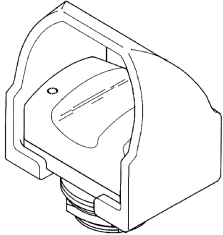


## Datasheet

### Alternate Action Optical Touch Buttons



- Zero-force touch-activated photoelectric replacements for mechanical push buttons
- Alternate-action touch buttons with SPDT electromechanical relay or solid-state outputs
- Optimized for easy mounting with a 30 mm threaded base
- Ergonomic design eliminates hand, wrist and arm stress
- Field covers included to prevent inadvertent activation from loose clothing, debris, etc.

Banner Optical Touch Buttons are manufactured and sold under license for U. S Patent #4,939,358.



**WARNING:** Banner OPTO-TOUCH® LTB Series Optical Touch Buttons are intended as general-purpose initiators, and are not safety devices. Like most solid-state devices, they are as equally likely to fail in the conducting (on) state as in the non-conducting (off) state. If OPTO-TOUCH Optical Touch Buttons are used to initiate machines or operations in which false operation of an Optical Touch Button could be dangerous, point-of-operation guarding devices or related safety controls must be installed and maintained to meet all appropriate OSHA regulations and ANSI B11 machine safety standards.



**WARNING:** Never use an OPTO-TOUCH **Optical Touch Button** as an actuator in an emergency stop (E-Stop) circuit. E-Stop actuators must be purely mechanical devices that require no power to operate. OPTOTOUCH Optical Touch Buttons require power to operate and must not be used as E-Stop actuators under any circumstances.



**Safety Instruction:** A field cover is supplied with this OPTO-TOUCH. Install the cover, as shown in the drawing page 1, to minimize the possibility of unintended switch operation. If this cover is missing or has become lost or damaged, contact Banner Engineering immediately for a no-charge replacement.

## Models

Model <sup>1</sup>	Voltage	Output	Connection <sup>2</sup>
LTBA5	120 V ac	SPDT electromechanical relay output	6-foot attached cable
LTBA5QD			5-pin quick-disconnect
LTBB5	240 V ac		6-foot attached cable
LTBB5QD			5-pin quick-disconnect

## Overview

Banner **Optical Touch Buttons** are touch-activated photoelectric switches designed to replace capacitive touch switches and mechanical push buttons. The OPTO-TOUCH's SPDT electromechanical relay or solid-state output (depending upon model) is activated for as long as a finger, introduced into the "touch area" (yoke) of the switch, interrupts the OPTO-TOUCH's infrared sensing beam.

Banner **Optical Touch Buttons** are ergonomically designed to eliminate the hand, wrist, and arm stresses associated with mechanical push buttons. They require absolutely no physical pressure to operate. LED indicators light for "power on" and "output activated".

All models are highly resistant to EMI, RFI, and ambient light interference. OTBs have either a black polysulfone (or red polycarbonate) upper housing and fiber-reinforced thermoplastic polyester base. Polycarbonate models have the letter "L" in their model number suffix. Environmental considerations for use of the two types differ; see specifications below. The 30- mm threaded base on all models provides easy mounting, and Banner **Optical Touch Buttons** are easily retrofitted to existing machines.

<sup>1</sup> To order a model with polycarbonate upper housing (others are polysulfone), added suffix "L" to the model number. For example, LTBA5L.

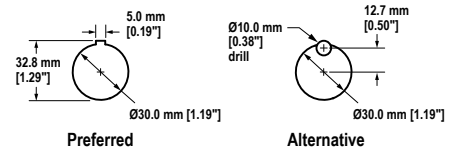
<sup>2</sup> Models with a quick disconnect require a mating cordset.



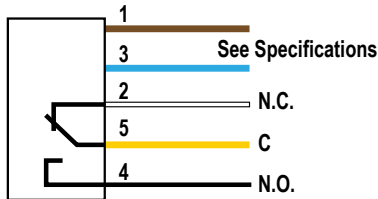
## Mounting Hole Information

The OPTO-TOUCH has a 30 millimeter threaded base which fits directly into a standard mounting hole for an oiltight push button. A lock ring, supplied with each OPTO-TOUCH, can be used to prevent switch rotation.

The mounting hole details shown at the right are used for the OPTO-TOUCH and also for standard oiltight push buttons and their legend plates. The drawing at the far right shows how to approximate the keyway using a drill hole.



## Wiring Diagrams



### Voltage Specifications

LTBA5 models: 105 V ac to 130 V ac

LTBB5 models: 210 V ac to 250 V ac

### Key

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

## Specifications

### Supply Voltage

105 V ac to 130 V ac or 210 V ac to 250 V ac (50/60Hz), depending on model  
All models require less than 25 mA (exclusive of load)

### Supply Protection Circuitry

Protected against transient voltages

### Ambient Light Immunity

120,000 lux (direct sunlight)

### Output Rating:

Maximum voltage is 250 V ac or 30 V dc  
Maximum current is 7 amps (resistive load), 1 HP maximum  
Minimum load is 0.05 watts (dc), 0.05 VA (ac)  
Mechanical life of relay is 50,000,000 operations (minimum)  
Electrical life of relay is 100,000 operations (minimum) at full resistive load  
Transient suppression recommended when switching inductive loads

### Output Protection

All models protected against false pulse on power-up  
100 ms delay on power-up; output does not conduct during this time

### Response Time

100 ms ON/OFF

### Output Configuration:

All models have SPDT electromechanical relay (one N.O. contact, one N.C. contact)

### EMI/RFI Immunity

Highly resistant to both single and mixed EMI and RFI noise sources

### Cable

Quick-disconnect (QD) models require a MBCC-512 5-conductor cable (purchased separately).  
Models with attached cable (non-QD models): 2 m (6 ft) PVC-jacketed, 22 AWG 4- or 5-conductor cable

### Construction

Black polysulfone (or red polycarbonate) upper housing and fiber-reinforced thermoplastic polyester base. Electronics fully epoxy-encapsulated. Totally encapsulated, non-metallic enclosure. The threaded base has M30 x 1.5 external threads and 1/2-in NPSM internal threads. Base requires a 1-3/16-in diameter mounting hole (fits most standard automotive-size jumbo legend plates and oiltight pushbutton holes).  
Field cover: Polypropylene copolymer (supplied)

### Indicator LEDs

Two indicator LEDs. One lights whenever power is applied; the other lights when the infrared sensing beam is interrupted

**Operating Temperature**

-20 °C to +50 °C (-4 °F to +122 °F)  
 90% at +50 °C maximum relative humidity (non-condensing)

**Environmental Considerations**

Models with polysulfone housing): Prolonged exposure to direct outdoor sunlight causes embrittlement of the polysulfone housing. Window glass effectively filters longer wavelength ultraviolet and provides excellent protection from sunlight. Contact Banner Engineering regarding outdoor applications. Clean periodically using mild soap solution and a soft cloth. Avoid the following substances, because they will attack polysulfone to varying degrees: esters, ketones, aromatic hydrocarbons, chlorinated hydrocarbons, and strong alkaline materials.  
 Models with polycarbonate housing: Avoid prolonged exposure to hot water and moist high-temperature environments above 66 °C (150 °F). Avoid aromatic hydrocarbons (such as xylene and toluene), halogenated hydrocarbons, and strong alkalis. Clean periodically using mild soap solution and a soft cloth.

**Environmental Rating**

NEMA 1, 3, 4, 4X, 12, and 13; IEC IP66

**Certifications**



**Required Overcurrent Protection**

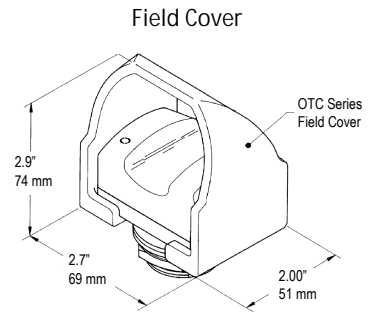
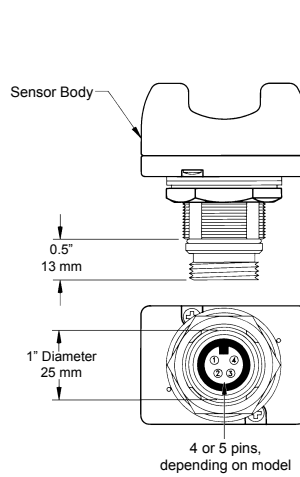
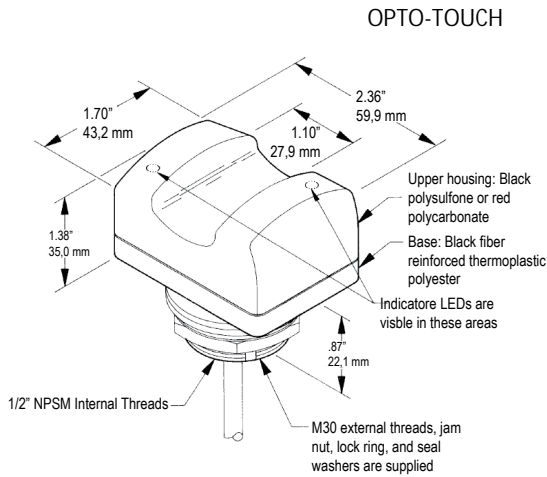


**WARNING:** Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

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](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**



**Accessories**

**Cordsets**

5-Pin Mini-Style Cordsets				
Model	Length	Style	Dimensions	Pinout (Female)
MBCC-506	1.83 m (6 ft)	Straight		<p>1 = Black                  2 = Blue                  3 = Yellow                  4 = Brown                  5 = White</p>
MBCC-512	3.66 m (12 ft)			
MBCC-530	9.14 m (30 ft)			

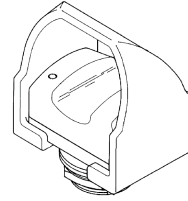
## Field Covers

OPTO-TOUCH Field Covers are designed to prevent inadvertent activation of OPTO-TOUCHs due to objects (loose clothing, debris, etc.) which might accidentally block the sensing beam.

Field covers are constructed of rugged Polypropylene copolymer, which is capable of absorbing high impacts (even at low temperatures). This material is highly resistant to abrasion and to damage by most chemicals.

Every OPTO-TOUCH is supplied with a black field cover, as standard. Field covers are available separately in four colors, which can be used to differentiate touch button functions when several touch buttons are in use.

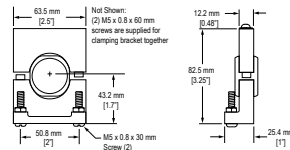
Model	Color
OTC-1-BK	Black (supplied)
OTC-1-RD	Red
OTC-1-YW	Yellow
OTC-1-GN	Green



## Swivel-Mount Bracket

### SMB30S

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



## 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.

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