

TWO-HAND CONTROL MODULES

DUO-TOUCH® SG Modules



STB Buttons



DUO-TOUCH® SG Run Bars


DUO-TOUCH® SG page 556

- Monitors STB buttons or other actuators
- Delivers highest level of safety for two-hand controls by meeting or exceeding OSHA/ANSI control reliability requirements
- Designed to meet Category 4 per ISO 13849-1 (EN 954-1) and Type IIIC two-hand control per ISO 13351 (EN 574)
- Offers choice of operating voltages, functions and outputs







STB Self-Checking Buttons page 561

- Delivers highest level of safety for two-hand controls
- Self-checks for internal problems
- Features ergonomic design to prevent repetitive motion stress


DUO-TOUCH® SG Run Bars page 564

- Provides convenient ergonomic means for two-hand control actuation
- Simplifies installment
- Includes two STB self-checking touch buttons (to be interfaced with DUO-TOUCH® SG modules or other Type IIIC two-hand control logic)

DUO-TOUCH® SG Selection Chart

| | Type | Supply Voltage | Inputs | Safety Outputs | Auxiliary Outputs | Output Rating | Housing Width | Model | Catalog Page |
|--|-----------------|--------------------|-----------------------|----------------|---------------------------|---------------|---------------|-------------------|--------------|
|  | IIIC (cat 4) | 24V ac/dc | 2 STB* | 2 NO | — | 6 amps | 22.5 mm | AT-FM-10K | 556 |
|  | | 115V ac/ 24V dc | 2 STB* | 4 NO | 1 NPN, 1 PNP & 1 NC | | 45 mm | AT-GM-13A | |
|  | | 230V ac/ 24V dc | 2 STB* | 4 NO | 1 NPN, 1 PNP & 1 NC | | 45 mm | AT-HM-13A | |
|  | | 115V ac/ 24V dc | 2 STB* & Muting | 2 NO | 1 NPN, 1 PNP & 1 NC | | 67.5 mm | AT-GM-11KM | |
|  | | 230V ac/ 24V dc | 2 STB* & Muting | 2 NO | 1 NPN, 1 PNP & 1 NC | | 67.5 mm | AT-HM-11KM | |

NC = Normally Closed, NO = Normally Open

* May also use two mechanical push buttons, each with one normally open (NO) and one normally closed (NC) contact (Form C). See data sheets for details.

- Photoelectrics Sensors
- Fiber Optic Sensors
- Special Purpose Sensors
- Measurement & Inspection Sensors
- Vision
- Wireless
- Lighting & Indicators
- Safety Light Screens
- Safety Laser Scanners
- Fiber Optic Safety Systems
- Safety Controllers & Modules
- Safety Two-Hand Control Modules**
- Safety Interlock Switches
- Emergency Stop & Stop Control

- DUO-TOUCH SG**
- STB BUTTONS
- DUO-TOUCH RUN BARS

DUO-TOUCH® SG

Two-Hand Control Modules, STB Compatible

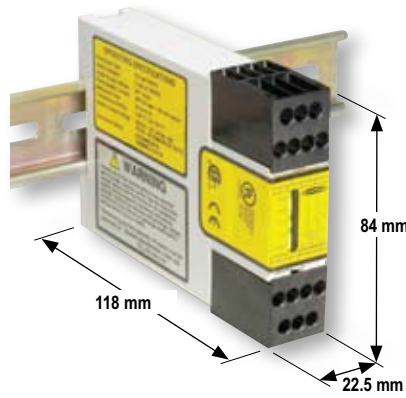
- Modules work with Banner STB self-checking touch buttons or can be retrofitted with existing mechanical palm buttons to create a complete, ergonomic two-hand control system (see page 561).
- To ensure OSHA/ANSI Control Reliability, modules have a diverse-redundant microcontroller circuit and multiple redundant, force-guided (mechanically linked) output contacts.
- Anti-tiedown logic requires that both touch buttons are activated within one-half second or less of each other.
- Designed to meet Category 4 per ISO 13849-1 (EN 954-1) and functional Type IIIC two-hand control per ISO 13851 (EN 574).
- Removable terminal blocks allow convenient wiring and exchanging of modules without rewiring.
- Optional mute inputs allow release of actuating buttons during the non-hazardous portion of the machine cycle.
- Modules easily interface with DUO-TOUCH® Run Bars with STBs for an economical, convenient means for actuation.



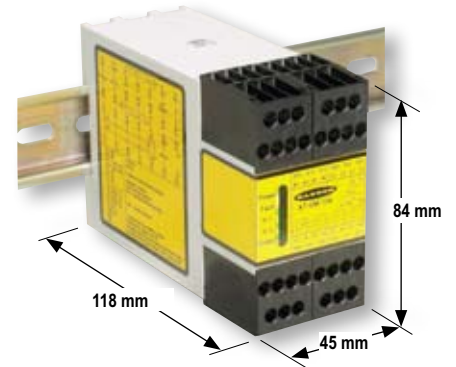
ACCESSORIES
page
563



AT-GM-11KM & AT-HM-11KM Models
(AT-GM-11KM shown)



AT-FM-10K Model



AT-GM-13A & AT-HM-13A Models
(AT-GM-13A shown)



DUO-TOUCH® SG Run Bar



Page 564

- Provides convenient economical means for two-hand control actuation
- Simplifies installment
- Includes two STB self-checking touch buttons

STB Self-Checking Touch Buttons



Page 561

- Delivers highest level of safety for two-hand controls
- Self-checks for internal problems
- Features ergonomic design to prevent repetitive motion stress

DUO-TOUCH® SG Two-Hand Control Modules


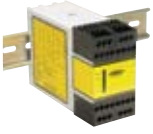



| Supply Voltage | Inputs | Safety Outputs | Output Rating | Auxiliary Outputs | Muting | Terminals | Model |
|----------------|-----------------------|----------------|---------------|---------------------------|--------|-----------|------------|
| 24V ac/dc | 2 STB* | 2 NO | 6 amps | — | — | Removable | AT-FM-10K |
| 115V ac/24V dc | 2 STB* | 4 NO | 6 amps | 1 NPN, 1 PNP & 1 NC | — | Removable | AT-GM-13A |
| 230V ac/24V dc | | | | | | | AT-HM-13A |
| 115V ac/24V dc | 2 STB* & Muting | 2 NO | 6 amps | 1 NPN, 1 PNP & 1 NC | Yes | Removable | AT-GM-11KM |
| 230V ac/24V dc | | | | | | | AT-HM-11KM |

NC = Normally Closed, NO = Normally Open


* May also use two mechanical push buttons, each with one normally open (NO) and one normally closed (NC) contact (Form C). See data sheets for details.

NOTE: Kits are available which include one DUO-TOUCH SG Safety Module and two STB Touch Buttons. STB Touch Buttons are also available separately. See page 561.

DUO-TOUCH® SG Kits — Solid-State STB Touch Buttons (Meets Category IIIC)

| Kit | Kit Components† | | | | | |
|--------------|---|----------------|----------------|------------------------|----------------------------------|----------|
| | DUO-TOUCH® SG Safety Module | Supply Voltage | Safety Outputs | Auxiliary Outputs | STB Touch Buttons (see page 561) | |
| | | | | | Connection | Model |
| ATK-VP6 |  AT-FM-10K | 24V ac/dc | 2 NO | — | 2 m | STBVP6 |
| ATK-VP6Q | | | | | 4-Pin Mini QD | STBVP6Q |
| ATK-VP6Q5 | | | | | 4-Pin Euro QD | STBVP6Q5 |
| ATGMK-VP6 |  AT-GM-13A | 115V ac/24V dc | 4 NO | 1 NPN, 1 PNP & 1 NC | 2 m | STBVP6 |
| ATGMK-VP6Q | | | | | 4-Pin Mini QD | STBVP6Q |
| ATGMK-VP6Q5 | | | | | 4-Pin Euro QD | STBVP6Q5 |
| ATHMK-VP6 |  AT-HM-13A | 230V ac/24V dc | 4 NO | 1 NPN, 1 PNP & 1 NC | 2 m | STBVP6 |
| ATHMK-VP6Q | | | | | 4-Pin Mini QD | STBVP6Q |
| ATHMK-VP6Q5 | | | | | 4-Pin Euro QD | STBVP6Q5 |
| ATGMKM-VP6 |  AT-GM-11KM | 115V ac/24V dc | 2 NO | 1 NPN, 1 PNP & 1 NC | 2 m | STBVP6 |
| ATGMKM-VP6Q | | | | | 4-Pin Mini QD | STBVP6Q |
| ATGMKM-VP6Q5 | | | | | 4-Pin Euro QD | STBVP6Q5 |
| ATHMKM-VP6 |  AT-HM-11KM | 230V ac/24V dc | 2 NO | 1 NPN, 1 PNP & 1 NC | 2 m | STBVP6 |
| ATHMKM-VP6Q | | | | | 4-Pin Mini QD | STBVP6Q |
| ATHMKM-VP6Q5 | | | | | 4-Pin Euro QD | STBVP6Q5 |

NC = Normally Closed, NO = Normally Open

 **Connection options:** A model with a QD requires a mating cordset (see page 563).

For 9 m cable, add suffix W/30 to the 2 m model number (example, ATK-VP6 W/30).










† Contact factory for DUO-TOUCH SG kits with e/m relay STB Buttons.

- Photoelectrics Sensors
- Fiber Optic Sensors
- Special Purpose Sensors
- Measurement & Inspection Sensors
- Vision
- Wireless
- Lighting & Indicators
- Safety Light Screens
- Safety Laser Scanners
- Fiber Optic Safety Systems
- Safety Controllers & Modules
- Safety Two-Hand Control Modules**
- Safety Interlock Switches
- Emergency Stop & Stop Control

ACCESSORIES
page 563

DUO-TOUCH SG
STB BUTTONS
DUO-TOUCH RUN BARS

DUO-TOUCH® SG AT-FM-10K Modules Specifications

| | | | | | | | | | | | | | | |
|---|---|--|-------------------------------|--------------------------|---------------------------------|-----------------------------|---------------------------------|-------------------------------|---|--|--|---|--|--|
| Supply Voltage and Current | 24V dc $\pm 15\%$ @ 150 mA (use a SELV-rated supply according to EN IEC 60950, NEC Class 2) 24V ac $\pm 15\%$ @ 150 mA, 50-60 Hz $\pm 5\%$ (use an NEC Class 2-rated transformer) To comply with UL and CSA standards, the installation's isolated secondary power supply circuit must incorporate a method to limit the overvoltage to 0.8 kV. | | | | | | | | | | | | | |
| Supply Protection Circuitry | Protected against transient voltages and reverse polarity | | | | | | | | | | | | | |
| Overvoltage Category | Output relay contact voltage of 1V to 150V ac/dc: Category III Output relay contact voltage of 151V to 250V ac/dc: Category II (Category III, if appropriate overvoltage reduction is provided, as described in datasheet.) | | | | | | | | | | | | | |
| Pollution Degree | 2 | | | | | | | | | | | | | |
| Safety Outputs | <p>Each normally open output channel is a series connection of contacts from two forced-guided (mechanically linked) relays, K1-K2.</p> <p>Contacts: AgNi, 5 μm gold-plated</p> <p>Low Current Rating: The 5 μm gold-plated contacts allow the switching of low current/low voltage. In these low-power applications, multiple contacts can also be switched in series (e.g., "dry switching"). To preserve the gold plating on the contacts, do not exceed the following max. values at any time</p> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;">Min. voltage: 1V ac/dc</td> <td style="text-align: center;">Max. voltage: 60V</td> </tr> <tr> <td style="text-align: center;">Min. current: 5 mA ac/dc</td> <td style="text-align: center;">Max. current: 300 mA</td> </tr> <tr> <td style="text-align: center;">Min. power: 5 mW (5 mVA)</td> <td style="text-align: center;">Max. power: 7 W (7 VA)</td> </tr> </table> <p>High Current Rating: If higher loads must be switched through one or more of the contacts, the minimum and maximum values of the contact(s) changes to:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; vertical-align: middle;">  </td> <td style="padding: 5px;"> Minimum Voltage: 15V ac/dc Current: 30 mA ac/dc Power: 0.45 W (0.45 VA) </td> <td style="padding: 5px;"> Maximum 250V ac/dc / 24V dc, 6 A resistive B300, R300 per UL508 </td> </tr> <tr> <td style="text-align: center; vertical-align: middle;">  </td> <td style="padding: 5px;"> Minimum Voltage: 15V ac/dc Current: 30 mA ac/dc Power: 0.45 W (0.45 VA) </td> <td style="padding: 5px;"> Maximum 250V ac/dc / 24V dc, 6 A resistive IEC 60947-5-1 AC15 230V ac, 3A; DC-13: 24V dc, 2A </td> </tr> </table> <p>Mechanical life: 20,000,000 operations Electrical life (switching cycles of the output contacts, resistive load): 150,000 cycles @ 900 VA; 1,000,000 cycles @ 250 VA; 2,000,000 cycles @ 150 VA; 5,000,000 cycles @ 100 VA NOTE: Transient suppression is recommended when switching inductive loads. Install suppressors across load. Never install suppressors across output contacts.</p> | | Min. voltage: 1V ac/dc | Max. voltage: 60V | Min. current: 5 mA ac/dc | Max. current: 300 mA | Min. power: 5 mW (5 mVA) | Max. power: 7 W (7 VA) |  | Minimum Voltage: 15V ac/dc Current: 30 mA ac/dc Power: 0.45 W (0.45 VA) | Maximum 250V ac/dc / 24V dc, 6 A resistive B300, R300 per UL508 |  | Minimum Voltage: 15V ac/dc Current: 30 mA ac/dc Power: 0.45 W (0.45 VA) | Maximum 250V ac/dc / 24V dc, 6 A resistive IEC 60947-5-1 AC15 230V ac, 3A; DC-13: 24V dc, 2A |
| Min. voltage: 1V ac/dc | Max. voltage: 60V | | | | | | | | | | | | | |
| Min. current: 5 mA ac/dc | Max. current: 300 mA | | | | | | | | | | | | | |
| Min. power: 5 mW (5 mVA) | Max. power: 7 W (7 VA) | | | | | | | | | | | | | |
|  | Minimum Voltage: 15V ac/dc Current: 30 mA ac/dc Power: 0.45 W (0.45 VA) | Maximum 250V ac/dc / 24V dc, 6 A resistive B300, R300 per UL508 | | | | | | | | | | | | |
|  | Minimum Voltage: 15V ac/dc Current: 30 mA ac/dc Power: 0.45 W (0.45 VA) | Maximum 250V ac/dc / 24V dc, 6 A resistive IEC 60947-5-1 AC15 230V ac, 3A; DC-13: 24V dc, 2A | | | | | | | | | | | | |
| Output Response Time | 35 milliseconds maximum | | | | | | | | | | | | | |
| Input Requirements | Outputs from actuating devices must each be capable of switching 25 mA @ 24V dc (nominal). | | | | | | | | | | | | | |
| Simultaneity Monitoring Period | ≤ 500 milliseconds | | | | | | | | | | | | | |
| Status Indicators | 4 green LEDs: Power ON Input 1 energized Input 2 energized Output | 1 red LED: Fault | | | | | | | | | | | | |
| Construction | Polycarbonate housing | | | | | | | | | | | | | |
| Environmental Rating | IEC IP20 | | | | | | | | | | | | | |
| Mounting | Mounts to standard 35 mm DIN rail track. Safety Module must be installed inside an enclosure rated NEMA 3 (IP54), or better. | | | | | | | | | | | | | |
| Vibration Resistance | 10 to 55 Hz @ 0.35 mm displacement per IEC 60068-2-6 | | | | | | | | | | | | | |
| Operating Conditions | Temperature: 0° to +50° C Relative humidity: 90% @ +50° C (non-condensing) | | | | | | | | | | | | | |
| Design Standards |  : Cat. 4 PL e, per EN ISO 13849-1; SIL 3 per IEC 61508 and IEC 62061; Type IIIC per ISO 13851 (EN574) (when used with STBs or hard contacts) | | | | | | | | | | | | | |
| Certifications |   | | | | | | | | | | | | | |
| Wiring Diagrams | WD065 (p. 818) | | | | | | | | | | | | | |

DUO-TOUCH® SG AT-..M-13A Modules Specifications

| | | | | | | | | | | | |
|--|--|--------------------------------|---|----------------------------|---|-------------------------------------|------------------------------------|---|--|--|--|
| Supply Voltage and Current | AT-GM-13A: 115V ac, ±15%; 50/60 Hz & 24V dc, ±15%, 10% max. ripple AT-HM-13A: 230V ac, ±15%; 50/60 Hz & 24V dc, ±15%, 10% max. ripple | | | | | | | | | | |
| Power Consumption | Approx. 4 W/7 VA | | | | | | | | | | |
| Supply Protection Circuitry | Protected against transient voltages and reverse polarity | | | | | | | | | | |
| Safety Outputs (including Auxiliary NC output 51/52) | <p>Outputs (K1 and K2): four redundant (total of eight) forced-guided safety relay contacts</p> <p>Contact ratings:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Min. voltage: 15V ac/dc</td> <td style="width: 50%;">Max. voltage: 250V ac or 250V dc</td> </tr> <tr> <td>Min. current: 30 mA</td> <td>Max. current: 6A ac or dc (resistive load)</td> </tr> <tr> <td>Min. power: 0.45 VA (0.45 W)</td> <td>Max. power: 1500 VA (200 W)</td> </tr> <tr> <td colspan="2">Mechanical life: 50,000,000 operations</td> </tr> <tr> <td colspan="2">Electrical life: 150,000 cycles (typically @ 1.5 kVA switching power)</td> </tr> </table> <p>NOTE: Transient suppression is recommended when switching inductive loads. Install suppressors across load. Never install suppressors across output contacts.</p> | Min. voltage: 15V ac/dc | Max. voltage: 250V ac or 250V dc | Min. current: 30 mA | Max. current: 6A ac or dc (resistive load) | Min. power: 0.45 VA (0.45 W) | Max. power: 1500 VA (200 W) | Mechanical life: 50,000,000 operations | | Electrical life: 150,000 cycles (typically @ 1.5 kVA switching power) | |
| Min. voltage: 15V ac/dc | Max. voltage: 250V ac or 250V dc | | | | | | | | | | |
| Min. current: 30 mA | Max. current: 6A ac or dc (resistive load) | | | | | | | | | | |
| Min. power: 0.45 VA (0.45 W) | Max. power: 1500 VA (200 W) | | | | | | | | | | |
| Mechanical life: 50,000,000 operations | | | | | | | | | | | |
| Electrical life: 150,000 cycles (typically @ 1.5 kVA switching power) | | | | | | | | | | | |
| Auxiliary Supply Voltage (for Solid-State outputs) | 24V dc @ 1A (between Y30 & Y33) | | | | | | | | | | |
| Auxiliary Solid-State Output Current | 500 mA max., short circuit protected (Y32 or Y33) | | | | | | | | | | |
| Output Response Time | 35 milliseconds max. ON/OFF | | | | | | | | | | |
| Input Requirements | Outputs from actuating devices (1 NO and 1 NC) must each be capable of switching 20 mA @ 12V dc. | | | | | | | | | | |
| Simultaneity Monitoring Period | ≤ 500 milliseconds | | | | | | | | | | |
| Z1/Z2 Courtesy Voltage | 24V dc @ 150 mA (for STB button power) | | | | | | | | | | |
| External Device Monitoring (EDM) | One pair of terminals (Y1 and Y2) are provided to monitor the state of external devices controlled by the safety outputs. Each device must be capable of switching 15 to 30V dc at 10-50 mA. | | | | | | | | | | |
| Status Indicators | <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">4 green LEDs:</td> <td style="width: 50%;">1 red LED:</td> </tr> <tr> <td>Power ON</td> <td>Fault</td> </tr> <tr> <td>Input 1 energized</td> <td></td> </tr> <tr> <td>Input 2 energized</td> <td></td> </tr> <tr> <td>Output</td> <td></td> </tr> </table> | 4 green LEDs: | 1 red LED: | Power ON | Fault | Input 1 energized | | Input 2 energized | | Output | |
| 4 green LEDs: | 1 red LED: | | | | | | | | | | |
| Power ON | Fault | | | | | | | | | | |
| Input 1 energized | | | | | | | | | | | |
| Input 2 energized | | | | | | | | | | | |
| Output | | | | | | | | | | | |
| Environmental Rating | Polycarbonate. Rated NEMA 1; IP20 | | | | | | | | | | |
| Mounting | Mounts to standard 35 mm DIN rail track. Safety Module must be installed inside an enclosure rated NEMA 3 (IP54), or better. | | | | | | | | | | |
| Vibration Resistance | 10 to 55 Hz @ 0.35 mm displacement per IEC 60068-2-6 | | | | | | | | | | |
| Operating Conditions | Temperature: 0° to +50° C Relative humidity: 90% @ +50° C (non-condensing) | | | | | | | | | | |
| Design Standards | Designed to comply with Category 4 per ISO 13849-1 (EN 954-1); Type IIIC per ISO 13851 (EN 574) | | | | | | | | | | |
| Certifications | <div style="display: flex; align-items: center;"> <div style="font-size: 2em; margin-right: 20px;">CE</div> <div> <p>Important Notice: European Community Machinery Directive 2006/42/EC The DUO-TOUCH SG AT-..M-13A Two-Hand Control Modules comply with Machine Directive 98/37/EC. After December 31, 2011, when Machine Directive 2006/42/EC will be in force, the DUO-TOUCH SG AT-..M-13A Two-Hand Control Modules can only be installed as a replacement component within the European Union (EU). For more information, please see www.bannerengineering.com/144763 or call 1-888-373-6767.</p> </div> </div> | | | | | | | | | | |
| Wiring Diagrams | AT-..M-13A models: WD066 (p. 819) AT-..M-13A to STB Buttons: WD068 (p. 820) | | | | | | | | | | |

- Photoelectrics Sensors
- Fiber Optic Sensors
- Special Purpose Sensors
- Measurement & Inspection Sensors
- Vision
- Wireless
- Lighting & Indicators
- Safety Light Screens
- Safety Laser Scanners
- Fiber Optic Safety Systems
- Safety Controllers & Modules
- Safety Two-Hand Control Modules**
- Safety Interlock Switches
- Emergency Stop & Stop Control

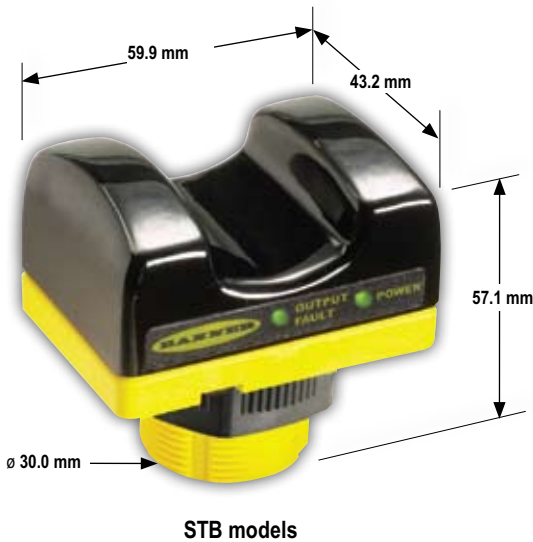
- DUO-TOUCH SG**
- STB BUTTONS
- DUO-TOUCH RUN BARS

DUO-TOUCH® SG AT-..M-11KM with Muting Specifications

| | | | | | | | | | | | | | | | |
|--|---|--------------------------------|---|----------------------------|---|-------------------------------------|---------------------------------------|---|--|--|--|------------------|--|--------|--|
| Supply Voltage and Current | AT-GM-11KM: 115V ac, ± 15%; 50/60Hz & 24V dc, +/- 15%, 10% max. ripple AT-HM-11KM: 230V ac, ± 15%; 50/60Hz & 24V dc, +/- 15%, 10% max. ripple | | | | | | | | | | | | | | |
| Power Consumption | Approx. 4 W / 7 VA | | | | | | | | | | | | | | |
| Supply Protection Circuitry | Protected against transient voltages and reverse polarity | | | | | | | | | | | | | | |
| Safety Outputs | <p>Outputs (K1 and K2): two redundant (total of four) safety relay (forced-guided) contacts</p> <p>Contact ratings:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Min. voltage: 15V ac/dc</td> <td style="width: 50%;">Max. voltage: 250V ac or 250V dc</td> </tr> <tr> <td>Min. current: 30 mA</td> <td>Max. current: 6A ac or dc (resistive load)</td> </tr> <tr> <td>Min. power: 0.45 W (0.45 VA)</td> <td>Max. power: 1500 VA, 200 watts</td> </tr> <tr> <td colspan="2">Mechanical life: 50,000,000 operations</td> </tr> <tr> <td colspan="2">Electrical life: 150,000 cycles (typically @ 1.5 kVA switching power)</td> </tr> </table> <p>NOTE: Transient suppression is recommended when switching inductive loads. Install suppressors across load. Never install suppressors across output contacts.</p> | Min. voltage: 15V ac/dc | Max. voltage: 250V ac or 250V dc | Min. current: 30 mA | Max. current: 6A ac or dc (resistive load) | Min. power: 0.45 W (0.45 VA) | Max. power: 1500 VA, 200 watts | Mechanical life: 50,000,000 operations | | Electrical life: 150,000 cycles (typically @ 1.5 kVA switching power) | | | | | |
| Min. voltage: 15V ac/dc | Max. voltage: 250V ac or 250V dc | | | | | | | | | | | | | | |
| Min. current: 30 mA | Max. current: 6A ac or dc (resistive load) | | | | | | | | | | | | | | |
| Min. power: 0.45 W (0.45 VA) | Max. power: 1500 VA, 200 watts | | | | | | | | | | | | | | |
| Mechanical life: 50,000,000 operations | | | | | | | | | | | | | | | |
| Electrical life: 150,000 cycles (typically @ 1.5 kVA switching power) | | | | | | | | | | | | | | | |
| Auxiliary Supply Voltage (for solid-state outputs) | 24V dc @ 1A (applied between Y30 & Y31) | | | | | | | | | | | | | | |
| Auxiliary Solid-State Output Current | 500 mA max., short circuit protected, Y32 is a PNP output, Y33 is an NPN output | | | | | | | | | | | | | | |
| Output Response Time | 35 milliseconds max. ON/OFF | | | | | | | | | | | | | | |
| Input Requirements | Outputs from actuating devices must each be capable of switching up to 20 mA @ 12V dc. | | | | | | | | | | | | | | |
| Simultaneity Monitoring Period | ≤ 500 milliseconds | | | | | | | | | | | | | | |
| Z1/Z2 Courtesy Voltage | 24V dc @ 150 mA (for STB button power, separate from Auxiliary output, unregulated) | | | | | | | | | | | | | | |
| External Device Monitoring (EDM) | One pair of terminals (Y1 and Y2) are provided to monitor the state of external devices controlled by the safety outputs. Each device must be capable of switching 15 to 30V dc at 10-50 mA. | | | | | | | | | | | | | | |
| Muting Device Inputs (M1, M2) | The muting devices work as a pair (M1 and M2). The simultaneity requirement is that they be "closed" within 3 seconds of each other to initiate a mute condition or allow a mute cycle, assuming all other conditions are met. Each muting device must be capable of switching 15 to 30V dc at 10-50 mA. | | | | | | | | | | | | | | |
| Mute Enable Input (ME) | Mute Enable input must be closed in order to start a mute cycle. Opening this input after a mute cycle has begun has no effect. The switching device must be capable of switching 15 to 30V dc at 10-50 mA. | | | | | | | | | | | | | | |
| Safety Stop Interface (SSI) | This input consists of two concurrent channels (SSI-A and SSI-B) and is always active. Any time either or both channels open, the Safety Outputs will go OFF. When using the SSI, the external device must be capable of switching 15 to 30V dc at 10-50 mA. | | | | | | | | | | | | | | |
| Status Indicators | <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">6 green LED indicators</td> <td style="width: 50%;">1 red LED indicator</td> </tr> <tr> <td>Power ON</td> <td>Fault</td> </tr> <tr> <td>Input 1 energized</td> <td></td> </tr> <tr> <td>Input 2 energized</td> <td></td> </tr> <tr> <td>SSI inputs closed</td> <td></td> </tr> <tr> <td>Muting activated</td> <td></td> </tr> <tr> <td>Output</td> <td></td> </tr> </table> | 6 green LED indicators | 1 red LED indicator | Power ON | Fault | Input 1 energized | | Input 2 energized | | SSI inputs closed | | Muting activated | | Output | |
| 6 green LED indicators | 1 red LED indicator | | | | | | | | | | | | | | |
| Power ON | Fault | | | | | | | | | | | | | | |
| Input 1 energized | | | | | | | | | | | | | | | |
| Input 2 energized | | | | | | | | | | | | | | | |
| SSI inputs closed | | | | | | | | | | | | | | | |
| Muting activated | | | | | | | | | | | | | | | |
| Output | | | | | | | | | | | | | | | |
| Environmental Rating | Polycarbonate. Rated NEMA 1; IP20 | | | | | | | | | | | | | | |
| Mounting | Mounts to standard 35 mm DIN rail track. Safety Module must be installed inside an enclosure rated NEMA 3 (IP54), or better. | | | | | | | | | | | | | | |
| Vibration Resistance | 10 to 55 Hz @ 0.35 mm displacement per IEC 60068-2-6 | | | | | | | | | | | | | | |
| Operating Conditions | Temperature: 0° to +50° C Relative humidity: 90% @ +50° C (non-condensing) | | | | | | | | | | | | | | |
| Design Standards | Designed to comply with Category 4 per ISO 13849-1 (EN 954-1); Type IIIC per ISO (EN 574) | | | | | | | | | | | | | | |
| Certifications | For certification information, please call 1-888-373-6767. | | | | | | | | | | | | | | |
| Wiring Diagrams | AT-..M-11KM: WD067 (p. 820) AT-..M-11KM to STB Buttons: WD068 (p. 820) | | | | | | | | | | | | | | |

STB Self-Checking Touch Buttons

- Provides highest level of safety for two-hand control input devices, per independent certification tests
- Provides redundant microprocessor and optical path
- Responds to a finger blocking light rather than to pressure
- Features ergonomic design to prevent repetitive motion stress
- Includes yellow field cover to prevent unintended switching
- Immune to ambient light, EMI and RFI
- Available with e/m relays rated for 1 amp switch capacity or solid-state outputs rated for 150 mA
- Withstands exposure to a variety of chemicals, depending on model
- For safety applications, STB buttons must be used with DUO-TOUCH® SG Two-Hand control modules, SC22-3.. Safety Controller or comparable control Type IIIC Two-Hand system



STB Self-Checking Buttons – Solid-State Outputs, 10-30V dc

| Connection | Upper Housing | Solid-State Outputs | Models |
|---------------|----------------|--------------------------------------|----------|
| 2 m | Polyetherimide | 2 Complementary PNP (1 ON, 1 OFF) | STBVP6 |
| 4-Pin Mini QD | | | STBVP6Q |
| 4-Pin Euro QD | | | STBVP6Q5 |

STB Self-Checking Buttons – e/m Relay Outputs, 20-30V ac/dc


| Connection | Upper Housing | e/m Relay Outputs | Models |
|---------------|----------------|--------------------------------------|-----------|
| 2 m | Polyetherimide | 2 Complementary SPST (1 NC, 1 NO) | STBVR81 |
| 5-Pin Mini QD | | | STBVR81Q |
| 5-Pin Euro QD | | | STBVR81Q6 |

NC = Normally Closed, NO = Normally Open


Connection options: A model with a QD requires a mating cordset (see page 563).

For 9 m cable, add suffix W/30 to the 2 m model number (example, STBVP6 W/30).

STB Self-Checking Buttons Specifications

| | |
|-------------------------------------|---|
| Supply Voltage and Current | STBVP6 Models: 10 to 30V dc @ 75 mA, typical STBVR81 Models: 20 to 30V ac/dc or 20V to 30V ac (peak-to-peak value), (50/60 Hz ± 5%) @ 75 mA |
| Supply Protection Circuitry | Protected against transient voltages and reverse polarity |
| Output Configuration | STBVP6 Models: Complementary PNP (sourcing) open-collector transistors STBVR81 Models: Complementary electromechanical relay |
| Output Rating | STBVP6 Models (solid-state outputs): Max. load: 150 mA ON-state saturation voltage: +V _(supply) -1.5V OFF-state leakage current: less than 1 µA STBVR81 Models (electromechanical relay): Max. switching voltage: 125V dc/150V ac Max. switching current: 1A @ 24V dc; 0.4A @ 125V ac (resistive loads) Max. resistive load power: 24 W dc; 50 VA ac Mechanical life of relay: 10 ⁹ cycles Electrical life of relay: 1.5 x 10 ⁵ cycles at 1 amp 24V resistive |
| Output Protection | All models protected against false pulse on power-up. Models with solid-state outputs have overload and short-circuit protection. |
| Output Response Time | 20 milliseconds ON/OFF |
| Indicators | 2 green LED indicators: Power: ON –power applied OFF –power off Output/fault: ON –button is activated OFF –button is deactivated Flashing –internal fault or blocked button on power-up detected |
| Construction | Totally encapsulated, non-metallic enclosure. Black Polyetherimide (PEI) upper housing; fiber-reinforced PBT polyester base. Electronics fully epoxy-encapsulated. Supplied with polypropylene (TP) field cover. |
| Environmental Rating | Meets NEMA standards 1, 3, 4, 4X, 12 and 13; IP66 |
| Connections | PVC-jacketed 2 m cables standard on integral-cable kits; QD fitting, depending on model. Accessory QD mating cordsets required for QD models. QD cordsets are ordered separately. See page 563. STBVP6: 4-wire (4-pin Mini-style QD, add suffix Q or 4-pin Euro-style QD, add suffix Q5) STBVR81: 5-wire (5-pin Mini-style QD, add suffix Q or 5-pin Euro-style QD, add suffix Q6) Integral 9 m cables are also available by adding suffix W/30 to the 2 m model number. |
| Ambient Light Immunity | Up to 100,000 lux |
| Applicable Agency Standards | (Used with an AT-FM-10K module or an SC22-3 Safety Controller) Analysis of measures for fault avoidance and fault control according to SIL3 (IEC 61508 and IEC 62061) and Category 4 (EN ISO 13849-1) passes EMI/RFI test levels as specified in IEC61496 and IEC62061. |
| Operating Conditions | Temperature: 0° to +50° C Relative humidity: 90% @ +50° C (non-condensing) |
| Application Notes | Environmental considerations for models with Polyetherimide (PEI) upper housings: The Polyetherimide upper housing will become brittle with prolonged exposure to outdoor sunlight. Window glass effectively filters ultraviolet light and provides excellent protection from sunlight. Avoid contact with strong alkalis hydrocarbons and fuels. Clean periodically using mild soap solution and a soft cloth. |
| Two-Hand Control System Note | When the STBVP6 is used with Banner's SC22-3 Safety Controller in a two-hand control system, the power supply to the STBVP6 must be of the same voltage that is used to power the Safety Controller and they must have a common supply ground. |
| Certifications |  |
| Hookup Diagrams | STB Solid State (PNP): DC03 (p. 744) STB e/m Relay: UN01 (p. 753) |

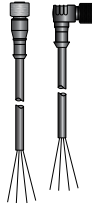
STB Self-Checking Button Field Covers

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

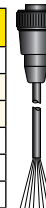
Field covers are designed to prevent inadvertent activation of buttons due to objects (loose clothing, debris, etc.) which might accidentally block their sensing beams. Field covers are constructed of rugged polypropylene and are highly resistant to abrasion and to damage by most chemicals. Standard model numbers are shipped with a yellow cover.


Cordsets

| Euro QD to Flying Leads | | | | |
|-------------------------|----------------|-------------|----------------|-------------|
| See page 682 | | | | |
| Length | Threaded 4-Pin | | Threaded 5-Pin | |
| | Straight | Right-Angle | Straight | Right-Angle |
| 1.83 m | MQDC-406 | MQDC-406RA | MQDC1-506 | MQDC1-506RA |
| 4.57 m | MQDC-415 | MQDC-415RA | MQDC1-515 | MQDC1-515RA |
| 9.17 m | MQDC-430 | MQDC-430RA | MQDC1-530 | MQDC1-530RA |
| 15.2 m | MQDC-450 | MQDC-450RA | - | - |









| Mini QD to Flying Leads | | |
|-------------------------|----------------|----------------|
| See page 700 | | |
| Length | Threaded 4-Pin | Threaded 5-Pin |
| | Straight | Straight |
| 1.83 m | MBCC-406 | MBCC-506 |
| 3.66 m | MBCC-412 | MBCC-512 |
| 9.14 m | MBCC-430 | MBCC-530 |



 Additional cordset information available. See page 679.

Brackets

| STB | | | | |
|---|---|---|---|---|
|  |  |  |  |  |
| pg. 639 | pg. 640 | pg. 641 | pg. 648 | pg. 648 |
| SMB30A | SMB30MM | SMB30SC | SMBAMS30P | SMBAMS30RA |

 Additional brackets and information available. See page 620.

- Photoelectrics Sensors
- Fiber Optic Sensors
- Special Purpose Sensors
- Measurement & Inspection Sensors
- Vision
- Wireless
- Lighting & Indicators
- Safety Light Screens
- Safety Laser Scanners
- Fiber Optic Safety Systems
- Safety Controllers & Modules
- Safety Two-Hand Control Modules**
- Safety Interlock Switches
- Emergency Stop & Stop Control

- DUO-TOUCH SG
- STB BUTTONS**
- DUO-TOUCH RUN BARS

Run Bar

DUO-TOUCH® SG Run Bar with STBs

- Minimizes risk of defeat and accidental machine actuation
- Provides a convenient and economical means for safeguarding when interfaced with DUO-TOUCH® SG Two-Hand Control Modules or comparable control systems
- Offers ergonomic design for reduced hand, wrist and arm stress
- Provides two diverse-redundant microcontroller-based photoelectric STB Touch Buttons with continuous internal self-checking
- Features bright LED power, output and fault indicators on STBs
- Constructed of robust, 13-gauge cold-rolled steel
- A choice of IP20- or IP65-rated models
- Provides immunity to ambient light, EMI and RFI interference
- Offers models with an emergency stop button
- Offers optional telescoping stands and brackets
- Provides knockouts for wiring flexibility and installation of accessory EZ-LIGHT™ indicators
- Meets ANSI B11.19 and ISO 13851 (EN 574) standards when monitored by Type IIIC Two-Hand Control logic device (e.g., AT series Two-Hand Control modules, see page 556)



ACCESSORIES
page
565



ONLINE
AUTOCAD, STEP,
IGES & PDF

DUO-TOUCH® Run Bars with STB Self-Checking Touch Buttons

| Connection | STB Touch Buttons | | Environmental Rating | E-Stop Button | Models* |
|-----------------|-------------------|-------------------------------|----------------------|--|---------------|
| | Model | Output | | | |
| Terminal Strip | STBVP6 | Solid-State Complementary PNP | IP20 | Not included | STBVP6-RB1 |
| 8-pin Mini QD** | | | | Not included | STBVP6-RB1Q8 |
| Terminal Strip | | | | Model SSA-EBM-02L E-stop button (two NC safety contacts) | STBVP6-RB1E02 |
| Terminal Strip | | | IP65 | Not included | STBVP6-RB2 |
| 8-pin Mini QD** | | | | Not included | STBVP6-RB2Q8 |
| Terminal Strip | | | | Model SSA-EBM-02L E-stop button (two NC safety contacts) | STBVP6-RB2E02 |

* DUO-TOUCH Run Bar kits available with two-hand control module. Contact factory for combinations.

** Order QDS-8..C cordsets separately, see page 565.

