

Muting Modules



- Suspends safeguarding during hazard-free times in the machine's cycle.
- Allows material to move into or from the process, without tripping the primary safeguard.
- Monitors hard-relay contact or OSSD output safety devices.
- Offers two reset options: Automatic and Monitored Manual.
- Uses diverse redundancy and self-checking, for reliability.
- Mounts outside a control panel, near the muted safeguard, or inside the control panel.
- Installs easily.
- Connects to supplemental safeguarding devices or E-stops.

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MM(2)-TA-12B Cordset Selection Guide 285
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SAFETY MODULES

PICO-GUARD CONTROLLERS

E-STOP/GUARD MONITORING

SAFETY MAT MONITORING

MUTING MODULES

EXTENSION MODULES

INTERFACE MODULES

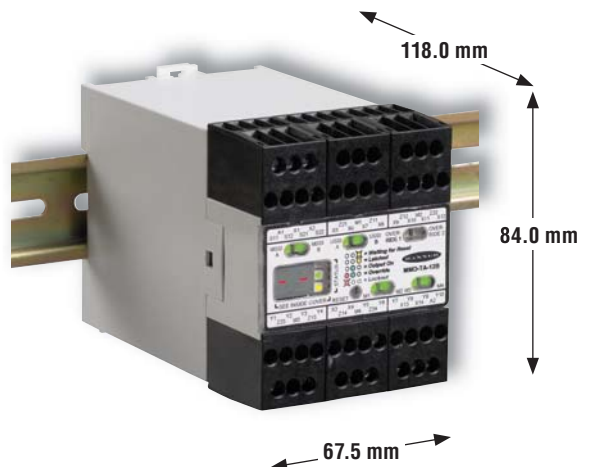
Muting Modules

- Three LEDs to indicate operating status
- 2-digit diagnostic display
- Maximum 30 milliseconds response time
- Quick disconnect cables
- DIN-rail mounted or compact IP65-rated housing
- Models for Type 2 and Type 4 applications



40.0 mm 60.0 mm

220.0 mm



118.0 mm

84.0 mm

67.5 mm

MM-TA-12B & MM2-TA-12B Muting Modules (MM-TA-12B shown)

MMD-TA-11B & MMD-TA-12B Muting Modules (MMD-TA-12B shown)



Muting Modules

Model	Safety Category	Input Device	Supply Voltage	Inputs	Safety Outputs	Output Rating	Aux. Outputs	Output Response Time	Data Sheet
MM-TA-12B	4	Mechanical & Solid State	24V dc	2 NC Muteable (dual) & 2 NC USSI (dual)	2 PNP OSSD	0.5 amps	1 PNP	10 ms	63517
MM2-TA-12B	2						1 PNP		123894
MMD-TA-12B	2 or 4	Mechanical & Solid State	24V dc	2 NC Muteable (dual) & 2 NC SSI (dual)	2 PNP OSSD	0.5 amps	1 PNP	10 ms	116390
MMD-TA-11B					2 NO	6 amp	1 NC	30 ms	

NC = Normally Closed Relay, NO = Normally Open Relay

MM-TA-12B Muting Module Specifications

Supply Voltage and Current	+24V dc \pm 15% @ 400 mA max (not including draw of the MSSSI power, AUX, ML, M1-M4 and OSSD connections)
Supply Protection Circuitry	All inputs and outputs are protected from short circuit to +24V dc or dc common.
Output Response Time	Muteable Safety Stop Interfaces (MSSI) and the Universal Safety Stop Interfaces (USSSI) are less than or equal to 10 milliseconds.
Safety Outputs	<p>Two diverse-redundant solid-state safety outputs: 24V dc, 0.5A sourcing OSSD (output signal switching device). Compatible with Banner "Safety Handshake" protocol.</p> <p>ON-State voltage: \geqV in-1.5V dc</p> <p>Max. leakage current: 1.2 mA; inclusive of faults (including open 0V dc wire)</p> <p>OFF-State voltage: 1.2V dc max.</p> <p>Max. load capacitance: 0.1 μF</p> <p>Non-safety auxiliary output: PNP solid-state output, rated at +24V dc @ 250 mA.</p> <p>OSSD test pulse width: 100 to 300 microseconds</p> <p>OSSD test pulse period: 12 microseconds</p>
MSSI Power Connections	+24V dc \pm 15% @ 2.5A max. output (dependent on System power input). Resettable 2.5A fuse
Status Indicators	<p>3 Status Indicator LEDs (Red, Green and Yellow): indicate Power ON/OFF, operating mode, lockout, override, and OSSD status</p> <p>Green LEDs adjacent to individual inputs/interfaces indicate status (ON = active/closed)</p>
Diagnostic Code Display	Diagnostic Display is a two-digit numeric display that indicates the cause of lockout conditions and the amount of time, in seconds, remaining for the backdoor timer.
Muting Lamp Output	<p>A monitored or non-monitored (selectable) sinking output. If monitoring has been selected, the current draw must be 10 mA to 360 mA. Interconnect wire resistance < 30 Ω.</p> <p>Max. switching voltage: 30V dc</p> <p>Max. switching current: 360 mA</p> <p>Min. switching current: 10 mA</p> <p>Saturation voltage: \leq 1.5V dc @ 10 mA; \leq 5V dc @ 360 mA</p>
Controls and Adjustments	<p>All configured on two redundant banks of DIP switches:</p> <ul style="list-style-type: none"> Manual/auto reset One-way/two-way muting Monitored/non-monitored mute lamp output One-channel/two-channel/no EDM Backdoor timer Mute on power-up enable Mute enable functional/disabled

MMD-TA-12B & MMD-TA-11B Muting Modules Specifications

Supply Voltage and Current	+24V dc $\pm 15\%$ @ 400 mA max (not including draw of the MSSSI power, AUX, ML, M1-M4 and OSSD connections)
Supply Protection Circuitry	All inputs and outputs are protected from short circuit to +24V dc or dc common.
Output Response Time	Muteable Safety Stop Interfaces (MSSSI) and the Safety Stop Interfaces (SSI) are less than or equal to 10 milliseconds (MMD-TA-12B) or 30 milliseconds (MMD-TA-11B).
Safety Outputs	<p>MMD-TA-12B: Two diverse-redundant solid-state safety outputs: 24V dc, 0.5A sourcing OSSD (output signal switching device). ON-State voltage: $\geq V_{in} - 1.5V$ dc Max. leakage current: 1.2 mA; inclusive of faults (including open 0V dc wire) OFF-State voltage: 1.2V dc max. Max. load capacitance: 0.1 μF Non-safety auxiliary output: PNP solid-state output, rated at +24V dc @ 250 mA. OSSD test pulse width: 50 to 100 microseconds OSSD test pulse period: 12 milliseconds</p> <p>MMD-TA-11B: Output(K1 & K2): Two normally open OSSD (output signal switching device) output channels and one normally closed auxiliary output channel. Each normally open OSSD output channel is a series connection of contacts from two forced-guided (positive-guided) relays—AgNi, 5 μm gold-plated</p> <p>Low Current Rating: Min. voltage: 1V ac/dc Min. current: 5 mA ac/dc Min. power: 5 mW (5 mVA) Max. voltage: 60V ac/dc Max. current: 300 mA ac/dc Max. power: 7 W (7 VA)</p> <p>High Current Rating: Min. voltage: 15V ac/dc Min. current: 30 mA ac/dc Min. power: 5 W (5 VA) Max. voltage: 250V ac/dc Max. current: 6 A ac/dc Max. power: 200 W (1500 VA)</p> <p>Mechanical life: 50,000,000 operations Electrical life: 100,000 operations (typical at 200 W/1500 VA, resistive load)</p>
MSSSI Power Connections	+24V dc $\pm 15\%$ @ 2.5A max. output (dependent on System power input). Resettable 2.5A fuse
Status Indicators	3 Status Indicator LEDs (Red, Green and Yellow): indicate Power ON/OFF, operating mode, lockout, override, and OSSD status Green LEDs adjacent to individual inputs/interfaces indicate status (ON = active/closed)
Diagnostic Code Display	Diagnostic Display is a two-digit numeric display that indicates the cause of lockout conditions and the amount of time, in seconds, remaining for the backdoor timer.
Muting Lamp Output	A non-monitored sinking output. Max. switching voltage: 30V dc Max. switching current: 360 mA Min. switching current: 10 mA Saturation voltage: $\leq 1.5V$ dc @ 360 mA
Controls and Adjustments	All configured on two redundant banks of DIP switches: Manual/auto reset One-way/two-way muting One-channel/two-channel/no EDM Backdoor timer Mute on power-up enable

MMD-TA-12B & MMD-TA-11B Muting Modules Specifications (cont'd)

Inputs	<p>The MSSl and the SSl can be interfaced with external safety devices that have either hard contact outputs or solid-state OSSD safety outputs.</p> <p>Operating Range for MSSl and SSl Inputs OFF State: 0-3V, 0-2 mA ON State: 11-30V, 10-50 mA</p> <p>Muteable Safety Stop Interface (MSSl) This input consists of two channels (MSSl-A and MSSl-B), and can be muted when the requirements for a mute cycle have been met. When muted, the OSSDs remain ON, independent of the MSSl status. If not muted, when one or both channels open, the OSSD outputs will go OFF.</p> <p>Safety Stop Interface (SSl) This input consists of two channels (SSl-A and SSl-B), and is always active. When one or both channels open, the OSSD Outputs will go OFF.</p>
External Device Monitoring (EDM)	Two pairs of terminals are provided to monitor the state of external devices controlled by the OSSD outputs. Each device must be capable of switching 15-30V dc at 10-50 mA.
Muting Device Inputs	The muting devices work in pairs (M1 and M2, M3 and M4) and are required to be "closed" within 3 seconds of each other (simultaneity requirement) to initiate a mute (assuming all other conditions are met). Sensor connected to M1 (and M3) must have contacts or PNP output. Sensor connected to M2 (and M4) must have contacts or NPN output. Each muting device must be capable of switching 15-30V dc at 10-50 mA.
Mute Enable Input	This input must have +24V dc applied in order to start a mute; opening this input after mute has begun has no effect. The switching device must be capable of switching 15-30V dc at 10-50 mA.
Override Inputs	The two-channel inputs must be closed within 3 seconds of each other (simultaneity requirement) and held closed during the 30-second Override. To initiate a subsequent Override, open both channels, wait 0.5 seconds, and then re-close both channels (within 3 seconds). The switching devices must be capable of switching 15-30V dc at 10-50 mA.
Reset Input	Terminals must be closed for a minimum of 0.25 seconds and not more than 2.0 seconds in order to guarantee a reset. The switching device must be capable of switching 15-30V dc at 10-50 mA.
Mounting	Mounts to standard 35 mm DIN rail track. Safety Module must be installed inside an enclosure rated NEMA 3 (IEC IP54), or better.
Construction	Polycarbonate housing
Environmental Rating	NEMA 1; IEC IP20
Vibration Resistance	<p>Vibration (per IEC 68-2-6: 1995): Frequency range: 10 to 55 Hz Sweep rate: 1 octave/minute Amplitude: 0.35 mm (interpreted as 0.70 mm peak to peak) Number of sweeps: 20 sweeps (10 cycles) per axis, for 3 axes (no delay at resonance)</p> <p>Bump (per IEC 68-2-29: 1987): Acceleration: 10 g Duration of pulse: 16 milliseconds Number of bumps: 1000 +/- 10 for each axis, for 3 axes Time between bumps: 2 seconds</p>
Operating Conditions	Temperature range: 0° to +50° C Relative humidity: 95% (non-condensing)
Safety Category	Safety Category 4 per EN 954-1
Certifications	For a list of certifications see page 237.
Wiring Diagrams	MMD-TA-12B: WD056 (p. 283) MMD-TA-11B: WD057 (p. 283)