

EZ-LIGHT™ VTB Series Touch Button

Ergonomic Optical Touch Button for Pick-to-Light Applications



Features

- Microcontroller-based photoelectric touch buttons are a cost-effective and easy-to-install alternative to capacitive touch switches and mechanical push buttons for error-proofing and parts-verification applications
- Ergonomically designed to eliminate hand, wrist and arm stresses associated with repeated switch operation; require no physical pressure to operate
- Illuminated base provides a bright, easy-to-see job light in one or two colors, depending on model
- LED power and output indicators
- Choose NPN or PNP output, depending on model
- Immune to ambient light, EMI and RFI interference
- High excess gain cuts through heavy airborne contamination to function in almost any environment; optional protective field cover available
- 12 to 30V dc operation

Models

One-Color Job Light						
Models			Cable*	Upper Housing	Output Type	Job Light Input
Green Job Light	Red Job Light	Blue Job Light				
VTBN6	VTBN6R	VTBN6B	2 m 4-wire cable	Polysulfone	NPN	0V dc
VTBN6Q	VTBN6RQ	VTBN6BQ	4-Pin Euro QD			
VTBN6L	VTBN6RL	VTBN6BL	2 m 4-wire cable	Polycarbonate		
VTBN6LQ	VTBN6RLQ	VTBN6BLQ	4-Pin Euro QD			
VTBP6	VTBP6R	VTBP6B	2 m 4-wire cable	Polysulfone	PNP	+10 to 30V dc
VTBP6Q	VTBP6RQ	VTBP6BQ	4-Pin Euro QD	Polycarbonate		
VTBP6L	VTBP6RL	VTBP6BL	2 m 4-wire cable			
VTBP6LQ	VTBP6RLQ	VTBP6BLQ	4-Pin Euro QD			
Two-Color Job Light						
Green & Red Job Lights (see Hookups)						
VTBN6GR			2 m 5-wire cable	Polysulfone	NPN	0V dc
VTBN6GRQ			5-Pin Euro QD			
VTBN6GRL			2 m 5-wire cable	Polycarbonate		
VTBN6GRLQ			5-Pin Euro QD			
VTBP6GR			2 m 5-wire cable	Polysulfone	PNP	+10 to 30V dc
VTBP6GRQ			5-Pin Euro QD	Polycarbonate		
VTBP6GRL			2 m 5-wire cable			
VTBP6GRLQ			5-Pin Euro QD			

* For 9 m (30') cable: add suffix "W/30" to the 2 m model number (e.g., VTBN6 W/30).
A model with a QD connector requires a mating cable; see page 6.

See Safety Use Warning on Back Page

EZ-LIGHT™ VTB Series Touch Button

Overview

EZ-LIGHT VTB Series Touch Buttons are touch-activated photoelectric devices designed to replace capacitive touch switches and mechanical push buttons. Their outputs activate while a finger is in the “touch area” (yoke) of the switch, interrupting the button’s infrared sensing beam.

The VTB is suited to many pick-to-light applications. Its solid-state output easily interfaces to a system controller, which is pre-programmed for a specific sequence of tasks. Mounted in or near each bin in an assembler’s work station, the Touch Button signals the assembler (by means of an easy-to-see job light):

- Which bins contain items to be picked in a given operation; and
- In what order they should be picked.

As the assembler takes a part in sequence, and then reaches a finger into the yoke of the corresponding Touch Button, the VTB’s output sends a signal to the controller. The control system then verifies if the correct part has been taken, and may respond by turning that job light OFF, and activating the job light of the next bin in the sequence. If multiple parts must be removed from one bin, the job light may remain ON until the appropriate number of signals is returned to the controller. If an incorrect part is selected, the control system may be wired to signal an alarm for the assembler and/or a supervisor and (depending on sensor model) the job light may turn red.

The result is increased efficiency (due to simplified job training), increased quality control (no skipped components), and reduced rework and inspections. The system speeds the resumption of work after breaks and other distractions. And it is ideal for multilingual workplaces where communication may be an issue.

Banner VTB Series 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 when power is on and outputs are activated.

All models are immune to EMI, RFI, and ambient light interference. VTBs have either a black polysulfone or red polycarbonate upper housing (depending on model) and a translucent white polycarbonate base. Environmental considerations for use of the two upper housing types differ; see specifications. The entire base section lights to provide a bright job light where a task is to be performed. The 30 mm threaded base on all models provides easy mounting.

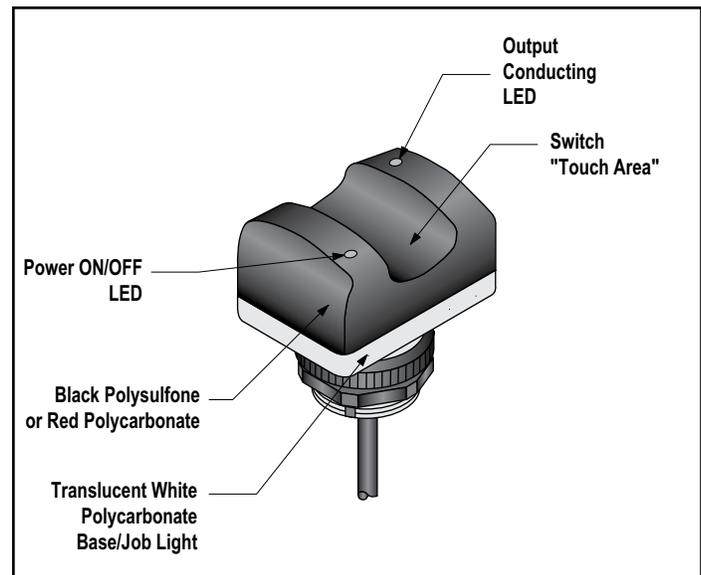


Figure 1. VTB Touch Button features

EZ-LIGHT™ VTB Series Touch Button

VTB Series Touch Button Indicators

Power On (red): Steady ON when power is applied

Output Conducting (red): Steady ON when button is activated
OFF when button is not activated

Job Light: Steady ON or flashing* when a task is to be performed

*Flashing job light is selected in hookup; see page 5. Color is dependent on model and hookup.

Rugged polypropylene (TP) field covers are available to prevent inadvertent switch actuation due to objects (such as loose clothing or debris) which might accidentally block the sensing beam. The polypropylene material is capable of absorbing high impact (even at low temperatures) and is highly resistant to abrasion and to damage by most chemicals. A variety of colors is available, allowing color-coding when multiple touch buttons are used. Note that when a field cover is used, it will also block a portion of the job light.

Installation

Mechanical Installation

The VTB Touch Button should be installed at such a height and in a location that will be comfortable for the user. In addition, shields, covers, rings, collars, dividers, or similar protection may be used to prevent accidental switch actuation. Figure 2 shows two methods for mounting the VTB Touch Buttons to prevent accidental switch actuation. When mounted on top of a surface, the protective field covers may be used as shown, or the VTB Touch Buttons may be mounted sideways under and/or behind another surface. This side mount prevents an object from being left on the switch, in the path of the beam and continually interrupting the beam.



Figure 2. VTB Buttons may be mounted with or without the optional field cover, so that they are protected from inadvertent actuation

Electrical Hookup

For single-color models, the job light may be either a solid or flashing color. This is accomplished in the hookup.

- For solid color, wire as shown in the standard hookups on page 5.
- For flashing (2 Hz), wire as shown in the alternate hookups (i.e., blue 12-30V dc, brown 0V, also shown on page 5).

For two-color models, the job light color is dependent on the hookup.

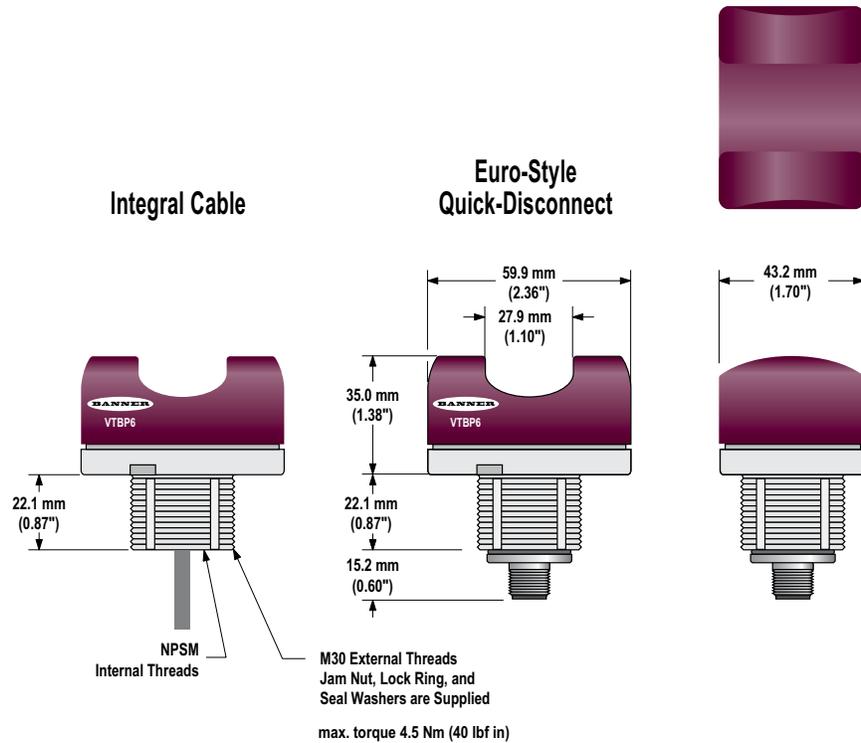
EZ-LIGHT™ VTB Series Touch Button

Specifications

Supply Voltage and Current	<p>12 to 30V dc (10% maximum ripple)</p> <p>One-Color Job Light Models: Less than 120 mA max current @ 12V dc (exclusive of load) Less than 70 mA max current @ 30V dc (exclusive of load)</p> <p>Two-Color Job Light Models: Less than 67 mA max current @ 12V dc (exclusive of load) Less than 40 mA max current @ 24V dc (exclusive of load) Less than 35 mA max current @ 30V dc (exclusive of load)</p>
Supply Protection Circuitry	Protected against transient voltages (fast-transient and over-voltage) and reverse polarity
Output Configuration	Choose 1 current sinking (NPN) open collector transistor or 1 current sourcing (PNP) open collector transistor, depending on model
Output Rating	<p>Maximum load: 150 mA</p> <p>On-state saturation voltage: < 1.5V @ 150 mA</p> <p>Off-state leakage current: < 10 µA</p>
Output Protection Circuitry	All models protected against false pulse on power-up (outputs held OFF for 1 second at power-up), overload and short-circuits.
Output Response Time	100 milliseconds ON/OFF
Indicators	<p>2 red LED indicators: Power ON and Output Conducting</p> <p>Base: Lights green, red or blue (depending on model and hookup) as a job light when input line is enabled. One-color models may be wired for flashing, rather than solid color operation.</p>
Construction	Totally encapsulated, non-metallic enclosure. Black polysulfone or red polycarbonate upper housing (see Application Note below); translucent white polycarbonate base. Electronics fully epoxy-encapsulated.
Connections	PVC-jacketed 2 m (6.5') cables or 4-pin Euro-style QD fitting, depending on model. Accessory QD cables required for QD models; see Accessories, page 6. Integral 9 m (30') cables are also available; see model selection chart, page 1.
Ambient Light Immunity	Up to 120,000 lux (direct sunlight)
EMI/RFI Immunity	Immune to EMI and RFI noise sources, per IEC 947-5-2.
Operating Conditions	<p>Temperature: -20° to +50° C (-4° to +122° F)</p> <p>Maximum relative humidity: 90% @ +50° C (non-condensing)</p>
Application Notes	<p>Environmental considerations for models with polysulfone upper housings: The polysulfone upper housing will become brittle with prolonged exposure to outdoor sunlight. Window glass effectively filters longer wavelength ultraviolet light and provides excellent protection from sunlight. Avoid contact with strong alkalis. Clean periodically using mild soap solution and a soft cloth.</p> <p>Environmental considerations for models with polycarbonate upper housings: Avoid prolonged exposure to hot water and moist high-temperature environments above 66° C (150° F). Avoid contact with aromatic hydrocarbons (such as xylene and toluene), halogenated hydrocarbons and strong alkalis. Clean periodically using mild soap solution and a soft cloth.</p>
Certification	

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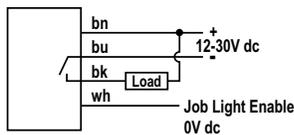
Dimensions



Hookups

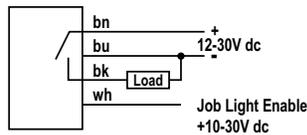
One-Color Job Light, NPN (Sinking) Output Models

Solid Job Light



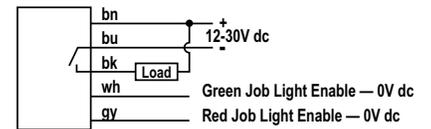
One-Color Job Light, PNP (Sourcing) Output Models

Solid Job Light

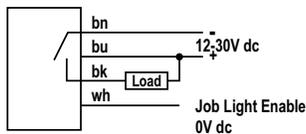


Two-Color Job Light Models

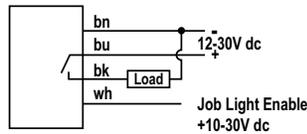
NPN (Sinking) Output Models



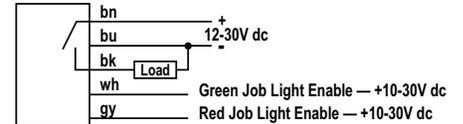
Flashing Job Light



Flashing Job Light



PNP (Sourcing) Output Models



NOTE: Cabled hookup shown. Cable and QD hookups are functionally identical.

EZ-LIGHT™ VTB Series Touch Button

Accessories

Quick-Disconnect (QD) Cables

Style	Model	Length	Dimensions	Pinout
4-Pin Euro Straight for use with one-color job light models	MQDC-406 MQDC-415 MQDC-430	2 m (6.5') 5 m (15') 9 m (30')		
4-Pin Euro Right-Angle for use with one-color job light models	MQDC-406RA MQDC-415RA MQDC-430RA	2 m (6.5') 5 m (15') 9 m (30')		
5-Pin Euro Straight for use with two-color job light models	MQDC1-506 MQDC1-515 MQDC1-530	2 m (6.5') 5 m (15') 9 m (30')		
5-Pin Euro Right-Angle for use with two-color job light models	MQDC1-506RA MQDC1-515RA MQDC1-530RA	2 m (6.5') 5 m (15') 9 m (30')		

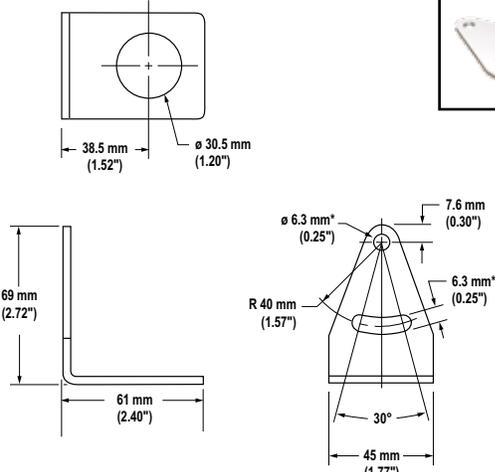
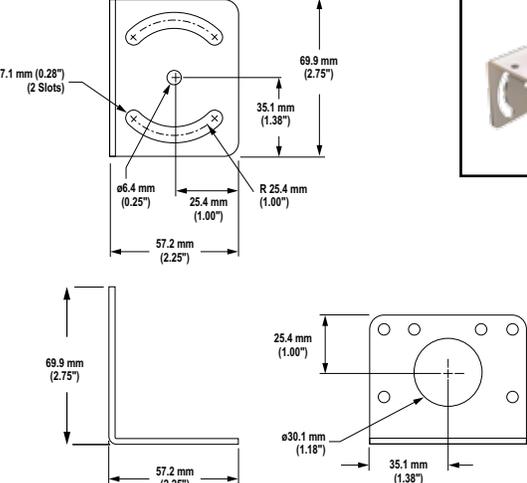
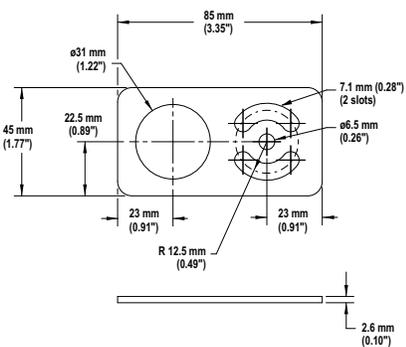
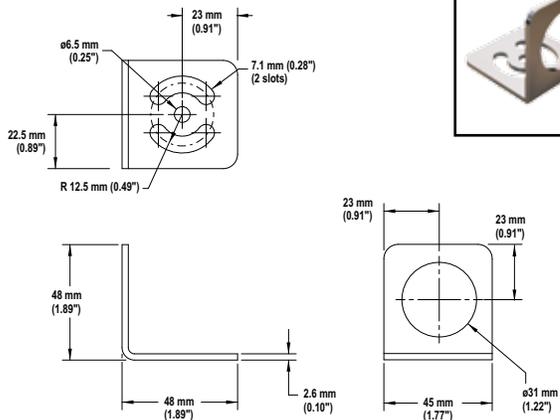
Field Covers

Field covers are designed to prevent inadvertent activation of optical touch buttons due to objects (loose clothing, debris, etc.) which might accidentally block their sensing beam. Field covers are constructed of rugged polypropylene and are highly resistant to abrasion and to damage by most chemicals.

Model	Description
OTC-1-BK OTC-1-GN OTC-1-RD OTC-1-YW	Black cover Green cover Red cover Yellow cover

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Mounting Brackets

<p>SMB30A</p>	<ul style="list-style-type: none"> • 12-ga. stainless steel right-angle mounting bracket with curved slot for versatile orientation • Clearance for M6 (1/4") hardware 	<p>SMB30MM</p>	<ul style="list-style-type: none"> • 30 mm 12-ga. stainless steel bracket with curved mounting slots for versatile orientation • Clearance for M6 (1/4") hardware
<p>* Use 5 mm (#10) screws to mount bracket. Drill screw holes 40.0 mm apart.</p>  	 		
<p>SMBAMS30P</p>	<p>SMBAMS30RA</p>		
<ul style="list-style-type: none"> • 12-ga. 300 series stainless steel • Flat SMBAMS series bracket with 30 mm hole for mounting sensors • Articulation slots for 90°+ of rotation   <p>Includes: 2 M6 (1/2") screws 2 washers 2 hex lock nuts</p>	<ul style="list-style-type: none"> • 12-ga. 300 series stainless steel • Right-angle SMBAMS series bracket with 30 mm hole for mounting sensors • Articulation slots for 90°+ of rotation  		

EZ-LIGHT™ VTB Series Touch Button

<p>SMB30SC</p>	<ul style="list-style-type: none"> • 30 mm swivel bracket • Black reinforced thermoplastic polyester • Includes stainless steel swivel locking hardware 	<p>SMB30FA</p>	<ul style="list-style-type: none"> • 12-ga. 300 series stainless steel • Right-angle bracket with 30 mm hole for mounting sensors • Attachment clamp allows 360° rotation • Threaded rod through-mounts to surface using washers and hex nuts
<div style="display: flex; justify-content: space-around;"> <div data-bbox="105 756 568 1176"> <p>Clearance for M6 (1/4") mounting hardware (not included)</p> <p>50.8 mm (2.00")</p> <p>M30 x 1.5 internal thread</p> <p>58.7 mm (2.31")</p> <p>66.5 mm (2.62")</p> <p>30.0 mm (1.18")</p> </div> <div data-bbox="600 436 763 651"> </div> <div data-bbox="600 661 763 745"> <p>Includes: 2 M5 s.s. machine screws 2 M5 hex lock nuts (s.s. and nylon)</p> </div> </div>		<div style="display: flex; justify-content: space-between;"> <div data-bbox="787 436 1266 1176"> <p>30 mm Bracket</p> <p>46.1 mm (1.81")</p> <p>3.0 mm (0.12")</p> <p>28 mm (1.10")</p> <p>29.8 mm (1.17")</p> <p>30.1 mm (1.18")</p> <p>32 mm (1.26")</p> <p>19.1 mm (0.75")</p> <p>19.8 mm (0.78")</p> <p>Clamp</p> <p>13.3 mm (0.52")</p> <p>13.0 mm (0.51")</p> <p>26.6 mm (1.05")</p> <p>3.2 mm (0.13")</p> <p>37.1 mm (1.46")</p> <p>15.9 mm (0.63")</p> <p>68.9 mm (2.71")</p> <p>37.4 mm (1.47")</p> <p>3/8 - 16 x 50.8 mm long</p> <p>Adjustment/Locking Screw 5/32" Hex</p> </div> <div data-bbox="1282 436 1461 651"> </div> <div data-bbox="1282 661 1445 745"> <p>Includes: 2 hex nuts 2 washers 1 lock washer</p> </div> </div>	



WARNING . . . Not To Be Used for Personnel Protection

Never use these products as sensing devices for personnel protection. Doing so could lead to serious injury or death.

These sensors do NOT include the self-checking redundant circuitry necessary to allow their use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition. Consult your current Banner Safety Products catalog for safety products which meet OSHA, ANSI and IEC standards for personnel protection.



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