

Interlock Switches

Guard Locking Switches

TLS-GD2



Description

The TLS-GD2 is a positive mode, tongue operated guard locking interlock switch that locks a machine guard closed until power is isolated and ensures that it remains isolated while the guard is open. It has three safety (N.C.) contacts and two auxiliary (N.O.) contacts. The TLS-GD2 head has two entry slots and it can be rotated to provide four actuator entry points. A blanking plug is provided to seal the unused slot.

The guard may only be opened when a signal is applied to the TLS-GD2's internal solenoid which allows the lock mechanism to be released. Therefore the TLS-GD2 is ideal for machines which do not stop immediately or where premature interruption of the machine could cause damage to tooling and components or cause an additional hazard.

The TLS-GD2 is available in three types. The TLS-1 GD2 and TLS-3 GD2 incorporate a power-to-release function. Three manual release points with security screws allow the locked TLS-GD2 to be released in emergencies. An optional lid-mounted key-release style can also be supplied. The TLS-2 GD2 has a power to lock function. All types have five sets of contacts in various forms and are suitable for use with PLCs.

The TLS-1 GD2 and TLS-3 GD2 are both available with Escape Release options. They are intended for machine guarding with full body access. The switch is installed so that the escape release push button on the rear side is accessible from inside the hazardous area. This allows the intentional unlocking of the TLS-GD2 from inside a hazardous area, providing a means of escape for a person who may become trapped.

A stainless steel actuator guide is fitted to protect the unit from actuator damage due to poor guard alignment or guard wear.

Note: With the TLS-2 GD2 "power to lock" style, provisions may be required to ensure that a dangerous situation can not result from open circuit faults or power cuts.

Features

- Power to release or power to lock
- High locking force $\leq 2000\text{N}$ (450lbs.)
- Five contacts: 2 N.C. & 1 N.O. for door position monitoring
1 N.C. & 1 N.O. or 2 N.C. for lock monitoring
- Rotatable head: 4 possible key entry slots
- Conforms to EN1088 & EN60947-5-1
- Escape Release version available

Specifications

Standards	EN954-1, ISO13849-1, IEC/EN60204-1, NFPA79, EN1088, ISO14119, IEC/EN60947-5-1, ANSI B11.19, AS4024.1
Category	Cat. 1 Device per EN954-1 Dual channel interlocks suitable for Cat. 3 or 4 systems
Approvals	CE marked for all applicable directives, cULus, and TUV
Safety Contacts	(TLS 1 & 2) 3 N.C. direct opening action (TLS 3) 4 N.C. direct opening action
Utilization Cat.	AC (Ue) (Ie) DC AC 15 500V 250V 100V 1A 2A 5A 250V 0.5A, 24V 2A
Max Switched Current/Volt/ Load	500V/500VA
Thermal Current (Ith)	10A
Min Current	5V 5mA DC
Safety Contact Gap	>2mm
Rtd. Insulation Voltage	(Ui) 500V
Rtd. Impulse withstand Volt	(Uimp) 2500V
Auxiliary Contacts	(TLS 1 & 2) 2 N.O. (1 solenoid monitoring) (TLS 3 1 N.O.)
Pollution Degree	3
Actuator Travel for Positive Opening	7mm (0.28in)
Break Contact Min Force	12N (2.7lbs)
Max Actuation Speed	160mm per sec (6.3ins per sec)
Max Actuation Frequency	1 Cycle per sec
Case Material	UL approved glass filled polyester
Actuator Material	Stainless Steel
Protection	IP67
Conduit Entry	3 x M20 or quick-disconnect style
Operating Temperature	-20°C to + 60°C (-4°F to +140°F)
Mounting	4 x M5
Fixing	Any position
Locking	TLS1 & 3 power to release TLS2 power to lock
Mechanical Life	1,000,000 operations
Electrical Life	1,000,000 operations
Weight	400g (.88lbs)
Colour	Red
Max Holding Force	2000N (450lbs.)
Max Releasable Load	100N (22.5lbs)
Min Operating Radius	160mm (6.3in) (80mm with flexible actuator) (3.15in)
Power Supply	24V AC/DC or 110V AC or 230V AC (solenoid)
Solenoid Power	Typically 7W 100% ED
Escape Release Button:	
Mechanical Life	10,000 operations
Max Operating Speed	160mm (6.304in) per second
Max Force on Button	50N (11.25lb)

Note: The safety contacts of the Allen-Bradley Guardmaster switches are described as normally closed (N.C.) i.e., with the guard closed, actuator in place (where relevant) and the machine able to be started.

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Product Selection

Type	Contacts		Solenoid		Actuator	Catalogue Number		
	Safety	Aux.	Contacts	Voltage		M20 Conduit	M20 Conduit/ 1/2in Adaptor	Quick Disconnect
TLS-1GD2 Power to Release	2 N.C.	1 N.O.	1 N.C. & 1 N.O.	24V AC/DC	—	440G-T27121	—	440G-T27233
					Standard	440G-T27251	440G-T27169	440G-T27234
					Fully Flex	440G-T27252	440G-T27171	440G-T27235
				110V AC/DC	—	440G-T27124	—	440G-T27236
					Standard	440G-T27253	440G-T27172	440G-T27237
					Fully Flex	440G-T27254	440G-T27174	440G-T27238
230V AC/DC			—	440G-T27123	—	—		
TLS-2GD2 Power to Lock			1 N.C. & 1 N.O.	24V AC/DC	—	440G-T27127	—	440G-T27239
					Standard	440G-T27255	440G-T27175	440G-T27240
					Fully Flex	440G-T27256	440G-T27177	440G-T27241
				110V AC/DC	—	440G-T27132	--	440G-T27242
					Standard	440G-T27257	440G-T27178	440G-T27243
	Fully Flex	440G-T27258			440G-T27180	440G-T27244		
TLS-3GD2 Power to Release	2 N.C.	24V AC/DC	—	440G-T27129	—	—		
			—	440G-T27134	—	440G-T27245		
			Standard	440G-T27259	440G-T27181	440G-T27246		
		110V AC/DC	Fully Flex	440G-T27260	440G-T27183	440G-T27247		
			—	440G-T27138	—	440G-T27248		
			Standard	440G-T27261	440G-T27184	440G-T27249		
Fully Flex	440G-T27262	440G-T27186	440G-T27250					
230V AC/DC	—	440G-T27136	—	—				

TLS-GD2 Escape Release

Type	Contacts		Solenoid		Actuator	Catalogue Number	
	Safety	Aux.	Contacts	Voltage		M20 Conduit	M20 Conduit/ 1/2in Adaptor
TLS-1 GD2 Power to Release	2N.C.	1N.O.	1N.C. & 1 N.O.	24V AC/DC	—	440G-T21BNPM-1B	440G-T21BNPT-1B
				110V AC/DC	Standard	—	440G-T21BGPT-1B
					—	440G-T21BNPM-4B	440G-T21BNPT-4B
				Standard	—	440G-T21BGPT-4B	
TLS-3 GD2 Power to Release			2 N.C.	24V AC/DC	—	440G-T21BNPM-2B	440G-T21BNPT-2B
				110V AC/DC	Standard	—	440G-T21BGPT-2B
					—	440G-T21BNPM-5B	440G-T21BNPT-5B
				Standard	—	440G-T21BGPT-5B	

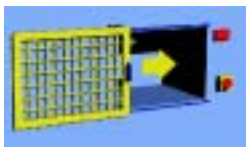
Recommended Cable

	Mating cable for TLS-3 2m (6.5ft). See page 15-13 for details and additional lengths.	889M-F12X9AE-2
	Mating cable for TLS-1 & TLS-2 2m (6.5ft). See page 15-13 for details and additional lengths.	889M-F12AH-2

Accessories

Description		For Dimensions refer to page	Catalogue Number
	TLS-GD2 Standard Actuator	14-4	440G-A27011
	Flat Actuator	14-5	440K-A11112
	Fully-Flexible Actuator	14-4	440G-A27143
	Sliding Bolt Actuator	14-4	440G-A27163
 Locking Cover	For TLS-1 with external override key	—	440G-A27140
	For TLS-3 with external override key	—	440G-A27142
	For TLS-1 with override key attached	—	440G-A27207
	For TLS-3 with override key attached	—	440G-A27208

Applications



Note: Lift-off guards require good alignment when using tongue actuated interlock switches.

IMPORTANT: It must not be possible to lift the guard without actuating the interlock. An interlock on either side may be required.

TLS escape release is suitable for machine guarding with full body access.

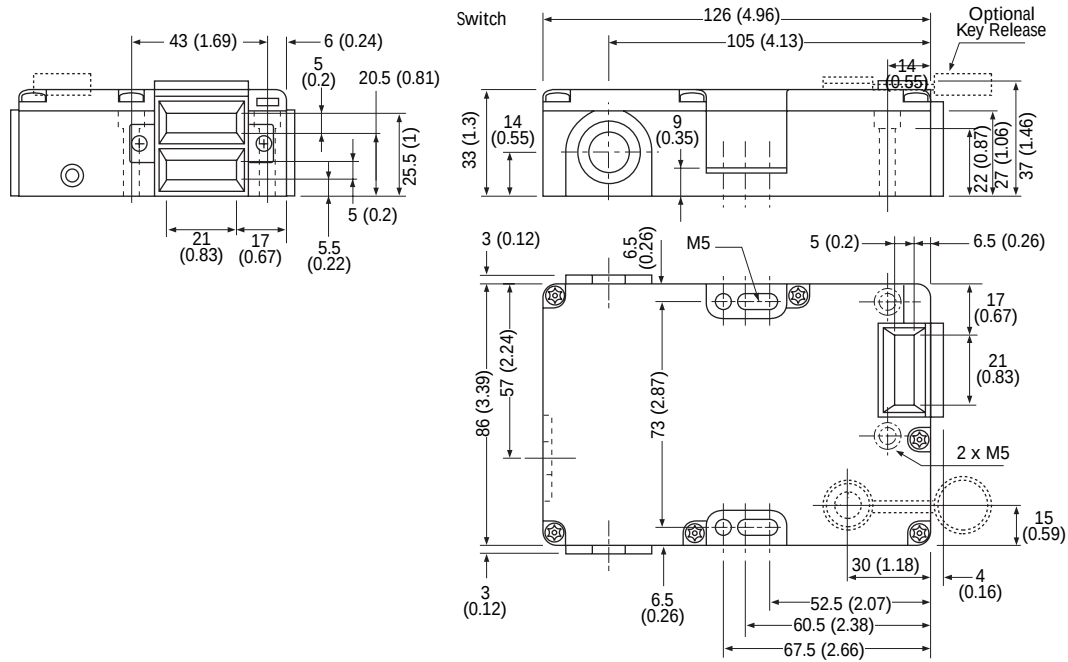
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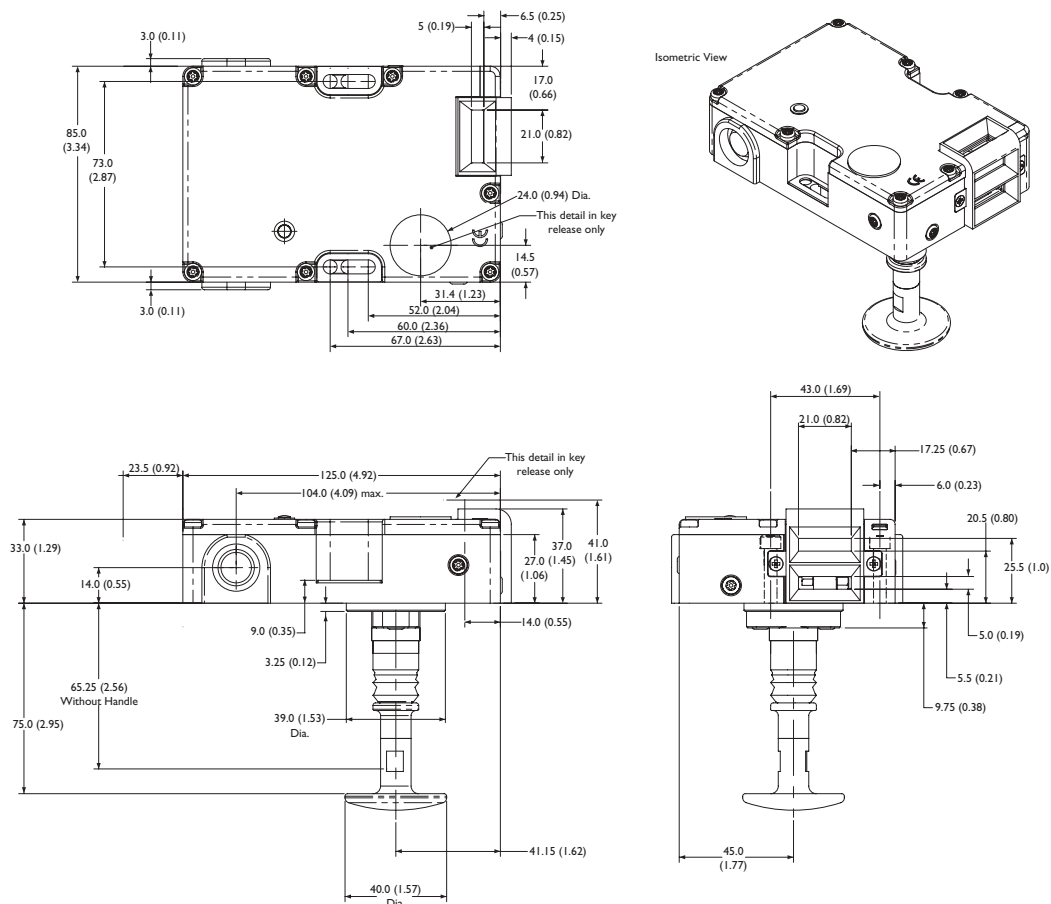
TLS-GD2

Approximate Dimensions—mm (inches)

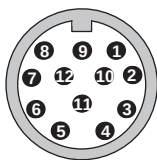
Dimensions are not intended to be used for installation purposes.



TLS-GD2 Escape Release



Typical Wiring Diagram

Connector Pinout		TLS-1 & TLS-2		TLS-3	
		Terminal	Contact	Terminal	Contact
	1	A1	Solenoid Power	A1	Solenoid Power
	3	A2		A2	
	4	11	N.C.	11	N.C.
	6	42		42	
	7	21	N.C.	21	N.C.
	8	22		52	
	9	33	N.O.	33	N.O.
	10	34		34	
	2	53	N.C.	—	—
	5	54			

Contact Action

□ Contact Open ■ Contact Closed

Actuator withdrawal distance from full insertion

