MAYSER®

Innovative by tradition.

RailFR®: Sensors, cable

EN | Data sheet

7504356	EKS 002 RailFR®
7504382	EKS 030 RailFR®
7504403	SE 1 15 RailFR®
7504405	SE 1 18 RailFR®

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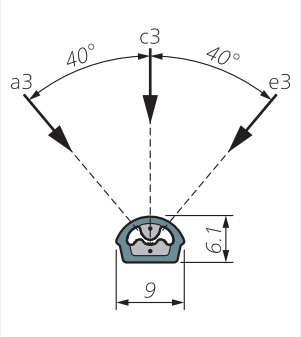
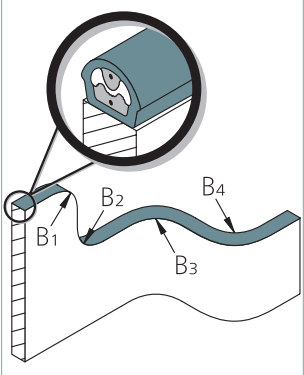
Sensors

7504356 EKS 002 RailFR



Dimensional tolerances according to ISO 3302 E2/L2

Bend radii:



Physical resistance
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Chemical resistance
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Compatibility of materials
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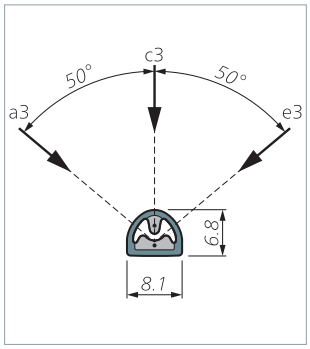
Switching characteristics at v_{test} = 50 mm/min			
Actuation force (c3)	**+23 °C**	**–25 °C**	**–40 °C**
Test piece (rod) Ø 20 mm	< 10 N	< 20 N	< 25 N
Test piece (cylinder) Ø 80 mm	< 60 N	< 100 N	< 120 N
Actuation distance (c3)			
Test piece (cylinder) Ø 80 mm	< 2.0 mm		
Actuation angle (a3 to e3)			
Test piece (cylinder) Ø 80 mm	±40°		
Safety classifications			
ISO 13849-1: B_{10D}	1×10^6		
Mechanical operating conditions			
Sensor length (min. | max.)	100 mm | 50 m		
Cable length (min. | max.)	200 mm | 100 m		
Tensile load, cable (max.)	60 N		
Bend radii (min.): B_1 | B_2 | B_3 | B_4	50 | 40 | 40 | 40 mm		
Installation position	Any		
IEC 60529: degree of protection	IP67		
EN 50125-1:			
Air temperature class	T3		
Short-term (max. 10 min)	TX		
Class of altitude range	AX, max. 2000 m NHN		
Max. humidity at	100%		
Max. temperature change	3 K/s		
Operating temperature	–40 to +60 °C		
Weight (without cable)	41 g/m		
Electrical operating conditions			
When sensor is not actuated			
Monitoring resistor (±1%)	1k2, 8k2, others on request		
Nominal output (max.)	250 mW		
Total resistance			
For sensor with max. 12 m and cable with max. 20 m	1k2 ±10%, 8k2 ±3%		
When sensor is actuated	Test piece (cylinder) Ø 80 mm, F = 150 N		
Contact transition resistance	< 400 ohms		
Switching current (min. | max.)	DC 1 mA | DC 10 mA		
More than one sensor	Max. 5 in series		
Connection cable	Ø 3.8 ±0.2 mm, 2×0.25 mm²		

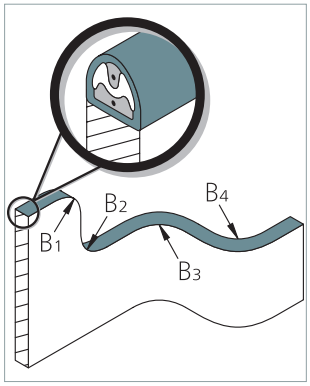
7504382 EKS 030 RailFR



Dimensional tolerances according to ISO 3302 E2/L2

Switching characteristics at v_{test} = 50 mm/min			
Actuation force (c3)	**+23 °C**	**–25 °C**	**–40 °C**
Test piece (rod) Ø 20 mm	< 10 N	< 20 N	< 25 N
Test piece (cylinder) Ø 80 mm	< 60 N	< 100 N	< 120 N
Actuation distance (c3)			
Test piece (cylinder) Ø 80 mm	< 1.5 mm		
Actuation angle (a3 to e3)			
Test piece (cylinder) Ø 80 mm	±50°		
Safety classifications			
ISO 13849-1: B_{10D}	1× 10^6		
Mechanical operating conditions			
Sensor length (min. | max.)	100 mm | 50 m		
Cable length (min. | max.)	200 mm | 100 m		
Tensile load, cable (max.)	60 N		
Bend radii (min.): B_1 | B_2 | B_3 | B_4	60 | 70 | 30 | 30 mm		
Installation position	Any		
IEC 60529: degree of protection	IP67		
EN 50125-1:			
Air temperature class	T3		
Short-term (max. 10 min)	TX		
Class of altitude range	AX, max. 2000 m NHN		
Max. humidity at	100%		
Max. temperature change	3 K/s		
Operating temperature	–40 to +60 °C		
Weight (without cable)	38 g/m		
Electrical operating conditions			
When sensor is not actuated			
Monitoring resistor (±1%)	1k2, 8k2, others on request		
Nominal output (max.)	250 mW		
Total resistance			
For sensor with max. 12 m and cable with max. 20 m	1k2 ±10%, 8k2 ±3%		
When sensor is actuated	Test piece (cylinder) Ø 80 mm, F = 150 N		
Contact transition resistance	< 400 ohms		
Switching current (min. | max.)	DC 1 mA | DC 10 mA		
More than one sensor	Max. 5 in series		
Connection cable	Ø 3.8 ±0.2 mm, 2× 0.25 mm^2		

Bend radii:



Physical resistance
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Chemical resistance
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Compatibility of materials
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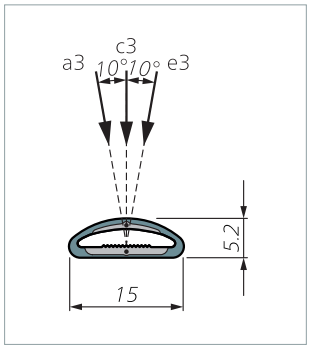
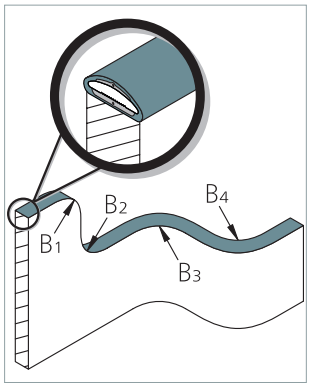
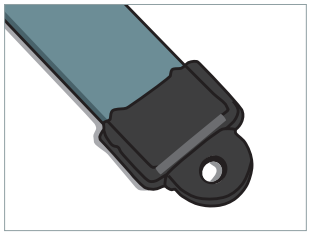


Dimensional tolerances according to ISO 3302 E2/L2

Bend radii:



With pull-in tab:



Switching characteristics at v_{test} = 50 mm/min			
Actuation force (c3)	**+23 °C**	**–25 °C**	**–40 °C**
Test piece (rod) Ø 20 mm	< 15 N	< 25 N	< 25 N
Test piece (cylinder) Ø 80 mm	< 70 N	< 100 N	< 100 N
Test specimen length	1.0 m		
Actuation distance (c3)			
Test piece (cylinder) Ø 80 mm	< 3.0 mm		
Actuation angle (a3 to e3)			
Test piece (cylinder) Ø 80 mm	±10°		
Safety classifications			
ISO 13849-1: B_{10D}	1× 10^6		
Mechanical operating conditions			
Sensor length (min. | max.)	100 mm | 50 m		
Cable length (min. | max.)	200 mm | 100 m		
Tensile load (max.)			
Cable	50 N		
Pull-in tab	30 N		
Bend radii (min.): B_1 | B_2 | B_3 | B_4	100 | – | 150 | 150 mm		
Installation position	Any		
IEC 60529: degree of protection	IP67		
EN 50125-1:			
Air temperature class	T3		
Short-term (max. 10 min)	TX		
Class of altitude range	AX, max. 2000 m NHN		
Max. humidity at	100%		
Max. temperature change	3 K/s		
Operating temperature	–40 to +60 °C		
Weight (without cable)	45 g/m		
Electrical operating conditions			
When sensor is not actuated			
Monitoring resistor (±1%)	1k2, 8k2, others on request		
Nominal output (max.)	250 mW		
Total resistance			
For sensor with max. 12 m and cable with max. 20 m	1k2 ±10%, 8k2 ±3%		
When sensor is actuated	Test piece (cylinder) Ø 80 mm, F = 150 N		
Contact transition resistance	< 400 ohms		
Switching current (min. | max.)	DC 1 mA | DC 10 mA		
More than one sensor	Max. 5 in series		
Connection cable	Ø 3.8 ±0.2 mm, 2× 0.25 mm^2		

Physical resistance
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Chemical resistance
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Compatibility of materials
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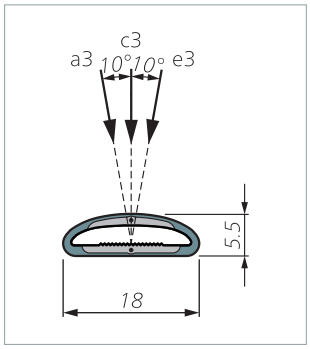
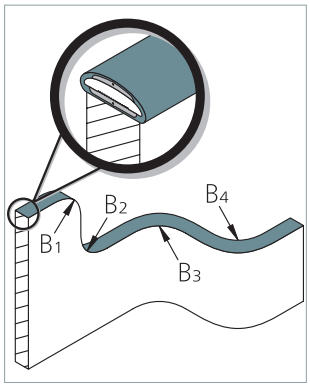
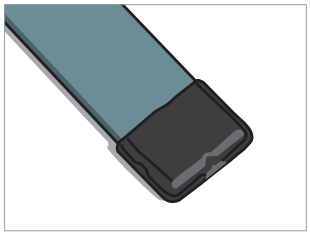


Dimensional tolerances according to ISO 3302 E2/L2

Bend radii:



Without pull-in tab:



Physical resistance
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Chemical resistance
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Compatibility of materials
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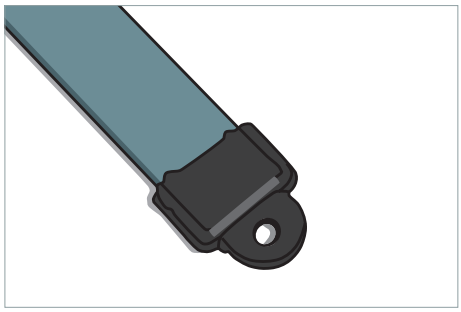
Switching characteristics at v_{test} = 50 mm/min			
Actuation force (c3)	**+23 °C**	**–25 °C**	**–40 °C**
Test piece (rod) Ø 20 mm	< 15 N	< 25 N	< 25 N
Test piece (cylinder) Ø 80 mm	< 80 N	< 120 N	< 120 N
Test specimen length	1.0 m		
Actuation distance (c3)			
Test piece (cylinder) Ø 80 mm	< 3.0 mm		
Actuation angle (a3 to e3)			
Test piece (cylinder) Ø 80 mm	±10°		
Safety classifications			
ISO 13849-1: B_{10D}	1× 10^6		
Mechanical operating conditions			
Sensor length (min. | max.)	100 mm | 50 m		
Cable length (min. | max.)	200 mm | 100 m		
Tensile load (max.)			
Cable	50 N		
Pull-in tab (optional)	30 N		
Bend radii (min.): B_1 | B_2 | B_3 | B_4	80 | 90 | 150 | 150 mm		
Installation position	Any		
IEC 60529: degree of protection	IP67		
EN 50125-1:			
Air temperature class	T3		
Short-term (max. 10 min)	TX		
Class of altitude range	AX, max. 2000 m NHN		
Max. humidity at	100%		
Max. temperature change	3 K/s		
Operating temperature	–40 to +60 °C		
Weight (without cable)	56 g/m		
Electrical operating conditions			
When sensor is not actuated			
Monitoring resistor (±1%)	1k2, 8k2, others on request		
Nominal output (max.)	250 mW		
Total resistance			
For sensor with max. 12 m and cable with max. 20 m	1k2 ±10%, 8k2 ±3%		
When sensor is actuated	Test piece (cylinder) Ø 80 mm, F = 150 N		
Contact transition resistance	< 400 ohms		
Switching current (min. | max.)	DC 1 mA | DC 10 mA		
More than one sensor	Max. 5 in series		
Connection cable	Ø 3.8 ± 0.2 mm 2× 0.25 mm^2		

Options for SE 1 18 RailFR

With pull-in tab:



Physical resistance

	RailFR
EN 45545-2: suitable for	
Hazard level	HL3
Set of requirements	R26

Chemical resistance

The product is resistant to normal chemical influences over an exposure time of 24 hours.

Explanation of symbols:
+ = resistant
± = resistant to a certain extent
– = not resistant

	RailFR
Cyanoacrylate adhesive	+
Greases	±
Graffiti remover	±
Skin cream	±
Isopropanol	±
Neutral cleaner	+
Alkaline cleaner	+
Hydrochloric acid cleaner	+
Phosphoric acid cleaner	+
Plastic cleaner	+
Soap solution	+
Saline solution 5%	+
Spirit (ethyl alcohol)	±
Talc	+

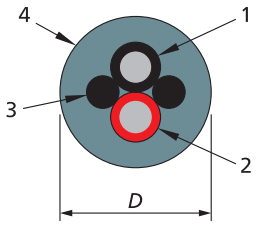
All tests were carried out at room temperature (+23 °C).

Compatibility of materials

The suitability of the product as part of the complete system (particularly the degree to which the materials are compatible with the components used) must be assessed in the context of the specific application. This is the responsibility of the company integrating the product into the system.
Depending on the exact nature of your requirements, we will be happy to assist you with alternative methods for testing the compatibility of materials (pressure-sensitive sensor + rubber sleeve profile used) by drawing on our expertise.

Cable

1005975 Mayser RailFR 2× 0.25 mm²



Cable structure		
Conductors, Nos. 1 and 2		CU wire, tinned, wire EN 13602 – Cu-ETP1
Nominal cross-section		0.25 mm²
Insulation	No. 1	Black, TPE
	No. 2	Red, TPE
Dummy wire	No. 3	Black, TPE
Sheath	No. 4	Squirrel grey (RAL 7000), TPE
Outer diameter D		3.8 ±0.2 mm
Weight		22 g/m
Electrical operating conditions		
Conductor resistance at 20 °C		≤ 80 ohms/km
Operating voltage (max.)		DC 48 V
Test voltage		1.5 kV
Mechanical operating conditions		
Bend radii (min.)		
Fixed installation		19 mm (5× D)
Moving / free installation		39 mm (10× D)
Drag chain		41 mm (10.5× D)
Operating temperature (fixed)		–40 to +90 °C
Operating temperature (flexible)		–30 to +90 °C
Physical resistance		
EN 45545-2: suitable for		
Hazard level		HL3
Set of requirements		R15 and R16
EN 60332-1-2		Flame-retardant and self-extinguishing
EN 60332-3-25		No spreading of fire
HD 605: artificial weathering		
60 W/m², 720 h, 38 °C, 65% rel. humidity, cycle: 18/102 min		No cracks
IEC 60754-1		Halogen-free
2011/65/EU: RoHS		Complies
Chemical resistance		
Hydrolysis		Very good
Acids		Good
EN 50264-1 (EM 104)		
Oil		Very good
Fuels		Very good
EN 50396 paragraph 8.1.3:		
Ozone resistance 72 h, 40 °C, 55% rel. humidity		No cracks