA dc
OFF-state leakage current: < 10 µA at 30 V dc

Output Response Time
50 milliseconds On and Off

Power-Up Delay
300 milliseconds

Indicators
Color 1: Green
Color 2: Red
Color 3: Yellow

Indicator Lumens

Color	Typical Wavelength	Typical Intensity (lm)
Green	525 nm	29
Red	625 nm	13
Yellow	591 nm	24

Environmental Rating
IEC IP67, IP69K per DIN 40050-9.

Operating Conditions
-40 °C to +50 °C (-40 °F to +122 °F)
90% at 50 °C maximum relative humidity (non-condensing)

Storage
-40 °C to +70 °C (-40 °F to +158 °F)

Vibration and Mechanical Shock
Vibration 10 Hz to 55 Hz 1.0 mm p-p amplitude per IEC 60068-2-6
Shock 30G 11 ms duration, half sine wave per IEC 60068-2-27

Connections
150 mm (6 in) PVC cable with a 8-pin M12/Euro-style male, stainless steel, quick disconnect (QD), or 2 m (6.5 ft) PVC integral cable

Construction
Base, dome, and nut: FDA-grade polycarbonate

Mounting
M30 × 1.5 Threaded base Max torque 4.5 N·m (40 in·lbf)

Certifications



Required Overcurrent Protection

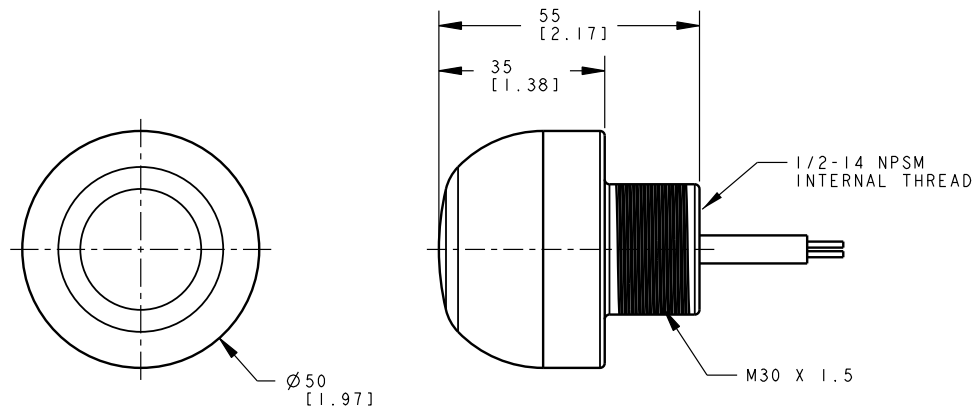


WARNING: Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

Overcurrent protection is required to be provided by end product application per the supplied table.
Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.
Supply wiring leads < 24 AWG shall not be spliced.
For additional product support, go to <http://www.bannerengineering.com>.

Supply Wiring (AWG)	Required Overcurrent Protection (Amps)
20	5.0
22	3.0
24	2.0
26	1.0
28	0.8
30	0.5

Dimensions



All measurements are listed in millimeters [inches], unless noted otherwise.

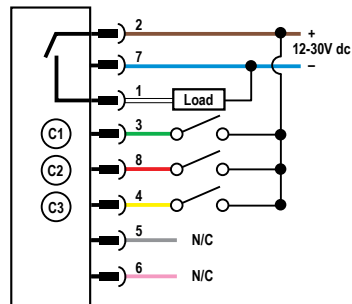
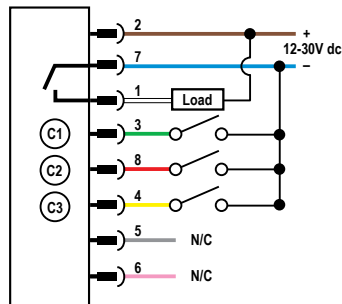
Wiring Diagram

NPN (Sinking) Output Models

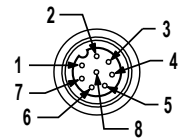
PNP (Sourcing) Output Models

Wiring Key

Pinout



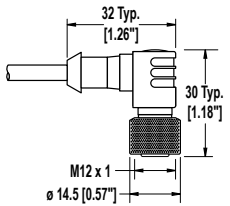
1 = White
2 = Brown
3 = Green
4 = Yellow
5 = Gray
6 = Pink
7 = Blue
8 = Red

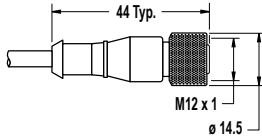
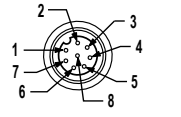


Accessories

Cordsets

8-Pin Threaded M12/Euro-Style Cordsets with Open-Shield				
Model	Length	Style	Dimensions	Pinout (Female)
MQDC2S-806	1.83 m (6 ft)	Straight		1 = White 2 = Brown 3 = Green 4 = Yellow 5 = Gray 6 = Pink 7 = Blue 8 = Red
MQDC2S-815	4.57 m (15 ft)			
MQDC2S-830	9.14 m (30 ft)			
MQDC2S-850	15.2 m (50 ft)			

8-Pin Threaded M12/Euro-Style Cordsets with Open-Shield				
Model	Length	Style	Dimensions	Pinout (Female)
MQDC2S-806RA	1.83 m (6 ft)	Right-Angle		
MQDC2S-815RA	4.57 m (15 ft)			
MQDC2S-830RA	9.14 m (30 ft)			
MQDC2S-850RA	15.2 m (50 ft)			

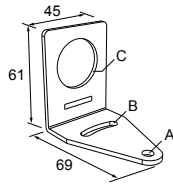
8-Pin Threaded M12/Euro-Style Cordsets with Open-Shield—Washdown, Stainless Steel				
Model	Length	Style	Dimensions	Pinout (Female)
MQDC-WDSS-0806	1.83 m (6 ft)	Straight		
MQDC-WDSS-0815	4.57 m (15 ft)			
MQDC-WDSS-0830	9.14 m (30 ft)			

1 = White 5 = Gray
2 = Brown 6 = Pink
3 = Green 7 = Blue
4 = Yellow 8 = Red

Brackets

SMB30A

- Right-angle bracket with curved slot for versatile orientation
- Clearance for M6 (¼ in) hardware
- Mounting hole for 30 mm sensor
- 12-ga. stainless steel

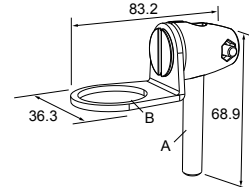


Hole center spacing: A to B=40

Hole size: A=ø 6.3, B= 27.1 x 6.3, C=ø 30.5

SMB30FA

- Swivel bracket with tilt and pan movement for precise adjustment
- Mounting hole for 30 mm sensor
- 12-ga. 304 stainless steel
- Easy sensor mounting to extrude rail T-slot
- Metric and inch size bolt available

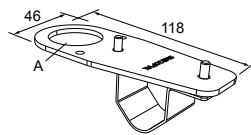


Bolt thread: SMB30FA, A= 3/8 - 16 x 2 in; SMB30FAM10, A= M10 - 1.5 x 50

Hole size: B= ø 30.1

SMB30FVK

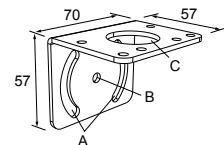
- V-clamp, flat bracket and fasteners for mounting to pipe or extensions
- Clamp accommodates 28 mm dia. tubing or 1 in. square extrusions
- 30 mm hole for mounting sensors



Hole size: A= ø 31

SMB30MM

- 12-ga. stainless steel bracket with curved mounting slots for versatile orientation
- Clearance for M6 (¼ in) hardware
- Mounting hole for 30 mm sensor

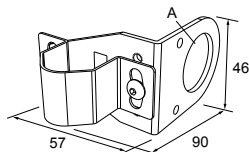


Hole center spacing: A = 51, A to B = 25.4

Hole size: A = 42.6 x 7, B = ø 6.4, C = ø 30.1

SMB30RAVK

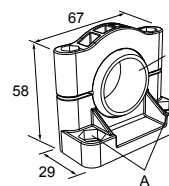
- V-clamp, right-angle bracket and fasteners for mounting sensors to pipe or extrusion
- Clamp accommodates 28 mm dia. tubing or 1 in. square extrusions
- 30 mm hole for mounting sensors



Hole size: A = $\varnothing$ 30.5

SMB30SC

- Swivel bracket with 30 mm mounting hole for sensor
- Black reinforced thermoplastic polyester
- Stainless steel mounting and swivel locking hardware included

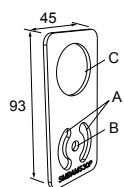


Hole center spacing: A= $\varnothing$ 50.8

Hole size: A= $\varnothing$ 7.0, B= $\varnothing$ 30.0

SMBAMS30P

- Flat SMBAMS series bracket
- 30 mm hole for mounting sensors
- Articulation slots for 90°+ rotation
- 12-ga. 300 series stainless steel

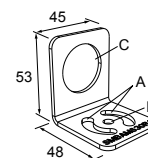


Hole center spacing: A=26.0, A to B=13.0

Hole size: A=26.8 x 7.0, B= $\varnothing$ 6.5, C= $\varnothing$ 31.0

SMBAMS30RA

- Right-angle SMBAMS series bracket
- 30 mm hole for mounting sensors
- Articulation slots for 90°+ rotation
- 12-ga. (2.6 mm) cold-rolled steel

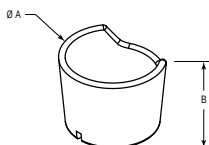


Hole center spacing: A=26.0, A to B=13.0

Hole size: A=26.8 x 7.0, B= $\varnothing$ 6.5, C= $\varnothing$ 31.0

TC-K50-CL

- Touch cover



Diameter: A = 67 mm

Height: B = 42.5 mm

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