Non-contact safety sensor T 4000 Compact

The T 4000 Compact is a non-contact safety system, certified in Safety Category 3, based on Transponder technology. The system consists of 2 parts:

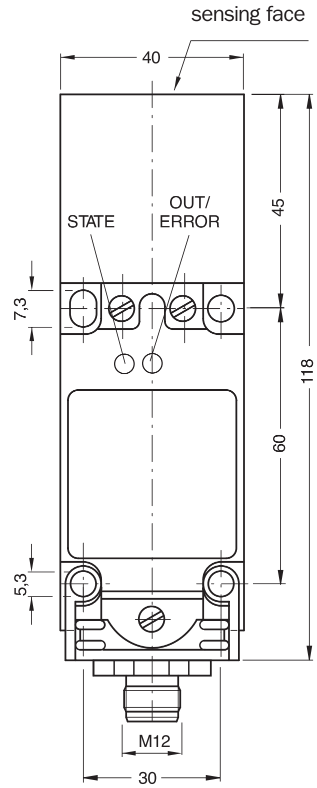
- Sensor
- Actuator

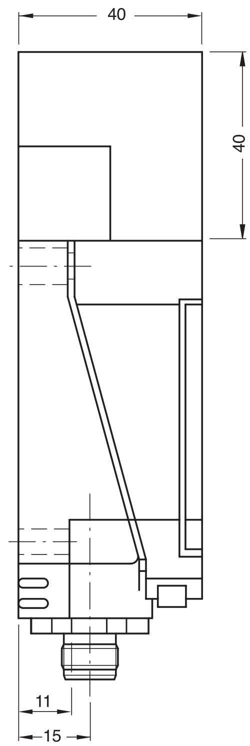
The T 4000 Compact is ideal for use in applications where mechanical interlocks can't be installed because of guard misalignment, strong vibrations or sanitary requirements (food industry).

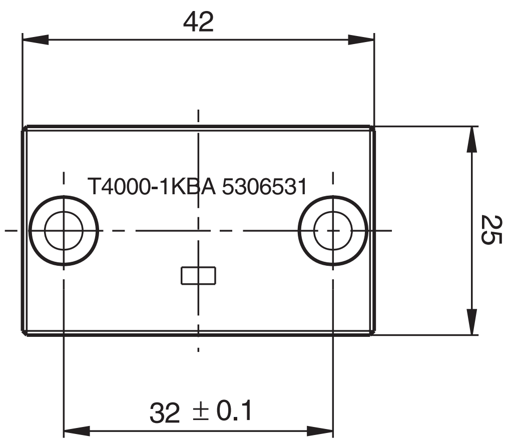
Using an electronic code that has been entered in the actuator, the device learns the sensor (on the guard's fixed section) one code at a time. When another T 4000 Compact series actuator is installed nearby, this function prevents the system from enabling the outputs if the guard is not in the proper position. In case of actuator damage, is possible, through a re-learning procedure (up to 8), to enter a new electronic code for the new device.

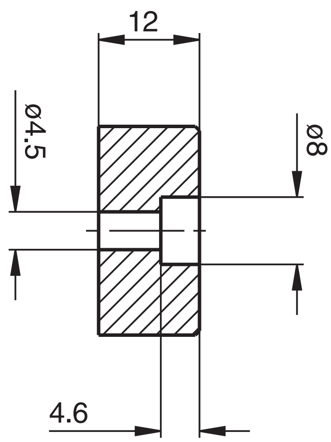
The safety controller, integrated in the sensor, directly processes signals in the field, providing two safe semiconductor outputs (La, Lb) and one signal output (OUT). In case of device malfunction, the outputs will be set to the low status and an LED indicator will alert the operator of the device failure. Thanks to its actuating (up to 20 mm) and deactivating (23 mm) capability, together with the ability to test the sensors without opening the guard, the T 4000 Compact safety interlock is ideal for demanding applications (automotive industry).

Drawings









Safety Sensors
Transponder

Technical specifications

	T 4000			
Parameter	**Value**			**Unit**
	minimum	**typical**	**maximum**	
Housing material	Plastic PBT V 0 GF 20			
Dimensions	118 x 40 x 40 mm			
Weight	0.4			kg
Ambient temperature to UB = 24 V DC	0	–	+55	°C
Storage temperature	-25	–	+70	°C
Enclosure	IP 67, protection class II, degree of contamination 2			
Installation position	optional			
Type of connection	M12 plug, 8-pin, shielded			
Operating voltage U_B (reverse voltage proof, stabilized, residual ripple < 5 %)	18	24	27	V DC
Current consumption	80			mA
Operating voltage for load U(+LA) / U(+LB)	18	–	27	V DC
Safety outputs LA and LB	LA / LB, 2 solid state outputs, p-switching, short-circuit proof electrically decoupled			
Output voltage U(LA) / U(LB) 1)				
HIGH	U(+LA) - 1,4	–	U(+LA)	
HIGH	U(+LB) - 1,4	–	U(+LB)	
V DC				
LOW U(LA) / U(LB)	0	–	1	
Switching current	1	–	400	mA
External fusing U(+LA) / U(+LB)	medium, solw blow			
Utilization category to EN 60947-5-2	DC-13 24 V 400 mA			
Classification to IEC/EN 60 947-5-3	PDF-S			
Door signal output OUT	solid state output, p-switching, short-circuit proof			
Output voltage	0,8 x UB	–	U_B	V DC
Load rating	–	–	20	mA
Control category according to EN 954	3			
Rated insulation voltage U_i	–	–	30	V
Rated impulse withstand voltage U_{imp}	–	–	1,5	kV
Resistance to vibration	according to EN 60 947-5-2			
Operating delay as of state change	–	–	180	ms
Risk period 2)	–	–	180	ms
Start-up delay time 3)	–	–	3	s
Dwell time 4)	0.5	–	–	s
EMC protection requirements	according to IEC 60947-5-3			
LED indicators	STATE LED	green: normal mode blinking: teach-in operation		
	OUT/ERROR LED	yellow: actuator detected red: test input activated internal circuitry error invalid teach-in operation		

1) If the output relays have switched due to a current > 300 mA, the gold plated contacts are no longer capable of guiding currents (≤ 10 mA).

2) The internal failure detection time indicates the device delay in opening the output relay when a failure occurs. In case of output relay failure, the failure is detected when opening the safety circuit.

3) After entering the operating voltage, during the ready phase delay, the relay outputs are disconnected and the door signal contact is set to LOW potential.

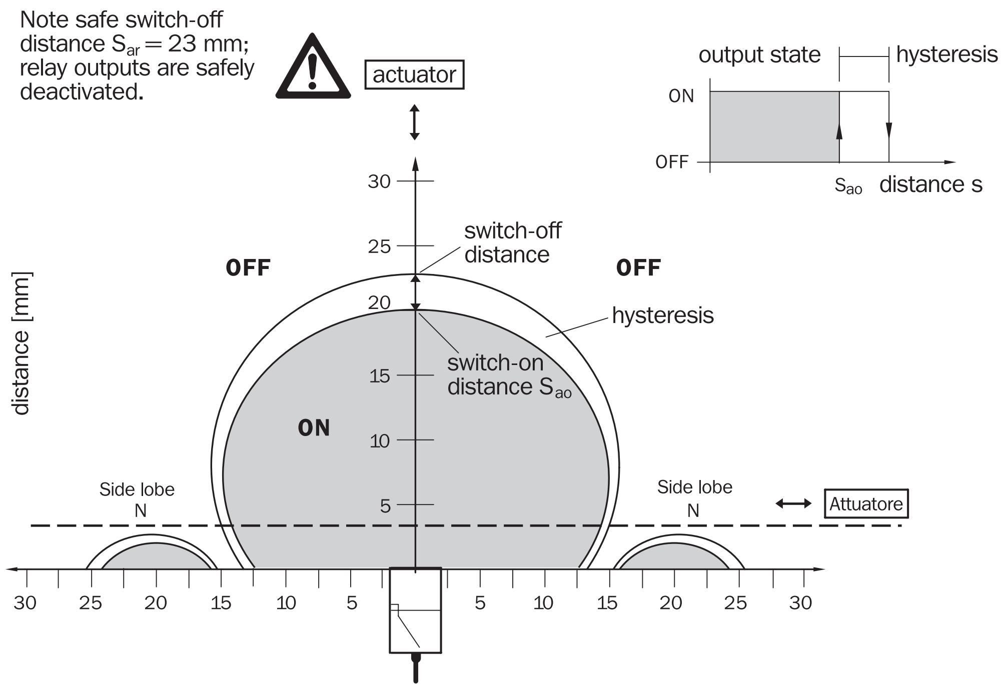
4) Not protected against short circuit.

Technical specifications for actuator

	T 4000			
Parameter	**Value**			**Unit**
	minimum	**typical**	**maximum**	
Housing material	Fortron, glass-reinforced thermoplastic material, fully encapsulated			
Dimensions	42 x 25 x 12 mm			
Weight	0.01			kg
Ambient temperature	–25	–	+70	°C
Enclosure	IP 67			
Installation position	sensing face opposite read head			
Power supply	inductive via read head			
Swell time remaining inside the operating range [1]	0.5	–	–	s

[1] The stay time is the time during which the actuator should be inside or outside the operating field.

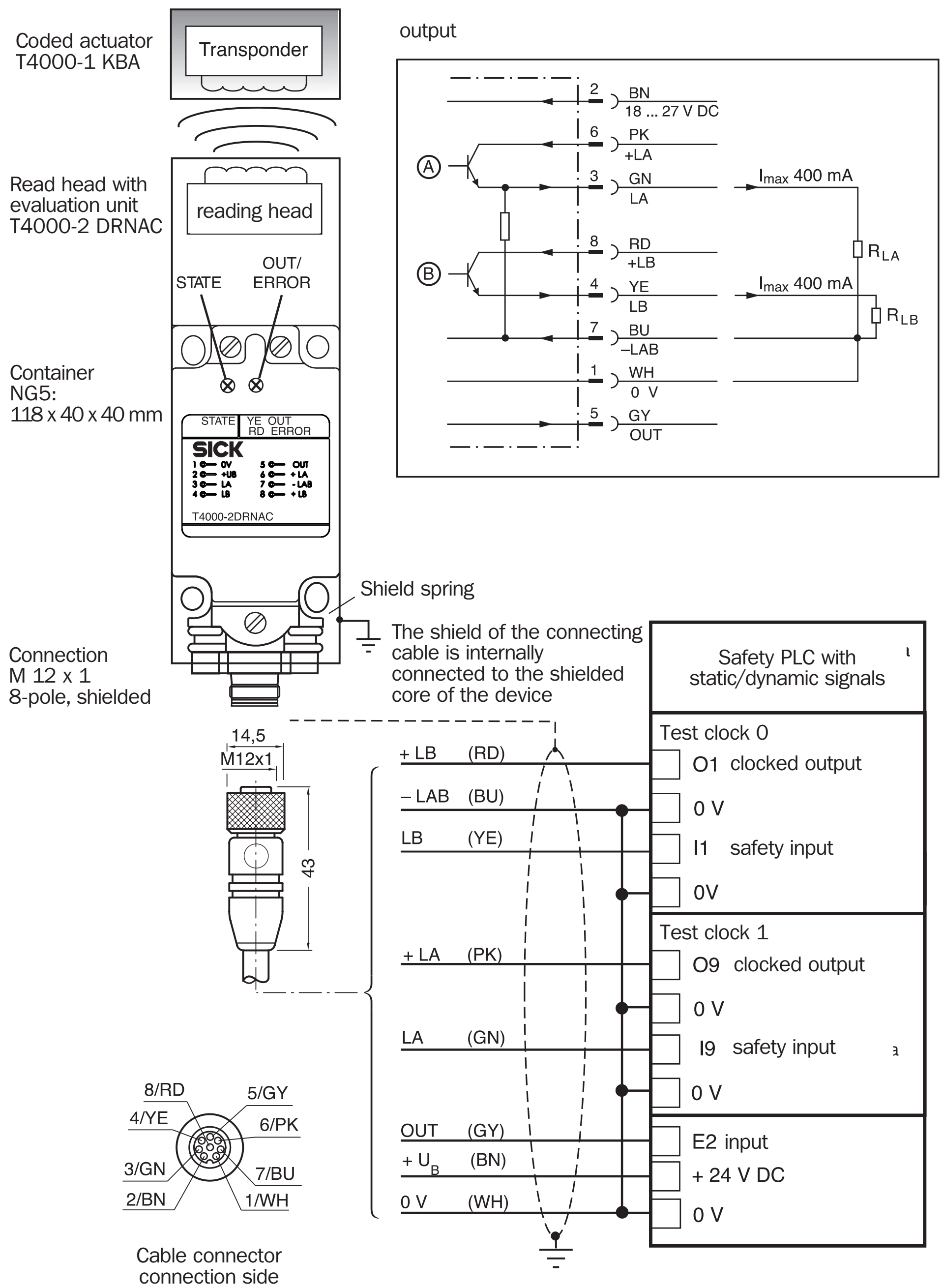
Application example



Direction of read head

- The sensitive side of the reading head can be rotated to 5 different positions. It is identified by the SICK logo and the circle corresponds to the center of the reading head.
- 1) Use a screwdriver to remove the reading head
- 2) Remove it from the housing and tilt it at 90° (arrow A). Position the sensitive side of the reading head as desired by rotating it in the direction of the B arrow.
- 3) Reassemble the reading head.

Connection and block diagram



Product selection table

Actuator		Part number
T4000-1 KBA		5 306 531

Data processing unit		Part number
T4000-2 DRNAC		6 022 052

Female connector	Cable length				Part number
M12 - 8-pin straight	5 m	10 m	15 m	30 m	
T4000-2 DRNAC	5				6 020 993
T4000-2 DRNAC		10			6 022 152
T4000-2 DRNAC			15		6 022 153
T4000-2 DRNAC				30	6 022 242

We recommend contacting Customer Service for product selection.