

Safety Interlock Switches

EC Series



Electrically Coded Interlock Switch & Control Unit

- The EC Series Control Units individually monitor one to four read heads to provide a Category 4 system for applications with up to four guard doors
- Uniquely coded actuators are a highly tamper resistance
- Misalignment of nearly 1/2 inch allows application on machine doors with a high level of vibration or alignment issues
- Manual or automatic start is switch selectable
- External Device Monitoring (EDM) allows the EC Series Control Unit to function as a safety monitoring relay
- The 6 A/24 VDC switching capability of the Control Unit allows connection directly to power contactors
- Individual guard door status may be monitored with the semiconductor outputs from the Control Unit; an additional output gives status of the Control Unit
- Guarding applications with more than four doors may be achieved by combining two or more Control Units in series while continuing to satisfy Category 4 according to EN954-1
- Approved for use in Class I, Div. 2 gas and dust applications



Conforms to EN954-1, EN1088,
EN 60204-1
UL and C-UL listed, BG approved

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Specifications

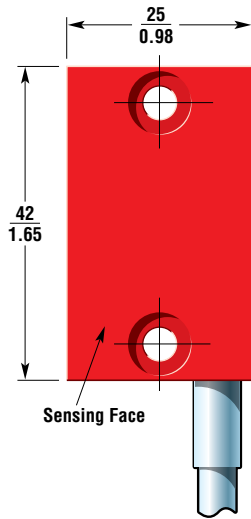
Electrical	EC-S2 and EC-S4 Control Units	EC-S1 Switch
Power Supply:	24 V/DC \pm 10%	—
External Fuse (Operating Voltage):	8 A max.	—
Current Consumption:	250 mA	—
Safety Inputs:	Max. 2 or 4 read heads	—
Max Input Resistance Y1/Y2:	600 ohms	—
Mode of Operation:	—	Inductive
Data Transfer to Control Unit:	—	2 K bit/s
Relay Outputs:	2 N/O	—
Auxiliary Contact of Controls:	2 or 4 solid state outputs for individual monitoring of each read head	—
N/C Operating Distance:	—	On = 10 to 15 mm; Off = 32 mm (25 m cable)
Max Switched AC:	1.5 A/230 VAC (inductive load)	—
Max Switched DC:	1.2 A/24 VDC (inductive load)	—
Min Switched Current/Voltage:	1 mA/1 VAC/DC	—
Impulse Withstand Voltage:	4000 V	—
Max Drop-Out Time:	500 m/sec	—
Max Output Fuse:	6.3 A quick acting	—
Reset Mode:	Automatic/Manual	—
External Device Monitoring:	N/C loop between Y1 and Y2	—
Mechanical		
Mounting:	35 mm (1.38 in.) DIN Rail	4 x M4 screws
Case Material:	Fiber-filled polyamide PA6.6	Glass-filled Fortron plastic
Max Wire Size:	2 x 2.5 mm (12 AWG) 3-pin M8 connector	Pre-wired PVC cable to 10 m (50 m max. cable length)
Weight:	250 g (8.8 oz.)	300 g (10.6 oz.) with 10 m cable
Color:	Gray	Red
Indication:	State LED: Green = Status with blink modes	—
	Out LED: Yellow = Safety outputs closed	—
	Dia LED: Red = Error indication	—
Mechanical Life:	10 x 10 ⁶	—
Environmental		
Protection:	IP20 (NEMA 1)	IP67/P69K
Operating Temperature:	0 to 55°C (32 to 131°F)	-25 to 70°C (-13 to 158°F)
Compliance		
Standards:	EN954-1, EN1088, EN60204-1	
Approvals/Listings:	CE marked for all applicable directives, UL, C-UL, BG, and TUV to ATEX 100a for Ex zone 2 and 22	
Safety Category:	Cat. 4 per EN954-1	

Specifications are subject to change without notice.

Note: The safety contacts of the Omron STI switches are described as normally closed (N/C)—i.e., with the guard closed, actuator in place, and the machine able to be started.

Actual Size

EC-S1 Read Head

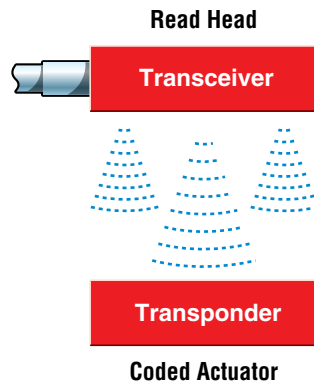


Operation

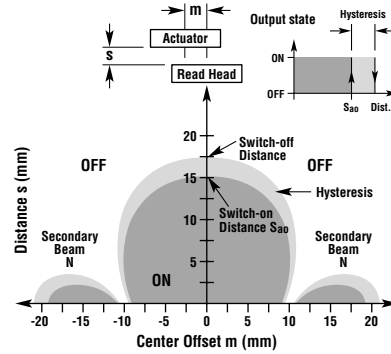
Operating Principle

Upon moving the actuator within the operating distance of the read head, the actuator (transponder) receives an electromagnetic field from a read head (transceiver station), processes it and sends data signals back to the read head which are read by the control unit.

Every actuator is unique and secure against manipulation. The control unit must be taught the code of replacement actuators by using the "teach-in operation" that requires no additional equipment.

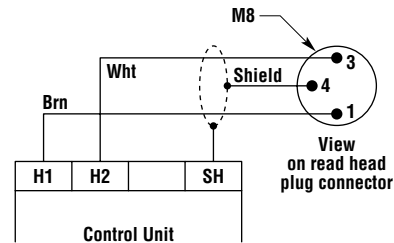


Operating Range



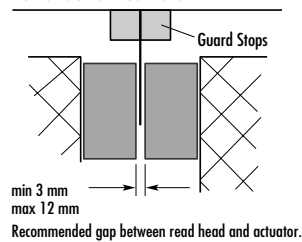
A minimum distance of $s = 3$ mm must be maintained in the case of lateral approach in order to prevent entry into the operating range of the secondary beams.

Connector Configuration

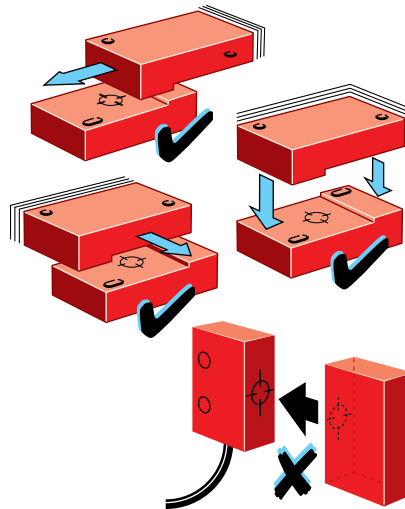


Mounting

NOTE: ACTUATOR MUST NOT STRIKE READ HEAD



Installation Alignments



Applications

Typical applications are on sliding guard doors or swinging guard doors.

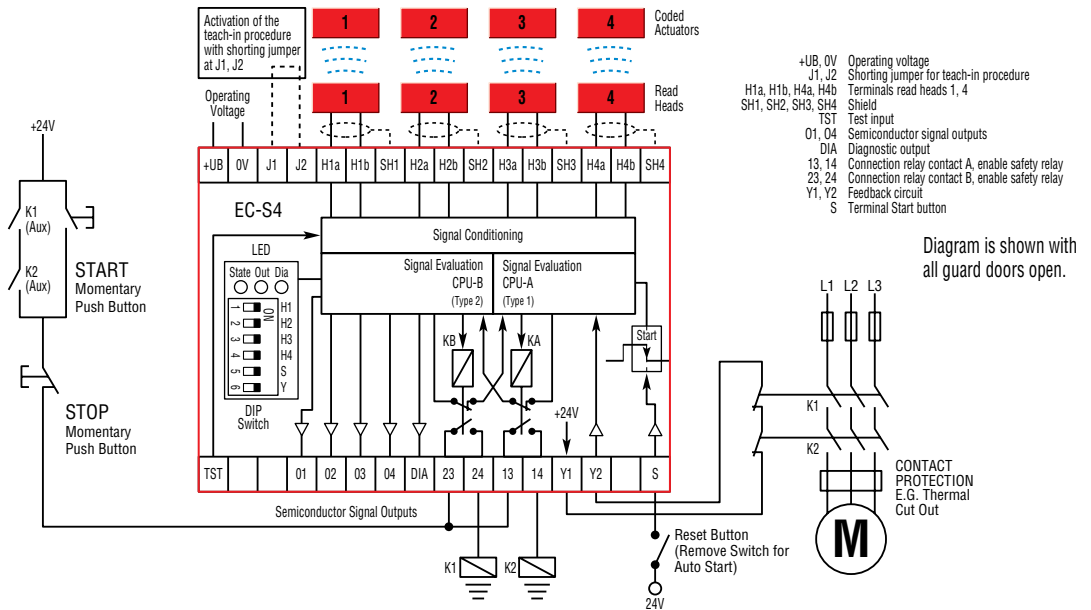
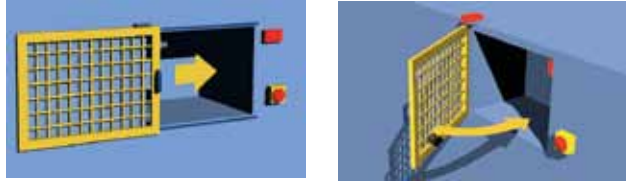


Diagram is shown with all guard doors open.

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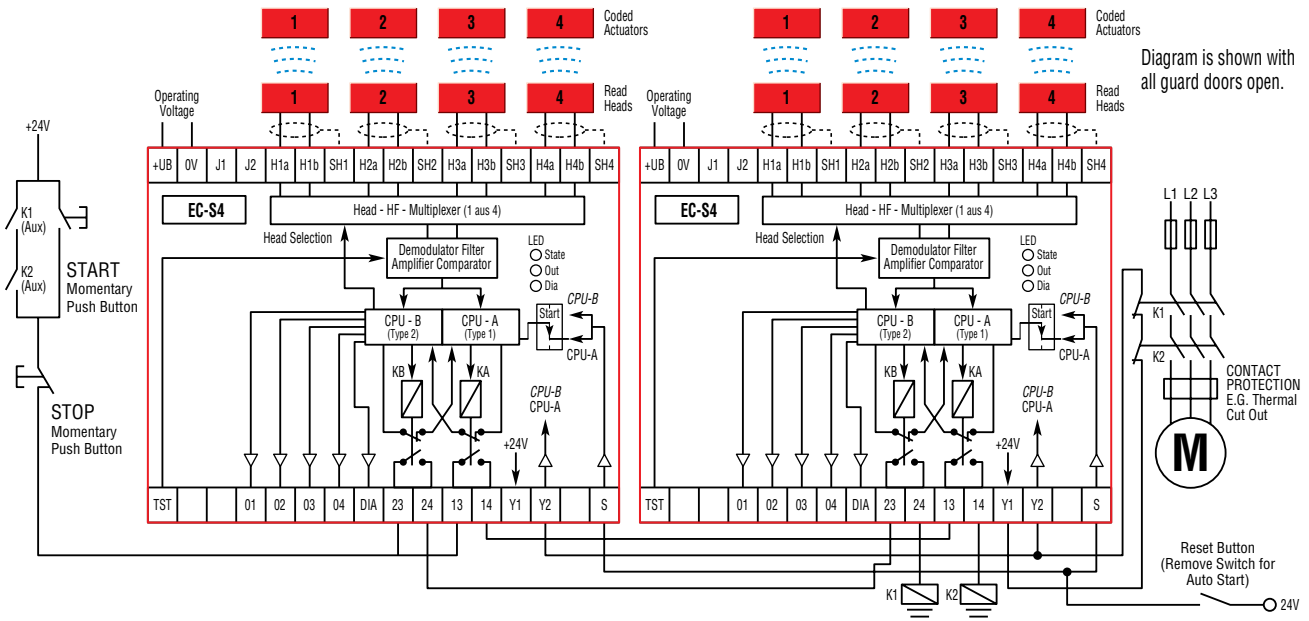


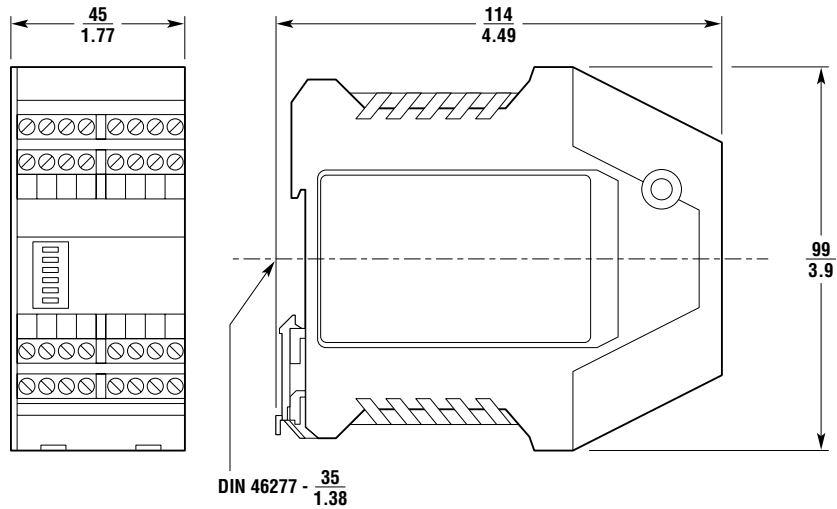
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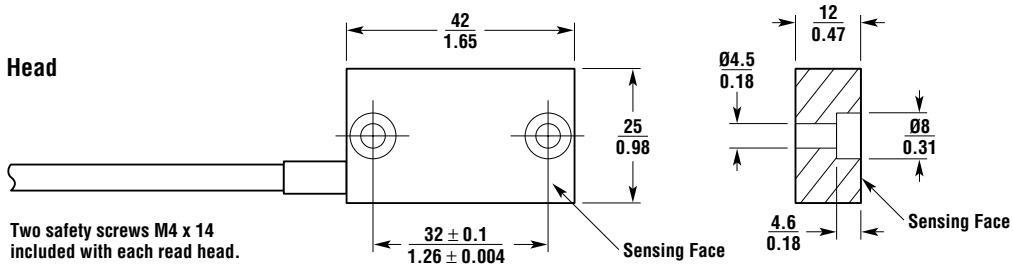
Dimensions

(mm/in.)

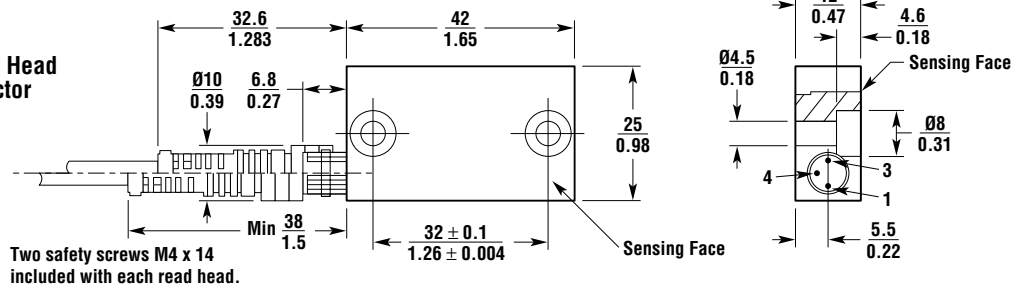
EC-S2 and EC-S4 Control Unit



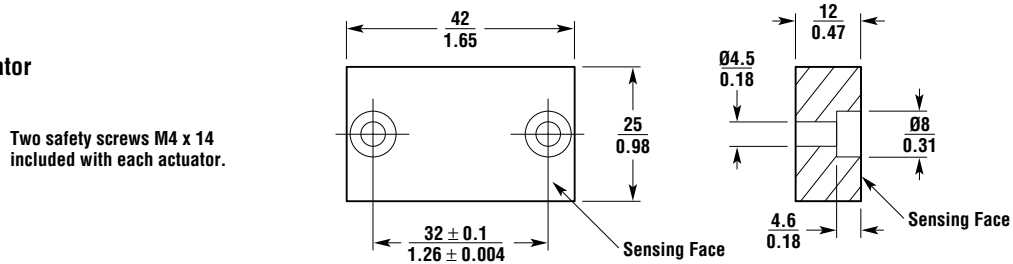
EC-S1 Read Head with Cable



EC-S1 Read Head with Connector



EC-S1 Actuator



Ordering

Model	Contacts	Wiring Entry	Part No.
Control Units			
EC-S2 Control (24 VDC) (2 Read Heads Max)	2 N/O safety outputs		44537-0020
EC-S4 Control (24 VDC) (4 Read Heads Max)	2 N/O safety outputs		44537-0040
Switches (Read Heads)			
PVC Fixed Cable			
EC-S1PC5 Switch & Actuator	Transceiver	5 m cable	44537-0105
EC-S1PC10 Switch & Actuator	Transceiver	10 m cable	44537-0110
EC-S1PC15 Switch & Actuator	Transceiver	15 m cable	44537-0115
EC-S1PC25 Switch & Actuator	Transceiver	25 m cable	44537-0125
M8 Connector			
EC-S1PCC Switch & Actuator	Transceiver	Connector	44537-0300
Cables for Connector Switch			
PVC Shielded Cable with M8 Connector			
5 m cable with M8 female connector			44537-7105
10 m cable with M8 female connector			44537-7110
20 m cable with M8 female connector			44537-7120
25 m cable with M8 female connector			44537-7125
Accessories			
EC-S1A Replacement Actuator			44537-0700