

# i10 Lock Safety Locking Devices

Highly flexible with narrow shape









The i10 Lock safety switch forms part of the product family of safety locking devices. Its narrow shape enables it to be mounted easily and directly on guard door frames. Different switching

## **Product description**

elements and actuators make it very flexible, mechanically and electrically. As a result, this safety switch can be adapted to the application in question.

## At a glance

- · Narrow plastic housing
- Either rigid or mobile actuators
- 3 cable entry glands M20 x 1.5 or M12 plug connector
- Locked by spring force and magnetic force
- · Locking and door monitoring

## Your benefits

- Simple mounting without additional mounting plate – directly on the aluminum profile of the guard door
  frame.
- High flexibility of the electrical connection due to three cable entry glands
- Improved diagnostics due to additional signaling contacts
- Practical adjustment: With choice of actuators – suitable for any door
- Different switching elements enable the appropriate solution for electrical installation
- Quick device exchange due to variants with M12 plug connector



## **Additional information**

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# **Detailed technical data**

You can find more detailed data in the operating instructions. Download at www.mysick.com.

## Locking type: electrical

Туре	i10-E0233 Lock	i10-E0253 Lock	i10-E0313S02 Lock	i10-E0453 Lock	i10-E0454 Lock	
Housing material		Glass-fil	per reinforced therm	noplastic		
Enclosure rating			IP 67			
Safety-related parameters		0 406	20 1 2 2 1 201			
B <sub>10d</sub> parameter		3 x 10° sw	ritching cycles, with -20 °C +55 °C	small load		
Ambient operating temperature from to						
Approach speed			≤ 20 m/min			
Actuation force			≥ 10 N			
Locking force			≤ 1,300 N			
Actuation frequency		Class	≤ 7,000 /h			
Switching principle		510W	action switching ele	ement		
Number of positive action N/C solenoid monitoring contacts			2			
Number of N/O solenoid monitoring contacts	1		(	0		
Number of positive action N/C door monitoring contacts	(	0	1	:	2	
Number of N/O door monitoring contacts	0	-	1	(	0	
Number of N/C door monitoring contacts	:	1		0		
Usage category in compliance with IEC/EN 60947-5-1			AC-15/DC-13			
Rated operating current (voltage)		,	O V AC) 4 V DC)		1 A (24 V AC) 1 A (24 V DC)	
Rated insulation voltage U <sub>i</sub>		25	0 V		30 V	
Rated impulse withstand voltage U <sub>imp</sub>		2,500	) V AC		1,500 V AC	
Switching voltage (switching current)			≥ 12 V DC (10 mA)			
Switching current (switching voltage)			≥ 1 mA (24 V DC)			
Solenoid operating voltage		24	V (20.4 V 26.4 V)	) DC		
Power consumption			≤ 8 W			
Duty cycle			100 %			
Connection type		Cable	gland		Connector	
Number of cable glands x size of the screwed joint		3 x I	M20		1 x M12, 8-pin	
Connection cable cross-section		0	.34 mm² 1.5 mm	1 <sup>2</sup>		
Short-circuit protection		4 A	gG		1 A gG	
Weight		0.40	6 kg		0.5 kg	

# Locking type: mechanical

Housing material   Glass-fiber reinforced themoplastic     Enclosure rating   P 67     Safety-related parameters   3 x 10° switching cycles, with small load     Ambient operating temperature from to   -20 ° ° +95 ° ° C     Approach speed   \$ 20 m/min     Actuation force   ≥ 10 N     Locking force   ≤ 1,300 N     Actuation frequency   € 7,000 /h     Switching principle   Slow action switching element     Number of positive action N/C solenoid monitoring contacts   0   2     Number of N/O solenoid monitoring contacts   1   0     Number of N/O door moni	Туре	i10-M0233 Lock	i10-M0253 Lock	i10-M0453 Lock	i10-M0454 Lock		
Safety-related parameters           Ambient operating temperature from to         -20 °C +55 °C           Approach speed         ≤ 20 m/min           Actuation force         ≥ 10 N           Locking force         ≤ 1,300 N           Actuation frequency         ≤ 7,000 /h           Switching principle         Slow action switching element           Number of positive action N/C solenoid monitoring contacts         1         0           Number of M/O solenoid monitoring contacts         1         0           Number of N/O door monitoring contacts         0         1         0           Number of N/O door monitoring contacts         1         0         0           Number of N/C door monitoring contacts         1         0         0         0         2           Number of N/O door monitoring contacts         1         0	Housing material	Glass-fiber reinforced thermoplastic					
B <sub>100</sub> parameter         3 x 10° switching cycles, with small load           Ambient operating temperature from to         -20 ° C +55 ° C           Approach speed         ≤ 20 m/min           Actuation force         ≥ 1.300 N           Locking force         ≤ 1.300 N           Actuation frequency         ≤ 7.000 /h           Switching principle         Slow action switching element           Number of positive action N/C solenoid monitoring contacts         1         0           Number of positive action N/C door monitoring contacts         1         0           Number of N/O door monitoring contacts         1         0           Number of N/C door monitoring contacts         1         0           Number of N/C door monitoring contacts         1         0           Usage category in compliance with IEC/EM 60947-5-1         AC-15/DC-13           IEC/EM 60947-5-1         4 A (230 V AC)         1 A (24 V AC)           4 A (24 V DC)         1 A (24 V AC)           4 A (24 V DC)         1 A (24 V AC)           4 A (24 V DC)         1 A (24 V AC)           4 A (24 V DC)         1 A (24 V AC)           4 A (24 V DC)         1 A (24 V AC)           4 A (24 V DC)         1 A (24 V AC)           4 A (24 V DC)         1 A (24 V AC)	Enclosure rating		IP (	67			
Approach speed	•	3 x 10 <sup>6</sup> switching cycles, with small load					
Actuation force ≥ 10 N  Locking force ≤ 1,300 N  Actuation frequency ≤ 7,000 /h  Switching principle Slow action switching element  Number of positive action N/C solenoid monitoring contacts  Number of positive action N/C door monitoring contacts  Number of N/O solenoid monitoring contacts  Number of N/O door monitoring contacts  Number of N/O door monitoring contacts  0 1 0  Lusage category in compliance with IEC/EN 60947-5.1  Rated operating current (voltage) 4 A (230 V AC) 1 A (24 V DC)  Rated insulation voltage U₁ 250 V 30 V  Rated impulse withstand voltage U₁ 250 V 30 V  Rated impulse withstand voltage U₁ 250 V 30 V  Switching voltage (switching current) 21 V DC (10 mA)  Switching current (switching voltage) 24 V (20.4 V 26.4 V) DC  Power consumption ≤ 8 W  Duty cycle 100 %  Connection type Cable gland Connector  Number of cable glands x size of the screwed joint  Connection cable cross-section 0.34 mm² 1.5 mm²  Short-circuit protection 4 A gG 1 A gG	Ambient operating temperature from to		-20 °C	. +55 °C			
Locking force         ≤ 1,300 N           Actuation frequency         ≤ 7,000 /h           Switching principle         Slow action switching element           Number of positive action N/C solenoid monitoring contacts         0           Number of Positive action N/C door monitoring contacts         0           Number of N/O door monitoring contacts         0           Number of N/C door monitoring contacts         1           Number of N/C door monitoring contacts         0           Number of N/C door monitoring contacts         1           Number of N/C door monitoring contacts         0           Number of N/C door monitoring contacts         0           Number of N/C door monitoring contacts         0           AC-15/DC-13           IEC/EN 60947-5-1         1           Rated insulation contacts         1 A (24 V DC)           Rated insulation voltage U <sub>i</sub> 250 V           Rated insulation voltage U <sub>i</sub> 2,500 V AC           Switching voltage (switching current)         ≥ 12 V DC (10 mA)	Approach speed		≤ 20 n	n/min			
Actuation frequency ≤ 7,000 /h  Switching principle Slow action switching element  Number of positive action N/C solenoid monitoring contacts  Number of positive action N/C door monitoring contacts  Number of N/O door monitoring contacts  Number of N/C door monitoring contacts  1	Actuation force		≥ 10	N C			
Switching principle         Slow action switching element           Number of positive action N/C solenoid monitoring contacts         2           Number of N/O solenoid monitoring contacts         1         0           Number of positive action N/C door monitoring contacts         0         1         0           Number of positive action N/C door monitoring contacts         0         1         0           Number of N/O door monitoring contacts         0         1         0           Number of N/C door monitoring contacts         1         0           Usage category in compliance with IEC/EN 60947-5-1         AC-15/DC-13           IEC/EN 60947-5-1         AC-15/DC-13           Rated operating current (voltage)         4 A (230 V AC) A (24 V DC)         1 A (24 V AC) A (24 V DC)           Rated insulation voltage U <sub>inp</sub> 2.500 V         30 V         30 V           Rated insulation voltage U <sub>imp</sub> 2.500 V AC         1,500 V AC         1,500 V AC           Switching voltage (switching current)         ≥ 12 V DC (10 mA)         2           Switching current (switching voltage)         ≥ 1 mA (24 V DC)         2           Solenoid operating voltage         24 V (20.4 V 26.4 V) DC         2           Power consumption         ≤ 8 W         2           Duty cycle         <	Locking force		≤ 1,3	00 N			
Number of positive action N/C solenoid monitoring contacts         2           Number of N/O solenoid monitoring contacts         1         0           Number of positive action N/C door monitoring contacts         0         1         0           Number of N/O door monitoring contacts         0         1         0           Number of N/C door monitoring contacts         1         0           Number of N/C door monitoring contacts         1         0           Usage category in compliance with IEC/EN 60947-5-1         4 A (230 V AC)         1 A (24 V AC)           IEC/EN 60947-5-1         1 A (24 V DC)         1 A (24 V DC)           Rated operating current (voltage)         4 A (230 V AC)         1 A (24 V DC)           Rated insulation voltage U <sub>inp</sub> 250 V         30 V           Rated impulse withstand voltage U <sub>imp</sub> 2,500 V AC         1,500 V AC           Switching voltage (switching current)         ≥ 12 V DC (10 mA)         2           Switching current (switching voltage)         24 V (20.4 V 26.4 V) DC         2           Solenoid operating voltage         24 V (20.4 V 26.4 V) DC         2           Power consumption         ≤ 8 W         2           Duty cycle         100 %         2           Connection type         Cable gland         Con	Actuation frequency		≤ 7,00	00 /h			
Mumber of N/O solenoid monitoring contacts         1         0           Number of positive action N/C door monitoring contacts         0         2           Number of N/O door monitoring contacts         0         1         0           Number of N/C door monitoring contacts         1         0           Number of N/C door monitoring contacts         1         0           Usage category in compliance with IEC/EN 60947-5-1         AC-15/DC-13           Rated operating current (voltage)         4 A (230 V AC) / 4 A (24 V DC)         1 A (24 V AC) / 1 A (24 V DC)           Rated insulation voltage U₁ / Rated insulation voltage U₁ / Paper (250 V Paper (250	Switching principle		Slow action swi	tching element			
Number of positive action N/C door monitoring contacts         0         1         0           Number of N/O door monitoring contacts         0         1         0           Number of N/C door monitoring contacts         1         0           Usage category in compliance with IEC/EN 60947-5-1         AC-15/DC-13           Rated operating current (voltage)         4 A (230 ∨ AC)	•		2				
Mumber of N/O door monitoring contacts   Number of N/O door monitoring contacts   1	Number of N/O solenoid monitoring contacts	1		0			
Number of N/C door monitoring contacts         1         0           Usage category in compliance with IEC/EN 60947-5-1         AC-15/DC-13           Rated operating current (voltage)         4 A (230 V AC) / 4 A (24 V DC)         1 A (24 V AC) / 1 A (24 V DC)           Rated insulation voltage U₁         250 V         30 V           Rated impulse withstand voltage U₂mp         2,500 V AC         1,500 V AC           Switching voltage (switching current)         ≥ 12 V DC (10 mA)         Switching current (switching voltage)           Switching current (switching voltage)         24 V (20.4 V 26.4 V) DC         Power consumption         ≤ 8 W           Duty cycle         100 %         Connection type         Cable gland         Connector           Number of cable glands x size of the screwed joint         3 x M20         1 x M12, 8-pin           Connection cable cross-section         0.34 mm² 1.5 mm²         1 A gG           Short-circuit protection         4 A gG         1 A gG	· · · · · · · · · · · · · · · · · · ·	(	)	2	2		
Usage category in compliance with IEC/EN 60947-5-1	Number of N/O door monitoring contacts	0	1	(	)		
IEC/EN 60947-5-1   Rated operating current (voltage)   4 A (230 V AC)	Number of N/C door monitoring contacts	1	1	(	)		
Rated insulation voltage $U_i$ 250 V 30 V Rated impulse withstand voltage $U_{imp}$ 2,500 V AC 1,500 V AC 1,500 V AC Switching voltage (switching current) $\geq 12$ V DC (10 mA) Switching current (switching voltage) $\geq 1$ mA (24 V DC) Solenoid operating voltage 24 V (20.4 V 26.4 V) DC Power consumption $\leq 8$ W Duty cycle 100 % Connection type Cable gland Connector Number of cable glands x size of the screwed joint Connection cable cross-section 0.34 mm <sup>2</sup> 1.5 mm <sup>2</sup> Short-circuit protection 4 A gG 1 A gG			AC-15/	DC-13			
Rated impulse withstand voltage U <sub>imp</sub> 2,500 V AC  Switching voltage (switching current)  ≥ 12 V DC (10 mA)  ≥ 1 mA (24 V DC)  Solenoid operating voltage  24 V (20.4 V 26.4 V) DC  Power consumption  ≤ 8 W  Duty cycle  Connection type  Cable gland  Connector  Number of cable glands x size of the screwed joint  Connection cable cross-section  0.34 mm² 1.5 mm²  Short-circuit protection  1,500 V AC  24 V (20.4 V 26.4 V) DC  24 V (20.4 V 26.4 V) DC  24 V (20.4 V 26.4 V) DC  25 R W  100 %  100 %  1 x M12, 8-pin screwed joint	Rated operating current (voltage)		,		, ,		
Switching voltage (switching current)       ≥ 12 V DC (10 mA)         Switching current (switching voltage)       ≥ 1 mA (24 V DC)         Solenoid operating voltage       24 V (20.4 V 26.4 V) DC         Power consumption       ≤ 8 W         Duty cycle       100 %         Connection type       Cable gland       Connector         Number of cable glands x size of the screwed joint       3 x M20       1 x M12, 8-pin         Connection cable cross-section       0.34 mm² 1.5 mm²         Short-circuit protection       4 A gG       1 A gG	Rated insulation voltage U <sub>i</sub>		250 V		30 V		
Switching current (switching voltage)       ≥ 1 mA (24 V DC)         Solenoid operating voltage       24 V (20.4 V 26.4 V) DC         Power consumption       ≤ 8 W         Duty cycle       100 %         Connection type       Cable gland       Connector         Number of cable glands x size of the screwed joint       3 x M20       1 x M12, 8-pin         Connection cable cross-section       0.34 mm² 1.5 mm²         Short-circuit protection       4 A gG       1 A gG	Rated impulse withstand voltage U <sub>imp</sub>		2,500 V AC		1,500 V AC		
Solenoid operating voltage       24 V (20.4 V 26.4 V) DC         Power consumption       ≤ 8 W         Duty cycle       100 %         Connection type       Cable gland       Connector         Number of cable glands x size of the screwed joint       3 x M20       1 x M12, 8-pin         Connection cable cross-section       0.34 mm² 1.5 mm²         Short-circuit protection       4 A gG       1 A gG	Switching voltage (switching current)		≥ 12 V DC	(10 mA)			
Power consumption       ≤ 8 W         Duty cycle       100 %         Connection type       Cable gland       Connector         Number of cable glands x size of the screwed joint       3 x M20       1 x M12, 8-pin         Connection cable cross-section       0.34 mm² 1.5 mm²         Short-circuit protection       4 A gG       1 A gG	Switching current (switching voltage)		≥ 1 mA (2	24 V DC)			
Duty cycle  Connection type  Cable gland  Connector  Number of cable glands x size of the screwed joint  Connection cable cross-section  O.34 mm² 1.5 mm²  Short-circuit protection  100 %  Connector  1 x M12, 8-pin	Solenoid operating voltage		24 V (20.4 V .	26.4 V) DC			
Connection type       Cable gland       Connector         Number of cable glands x size of the screwed joint       3 x M20       1 x M12, 8-pin         Connection cable cross-section       0.34 mm² 1.5 mm²         Short-circuit protection       4 A gG       1 A gG	Power consumption		≤ 8	W			
Number of cable glands x size of the screwed joint  Connection cable cross-section  Short-circuit protection  3 x M20  1 x M12, 8-pin  0.34 mm² 1.5 mm²  4 A gG  1 A gG	Duty cycle	100 %					
Screwed joint  Connection cable cross-section  0.34 mm² 1.5 mm²  Short-circuit protection  4 A gG  1 A gG	Connection type		Cable gland		Connector		
Short-circuit protection 4 A gG 1 A gG		3 x M20 1 x M12, 8-pir					
	Connection cable cross-section		0.34 mm <sup>2</sup> .	1.5 mm²			
<b>Weight</b> 0.46 kg 0.5 kg	Short-circuit protection		4 A gG		1 A gG		
	Weight		0.46 kg		0.5 kg		

# **Ordering information**

#### • Locking type: electrical

Solenoid monitoring contacts		Door	monitoring cont	acts	Connection	Model name	Part no.
Number of positive action N/C	Number of N/O	Number of positive action N/C	Number of N/O	Number of N/C	type		
2	0	0	0	1	Cable gland	i10-E0233 Lock	6022585
		0	1	1		i10-E0253 Lock	6020536
		1	1	0		i10-E0313S02 Lock	6011368
	O	2	0	0		i10-E0453 Lock	6020598
		2	0	0	Connector	i10-E0454 Lock	6045056

#### • Locking type: mechanical

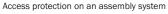
Solenoid monitoring contacts		Door monitoring contacts			Connection	Model name	Part no.
Number of positive action N/C	Number of N/O	Number of positive action N/C	Number of N/O	Number of N/C	type		
2	1 0 0 0 0 0 2	0	0	1	Cable gland	i10-M0233 Lock	6022580
		0	1	1		i10-M0253 Lock	6027397
		2	0	0		i10-M0453 Lock	6029934
		2		0 0	Connector	i10-M0454 Lock	6045055

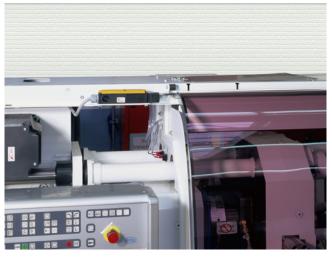
# **Application**

You can find more applications using the application finder at www.mysick.com.

- Monitoring of rotatable, laterally sliding or removable protective devices
- Personal protection for follow-on movements
- Process protection for automated production systems





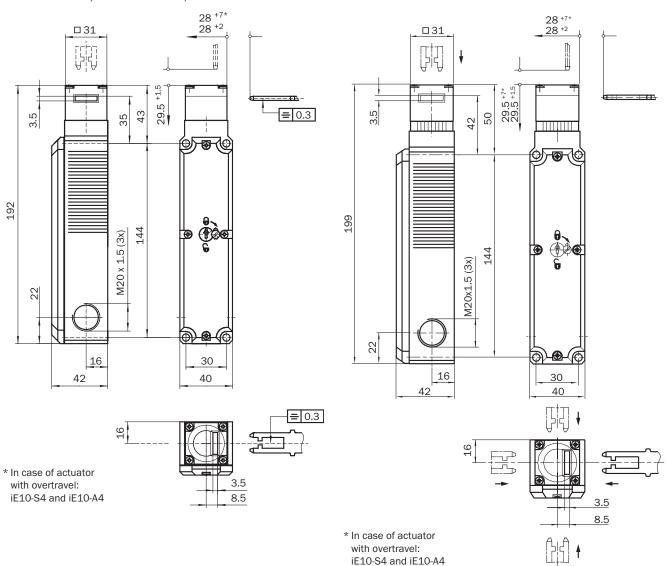


Access protection on an injection molding machine

# **Dimensional drawings**

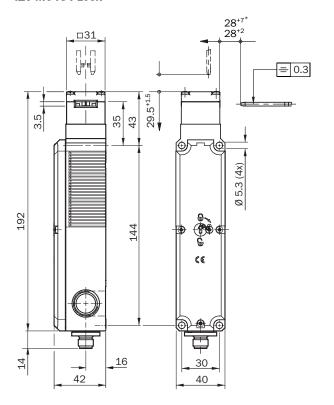
i10-E0233 Lock, i10-E0253 Lock, i10-E0453 Lock, i10-M0233 Lock, i10-M0253 Lock, i10-M0453 Lock

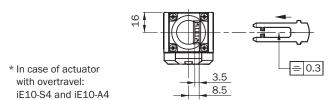
#### i10-E0313S02 Lock



All dimensions in mm

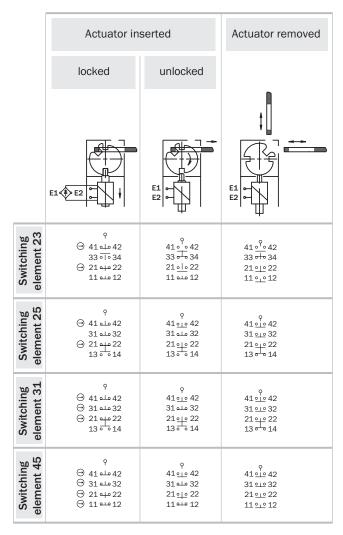
#### i10-E0454 Lock i10-M0454 Lock





All dimensions in mm

# **Switching elements**



# Switching element 23:

2 positive action N/C contacts + 1 N/O contact + 1 N/C as door contact

#### Switching element 25:

2 positive action N/C contacts + 1 N/O contact as door contact + 1 N/C as door contact

#### Switching element 31:

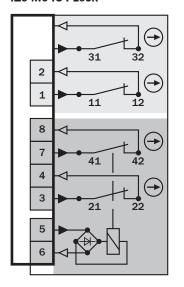
2 positive action N/C contacts + 1 N/O contact as door contact + 1 positive action N/C as door contact

#### Switching element 45:

- 2 positive action N/C contacts +
- 2 positive action N/C as door contacts

# **Connection diagram**

#### i10-E0454 Lock i10-M0454 Lock





Door monitoring

Solenoid monitoring

# **Accessories**

### Actuators

• Items supplied: Including two safety screws

Figure	Design	Actuation option	Method of actuation	Door radius	Туре	Part no.
	Angled	Rigid	-	≥ 1,000 mm	iE10-A1	5306535
		Nigiu	With overtravel	≥ 1,000 mm	iE10-A4	5308497
	Radial	Semiflexible	Door hinged at top/ bottom	≥ 90 mm	iE10-R1	5306528
			Door hinged on left/ right	≥ 100 mm	iE10-R2	5306529
		Rigid	-	≥ 1,000 mm	iE10-S1	5306527
17.00	Straight	Rubber-mounted	-	≥ 1,000 mm	iE10-S2	5306530
27		Rigid	With overtravel	≥ 1,000 mm	iE10-S4	5308383

## Lock

Figure	Remark	Property	Туре	Part no.
	Lock for mechanical unlocking mechanism	Parallel closing	iE10-K2	5308270

# Alignment guide

Figure	Туре	Part no.	
	iE10-G1	5318460	

# Connecting cables

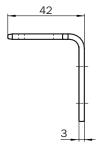
Figure	Direction of cable outlet	Cable length	Туре	Part no.
Straight	5 m	DOL-1208-G05MA	6020993	
	10 m	DOL-1208-G10MA	6022152	
	15 m	DOL-1208-G15MA	6022153	
		30 m	DOL-1208-G30MA	6022242

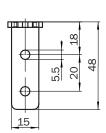
# Cable gland

Figure	Туре	Part no.	
Colo 1	Cable gland M20	5309164	

# **Dimensional drawings actuators**

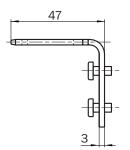
## iE10-A1

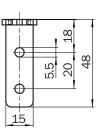


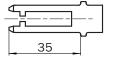




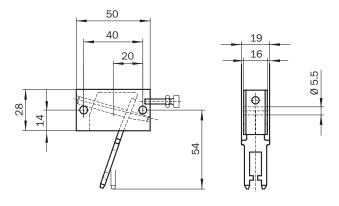
## iE10-A4

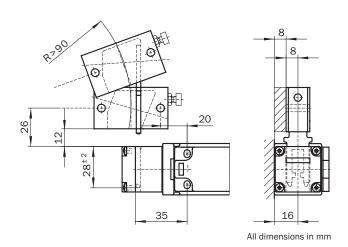




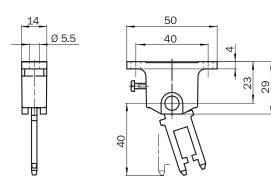


#### iE10-R1

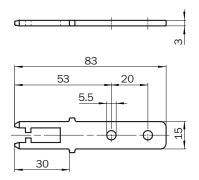




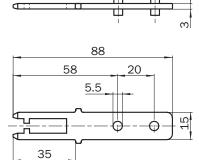
## iE10-R2

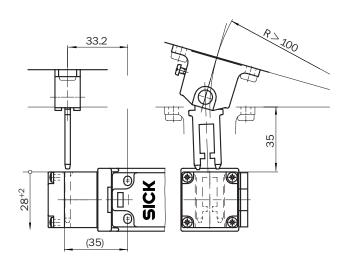


#### iE10-S1

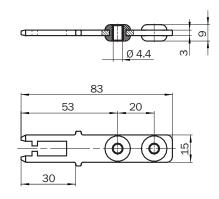


#### iE10-S4





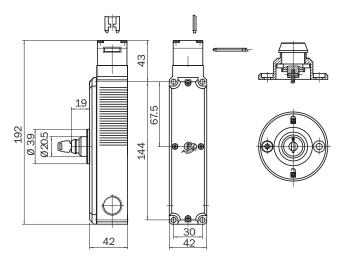
#### iE10-S2



All dimensions in mm

# **Dimensional drawings lock**

#### iE10-K2

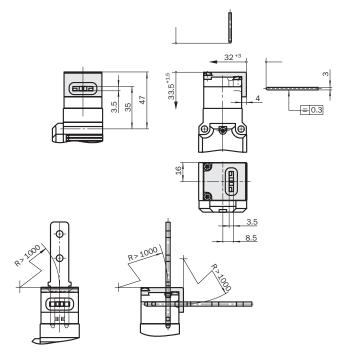


The mechanical unlocking mechanism of the i10 Lock can easily be operated via a key. The lock on the front of the i10 Lock is fixed with two screws.

• Parallel closing locking mechanism
Fixing screws and two keys supplied with delivery.

# Dimensional drawings alignment guide

#### iE10-G1



The metal alignment guide provides the actuator with a wider entry area into the safety switch. With the alignment guide, the safety switch is better protected against damage.

It can be secured to the safety switch with the two M3 x 34 self-tapping screws (screws supplied with delivery).

It can only be used in combination with actuators with over-travel (iE10-A4, iE10-S4).

It can not be used with special locking devices (i10-E0313S02), which already have a longer top entry overtravel.

All dimensions in mm

# SICK at a glance



## Leading technologies

With a staff of more than 5,000 and over 50 subsidiaries and representations worldwide, SICK is one of the leading and most successful manufacturers of sensor technology. The power of innovation and solution competency have made SICK the global market leader. No matter what the project and industry may be, talking with an expert from SICK will provide you with an ideal basis for your plans – there is no need to settle for anything less than the best.



#### Unique product range

- Non-contact detecting, counting, classifying, positioning and measuring of any type of object or media
- Accident and operator protection with sensors, safety software and services
- Automatic identification with bar code and RFID readers
- Laser measurement technology for detecting the volume, position and contour of people and objects
- Complete system solutions for analysis and flow measurement of gases and liquids



#### Comprehensive services

- SICK LifeTime Services for safety and productivity
- Application centers in Europe, Asia and North America for the development of system solutions under realworld conditions
- E-Business Partner Portal www.mysick.com – price and availability of products, requests for quotation and online orders

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