



Inductive Sensor



▶ Company Profile

Tianjin Geneuo Technology Co., Ltd. specializes in the development, production and sales of industrial automation products, system integration and engineering service.

- Communication solution

- Industry EtherNET Switch

- Fieldbus modules: ProfiNET, EtherNET/IP, EtherCAT, MODBUS TCP/IP I/O modules

- Inductive sensors

- Different housing design are available:M5 to M80 and cubic

- Optimized connection technology for efficient automation

- M5 to M40 receptacle, pre-moulding cable, field wireable connectivity

- Passive junction box and splitters


- Industrial network connectors for ProfiNET, EtherNET/IP, EtherCAT, MODBUS TCP/IP,Profibus,DeviceNET,CC-link.

- LED lighting

- Machine station lighting

- Factory lighting

- Intelligent lighting solutions



Geneuo exceptionally large product portfolio does not only cover all relevant standard solutions but also the special requirements of individual industries. The products and the total solution have been widely used in automotive, iron & steel, machine tool, elevator, textile, packaging, rubber machine etc.

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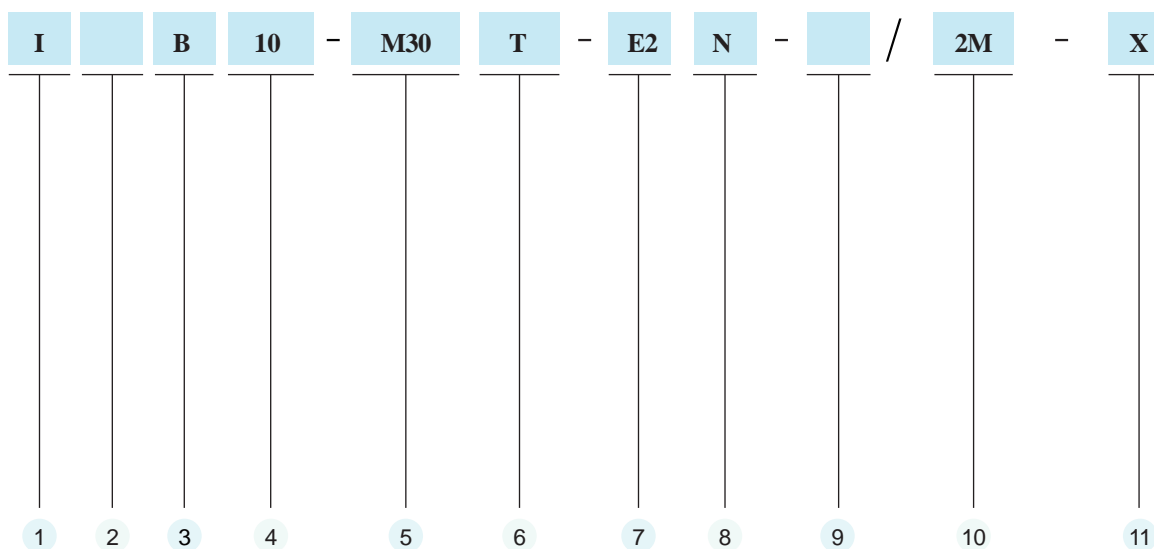
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Type codes



1 I - Inductive sensor

2 Products series
Blank - Standard

3 Mounting conditions
B - Flush
N - Non-flush

4 Sensing range
0.6 mm ... 100 mm

5 Housing
Cylinder thread barrel -
M12, M18, M30
Small square -
Q18, Q25, Q30

6 Housing material
Blank -
Nickel / Chrome- coated
T - PBT material

7 Electric output function
D0 - 4 wire, DC, NPN, NO+NC
D2 - 4 wire, DC, PNP, NO+NC
E0 - 3 wire, DC, NPN, NO
E1 - 3 wire, DC, NPN, NC
E2 - 3 wire, DC, PNP, NO
E3 - 3 wire, DC, PNP, NC
A2 - 2 wire, AC, NC
A4 - 2 wire, AC, NO
T0 - 2 wire, DC, NO,
with reverse polarity protection
T1 - 2 wire, DC, NC,
with reverse polarity protection

8 Function display
Blank - LED
N - No LED

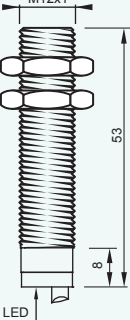
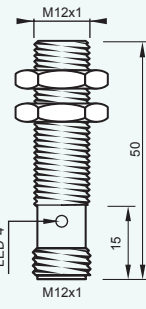
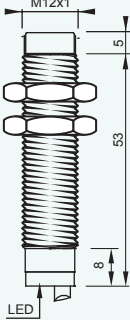
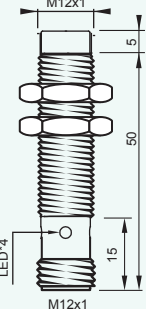
9 Special function description
Blank - No Special function

10 Electrical connection
Blank - M12x1 connector
S3 - 3-pin M8x1 connector
*M - Cable connection, Jacket-PVC,
cable length (unit: m)
*MR - Cable connection, Jacket-PUR,
cable length (unit: m)
E*M - *m cable with M12 straight connector
EL*M - *m cable with M12 angle connector
S*M - *m cable with M8 straight connector
SL*M - *m cable with M8 angle connector
SR*M - *m cable with $\Phi 8$ quick-disconnection
straight connector

11 Additional information
D - Short housing length
L - Long housing length
G - Special code

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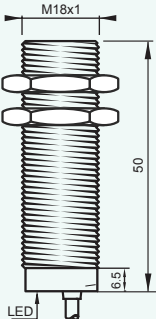
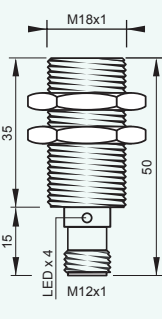
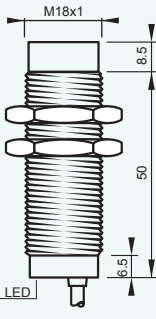
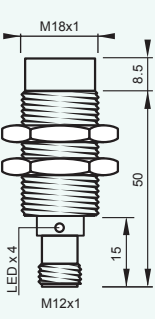
Housing style	M12	M12	M12	M12
Sensing distance	4mm	4mm	4mm	4mm
Mounting condition	Flush	Flush	Non-flush	Non-flush

Dimensions				
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Performance Parameter				
Operating Voltage	10...30VDC	10...30VDC	10...30VDC	10...30VDC
Operating Current	≤200mA	≤200mA	≤200mA	≤200mA
Connection	2M, PVC Cable	M12 Connector	2M, PVC Cable	M12 Connector
Voltage Drop.	≤2.5V	≤2.5V	≤2.5V	≤2.5V
Residual Current	—	—	—	—
Short-circuit protection	built-in	built-in	built-in	built-in
Switching Freq.	600Hz	600Hz	600Hz	600Hz
Hysteresis % Sr	3...15%	3...15%	3...15%	3...15%
Repeatability	≤5%Sr	≤5%Sr	≤5%Sr	≤5%Sr
Housing material	brass-chrome coated	brass-chrome coated	brass-chrome coated	brass-chrome coated
Protection degree	IP67	IP67	IP67	IP67
Operating Temp.	-25~75°C	-25~75°C	-25~75°C	-25~75°C
Output LED	yellow	yellow	yellow	yellow

Output function Type & Item No.				
PNP,NO	IB4-M12-E2/2M A0120006	IB4-M12-E2 A0120005	IN4-M12-E2/2M A0120022	IN4-M12-E2 A0120021
PNP,NC	IB4-M12-E3/2M A0120008	IB4-M12-E3 A0120007	IN4-M12-E3/2M A0120024	IN4-M12-E3 A0120023
PNP,NO+NC	IB4-M12-D2/2M A0120012	IB4-M12-D2 A0120011	IN4-M12-D2/2M A0120016	IN4-M12-D2 A0120015
NPN,NO	IB4-M12-E0/2M A0120002	IB4-M12-E0 A0120001	IN4-M12-E0/2M A0120018	IN4-M12-E0 A0120017
NPN,NC	IB4-M12-E1/2M A0120004	IB4-M12-E1 A0120003	IN4-M12-E1/2M A0120020	IN4-M12-E1 A0120019
NPN,NO+NC	IB4-M12-D0/2M A0120010	IB4-M12-D0 A0120009	IN4-M12-D0/2M A0120014	IN4-M12-D0 A0120013

Housing style	M18	M18	M18	M18
Sensing distance	8mm	8mm	8mm	8mm
Mounting condition	Flush	Flush	Non-flush	Non-flush

Dimensions				
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Performance Parameter

Operating Voltage	10...30VDC	10...30VDC	10...30VDC	10...30VDC
Operating Current	≤200mA	≤200mA	≤200mA	≤200mA
Connection	2M, PVC Cable	M12 Connector	2M, PVC Cable	M12 Connector
Voltage Drop.	≤2.5V	≤2.5V	≤2.5V	≤2.5V
Residual Current	—	—	—	—
Short-circuit protection	built-in	built-in	built-in	built-in
Switching Freq.	400Hz	400Hz	400Hz	400Hz
Hysteresis % Sr	3...15%	3...15%	3...15%	3...15%
Repeatability	≤5%Sr	≤5%Sr	≤5%Sr	≤5%Sr
Housing material	brass-chrome coated	brass-chrome coated	brass-chrome coated	brass-chrome coated
Protection degree	IP67	IP67	IP67	IP67
Operating Temp.	-25~75°C	-25~75°C	-25~75°C	-25~75°C
Output LED	yellow	yellow	yellow	yellow

Output function | Type & Item No.

PNP,NO	IB8-M18-E2/2M A0180006	IB8-M18-E2 A0180005	IN8-M18-E2/2M A0180018	IN8-M18-E2 A0180017
PNP,NC	IB8-M18-E3/2M A0180008	IB8-M18-E3 A0180007	IN8-M18-E3/2M A0180020	IN8-M18-E3 A0180019
PNP,NO+NC	IB8-M18-D2/2M A0180012	IB8-M18-D2 A0180011	IN8-M18-D2/2M A0180024	IN8-M18-D2 A0180023
NPN,NO	IB8-M18-E0/2M A0180002	IB8-M18-E0 A0180001	IN8-M18-E0/2M A0180014	IN8-M18-E0 A0180013
NPN,NC	IB8-M18-E1/2M A0180004	IB8-M18-E1 A0180003	IN8-M18-E1/2M A0180016	IN8-M18-E1 A0180015
NPN,NO+NC	IB8-M18-D0/2M A0180010	IB8-M18-D0 A0180009	IN8-M18-D0/2M A0180022	IN8-M18-D0 A0180021

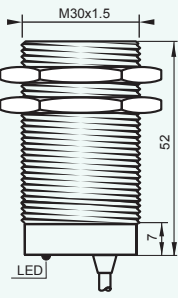
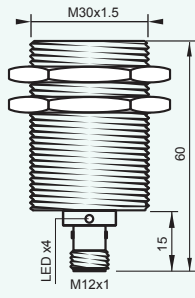
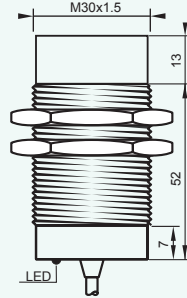
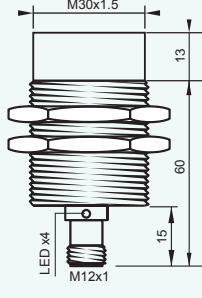
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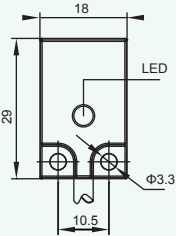
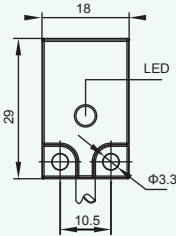
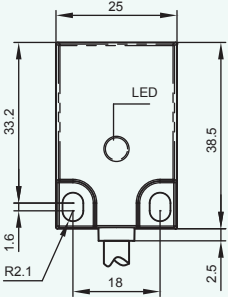
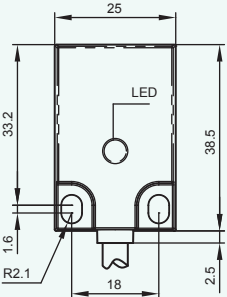
Housing style	M30	M30	M30	M30
Sensing distance	15mm	15mm	15mm	15mm
Mounting condition	Flush	Flush	Non-flush	Non-flush

Dimensions				

Performance Parameter				
Operating Voltage	10...30VDC	10...30VDC	10...30VDC	10...30VDC
Operating Current	≤200mA	≤200mA	≤200mA	≤200mA
Connection	2M, PVC Cable	M12 Connector	2M, PVC Cable	M12 Connector
Voltage Drop.	≤2.5V	≤2.5V	≤2.5V	≤2.5V
Residual Current	—	—	—	—
Short-circuit protection	built-in	built-in	built-in	built-in
Switching Freq.	300Hz	300Hz	300Hz	300Hz
Hysteresis % Sr	3...15%	3...15%	3...15%	3...15%
Repeatability	≤5%Sr	≤5%Sr	≤5%Sr	≤5%Sr
Housing material	brass-chrome coated	brass-chrome coated	brass-chrome coated	brass-chrome coated
Protection degree	IP67	IP67	IP67	IP67
Operating Temp.	-25~75°C	-25~75°C	-25~75°C	-25~75°C
Output LED	yellow	yellow	yellow	yellow

Output function Type & Item No.				
PNP,NO	IB15-M30-E2/2M A0300006	IB15-M30-E2 A0300005	IN15-M30-E2/2M A0300018	IN15-M30-E2 A0300017
PNP,NC	IB15-M30-E3/2M A0300008	IB15-M30-E3 A0300007	IN15-M30-E3/2M A0300020	IN15-M30-E3 A0300019
PNP,NO+NC	IB15-M30-D2/2M A0300012	IB15-M30-D2 A0300011	IN15-M30-D2/2M A0300024	IN15-M30-D2 A0300023
NPN,NO	IB15-M30-E0/2M A0300002	IB15-M30-E0 A0300001	IN15-M30-E0/2M A0300014	IN15-M30-E0 A0300013
NPN,NC	IB15-M30-E1/2M A0300004	IB15-M30-E1 A0300003	IN15-M30-E1/2M A0300016	IN15-M30-E1 A0300015
NPN,NO+NC	IB15-M30-D0/2M A0300010	IB15-M30-D0 A0300009	IN15-M30-D0/2M A0300022	IN15-M30-D0 A0300021

Housing style	Q18	Q18	Q25	Q25
Sensing distance	5mm	8mm	8mm	10mm
Mounting condition	Flush	Non-flush	Flush	Non-flush

Dimensions				

Performance Parameter				
Operating Voltage	10...30VDC	10...30VDC	10...30VDC	10...30VDC
Operating Current	≤200mA	≤200mA	≤200mA	≤200mA
Connection	2M, PVC Cable	2M, PVC Cable	2M, PVC Cable	2M, PVC Cable
Voltage Drop.	≤2.5V	≤2.5V	≤2.5V	≤2.5V
Residual Current	—	—	—	—
Short-circuit protection	built-in	built-in	built-in	built-in
Switching Freq.	400Hz	400Hz	400Hz	400Hz
Hysteresis % Sr	3...15%	3...15%	3...15%	3...15%
Repeatability	≤5%Sr	≤5%Sr	≤5%Sr	≤5%Sr
Housing material	PBT	PBT	PBT	PBT
Protection degree	IP67	IP67	IP67	IP67
Operating Temp.	-25~70°C	-25~70°C	-25~70°C	-25~70°C
Output LED	yellow	yellow	yellow	yellow

Output function Type & Item No.				
PNP,NO	IB5-Q18T-E2/2M A0410003	IN8-Q18T-E2/2M A0410011	IB8-Q25T-E2/2M A0420013	IN10-Q25T-E2/2M A0420003
PNP,NC	IB5-Q18T-E3/2M A0410004	IN8-Q18T-E3/2M A0410012	IB8-Q25T-E3/2M A0420014	IN10-Q25T-E3/2M A0420004
PNP,NO+NC				
NPN,NO	IB5-Q18T-E0/2M A0410001	IN8-Q18T-E0/2M A0410009	IB8-Q25T-E0/2M A0420011	IN10-Q25T-E0/2M A0420001
NPN,NC	IB5-Q18T-E1/2M A0410002	IN8-Q18T-E1/2M A0410010	IB8-Q25T-E1/2M A0420012	IN10-Q25T-E1/2M A0420002
NPN,NO+NC				

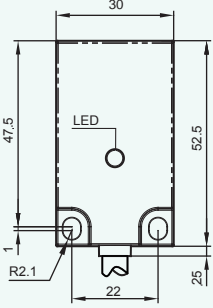
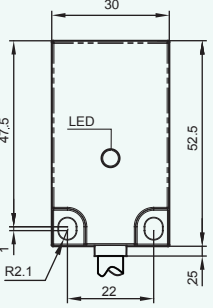
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Housing style	Q30	Q30	
Sensing distance	10mm	15mm	
Mounting condition	Flush	Non-flush	

Dimensions			

Operating Voltage	10...30VDC	10...30VDC	
Operating Current	≤200mA	≤200mA	
Connection	2M, PVC Cable	2M, PVC Cable	
Voltage Drop.	≤2.5V	≤2.5V	
Residual Current	—	—	
Short-circuit protection	built-in	built-in	
Switching Freq.	400Hz	400Hz	
Hysteresis % Sr	3...15%	3...15%	
Repeatability	≤5%Sr	≤5%Sr	
Housing material	PBT	PBT	
Protection degree	IP67	IP67	
Operating Temp.	-25~70°C	-25~70°C	
Output LED	yellow	yellow	

Output function Type & Item No.			
PNP,NO	IB10-Q30T-E2/2M A0430018	IN15-Q30T-E2/2M A0430005	
PNP,NC	IB10-Q30T-E3/2M A0430019	IN15-Q30T-E3/2M A0430006	
PNP,NO+NC	IB10-Q30T-D2/2M A0430021	IN15-Q30T-D2/2M A0430002	
NPN,NO	IB10-Q30T-E0/2M A0430016	IN15-Q30T-E0/2M A0430003	
NPN,NC	IB10-Q30T-E1/2M A0430017	IN15-Q30T-E1/2M A0430004	
NPN,NO+NC	IB10-Q30T-D0/2M A0430020	IN15-Q30T-D0/2M A0430001	

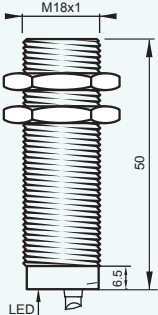
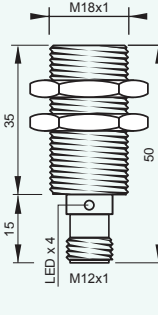
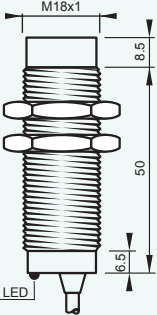
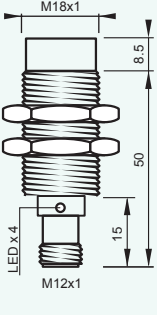
Housing style	M12	M12	M12	M12
Sensing distance	4mm	4mm	4mm	4mm
Mounting condition	Flush	Flush	Non-flush	Non-flush

Dimensions				

Performance Parameter				
Operating Voltage	10...30VDC	10...30VDC	10...30VDC	10...30VDC
Operating Current	≤200mA	≤200mA	≤200mA	≤200mA
Connection	2M, PVC Cable	M12 Connector	2M, PVC Cable	M12 Connector
Voltage Drop.	≤6.0V	≤6.0V	≤6.0V	≤6.0V
Residual Current	—	—	—	—
Short-circuit protection	built-in	built-in	built-in	built-in
Switching Freq.	700Hz	700Hz	700Hz	700Hz
Hysteresis % Sr	3...15%	3...15%	3...15%	3...15%
Repeatability	≤5%Sr	≤5%Sr	≤5%Sr	≤5%Sr
Housing material	brass-chrome coated	brass-chrome coated	brass-chrome coated	brass-chrome coated
Protection degree	IP67	IP67	IP67	IP67
Operating Temp.	-25~75°C	-25~75°C	-25~75°C	-25~75°C
Output LED	yellow	yellow	yellow	yellow

Output function Type & Item No.				
DC 2-wires,NO	IB4-M12-T0/2M A0120026	IB4-M12-T0 A0120025	IN4-M12-T0/2M A0120030	IN4-M12-T0 A0120029
DC 2-wires,NC	IB4-M12-T1/2M A0120028	IB4-M12-T1 A0120027	IN4-M12-T1/2M A0120032	IN4-M12-T1 A0120031

Housing style	M18	M18	M18	M18
Sensing distance	8mm	8mm	8mm	8mm
Mounting condition	Flush	Flush	Non-flush	Non-flush

Dimensions				
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Performance Parameter				
Operating Voltage	10...30VDC	10...30VDC	10...30VDC	10...30VDC
Operating Current	≤200mA	≤200mA	≤200mA	≤200mA
Connection	2M, PVC Cable	M12 Connector	2M, PVC Cable	M12 Connector
Voltage Drop.	≤6.0V	≤6.0V	≤6.0V	≤6.0V
Residual Current	—	—	—	—
Short-circuit protection	built-in	built-in	built-in	built-in
Switching Freq.	700Hz	700Hz	700Hz	700Hz
Hysteresis % Sr	3...15%	3...15%	3...15%	3...15%
Repeatability	≤5%Sr	≤5%Sr	≤5%Sr	≤5%Sr
Housing material	brass-chrome coated	brass-chrome coated	brass-chrome coated	brass-chrome coated
Protection degree	IP67	IP67	IP67	IP67
Operating Temp.	-25~75°C	-25~75°C	-25~75°C	-25~75°C
Output LED	yellow	yellow	yellow	yellow

Output function Type & Item No.				
DC 2-wires,NO	IB8-M18-T0/2M A0180026	IB8-M18-T0 A0180025	IN8-M18-T0/2M A0180042	IN8-M18-T0 A0180041
DC 2-wires,NC	IB8-M18-T1/2M A0180028	IB8-M18-T1 A0180027	IN8-M18-T1/2M A0180044	IN8-M18-T1 A0180043

Housing style	M30	M30	M30	M30
Sensing distance	15mm	15mm	15mm	15mm
Mounting condition	Flush	Flush	Non-flush	Non-flush

Dimensions				
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Performance Parameter				
Operating Voltage	10...30VDC	10...30VDC	10...30VDC	10...30VDC
Operating Current	≤200mA	≤200mA	≤200mA	≤200mA
Connection	2M, PVC Cable	M12 Connector	2M, PVC Cable	M12 Connector
Voltage Drop.	≤6.0V	≤6.0V	≤6.0V	≤6.0V
Residual Current	—	—	—	—
Short-circuit protection	built-in	built-in	built-in	built-in
Switching Freq.	700Hz	700Hz	700Hz	700Hz
Hysteresis % Sr	3...15%	3...15%	3...15%	3...15%
Repeatability	≤5%Sr	≤5%Sr	≤5%Sr	≤5%Sr
Housing material	brass-chrome coated	brass-chrome coated	brass-chrome coated	brass-chrome coated
Protection degree	IP67	IP67	IP67	IP67
Operating Temp.	-25~75°C	-25~75°C	-25~75°C	-25~75°C
Output LED	yellow	yellow	yellow	yellow

Output function Type & Item No.				
DC 2-wires,NO	IB15-M30-T0/2M A0300026	IB15-M30-T0 A0300025	IN15-M30-T0/2M A0300030	IN15-M30-T0 A0300029
DC 2-wires,NC	IB15-M30-T1/2M A0300028	IB15-M30-T1 A0300027	IN15-M30-T1/2M A0300032	IN15-M30-T1 A0300031

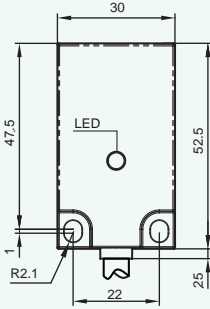
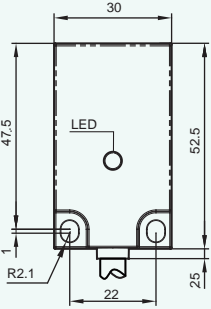
Housing style	Q18	Q18	Q25	Q25
Sensing distance	5mm	8mm	8mm	10mm
Mounting condition	Flush	Non-flush	Flush	Non-flush

Dimensions				

Performance Parameter				
Operating Voltage	10...30VDC	10...30VDC	10...30VDC	10...30VDC
Operating Current	≤200mA	≤200mA	≤200mA	≤200mA
Connection	2M, PVC Cable	2M, PVC Cable	2M, PVC Cable	2M, PVC Cable
Voltage Drop.	≤6.0V	≤6.0V	≤6.0V	≤6.0V
Residual Current	—	—	—	—
Short-circuit protection	built-in	built-in	built-in	built-in
Switching Freq.	700Hz	700Hz	700Hz	700Hz
Hysteresis % Sr	3...15%	3...15%	3...15%	3...15%
Repeatability	≤5%Sr	≤5%Sr	≤5%Sr	≤5%Sr
Housing material	PBT	PBT	PBT	PBT
Protection degree	IP67	IP67	IP67	IP67
Operating Temp.	-25~75°C	-25~75°C	-25~70°C	-25~70°C
Output LED	yellow	yellow	yellow	yellow

Output function Type & Item No.				
DC 2-wires,NO	IB5-Q18T-T0/2M A0410005	IN8-Q18T-T0/2M A0410030	IB8-Q25T-T0/2M A0420038	IN10-Q25T-T0/2M A0420006
DC 2-wires,NC	IB5-Q18T-T1/2M A0410006	IN8-Q18T-T1/2M A0410014	IB8-Q25T-T1/2M A0420040	IN10-Q25T-T1/2M A0420009

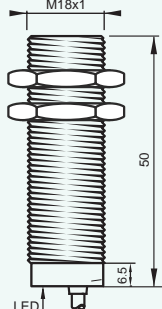
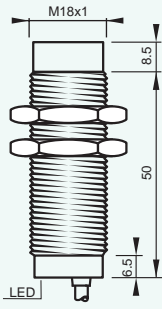
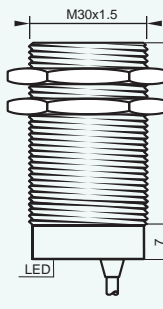
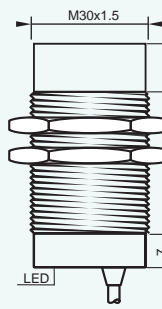
Housing style	Q30	Q30		
Sensing distance	15mm	15mm		
Mounting condition	Non-flush	Non-flush		

Dimensions				

Performance Parameter				
Operating Voltage	10...30VDC	10...30VDC		
Operating Current	≤200mA	≤200mA		
Connection	2M, PVC Cable	2M, PVC Cable		
Voltage Drop.	≤6.0V	≤6.0V		
Residual Current	—	—		
Short-circuit protection	built-in	built-in		
Switching Freq.	200Hz	200Hz		
Hysteresis % Sr	3...15%	3...15%		
Repeatability	≤5%Sr	≤5%Sr		
Housing material	PBT	PBT		
Protection degree	IP67	IP67		
Operating Temp.	-25~70°C	-25~70°C		
Output LED	yellow	yellow		

Output function Type & Item No.				
DC 2-wires,NO	IB10-Q30T-T0/2M A0430025	IN15-Q30T-T0/2M A0430040		
DC 2-wires,NC	IB10-Q30T-T1/2M A0430027	IN15-Q30T-T1/2M A0430008		

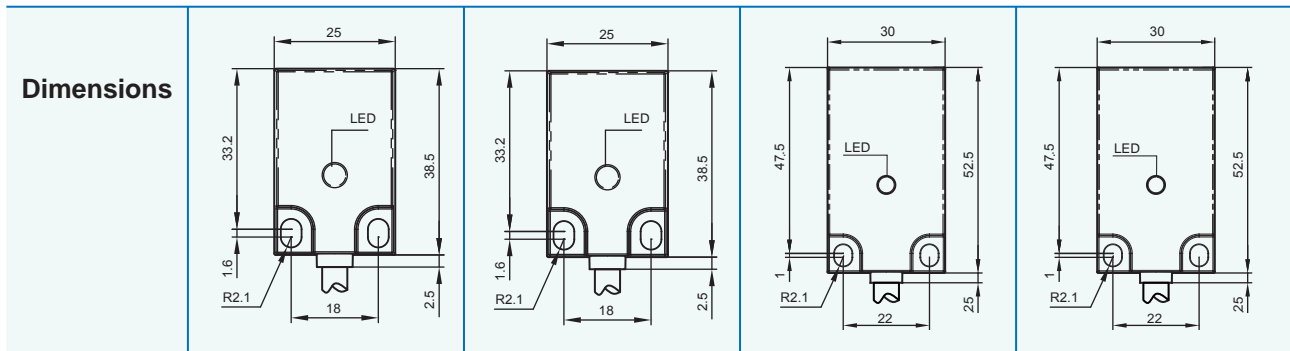
Housing style	M18	M18	M30	M30
Sensing distance	5mm	8mm	10mm	15mm
Mounting condition	Flush	Non-flush	Flush	Non-flush

Dimensions				

Performance Parameter				
Operating Voltage	20~250VAC	20~250VAC	20~250VAC	20~250VAC
Operating Current	≤400mA	≤400mA	≤400mA	≤400mA
Connection	2M, PVC Cable	2M, PVC Cable	2M, PVC Cable	2M, PVC Cable
Voltage Drop.	≤11V	≤11V	≤11V	≤11V
Residual Current	≤3mA	≤3mA	≤3mA	≤3mA
Short-circuit protection	built-in	built-in	built-in	built-in
Switching Freq.	20Hz	20Hz	20Hz	20Hz
Hysteresis % Sr	3...15%	3...15%	3...15%	3...15%
Repeatability	≤5%Sr	≤5%Sr	≤5%Sr	≤5%Sr
Housing material	brass-chrome coated	brass-chrome coated	brass-chrome coated	brass-chrome coated
Protection degree	IP67	IP67	IP67	IP67
Operating Temp.	-25~75°C	-25~75°C	-25~75°C	-25~75°C
Output LED	yellow	yellow	yellow	yellow

Output function Type & Item No.				
AC 2-wires,NO	IB5-M18-A4/2M A0180941	IN8-M18-A4/2M A0180036	IB10-M30-A4/2M A0300941	IN15-M30-A4/2M A0300040
AC 2-wires,NC	IB5-M18-A2/2M A0180939	IN8-M18-A2/2M A0180034	IB10-M30-A2/2M A0300963	IN15-M30-A2/2M A0300038

Housing style	Q25	Q25	Q30	Q30
Sensing distance	8mm	10mm	10mm	15mm
Mounting condition	Flush	Non-flush	Flush	Non-flush

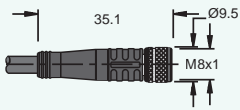

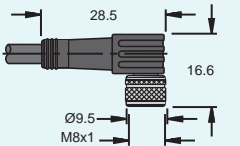
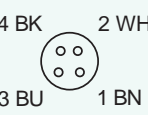
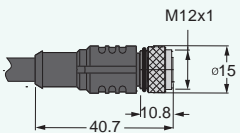
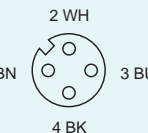
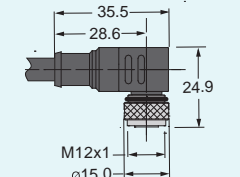
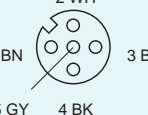


Performance Parameter				
Operating Voltage	20~250VAC	20~250VAC	20~250VAC	20~250VAC
Operating Current	≤400mA	≤400mA	≤400mA	≤400mA
Connection	2M, PVC Cable	2M, PVC Cable	2M, PVC Cable	2M, PVC Cable
Voltage Drop.	≤11V	≤11V	≤11V	≤11V
Residual Current	≤3mA	≤3mA	≤3mA	≤3mA
Short-circuit protection	built-in	built-in	built-in	built-in
Switching Freq.	20Hz	20Hz	20Hz	20Hz
Hysteresis % Sr	3...15%	3...15%	3...15%	3...15%
Repeatability	≤5%Sr	≤5%Sr	≤5%Sr	≤5%Sr
Housing material	PBT	PBT	PBT	PBT
Protection degree	IP67	IP67	IP67	IP67
Operating Temp.	-25~75°C	-25~75°C	-25~75°C	-25~75°C
Output LED	yellow	yellow	yellow	yellow

Output function Type & Item No.				
AC 2-wires,NO	IB8-Q25T-A4/2M A0420033	IN10-Q25T-A4/2M A0420007	IB10-Q30T-A4/2M A0430037	IN15-Q30T-A4/2M A0430009
AC 2-wires,NC	IB8-Q25T-A2/2M A0420035	IN10-Q25T-A2/2M A0420008	IB10-Q30T-A2/2M A0430039	IN15-Q30T-A2/2M A0430010

Connectors (1)

(1) Other connector types please ask connector product manager

Pre-cast cable	Pin	Cable Length	Order code	Type	
M8x1 straight female connector 	3	2m	10021000	SK3-2M/P00	
		5m	10021001	SK3-5M/P00	
		10m	10021002	SK3-10M/P00	
		4	2m	10021010	SK4-2M/P00
			5m	10021011	SK4-5M/P00
			10m	10021012	SK4-10M/P00
M8x1 angle female connector 	3	2m	10021020	SLK3-2M/P00	
		5m	10021021	SLK3-5M/P00	
		10m	10021022	SLK3-10M/P00	
		4	2m	10021030	SLK4-2M/P00
			5m	10021031	SLK4-5M/P00
			10m	10021032	SLK4-10M/P00
M12x1 straight female connector 	4	2m	10011010	EK4-2M/P00	
		5m	10011011	EK4-5M/P00	
		10m	10011012	EK4-10M/P00	
		5	2m	10011020	EK4.5-2M/P00
			5m	10011021	EK4.5-5M/P00
			10m	10011022	EK4.5-10M/P00
M12x1 angle female connector 	4	2m	10011040	ELK4-2M/P00	
		5m	10011041	ELK4-5M/P00	
		10m	10011042	ELK4-10M/P00	
		5	2m	10011050	ELK4.5-2M/P00
			5m	10011051	ELK4.5-5M/P00
			10m	10011052	ELK4.5-10M/P00

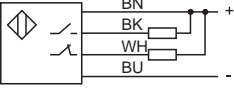
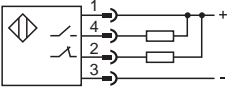
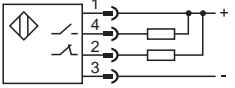
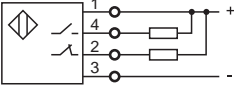
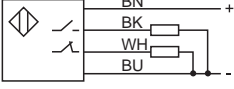
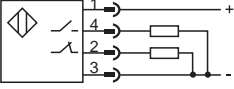
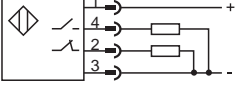
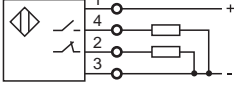
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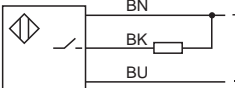
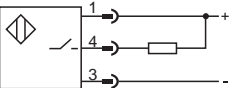
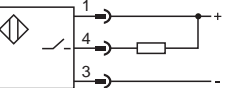
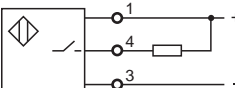
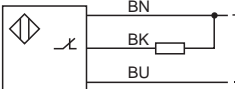
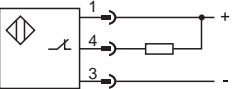
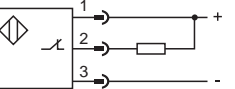
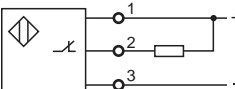
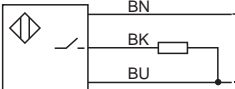
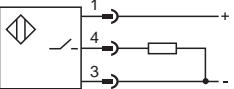
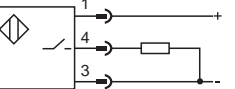
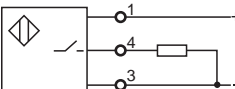
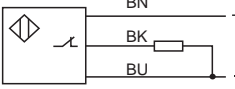
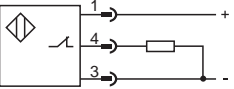
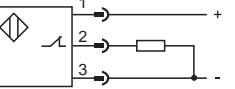
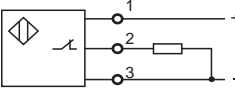
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Wiring diagrams

DC 4 wire	Cable version	M8 connection	M12 connection	Terminal chamber
NPN NO+NC	 S031	 S059	 S032	 S033
PNP NO+NC	 S034	 S060	 S035	 S036

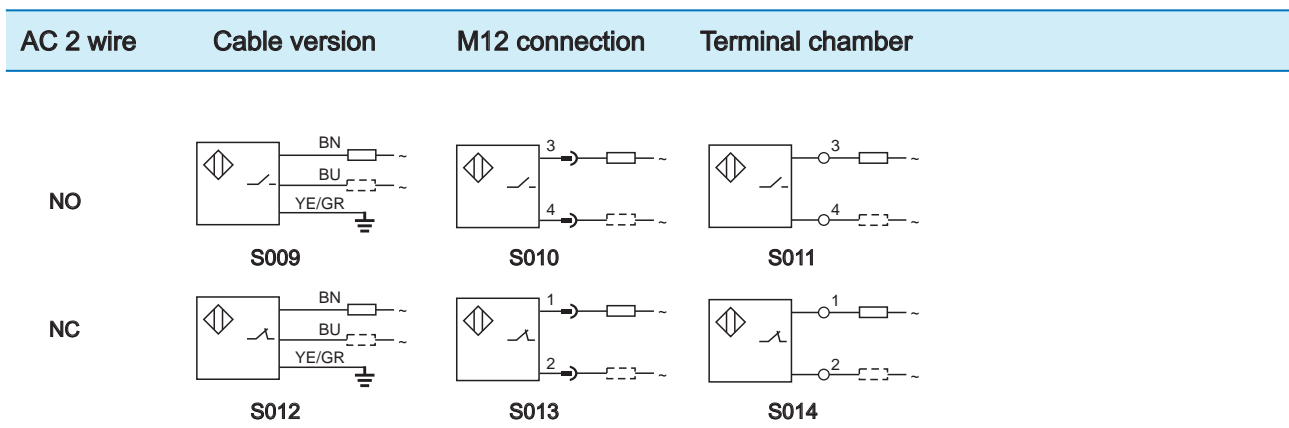
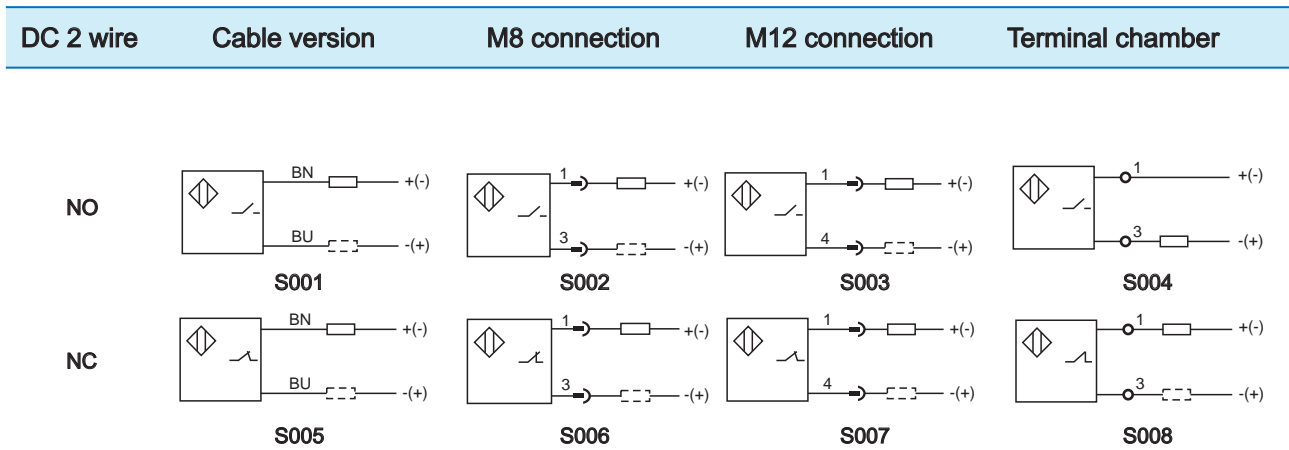
DC 3/4 wire	Cable version	M8 connection	M12 connection	Terminal chamber
NPN NO	 S015	 S016	 S017	 S018
NPN NC	 S019	 S020	 S021	 S022
PNP NO	 S023	 S024	 S025	 S026
PNP NC	 S027	 S028	 S029	 S030

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CAPACITANCE

Maximum permissible capacity is the maximum allowed total capacitance of load on devices output, while still need to ensure reliable operation of sensors, main part of the total capacitance is the line capacitance (about 00-200 pf/m) and load input capacitance.

CE MARK

The CE-symbol is neither a seal of quality nor a test mark but serves for free trade within the European Community.

Manufacturers assure that the protective aims of the applicable directives are fulfilled by CE- labelled products.

With the CE symbol on products for sale, the manufacturer confirms that these products comply with the technical guidelines for operating safety and electromagnetic compatibility valid at the time of licensing.

DEGREES OF PROTECTION

Protection against the ingress of water or foreign matter, touch protection

IP65: full protection against ingress of dust and water.

IP67: full protection against ingress of dust and protection against submersion of

water at 1 m depth for 30 minutes at constant temperature.

IP68: including IP67

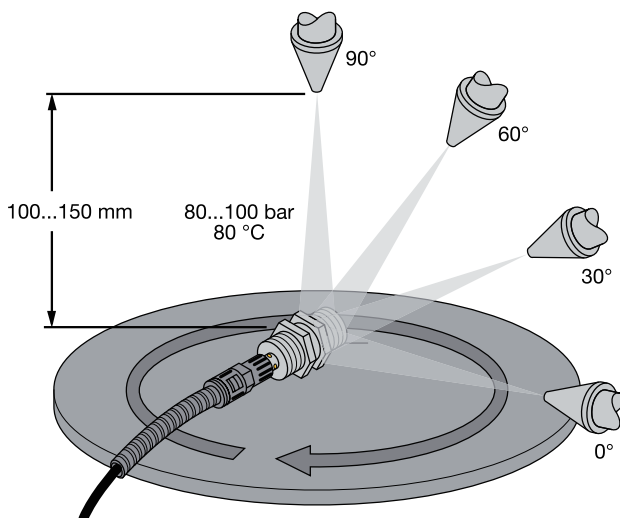
– 24 hrs. continuous storage at +70 °C

– 24 hrs. continuous storage at -25 °C

– 7 days submersion, depth 1 m

– 10 thermal shock changes from +70°C to -25°C, dwell cycle per temperature 1h:

IP69K: Full protection against dust and high-pressure/steam-jet cleaning according to DIN 40050-9, following EN 60529 EN 60529 (See Figure below)



Residual current (I_r)

2-wire sensors: The current which flows in non-active condition.

3 and 4-wire sensors: The current which flows in non-active condition between the output and 0 V (PNP output), resp. between output and supply voltage (NPN output).

Magnetic field immune

Magnetic-field immune sensors are insensitive to magnetic fields, as they occur in welding systems for example.

All IRB series sensors are immune to magnetic DC or AC fields due to their special function principle.

No-load current $I(I_0)$

2-wire sensors: The current which flows in non-active condition.

3/4-wire sensors: Off-state current flow between output and 0 V (PNP output) resp. output and supply voltage (NPN output), see also residual current.

Voltage drop

Voltage drop is the reduction in voltage of a connected output. While output amplifier operated, there has a voltage drop between amplifier and polarity reversal protection diode (voltage lie on current).

Special notice: When a few of sensors connected in series or connected to the input of electronic components.

Viberaton and shock resistance

All sensors mentioned in catalogue according to standard IEC600068-2-6 after vibration test (1 mm amplitude 55 hz). After a bear: 30 g (30 times the acceleration of gravity) 11 ms impact experiment, through the IEC60068-2-27 testing.

Power supply U_b

Shall not exceed the prescribed voltage value. To increase the degree of reliability and ease of use, sensors always with built-in protection circuit, in case of instantaneous aperiodic peaks, reached to IEC60255-5 requirement. While the input voltage is lower than the limit, sensors will not damage the device, but will stop working (even a short time is not allowed).

Repeat accuracy

Sensors with switching output (digital): Deviation of the switch point indicated in percentage after often repeated switching, under identical conditions and with the same sensor.

Wiring

Sensor cables are not allowed to parallel with perceptual load (protection of line pipe magnetic rectification device, motor, etc.) cable or power supply cable for a motor. Cable must be short as far as possible, but if wiring reasonably (small coupling capacitance, less interference), cable length can be up to 300 m.

Using following methods could minimize electromagnetic interference:

- Keep a certain distance with interference cables (> 100 mm)
- Use shielding cables or add shielding layer on cables
- Perceptual load on-site (contactor, magnetic ballast, relay etc.), install the RC filter or a rheostat

Switching distance

Distance at which a change of signal is produced with axial approach of the object.

Sensors with analogue output:

The area in which changes of the measured variable (i.e. change of sensing range regarding inductive sensors) results into a change of the output signal.

Indicated as absolute value (e.g. „4 mm“) or as distance to the sensor (e.g. „1 ... 5 mm“).

The basis for indication in % (e.g. determination of liniarity deviation) is always the absolute value.

The standard target is a rectangular metal plate for determination of the rated operating distance S_n

- Material: St37
- Thickness: 1 mm
- Edge lengths $3 \times S_n$, if $3 \times S_n$ is greater than the diameter of the active face, otherwise just the diameter of the active face.

Usable operating distance (S_u) (inductive sensors):

Allowed switching distance within the admissible temperature and voltage range.

Correlation to rated operating distance

$$0.8 \times S_r < S_u < 1.2 \times S_r \quad 0.72 \times S_n < S_u < 1.32 \times S_n$$

Assured switching distance (S_a) (inductive sensors):

Distance at which the sensor securely switches.

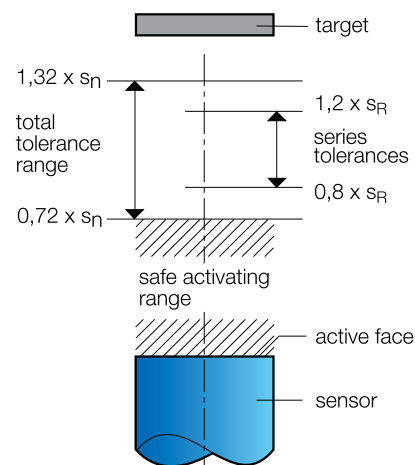
Correlation to rated switching distance s_a : $s_a < 0.81 \times s_n$;

Real switching distance (S_r):

Switching distance under fixed temperature and supply conditions. Factory set tolerances are taken into account

Correlation to rated switching distance s_n :

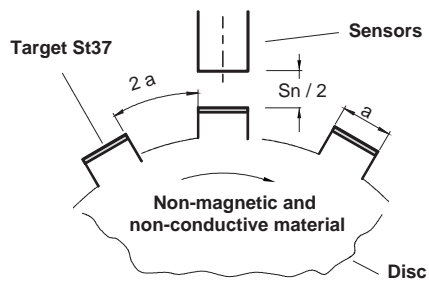
$$0.9 \times S_n < S_r < 1.1 \times S_n$$



Switching frequency

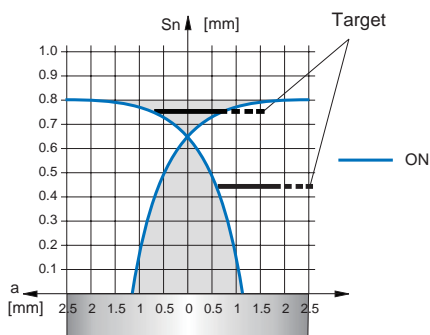
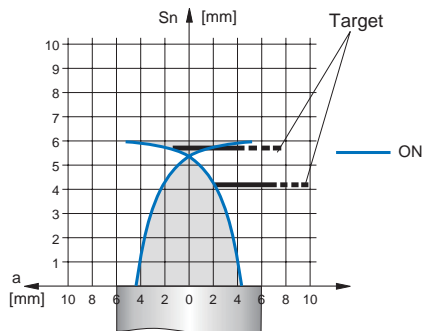
The switching frequency indicates the number of status changes per second. The higher the switching frequency the more often switching can be repeated per second resp. the faster the switching operation.

Concerning proximity switches, the switching frequency indicates the maximum number of changes between attenuated and non-attenuated state per second (Hz).



Switching distance curve

Standard target to determine the switching distance, switching distance is axial, standard target movement in lateral way, here are two typical curves in the typical data:



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