

SSA-EBM-xxEAAQ120TBBKxx Series Emergency Stop Push Button with OTBVP6



Datasheet

Push-to-Stop, Twist-to-Release Electro-Mechanical Push Button



Shown with a K30 light

- Push-to-stop, twist-to-release operation per EN 60947-5-5
- Latching design complies with ISO 13850; direct (positive) opening operation per EN 60947-5-1
- OTBVP6 provides normally open PNP output for a variety of functions
- 12-pin M12 quick disconnect
- Gray, rectangular plastic enclosure
- Rugged design; easy installation with no assembly or individual wiring required
- EZ-LIGHT® Indication and Outputs (dependent on model)

SSA-EB... series models are "mushroom-style" electro-mechanical emergency stop push buttons. When the button is armed, the switch's safety contacts (normally closed/NC) are closed and its monitoring contacts (normally open/NO), if present, are open. When the button is pushed, the switch's safety contacts open, and the monitoring contacts close. The contacts remain in this condition until the push button is manually rearmed by twisting clockwise the red push button actuator.

The OTBVP6 is intended as a general-purpose initiator, and by itself is not a safety device. The output is on when an object (for example, an individual's finger) is placed in the sensing area. A field cover is included to minimize the possibility of unintended or inadvertent activation. If this cover is missing or has become lost or damaged, contact Banner for a no-charge replacement. See the OTB datasheet p/n 28436, available at <http://www.bannerengineering.com>, for additional information.

Models

Model	E-Stop Contacts	AUX output	EZ-LIGHT® Model and Color(s)	OTB Outputs
SSA-EBM-12EAAQ120TBBK30B	2 N.C. (positive opening)	1 N.O. (hard contact)	Green K30	2 PNP (1 x N.O., 1 x N.C.)
SSA-EBM-12EAAQ120TBBK50C	2 N.C. (positive opening)	1 N.O. (hard contact)	Green/Red/Yellow K50	2 PNP (1 x N.O., 1 x N.C.)
SSA-EBM-02EAAQ120TBBK30D	2 N.C. (positive opening)	n.a.	Red K30	2 PNP (1 x N.O., 1 x N.C.)
SSA-EBM-12EAAQ120TBBK30D	2 N.C. (positive opening)	1 N.O. (hard contact)	Red K30	2 PNP (1 x N.O., 1 x N.C.)

Important... Read this before proceeding!

The user is responsible for satisfying all local, state, and national laws, rules, codes, and regulations relating to the use of this product and its application. Banner Engineering Corp. has made every effort to provide complete application, installation, operation, and maintenance instructions. Please contact a Banner Applications Engineer with any questions regarding this product.

The user is responsible for making sure that all machine operators, maintenance personnel, electricians, and supervisors are thoroughly familiar with and understand all instructions regarding the installation, maintenance, and use of this product, and with the machinery it controls. The user and any personnel involved with the installation and use of this product must be thoroughly familiar with all applicable standards, some of which are listed within the specifications. Banner Engineering Corp. makes no claim regarding a specific recommendation of any organization, the accuracy or effectiveness of any information provided, or the appropriateness of the provided information for a specific application.

WARNING:



- **Not a safeguarding device**
- Failure to follow these instructions could result in serious injury or death.
- This device is not considered a safeguarding device because it requires an overt action by an individual to stop machine motion or hazards. A safeguarding device limits or eliminates an individual's exposure to a hazard without action by the individual or others. This device cannot be substituted for required safeguarding. Refer to the applicable standards to determine those requirements.

US Application Standards

ANSI B11.0 Safety of Machinery, General Requirements, and Risk Assessment

ANSI B11.19 Performance Criteria for Safeguarding

NFPA 79 Electrical Standard for Industrial Machinery



International/European Standards

EN ISO 12100 Safety of Machinery – General Principles for Design — Risk Assessment and Risk Reduction

ISO 13850 (EN 418) Emergency Stop Devices, Functional Aspects – Principles for Design

IEC 62061 Functional Safety of Safety-Related Electrical, Electronic and Programmable Control Systems

EN ISO 13849-1:2015 Safety-Related Parts of Control Systems

IEC/EN 60204-1 Electrical Equipment of Machines Part 1: General Requirements

EN 60947-1 Low Voltage Switchgear – General Rules

EN 60947-5-1 Low Voltage Switchgear – Electromechanical Control Circuit Devices

EN 60947-5-5 Low Voltage Switchgear – Electrical Emergency Stop Device with Mechanical Latching Function

Emergency Stop Considerations

NFPA 79, ANSI B11.19, IEC/EN 60204-1, and ISO 13850 specify emergency stop requirements, including the following:

- Emergency-stop push buttons shall be located at each operator control station and at other operating stations where emergency shutdown is required.
- Stop and emergency-stop push buttons shall be continuously operable and readily accessible from all control and operating stations where located. Do not mute or bypass E-stop buttons.
- Actuators of emergency-stop devices shall be colored red. The background immediately around the device actuator shall be colored yellow (where possible). The actuator of a push-button-operated device shall be of the palm or mushroom-head type.
- The emergency-stop actuator shall be a self-latching type.

WARNING:



- **Do not mute or bypass any emergency stop device**
- Muting or bypassing the safety outputs renders the emergency stop function ineffective.
- ANSI B11.19, NFPA 79 and IEC/EN 60204-1 require that the emergency stop function remains active at all times.

WARNING:



- **Connect two or more devices to the same safety module (controller) in series**
- Connecting devices in parallel defeats the switch contact monitoring ability of the module and creates an unsafe condition that could result in serious injury or death.
- Failure to test each device individually in this manner could result in undetected faults and create an unsafe condition that could result in serious injury or death.
- Connect the contacts of the corresponding pole of each switch in series. Never connect the contacts of multiple switches in parallel. Individually actuate (engage) each device, then release (or re-arm) and reset the safety module. This allows the module to check each switch and its wiring to detect faults. Perform this check during the prescribed checkouts.

Installation and Maintenance

The device must not be affected by environmental conditions. **Install the device so that operation is not impeded, but should be protected against inadvertent operation** (for example, accidental actuation by being bumped or leaned against). All hardware is user-supplied.

Electrical installation must be made by qualified personnel⁽¹⁾ and must comply with NEC (National Electrical Code), NFPA 79 or IEC/EN 60204-1, and all applicable local standards. It is not possible to give exact wiring instructions for a device that interfaces to a multitude of machine control configurations. The following is general in nature; it is recommended to perform a risk assessment to ensure appropriate application, interfacing/hookup, and risk reduction (see ISO 12100 or ANSI B11.0).

Pin	Color	Function	SSA-EBM-12EAAQ120TBBK30B	SSA-EBM-12EAAQ120TBBK50C	SSA-EBM-02EAAQ120TBBK30D *	SSA-EBM-12EAAQ120TBBK30D *
1	White	OTB N.O.	OTB N.O. (PNP) Output	OTB N.O. (PNP) Output	OTB N.O. (PNP) Output	OTB N.O. (PNP) Output
2	Brown	+24 V DC	OTB, K30 supply	OTB, K50 supply	OTB, K30 supply	OTB, K30 supply
3	Green	E-Stop N.O.	E-Stop N.O. (b)	E-Stop N.O. (b)	not used	E-Stop N.O. PNP (switches Pin 2)
4	Yellow	E-Stop N.C.	CH2(a)	CH2(a)	CH2(a)	CH2(a)

Continued on page 3

⁽¹⁾ A Qualified Person possesses a recognized degree or certificate or has extensive knowledge, training, and experience to solve problems relating to the emergency stop installation.

Continued from page 2

Pin	Color	Function	SSA-EBM-12EAAQ120TBBK30B	SSA-EBM-12EAAQ120TBBK50C	SSA-EBM-02EAAQ120TBBK30D *	SSA-EBM-12EAAQ120TBBK30D *
5	Gray	E-Stop N.C.	CH2(b)	CH2(b)	CH2(b)	CH2(b)
6	Pink	E-Stop N.C.	CH1(a)	CH1(a)	CH1(a)	CH1(a)
7	Blue	0 V DC	OTB and K30 common	OTB and K50 common	OTB and K30 common	OTB and K30 common
8	Red	E-Stop N.C.	CH1(b)	CH1(b)	CH1(b)	CH1(b)
9	Orange	K30/K50	+24 V DC signal to illuminate K30 Green	+24 V DC signal to illuminate K50 Green/Yellow **	not used	not used
10	White/Brown	E-Stop N.O.	E-Stop N.O. (a)	E-Stop N.O. (a)	not used	not used
11	Black	OTB N.C.	OTB N.C. output	OTB N.C. PNP output	OTB N.C. PNP output	OTB N.C. PNP output
12	Violet	K30/K50	K30 N.O. PNP Output	+24 V DC signal to illuminate K50 Red/Yellow *	not used	not used

* SSA-EBM-x2EAAQ120TBBK30D: EZ-LIGHT K30 illuminates RED when E-Stop is actuated (pushed).

** SSA-EBM-12EAAQ120TBBK50C EZ-LIGHT K50 logic:

Illumination	Pin 9	Pin 12
Green	+24 V DC	open
Red	open	+24 V DC
Yellow	+24 V DC	+24 V DC

WARNING:

- **Risk of electric shock**

- Use extreme caution to avoid electrical shock. Serious injury or death could result.
- Always disconnect power from the safety system (for example, device, module, interfacing, etc.), guarded machine, and/or the machine being controlled before making any connections or replacing any component. Lockout/tagout procedures might be required. Refer to OSHA 29CFR1910.147, ANSI Z244-1, or the applicable standard for controlling hazardous energy.
- Make no more connections to the device or system than are described in this manual. Electrical installation and wiring must be made by a Qualified Person⁽¹⁾ and must comply with the applicable electrical standards and wiring codes, such as the NEC (National Electrical Code), NFPA 79, or IEC 60204-1, and all applicable local standards and codes.

Checkout

At machine set up, a *Designated Person*⁽²⁾ should test each safety point for proper machine shutdown response. A *Designated Person* should check the safety point for proper operation, physical damage, button looseness, and excessive environmental contamination. This should take place on a periodic schedule determined by the user, based on the severity of the operating environment and the frequency of switch actuations.

Adjust, repair, or replace components as needed. If inspection reveals contamination on the switch, thoroughly clean the switch and eliminate the cause of the contamination. Replace the switch and/or appropriate components when any parts or assemblies are damaged, broken, deformed, or badly worn; or if the electrical/mechanical specifications (for the environment and operating conditions) have been exceeded.

Always test the control system for proper functioning under machine control conditions after performing maintenance, replacing the safety point, or replacing any component of the device.

Specifications

Supply Voltage

+24 V DC \pm 20% (pin 2)

OTBVP6: 25 mA, exclusive of load (see OTBVP6 specifications)

EZ-LIGHT K30L: 25 mA maximum per LED color

EZ-LIGHT K50L: 50 mA maximum

Electrical Rating

2 A at 60 V AC / 75 V DC maximum

Rated Insulation Voltage (Ui)

60 V AC / 75 V DC

Rated Current (Ith)

2A

⁽¹⁾ A person who, by possession of a recognized degree or certificate of professional training, or who, by extensive knowledge, training and experience, has successfully demonstrated the ability to solve problems relating to the subject matter and work.

⁽²⁾ A *Designated Person* is identified in writing by the employer as being appropriately trained to perform a specified checkout procedure. A Qualified Person possesses a recognized degree or certificate or has extensive knowledge, training, and experience to solve problems relating to the emergency stop installation.

Electrical Life

E-Stop Contacts: 1,000,000 operations

Mechanical Life

E-Stop Button: 300,000 operations

Contacts: 1,000,000 operations

Construction

Housing: Polycarbonate, Mounting: #10 beveled screw

E-Stop Button: Plastic: Polycarbonate / Polyamide;
Metal: Aluminum and zinc alloy

OTBVP6: See OTBVP6 specifications

EZ-LIGHT K30L: Thermoplastic polyester base, thermoplastic diffuser

EZ-LIGHT K50L: Polycarbonate base, translucent polycarbonate diffuser (dome)

Operating Conditions

Temperature: -20 °C to +50 °C (-4 °F to +122 °F)

Humidity: 45% to 85% relative humidity (no condensation)

Environmental Rating

IP50 (IEC60526)

Output Configuration

See "[Installation and Maintenance](#)" on page 2

E-Stop Design Standards

Compliant with EN 60497-1 / -5-1, ISO 13850, ANSI B11.19 , NFPA 79, IEC/EN 60204-1

Rated Operating Current and Voltage (Ue)

		24 V	48 V	60 V AC/75 V DC
AC 50/60 Hz	Inductive Load (AC-15)	2 A	2 A	2 A
DC	Inductive Load (DC-13)	2 A	1.5 A	0.55 A

OTBVP6 Touch Button Specifications

Output Configuration: Normally Open (pin 1), Normally Closed (pin 11); PNP sourcing (depending on model)

Output Rating: 150 mA maximum load

Ambient Light Immunity: 120,000 lux (direct sunlight)

EMI/RFI Immunity: Highly resistant to both single and mixed EMI and RFI noise sources

Indicator LEDs: Two indicator LEDs: Power ON; Output ON

Construction:

Black polysulfone upper housing and fiber-reinforced PBT base. Electronics fully epoxyencapsulated. Sealed, non-metallic enclosure.

Field cover of polycarbonate-PET polyester.

Environmental Considerations: Prolonged exposure to direct outdoor sunlight will cause embrittlement of the polysulfone housing. Window glass provides protection from sunlight. Contact Banner Engineering regarding outdoor applications.

Clean periodically using mild soap solution and a soft cloth. Avoid strong alkaline materials.

Certifications for the E-Stop Button



Banner Engineering BV
Park Lane, Culliganlaan 2F bus 3
1831 Diegem, BELGIUM



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Blenheim Court
Wickford, Essex SS11 8YT
GREAT BRITAIN



Certifications for the OTBVP6



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Certifications for the EZ-LIGHT K30L/K50L



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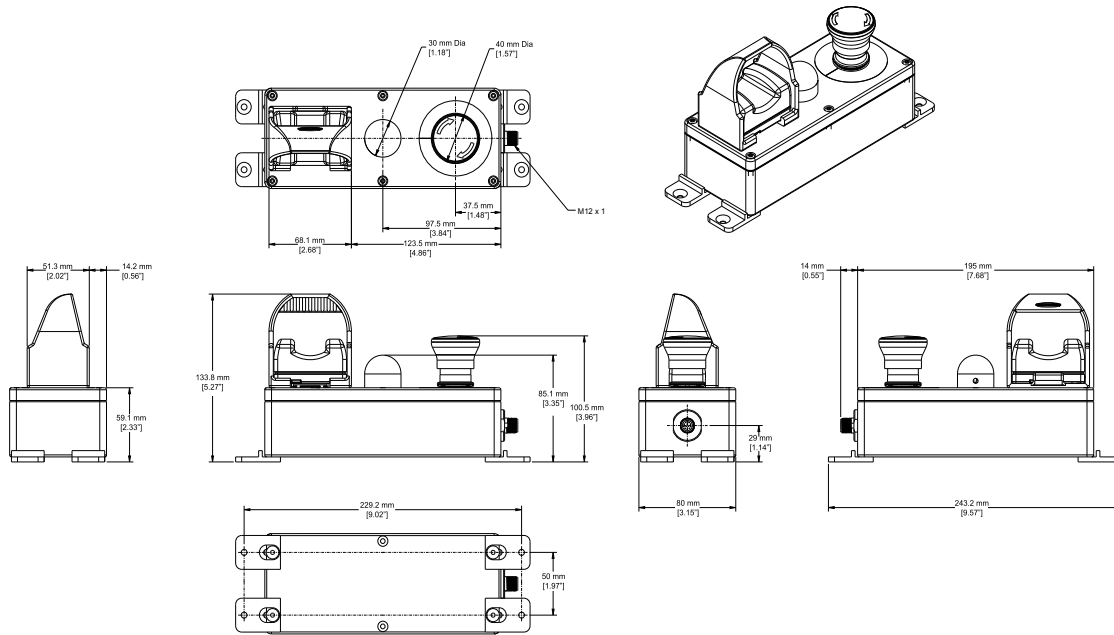


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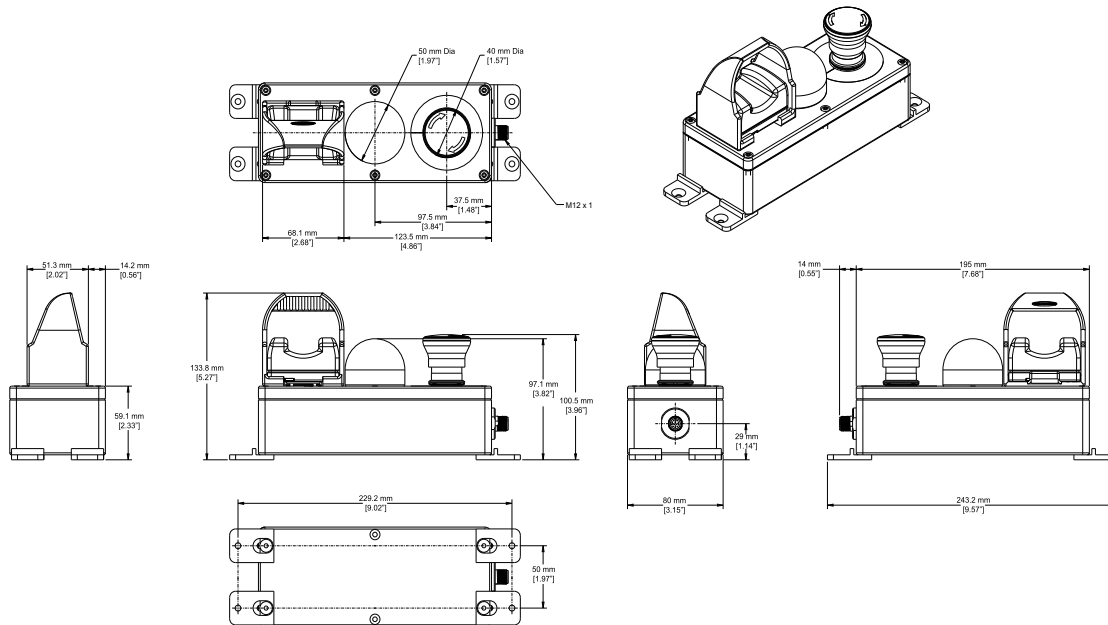


Dimensions

SSA-EBM-12EAAQ120TBBK30D



SSA-EBM-12EAAQ12K50C and Q120TBBK50C



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