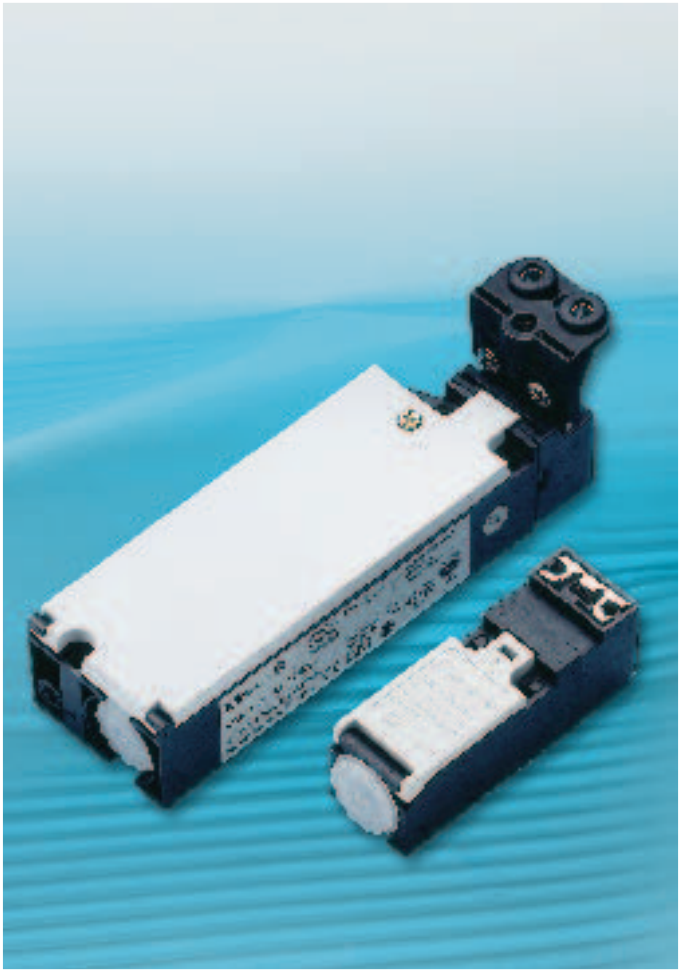
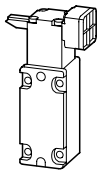


Position Switches, Proximity Switches, Pressure Switches, Float Switches

Overview

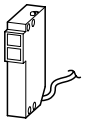
Position switches

Safety components

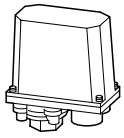


Inductive proximity switches

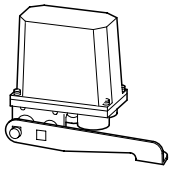
Optical proximity switches



Pressure switches



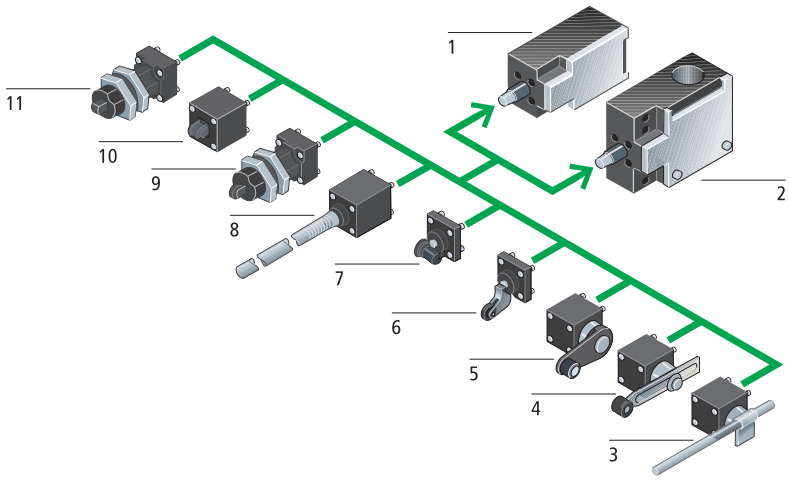
Float switches



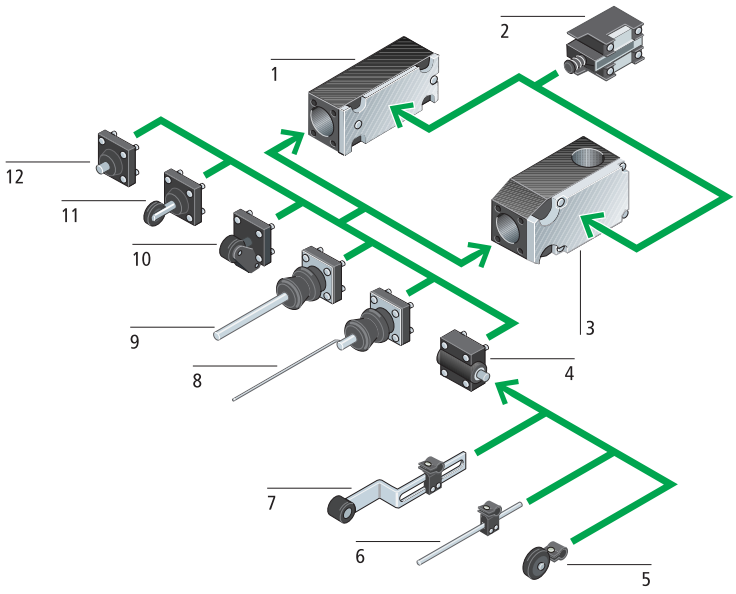
AT0, ATR, AT4 Position Switches

System Overview

AT0



AT4



AT0, ATR, AT4 Position Switches
System Overview

AT0/ATR

Basic units

Basic unit 1
Narrow version
To EN 50 047
With snap-on cover
Number of contacts: 1M/1B, 2M, 2B
As snap-action or standard-action switch
→ Page 03/004

Basic unit 2
Wide version
With 2 × M20
Number of contacts: 1M/1B, 2M, 2B
As snap-action or standard-action switch
→ Page 03/004

Operating heads
Can be rotated in 90° stages

Actuating rod 3
On conveyor belts for light-weight goods

Adjustable roller lever 4
For length adjustment as required

Rotary lever 5
For transverse actuation, for pendulum movements

Angled roller lever 6
For actuation along the device axis

Roller lever 7
For one-sided operation with high actuation speed
→ Page 03/009

Operating heads
Can be rotated in 90° stages

Spring-rod actuator 8
For flexible actuation from any side

Plunger (centre fixing) 9
For transverse and axial actuation when fitted in a through-hole

Roller plunger 10
For transverse actuation with low actuating force

Roller plunger (centre fixing) 11
For transverse actuation when fitted in a through-hole
→ Page 03/009

AT4

Housings/switch mechanisms

AT4 enclosure 1
Narrow version
To EN 50 041
→ Page 03/016

Switch mechanisms 2
Standard-action and snap-action contact
Overlapping method of contact-making
Number of contacts: 1M/1B
→ Page 03/016

AT4 enclosure 3
Wide version
With 3 × M20
→ Page 03/016

Operating heads
Can be rotated in 90° stages

Rotary drive head 4
For use in combination with more than 30 different actuators

Actuating roller lever 5
With various lever lengths, roller diameters and widths

Actuating rod 6
With plastic rod or adjustable aluminium rod

Adjustable roller lever 7
For length adjustment as required
→ Page 03/017

Operating heads
Can be rotated in 90° stages

Spring-rod head 8
For flexible actuation from any side, with steel spring-rod

Spring-rod head 9
For flexible actuation from any side, with plastic rod

Actuating roller head 10
For one-sided operation with high actuation speed

Roller plunger head 11
For transverse actuation with low wear

Plunger head 12
With steel cap for operation with hot operating elements
→ Page 03/016

AT0, ATR, AT4 product attributes

- Modular system
- Degree of protection IP65
- totally insulated
- Personnel protection
- Positive operation
- Suitable for use with electronic devices to IEC/EN 61 131-2
- Safety function by positive opening of contacts to IEC/EN 60 947-5-1
- Devices for world markets

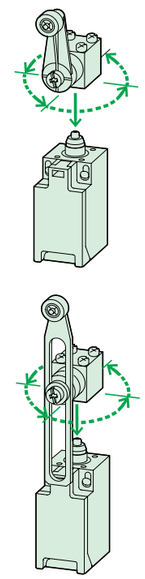
AT0 Position Switches
Complete Units

Contacts M = Make B = Break ⊖ = Safety function by positive opening of contacts to IEC/EN 60 947-5-1	Contact sequence Contact ■ Closed □ Open Zw = Positive opening clearance	Plunger EN 50 047 Form B Basic unit Type Article no.	Price See Price List		Plunger Centre fixing Type Article no.	Price See Price List
Complete units, IP65						
SUVA CNA INSAI						
totally insulated						
Narrow version						
1 M 1 B ⊖	13 21 / 14 22	13-14 / 21-22 0 2,9 4,8 6 mm Zw = 4,2 mm	**AT0-11-1-I** 095406			**AT0-11-1-I/ZS** 036069	
1 M 1 B ⊖	17 25 / 18 26	17-18 / 25-26 0 2,1 3,4 6 mm Zw = 4,7 mm	**AT0-11-2-I** 097779			**AT0-11-2-I/ZS** 076410	
2 M – –	13 23 / 14 24	13-14 / 23-24 0 1,3 6 mm	**AT0-20-1-I** 002860			**AT0-20-1-I/ZS** 062173	
– 2 B ⊖	11 21 / 12 22	11-12 / 21-22 0 3,4 6 mm Zw = 4,7 mm	**AT0-02-1-I** 005233			**AT0-02-1-I/ZS** 002849	
– 2 B ⊖	11 21 / 12 22	11-12 / 21-22 0 2 4 6 mm Zw (11-12) = 3,3 mm Zw (21-22) = 5,3 mm	**AT0-02-1-I-SOND916** 098448			–	
1 M 1 B ⊖	13 21 / 14 22	Snap-action contact 13-14 / 21-22 → 13-14 / 21-22 ← 0 1,6 3,0 6 mm Zw = 4,5 mm	**AT0-11-S-I** 000487			**AT0-11-S-I/ZS** 019459	
1 M 1 B ⊖	13 21 / 14 22	Snap-action contact 13-14 / 21-22 → 13-14 / 21-22 ← 0 0,6 1 6 mm Zw = 3,5 mm	**AT0-11-S1-I** 226060			–	
Wide version							
1 M 1 B ⊖	13 21 / 14 22	13-14 / 21-22 0 2,9 4,8 6 mm Zw = 4,2 mm	**AT0-11-1-IA** 007606			**AT0-11-1-IA/ZS** 055053	
1 M 1 B ⊖	17 25 / 18 26	17-18 / 25-26 0 2,1 3,4 6 mm Zw = 4,7 mm	**AT0-11-2-IA** 009979			**AT0-11-2-IA/ZS** 095394	
2 M – –	13 23 / 14 24	13-14 / 23-24 0 1,3 6 mm	**AT0-20-1-IA** 014725			**AT0-20-1-IA/ZS** 081157	
– 2 B ⊖	11 21 / 12 22	11-12 / 21-22 0 3,4 6 mm Zw = 4,7 mm	**AT0-02-1-IA** 017098			**AT0-02-1-IA/ZS** 021833	
1 M 1 B ⊖	13 21 / 14 22	Snap-action contact 13-14 / 21-22 → 13-14 / 21-22 ← 0 1,6 3,0 6 mm Zw = 4,5 mm	**AT0-11-S-IA** 012352			**AT0-11-S-IA/ZS** 040816	
1 M 1 B ⊖	13 21 / 14 22	Snap-action contact 13-14 / 21-22 → 13-14 / 21-22 ← 0 0,6 1 6 mm Zw = 3,5 mm	**AT0-11-S1-IA** 226061			–	

AT0 Position Switches
Complete Units

Roller plunger EN 50 047 Form C Type Article no.	Price See Price List		Roller plunger Centre fixing Type Article no.	Price See Price List	Notes Std. pack
AT0-11-1-I/RS 024204			**AT0-11-1-I/ZRS** 033696		10 off
AT0-11-2-I/RS 064545			**AT0-11-2-I/ZRS** 074037		2 off
AT0-20-1-I/RS 050308			**AT0-20-1-I/ZRS** 059800		
AT0-02-1-I/RS 090649			**AT0-02-1-I/ZRS** 000476		
–			–		
AT0-11-S-I/RS 007594			**AT0-11-S-I/ZRS** 017086		10 off
–			–		1 off
AT0-11-1-IA/RS 045561			**AT0-11-1-IA/ZRS** 052680		1 off
AT0-11-2-IA/RS 085902			**AT0-11-2-IA/ZRS** 093021		
AT0-20-1-IA/RS 071665			**AT0-20-1-IA/ZRS** 078784		
AT0-02-1-IA/RS 012341			**AT0-02-1-IA/ZRS** 019460		
AT0-11-S-IA/RS 031324			**AT0-11-S-IA/ZRS** 038443		
–			–		

The operating heads can be rotated in 90° stages to match the specified direction of operation.
For degree of protection IP65, use M20 cable glands with up to 9.0 mm length of connecting thread (V-M20).



For external applications or temperatures down to –40 °C use RBS-AT0 sealing membrane.

No SUVA approval for the following types:

- **AT0-20-1-I**
- **AT0-20-1-I/ZS**
- **AT0-20-1-I/RS**
- **AT0-20-1-I/ZRS**
- **AT0-20-1-IA**
- **AT0-20-1-IA/ZS**
- **AT0-20-1-IA/RS**
- **AT0-20-1-IA/ZRS**

Accessories	Page
V-M20 cable gland	03/018
Sealing membrane	03/018

AT0 Position Switches
Complete Units

Contacts M = Make B = Break ⊖ = Safety function by positive opening of contacts to IEC/EN 60 947-5-1	Contact sequence Contact ■ Closed □ Open Zw = Positive opening clearance	Spring-rod actuator[1] Type Article no.	Price See Price List		Roller lever EN 50 047 Form E Type Article no.	Price See Price List
Complete units, IP65						
SUVA CNA INSAI						
totally insulated						
Narrow version						
1 M 1 B ⊖		–		13-14 21-22 0 4,7 8,0 10,1 mm Zw = 6,8 mm	**AT0-11-1-I/AR** 017085	
1 M 1 B ⊖		–		17-18 25-26 0 3,3 5,6 10,1 mm Zw = 7,8 mm	**AT0-11-2-I/AR** 057426	
2 M – –		–		13-14 23-24 0 2,2 10,1 mm	**AT0-20-1-I/AR** 043189	
– 2 B ⊖		–		11-12 21-22 0 5,5 10,1 mm Zw = 7,7 mm	**AT0-02-1-I/AR** 083530	
1 M 1 B ⊖	Snap-action contact 13-14 21-22 13-14 21-22 0° 9° 23° 25°	**AT0-11-S-I/F** 000475		13-14 21-22 13-14 21-22 0 2,6 4,8 10,1mm Zw = 7,4 mm	**AT0-11-S-I/AR** 097767	
Wide version						
1 M 1 B ⊖		–		13-14 21-22 0 4,7 8,0 10,1 mm Zw = 6,8 mm	**AT0-11-1-IA/AR** 038442	
1 M 1 B ⊖		–		17-18 25-26 0 3,3 5,6 10,1 mm Zw = 7,8 mm	**AT0-11-2-IA/AR** 078783	
2 M – –		–		13-14 23-24 0 2,2 10,1 mm	**AT0-20-1-IA/AR** 064546	
– 2 B ⊖		–		11-12 21-22 0 5,5 10,1 mm Zw = 7,7 mm	**AT0-02-1-IA/AR** 005222	
1 M 1 B ⊖	Snap-action contact 13-14 21-22 13-14 21-22 0° 9° 23° 25°	**AT0-11-S-IA/F** 024205		13-14 21-22 13-14 21-22 0 2,6 4,8 10,1mm Zw = 7,4 mm	**AT0-11-S-IA/AR** 021832	

Notes [1] Do not use spring-rod actuator as a safety position switch; admissible only with snap-action contact.

AT0 Position Switches
Complete Units

Angled roller lever Type Article no.	Price See Price List		Rotary lever EN 50 047 Form A Type Article no.	Price See Price List	Notes Std. pack
13-14 21-22 0 4,7 8,3 10,5mm Zw = 7,0 mm	**AT0-11-1-I/WR** 031323		13-14 21-22 0° 22° 41° 54° Zw = 37°	**AT0-11-1-I/R** 021831	10 off
17-18 25-26 0 3,3 5,7 10,5 mm Zw = 8,0 mm	**AT0-11-2-I/WR** 071664		17-18 25-26 0° 14° 27° 54° Zw = 44°	**AT0-11-2-I/R** 062172	2 off
13-14 23-24 0 2,1 10,5 mm	**AT0-20-1-I/WR** 057427		13-14 23-24 0° 8° 54°	**AT0-20-1-I/R** 047935	
11-12 21-22 0 5,6 10,5 mm Zw = 7,9 mm	**AT0-02-1-I/WR** 097768		11-12 21-22 0° 27° 54° Zw = 44°	**AT0-02-1-I/R** 088276	
13-14 21-22 13-14 21-22 0 2,6 4,9 10,5 mm Zw = 7,6 mm	**AT0-11-S-I/WR** 014713		13-14 21-22 13-14 21-22 0° 10° 23° 54° Zw = 39°	**AT0-11-S-I/R** 005221	1 off
–			13-14 21-22 0° 22° 41° 54° Zw = 37°	**AT0-11-1-IA/R** 043188	2 off
–			17-18 25-26 0° 14° 27° 54° Zw = 44°	**AT0-11-2-IA/R** 083529	
–			13-14 23-24 0° 8° 54°	**AT0-20-1-IA/R** 069292	
–			11-12 21-22 0° 27° 54° Zw = 44°	**AT0-02-1-IA/R** 009968	
–			13-14 21-22 13-14 21-22 0° 10° 23° 54° Zw = 39°	**AT0-11-S-IA/R** 028951	

The operating heads can be rotated in 90° stages to match the specified direction of operation.
For degree of protection IP65, use M20 cable glands with up to 9.0 mm length of connecting thread (V-M20)

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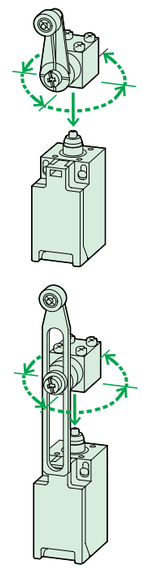
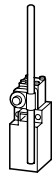
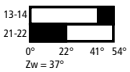
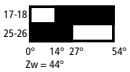
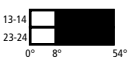
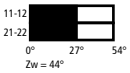
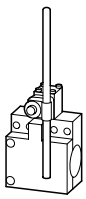
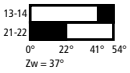
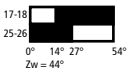
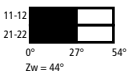


No SUVA approval for the following types:

- **AT0-11-S-I/F**
- **AT0-20-1-I/AR**
- **AT0-20-1-I/WR**
- **AT0-20-1-I/R**
- **AT0-11-S-IA/F**
- **AT0-20-1-IA/AR**
- **AT0-20-1-IA/R**

Accessories	Page
V-M20 cable gland	03/018

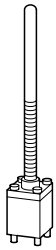
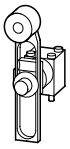
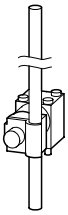
AT0 Position Switches
Complete Units

Contacts M = Make B = Break ⊖ = Safety function by positive opening of contacts to IEC/EN 60 947-5-1		Contact sequence Contact ■ Closed □ Open Zw = Positive opening clearance	Adjustable roller lever Type Article no.	Price See Price List		Actuating rod[1] Type Article no.	Price See Price List	Std. pack
Complete units, IP65								
totally insulated								
Narrow version								
1 M 1 B ⊖			**AT0-11-1-I/V** 028950			**AT0-11-1-I/H** 019458		10 off
1 M 1 B ⊖			**AT0-11-2-I/V** 069291			**AT0-11-2-I/H** 059799		2 off
2 M – –			**AT0-20-1-I/V** 055054			**AT0-20-1-I/H** 045562		
– 2 B ⊖			**AT0-02-1-I/V** 095395			**AT0-02-1-I/H** 085903		
1 M 1 B ⊖		Snap-action contact 	**AT0-11-S-I/V** 012340			**AT0-11-S-I/H** 002848		10 off
Wide version								
1 M 1 B ⊖			**AT0-11-1-IA/V** 050307			**AT0-11-1-IA/H** 040815		2 off
1 M 1 B ⊖			**AT0-11-2-IA/V** 090648			**AT0-11-2-IA/H** 081156		
2 M – –			**AT0-20-1-IA/V** 076411			**AT0-20-1-IA/H** 066919		
– 2 B ⊖			**AT0-02-1-IA/V** 017087			**AT0-02-1-IA/H** 007595		
1 M 1 B ⊖		Snap-action contact 	**AT0-11-S-IA/V** 036070			**AT0-11-S-IA/H** 026578		

Notes

[1] Not to be used as a safety position switch

AT0 Position Switches
Operating Heads

	Style	Direction of actuation	Type Article no.	Price See Price List	Std. pack	Notes
Operating heads						
Roller plunger 	Form C to EN 50 047	transverse	**RS-AT0** 053145		5 off	The operating heads can be rotated in 90° stages to match the specified direction of operation. For degree of protection IP65, use M20 cable glands with up to 9.0 mm length of connecting thread (V-M20)
Roller plunger 	(centre fixing)	transverse	**ZRS-AT0** 031083			
Plunger 	(centre fixing)	axial, transverse	**ZS-AT0** 033456			
Spring-rod actuator 	–	transverse	**F-AT0** 050772			
Roller lever 	Form E to EN 50 047	transverse	**AR-AT0** 046026		10 off	
Angled roller lever 	–	transverse	**WR-AT0** 048399		5 off	
Rotary lever 	Form A to EN 50 047	transverse	**R-AT0** 038907			
Adjustable roller lever 	–	transverse	**V-AT0** 041280			
Actuating rod 	–	transverse	**H-AT0** 043653			

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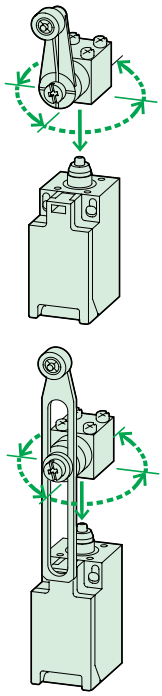


Not for use as safety position switches:

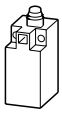
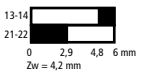
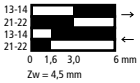
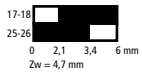
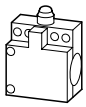
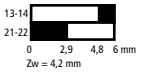
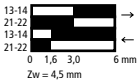
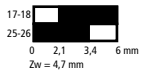
- **F-AT0**
- **H-AT0**

F-AT0 can be used, but only in conjunction with snap-action contact

Accessories	Page
V-M20 cable gland	03/018

ATR Position Switches

Basic Units, Operating Heads

Contacts M = Make B = Break ⊖ = Safety function by positive opening of contacts to IEC/EN 60 947-5-1	Contact sequence Contact ■ Closed □ Open Zw = Positive opening clearance	**Type** Article no.	**Price** See Price List	Std. pack
Basic units, IP65				
Narrow version				
1 M 1 B ⊖ 		**ATR-11-1-I** 034855		10 off
1 M 1 B ⊖ 	Snap-action contact 	**ATR-11-S-I** 034869		10 off
1 M 1 B ⊖ 		**ATR-11-2-I** 210296		2 off
Wide version				
1 M 1 B ⊖ 		**ATR-11-1-IA** 034868		2 off
1 M 1 B ⊖ 	Snap-action contact 	**ATR-11-S-IA** 034867		2 off
1 M 1 B ⊖ 		**ATR-11-2-IA** 210298		2 off
Operating heads Use only in conjunction with ATR-... basic unit				
Roller head		**ARG-ATR** 034856		10 off
Roller lever		**ARK-ATR** 034857		5 off

ATR Position Switches
Complete Units

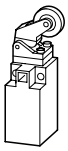
Contacts
M = Make
B = Break
⊖ = Safety function by positive opening of contacts to IEC/EN 60 947-5-1

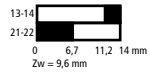
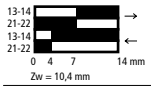
Contact sequence
Contact
■ Closed
□ Open
Zw = Positive opening clearance

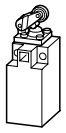
Contacts	Contact sequence	Type	Price		Notes
		Article no.	See Price List	Std. pack	

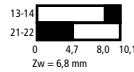
Complete units, IP65

Narrow version

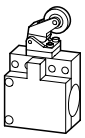


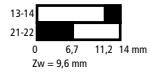
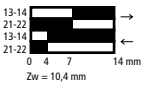
1 M 1 B ⊖			**ATR-11-1-I/ARG** 034862		10 off
1 M 1 B ⊖		Snap-action contact 	**ATR-11-S-I/ARG** 034861		

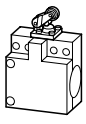


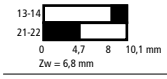
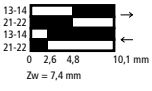
1 M 1 B ⊖			**ATR-11-1-I/ARK** 034866		
1 M 1 B ⊖		Snap-action contact 	**ATR-11-S-I/ARK** 034865		

Wide version

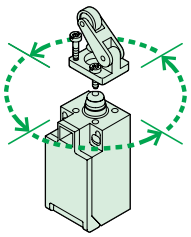


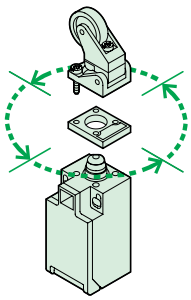
1 M 1 B ⊖			**ATR-11-1-IA/ARG** 034860		2 off
1 M 1 B ⊖		Snap-action contact 	**ATR-11-S-IA/ARG** 034858		

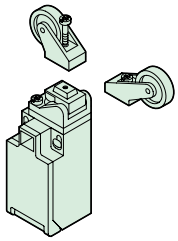


1 M 1 B ⊖			**ATR-11-1-IA/ARK** 034864		
1 M 1 B ⊖		Snap-action contact 	**ATR-11-S-IA/ARK** 034863		

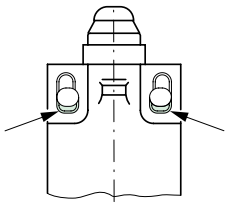
The operating heads can be rotated in 90° stages to match the specified direction of operation.







For degree of protection IP65, use M20 cable glands with up to 9.0 mm length of connecting thread (V-M20).

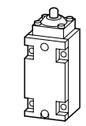
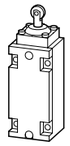
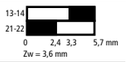
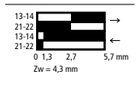
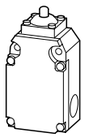
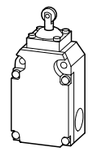
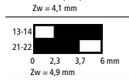
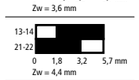
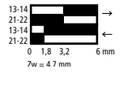
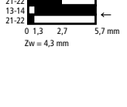


The following applies to types **ATR-...-I and ATR-...-I/ARK:**

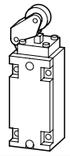
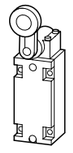
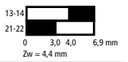
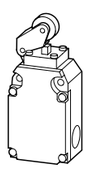
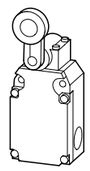
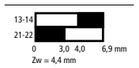
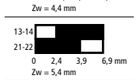
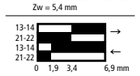
- When the mounting holes are knocked out, this results in the dimensions specified in EN 50 047.
- For external applications or temperatures down to –40 °C use RBS-ATR sealing membrane.

Accessories	Page
V-M20 cable gland	03/018
Sealing membrane	03/018

AT4 Position Switches
Complete Units

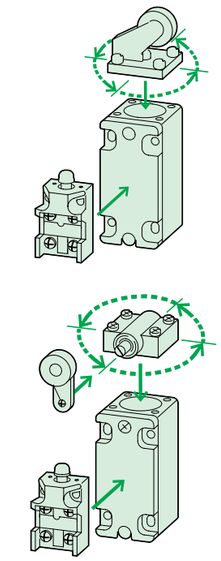
Contacts M = Make B = Break ⊖ = Safety function by positive opening of contacts to IEC/EN 60 947-5-1	Contact sequence Contact ■ Closed □ Open Zw = Positive opening clearance	**Plunger** **EN 50 041** Form B **Type** Article no.	**Price** See Price List		**Roller plunger** **EN 50 041** Form C **Type** Article no.	**Price** See Price List
Complete units, IP65						
Narrow version						
1 M 1 B ⊖		 **AT4/11-1/I/S** 005244			 **AT4/11-1/I/RS** 000498	
1 M 1 B ⊖		 **AT4/11-2/I/S** 097791			 **AT4/11-2/I/RS** 090672	
1 M 1 B ⊖		Snap-action contact  **AT4/11-S/I/S** 090673			 **AT4/11-S/I/RS** 085927	
Wide version						
1 M 1 B ⊖		 **AT4/11-1/IA/S** 038466			 **AT4/11-1/IA/RS** 031347	
1 M 1 B ⊖		 **AT4/11-2/IA/S** 024229			 **AT4/11-2/IA/RS** 021856	
1 M 1 B ⊖		Snap-action contact  **AT4/11-S/IA/S** 028976			 **AT4/11-S/IA/RS** 024230	

AT4 Position Switches
Complete Units

	Roller head **Type** Article no.	**Price** See Price List		**Rotary lever** **EN 50 041** Form A **Type** Article no.	**Price** See Price List	**Notes** Std. pack
						
	 **AT4/11-1/I/AR** 085925			 **AT4/11-1/I/R316** 095417		1 off
	 **AT4/11-2/I/AR** 076434			 **AT4/11-2/I/R316** 085926		
	 **AT4/11-S/I/AR** 062197			 **AT4/11-S/I/R316** 081181		
						
	 **AT4/11-1/IA/AR** 017109			 **AT4/11-1/IA/R316** 026601		1 off
	 **AT4/11-2/IA/AR** 005245			 **AT4/11-2/IA/R316** 014737		
	 **AT4/11-S/IA/AR** 000500			 **AT4/11-S/IA/R316** 019484		

The operating heads can be rotated in 90° stages to match the specified direction of operation.

For degree of protection IP65, use M20 cable glands with up to 9.0 mm length of connecting thread (V-M20).



Accessories	**Page**
V-M20 cable gland	03/019

AT4 Position Switches
Complete Units

Contacts M = Make B = Break ⊖ = Safety function by positive opening of contacts to IEC/EN 60 947-5-1	Contact sequence Contact ■ Closed □ Open Zw = Positive opening clearance	Adjustable roller lever Type Article no.	Price See Price List		Actuating rod[1] EN 50 041 Form D Type Article no.	Price See Price List
Complete units, IP65						
totally insulated						
Narrow version						
1 M 1 B ⊖		**AT4/11-1/I/V** 009990			**AT4/11-1/I/H** 090671	
1 M 1 B ⊖		**AT4/11-2/I/V** 000499			**AT4/11-2/I/H** 083553	
1 M 1 B ⊖	Snap-action contact	**AT4/11-S/I/V** 095419			**AT4/11-S/I/H** 076435	
Wide version						
1 M 1 B ⊖		**AT4/11-1/IA/V** 040839			**AT4/11-1/IA/H** 021855	
1 M 1 B ⊖		**AT4/11-2/IA/V** 031348			**AT4/11-2/IA/H** 012364	
1 M 1 B ⊖	Snap-action contact	**AT4/11-S/IA/V** 033722			**AT4/11-S/IA/H** 014738	

Notes

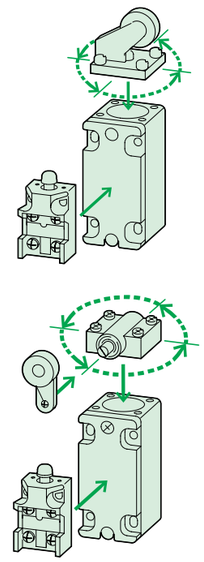
1) Not to be used as a safety position switch
2) Not to be used as a safety position switch; admissible only with snap-action contact.

AT4 Position Switches
Complete Units

Spring-rod actuator[2] Type Article no.	Price See Price List		Type Article no.	Price See Price List	Std. pack	Notes
–			–		1 off	
–			–			
AT4/11-S/I/F 066943			**AT4/11-S/I/F2** 071689			
–			–		1 off	
–			–			
AT4/11-S/IA/F 005246			**AT4/11-S/IA/F2** 009992			

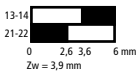
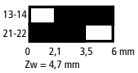
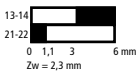
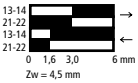
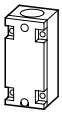
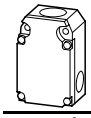
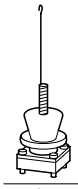
The operating heads can be rotated in 90° stages to match the direction of operation to the plane of actuation of the position switches.

For degree of protection IP65, use M20 cable glands with up to 9.0 mm length of connecting thread (V-M20).



Accessories	Page
V-M20 cable gland	03/018

AT4 Position Switches
Components

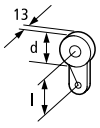
	Contacts M = Make B = Break ⊖ = Safety function by positive opening of contacts to IEC/EN 60 947-5-1	Contact sequence Contact ■ Closed □ Open Zw = Positive opening clearance	**Type** Article no.	**Price** See Price List	Std. pack
Switch mechanisms					
For fitting into the following insulated housings					
	1 M 1 B ⊖ 		**ATB11-1** 069314		10 off
	1 M 1 B ⊖ 		**ATB11-2** 071687		
	1 M 1 B ⊖ 		**ATB11-3** 077210		
	1 M 1 B ⊖ 	Snap-action contact 	**ATB11-S** 074060		
Insulated enclosures, IP65					
For housing the above switch mechanisms					
Narrow version to EN 50 041 			**I-AT4** 055226		1 off
Wide version 			**IA-AT4** 074212		1 off
Operating heads					
For combination with the above insulated housings					
Plunger head to EN 50 041 			**S-AT4** 095692		2 off
Roller plunger head to EN 50 041 			**RS-AT4** 024502		
Actuating roller head 			**AR-AT4** 088344		
Spring-rod actuator head, rod length 160 mm[1] 			**F-AT4** 090792		
Spring-rod actuator head, rod length 130 mm[1] 			**F2-AT4** 036214		

Notes

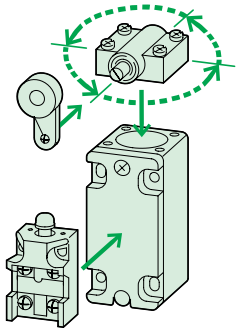
1) Not to be used as a safety position switch; admissible only with snap-action contact.

AT4 Position Switches
Components

	Max. operating speed - lateral	Angle of actuation	Lever length *l*	Dia-meter *d*	**Type** Article no.	**Price** See Price List	Std. pack	Notes
		Degrees	mm	mm				
Operating heads								
For combination with the insulated housings opposite								
Rotary drive head • For combination with the actuators below	3 1.5	15 50			**R-AT4** 095687		2 off	
Actuators								
Adjustable roller lever	2.3 1.1	15 50	150	–	**HV** 019631		5 off	
Actuating rod[1] • With adjustable aluminium rod	1.4	–	190	–	**HH-A** 063268		10 off	
Actuating rod[1] • With plastic rod	1.4	–	190	–	**HH-K** 063267		10 off	
Actuating roller lever[2] • With plastic roller			30	18	**HR311** 059970		1 off	
			30	22	**HR313** 064716			
			30	30	**HR316** 069462			
			30	40	**HR317** 071835			
			30	50	**HR318** 074208			
			37.5	18	**HR411** 088446			
			37.5	22	**HR413** 093192			
			37.5	30	**HR416** 097938			
			37.5	40	**HR417** 012511			
			37.5	50	**HR418** 014884			
			50	18	**HR511** 033868			
			50	22	**HR513** 038614			
			50	30	**HR516** 043360			
			50	40	**HR517** 045733			
			50	50	**HR518** 048106			

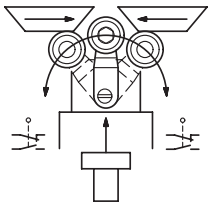


The operating heads can be rotated in 90° stages to match the specified direction of operation.

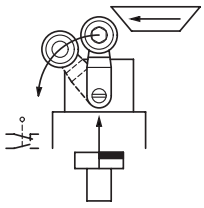


With the rotary drive, the method of contact making can be selected to suit the direction of operation simply by turning the plunger components.

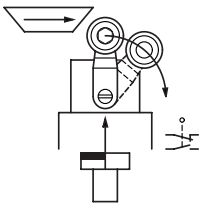
Contact made in both directions



Only when actuated from the right



Only when actuated from the left



For degree of protection IP65, use M20 cable glands with up to 9.0 mm length of connecting thread (V-M20).

Accessories	**Page**
V-M20 cable gland	03/018

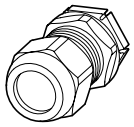
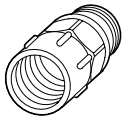
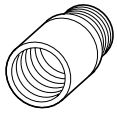
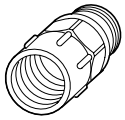
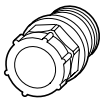
Notes

[1] Not to be used as a safety position switch; admissible only with snap-action contact.

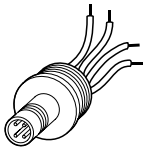
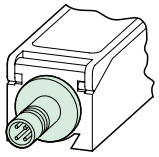
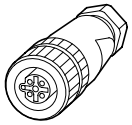
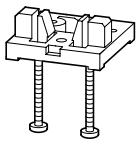
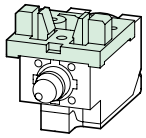
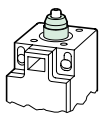
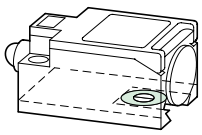
[2] For non-standard rollers, please enquire.

AT... Position Switches

Accessories

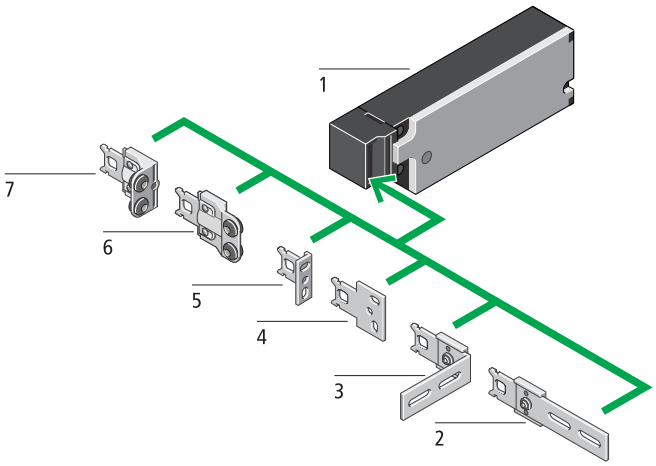
	Type Article no.	Price See Price List	Std. pack	
Metric cable gland, M20, to EN 50 262 • With lock nut and built-in strain relief • IP68 up to 5 bar, halogen-free • External diameter of cable 6 – 13 mm 	**V-M20** 206910		20 off	
Adapter to convert PG 13,5 to M20, IP65 For PG13,5 cable glands Moulded 	**VPG13,5/M20** 225268		10 off	
Screw connection to fit M20 into ½'' For American pipe thread Metal 	**V1/2''/M20-NA** 225269		1 off	The screw connection must be earthed, not total insulation
Screw connection to fit M20 into ½'' For American pipe thread Moulded 	**V1/2''/M20** 225270		10 off	
M20 diaphragm bolt, IP65 With built-in push-through diaphragm External diameter of cable up to 13 mm IP65 with cable inserted 	**EMS20** 225271		25 off	
M20 screw closure, IP65 (self-sealing grommet) For tightening / loosening by using a standard wrench for sealing grommet plugs 	**SV-M20** 225267		25 off	

AT... Position Switches
Accessories

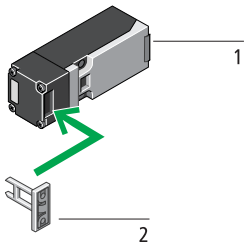
	For use with	Type Article no.	Price See Price List	Std. pack		
Plug connector, M12×1, IP65 Moulded U_i = 250 V, I_{th} = 4 A Fuse: 6 A gG/gL						
	AT0, ATR, AT0-ZB	**+M12A-AT** 200493		1 off	"A" coded  Standard in accordance with IEC/EN 60 947-5-2	To be ordered with basic unit only 
		+M12B-AT 201196		1 off	"B" coded 	
Screw connector, M12×1, IP65 Moulded, straight version Screw connection, for use with cable diameters ∅ 6 – 8 mm/max. 0.75 mm² U_i = 250 V						
	+M12A-AT	**M12A-G-AT** 206869		1 off	"A" coded	
	+M12B-AT	**M12B-G-AT** 215449		1 off	"B" coded	
Fixing adapter For fitting in control panels						
	ATR-11-S-I	**BA-ATR** 087779		1 off		
Sealing membrane For outdoor applications and for temperatures down to –40 °C Colour: red						
	AT0-...-...-I(A)	**RBS-AT0** 050989		10 off		
	ATR-...-...-I(A)	**RBS-ATR** 050988		10 off		
Locating plate Useful for transverse operation						
	AT0, ATR	**FS-AT** 019610		20 off		

Safety Position Switches
System Overview

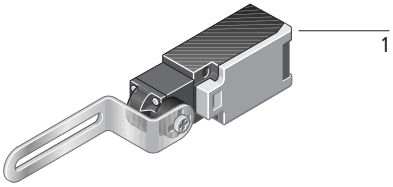
AT0...-ZBZ



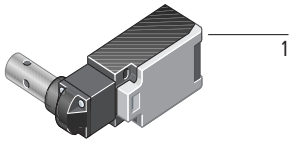
AT0...-ZB



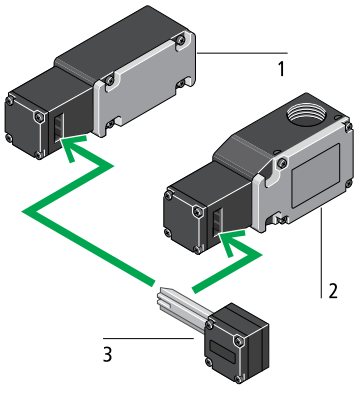
ATR-.../TKG



ATR-.../TS



AT4.../ZB



Safety Position Switches
System Overview

AT0...-ZBZ

Basic unit 1
- Spring or magnet-powered interlock
- For increased personnel and process protection
- Tamper-proof
- Triple-coded actuators

→ Page 03/024

Flat flexible actuators 2
- For doors that do not close precisely

→ Page 03/025

Angled flexible actuators 3
- For doors that do not close precisely

→ Page 03/025

Flat actuators 4
- For sliding doors

→ Page 03/025

Angled actuators 5
- For swing doors

→ Page 03/025

Flat compensating actuators 6
- For increased tolerance compensation in the direction of door closure

→ Page 03/025

Angled compensating actuators 7
- For increased tolerance compensation in the direction of door closure

→ Page 03/025

AT0...-ZB

Complete unit 1
- For personnel protection
- Number of contacts: 1B, 1M/1B or 2B
- 5 directions of operation possible
- With snap-on cover

→ Page 03/027

Actuators 2
- Triple-coding protection against tampering

ATR-.../TKG

Complete unit 1
- For personnel protection
- Number of contacts: 1M/1B or 2B
- For swing doors; unit permanently connected to the door

→ Page 03/026

ATR-.../TS

Complete unit 1
- For personnel protection
- Number of contacts: 1M/1B or 2B
- For swing doors; unit permanently fixed to the hinge pin

→ Page 03/026

AT4.../ZB

Complete unit 1
- Narrow version
- For personnel protection
- Number of contacts: 1B, 1M/1B

→ Page 03/027

Complete unit 2
- Wide version
- For personnel protection
- Number of contacts: 1B, 1M/1B, 1M/2B
- 3 × M20

→ Page 03/027

Actuators 3
- Triple coding
- For horizontal or vertical operation

Product attributes

- Interlocking device to EN 1088
- For use in safety circuits
- ⊖ Safety function by positive opening of contacts to IEC/EN 60 947-5-1
- Degree of protection IP65
- Operating head can be rotated by 4 × 90°
- With M20 × 1.5 connecting thread

totally insulated

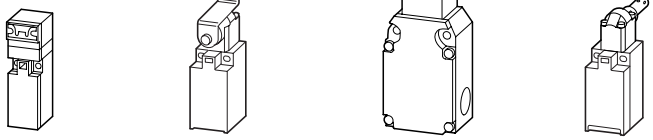
SUVA CNA INSAI

Safety Position Switches

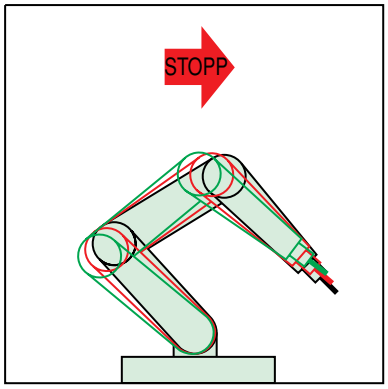
System Overview

Safety components for mobile protective mechanisms

AT0-ZB **ATR/TKG** **AT4/ZB** **ATR/TS**

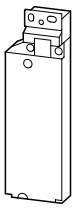


"Personnel protection" by monitoring the protective mechanism

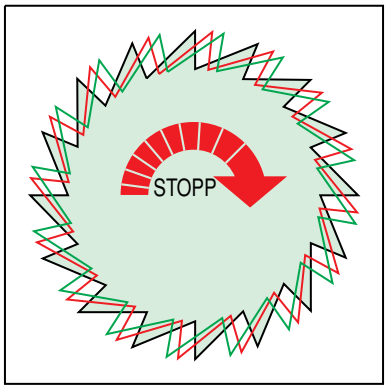


- Door open
- AT..-ZB disconnects power
- No danger

AT0-ZBZ

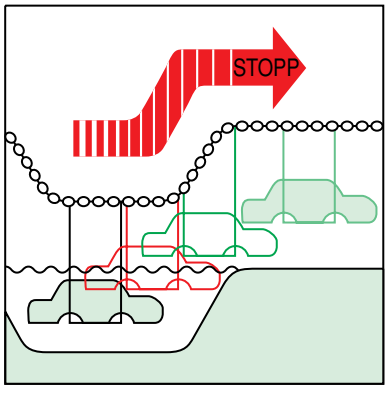


"Increased personnel protection" by monitoring and interlocking the protective mechanism



- Stop command
- Waiting time
- Machine stops
- Protective mechanism operates
- No danger

"Process protection"

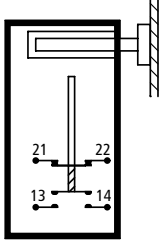


- Stop command
- Waiting time
- Process sequence halted
- Protective mechanism operates
- Product OK

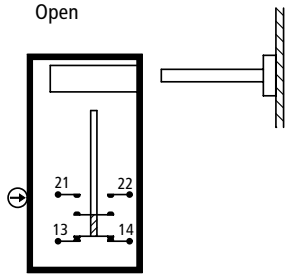
Safety Position Switches
System Overview

AT...-ZB

Closed



Open

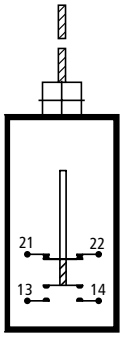


→ **Personnel protection**

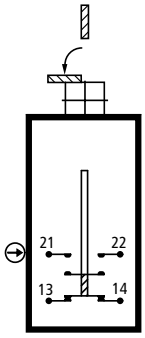
Opening of door	→ Positive opening of enabling contact (21–22)
Door open	→ Enabling contact safely open, even when attempts are made to tamper using simple tools
Closing of door	→ Triple-coded actuator closes the enabling contact

ATR-/TKG
ATR-/TS

Closed



Open

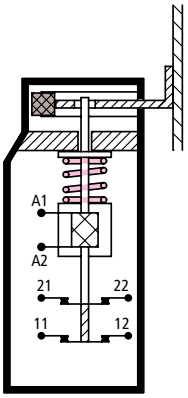


→ **Personnel protection**

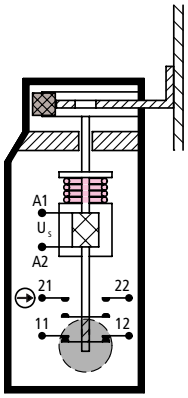
Opening of guard mechanism	→ Positive opening of enabling contact (21–22)
Guard mechanism open	→ Enabling contact safely open, even when attempts are made to tamper using simple tools
Closing of guard mechanism	→ Closes enabling contact (21–22)

AT0-02-...FT-ZBZ, spring-powered interlock (closed-circuit principle)

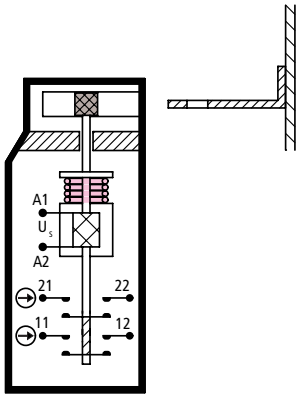
Interlocked



Released



Open

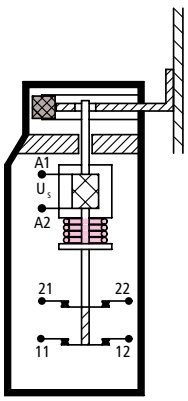


→ **Increased personnel protection with separate indication of door position**

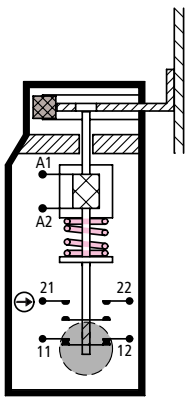
Door closed + interlocked	→ Coil de-energized: even with mains failure or wire breakage: door interlocked = safe status, enabling contacts (21–22) closed
To release door	→ Apply voltage to coil (A1, A2), e.g. via zero-speed monitor, enabling contact (21–22) opens
Opening of door	→ Only possible once it is released, door position contact (11–12) opens
Door open	→ Both contacts blocked in open position, even when attempts are made to tamper using simple tools
Closing of door	→ Triple-coded actuator cancels blocking of enabling contact, door position contact (11–12) closes
To interlock door	→ Disconnect coil voltage: 1. Actuator interlocked 2. Enabling contact closed → Enabling only possible with door interlocked

AT0-02-...MT-ZBZ, magnet-powered interlock (open-circuit principle)

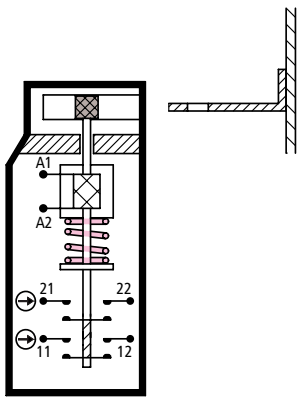
Interlocked



Released



Open

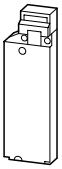
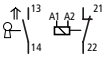
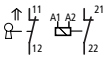
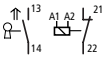
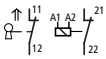
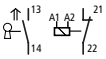
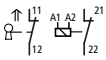
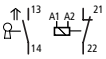
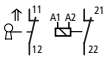
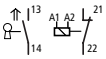
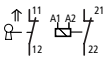
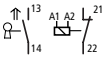
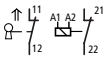


→ **Process protection + personnel protection with separate indication of door position**

Door closed + interlocked	→ Coil energized: rapid access possible in the event of mains failure or wire breakage. Both contacts closed
To release door	→ Switch off voltage to coil (A1, A2), e.g. via zero-speed monitor, enabling contact (21–22) opens
Opening of door	→ Only possible once it is released, door position contact (11–12) opens
Door open	→ Both contacts blocked in open position, even when attempts are made to tamper using simple tools
Closing of door	→ Triple-coded actuator cancels blocking of enabling contact, door position contact (11–12) closes
To interlock door	→ Apply coil voltage: 1. Actuator interlocked 2. Enabling contact closed → Enabling only possible with door interlocked

AT0-...-ZBZ Safety Position Switches

With Mechanical Securing Action and Separate Actuator

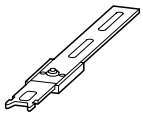
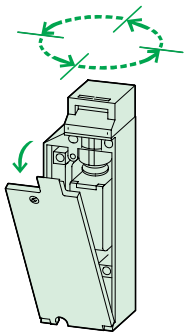
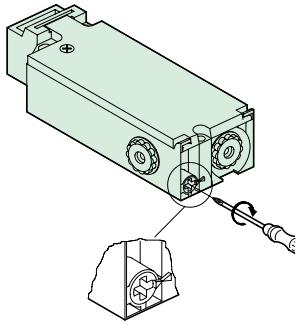
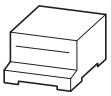
Contacts M = Make B = Break ⊖ = Safety function by positive opening of contacts to IEC/EN 60 947-5-1		Rated control voltage U_s of magnetic drive	**Type** Article no.	**Price** See Price List	Std. pack
Spring-powered interlock (closed-circuit principle) IP65[1]					
• With interlock monitoring and auxiliary release mechanism • Monitoring of door position: continuous					
					
1 M 1 B ⊖		24 V DC	**AT0-11-24DFT-ZBZ/X** 082826		1 off
– 2 B ⊖		24 V DC	**AT0-02-24DFT-ZBZ/X** 082827		
1 M 1 B ⊖		120 V 50/60 Hz	**AT0-11-120AFT-ZBZ/X** 082828		
– 2 B ⊖		120 V 50/60 Hz	**AT0-02-120AFT-ZBZ/X** 082829		
1 M 1 B ⊖		230 V 50/60 Hz	**AT0-11-230AFT-ZBZ/X** 082830		
– 2 B ⊖		230 V 50/60 Hz	**AT0-02-230AFT-ZBZ/X** 082831		
Magnet-powered interlock (open-circuit principle) IP65[2]					
• With interlock monitoring • Monitoring of door position: continuous					
1 M 1 B ⊖		24 V DC	**AT0-11-24DMT-ZBZ/X** 082832		1 off
– 2 B ⊖		24 V DC	**AT0-02-24DMT-ZBZ/X** 082833		
1 M 1 B ⊖		120 V 50/60 Hz	**AT0-11-120AMT-ZBZ/X** 082834		
– 2 B ⊖		120 V 50/60 Hz	**AT 0-02-120AMT-ZBZ/X** 082835		
1 M 1 B ⊖		230 V 50/60 Hz	**AT0-11-230AMT-ZBZ/X** 082836		
– 2 B ⊖		230 V 50/60 Hz	**AT0-02-230AMT-ZBZ/X** 082837		

Notes

[1] Time control of the release operation possible using ESR4-NT30-30 → 04/024

[2] Time control of the release operation possible using ESR4-NV30-30 → 04/024

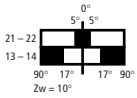
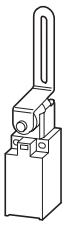
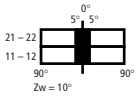
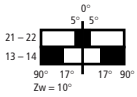
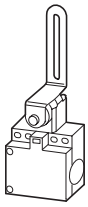
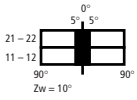
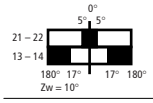
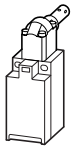
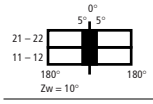
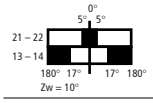
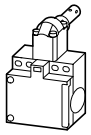
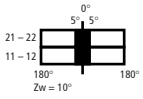
AT0-...-ZBZ Safety Position Switches
Actuators, Accessories

	Type Article no.	Price See Price List	Std. pack	Notes
Actuators For combination with AT0...-ZBZ/X basic units				
Flat actuator for sliding doors 	**G-ZBZ** 055728		1 off	Electrical circuitry with DIL contactors and ESR4 safety relays (Section 04), see Safety Manual TB0-009. Care should be taken during fitting and operation, that no foreign bodies penetrate the entry aperture of the actuator.
Angled actuator For swing doors 250 mm wide and over 	**W-ZBZ** 055727			
Angled, flexible actuator For doors that do not close precisely 	**F-ZBZ** 093744			
Flat, flexible actuator For doors that do not close precisely 	**FG-ZBZ** 082356			 The operating head can be rotated manually in 90° stages to match the specified plane of actuation.
Flat, compensating actuator With increased tolerance in the direction of closing For doors that do not close precisely 	**NG-ZBZ** 200232			
Angled, compensating actuator With increased tolerance in the direction of closing For doors that do not close precisely 	**NW-ZBZ** 200233			 In the event of a loss of voltage, e.g. during commissioning, the spring-powered AT0-..-...FT-ZBZ can be released by means of a screwdriver. The auxiliary release mechanism must be sealed! For degree of protection IP65, use M20 cable glands with up to 9.0 mm length of connecting thread (V-M20) .
Dust protection cap Prevents foreign bodies getting into the actuator head 	**SK-ZBZ** 203505		1 off	
PG 13,5 lock nut For use in AT0-ZBZ with PG13,5 cable glands	**GM-PG 13,5** 226343		10 off	

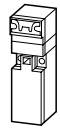
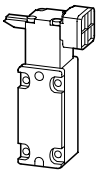
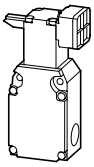
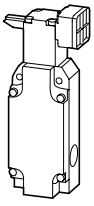
Accessories	Page
V-M20 cable gland	03/018

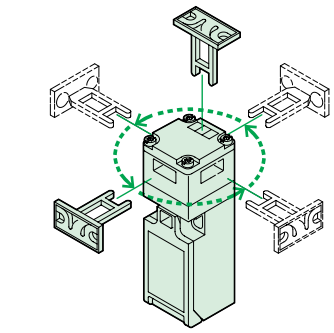
ATR-.../TKG Hasp-Operated and ATR-.../TS Hinge-Operated Safety Switches

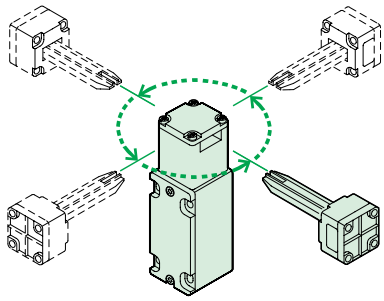
Complete Units

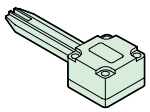
	Contacts M = Make B = Break ⊖ = Safety function by positive opening of contacts to IEC/EN 60 947-5-1		Contact sequence Contact ■ Closed □ Open Zw = Positive opening clearance	**Type** Article no.	**Price** See Price List	Std. pack
ATR-.../TKG hasp-operated safety switches, IP65						
Narrow version	1 M 1 B ⊖			**ATR-11-1-I/TKG** 205098		1 off
 	– 2 B ⊖			**ATR-02-1-I/TKG** 205099		
Wide version	1 M 1 B ⊖			**ATR-11-1-IA/TKG** 205101		
 	– 2 B ⊖			**ATR-02-1-IA/TKG** 205100		
ATR-.../TS hinge-operated safety switches IP65						
Narrow version	1 M 1 B ⊖			**ATR-11-1-I/TS** 206863		1 off
 	– 2 B ⊖			**ATR-02-1-I/TS** 206865		
Wide version	1 M 1 B ⊖			**ATR-11-1-IA/TS** 206868		
 	– 2 B ⊖			**ATR-02-1-IA/TS** 206867		

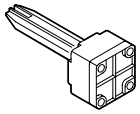
AT.../ZB Safety Position Switches
Complete Units

	Contacts M = Make B = Break ⊖ = Safety function by positive opening of contacts to IEC/EN 60 947-5-1		Type Article no.	Price See Price List	Std. pack	Notes
AT0...-ZB safety position switches, IP65						
• With actuator[1]						
	– 1 B ⊖		**AT0-01-1-ZB** 029378		1 off	Electrical circuitry with DIL contactors and ESR4 safety relays (Section 04), see Safety Manual TB0-009.
	1 M 1 B ⊖		**AT0-11-1-ZB** 029335			
	– 2 B ⊖		**AT0-02-1-ZB** 063970			
AT4...-ZB safety position switches, IP65						
• With actuator[1]						
Narrow version 	– 1 B ⊖		**AT4/01-1/I/ZB** 090675		1 off	
	1 M 1 B ⊖		**AT4/11-1/I/ZB** 014736			
Wide version 	– 1 B ⊖		**AT4/01-1/IA/ZB** 093048			
	1 M 1 B ⊖		**AT4/11-1/IA/ZB** 045585			
Wide, long version 	1 M 2 B ⊖		**AT4/12-7/IB/ZB** 063266			









Actuators can be repositioned to adapt to horizontal or vertical installation.

The operating heads can be rotated manually in 90° stages to match the specified plane of actuation. For degree of protection IP65 use M20 cable glands with up to 9.0 mm length of connecting thread (V-M20).

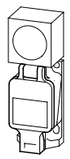
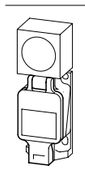
Note:
Care should be taken during mounting and operation, that no foreign bodies penetrate the entry aperture of the actuator.

Accessories	Page
V-M20 cable gland	03/018
M12 connector	03/019
Contact sequences	03/051, 053

Notes

[1] With the actuator inserted, the make contact is open and the break contact is closed.

ATI Inductive Proximity Switches

	Switching distance	Rated operational voltage	Maximum load current	Contacts	Style	Fitting in metal	**Moulded housing** with 2 m connecting cable[1] **Type** Article no.	**Price** See Price List	Std. pack
	S_n mm	U_e V	I_e mA	M = Make B = Break	Dimensions mm				
Three-wire DC proximity switches, – switching to + pole (PNP)									
	1.5	10 – 30	200	M	Cylinder M8 × 1	shielded	–		
	2	10 – 30	400	M	Cuboid 40 × 26 × 12	shielded can be grouped	**ATI1DQ** 030774		1 off
	2	10 – 30	400	M	Cylinder M12 × 1	shielded	**ATI12DR** 030775		
	2	10 – 60	400	M	Cylinder M12 × 1	shielded	–		
	5	10 – 30	400	M	Cylinder M18 × 1	shielded	**ATI18DR** 030776		
	5	10 – 60	400	M	Cylinder M18 × 1	shielded	–		
	10	10 – 30	400	M	Cylinder M30 × 1.5	shielded	**ATI30DR** 030777		
	10	10 – 60	400	M	Cylinder M30 × 1.5	shielded	–		
	20	10 – 60	400	M/B convertible	EN 50 041 120 × 40 × 40	shielded	**ATI1DN** 030778		
	40	10 – 60	400	M/B convertible	EN 50 041 120 × 40 × 40	unshielded	**ATI2DN** 030779		
Two-wire AC proximity switches, 50/60 Hz									
	2	90 – 250	180	M	Cuboid 40 × 26 × 12	shielded can be grouped	**ATI1AQ** 030768		1 off
	2	20 – 250	300	M	Cylinder M12 × 1	shielded	**ATI12AR** 030769		
	5	20 – 250	500	M	Cylinder M18 × 1	shielded	**ATI18AR** 030770		
	10	20 – 250	500	M	Cylinder M30 × 1.5	shielded	**ATI30AR** 030771		
	20	20 – 250	500	M/B convertible	EN 50 041 120 × 40 × 40	shielded	**ATI1AN** 030772		
	40	20 – 250	500	M/B convertible	EN 50 041 120 × 40 × 40	unshielded	**ATI2AN** 030773		

Notes

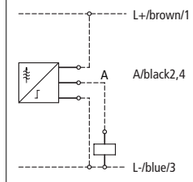
[1] Standard housing EN 50 041: connection via PG-13,5 cable entry
[2] Connectors SW-ATI, SG-ATI

ATI Inductive Proximity Switches

Metal housing with 2 m connecting cable **Type** Article no.	**Price** See Price List	Std. pack	**Metal housing** with plug-in connection[2] **Type** Article no.	**Price** See Price List	Std. pack
ATI8DMR 030780		1 off	**ATI8DMSR** 030784		1 off
–			–		
–			–		
ATI12DMR 030781			**ATI12DMSR** 030785		
–			–		
ATI18DMR 030782			**ATI18DMSR** 030786		
–					
ATI30DMR 030783			**ATI30DMSR** 030787		
–			–		
–			–		
–			–		
–			–		
–			–		
–			–		

All ATI...D... have an LED function display and protective functions against:
- Short circuit
- Overload
- Polarity reversal
- Wire breakage

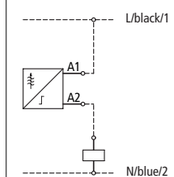
Connection diagram to IEC/EN 60 947-5-2:
Three-wire DC proximity switch:



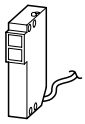
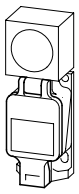
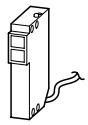
Accessories Page
Connectors 03/031

All ATI...A... have an LED function display

Connection diagram:
Two-wire AC proximity switch:



ATL Optical Proximity Switches

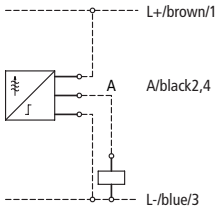
	Operating range S_d mm	Rated operational voltage U_e V DC	Maximum load current I_e mA	Contacts M = Make B = Break	Style Dimensions mm	**Type** Article no.	**Price** See Price List	Std. pack
Reflected-light beams								
	70	10 – 30	100	M	Cylinder metal M8 × 1 with 2 m connecting cable	**ATL8DMR** 065796		1 off
	150	10 – 30	200	M	Cylinder metal M12 × 1 with 2 m connecting cable	**ATL12DMR** 065798		
	500	10 – 60	200	M + B	Cuboid metal 66 × 44 × 12 with 2 m connecting cable 5 × 0.34 mm²	**ATL1DMQ** 065799		
	500	10 – 60	400	M/B convertible	EN 50 041 moulded 120 × 40 × 40 connection via PG13,5 cable entry	**ATL1DN** 065801		
Reflected-light barriers								
For combination with R...-ATL light-barrier reflectors								
	200 – 5000	10 – 60	200	M + B	Cuboid metal 66 × 44 × 12 with 2 m connecting cable 5 × 0.34 mm²	**ATL2DMQ** 065800		1 off

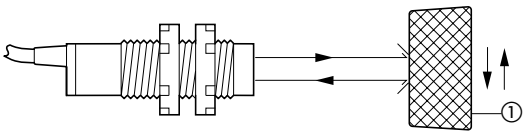
Notes

All ATL... have an LED function display, an adjustment and alignment facility, and protective functions against:

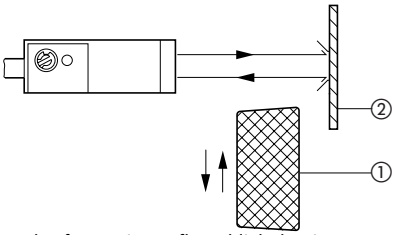
- Short circuit
- Overload
- Polarity reversal
- Wire breakage

Connection diagram:
ATL... with 2m connecting cable,
ATL1DN via PG13,5 cable entry



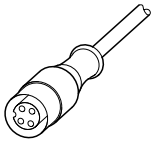
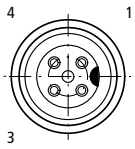
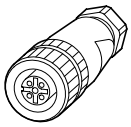


Mode of operation: reflected-light sensor

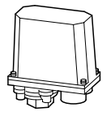


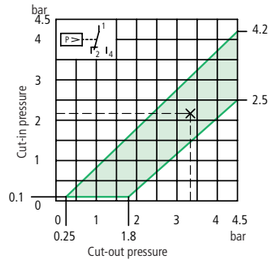
Mode of operation: reflected-light barrier
① Object
② Reflector

ATI Inductive Proximity Switches, ATL Optical Proximity Switches
Accessories

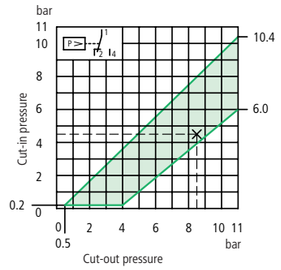
	For use with	Type Article no.	Price See Price List	Std. pack	
M12 connector,IP67					
With 2 m integral cable, 3 × 0.34 mm², U_i = 250 V					
Straight version 	ATI... DMSR	**SG-ATI** 030788		1 off	Connection diagram: Connectors:  1/BN/brown 4/BK/black 3/BU/blue
Angled version With two LEDs 	ATI... DMSR	**SW-ATI** 030789		1 off	
M12 screw connector, IP65					
Screw connection, for use with cable diameters ∅ 6 – 8 mm/max. 0.75 mm² U_i = 250 V					
Straight version 	ATI... DMSR	**M12A-G-AT** 206869		1 off	
Light-barrier reflector					
Diameter 40 mm 	ATL2DMQ	**R1-ATL** 065802		1 off	Objects to be sensed ≧ diameter of the reflector Double-sided adhesive tape (not supplied) required for installation
Diameter 80 mm 	ATL2DMQ	**R2-ATL** 065803		1 off	

MCS Pressure Switches
With Auxiliary Contacts, Pressure Pipe Flange R ¼''

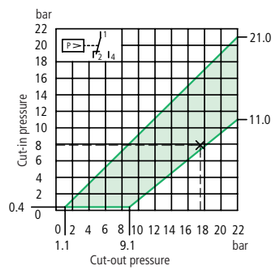
Preferred setting range from	to	Max. operating pressure	Variable switching differential Type Article no.	Price See Price List	Std. pack	Cut-out and cut-in pressure **each** infinitely variable. Pressures can be set to any point within the area of the pressure diagram for the appropriate switch.
bar	bar	bar				
Pressure switches, IP65						
						
1 changeover contact						
0.25	4.0	7.0	**MCS4** 019711		1 off	
0.25	4.0	7.0	**MCS4-G** 058693		1 off	
2 changeover contacts						
0.25	4.0	7.0	**MCS4-SOND910-G** 087792		1 off	
1 changeover contact						
2.0	10	15	**MCS11** 088527		1 off	
2.0	10	15	**MCS11-G** 058692		1 off	
2 changeover contacts						
2.0	10	15	**MCS11-SOND910-G** 087793		1 off	
1 changeover contact						
8.0	22	25	**MCS22** 098019		1 off	
8.0	22	25	**MCS22-G** 058691		1 off	
2 changeover contacts						
8.0	22	25	**MCS22-SOND910-G** 087794		1 off	



Min. switching differential: 0.15 bar
Example:
Cut-out pressure 3.3 bar
Cut-in pressure 2.2 bar



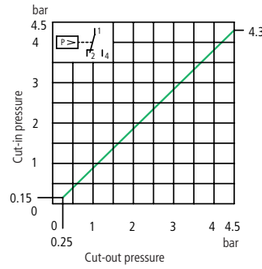
Min. switching differential: 0.3 bar
Example:
Cut-out pressure 8.5 bar
Cut-in pressure 4.5 bar

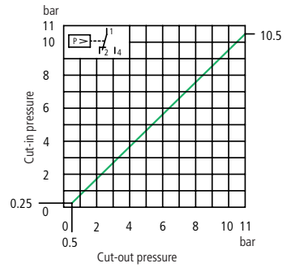


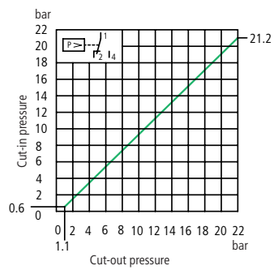
Min. switching differential: 0.7 bar
Example:
Cut-out pressure 17.5 bar
Cut-in pressure 7.8 bar

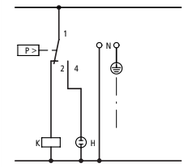
MCS Pressure Switches
With Auxiliary Contacts, Pressure Pipe Flange R ¼''

Fixed switching differential Type Article no.	Price See Price List	Std. pack	Cut-out pressure infinitely variable cut-in pressure according to characteristic
MCS4SONDOD 026830		1 off	
MCS11SONDOD 095646		1 off	
MCS22SONDOD 017338		1 off	









Notes

Features:

- Pressure pipe flange R ¼''
- If required,
  R ½'' pressure pipe flange
- IP65 in conjunction with V-M20 cable gland
- One insulated earth terminal ⏚
- One insulated N terminal prepared to support fitting of indicator light
- Two cable entry knockouts for M20
- Neoprene diaphragm resistant to ageing and to air, machine oil and water
  min. –25 °C, max. +80 °C

Please enquire regarding other types of resistance and also non-standard versions

Cut-in and cut-out pressures factory-set via type suffix, → Page 03/036.

R ¼'' corresponds to G ¼
R ½'' corresponds to G ½ to ISO 228-1

Auxiliary contacts to IEC/EN 60 947-1

MCS...-G:
Gold-plated contacts, particularly suitable for switching low voltages and currents from 5 V AC/DC, 1 mA

Accessories	Page
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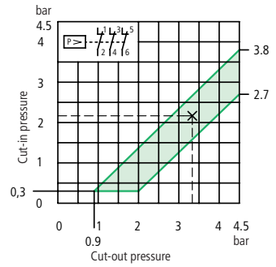
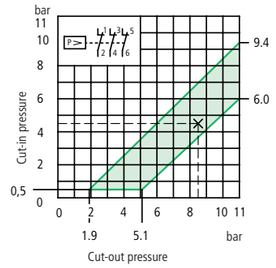
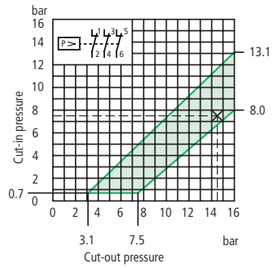
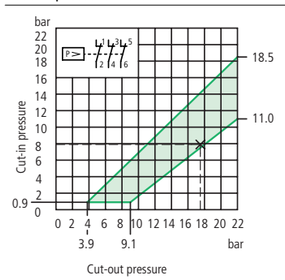
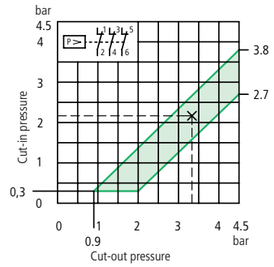
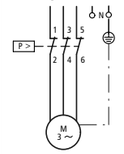
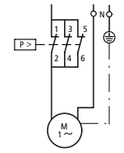
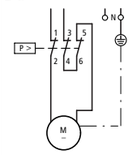
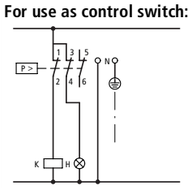
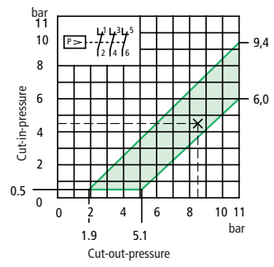
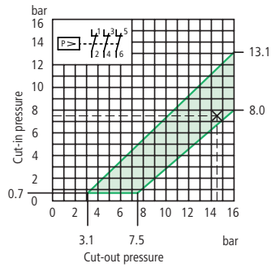
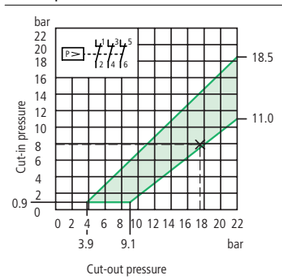
MCSN Pressure Switches
With Main Contacts, Pressure Pipe Flange R ½''

Preferred setting range from	to	Max. operating pressure	Variable switching differential Type	Price	Std. pack	Cut-out and cut-in pressure **each** infinitely variable. Pressures can be set to any point within the area of the pressure diagram for the appropriate switch.
bar	bar	bar	Article no.	See Price List		
Pressure switches IP65, 3-pole						
0.9	4.0	7.0	**MCSN4** 057679		1 off	 Min. switching differential: 0.6 bar Example: Cut-out pressure 3.3 bar Cut-in pressure 2.2 bar
2.0	10	15	**MCSN11** 029203		1 off	 Min. switching differential: 1.4 bar Example: Cut-out pressure 8.5 bar Cut-in pressure 4.5 bar
5.0	15	25	**MCSN16** 038695		1 off	 Min. switching differential: 2.4 bar Example: Cut-out pressure 14.5 bar Cut-in pressure 7.5 bar
8.0	22	25	**MCSN22** 048187		1 off	 Min. switching differential: 3.0 bar Example: Cut-out pressure 17.5 bar Cut-in pressure 7.8 bar

MCSN Pressure Switches
With Main Contacts, Pressure Pipe Flange R ½''

With relief valve Type	Price	Std. pack	Cut-out and cut-in pressure **each** infinitely variable. Pressures can be set to any point within the area of the pressure diagram for the appropriate switch.	Notes
Article no.	See Price List			
MCSN4-V 062425		1 off	 Min. switching differential: 0.6 bar Example: Cut-out pressure 3.3 bar Cut-in pressure 2.2 bar	Features: • MCSN...-V relief valve: fitted on the right with Ermeto gland for 6 mm diameter pipe, can also be supplied with relief valve fitted on the left if required; Ordering data: **MCSN...-VG** • With terminal cover as standard • One insulated earth terminal ⏚ One insulated N terminal • Two cable entry knockouts for M20, without cable gland • IP65 in conjunction with V-M20 cable gland • R ½'' pressure pipe flange • If required: R ¼'' pressure pipe flange • Neoprene diaphragm resistant to ageing and to air, machine oil and water min. –25 °C, max. +80 °C • Please enquire regarding other types of resistance and also non-standard versions R ¼'' corresponds to G ¼ R ½'' corresponds to G ½ to ISO 228-1 For use as motor load switch to IEC/EN 60 947-4-1 for: **Three-phase AC-3**  **Single-phase**  **DC**  **For use as control switch:**  Cut-in and cut-out pressures factory-set via type suffix, → Page 03/036
MCSN11-V 033949		1 off	 Min. switching differential: 1.4 bar Example: Cut-out pressure 8.5 bar Cut-in pressure 4.5 bar	
MCSN16-V 043441		1 off	 Min. switching differential: 2.4 bar Example: Cut-out pressure 14.5 bar Cut-in pressure 7.5 bar	
MCSN22-V 052933		1 off	 Min. switching differential: 3.0 bar Example: Cut-out pressure 17.5 bar Cut-in pressure 7.8 bar	

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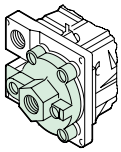
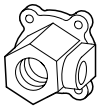
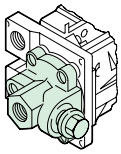
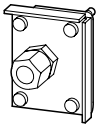
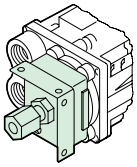
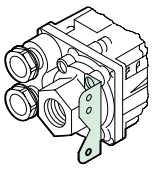
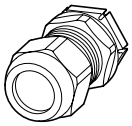
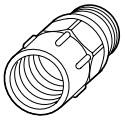
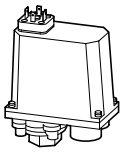
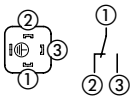
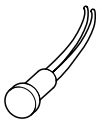
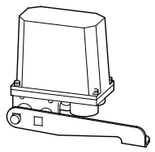
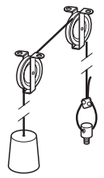
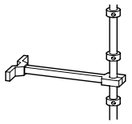
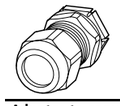
Pressure Switches
Accessories

	For use with	Type When ordered separately Article no.	Price See Price List	Type suffix When ordered with basic unit Article no.	Extra charge See Price List	Std. pack	
Pressure pipe flange Other than standard version							
	MCS with R ½"	**R1/2"-MCS** 031617		**+R1/2"-MCS** 001627		1 off	
	MCSN(-V) with R ¼"	**R1/4"-MCSN** 033990		**+R1/4"-MCSN** 001628		1 off	
Pressure pipe flange with pressure gauge connection							
	MCS, MCSN(-V)	**M-MCS** 071913		**+M-MCS** 001625		1 off	 Pressure gauge connection R ¼'', pressure gauge connection R ½'' as standard also applies to MCS
Compression fitting							
	MCS, MCSN	**E8-MCS** 040949		**+E8-MCS** 001624		1 off	 External thread diameter 8 mm Integral wall fixing bracket adjustable through 180°
Wall fixing bracket							
	MCS, MCSN	**W-MCS** 050665		**+W-MCS** 001631		1 off	 Bracket for wall fixing adjustable through 90° to right or left
Pressure setting Factory-set cut-in and cut-out pressures (figures to be inserted in brackets = pressure in bar)							
	MCS, MCSN	–		**+PMIN(*)/PMAX(*)** 203948		1 off	**Example:** **MCS4 + PMIN (2,2)/PMAX(3,3)**

Pressure Switches
Accessories

	For use with	Colour	Type When ordered separately Article no.	Price See Price List	Type suffix When ordered with basic unit Article no.	Extra charge See Price List	Std. pack
Metric cable gland, M20 to EN 50 262 With lock nut and built-in strain relief IP68 up to 5 bar, halogen-free External diameter of cable 6 – 13 mm							
	MCS, MCSN		**V-M20** 206910		–		20 off
Adapter to convert PG 13,5 to M20, IP65 For PG 13,5 cable glands Moulded							
	MCS, MCSN		**VPG13,5/M20** 225268		–		10 off
External device plug, IP65 3-pole plus earth For socket adapters to DIN 43 650-A/ISO 4400							
	MCS..., MCS...-G (not SOND910)		–		**+S3-MCS** 201854		1 off
Plug configuration: 							
Indicator lights Supplied with transparent MCS shroud (neon bulb for 220 – 240 V AC)							
	MCS...	○	–		**+L-WS-220V-MCS** 001639		1 off
	MCS...	●	–		**+L-GN-220V-MCS** 001633		
	MCS...	●	–		**+L-RT-220V-MCS** 001636		

Float Switches

	Type Article no.	Price See Price List	Std. pack	
Float switches, IP65				
	**SW** 088594		1 off	
Moulded floats To be filled with sand or liquid				
	**SK-SW** 012651		1 off	
Cable operation				
	**SBO-SW** 045869		1 off	Set of accessories, without float for cable operation, consists of: • 1 cable eye bolt • 2 guide pulleys • 4 cable clamps incl. screws • 10 m steel cable (plastic sheathed) • 1 counterweight
Rod operation				
	**STO-SW** 069608		1 off	Set of accessories, without float for rod operation, consists of: • 1 bracket • 3 clamp rings • 1 operating rod (plastic 1.20 m) • 2 hexagonal nuts (plastic)
Metric cable gland, M20 to EN 50 262 With lock nut and built-in strain relief IP68 up to 5 bar, halogen-free External diameter of cable 6 – 13 mm				
	**V-M20** 206910		20 off	
Adapter to convert PG 13,5 to M20, IP65 For PG 13,5 cable glands Moulded				
	**VPG13,5/M20** 225268		10 off	

Float Switches

Notes

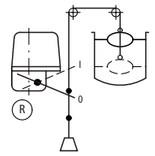
Standard features
- Lever can be transposed to reverse contact operation
- One insulated earth terminal ⏚, one insulated N terminal
- Shroud: impact-resistant, grey
- Two cable entry knockouts for M20, without cable gland
- IP65 in conjunction with V-M20 cable gland
- Bracket for wall fixing
- Mounting position as required

Transposing the operating lever or repositioning the fulcrum reverses contact operation as required on site:

Cable operation

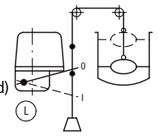
Filling

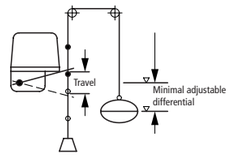
Fulcrum right



Emptying

Fulcrum left (as supplied)



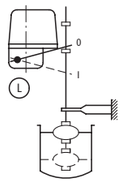


The operating force is produced by the weight of the float and the counterweight, and is transferred to the switch lever via the cable clamps on the steel cable.

Rod operation

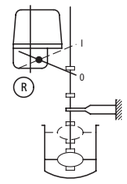
Filling

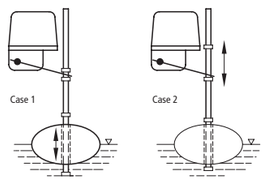
Fulcrum left (as supplied)



Emptying

Fulcrum right

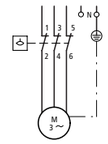




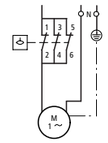
The operating rod can be affixed firmly either to the actuating lever of the float switch, as in Case 1, or to the float itself (Case 2). In Case 1, the float takes the rod and actuating lever with it. In Case 2, the float and rod carry the actuating lever. The latter version should be used with dirty-water pumps.

For use as motor load switch for:

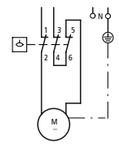
Three-phase AC-3



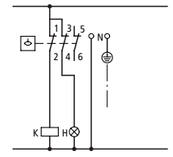
Single-phase



DC



For use as control switch:



Material:
Float, operating rod and cable sheath of tough plastic.

They are proof against:

- Tap water, river and sea water up to 100 °C
- De-ionized water up to 100 °C
- Brine up to 100 °C
- Acids (10 %) up to 40 °C
- Alkalis (10 %) up to 40 °C

Operating play:
Minimum play at actuating lever: 24 mm

Position Switches, Safety Position Switches
Technical Data

Position switches				AT0...[3]	ATR...	AT4...
Contacts/switching capacity						
Rated impulse withstand voltage U_{imp}			V	6000	6000	6000
Rated insulation voltage U_i			V	500	500	500
Overvoltage category/pollution degree				III/3	III/3	III/3
Rated operational current I_e						
AC-15	24 V		A	10	10	10
	230 V		A	6	6	6
	400 V		A	4	4	4
	500 V		A	2	2	2
DC-13	24 V DC		A	10	10	10
	110 V DC		A	1	1	1
	220 V DC		A	0.5	0.5	0.4
Supply frequency			Hz	≦ 400	≦ 400	≦ 400
Short-circuit rating in the closed state (IEC/EN 60 947-5-1)						
Fuseless			Type	PKZM0-10, FAZ-B6	PKZM0-10, FAZ-B6	PKZM0-10, FAZ-B6
Maximum fuse			A gG/gL	10	10	10
Short-circuit rating to IEC/EN 60 947-5-1						
Maximum fuse			A gG/gL	6	6	6
Repetition accuracy of switching point			mm	± 0.02	± 0.02	± 0.02
Mechanical variables						
Lifespan						
Standard-action contact		Operations	× 10^6	20[2]	20[2]	20
Snap-action contact		Operations	× 10^6	20[2]	20[2]	20
Contact temperature of roller head			°C	≦ 100	≦ 100	≦ 100
Mechanical shock resistance (shock duration 20 ms)						
Standard-action contact			g	25	25	5
Snap-action contact			g	2	2	2
Actuating frequency			Ops./h	6000	6000	6000
Dimensions				→ Page 03/046	→ Page 03/047, 052	→ Page 03/048
Actuation						
Mechanical						
Actuating force at beginning/end of stroke						
	Basic units		N	1.0/8.0	1.0/8.0	–
	S		N	–	–	8.0/20.0
	RS		N	1.0/8.0	–	8.0/20.0
	AR (WR)		N	1.0/8.0	–	3.0/9.0
	ARG-ATR, ARK-ATR		N	1.0/8.0	1.0/8.0	–
	ZB/ZBZ (push in/pull out)		N	–	–	–
Mechanical holding force	ZBZ/G; ZBZ/W		N	–	–	–
	ZBZ/F; ZBZ/NW		N	–	–	–
	ZBZ/FG; ZBZ/NG		N	–	–	–
Actuating torque of rotary drives			Nm	0.2	–	0.3
Max. operating speed with DIN cam		Angle of actuation				
	Basic units	(α = 0°/30°)	m/s	1/0.5	1/1	–
	R	(α = 30°)	m/s	1.5	–	1.8
	V	(α = 30°, L = 125 mm)	m/s	1.5	–	1.4
	H	(L = 130 mm)	m/s	1.5	–	1.4
	AR	(α = 30°/45°)	m/s	1	–	1.5/1
	ARG-ATR	(α = 30°, β = 45°)	m/s	–	1.5/1	–
	ARK-ATR	(α = 30°)	m/s	–	1	–
	WR	(α = 30°)	m/s	1	–	–
	RS, ZRS	(α = 0°/30°)	m/s	1/1	–	0.5/0.5
	S, ZS	(α = 0°/30°)	m/s	1/0.5	–	0.5
Electromechanical						
For magnet	AC voltage (50/60 Hz)		V/VA	–	–	–
			V/VA	–	–	–
	DC voltage		V/W	–	–	–
Voltage tolerance				–	–	–
Magnet duty factor			DF	–	–	–

Position Switches, Safety Position Switches
Technical Data

AT4/.../ZB	AT0-...-ZB	AT0-...ZBZ
6000	6000[1]	4
500	500[1]	400
III/3	III/3	III/3
10	10	6
6	6	6
4	4	4
2	2	–
10	10	10
1	1	1
0.5	0.5	0.5
≦ 400	≦ 400	≦ 400
PKZM0-10, FAZ-B6	PKZM0-10, FAZ-B6	PKZM0-10, FAZ-B6
10	10	10
6	6	6
–	–	–
10	10	1
–	–	–
–	–	–
5	25	10
–	–	–
1800	1800	800
→ Page 03/053	→ Page 03/051	→ Page 03/050
–	–	–
–	–	–
–	–	–
–	–	–
–	–	–
15/20	10/5	25/15
–	–	2000
–	–	1000
–	–	1800
–	–	–
–	–	–
–	–	–
–	–	–
–	–	–
–	–	–
–	–	–
–	–	–
–	–	–
–	–	–
–	–	–
–	–	230/11
–	–	120/8
–	–	24/8
–	–	0.85 – 1.1 × U_s
–	–	100 %

General technical data

Standards	IEC/EN 60 947	
Climatic proofing	Damp heat, constant to IEC 60 068-2-3, cyclical to IEC 60 068-2-30	
Ambient temperature min./max. °C	–25/+70 (**AT0-...ZBZ:** –25/+40)	
Mounting position	As required	
Degree of protection	IP65	
Weight	→ Page 15/022	
Terminal capacity		
1 conductor, solid	min./max.	0.75/2.5 mm²
1 conductor, flexible	min./max.	0.5/1.5 mm²
2 conductors, solid	min./max.	0.75/1.5 mm²
2 conductors, flexible	min./max.	0.5/1.5 mm²

Notes

[1] AT0-02-1-ZB: U_{imp} = 4 kV, U_i = 400 V
[2] AT...-I(IA) at lateral operation: 6 × 10^6
.../WR: 15 × 10^6
.../F: 6 × 10^6
.../ZS: 1 × 10^6
.../TKG: 1 × 10^6
.../TS: 1 × 10^6
[3] AT0-11-S1...:
AC-15: 230 V/3 A
DC-12: 24 V/4 A

ATI Inductive Proximity Switches
Technical Data

Inductive proximity switches		Three-wire DC proximity switches (PNP) in moulded housings					
		ATI1DQ	ATI12DR	ATI18DR	ATI30DR	ATI1DN	ATI2DN
General technical date							
Standards		IEC/EN 60 947-5-2, EN 50 081-2, EN 50 082-2					
Ambient temperature	Min./Max. °C	–25/+70					
Degree of protection		IP67					
Dimensions		→ Page 03/054					
Characteristics							
Rated switching distance S_n	mm	2	2	5	10	20	40
Repetition accuracy of S_n	%	< 10	< 10	< 5	< 5	< 5	< 5
Temperature drift of S_n	%	< 10	< 10	< 10	< 10	< 10	< 10
Switching hysteresis of S_n	%	< 15	< 15	< 15	< 15	< 20	< 20
Rated operational voltage U_e	V	10 – 30 DC	10 – 30 DC	10 – 30 DC	10 – 30 DC	10 – 60 DC	10 – 60 DC
Supply frequency f_n	Hz	–	–	–	–	–	–
Residual ripple of U_e	%	< 10	< 10	< 10	< 10	< 10	< 10
Operational current I_b							
In the switched state at 24 V DC	mA	< 18	< 18	< 18	< 10	< 15	< 15
Rated current/max. load current I_e	mA	400	400	400	400	400	400
Voltage drop U_d at I_e	V	< 2.2	< 2.4	< 2.4	< 2.4	< 2.4	< 2.4
Readiness delay t_v	ms	< 50	< 50	< 50	< 50	< 50	< 50
Max. operating frequency f (resistive load)	Hz	800	2000	1000	500	150	100
Min. load current I_e	mA	–	–	–	–	–	–
Short-time current (20 ms, 1Hz)	A	–	–	–	–	–	–
Residual current I_r							
Through the load in the blocked state at 230 V AC and 24 V DC	mA	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Function display		LED	LED	LED	LED	3 LED	3 LED

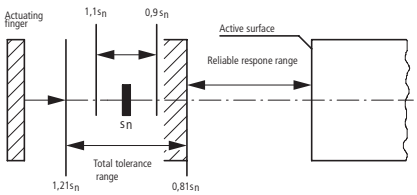
Rated switching distance S_n [mm] with ATI

In accordance with the Standards, the rated switching distance S_n refers to a steel flag St37, 1 mm thick and dimensions W × H.

ATI...R: W × H = diameter of device
ATI...N(Q): W × H = length of edge

– Deviation in the type, size and shape of the approaching metal object
– Ambient temperature
– Different alloys

Ideal band



Correction factors for ATI:

Steel St 37	1.0	× S_n
Nickel chrome	approx. 0.9	× S_n
Brass	approx. 0.5	× S_n
Aluminium	approx. 0.45	× S_n
Copper	approx. 0.4	× S_n
Galvanized sheet steel	approx. 0.85	× S_n

ATI Inductive Proximity Switches
Technical Data

Three-wire DC proximity switches (PNP) in metal housings				Two-wire AC proximity switches in moulded housings					
ATI8DMR ATI8DMSR	**ATI12DMR ATI12DMSR**	**ATI18DMR ATI18DMSR**	**ATI30DMR ATI30DMSR**	**ATI1AQ**	**ATI12AR**	**ATI18AR**	**ATI30AR**	**ATI1AN**	**ATI2AN**
IEC/EN 60 947-5-2, EN 50 081-2, EN 50 082-2				IEC/EN 60 947-5-2, EN 50 081-2, EN 50 082-2					
–25/+70				–25/+70					
IP67				IP67					
→ Page 03/054				→ Page 03/054					
1.5	2	5	10	2	2	5	10	20	40
< 10	< 10	< 5	< 5	< 10	< 10	< 10	< 10	< 5	< 5
< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15
10 – 30 DC	10 – 60 DC	10 – 60 DC	10 – 60 DC	90 – 250 AC	20 – 250 AC	20 – 250 AC	20 – 250 AC	20 – 250 AC	20 – 250 AC
–	–	–	–	50 – 60	50 – 60	50 – 60	50 – 60	50 – 60	50 – 60
< 10	< 10	< 10	< 10	–	–	–	–	–	–
< 10	< 10	< 10	< 10	–	–	–	–	–	–
200	400	400	400	180	300	500	500	500	500
< 2,4	< 2,4	< 2,4	< 2,4	< 12	< 5	< 5	< 5	< 5	< 5
< 50	< 50	< 50	< 50	< 300	< 300	< 300	< 300	< 300	< 300
2000	2000	1000	500	25	15 (150 mA)	15 (150 mA)	15 (150 mA)	15 (150 mA)	15 (150 mA)
–	–	–	–	5	2	2	2	2	2
–	–	–	–	1	2	8	8	8	8
< 0,01	< 0,01	< 0,01	< 0,01	< 3	< 2	< 2	< 2	< 2	< 2
LED	2 LED	2 LED	2 LED	LED	LED	LED	LED	2 LED	2 LED

ATL Optical Proximity Switches
Technical Data

Optical Proximity Switches		Three-wire DC version (PNP)				
		ATL8MDR	ATL12DMR	ATL1DMQ	ATL1DN	ATL2DMQ
General technical data						
Standards		IEC/EN 60 947-5-2, EN 50 081-2, EN 50 082-2				
Ambient temperature	Min./Max. °C	0/+60				
Degree of protection		IP65				
Dimensions		→ Page 03/055				
Characteristics						
Function principle		Beam	Beam	Beam	Beam	Barrier
Operating range S_d	mm	70	150	500	500	200 – 5000
Temperature drift of S_d	%	< 10	< 10	< 10	< 10	< 10
Rated operational voltage U_e	V	10 – 30 DC	10 – 30 DC	10 – 60 DC	10 – 60 DC	10 – 60 DC
Residual ripple of U_e	%	< 10	< 10	< 10	< 10	< 10
Operational current I_b						
In the switched state at 24 V DC	mA	< 20	< 30	< 30	< 30	< 30
Rated current/max. load current I_e	mA	100	200	200	400	200
Voltage drop U_d at I_e	V	< 1.5	< 2.5	< 3	< 3	< 3
Readiness delay t_v	ms	< 50	< 50	< 50	< 50	< 50
Max. operating frequency f (resistive load)	Hz	250	250	250	150	250
Residual current I_r						
Through the load in the blocked state at 24 V DC	mA	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01
Signal output; current-limited	mA	–	–	5	50	5
Setting/adjusting aid		Yes	Yes	Yes	Yes	Yes
Function display		LED	LED	LED	3 LED	LED

Operating range S_d [mm] with ATL

The operating range is defined in accordance with IEC/EN 60 947-5-2. With reflected-light beams, this is based on a white paper with 90% reflectivity and
– 100 mm edge length at $S_d <$ 400 mm
– 200 mm edge length at $S_d \geqq$ 400 mm

Correction factors for ATL as a reflected-light beam:

Paper white, matt, 200 g/m²	$1.0 \times S_d$
Metal, shiny	$1.2...1.6 \times S_d$
Aluminium, black anodized	$1.1...1.8 \times S_d$
Expanded polystyrene, white	$1 \times S_d$
Cotton material, white	$0.6 \times S_d$
PVC, grey	$0.5 \times S_d$
Wood, untreated	$0.4 \times S_d$
Cardboard, black, gloss	$0.3 \times S_d$
Cardboard, black, matt	$0.1 \times S_d$

Short-circuit protection monitored

DC-operated proximity switches are proof against short circuit. The device is not damaged by the effects of a short circuit, no matter how long its duration. Once the fault has been cleared, the switch is immediately ready for operation again.

MCS(N) Pressure Switches, SW Float Switches
Technical Data

Pressure Switches, Float Switches		MCS	MCSN	SW
Mechanical variables				
Lifespan At 50 % – 12 % pressure differential				
Operations	× 10^6	1 – 2	0.5	0.5
Terminations				
Terminal capacity				
1 conductor, solid, min./max.	mm^2	0.75/2.5	0.75/2.5	0.75/2.5
1 conductor, flexible, min./max.	mm^2	0.5/1.5	0.5/1.5	0.5/1.5
2 conductors, solid, min./max.	mm^2	–	0.75/2.5	0.75/2.5
2 conductors, flexible, min./max.	mm^2	–	0.5/1.5	0.5/1.5
Terminal		Tunnel terminal	Flat terminal with clamping washer	
Terminal screw		M3	M4	M4
Tightening torque of terminal screw	Nm	0.5	1.2	1.2
Contacts/switching capacity				
Rated impulse withstand voltage U_{imp}	V	4000	4000	4000
Rated insulation voltage U_i	V	400	400	400
Overvoltage category/ pollution degree		III/3	III/3	III/3
Max. short-circuit protective device				
Fuseless	Type	PKZ2/ZM6	PKZ2/ZM16	PKZ2/ZM16
Maximum fuse	A gG/gL	10	20	20
Type of coordination		–	1	1
Rated operational current I_e				
AC-15 230 V	A	2	–	–
AC-3 230 V	A	–	15	15
AC-3 400 V	A	–	11.5	11.5
DC-13 24 V	A	2	–	–
DC-13 110 V	A	0.5[1)]	–	–
Rated frequency	Hz	50	50	50
Rated power P				
AC-3 230 V	kW	–	4	4
AC-3 400 V	kW	–	5.5	5.5

Notes [1)] ...SOND910-G: 0.25 A

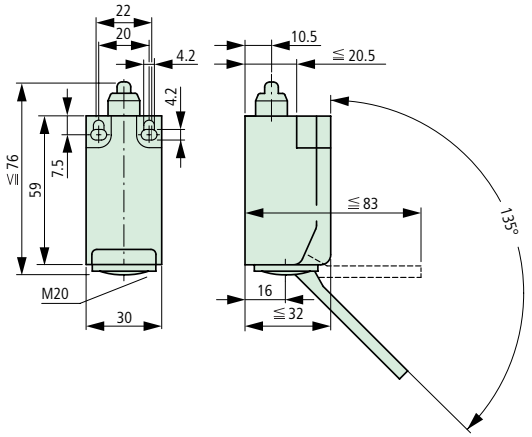
General technical data		
Standards		IEC/EN 60 947-4-1 (**MCS:** IEC/EN 60 947-5-1)
Test pressure	bar	32
Rupturing pressure	bar	90
Maximum actuating frequency	Ops./h	1500 (**MCS:** 3000)
Climatic proofing		Damp heat, constant, to IEC 60 068-2-3, cyclical, to IEC 60 068-2-30
Ambient temperature		
Min./Max.	°C	–25/+70
Degree of protection		IP65
Mounting position		As required
Mechanical shock resistance g (shock duration 20 ms)		>10
Vibration resistance (1mm amplitude)	Hz	36
Dimensions		→ Page 03/056, 057
Weight		→ Page 15/022

AT0 Position Switches

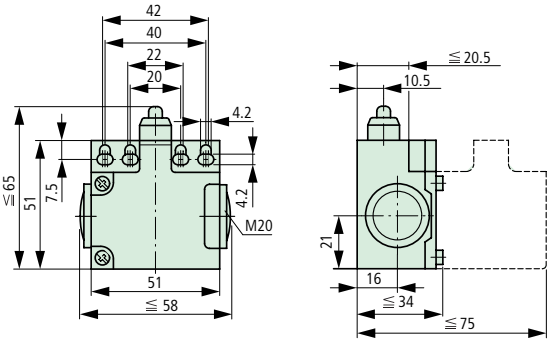
Dimensions

Position switches

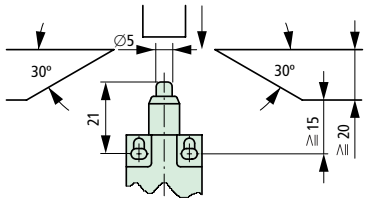
AT0-...-...-I



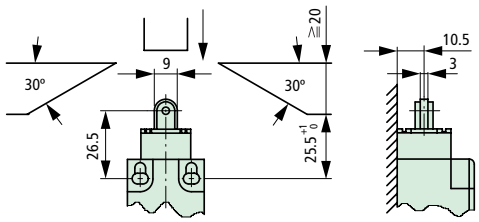
AT0-...-...-IA



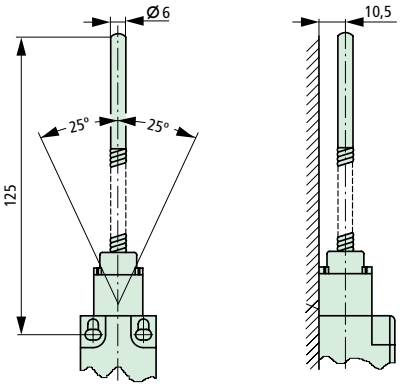
AT0-...-...-I(A)



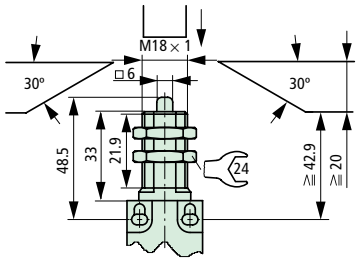
AT0-...-...-I(A)/RS



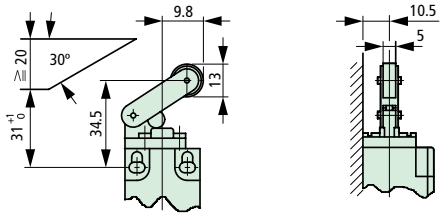
AT0-11-S-I(A)/F



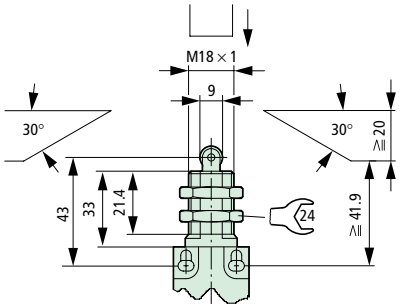
AT0-...-...-I(A)/ZS



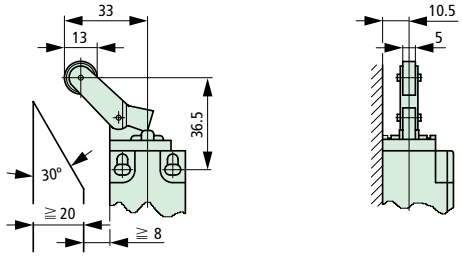
AT0-...-...-I(A)/AR



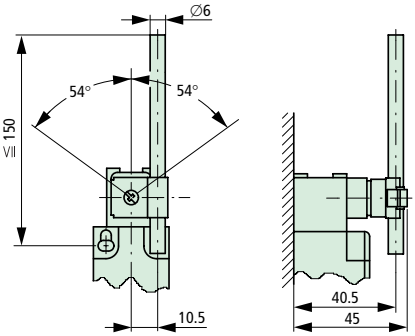
AT0-...-...-I(A)/ZRS



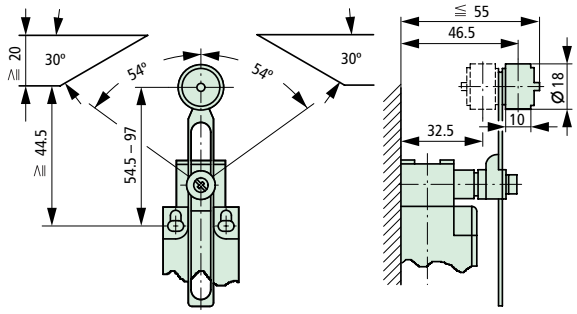
AT0-...-...-I/WR



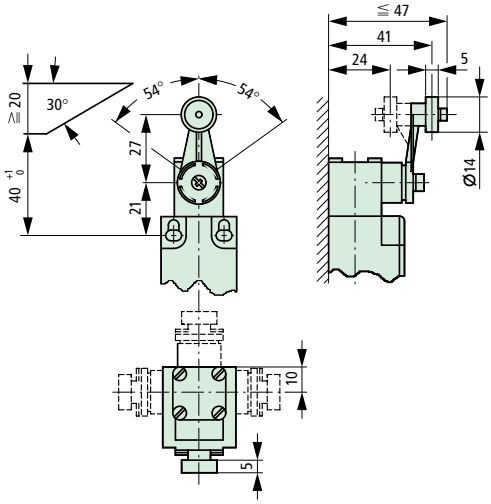
AT0-...-...-I(A)/H



AT0-...-...-I(A)/V



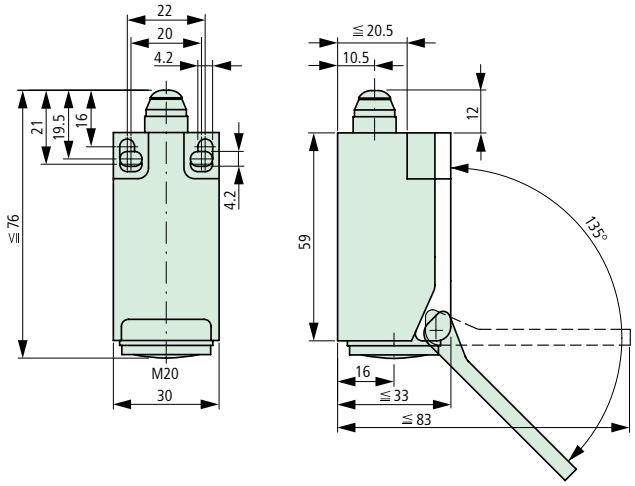
AT0-...-I(A)/R



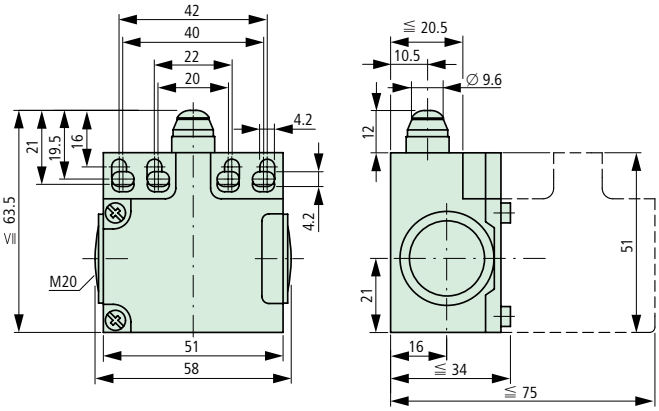
ATR Position Switches
Dimensions

Position switches

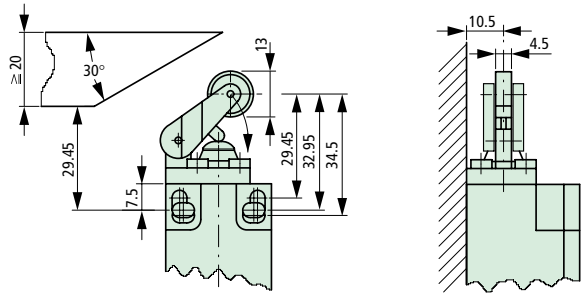
ATR-…-…-I



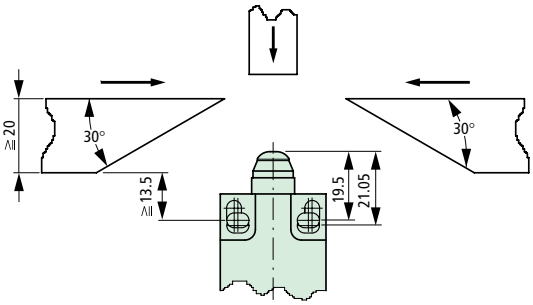
ATR-…-…-IA



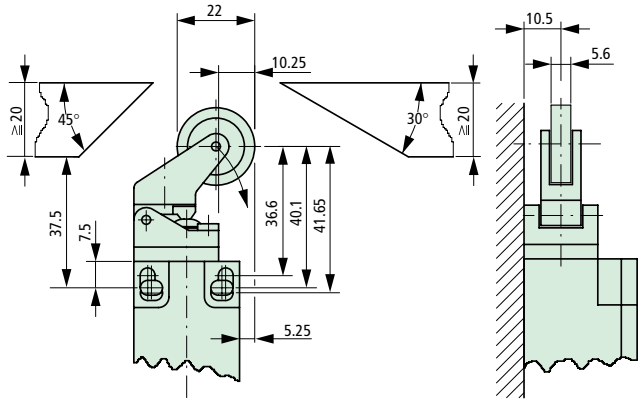
ATR-...-...-I(A)/ARK



ATR-...-...-I(IA)

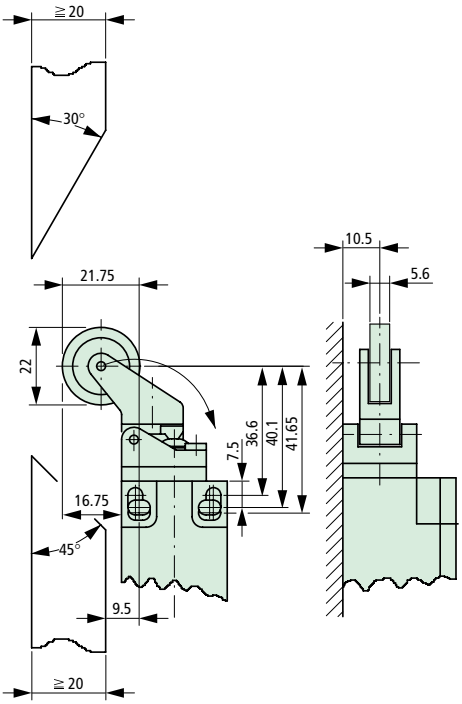


ATR-...-...-I(IA)/ARG

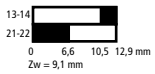


ATR-...-...-I/ARG

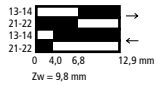
Roller head turned through 180°, when fitted in this way, produces different operating paths



ATR-11-1-I/ARG



ATR-11-S-I/ARG



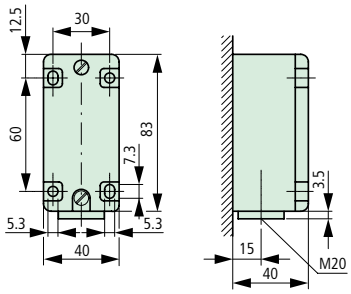
Contact
■ Closed
□ Open
Zw = Positive opening clearance

AT4 Position Switches

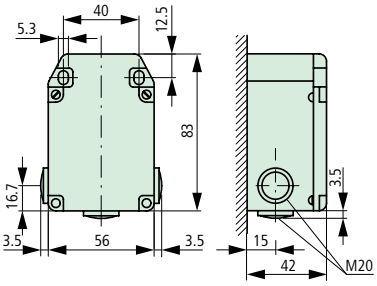
Dimensions

Position switches

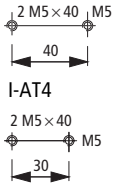
I-AT4



IA-AT4

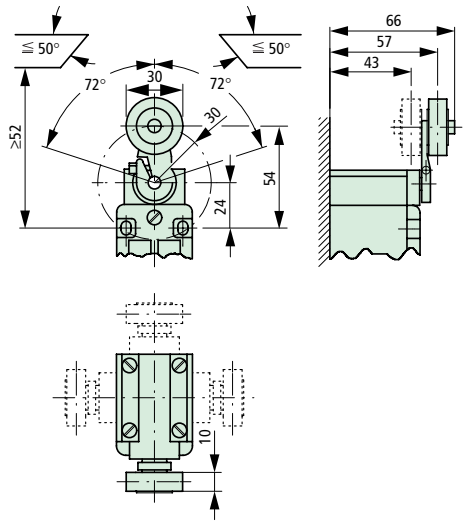


IA-AT4

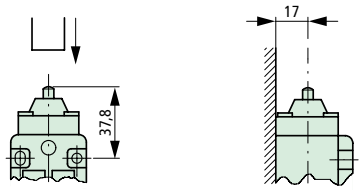


I-AT4

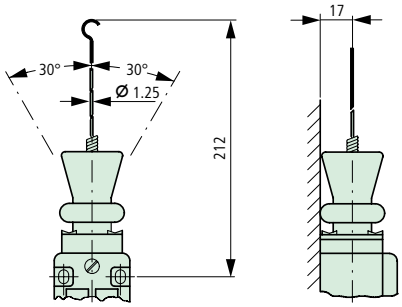
AT4/-...-.../I(IA)/R316



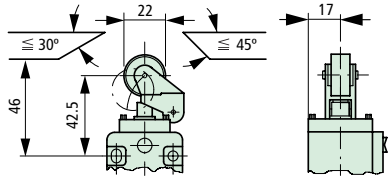
AT4/.../-.../I(IA)/S



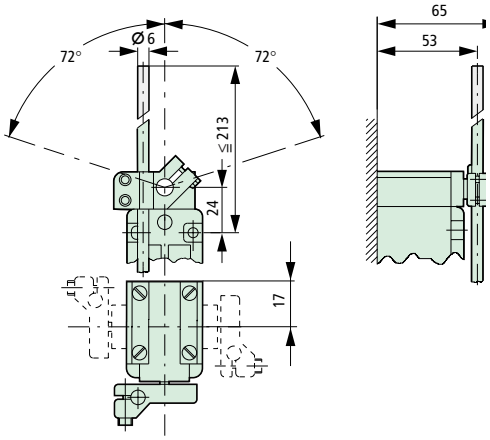
AT4/11-S/I(IA)/F



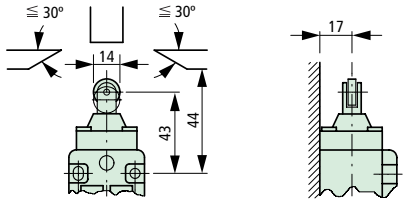
AT4/...-.../I(IA)/AR



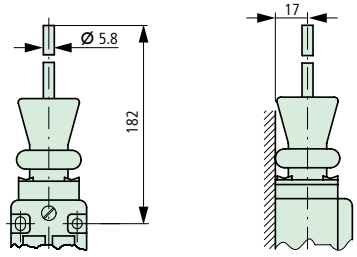
AT4/-...-.../I(IA)/H



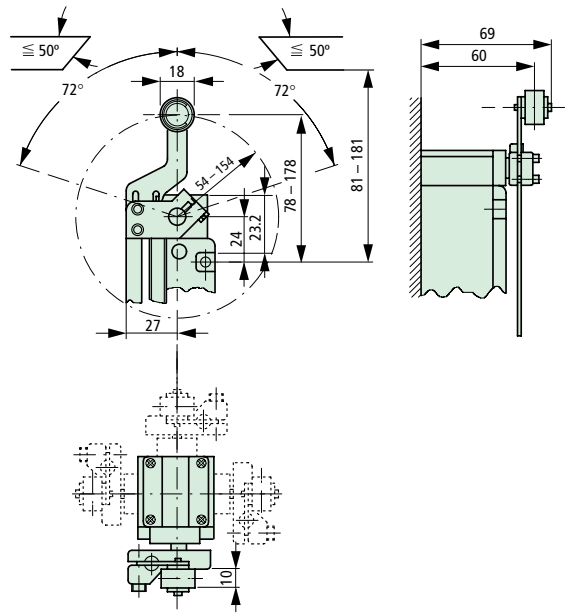
AT4/...-.../I(IA)/RS



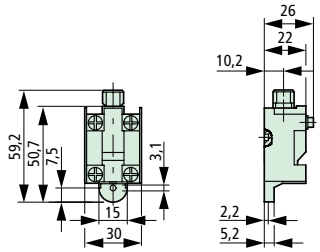
AT4/11-S/I(IA)/F2



AT4/-...-.../I(IA)/V

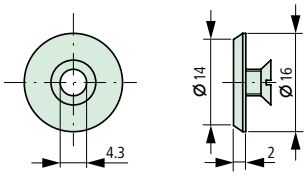


ATB11-...

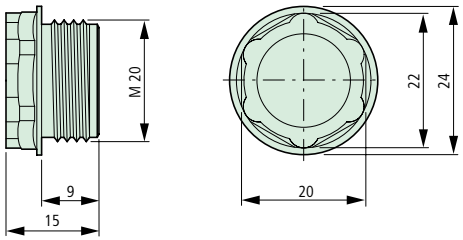


AT... Accessories
Dimensions

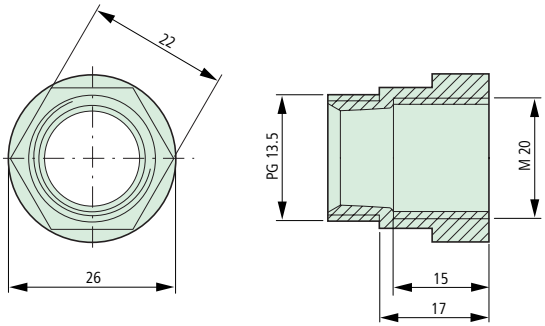
AT locating plate
FS-AT



Diaphragm bolt
EMS20



Adapter
VPG13,5/M20

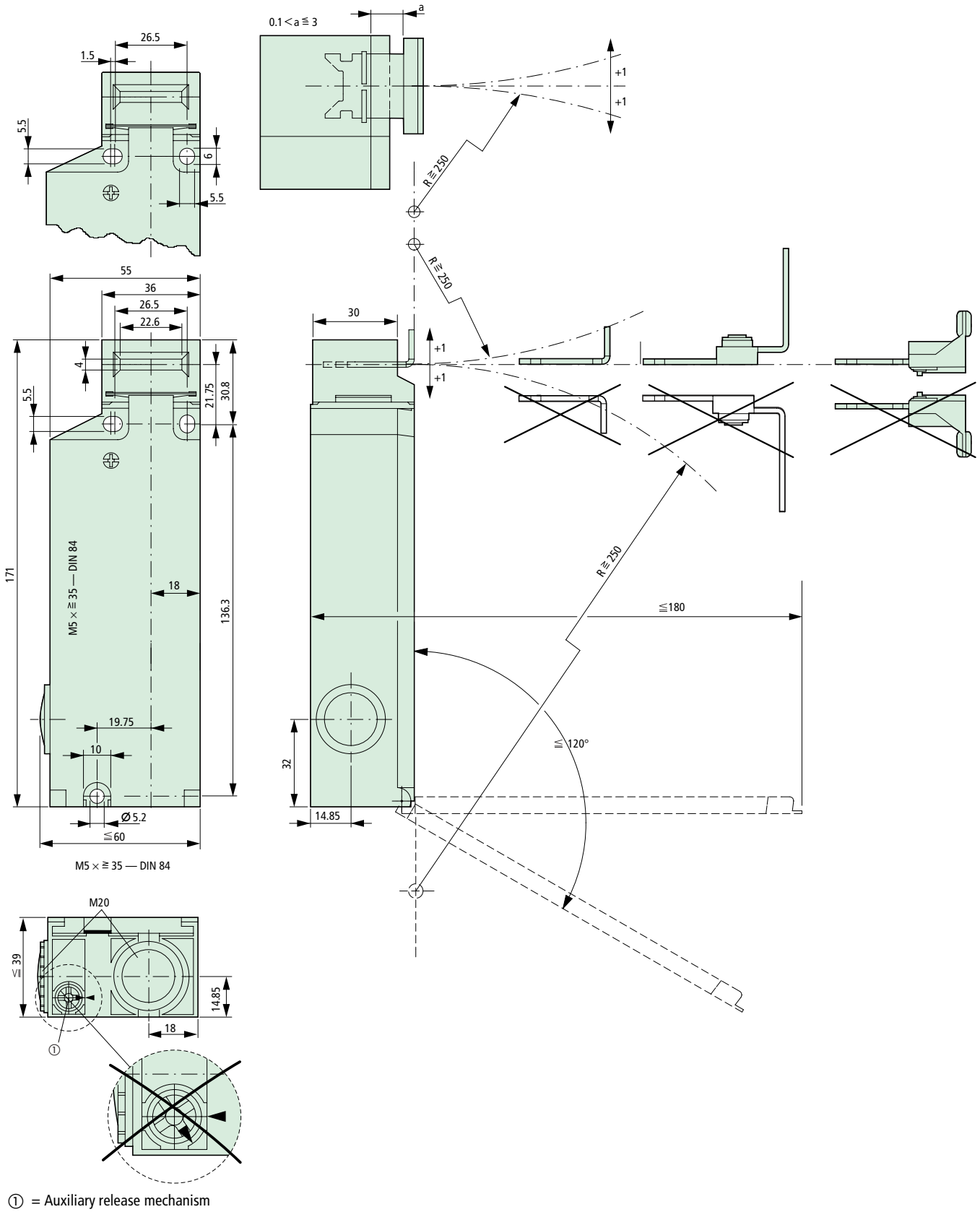


AT0...-ZBZ Safety Position Switches

Dimensions

Safety position switches
AT0...-ZBZ

Switch must not be used as a mechanical stop

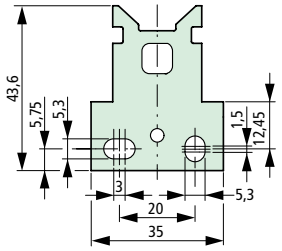


① = Auxiliary release mechanism

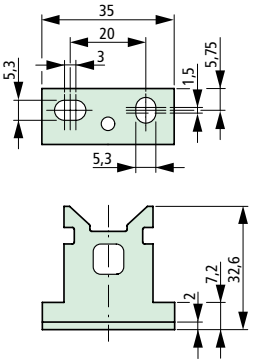
AT0...-ZB(Z) Safety Position Switches
Dimensions

Actuators for AT0...-ZBZ safety position switches

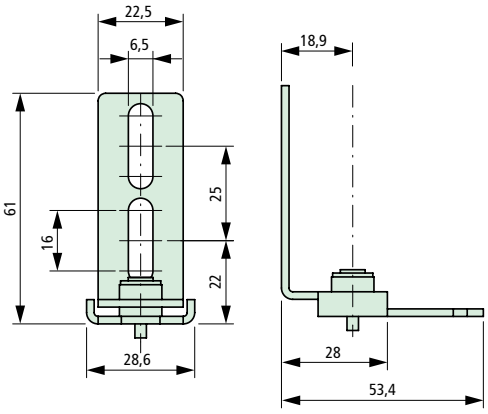
G-ZBZ



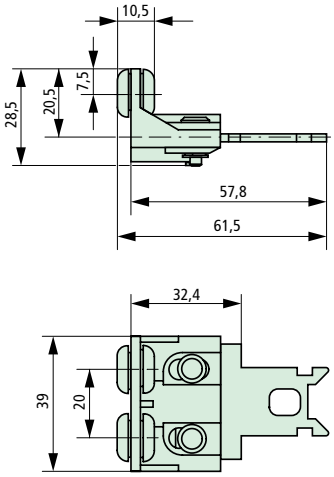
W-ZBZ



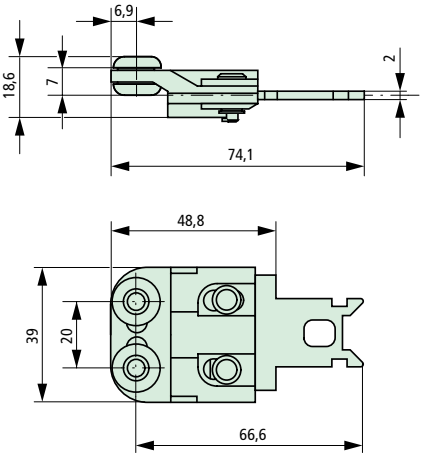
F-ZBZ



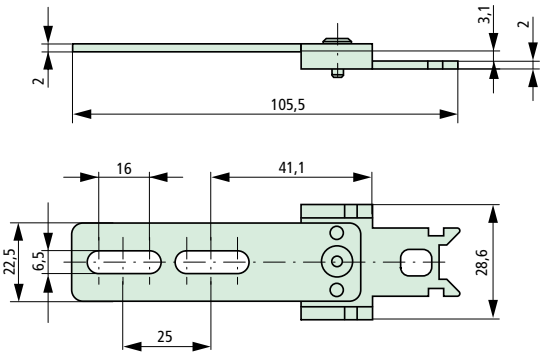
NW-ZBZ



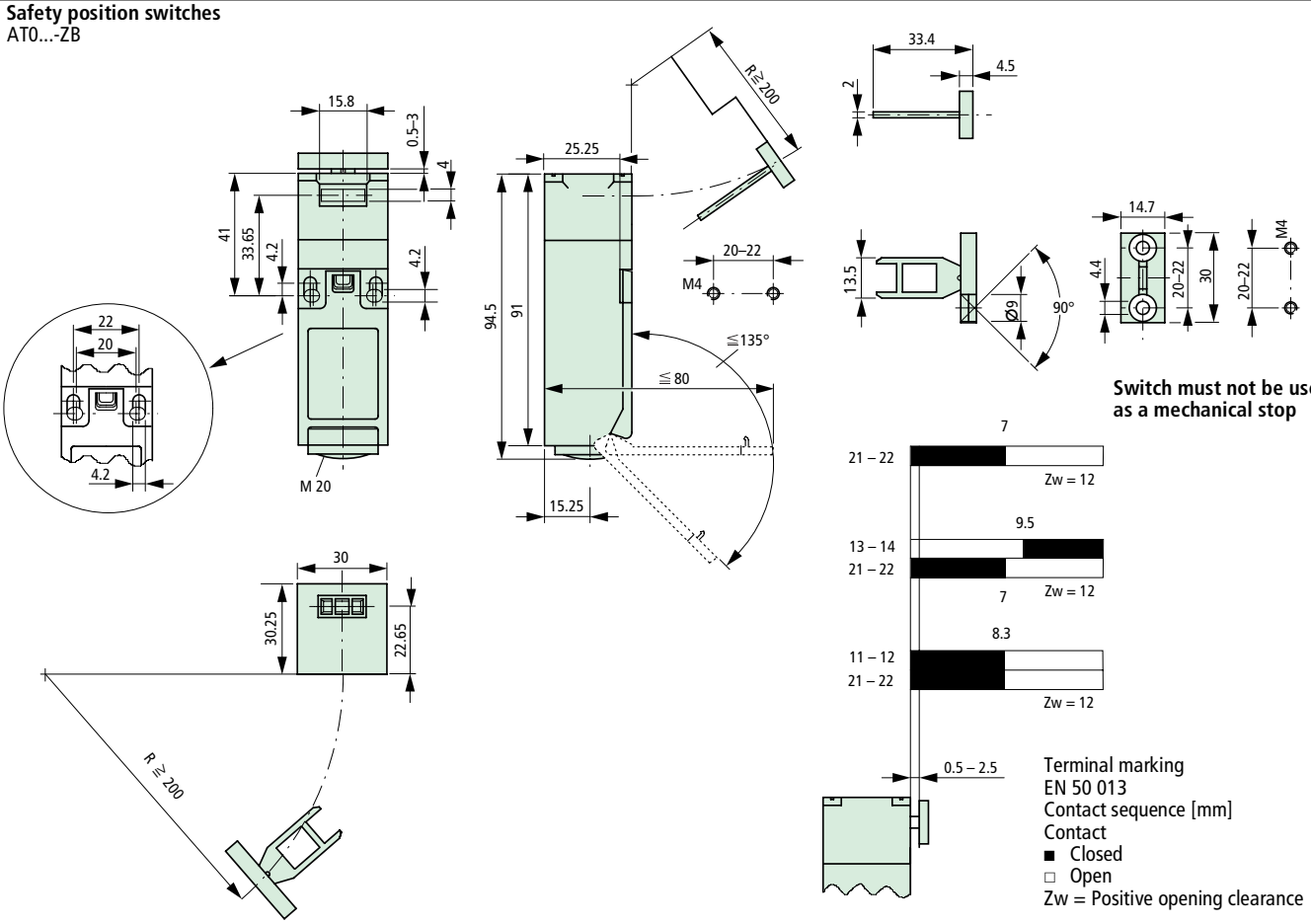
NG-ZBZ



FG-ZBZ



Safety position switches
AT0...-ZB

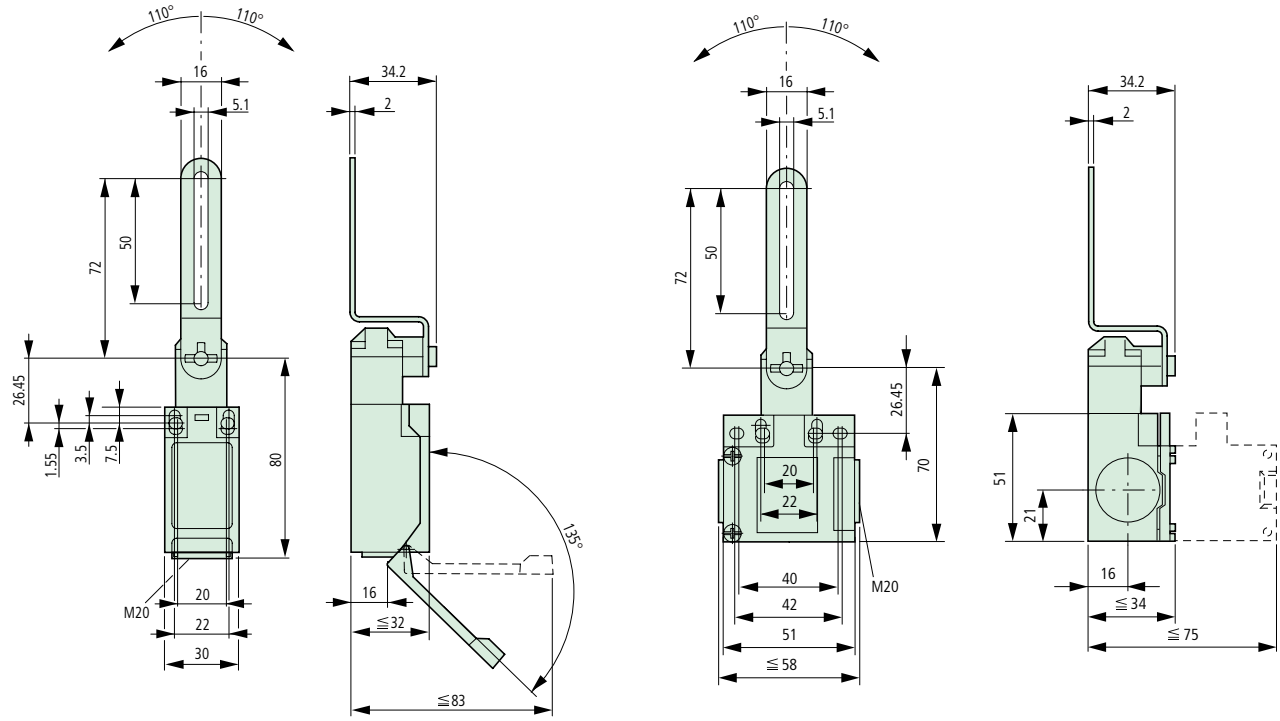


Terminal marking
EN 50 013
Contact sequence [mm]
Contact
■ Closed
□ Open
Zw = Positive opening clearance

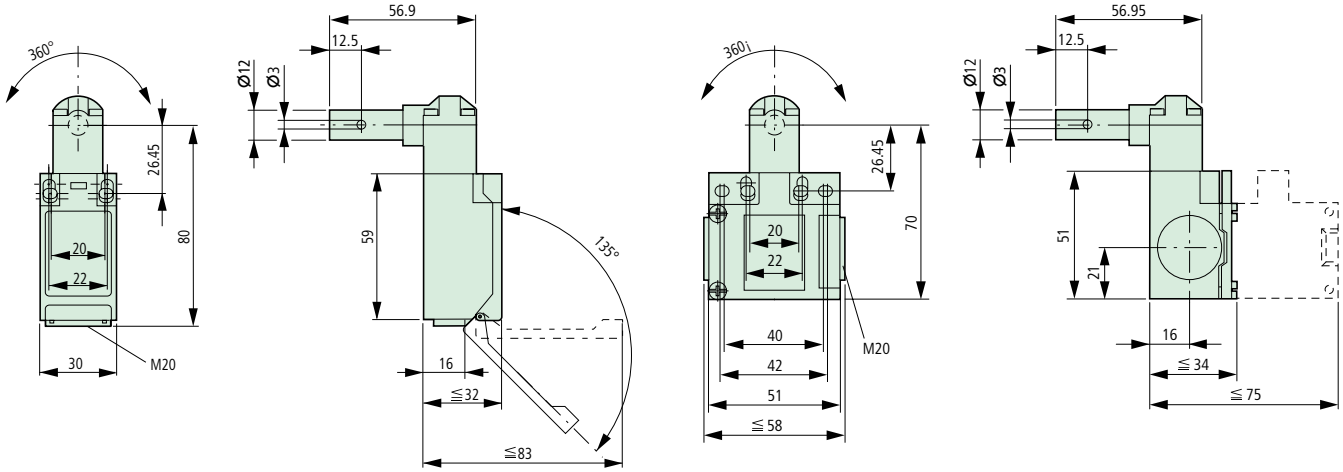
ATR Safety Position Switches

Dimensions

ATR.../TKG hasp-operated safety switches

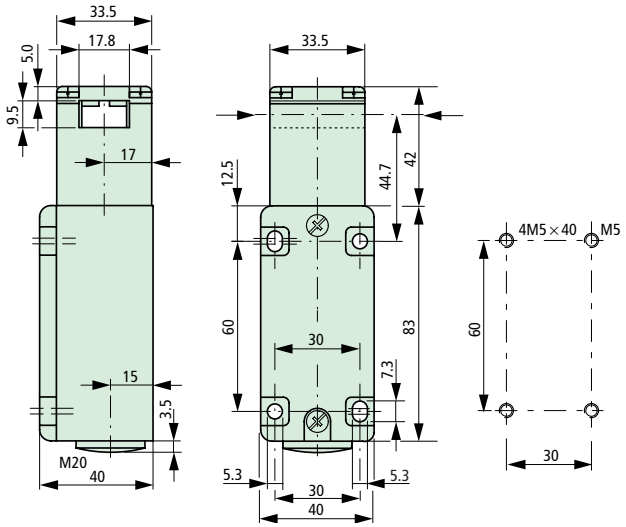


ATR.../TS hinge-operated safety switches

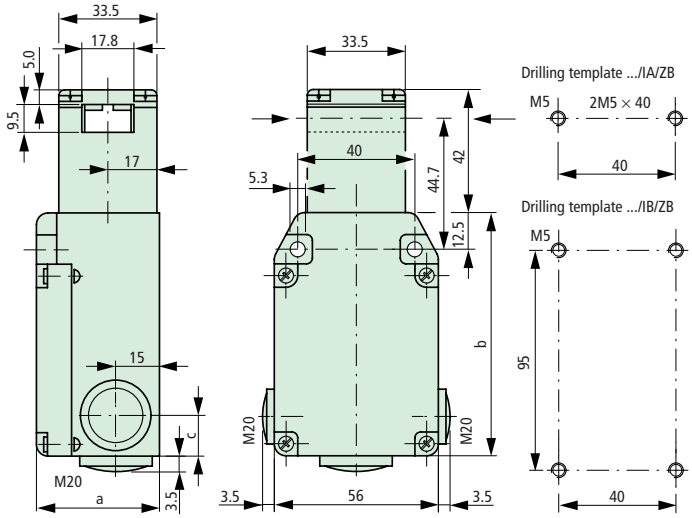


AT4...-ZB Safety Position Switches
Dimensions

Safety position switches
AT4/…/I/ZB

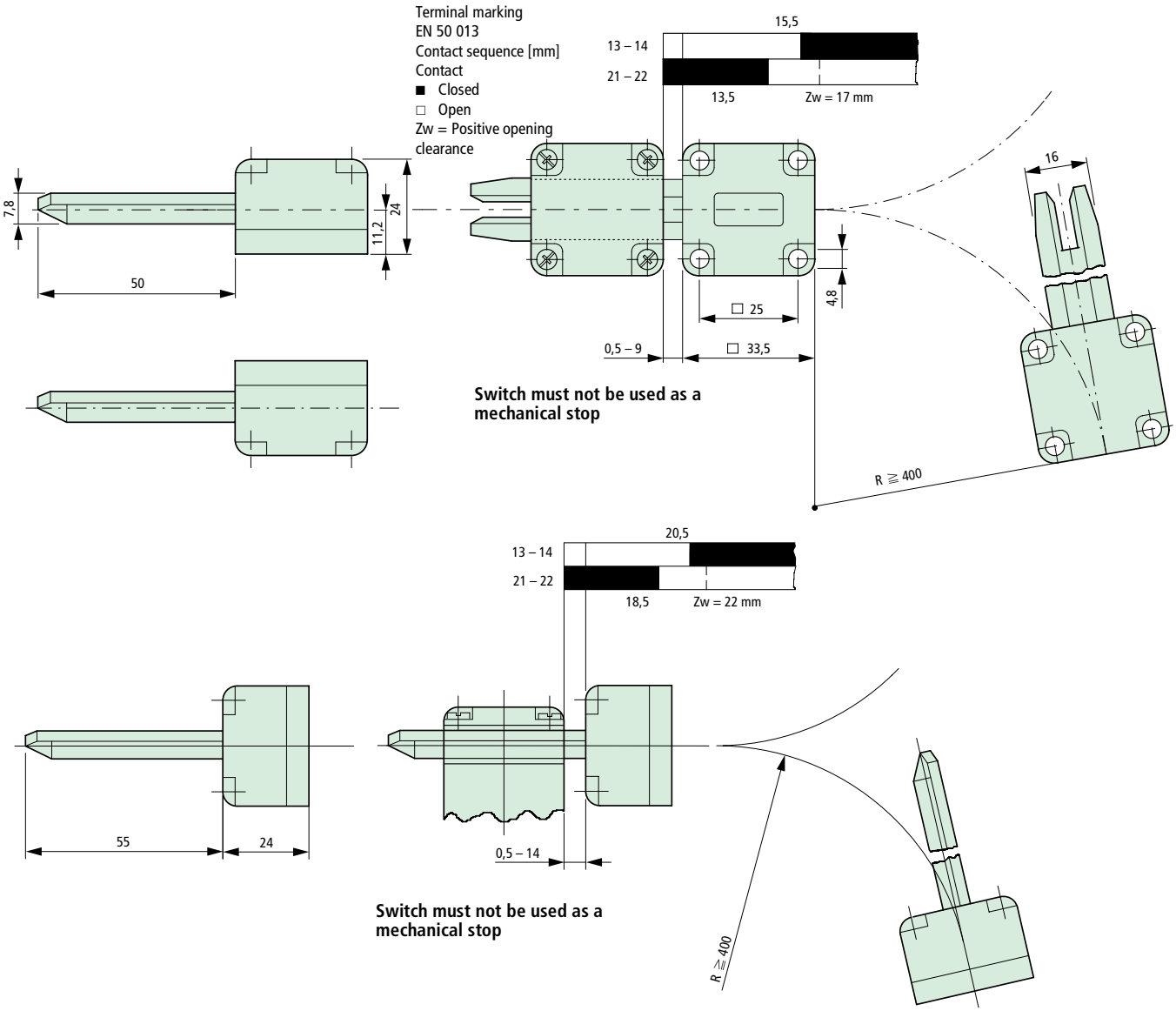


AT4/…/IA/ZB
AT4/…/IB/ZB



Type	a	b	c
AT4/…/IA/ZB	41.5	83	16.7
AT4/…/IB/ZB	43	115	29.5

Actuator

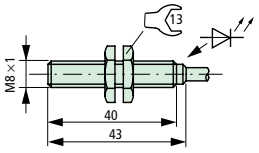


ATI Inductive Proximity Switches

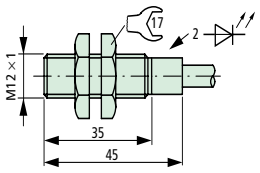
Dimensions

Three-wire DC version (PNP)
Metal housing without plug-in connection

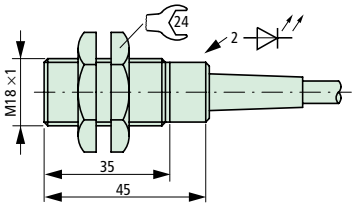
ATI8DMR



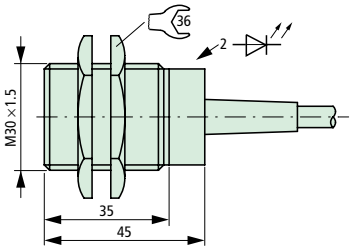
ATI12DMR



ATI18DMR

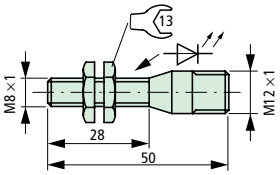


ATI30DMR



Metal housing with plug-in connection

ATI8DMSR



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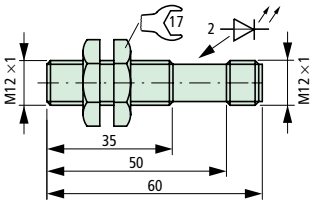

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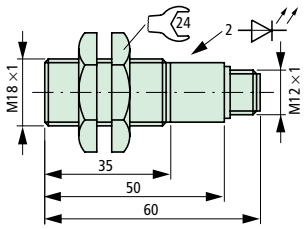
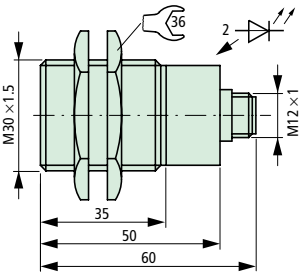
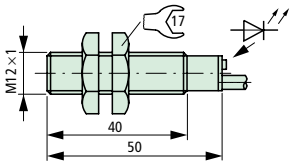


ATI30DMSR

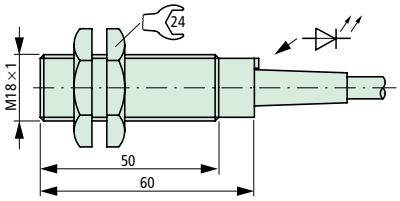


Insulated housing

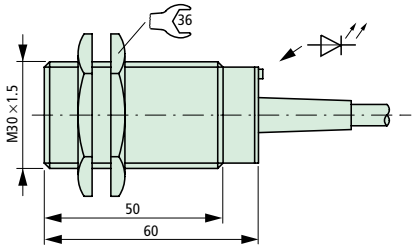
ATI12DR



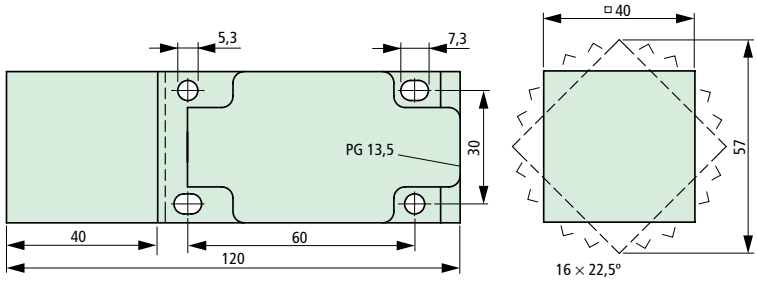
ATI18DR



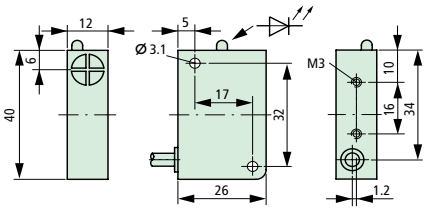
ATI30DR



ATI..DN

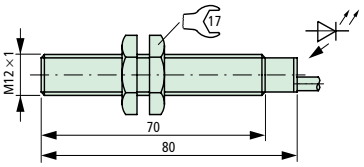


ATI1DQ

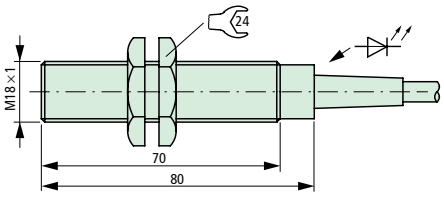


Two-wire AC proximity switches
Insulated housing

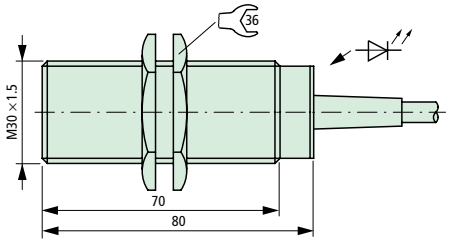
ATI12AR



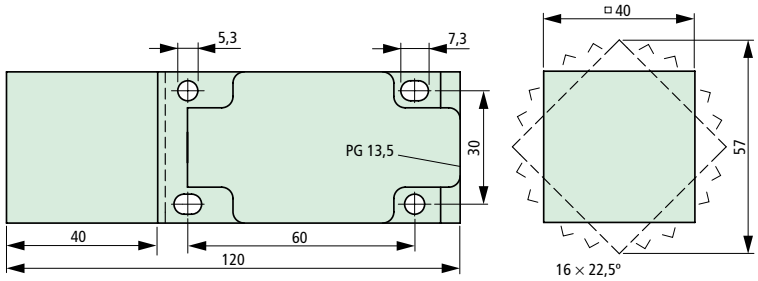
ATI18AR



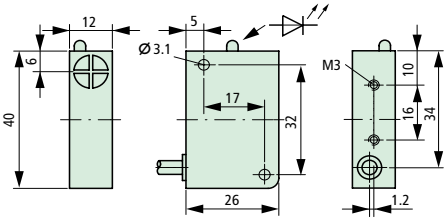
ATI30AR



ATI...AN

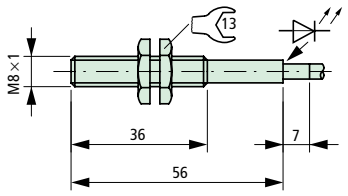


ATI1AQ

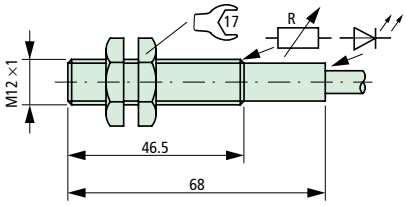


ATL Optical Proximity Switches
Dimensions

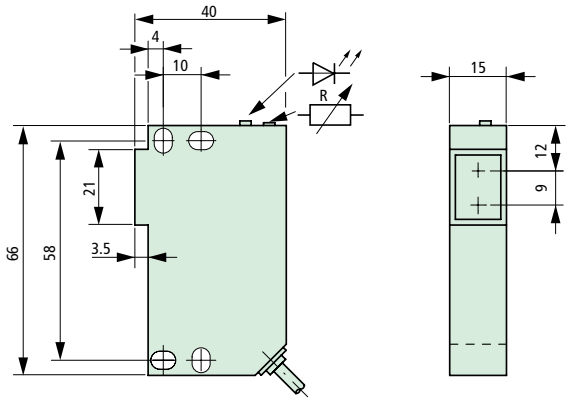
Three-wire DC version (PNP)
Metal housing
ATL8DMR



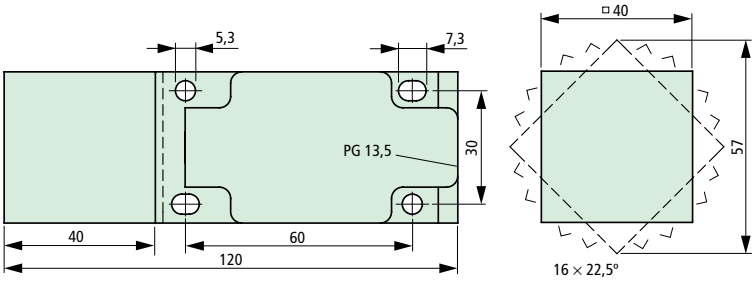
ATL12DMR



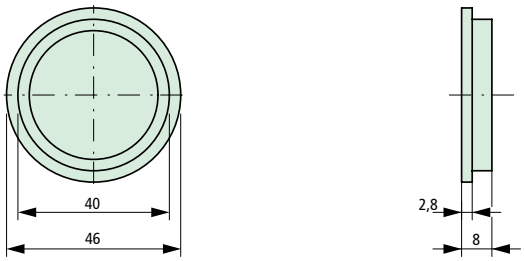
ATL...DMQ



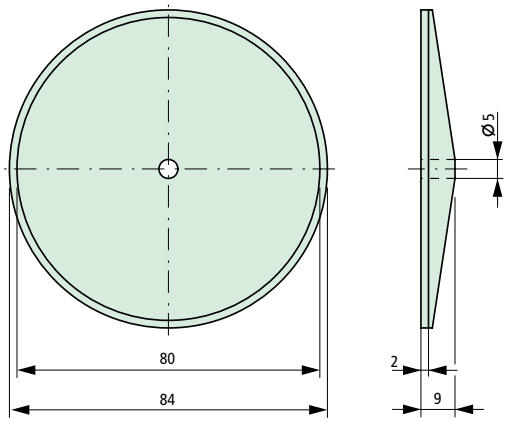
Insulated housing
ATL1DN



Reflectors for optical proximity switches
R1-ATL



R2-ATL

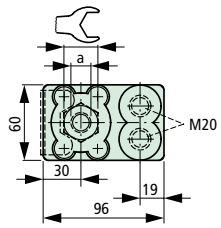


MCS Pressure Switches

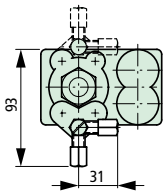
Dimensions

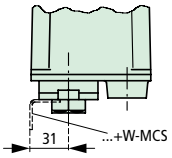
Pressure switches
MCS...,
MCS N...
.

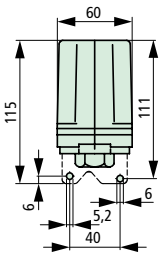
	Cable entry	a	
MCS...:	2 × M20	R ¼"	27
MCSN...:	2 × M20	R ½"	36

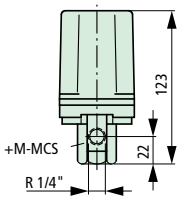


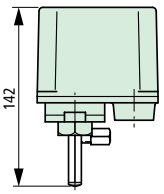
MCSN..V
With relief valve

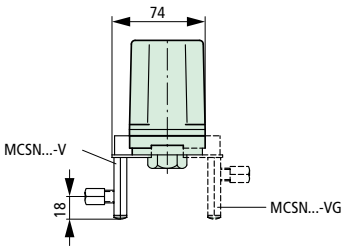


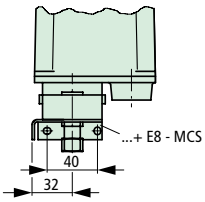


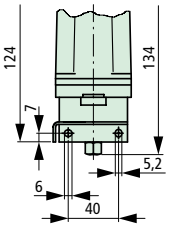






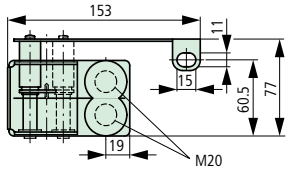


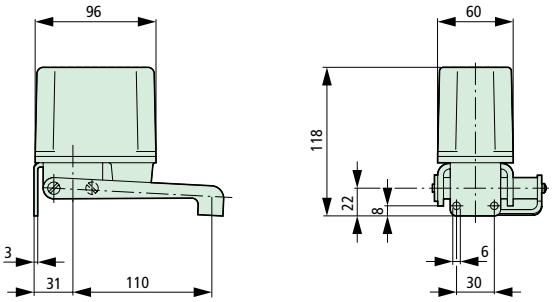




SW Float Switches
Dimensions

Float Switches
SW

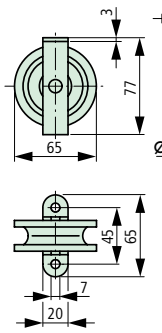




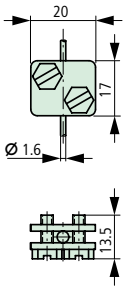
Accessories for float switches

Cable operation

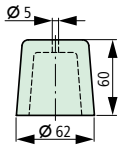
Guide pulley



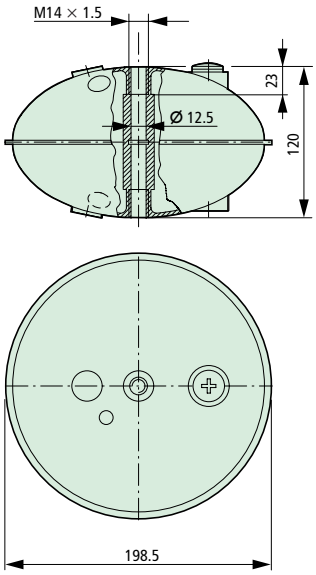
Cable clamp



Counterweight
0.9 kg

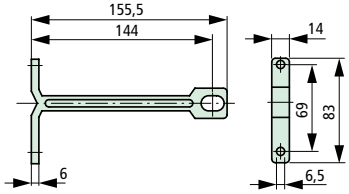


Float



Rod operation

Bracket



Operating rod