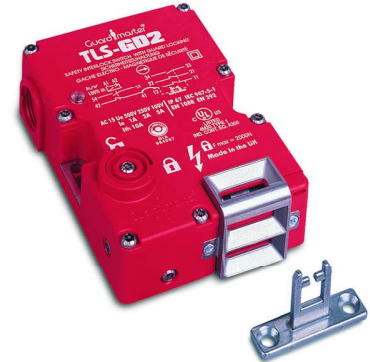


Guard Locking Switches – Electromechanical Switches (Voltage-free Contacts)

TLS-GD2 Guard Locking Switches

The TLS-GD2 guard locking switches have the following features:

- Power to Release or Power to Lock
- High locking force ≤ 2000 N (450 lbf)
- Five contacts: 2 N.C. and 1 N.O. for door position monitoring 1 N.C. and 1 N.O. or 2 N.C. for lock monitoring
- Rotatable head: Four possible key entry slots
- Conforms to ISO 14119 and IEC 60947-5-1
- Escape release version available
- IP69K, suitable for high pressure, high temperature washdown



Specifications

Attribute	TLS-GD2 Guard Locking Switches			
Safety Ratings				
Standards	ISO 14119, IEC 60947-5-1			
Safety classification	Type 2 interlocking device with guard locking and low coding (tongue) per ISO 14119			
Functional safety	See publication SAFETY-SR001			
Certifications	CE Marked for all applicable EU directives, cULus Listed, TÜV Certified, UKCA Marked for all applicable regulations rok.auto/certifications			
Outputs				
Safety contacts ⁽¹⁾	• TLS-1 and -2: 3 N.C. direct opening action • TLS-3: 4 N.C. direct opening action			
Auxiliary contacts	• TLS-1 and -2: 2 N.O. (1 solenoid monitoring) • TLS-3: 1 N.O.			
Thermal current/ <i>I</i> _{th}	10 A			
Rated insulation voltage (<i>U</i> _i)	500V			
Switching current at voltage, min	3 mA at 18V DC			
Utilization Category				
A600/AC-15 (Ue)	600V	500V	240V	120V
A600/AC-15 (Ie)	1.2 A	1.4 A	3 A	6 A
DC-13 (Ue)	24V			
DC-13 (Ie)	2 A			
Solenoid Characteristics				
Holding force <i>F</i> _{max} (ISO 14119)	• Plastic pins: 1950 N (488 lbf) • Steel bolts: 2600 N (585 lbf)			
Holding force <i>F</i> _{zh} (ISO 14119)	• Plastic pins: 1500 N (337 lbf) • Steel bolts: 2000 N (450 lbf)			
Power supply	24V AC/DC or 110V AC or 230V AC (solenoid)			
Solenoid power	7 W typical 100% ED			
Escape release button	Force max: 50 N (11.25 lbf)			

Attribute	TLS-GD2 Guard Locking Switches	
Operating Characteristics		
Break contact force, min	20 N (4.5 lbf)	
Actuation speed, max [mm/s (in/s)]	160 (6.29)	
Actuation frequency, max	1 cycle/s	
Operating radius, min [mm (in.)]	160 (6.3) [80 (3.15) with flexible actuator]	
Mechanical life	1,000,000 operations	
Environmental		
Enclosure type rating	IP66, IP67, IP69K	
Operating temperature [°C (°F)]	-20...+60 (-4...+140)	
Physical Characteristics		
Material	• Housing: UL Approved glass-filled PBT • Actuator: Stainless steel	
Weight	400 g (0.88 lb)	
Color	Red	

(1) The safety contacts are described as normally closed (N.C.) that is, with the guard closed, the actuator in place (where relevant), and the machine able to be started.

Product Selection

Type	Contacts		Solenoid		Actuator Type	Cat. No.								
	Safety	Auxiliary	Contacts	Voltage		Conduit		Connector ⁽¹⁾						
						M20	1/2 inch NPT Adapter	12-pin M23	8-pin Micro (M12) ⁽²⁾					
TLS-1 GD2 Power to Release	2 N.C.	1 N.O.	1 N.C. and 1 N.O.	24V AC/DC	—	440G-T27121	—	440G-T27233	440G-T2NBBPH-1R					
					GD2 Standard	440G-T27251	440G-T27169	440G-T27234	—					
					Fully flexible	440G-T27252	440G-T27171	440G-T27235	—					
				110V AC/DC	—	440G-T27124	—	—	—					
					GD2 Standard	440G-T27253	440G-T27172	—	—					
					Fully flexible	440G-T27254	440G-T27174	—	—					
TLS-2 GD2 Power to Lock	2 N.C.	1 N.O.	1 N.C. and 1 N.O.	24V AC/DC	—	440G-T27127	—	440G-T27239	440G-T2NBBPH-1L					
					GD2 Standard	440G-T27255	440G-T27175	440G-T27240	—					
					Fully flexible	440G-T27256	440G-T27177	440G-T27241	—					
				110V AC/DC	—	440G-T27132	—	—	—					
					GD2 Standard	440G-T27257	440G-T27178	—	—					
					Fully flexible	440G-T27258	440G-T27180	—	—					
TLS-3 GD2 Power to Release	2 N.C.	1 N.O.	2 N.C.	24V AC/DC	—	440G-T27134	—	440G-T27245	440G-T2NBBPH-2R					
					GD2 Standard	440G-T27259	440G-T27181	440G-T27246	—					
					Fully flexible	440G-T27260	440G-T27183	440G-T27247	—					
				110V AC/DC	—	440G-T27138	—	—	—					
					GD2 Standard	440G-T27261	440G-T27184	—	—					
					Fully Flexible	440G-T27262	440G-T27186	—	—					
230V AC/DC	—	440G-T27136	—	—	—									
	TLS-1 GD2 Power to Release with Escape Release	2 N.C.	1 N.O.	1 N.C. and 1 N.O.	24V AC/DC	—	440G-T21BNPM-1B	440G-T21BNPT-1B	440G-T21BNPL-1B	440G-T2NBNPH-1B				
						GD2 Standard	440G-T21BGPM-1B	440G-T21BGPT-1B	440G-T21BGPL-1B	—				
—						440G-T21BNPM-4B	440G-T21BNPT-4B	—	—					
110V AC/DC					GD2 Standard	440G-T21BGPM-4B	440G-T21BGPT-4B	—	—					
					TLS-3 GD2 Power to Release with Escape Release	2 N.C.	1 N.O.	2 N.C.	24V AC/DC	—	440G-T21BNPM-2B	440G-T21BNPT-2B	440G-T21BNPL-2B	440G-T2NBNPH-2B
										GD2 Standard	440G-T21BGPM-2B	440G-T21BGPT-2B	440G-T21BGPL-2B	—
—	440G-T21BNPM-5B	440G-T21BNPT-5B	—	—										
110V AC/DC	GD2 Standard	440G-T21BGPM-5B	440G-T21BGPT-5B	—					—					
	—	440G-T21BNPM-5B	440G-T21BGPT-5B	—					—					
	GD2 Standard	440G-T21BGPM-5B	440G-T21BGPT-5B	—					—					

(1) For connector ratings, see [Table 10 on page 19](#).(2) With an 8-pin micro connector, not all contacts are connected. See [Typical Wiring Diagrams on page 16](#) for wiring details.

Table 8 - Connection Systems

Description	8-pin Micro (M12)	12-wire, 12-pin M23	9-wire, 12-pin M23 ⁽¹⁾
Cordset	889D-F8AB-x ⁽²⁾	889M-F12AH-x ⁽²⁾	889M-F12X9AE-x ⁽²⁾
Patchcord	889D-F8ABDM-y ⁽³⁾	889M-F12AHMU-z ⁽⁴⁾	—

(1) The 9-wire cordset can be used only with the TLS3 versions.

(2) Replace x with 2 (2 m [6.6 ft]), 5 (5 m [16.4 ft]), or 10 (10 m [32.8 ft]) for standard cable lengths.

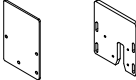
(3) Replace y with 1 (1 m [3.3 ft]), 2 (2 m [6.6 ft]), 3 (3 m [9.8 ft]), 5 (5 m [16.4 ft]), or 10 (10 m [32.8 ft]) for standard cable lengths.

(4) Replace z with OM3 (0.3 m [1 ft]), OM6 (0.6 m [2 ft]), 1 (1 m [3.3 ft]), 2 (2 m [6.6 ft]), or 3 (3 m [9.8 ft]) for standard lengths.

Accessories

Description	Cat. No.
 GD2 standard actuator	440G-A27011
 GD2 flat actuator	440K-A11112
 Extended flat actuator	440K-A17116
 Fully flexible actuator	440G-A27143
 Sliding bolt actuator not to be used with the TLS1 Escape Release	440G-A27163
 Emergency override key (See the following Attention)	440G-A36026
 Flexible release—1 m (3.3 ft) cable	440G-A27356 ⁽¹⁾
Flexible release—3 m (9.8 ft) cable	440G-A27357 ⁽¹⁾
 Dust cover	440K-A17183
 Sliding bolt	440K-AMDS

(1) Flexible release cannot be used with Power to Lock switches.

Description	Cat. No.
 Cover for TLS-1 with external override key for series D and earlier	440G-A27140
Cover for TLS-3 with external override key for series D and earlier	440G-A27142
Cover for TLS-1 with override key that is attached for series D and earlier	440G-A27207
Cover for TLS-3 with override key that is attached for series D and earlier	440G-A27208
Cover for TLS-1 with external override key for series E and later	440G-A27371
Cover for TLS-3 with external override key for series E and later	440G-A27372
Cover for TLS-1 with override key that is attached for series E and later	440G-A27373
Cover for TLS-3 with override key that is attached for series E and later	440G-A27374
 Mounting plate	440K-AMDSSMPB



ATTENTION: Do not attach the emergency override key to the TLS-GD2 switch.

Approximate Dimensions

Figure 8 - Guard Locking Switch Dimensions [mm (in.)]

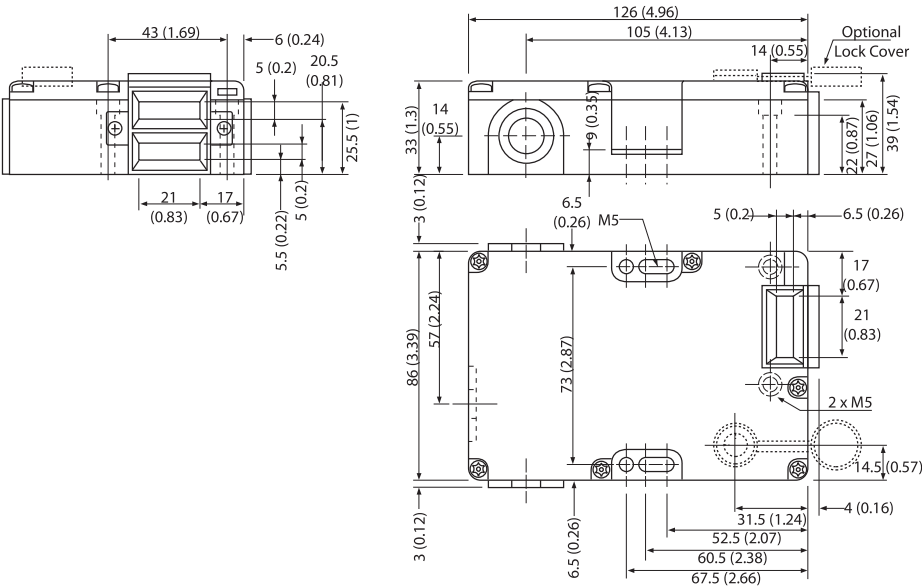
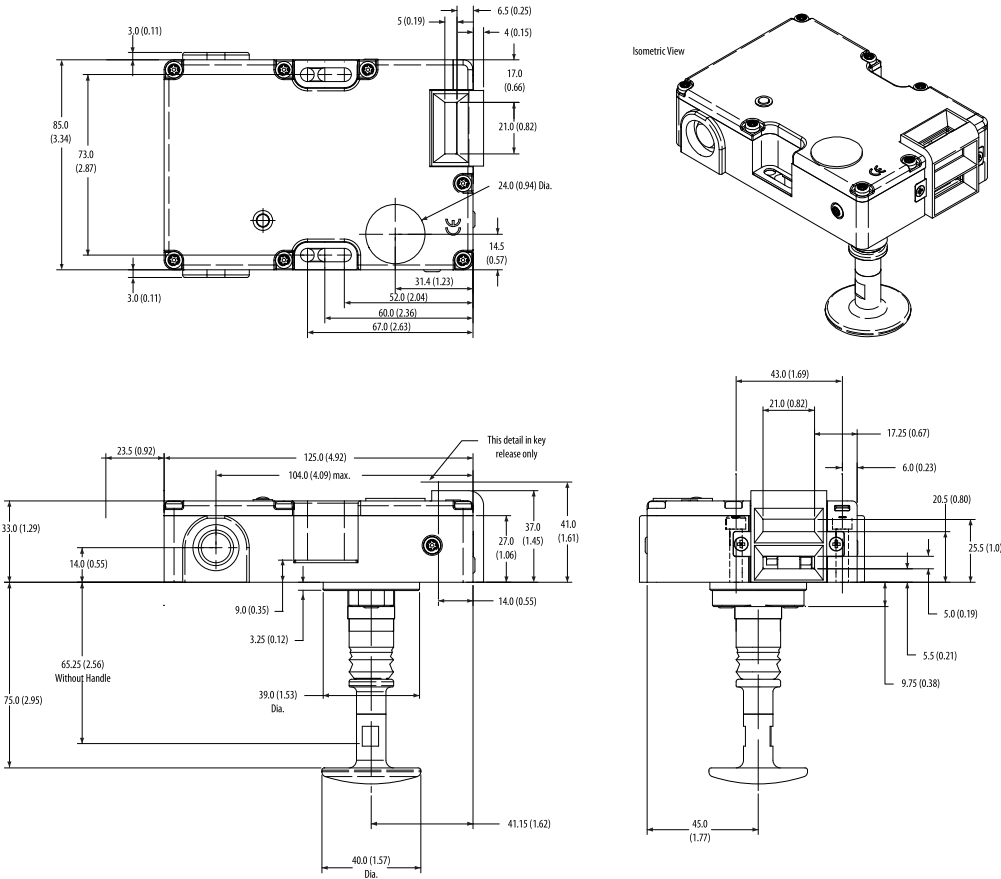
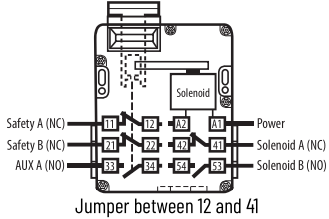
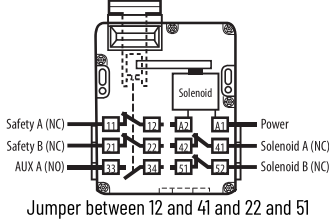
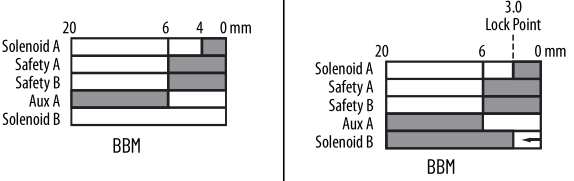
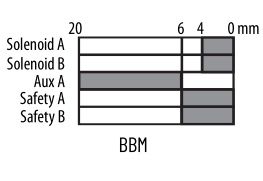
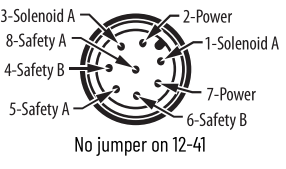
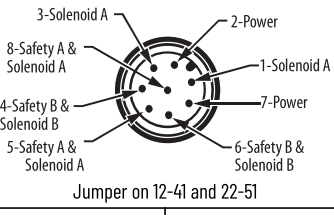
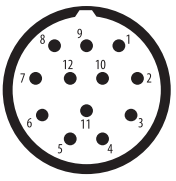


Figure 9 - TLS-GD2 Escape Release [mm (in.)]



Typical Wiring Diagrams

Description		TLS1	TLS2	TLS3	
Contact Configuration		 Jumper between 12 and 41		 Jumper between 12 and 41 and 22 and 51	
Contact Action □ Open ■ Closed		 BBM		 BBM	
8-pin Micro (M12)		 No jumper on 12-41		 Jumper on 12-41 and 22-51	
12-pin M23		1 and 3	Solenoid Power	1 and 3	Solenoid Power
		4 and 12	Safety A ⁽¹⁾	4 and 12	Safety A ⁽¹⁾
		7 and 8	Safety B	7 and 5	Safety B ⁽¹⁾
		9 and 10	Aux A	9 and 10	Aux A
		6 and 11	Solenoid A ⁽¹⁾	6 and 11	Solenoid A ⁽¹⁾
		2 and 5	Solenoid B	2 and 8	Solenoid B ⁽¹⁾
8-pin Cordset 889D-F8AB-x ⁽²⁾	Brown Blue	Solenoid power		Solenoid power	
	Gray Red	Safety A		Safety A and Solenoid A	
	Yellow Pink	Safety B		Safety B and Solenoid B	
	White Green	Solenoid A		Solenoid A	
12-pin, 9-wire Cordset 889M-F12X9AE-x ⁽²⁾ (Pink/Yellow: Not connected)		Cannot be used		Brown Blue	Solenoid Power
				White Green	Safety A and Solenoid A
				Yellow Gray	Safety B and Solenoid B
				Pink Red	Aux A
12-pin, 12-wire Cordset 889M-F12AH-x ⁽²⁾	Brown Gray	Solenoid Power		Brown Gray	Solenoid Power
	Pink Green	Safety A ⁽¹⁾		Pink Green	Safety A ⁽¹⁾
	White Red/Blue	Safety B		White Red	Safety B ⁽¹⁾
	Black Violet	Aux A		Black Violet	Aux A
	Gray/Pink Yellow	Solenoid A ⁽¹⁾		Gray/Pink Yellow	Solenoid A ⁽¹⁾
	Blue Red	Solenoid B		Blue Red/Blue	Solenoid B ⁽¹⁾

(1) See warning statements on [page 17](#).

(2) Replace x with 2 (2 m [6.6 ft]), 5 (5 m [16.4 ft]) or 10 (10 m [32.8 ft]) for standard cable lengths.



WARNING: To monitor independently one or more safety contacts and the solenoid feedback (TLS 1, 2, and 3):

- The 12-wire cordset 889M-F12AH-footnote must be used and
- For the TLS1 and TLS2, the jumper from 12 to 41 must be removed.
- For the TLS3, the jumpers between 12 and 41 and 22 and 51 must be removed.



WARNING: Monitoring of one or more safety contacts and the solenoid feedback (in series) is available, when jumpers are in place and:

- For the TLS1 and TLS2, by using pins 4 and 6 on the 12-pin, M23 receptacle, or pink and yellow wires on the 12-wire cordset (889M-F12AH-x⁽¹⁾).
- For the TLS3, by using pins 4 and 6 and pins 7 and 8 on the 12-pin, M23 receptacle, or pink and yellow and white and red/blue wires on the 12-wire cordset (889M-F12AH-x⁽¹⁾).

(1) Replace x with 2 (2 m [6.6 ft]), 5 (5 m [16.4 ft]), or 10 (10 m [32.8 ft]) for standard cable lengths.

440G-MT Guard Locking Switches

The 440G-MT solenoid switch locks a machine guard closed and can only be opened when a signal is applied to the internal solenoid, which releases the lock mechanism.

The 440G-MT guard locking solenoid switches have the following features:

- Type 2 Interlocking Device with Guard Locking and low coding per ISO 14119
- High Fzh (holding force): 1500 N (337 lb)
- Mechanical lock (Power to Release)
- Heavy-duty, die-cast alloy housing for use in harsh environments
- Diagnostic version available with built-in status indicator to indicate door status independent of lock status



Specifications

Attribute	440G-MT Guard Locking Switches			
Safety Ratings				
Standards	ISO 14119, IEC 60947-5-1			
Safety classification	Type 2 Interlocking Device with Guard Locking and low coding per ISO 14119			
Functional safety	See publication SAFETY-SR001			
Certifications	CE Marked for all applicable EU directives, cULus Listed, TÜV Certified, UKCA Marked for all applicable regulations rok.auto/certifications			
Outputs				
Safety contacts ⁽¹⁾	3 N.C. or 2 N.C. direct opening action			
Auxiliary contacts	1 N.O. or 2 N.O.			
Thermal current/ <i>I</i> _{th}	10 A			
Rated insulation voltage (U _i)	500V			
Switching current at voltage, min	3 mA at 18V DC			
Utilization Category				
A600/AC-15 (U _e)	600V	500V	240V	120V
A600/AC-15 (I _e)	1.2 A	1.4 A	3 A	6 A
DC-13 (U _e)	24V			
DC-13 (I _e)	2 A			
Solenoid Characteristics				
Locking type	Power to Release			
Holding force, max	1600 N (360 lbf)			
Power supply	24V AC/DC or 110V AC or 230V AC			
Solenoid power	13 W typical 100% ED			
Operating Characteristics				
Break contact force, min	6 N (1.35 lbf)			
Actuation speed, max [mm/s (in/s)]	160 (6.29)			
Actuation frequency, max	2 cycles/s			
Operating radius, min [mm (in)]	60 (2.36)			
Mechanical life	1,000,000 operations			
Environmental				
Enclosure type rating	IP67			
Operating temperature [°C (°F)]	-25...+60 (13...140)			
Physical Characteristics				
Material	• Housing: Painted zinc alloy • Actuator: Stainless steel			
Weight [g (in.)]	1400 (3.08)			
Color	Red			

(1) The safety contacts are described as normally closed (N.C.) that is, with the guard closed, the actuator in place (where relevant), and the machine able to be started.

Product Selection

Solenoid Voltage	Contact			Actuator Type	Cat. No.			
	Safety	Auxiliary	Action		M20 Conduit		Connector ⁽¹⁾	
					M20	1/2 inch NPT	12-pin M23	8-pin Micro (M12) ⁽²⁾
24V AC/DC	3 N.C.	1 N.O.	BBM	GD2 standard	440G-MT47037	440G-MT47039	440G-MT47041	440G-M3NBGDH-AC
				Fully flexible	440G-MT47038	440G-MT47040	440G-MT47042	440G-M3NBDH-AC
				—	440G-MT47007	440G-MT47008	440G-MT47043	—
	2 N.C.	2 N.O.	BBM	GD2 standard	440G-MT47044	440G-MT47046	440G-MT47048	—
				Fully flexible	440G-MT47045	440G-MT47047	440G-MT47049	—
				—	440G-MT47010	440G-MT47011	440G-MT47050	—
24V DC with diagnostic function and metal override key	3 N.C.	1 N.O.	BBM	GD2 standard	440G-MT47149	440G-MT47150	440G-MT47151	—
				Fully flexible	440G-MT47152	440G-MT47153	440G-MT47154	—
				No actuator	440G-MT47155	440G-MT47156	440G-MT47157	—
	2 N.C.	2 N.O.	BBM	GD2 standard	440G-MT47158	440G-MT47159	440G-MT47160	—
				Fully flexible	440G-MT47161	440G-MT47162	440G-MT47163	—
				No actuator	440G-MT47164	440G-MT47165	440G-MT47166	—
110V AC/DC	3 N.C.	1 N.O.	BBM	GD2 standard	440G-MT47070	440G-MT47073	—	—
				Fully flexible	440G-MT47071	440G-MT47074	—	—
				—	440G-MT47013	440G-MT47009	—	—
	2 N.C.	2 N.O.	BBM	GD2 standard	440G-MT47077	440G-MT47079	—	—
				Fully flexible	440G-MT47078	440G-MT47080	—	—
				—	440G-MT47012	440G-MT47014	—	—
230V AC/DC	3 N.C.	1 N.O.	BBM	—	440G-MT47016	440G-MT47017	—	—
	2 N.C.	2 N.O.		—	440G-MT47015	440G-MT47024	—	—

(1) For connector ratings, see [Table 10](#).(2) With an 8-pin micro (M12) connector, not all contacts are connected. See [Typical Wiring Diagrams on page 21](#) for wiring details.
Table 9 - Connection Systems

Description	8-pin Micro	12-pin M23
Cordset	889D-F8AB-x ⁽¹⁾	889M-F12AH-x ⁽²⁾
Patchcord	889D-F8ABDM-y ⁽²⁾	889M-F12AHMU-z ⁽³⁾

(1) Replace x with 2 (2 m [6.6 ft]), 5 (5 m [16.4 ft]), or 10 (10 m [32.8 ft]) for standard cable lengths.

(2) Replace y with 1 (1 m [3.3 ft]), 2 (2 m [6.6 ft]), 3 (3 m [9.8 ft]), 5 (5 m [16.4 ft]), or 10 (10 m [32.8 ft]) for standard cable lengths.

(3) Replace z with OM3 (0.3 m [1 ft]), OM6 (0.6 m [2 ft]), 1 (1 m [3.3 ft]), 2 (2 m [6.6 ft]) or 3 (3 m [9.8 ft]) for standard lengths.

Table 10 - Connector Ratings

	Max Ratings		Applicable Standards
	AC	DC	
8-pin Micro (M12)	30V, 2 A	30V, 2 A	IEC 61076-2-101
12-pin M23	63V, 6 A	63V, 6 A	IEC 61984

Accessories

Description		Cat. No.
	GD2 standard actuator	440G-A27011
	GD2 flat actuator	440K-A11112
	Fully flexible actuator	440G-A27143
	Sliding bolt actuator	440G-A27163

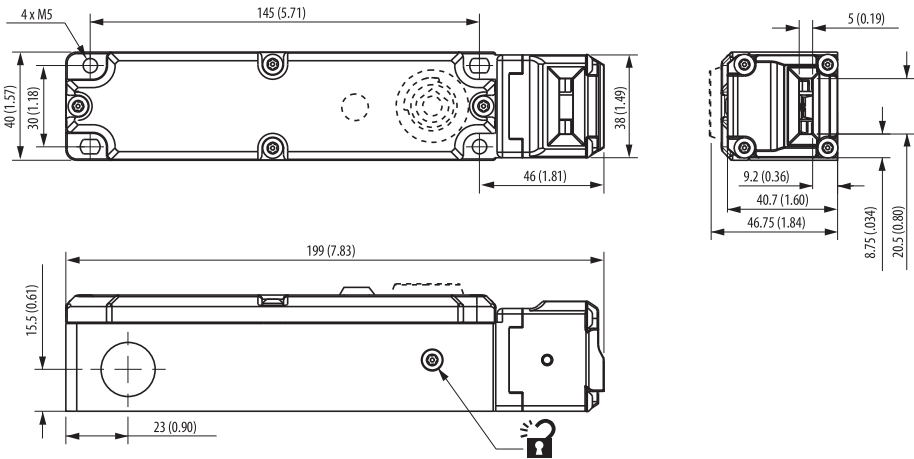
Description		Cat. No.
	Extended flat actuator	440K-A17116
	Replacement cover, no status indicator, no override key	440G-MT47120
	Replacement cover, status indicator, override key	440G-MT47123
	Emergency override key (See following Attention)	440G-A36026
	Dust cover	440K-A17180



ATTENTION: Do not attach the emergency override key to the 440G-MT switch.

Approximate Dimensions

Figure 10 - Guard Locking Switch [mm (in.)]



Typical Wiring Diagrams

Description		2 N.C. and 2 N.O.	3 N.C. and 1 N.O.
Contact Configuration			
Contact Action □ Open ■ Closed			
8-pin Micro (M12)		—	
12-pin m23 QD Pin 11 is not connected.	1 and 3	Solenoid power	Solenoid power
	4 and 6	Safety A	Safety A
	7 and 8	Safety B	Safety B
	2 and 5	Aux A	Safety C
	9 and 10	Aux B	Aux A
	12	Ground	Ground
8-pin Cordset 889D-F8AB-x ⁽¹⁾	Brown Blue	—	Solenoid power
	Gray Red	—	Safety A
	Yellow Pink	—	Safety B
	White Green	—	Aux A
12-pin Cordset 889M-F12AH-x ⁽¹⁾ Gray/pink not connected.	Brown Gray	Solenoid Power	Solenoid Power
	Pink Yellow	Safety A	Safety A
	White Red/Blue	Safety B	Safety B
	Blue Red	Aux A	Safety C
	Black Violet	Aux B	Aux A
	Green	Ground	Ground

(1) Replace x with 2 (2 m [6.6 ft]), 5 (5 m [16.4 ft]), or 10 (10 m [32.8 ft]) for standard cable lengths.

Table 11 - Diagnostic Version

Actuator	Status Indicator Output Matrix	
	Solenoid Off	Solenoid On
In	Green	Amber
Out	Flashing red	Red

Table 12 - Diagnostic Electrical Output

Actuator	Voltage
In	0V DC
Out	+24V DC

Electrical output independent of solenoid status. Maximum output is 100 mA.

Atlas 5 Guard Locking Switches

The Atlas™ 5 guard locking switches have the following features:

- Type 2 interlocking device with guard locking and low coding per ISO 14119
- High Fzh (holding force): 3850 N (865 lb)
- Mechanical lock (Power to Release)
- Heavy-duty, die-cast alloy housing for use in harsh environments
- Patented self-aligning head tolerates actuator misalignment



Specifications

Attribute	Atlas 5 Guard Locking Switches	
Safety ratings		
Standards	ISO 14119, IEC 60947-5-1	
Safety classification	Type 2 interlocking device with guard locking and low coding per ISO 14119	
Functional safety	See publication SAFETY-SR001	
Certifications	cULus Listed, TÜV Certified, UKCA Marked for all applicable regulations, CE Marked for all applicable EU directives rok.auto/certifications	
Outputs		
Safety contacts	Atlas 5: 2 N.C. direct opening action; 1 N.O. direct opening action Atlas 5 trapped key (left hand): 2 N.C. direct opening action; 1 N.O. direct opening action	
Auxiliary contacts	1 N.O.	
Thermal current/ <i>I</i> _{th}	10 A	
Rated insulation voltage (U _i)	500V	
Switching current at voltage, min	3 mA at 18V DC	
Utilization Category		
AC-15 (U _e)	240V	120V
AC-15 (I _e)	1.5 A	3 A
DC-13 (U _e)	24V	
DC-13 (I _e)	2 A	
Solenoid characteristics		
Locking type	Power to Release	
Holding force F _{max}	5000 N (1124 lbf)	
Holding force F _{zh}	3850 N (865 lbf)	
Power supply	24V AC/DC or 110V AC or 230V AC (solenoid)	
Solenoid power	13 W typical 100% ED	
Operating characteristics		
Break contact force, min	12 N (2.7 lbf)	
Actuation speed, max [mm/s (in/s)]	160 (6.29)	
Actuation frequency, max	2 cycles/s	
Operating radius, min [mm (in.)]	300 (11.8) end entry, 800 (31.5) front entry	
Mechanical life	1,000,000 operations	
Environmental		
Enclosure type rating	IP65	
Operating temperature [°C (°F)]	-10...+60 (14...140)	
Physical Characteristics		
Material	• Housing: Die-cast alloy • Actuator: Stainless steel	
Weight [g (in.)]	1200 (2.65)	
Color	Red	

Product Selection

Module Type	Actuator Type	Contact		Solenoid Contacts	Solenoid Voltage	Cat. No.			
		Safety	Auxiliary			Conduit Entry ⁽¹⁾			
						M20	1/2 inch NPT Adapter	12-pin M23 ⁽²⁾	8-pin Micro (M12) ⁽²⁾
Standard	Standard	2 N.C.	1 N.O.	2 N.C. and 1 N.O.	24V AC/DC	440G-L07264	440G-L07258	440G-L07298	440G-L2NNSDH-3N
					110V AC/DC	440G-L07263	440G-L07257	—	—
					230V AC/DC	440G-L07262	440G-L07256	—	—
LH Key Lock					24V AC/DC	440G-L07255	440G-L07249	440G-L07301	440G-L2NNSDH-38
					110V AC/DC	440G-L07254	440G-L07248	—	—
					230V AC/DC	440G-L07253	440G-L07247	—	—

(1) For connector ratings, see Safety Switches and Connectors.

(2) With an 8-pin micro connector, not all contacts are connected. See [Typical Wiring Diagrams on page 25](#) for details.

Table 13 - Connection Systems

Description	Cat. No.	
	8-pin Micro (M12)	12-pin M23
Cordset	889D-F8AB-x ⁽¹⁾	889M-F12AH-x ⁽¹⁾
Patchcord	889D-F8ABDM-y ⁽²⁾	889M-F12AHMU-z ⁽³⁾

(1) Replace x with 2 (2 m [6.6 ft]), 5 (5 m [16.4 ft]), or 10 (10 m [32.8 ft]) for standard cable lengths.

(2) Replace y with 1 (1 m [3.3 ft]), 2 (2 m [6.6 ft]), 3 (3 m [9.8 ft]), 5 (5 m [16.4 ft]), or 10 (10 m [32.8 ft]) for standard cable lengths.

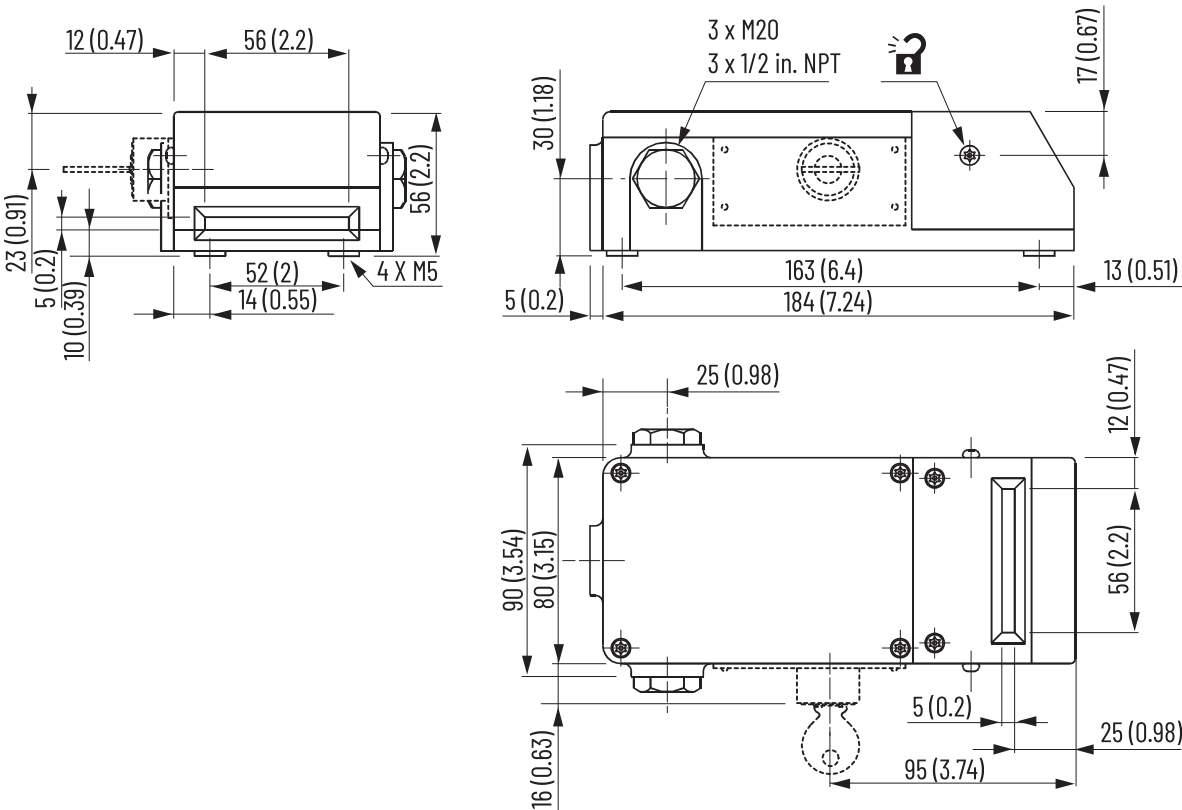
(3) Replace z with OM3 (0.3 m [1 ft]), OM6 (0.6 m [2 ft]), 1 (1 m [3.3 ft]), 2 (2 m [6.6 ft]), or 3 (3 m [9.8 ft]) for standard lengths.

Accessories

Description	Cat. No.	
	Standard actuator	440G-A07136
	Atlas replacement end cap	440G-A07180
	Fully flex actuator	440G-A07269
	Dust cover	440K-A17181

Approximate Dimensions

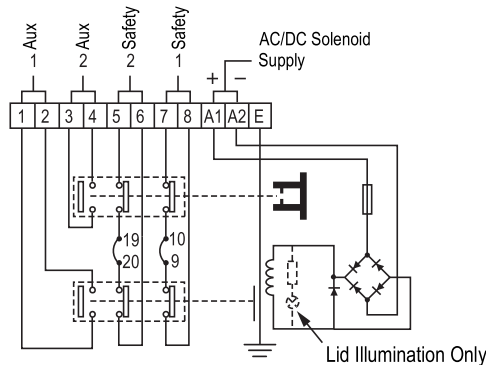
Figure 11 - Guard Locking Switch Dimensions [mm (in.)]



Typical Wiring Diagrams

Figure 12 - Contact Configuration

Guard Open—Solenoid De-energized



Terminal Configuration
Machine in Run Condition

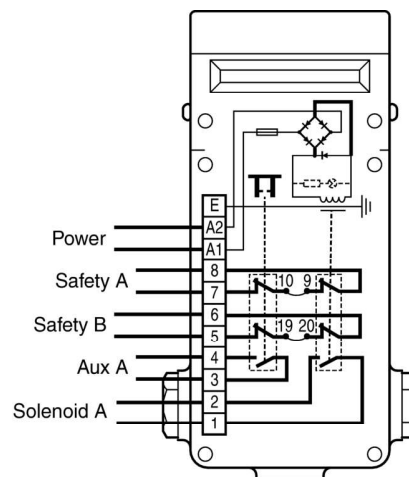
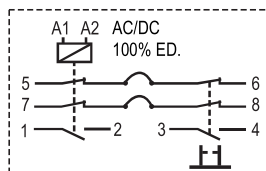


Figure 13 - Contact Action

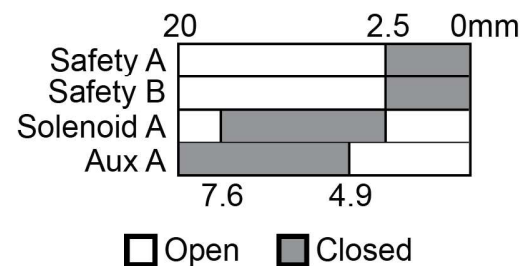
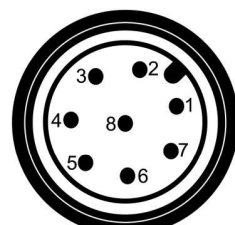
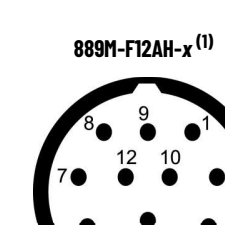


Table 14 - 8-pin (M12) Cordset

889D-F8AB-x ⁽¹⁾	Pin	Color	Function
	1	White/Green	Solenoid A
	2	Brown/Blue	Power
	3	White/Green	Solenoid A
	4	Yellow/Pink	Safety B
	5	Gray/Red	Safety A
	6	Yellow/Pink	Safety B
	7	Brown/Blue	Power
	8	Gray/Red	Safety A

(1) Replace x with 2 (2 m [6.6 ft]), 5 (5 m [16.4 ft]), or 10 (10 m [32.8 ft]) for standard cable lengths.

Table 15 - 12-pin (M23) Cordset

889M-F12AH-x ⁽¹⁾	Pin	Color	Function
	1	Solenoid Power	Brown/Gray
	2	Auxiliary A	Blue/Red
	3	Solenoid Power	Brown/Gray
	4	Safety A	Pink/Yellow
	5	Auxiliary A	Blue/Red
	6	Safety A	Pink/Yellow
	7	Safety B	White/Red/Blue
	8	Safety B	White/Red/Blue
	9	Solenoid A	Black/Violet
	10	Solenoid A	Black/Violet
	11	Not Connected	—
	12	Ground	Green

(1) Replace x with 2 (2 m [6.6 ft]), 5 (5 m [16.4 ft]), or 10 (10 m [32.8 ft]) for standard cable lengths.

440G-S Spartan Guard Locking Switches

The 440G-S Spartan guard locking switches have the following features:

- Type 2 interlock with guard locking and low coding
- Power to Release
- Lid-mounted status indication
- Rotatable head: Four possible key entry slots
- A catch kit with actuator alignment helps protect the unit from actuator damage due to poor guard alignment
- Manual release points with security screws or special key allow the switch to be unlocked if an unforeseen and uncommon circumstance occurs, such as a power failure



Specifications

Attribute	440G-S Spartan Guard Locking Switches
Safety Ratings	
Standards	ISO 14119, IEC 60947-5-1
Safety classification	Type 2 interlocking device with guard locking and low coding per ISO 14119
Functional safety	See publication SAFETY-SR001
Certifications	cULus Listed, TÜV Certified, UKCA Marked for all applicable regulations, CE Marked for all applicable EU directives rok.auto/certifications
Outputs	
Safety contacts	2 N.C. or 3 N.C. direct opening action
Auxiliary contacts	1 N.O.
Thermal current (I_{th})	10 A
Insulation voltage	500V
Impulse withstand voltage	2500V
Utilization Category	AC 15 500V 250V 100V (Ie) 1 A 2 A 5 A DC 250V/0.5 A 24V/2 A
Switched current/volt/load, max	500V/500VA
Current, min	5V 5 mA DC
Safety contact gap [mm (in.)]	>2 (0.08)
Solenoid Characteristics	
Holding force F_{max}	1000 N (225 lb)
Holding force F_{zh}	770 N (173 lb)
Power supply	24V AC/DC, 110V AC, 230V AC (solenoid)
Solenoid power	Typically 7 W 100% ED

Attribute	440G-S Spartan Guard Locking Switches
Operating Characteristics	
Actuation speed, max [mm/s (in/s)]	160 (6.3)
Actuation frequency, max	1 cycle per second
Mechanical life	1,000,000 operations
Environmental	
Pollution degree ⁽¹⁾	3
Operating temperature [°C (°F)]	-20...+60 (-4...+140)
Protection	IP67
Physical Characteristics	
Material	• Housing: UL Approved glass filled polyester • Actuator: Stainless steel
Conduit entry	1 x M20 or quick disconnect style
Fixing	2 x M5
Mounting	Any position
Electrical life	1,000,000 operations
Weight [g (lb)]	260 (0.57)
Color	Red
Operating radius, min [mm (in.)]	175 (6.9)
Status indicator	Solenoid monitor

(1) Conductive pollution occurs, or dry, non-conductive pollution occurs which becomes conductive due to condensation.

Product Selection

Actuator	Solenoid Voltage	Contacts		Cat. No.		
		Safety	Aux.	M20 Conduit	M20 Conduit/ 1/2in. Adapter	Quick Disconnect
Standard	24V AC/DC	2 N.C.	1 N.O.	440G-S36001	440G-S36044	440G-S36058
		3 N.C.	—	440G-S36007	440G-S36047	40G-S36059
	110V AC/DC	2 N.C.	1 N.O.	440G-S36003	440G-S36045	440G-S36060
		3 N.C.	—	440G-S36009	440G-S36048	440G-S36061
	230V AC/DC	2 N.C.	1 N.O.	440G-S36005	440G-S36046	440G-S36062
		3 N.C.	—	440G-S36011	—	440G-S36063
	Mating cable					889M-F12X9AE-x ⁽¹⁾

(1) Replace x with 2 (2 m [6.6 ft]), 5 (5 m [16.4 ft]), or 10 (10 m [32.8 ft]) for standard cable lengths.

Table 16 - Connection Systems

Description	Cat. No.
	12-pin M23
Cordset	889M-F12AH-x ⁽¹⁾
Patchcord	889M-F12AHMU-z ⁽¹⁾

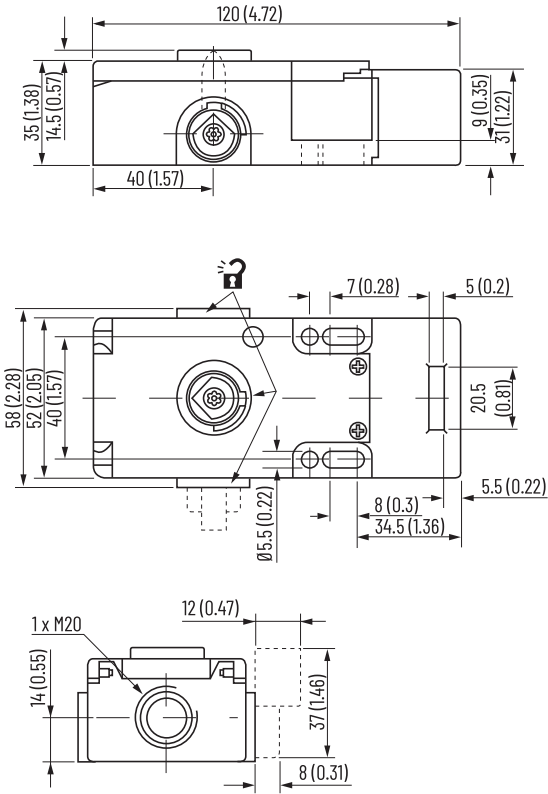
(1) Replace z with OM3 (0.3 m [1 ft]), OM6 (0.6 m [2 ft]), 1 (1 m [3.3 ft]), 2 (2 m [6.6 ft]), or 3 (3 m [9.8 ft]) for standard lengths.

Accessories

Description	Cat. No.
 Replacement actuator with catch retainer and guide	440G-A36050
 Manual release key	440G-A36026

Approximate Dimensions

Figure 14 - Guard Locking Switch [mm (in.)]



Typical Wiring Diagrams

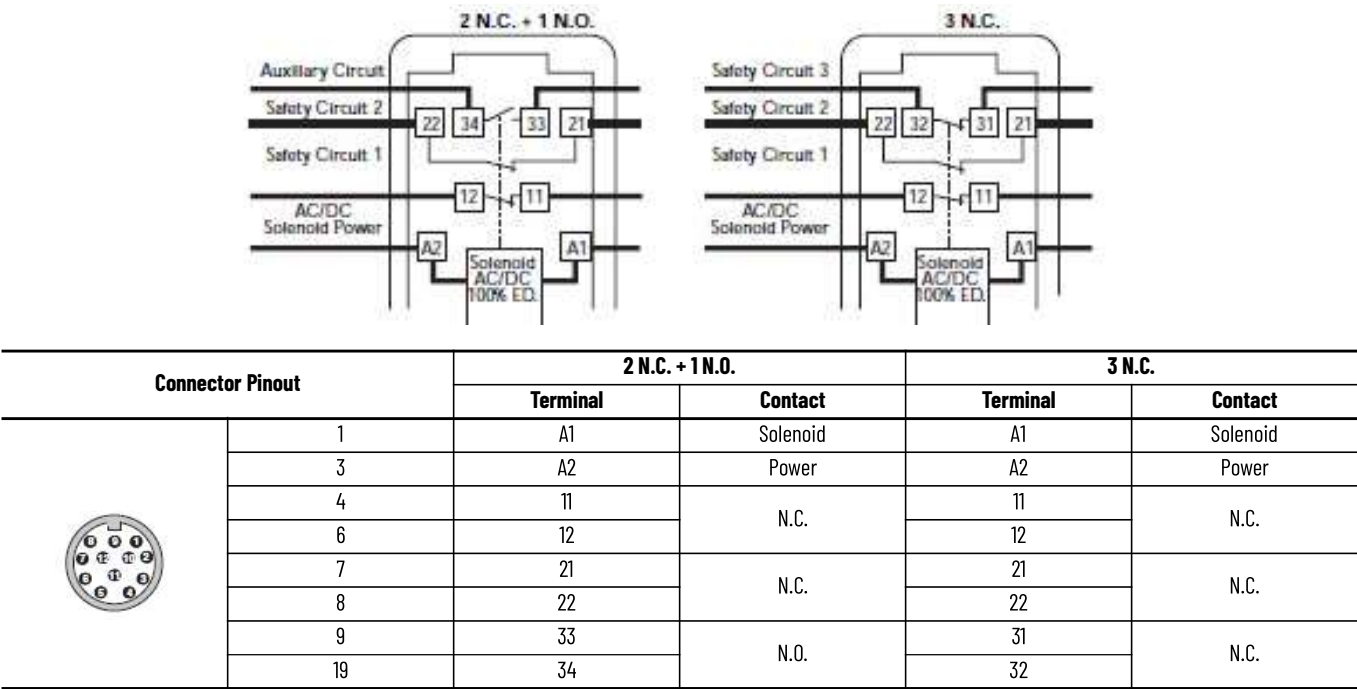


Figure 15 - Contact Action

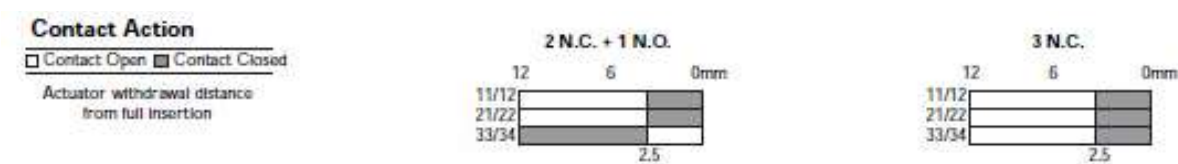


Figure 16 - Application Details

