



**GIOVENZANA
INTERNATIONAL B.V**

AUTOMATION TECHNOLOGIES



AUTOMATION

GENERAL CATALOGUE

Limit Switches

FA - FT - FT1R - Safety - FCT - FCM - Astra Series

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AUTOMATION TECHNOLOGIES



Thermoplastic and die-cast aluminium limit switches



Limit switches with reset



Safety limit switches



Pre-wired thermoplastic limit switches

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Limit Switches

FA - FT - FT1R - Safety - FCT - FCM - Astra Series

Terminology

DOUBLE INSULATION

Materials of group II, according to IEC536, are made with double insulation. This consists of doubling the insulation capability by means

of an additional divider in order to eliminate any electrical shock risk and avoid the need for any additional protections.

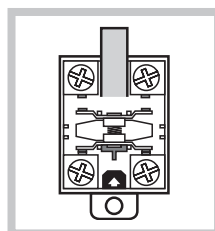
APERTURA POSITIVA

A limit switch complies to this specification when all the normally closed contact elements of the switch can be changed, with certainty, to the open position (no flexible link between the moving contacts and the operator of the switch, to which an actuating force is applied). Positive opening does not apply to NO contacts. Control switches

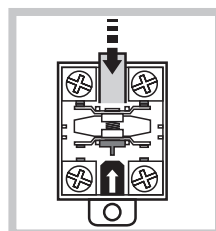
with positive opening operation can be equipped with either slow-break or snap-action contacts. In order to use different contacts on the same switch, it is necessary to electrically separate them; otherwise only one contact can be used. Every positive opening control switch must be marked on the external housing with the symbol. 

CONTACT ELEMENTS ACTING INDEPENDENTLY (OR SNAP ACTION)

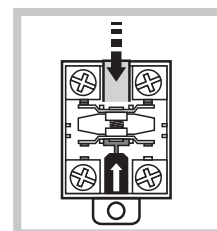
Is defined, under IEC947-5-1/EN6094-5-1, the contact element of a device for manual or automatic control circuits where the speed of motion of the contact is virtually independent of the speed of motion of the actuator. Commonly called "quick trigger" the electrical behavior of these elements means that the contact is in order even in the slow movements of the actuator. These contact elements have position does not coincide with the release of drive (differential stroke) See example page. 105.



Contatto a riposo



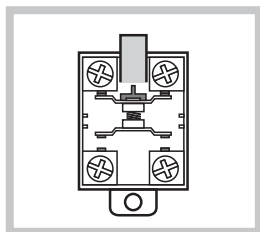
Contatto azionato



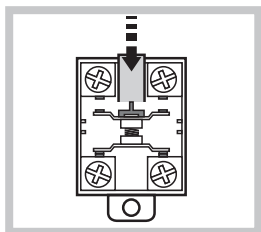
Apertura positiva

CONTACT ELEMENTS DIRECT ACTING (OR SLOW ACTION)

Is defined, under IEC947-5-1/EN6094-5-1, the contact element of a device for manual or automatic control circuits where speed of movement of the contact depends on the speed of motion of the actuator. See example page. 105



Contact in stand-by

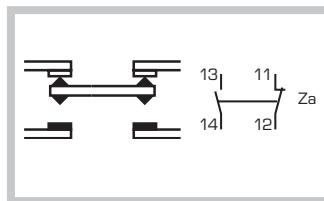


Contact activated

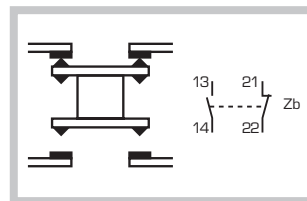
CONTACT BLOCKS CONFIGURATION

ACCORDING TO IEC/EN60947-5-1

Contact blocks with 4 terminals must be marked with Za or Zb symbols as shown in the picture below.



Contacts with same polarity



The two moving contacts are electrically insulated

APPLICATIONS

AC-15: control of an electromagnet on a.c., test 10 le/le.

AC-13: control of an electromagnet on d.c., test le/le.

TERMINALS

For limit switches with metal housing, the fixing point of the earth conductor must be marked and must be positioned inside the housing next to the cable entry.

Limit Switches

FA - FT - FT1R - Safety - FCT - FCM - Astra Series
Terminology



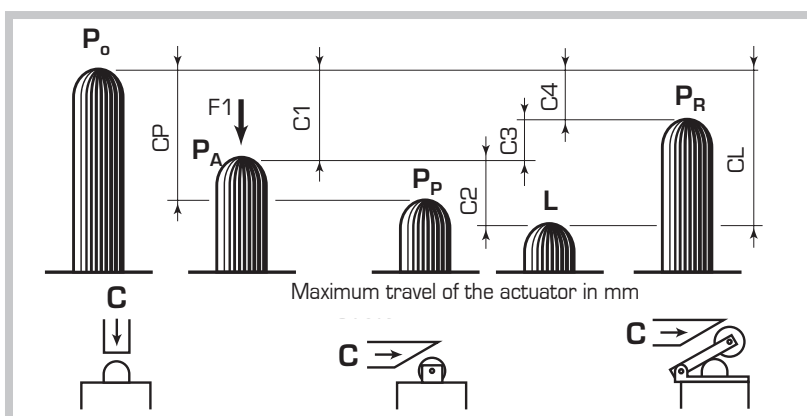
AUTOMATION TECHNOLOGIES

MINIMUM OPENING FORCE/MOMENTUM

It is the minimum force/momentum that must be applied by the actuator for the contacts to trip.

MINIMUM POSITIVE OPENING FORCE/MOMENTUM

It is the minimum force/momentum that must be applied by the actuator to guarantee the positive opening of NC contacts.



P₀ Rest position

Position of the actuator when no external force is applied.

P_A Tripping point of contact

Position of the actuator, with force F₁ applied, in which the contacts leave the stand-by position.

P_P Positive opening position

Position of the actuator when there is positive opening.

L Maximum travel position

Maximum travel of the actuator when the force F₁ is applied.

P_R Resetting position

Position of the actuator when the contacts are back in their non actuated position.

C₁ Tripping travel

Distance between the P₀ and P_A positions.

C_P Positive opening tripping travel

Minimum travel of the actuator from the P₀ position to guarantee positive opening of NC contacts.

C₂ Extra tripping travel

Distance between P_A and the maximum travel L.

C₁ Maximum travel

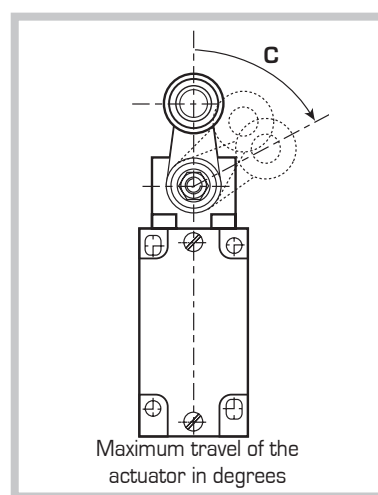
Distance between P₀ and the maximum travel L.

C₃ Differential travel (C₁-C₄)

Distance between P_A and P_R

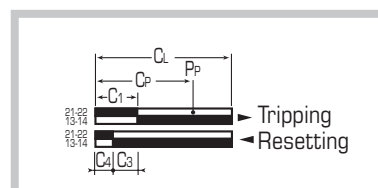
C₄ Resetting travel

Distance between P_R and P₀

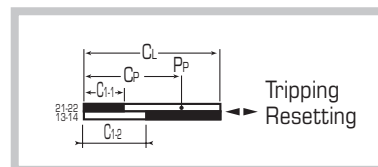


Maximum travel of the actuator in degrees

Tripping travel for snap-action contacts



Tripping travel for slow-break contacts



NOTE: for slow-break contacts, C₃=01, C₁-1=Tripping and resetting travel of contacts 21-22, C₁-2= Tripping and resetting travel of contacts 13-14

Examples

FA134Z11

(snap-action contacts)



Tripping travel in mm/
cam linear movement



FA138Z11

(snap-action contacts)



Tripping travel in degrees/
lever rotary movement

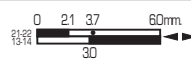


FA131X11

(slow break contacts)



Tripping travel in mm/
plunger linear movement



Limit Switches

FA1 Series

IP66 die-cast aluminium type

1 cable entry
M16x1.5



FA131



FA134



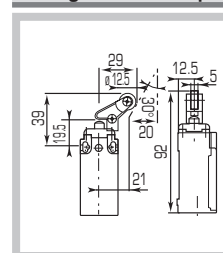
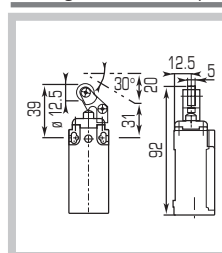
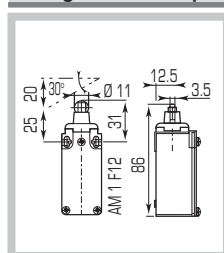
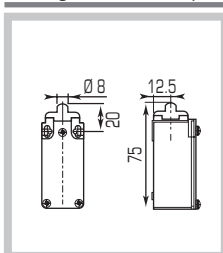
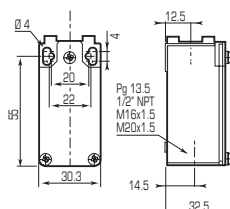
FA132



FA133

TYPE OF OPERATOR	SHORT STEEL END PLUNGER	STEEL ROLLER PLUNGER	ROLLER LEVER PLUNGER HORIZONTAL ACTUATION	ROLLER LEVER PLUNGER VERTICAL ACTUATION
Standard - Positive opening NC contacts	EN50047	EN50047	-	-
Minimum tripping force	15	12	7	7
Minimum positive opening force	30	30	24	24
Z11 1NC-1NO Snap action Zb	FA131Z11 0 13 25 41 56 mm	FA134Z11 0 25 47 76 96 mm	FA132Z11 0 49 90 145 210 mm	FA133Z11 0 49 90 145 210 mm
X11 1NC-1NO Slow break Zb	FA131X11 0 16 32 56 mm 2.5	FA134X11 0 32 60 96 mm 46	FA132X11 0 60 105 210 mm 86	FA133X11 0 60 105 210 mm 86
Y11 1NC-1NO overlapping Slow break Zb	FA131Y11 0 29 45 56 mm 15	FA134Y11 0 53 82 96 mm 30	FA132Y11 0 102 146 210 mm 54	FA133Y11 0 102 146 210 mm 54
Z02 2NC Snap action Zb	FA131Z02 0 13 24 40 56 mm	FA134Z02 0 25 45 74 96 mm	FA132Z02 0 51 86 131 210 mm	FA133Z02 0 51 86 131 210 mm
W02 2NC Slow break Zb	FA131W02 0 15 31 56 mm	FA134W02 0 30 59 96 mm	FA132W02 0 57 102 210 mm	FA133W02 0 57 102 210 mm
W20 2NO Slow break Zb	FA131W20 0 14 56 mm	FA134W20 0 28 96 mm	FA132W20 0 53 210 mm	FA133W20 0 53 210 mm
WEIGHT gr - MIN. PACK QTY.	168 gr 1 pcs	175 gr 1 pcs	186 gr 1 pcs	186 gr 1 pcs

DIMENSIONS



Limit Switches

FA1 Series

IP66 die-cast aluminium type



AUTOMATION TECHNOLOGIES

1 cable entry
M16x1.5



FA138



FA141



FA139



FA140

TYPE OF OPERATOR	ROLLER LEVER Ø 18	RUBBER ROLLER LEVER Ø 50	VARIABLE LENGTH ROLLER LEVER Ø 18	VARIABLE LENGTH RUBBER ROLLER LEVER Ø 50
Standard - Positive opening NC contacts	-	-	-	-
Minimum tripping force	0.10	0.10	0.10	0.10
Minimum positive opening force	0.32	-	-	-

Z11 1NC-1NO	Snap action Zb	FA138Z11 	FA141Z11 	FA139Z11 	FA140Z11
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X11 1NC-1NO	Slow break Zb	FA138X11 	FA141X11 	FA139X11 	FA140X11
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Y11 1NC-1NO overlapping	Slow break Zb	FA138Y11 	FA141Y11 	FA139Y11 	FA140Y11
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Z02 2NC	Snap action Zb	FA138Z02 	FA141Z02 	FA139Z02 	FA140Z02
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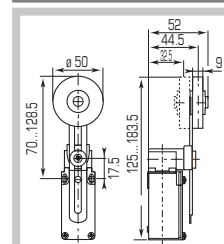
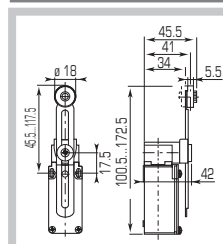
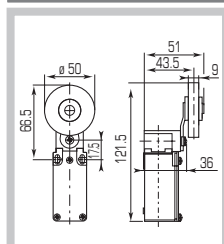
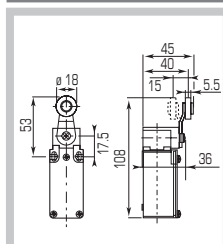
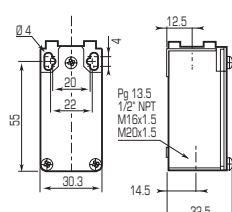
W02 2NC	Slow break Zb	FA138W02 	FA141W02 	FA139W02 	FA140W02
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W20 2NO	Slow break Zb	FA138W20 	FA141W20 	FA139W20 	FA140W20
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WEIGHT gr - MIN. PACK QTY.

235 gr 1 pcs 255 gr 1 pcs 245 gr 1 pcs 265 gr 1 pcs

DIMENSIONS



IP66 die-cast aluminium type

FA137

245 gr 1 pcs

Limit Switches

FA3 Series

IP66 die-cast aluminium type



AUTOMATION TECHNOLOGIES

3 cable entries
M16x1.5



FA331



FA334



FA332

TYPE OF OPERATOR	SHORT STEEL END PLUNGER	SHORT STEEL ROLLER PLUNGER	ROLLER LEVER PLUNGER HORIZONTAL ACTUATION
Standard - Positive opening NC contacts	-	-	-
Minimum tripping force	15	12	7
Minimum positive opening force	30	30	24
Z11 Snap action 1NC-1NO Zb	FA331Z11 0 13 25 41 56 mm	FA334Z11 0 25 47 76 96 mm	FA332Z11 0 49 90 145 210 mm
X11 Slow break 1NC-1NO Zb	FA331X11 0 16 32 56 mm 2.5	FA334X11 0 32 60 96 mm 46	FA332X11 0 60 105 210 mm 86
Y11 Slow break 1NC-1NO overlapping Zb	FA331Y11 0 29 45 56 mm 15	FA334Y11 0 53 82 96 mm 30	FA332Y11 0 102 146 210 mm 54
Z02 Snap action 2NC Zb	FA331Z02 0 13 24 40 56 mm	FA334Z02 0 25 45 74 96 mm	FA332Z02 0 51 86 131 210 mm
W02 Slow break 2NC Zb	FA331W02 0 15 31 56 mm	FA334W02 0 30 59 96 mm	FA332W02 0 57 102 210 mm
W20 Slow break 2NO Zb	FA331W20 0 14 56 mm	FA334W20 0 28 96 mm	FA332W20 0 53 210 mm

WEIGHT gr - MIN. PACK QTY.

270 gr

1 pcs

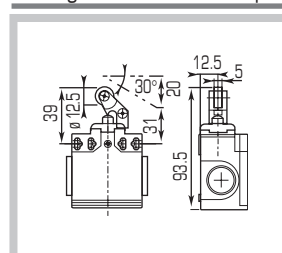
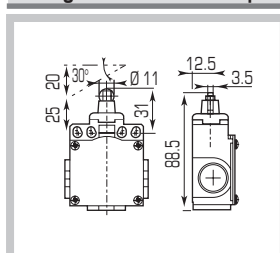
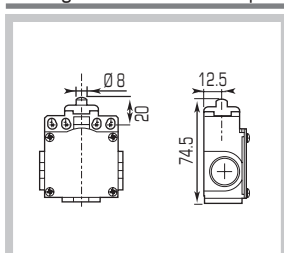
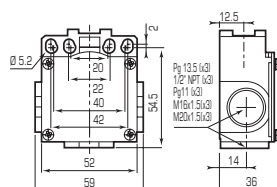
280 gr

1 pcs

290 gr

1 pcs

DIMENSIONS



Limit Switches

FA3 Series

IP66 die-cast aluminium type

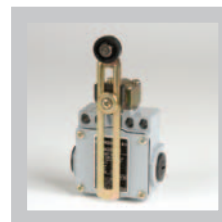
3 cable entries
M16x1.5



FA338



FA341



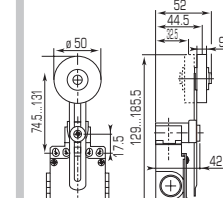
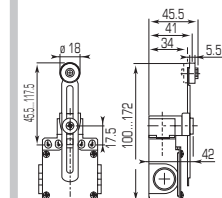
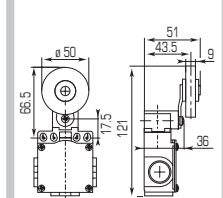
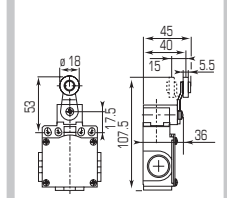
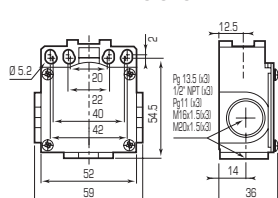
FA339



FA340

TYPE OF OPERATOR	ROLLER LEVER Ø 18	RUBBER ROLLER LEVER Ø 50	VARIABLE LENGTH ROLLER LEVER Ø 18	VARIABLE LENGTH RUBBER ROLLER LEVER Ø 50
Standard - Positive opening NC contacts	-	-	-	-
Minimum tripping force	0.10	0.10	0.10	0.10
Minimum positive opening force	0.32	-	-	-
Z11 1NC-1NO Snap action	FA338Z11 0 17Y 31Y 47Y 74Y	FA341Z11 0 17Y 31Y 74Y	FA339Z11 0 17Y 31Y 74Y	FA340Z11 0 17Y 31Y 74Y
X11 1NC-1NO Slow break	FA338X11 0 21Y 37Y 74Y	FA341X11 0 21Y 74Y	FA339X11 0 21Y 74Y	FA340X11 0 21Y 74Y
Y11 1NC-1NO Slow break overlapping	FA338Y11 0 35° 51° 74°	FA341Y11 0 35Y 74Y	FA339Y11 0 35Y 74Y	FA340Y11 0 35Y 74Y
Z02 2NC Snap action	FA338Z02 0 17 30 46 74	FA341Z02 0 17Y 30Y 74Y	FA339Z02 0 17Y 30Y 74Y	FA340Z02 0 17Y 30Y 74Y
W02 2NC Slow break	FA338W02 0 19 37 74	FA341W02 0 19 74	FA339W02 0 19 74	FA340W02 0 19 74
W20 2NO Slow break	FA338W20 0 18Y 74Y	FA341W20 0 18Y 74Y	FA339W20 0 18Y 74Y	FA340W20 0 18Y 74Y
WEIGHT gr - MIN. PACK QTY.	325 gr 1 pcs	345 gr 1 pcs	335 gr 1 pcs	355 gr 1 pz

DIMENSIONS



Limit Switches

FA3 Series

IP66 die-cast aluminium type



AUTOMATION TECHNOLOGIES

3 cable entries
M16x1.5



FA335



FA336



FA337

TYPE OF OPERATOR	SPRING LEVER WITH TIP IN PA	"CAT'S WHISKER"	VARIABLE LENGTH STEEL ROD LEVER Ø 3
Standard - Positive opening NC contacts	-	-	-
Minimum tripping force	0.10	0.10	0.10
Minimum positive opening force	-	-	-
Z11 1NC-1NO Snap action Zb	FA335Z11 	FA336Z11 	FA337Z11
X11 1NC-1NO Slow break Zb	FA335X11 	FA336X11 	FA337X11
Y11 1NC-1NO Slow break overlapping Zb	FA335Y11 	FA336Y11 	FA337Y11
Z02 2NC Snap action Zb	FA335Z02 	FA336Z02 	FA337Z02
W02 2NC Slow break Zb	FA335W02 	FA336W02 	FA337W02
W20 2NO Slow break Zb	FA335W20 	FA336W20 	FA337W20

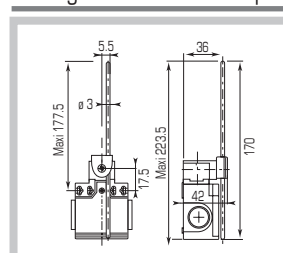
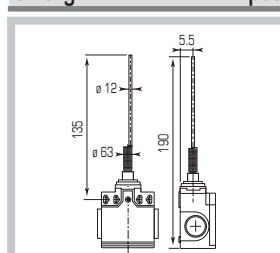
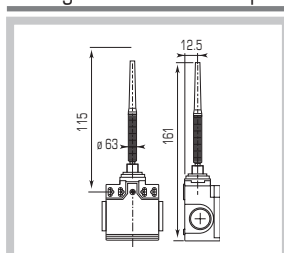
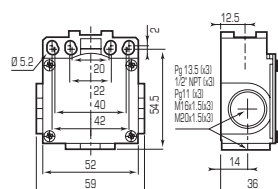
WEIGHT gr - MIN. PACK QTY.

305 gr 1 pcs

320 gr 1 pcs

380 gr 1 pcs

DIMENSIONS



Limit Switches

FT1 Series

IP65 □ thermoplastic type

1 cable entry
M16x1.5



FT131



FT1P31

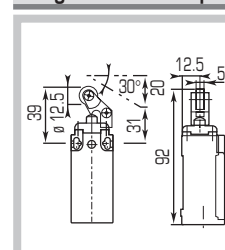
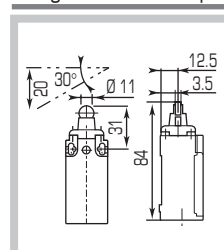
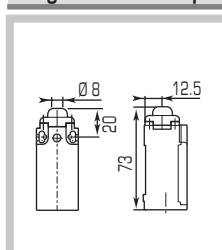
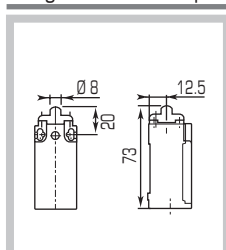
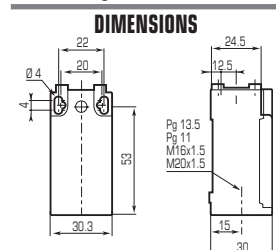


FT134



FT132

TYPE OF OPERATOR	SHORT STEEL END PLUNGER	SHORT STEEL END PLUNGER WITH PROTECTIVE BOOT	ROLLER LEVER PLUNGER	ROLLER LEVER PLUNGER HORIZONTAL ACTUATION
Standard - Positive opening NC contacts	EN50047	EN50047	EN50047	EN50047
Minimum tripping force	15	15	12	7
Minimum positive opening force	30	30	30	24
Z11 1NC-1NO Snap action Zb	FT131Z11 	FT1P31Z11 	FT134Z11 	FT132Z11
X11 1NC-1NO Slow break Zb	FT131X11 	FT1P31X11 	FT134X11 	FT132X11
Y11 1NC-1NO Slow break overlapping Zb	FT131Y11 	FT1P31Y11 	FT134Y11 	FT132Y11
Z02 2NC Snap action Zb	FT131Z02 	FT1P31Z02 	FT134Z02 	FT132Z02
W02 2NC Slow break Zb	FT131W02 	FT1P31W02 	FT134W02 	FT132W02
W20 2NO Slow break Zb	FT131W20 	FT1P31W20 	FT134W20 	FT132W20
WEIGHT gr - MIN. PACK QTY.	60 gr 1 pcs	60 gr 1 pcs	62 gr 1 pcs	65 gr 1 pcs



Limit Switches

FT1 Series

IP65 □ thermoplastic type



AUTOMATION TECHNOLOGIES

1 cable entry
M16x1.5



FT1P32



FT133



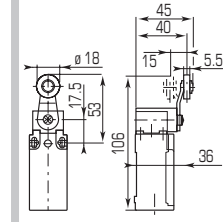
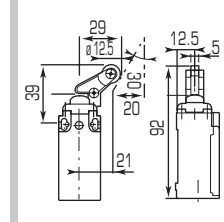
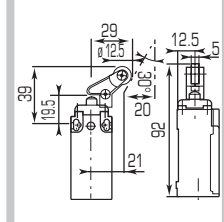
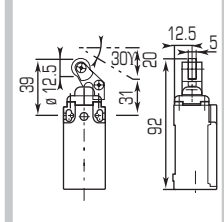
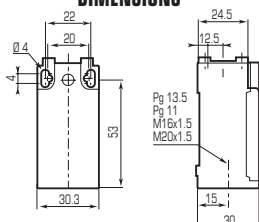
FT1P33



FT138

TYPE OF OPERATOR	ROLLER LEVER PLUNGER WITH PROTECTIVE BOOT HORIZONTAL ACTUATION	ROLLER LEVER PLUNGER VERTICAL ACTUATION	ROLLER LEVER PLUNGER WITH PROTECTIVE BOOT VERTICAL ACTUATION	ROLLER LEVER Ø 18
Standard - Positive opening NC contacts	EN50047	EN50047	EN50047	EN50047
Minimum tripping force N	7	7	7	0.10
Minimum positive opening force N	24	24	24	0.32
Snap action	FT1P32Z11	FT133Z11	FT1P33Z11	FT138Z11
Z11 1NC-1NO				
Slow break	FT1P32X11	FT133X11	FT1P33X11	FT138X11
X11 1NC-1NO				
Slow break	FT1P32Y11	FT133Y11	FT1P33Y11	FT138Y11
Y11 1NC-1NO overlapping				
Snap action	FT1P32Z02	FT133Z02	FT1P33Z02	FT138Z02
Z02 2NC				
Slow break	FT1P32W02	FT133W02	FT1P33W02	FT138W02
W02 2NC				
Slow break	FT1P32W20	FT133W20	FT1P33W20	FT138W20
W20 2NO				
WEIGHT gr - MIN. PACK QTY.	65 gr 1 pcs	65 gr 1 pcs	65 gr 1 pcs	80 gr 1 pcs

DIMENSIONS



Limit Switches

FT1 Series

IP65 □ thermoplastic type

1 cable entry
M16x1.5



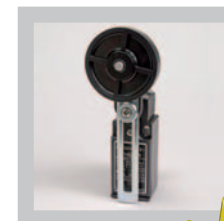
FT141



FT139



FT140



FT140R

NEW

TYPE OF OPERATOR	RUBBER ROLLER LEVER Ø 50	VARIABLE LENGTH ROLLER LEVER Ø 18	VARIABLE LENGTH RUBBER ROLLER LEVER Ø 50	VARIABLE LENGTH AND RUBBER ROLLER LEVER Ø 50
Standard - Positive opening NC contacts	-	-	-	-
Minimum tripping force	0.10	0.10	0.10	0.10
Minimum positive opening force	-	-	-	-
Snap action	FT141Z11	FT139Z11	FT140Z11	FT140Z11R
Z11 1NC-1NO				
Slow break	FT141X11	FT139X11	FT140X11	FT140X11R
X11 1NC-1NO				
Slow break	FT141Y11	FT139Y11	FT140Y11	FT140Y11R
Y11 1NC-1NO overlapping				
Snap action	FT141Z02	FT139Z02	FT140Z02	FT140Z02R
Z02 2NC				
Slow break	FT141W02	FT139W02	FT140W02	FT140W02R
W02 2NC				
Slow break	FT141W20	FT139W20	FT140W20	FT140W20R
W20 2NO				
WEIGHT gr - MIN. PACK QTY.	95 gr 1 pcs	105 gr 1 pcs	125 gr 1 pcs	125 gr 1 pcs

DIMENSIONS				

Limit Switches

FT1 Series

IP65 ☐ thermoplastic type



AUTOMATION TECHNOLOGIES

1 cable entry
M16x1.5



FT135



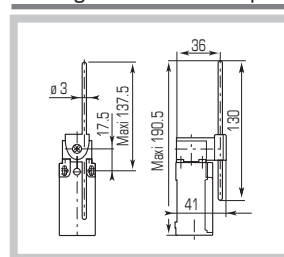
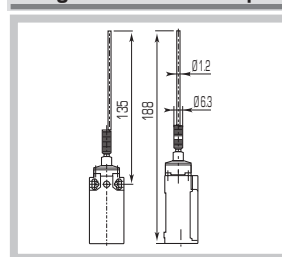
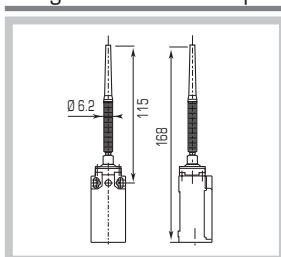
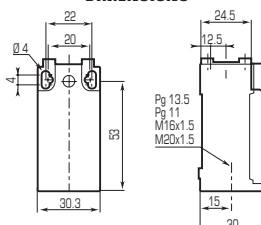
FT136



FT137

TYPE OF OPERATOR	SPRING LEVER WITH TIP IN PA	"CAT'S WHISKER"	VARIABLE LENGTH STEEL ROD LEVER Ø 3
Standard - Positive opening NC contacts	EN50047	-	-
Minimum tripping force	0.12	0.12	0.12
Minimum positive opening force	-	-	-
Z11 1NC-1NO Snap action Zb	FT135Z11 0 12Y 23Y 36Y	FT136Z11 0 12Y 23Y 36Y	FT137Z11 0 17Y 31Y 74Y
X11 1NC-1NO Slow break Zb	FT135X11 0 14Y 36Y 21Y	FT136X11 0 14Y 36Y 21Y	FT137X11 0 21Y 74Y 30Y
Y11 1NC-1NO Slow break overlapping Zb	FT135Y11 0 25° 36° 12°	FT136Y11 0 25° 36° 12°	FT137Y11 0 35Y 74Y 18Y
Z02 2NC Snap action Zb	FT135Z02 0 12Y 22Y 36Y	FT136Z02 0 12Y 22Y 36Y	FT137Z02 0 17Y 30Y 74Y
W02 2NC Slow break Zb	FT135W02 0 14° 36° 21°	FT136W02 0 14° 36° 21°	FT137W02 0 19 74
W20 2NO Slow break Zb	FT135W20 0 13Y 36Y	FT136W20 0 13Y 36Y	FT137W20 0 18Y 74Y
WEIGHT gr - MIN. PACK QTY.	70 gr 1 pcs	80 gr 1 pcs	105 gr 1 pcs

DIMENSIONS



Limit Switches

FT2 Series

IP65 □ thermoplastic type

2 cable entry
M16x1.5



FT231



FT2P31



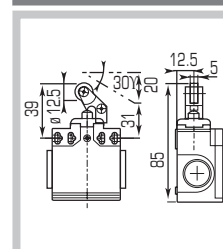
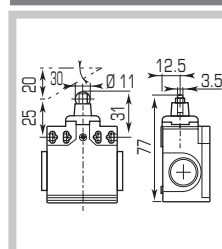
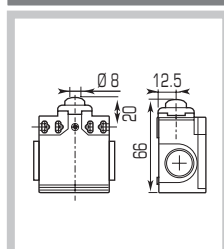
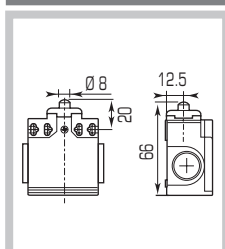
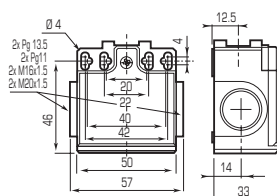
FT234



FT232

TYPE OF OPERATOR	SHORT STEEL END PLUNGE	SHORT STEEL END PLUNGER WITH PROTECTIVE BOOT	ROLLER LEVER PLUNGER	ROLLER LEVER PLUNGER HORIZONTAL ACTUATION
Standard - Positive opening NC contacts (→)	- (→)	- (→)	- (→)	- (→)
Minimum tripping force N	15	15	12	7
Minimum positive opening force N	30	30	30	24
Snap action	FT231Z11	FT2P31Z11	FT234Z11	FT232Z11
Z11 1NC-1NO Zb				
Slow break	FT231X11	FT2P31X11	FT234X11	FT232X11
X11 1NC-1NO Zb				
Slow break	FT231Y11	FT2P31Y11	FT234Y11	FT232Y11
Y11 1NC-1NO overlapping Zb				
Snap action	FT231Z02	FT2P31Z02	FT234Z02	FT232Z02
Z02 2NC Zb				
Slow break	FT231W02	FT2P31W02	FT234W02	FT232W02
W02 2NC Zb				
Slow break	FT231W20	FT2P31W20	FT234W20	FT232W20
W20 2NO Zb				
WEIGHT gr - MIN. PACK QTY.	100 gr 1 pcs	100 gr 1 pcs	105 gr 1 pcs	105 gr 1 pcs

DIMENSIONS



Limit Switches

FT2 Series

IP65 □ thermoplastic type



AUTOMATION TECHNOLOGIES

2 cable entry
M16x1.5



FT2P32



FT238



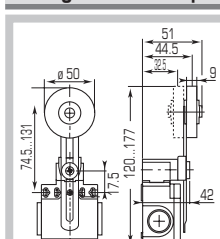
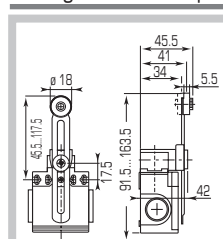
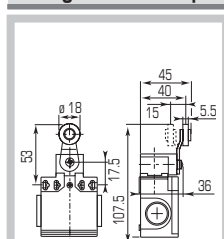
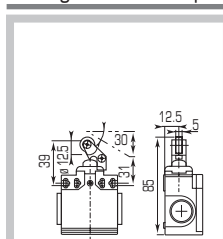
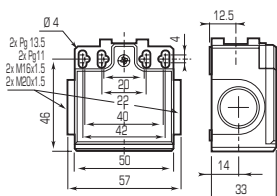
FT239



FT240

TYPE OF OPERATOR	ROLLER LEVER PLUNGER WITH PROTECTIVE BOOT HORIZONTAL ACTUATION	ROLLER LEVER Ø 18	VARIABLE LENGTH ROLLER LEVER Ø 18	VARIABLE LENGTH Ø 50 RUBBER ROLLER LEVER
Standard - Positive opening NC contacts	-	-	-	-
Minimum tripping force	7	0.10	0.10	0.10
Minimum positive opening force	24	0.32	-	-
Snap action	FT2P32Z11	FT238Z11	FT239Z11	FT240Z11
Z11 1NC-1NO 				
Slow break	FT2P32X11	FT238X11	FT239X11	FT240X11
X11 1NC-1NO 				
Slow break overlapping	FT2P32Y11	FT238Y11	FT239Y11	FT240Y11
Y11 1NC-1NO 				
Snap action	FT2P32Z02	FT238Z02	FT239Z02	FT240Z02
Z02 2NC 				
Slow break	FT2P32W02	FT238W02	FT239W02	FT240W02
W02 2NC 				
Slow break	FT2P32W20	FT238W20	FT239W20	FT240W20
W20 2NO 				
WEIGHT gr - MIN. PACK QTY.	105 gr 1 pcs	125 gr 1 pcs	125 gr 1 pcs	155 gr 1 pcs

DIMENSIONS



Limit Switches

Serie FT2

IP65 □ thermoplastic type

2 cable entries
M16x1.5



FT241



FT235



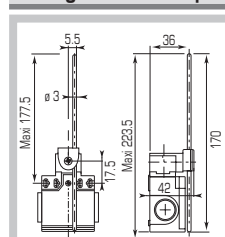
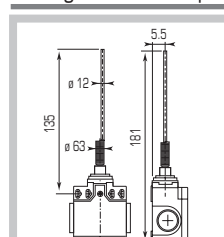
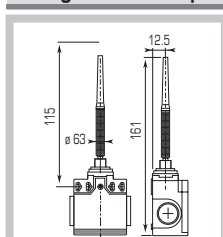
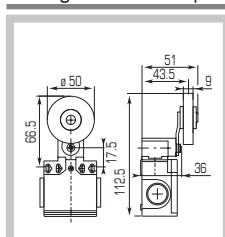
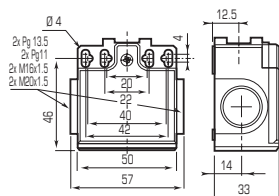
FT236



FT237

TYPE OF OPERATOR	Ø 50 RUBBER ROLLER LEVER	SPRING LEVER WITH TIP IN PA	"CAT'S WHISKER"	VARIABLE LENGTH Ø 3 STEEL ROD LEVER
Standard - Positive opening NC contacts	-	-	-	-
Minimum tripping force N	0.10	0.10	0.10	0.10
Minimum positive opening force N	-	0.32	-	-
Snap action	FT241Z11	FT235Z11	FT236Z11	FT237Z11
Z11 1NC-1NO				
Slow break	FT241X11	FT235X11	FT236X11	FT237X11
X11 1NC-1NO				
Slow break	FT241ZY11	FT235Y11	FT236Y11	FT237Y11
Y11 1NC-1NO overlapping				
Snap action	FT241Z02	FT235Z02	FT236Z02	FT237Z02
Z02 2NC				
Slow break	FT241W02	FT235W02	FT236W02	FT237W02
W02 2NC				
Slow break	FT241W20	FT235W20	FT236W20	FT237W20
W20 2NO				
WEIGHT gr - MIN. PACK QTY.	145 gr 1 pcs	135 gr 1 pcs	110 gr 1 pcs	130 gr 1 pcs

DIMENSIONS



Limit Switches

FT1R Series with reset

IP65 □ thermoplastic type



AUTOMATION TECHNOLOGIES

1 cable entry
M16x1.5



FT1R31



FT1R34



FT1R32



FT1R33

TYPE OF OPERATOR	SHORT STEEL END PLUNGER	PA ROLLER PLUNGER	PA ROLLER LEVER PLUNGER HORIZONTAL ACTUATION	PA ROLLER LEVER PLUNGER VERTICAL ACTUATION
Standard - Positive opening NC contacts	-	-	-	-
Minimum tripping force	15	12	7	7
Minimum positive opening force	30	30	24	24

Snap action	FT1R31Z11	FT1R34Z11	FT1R32Z11	FT1R33Z11
Z11 1NC-1NO Zb				

Slow break	FT1R31X11	FT1R34X11	FT1R32X11	FT1R33X11
X11 1NC-1NO Zb				

Slow break	FT1R31Y11	FT1R34Y11	FT1R32Y11	FT1R33Y11
Y11 1NC-1NO overlapping Zb				

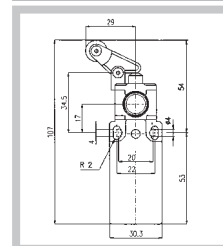
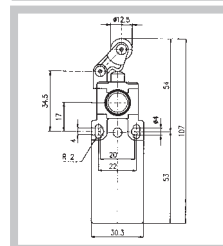
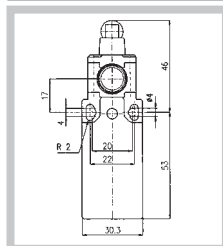
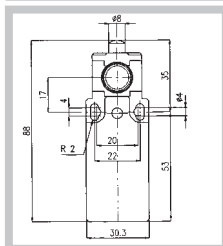
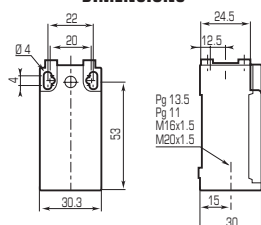
Snap action	FT1R31Z02	FT1R34Z02	FT1R32Z02	FT1R33Z02
Z02 2NC Zb				

Slow break	FT1R31W02	FT1R34W02	FT1R32W02	FT1R33W02
W02 2NC Zb				

WEIGHT gr - MIN. PACK QTY.

75 gr 1 pcs 78 gr 1 pcs 80 gr 1 pcs 80 gr 1 pcs

DIMENSIONS



Limit Switches

FT1R Series with reset

IP65 □ thermoplastic type

1 cable entry
M16x1.5



FT1R38



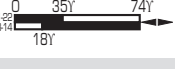
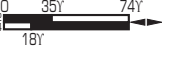
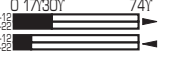
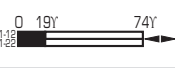
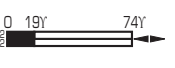
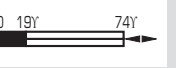
FT1R41



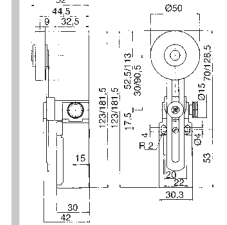
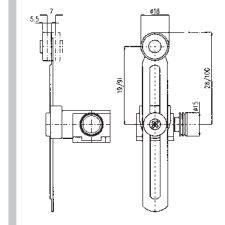
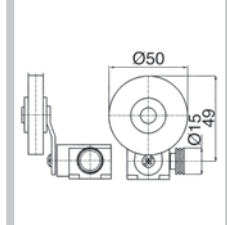
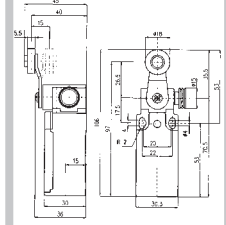
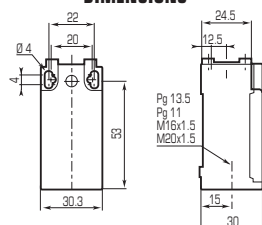
FT1R39



FT1R40

TYPE OF OPERATOR	ROLLER LEVER Ø 18	Ø 50 RUBBER ROLLER LEVER	VARIABLE LENGTH ROLLER LEVER Ø 18	VARIABLE LENGTH Ø 50 RUBBER ROLLER LEVER
Standard - Positive opening NC contacts →	- →	-	-	-
Minimum tripping force N	0.10	0.10	0.10	0.10
Minimum positive opening force N	0.32	-	-	-
Snap action	FT1R38Z11	FT1R41Z11	FT1R39Z11	FT1R40Z11
Z11 1NC-1NO  Zb				
Slow break	FT1R38X11	FT1R41X11	FT1R39X11	FT1R40X11
X11 1NC-1NO  Zb				
Slow break	FT1R38Y11	FT1R41Y11	FT1R39Y11	FT1R40Y11
Y11 1NC-1NO overlapping  Zb				
Snap action	FT1R38Z02	FT1R41Z02	FT1R39Z02	FT1R40Z02
Z02 2NC  Zb				
Slow break	FT1R38W02	FT1R41W02	FT1R39W02	FT1R40W02
W02 2NC  Zb				
WEIGHT gr - MIN. PACK QTY.	95 gr 1 pcs	110 gr 1 pcs	120 gr 1 pcs	145 gr 1 pcs

DIMENSIONS



Safety Limit Switches

Safety Series - Limit Switches

IP65 □ thermoplastic type



AUTOMATION TECHNOLOGIES

1 cable entry
M16x1.5



ST1K1



ST1K61



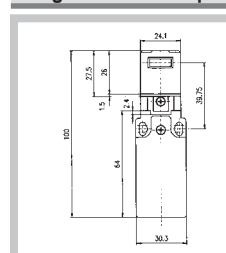
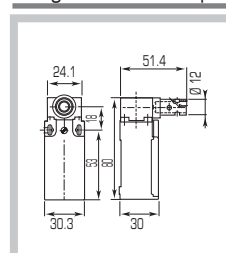
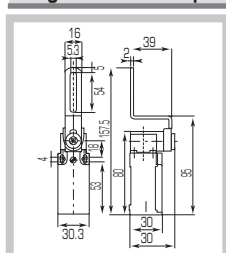
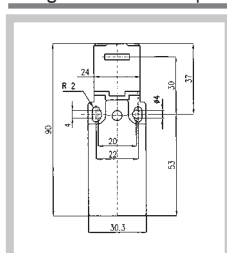
ST1K71 Zinc Plated Steel Spindle
ST1K72 Stainless Steel Spindle



ST1K8

TYPE OF OPERATOR	90° ADJUSTABLE TURRET HEAD WITH ACTUATOR	ADJUSTABLE STEEL ROTARY LEVER	STEEL SPINDLE	360° ADJUSTABLE TURRET HEAD WITH ACTUATOR
Standard - Positive opening I/O contacts (→)	- (→)	- (→)	- (→)	-
Minimum tripping force N	-	-	-	-
Minimum positive opening force N	-	-	-	-
Z11 1NC-1NO 	ST1K1*Z11	ST1K61Z11	Zinc Plated ST1K71Z11 Stainless ST1K72Z11	ST1K8*Z11
X11 1NC-1NO 	ST1K1*X11	ST1K61X11	Zinc Plated ST1K71X11 Stainless ST1K72X11	ST1K8*X11
Y11 1NC-1NO overlapping 	ST1K1*Y11	ST1K61Y11	Zinc Plated ST1K71Y11 Stainless ST1K72Y11	ST1K8*Y11
Z02 2NC 	ST1K1*Z02	ST1K61Z02	Zinc Plated ST1K71Z02 Stainless ST1K72Z02	ST1K8*Z02
W02 2NC 	ST1K1*W02	ST1K61W02	Zinc Plated ST1K71W02 Stainless ST1K72W02	ST1K8*W02
WEIGHT gr - MIN. PACK QTY.	83 gr 1 pcs	96 gr 1 pcs	80 gr 1 pcs	90 gr 1 pcs

DIMENSIONS



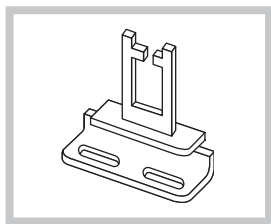
* Include actuator type reference number i.e.: ST1K13Z11

Safety Limit Switches

Safety Series - Limit Switches

IP65 □ thermoplastic type

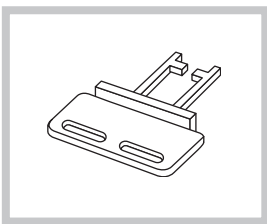
ACTUATORS



22MM RIGHT-ANGLED
ACTUATOR

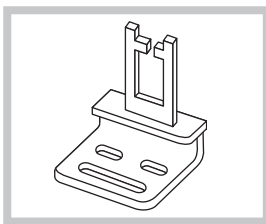
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3



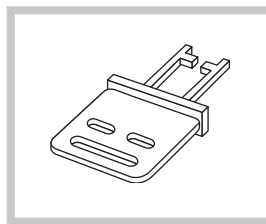
22MM STRAIGHT
ACTUATOR

4



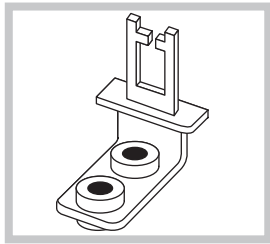
13MM RIGHT-ANGLED
ACTUATOR

5



13MM STRAIGHT
ACTUATOR

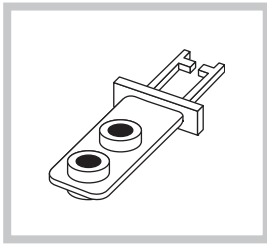
6



SHOCK ABSORBING
RIGHT-ANGLED ACTUATOR

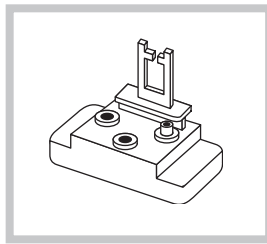
CODE

7



SHOCK ABSORBING
STRAIGHT ACTUATOR

8



JOINTED
KEY ACTUATOR

9

GENERAL CHARACTERISTICS

Safety limit switches are suitable for stopping dangerous machinery movements on opening of machine guards or protective covers. Available with different type of actuators and controls and with adjustable turret heads which can be rotated through 360° in 90° steps, they can be installed with a wide variety of opening mechanisms.

Comply with		IEC/EN60947-5-1, UL508		
Rated insulation voltage U_i	V	690		
Rated impulse withstand voltage U_{imp}	kV	6		
Operating frequency	Hz	50		
Rated thermal current I_{th}	A	10		
Rated operating current I_e :				
AC15: alternate current	V	24	230	380
	A	10	3.1	1.9
DC13: direct current	V	24	250	-
	A	2.8	0.27	-
Conditional short circuit withstand		10A gG fuse rating		
Electrical shocks withstand IEC 536		class II		
Protection rating IEC/EN 60529		IP65		
Operating temperature	°C	-25 +70		
Category of use UL 508		A600 - Q600		
Certifications		UL		

Limit Switches

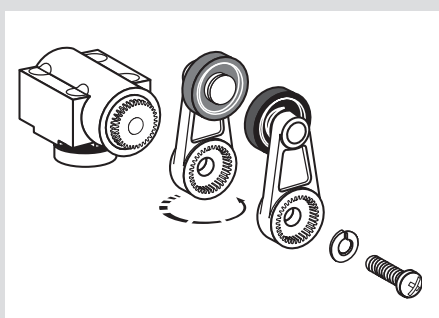
FA - FT - FT1R Series

Installation and use



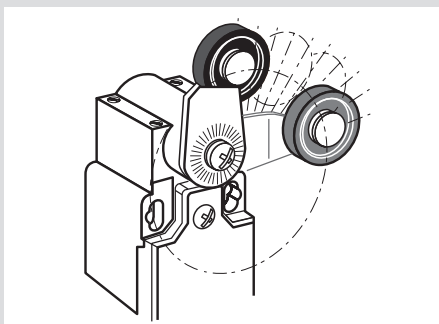
AUTOMATION TECHNOLOGIES

REVERSE MOUNTING OF THE OPERATING LEVER



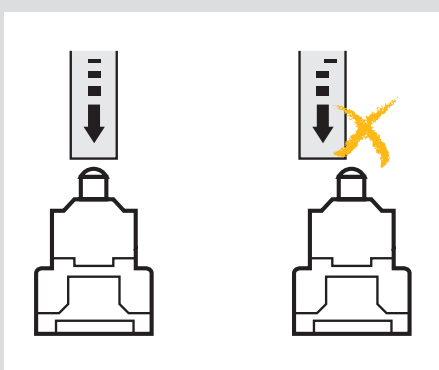
FA - FT - FT1R Series

REST POSITION SETTING THROUGH 10° STEPS



FA - FT - FT1R Series

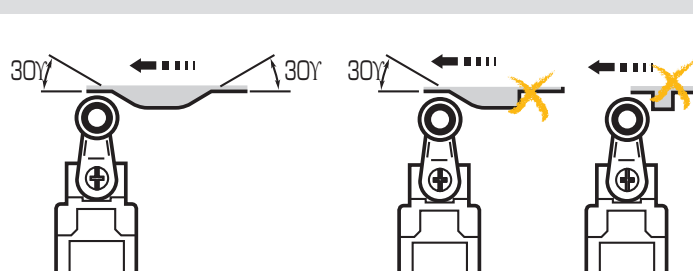
STEEL PLUNGER



Right

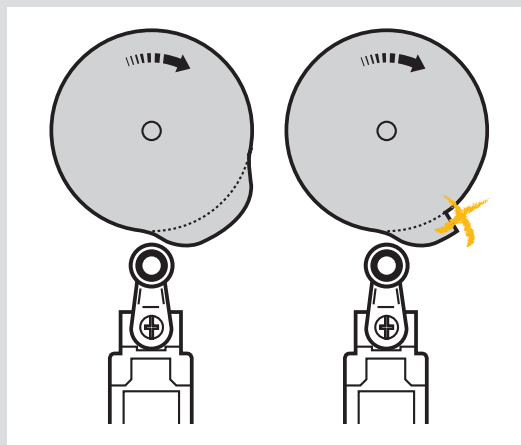
Wrong

PLUNGER OR ROLLER LEVER



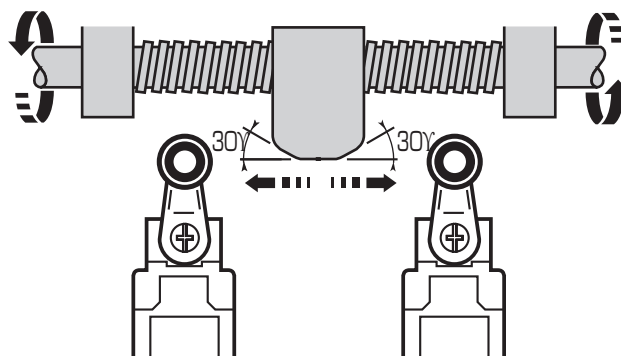
Right

Wrong



Right

Wrong



In case of a relatively slow movement of the actuator, snap action contact are recommended

Limit Switches

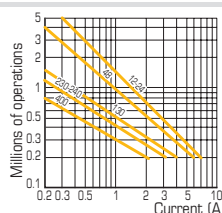
FA - FT - FT1R Series

Technical data

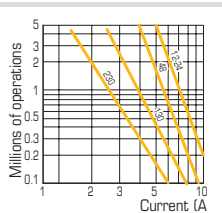
GENERAL CHARACTERISTICS

Comply with	IEC947-5-1, EN60947-5-1, UL508, CSA 22.2 n° 14	
Certifications	cUL	
Ambient temperature	°C	Operating -25 +70
	°C	Storage -30 +80
Climate protection	IEC68 part 2-3	Hot damp
	IEC68 part 2-11	Saline fog
Installation positions	All positions	
Impact resistance	IEC68 part 2-27	50g* (1/2 sinusoidal shock for 11 msec) without replacing contacts
Vibration resistance	IEC68 part 2-6	25g (10...500 Hz) without replacing contacts >100 msec
Electrical shocks withstand	IEC536	Class II for FT series - Class I for FA series
Protection rating	EN60529	IP65 FT series - IP66 - FA series
Accuracy (measured after 1 million operations)	0.05 FA series - 0.1 FT series (on the making point)	
0.05 Minimum tripping force	m/s	Slow break 0.06 - snap action 0.001
Rated insulation voltage Ui (IEC/EN60947-1)	V	690 FT series - 400 FA series
according to UL508 and CSA C22-2 No. 14	V	(3 pollution grade)
Rated impulse withstand voltage Uimp (IEC/EN60947-1)	kV	600 (designation A600 - Q600)
Rated thermal current Ith (IEC/EN60947-1)	A	6
Short circuit protection <500 Va.c. - fuses type gG (gl7)	A	10
Rated operating current Ie:		10
AC-15 (IEC/EN60947-5-1)	24 V - 50/60 Hz A	6
	120 V - 50/60 Hz A	3.1
	230 V - 50/60 Hz A	3
	240 V - 50/60 Hz A	1.9
	400 V - 50/60 Hz A	2.8
DC-13 (IEC/EN60947-5-1)	24 V - 50/60 Hz A	0.55
	125 V - 50/60 Hz A	0.27
	250 V - 50/60 Hz A	3600
Changeover frequency	cycles/hour	0.5
Load factor		25
Contact insulation resistance	m Ω	M3.5 screw clamp terminals (+/-) pozidriv 2
Termination type		M3.5 screw clamp terminals (+/-) pozidriv 2
Earth terminal (FA series only)		0.75...2.5
Terminal capacity solid/flexible conductor	n.1 o 2 x mm²	according to EN50013
Terminal referencing		15 FA. 31; 32; 33
Mechanical life	millions of operations	10 FT. 34; 37; 38...41
		>5 FT. P31...P33; 35; 36
Electrical life (according to IEC/EN60947-5-1)		AC-15 and DC-13 categories of use (0.5 load factor according to the diagrams below)

AC-15 Snap action



AC-15 Slow break



* 25gr for FA.40 and FT.40

DC-13 Snap action Slow break

Breaking capacity for a duration of 5 millions cycles

Voltage 24 V	9.5 W	12 W
Voltage 48 V	6.8 W	9 W
Voltage 110 V	3.6 W	6 W

Limit Switches

Pre-wired FCT series

IP67 □ thermoplastic type



AUTOMATION TECHNOLOGIES

Cable: PVC UL
5x0.75 mm²
2 m length
Outlet: horizontal .L.
vertical .V.



.01.



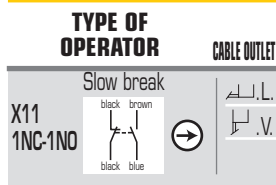
.02.



.03.

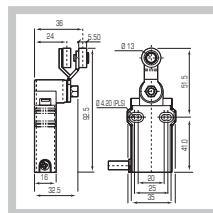
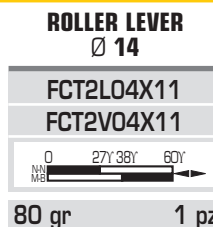
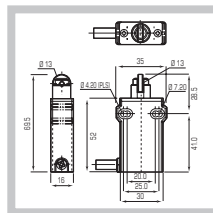
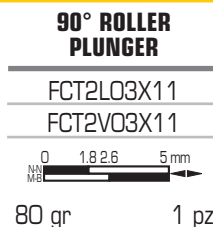
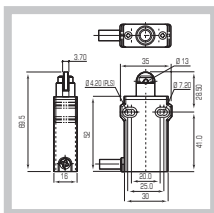
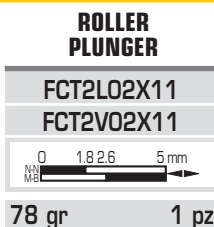
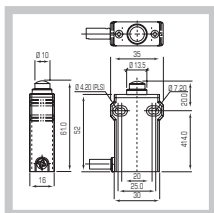
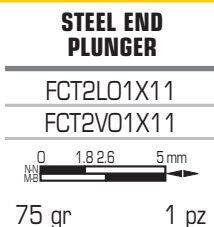


.04.



WEIGHT gr. - MIN. PACK QTY.

DIMENSIONS



Cable: PVC UL
5x0.75 mm²
2 m length
Outlet: horizontal .L.
vertical .V.



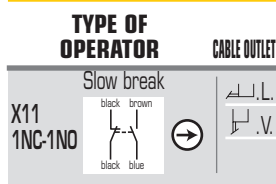
.06.



.07.

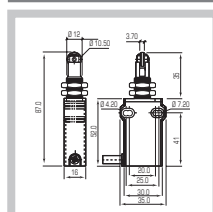
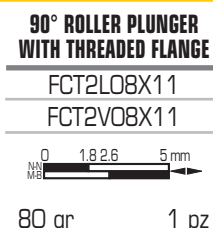
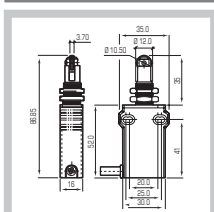
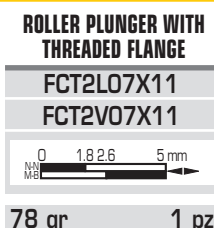
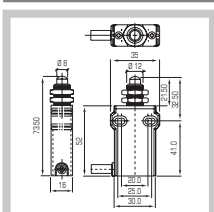
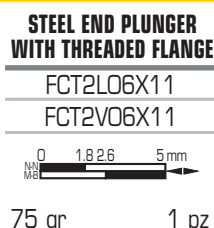


.08.



WEIGHT gr. - MIN. PACK QTY.

DIMENSIONS



CHARACTERISTICS

IEC/EN60947-5-1
Rated insulation voltage U_i/500V
Rated thermal current I_{th} 10A
Rated operating current I_e:

AC15	U _e V	120	250	400
	I _e A	6	4	3
DC13	U _e V	24	125	250
	I _e A	2,5	0,55	0,27

UL508
General use
Designation A300-Q300
Operating temperature -25 +70 °C
Self extinguishing body VO

Limit Switches

Pre-wired FCM series

IP67 ☐ Metal type



Cable: PVC UL
5x0.75 mm²
2 m length
Outlet: horizontal .L.



.01.



.02.



.03.



.04.

TYPE OF OPERATOR	STEEL END PLUNGER	ROLLER PLUNGER	90° ROLLER PLUNGER	14 Ø POM ROLLER LEVER
Z11 1NC-1NO 	FCM2LO1Z11 	FCM2LO2Z11 	FCM2LO3Z11 	FCM2LO4Z11
WEIGHT gr - MIN. PACK QTY.	175 gr 1 pz	180 gr 1 pz	180 gr 1 pz	225 gr 1 pz
DIMENSIONS				



Cable: PVC UL
5x0.75 mm²
2 m length
Outlet: horizontal .L.



.06.



.07.



.08.

TYPE OF OPERATOR	STEEL END PLUNGER WITH THREADED FLANGE	ROLLER PLUNGER WITH THREADED FLANGE	90° ROLLER PLUNGER WITH THREADED FLANGE	CHARACTERISTICS
Slow break Z11 1NC-1NO BK BU BN Zb	FCM2LO6Z11 01.0 1.9 4.0 5.0 mm 21.22 13.14 21.22 13.14	FCM2LO7Z11 01.7 3.3 6.9 8.7 mm 21.22 13.14 21.22 13.14	FCM2LO8Z11 01.7 3.3 6.9 8.7 mm 21.22 13.14 21.22 13.14	IEC/EN60947-5-1 Rated insulation voltage Ui/500V Rated thermal current Ith 5A Rated operating current Ie: AC15 Ue V 24 120 240 Ie A 5 3 1,5 DC13 Ue V 24 125 250 Ie A 1 0,22 0,1 Pollution class 3 Material group I Operating temperatures -25 +70 °C
WEIGHT gr - MIN. PACK QTY. DIMENSIONS	75 gr 1 pz	78 gr 1 pz	80 gr 1 pz	

Limit Switches

Astra Series

IP54 universal type



AUTOMATION TECHNOLOGIES

2 cable entries
with cable gland



TYPE OF OPERATOR	STEEL ROLLER PLUNGER	ROLLER LEVER Ø 20	ROLLER LEVER Ø 35	ROLLER PLUNGER AND LEVER WITH RESET
1NC-1NO Slow break 	30303061 	30303073 	30303025 	30303092 lever
1NC-1NO overlapping Slow break 	30303062 	30303074 	30303026 	30303098 with plunger
WEIGHT gr - MIN. PACK QTY.	130 gr 1 pz	160 gr 1 pz	200 gr 1 pz	180 gr 1 pz
DIMENSIONS				

GENERAL CHARACTERISTICS

■	Comply with		IEC/EN60947-5-1						
■	Rated insulation voltage U_i	V	500 (pollution class 3)						
■	Rated impulse withstand voltage U_{imp}	kV	4						
■	Operating frequency	Hz	50/60						
■	Rated thermal current I_{th}	A	10						
■	Rated operating current I_e :								
	AC-15 alterante current	V	<table><tr><td>110</td><td>230</td><td>380</td></tr><tr><td>8</td><td>8</td><td>6</td></tr></table>	110	230	380	8	8	6
110	230	380							
8	8	6							
		A							
■	Contact type		Slow break double gap contacts						
■	Protection rating	EN60529	IP54						
■	Ambient temperature	°C	Operating -25 +55						
		°C	Storage -30 +70						
■	Termination type		Screw clamp terminals						
■	Materials		Housing in reinforced PA – PC lid						
			Nickel brass plunger – Reinforced PC lever						



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