

LR-LX-LK-LW Safety Switches with separate actuator

- Technopolymer housing, from one to three conduit entries
- Protection degree IP67
- 15 contact blocks available
- 8 stainless steel actuators available
- Versions with M12 connector
- Versions with gold-plated silver contacts

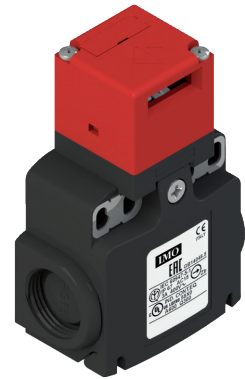


Approval UL: E146236

LR Series



LK Series



Options & Ordering Codes

Note: The feasibility of a code number does not mean the effective availability of a product

LR C6 JK - J3 D1 SS G 20 X70 H6

Housing

technopolymer, one conduit entry	LR
technopolymer, two conduit entries	LX
technopolymer, three conduit entries	LW

Contact Blocks

1NO+1NC, snap action	C5
1NO+1NC, slow action	C6
1NO+1NC, slow action overlapped	C7
2NC, slow action	C9
2NC, snap action	C11
2NC, slow action shifted and spaced	C13
2NC, slow action shifted	C14
1NO+1NC, slow action closer	C18
1NO+2NC, slow action	C20
3NC, slow action	C21
2NO+1NC, slow action	C22
1NO+1NC, slow action	C33
2NC, slow action	C34
1NO+1NC, slow action overlapped	C37
1NC, slow action C66	C66

Head Type

removable head (LW housing only)	DK
non-removable head (LR, LX, LK housing)	JK

Actuator Extraction Force

10 N (standard)	
30 N	J3

Actuators

without actuator (standard)	
with straight actuator AC-KEYD	D
with right-angled actuator AC-KEYD1	D1
with jointed actuator AC-KEYD2	D2

Amb. Temperature

-25°C...+80°C (standard)	
H6	-40°C...+80°C

Preinstalled Cable Glands or Connectors

without cable gland or connector (standard)	
X23	cable gland for cables Ø 6... Ø 12mm
X70	M12 plastic connector, 4 poles

Threaded Conduit Entry

20	M20x1.5 (standard)
16	M16x1.5
	PG 13.5 (LR-LX housing only)
11	PG 11 (LR-LX housing only)

Contact Type

silver contacts (standard)	
G	silver contacts with 1 µm gold coating

External Metal Parts

zinc-plated steel (standard)	
SS	stainless steel

Note: Specifications not listed below are the same as above Options & Ordering Codes (LR, LX & LW)

LK C33 JK - J3 D1 SS G 16 X70 H6

Housing

technopolymer, one conduit entry	LK
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Contact Blocks

1NO+1NC, slow action	C33
2NC, slow action	C34

Threaded Conduit Entry

M16x1.5 (standard)	16
PG 11	11

Pre-installed Cable Glands

without cable gland (standard)	
cable gland for cables Ø 5... Ø 10mm	X24
cable gland for cables Ø 3... Ø 7mm	X28

Specifications

For safety applications up to:	SIL 3 acc. to EN 62061 PL e acc. to EN ISO 13849-1
Mechanical interlock, coded:	type 2 acc. to EN ISO 14119
Coding level:	Low acc. to EN ISO 14119
Safety parameters:	
B _{10d} ¹ :	2,000,000 for NC contacts
Service life:	20 years
Ambient temperature:	-25°C ... +80°C
Max. actuation frequency:	3600 operating cycles ¹ /hour
Mechanical endurance:	1 million operating cycles ¹
Max. actuation speed:	0.5 m/s
Min. actuation speed:	1 mm/s
Actuator extraction force:	10 N (-J3 versions: 30 N)

(1) One operation cycle means two movements, one to close and one to open contacts, as defined in EN 60947-5-1.

In conformity with standards

IEC 60947-5-1, EN 60947-5-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 14119, EN ISO 12100, IEC 60529, EN 60529, EN ISO 13850, EN 418, UL 508, CSA 22.2 No.14 .

In conformity with requirements requested by

Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC and EMC Directive 2004/122/EC.

Housing

Housing made of glass fiber reinforced technopolymer, self-extinguishing, shock-proof and with double insulation:	<input type="checkbox"/>
LR series, one threaded conduit entry:	M20x1.5 (standard)
LK series: one threaded conduit entry:	M16x1.5 (standard)
LX series - two knock-out threaded conduit entries:	M20x1.5 (standard)
Three LW series knock-out threaded conduit entries:	M20x1.5 (standard)
Protection degree:	IP67 acc. to EN 60529 with cable gland having equal or higher protection degree

Positive contact opening in conformity with standards

IEC 60947-5-1, EN 60947-5-1.

Cable cross section (flexible copper strands)

Contact blocks C20, C21, C22, C33, C34:	min.	1 x 0.34 mm ²	(1 x AWG 22)
	max.	2 x 1.5 mm ²	(2 x AWG 16)
Contact blocks C5, C6, C7, C9, C11, C13, C14, C18, C37, C66:	min.	1 x 0.5 mm ²	(1 x AWG 20)
	max.	2 x 2.5 mm ²	(2 x AWG 14)

Electrical data

Utilization category

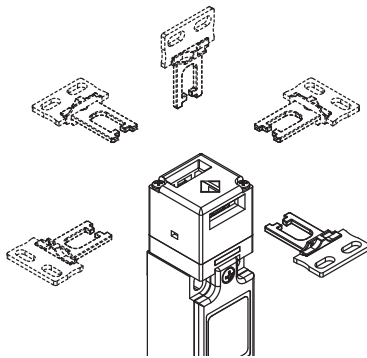
without connector	with M12 connector 4 poles	with M12 connector 8 poles
Thermal current (I _{th}): Rated insulation voltage (U _i): Rated impulse withstand voltage (U _{imp}): Conditional short circuit current: Protection against short circuits: Pollution degree:	10 A 500 Vac 600 Vdc 400 Vac 500 Vdc (contact blocks 20, 21, 22, 33, 34) 6 kV 4 kV (contact blocks 20, 21, 22, 33, 34) 1000 A acc. to EN 60947-5-1 type aM fuse 10 A 500 V 3	4 A 250 Vac 300 Vdc type gG fuse 4 A 500 V 3
Alternating current: AC15 (50 ÷ 60 Hz) U _e (V) 250 400 500 I _e (A) 6 4 1 Direct current: DC13 U _e (V) 24 125 250 I _e (A) 6 1.1 0.4	Alternating current: AC15 (50 ÷ 60 Hz) U _e (V) 24 120 250 I _e (A) 4 4 4 Direct current: DC13 U _e (V) 24 125 250 I _e (A) 4 1.1 0.4	Alternating current: AC15 (50 ÷ 60 Hz) U _e (V) 24 I _e (A) 2 Direct current: DC13 U _e (V) 24 I _e (A) 2

Description



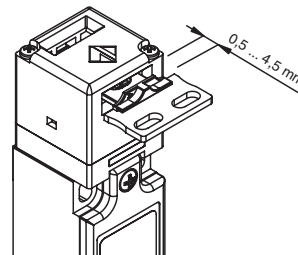
These safety switches are ideal for controlling gates, sliding doors and other guards which protect dangerous parts of machines without inertia. The stainless steel actuator is fastened to the moving part of the guard, so it is removed from the switch on every opening of the guard. The switch mechanism guarantees that removing the actuator forces the positive opening of the electrical contacts. Easy to install, these switches can be applied to any kind of protection (with hinge, sliding and removable ones). Besides, the possibility to actuate the switch only with its actuator guarantees that the machine can be restarted only when the guard has been closed.

Orientable heads



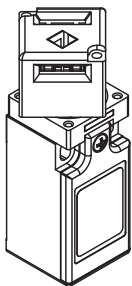
Removing the two fastening screws, in all switches, the head can be rotated in 90° steps. In this way it is possible to actuate the switch from 5 different directions.

Wide-ranging actuator travel



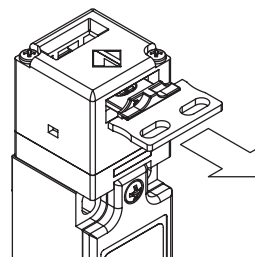
The head of this switch is equipped with an actuator with a wide range of travel. In this way the guard can oscillate along the direction of insertion (4mm) without causing unwanted machine shutdowns. This extensive travel is available in all actuators, in order to ensure maximum device reliability.

Not detachable head



To make head adjustment safer and smoother, these switches are equipped with a special head to body coupling system. This system makes it impossible to remove the head from the device even during adjustment, thus rendering the use of one-way screws unnecessary for locking the head in position once adjustment is complete. This solution is available for the LR, LX and LK series.

Versions with 30 N actuator extraction force



Versions with 30 N actuator holding force instead of the standard 10 N are available.

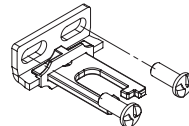
Protection degree IP67

IP67

These devices are designed to be used in the toughest environmental conditions and they pass the IP67 immersion test acc. to IEC 60529.

They can therefore be used in all environments where the maximum protection of the housing is required.

Safety screws for actuators



As required by EN ISO 14119, the actuator must be fixed immovably to the door frame. Pan head safety screws with one-way fitting are available for this purpose. With this screw type, the actuators cannot be removed or tampered with using common tools. See accessories on page 295.

Extended temperature range

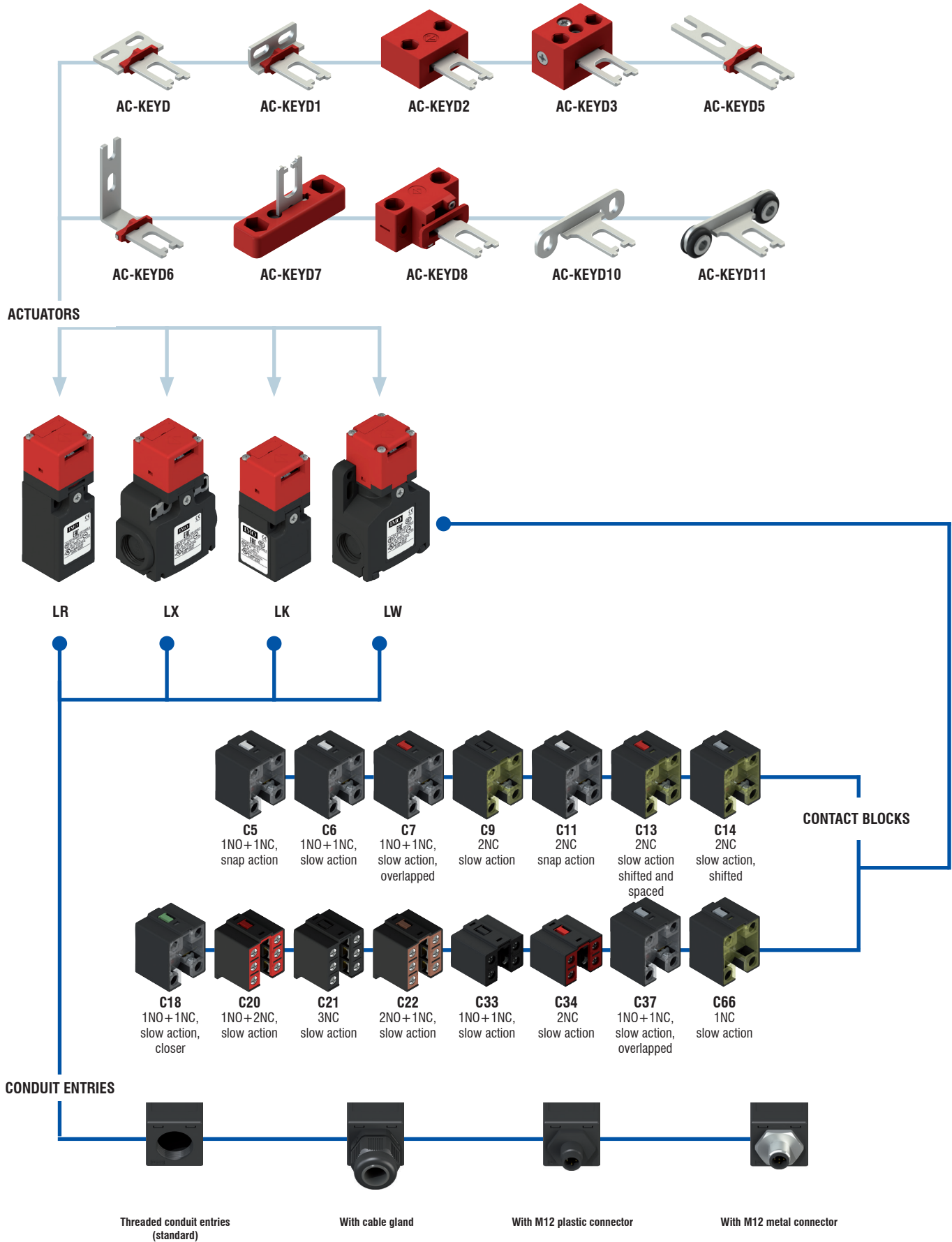
-40°C

This range of switches is also available in a special version with an ambient operating temperature range of -40°C to +80°C.

They can be used for applications in cold stores, sterilisers and other devices with low temperature environments. Special materials that have been used to realize these versions, maintain unchanged their features also in these conditions, widening the installation possibilities.

Selection diagram

- Product option
- Accessory sold separately



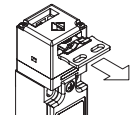
Dimensional drawings

All measures in the drawings are in mm

Contact type:	Technopolymer housing		Technopolymer housing		Technopolymer housing		Technopolymer housing	
	Without actuator		Without actuator		Without actuator		Without actuator	
R = snap action L = slow action LO = slow action overlapped LS = slow action shifted LV = slow action shifted and spaced LA = slow action closer								
Contact blocks	5 R LRC5JK → 1NO+1NC 6 L LRC6JK → 1NO+1NC 7 LO LRC7JK → 1NO+1NC 9 L LRC9JK → 2NC 11 R LRC11JK → 2NC 13 LV LRC13JK → 2NC 14 LS LRC14JK → 2NC 18 LA LRC18JK → 1NO+1NC 20 L LRC20JK → 1NO+2NC 21 L LRC21JK → 3NC 22 L LRC22JK → 2NO+1NC 33 L LRC33JK → 1NO+1NC 34 L LRC34JK → 2NC 37 LO LRC37JK → 1NO+1NC 66 L LRC66JK → 1NC	LXC5JK → 1NO+1NC LXC6JK → 1NO+1NC LXC7JK → 1NO+1NC LXC9JK → 2NC LXC11JK → 2NC LXC13JK → 2NC LXC14JK → 2NC LXC18JK → 1NO+1NC LXC20JK → 1NO+2NC LXC21JK → 3NC LXC22JK → 2NO+1NC LXC33JK → 1NO+1NC LXC34JK → 2NC LXC37JK → 1NO+1NC LXC66JK → 1NC	LWC5DK → 1NO+1NC LWC6DK → 1NO+1NC LWC7DK → 1NO+1NC LWC9DK → 2NC LWC11DK → 2NC LWC13DK → 2NC LWC14DK → 2NC LWC18DK → 1NO+1NC LWC20DK → 1NO+2NC LWC21DK → 3NC LWC22DK → 2NO+1NC LWC33DK → 1NO+1NC LWC34DK → 2NC LWC37DK → 1NO+1NC LWC66DK → 1NC	LKC33JK-16 → 1NO+1NC LKC34JK-16 → 2NC				
Min. force	10 N (18 N →)		10 N (18 N →)		10 N (18 N →)		10 N (18 N →)	
Travel diagrams	group 8		group 8		group 8		group 8	

NOTE: Please ensure requirement for additional suffixes are added to the above part numbers when ordering.

All switches listed above are available in a version with 30N actuator extraction force. To obtain these products, the order code must be changed by adding the extension "-J3", for example LRC6JK-20J3.



Min. force 30 N version	30 N (38 N →)	30 N (38 N →)	30 N (38 N →)	30 N (38 N →)
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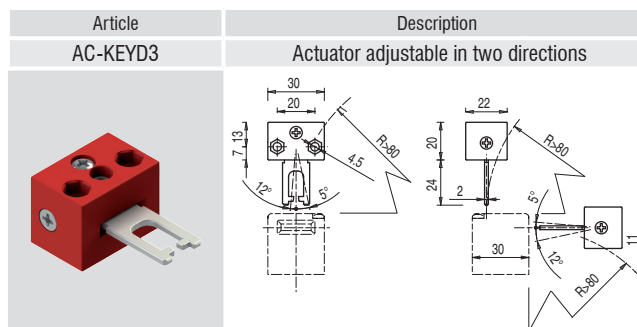
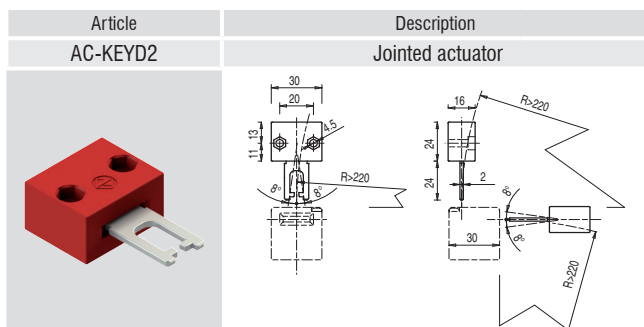
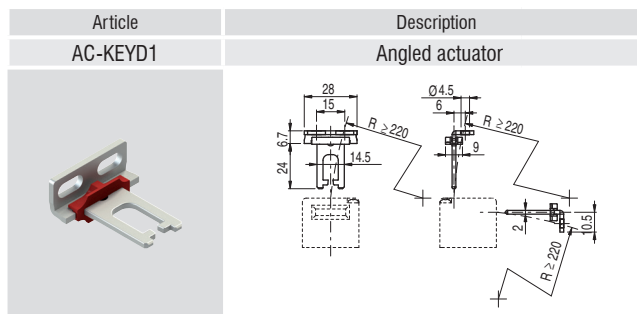
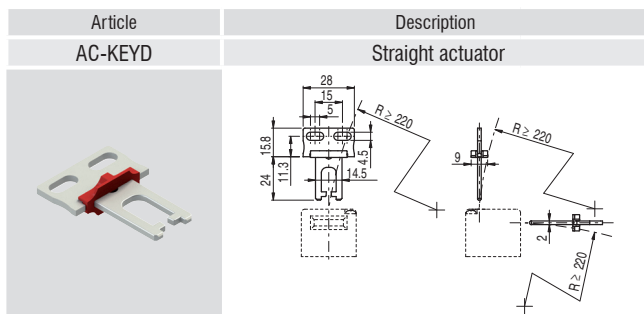
Utilization limits

Do not use where dust and dirt may penetrate in any way into the head and deposit there, in particular where metal dust, concrete or chemicals are spread. Adhere to the EN ISO 14119 requirements regarding low level of coding for interlocks. Do not use in environments with the presence of explosive or flammable gas.

Stainless steel actuators

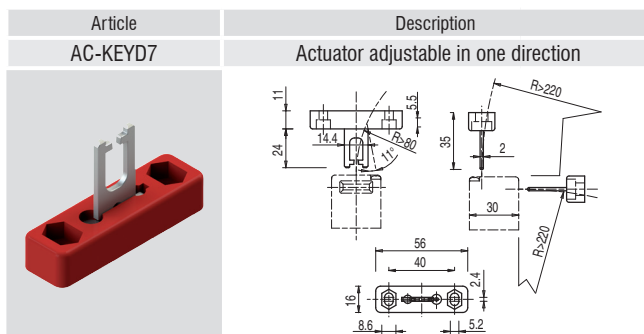
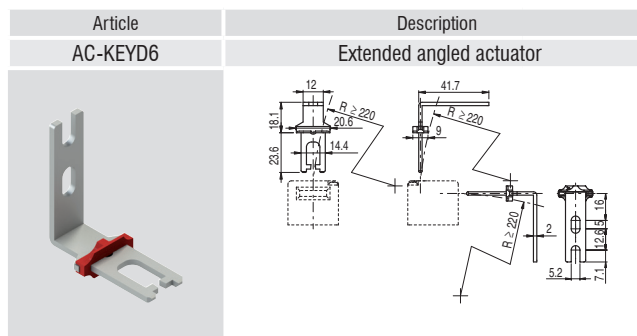
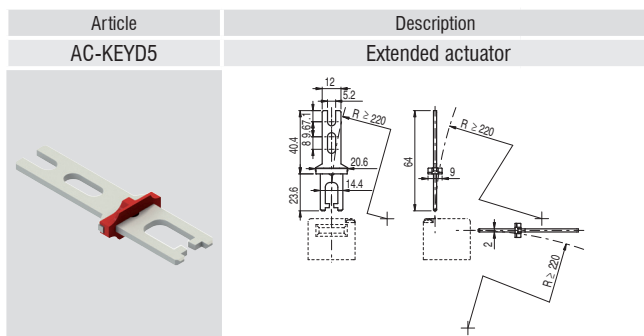
All measures in the drawings are in mm

IMPORTANT: These actuators can be used with items of the LR, LX, LK and LW series (e.g. LRC6JK-20).
Low level of coding acc. to EN ISO 14119.

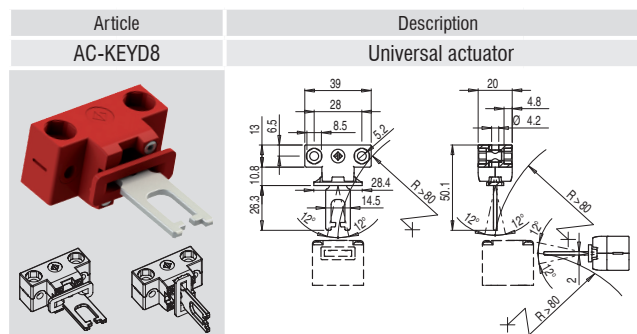


The actuator can flex in four directions for applications where the door alignment is not precise.

Actuator adjustable in two directions for doors with reduced dimensions.



Actuator adjustable in one direction for doors with reduced dimensions.



Joined and two directions adjustable actuator for doors with reduced dimensions. The actuator has two couples of fixing holes and it is possible to rotate by 90° the actuator-working plan.

