

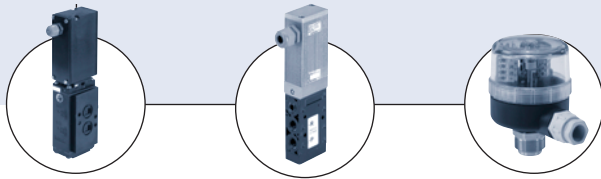


I/O Box, valve switch box for 4 pilot valves and 8 position feedbacks to a PROFIBUS PA network



- 4 outputs for low power piezo valves
- 8 inputs for NAMUR proximity switches
- Completely powered from the bus
- Intrinsically-safe model in EEx ia IIC T6
- Robust design for use in the chemical and process engineering industries

Type 8642 can be combined with...



Type 6520

Pilot valve

Type 6521

Pilot valve

Type 1062

Electrical position feedback

Further NAMUR proximity switches

The Type 8642 I/O Box is a field unit used to connect four pilot valves and 8 NAMUR sensors directly to the field bus.

The pilot valves are used as pilot valves for pneumatically driven process valves. The pilot and process valves form a unit mounted in a pipeline that controls a media flow. In total, up to 4 process valves can be controlled with the I/O Box.

The NAMUR sensor inputs of the I/O Box are used to monitor the switching status of process valves. To do this, one NAMUR sensor detects the closed position of the process valve, and another the open position. Using the 8 NAMUR sensors that can be connected to the I/O Box, the current positions of up to 4 process valves can be reported. The I/O Box is mainly used in process control installations in chemical, pharmaceutical and refinery environments.

The I/O Box offers special advantages in an installation structure with a small footprint. The box can be located directly in the field reducing the outlay for cabling, switch cabinets and their documentation.

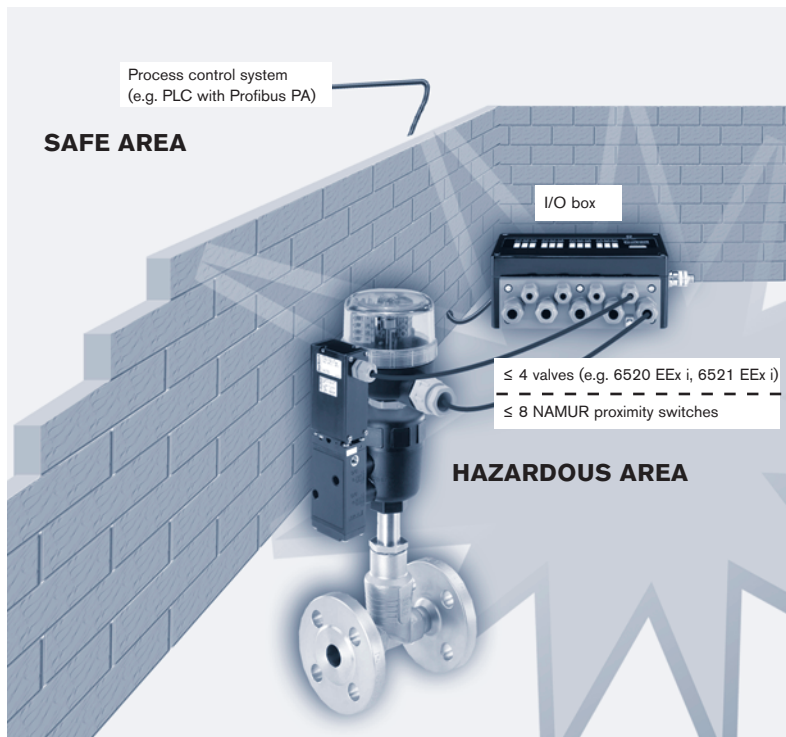
A comprehensive field bus installation can be installed with the I/O Box. The user's overview of the plant is widened. Information about the functionality of field valves and the maintenance deadline can be forecasted based on the number of valve cycles and their switching time.

By means of modern communications methods such as field bus and Ethernet technology, access to device information is possible throughout the installation. The integration and operation of devices is realised via the manufacturer-independent DTM/FDT or EDT technology of the Profibus.

Technical data	
Body material	Polyester, glass-fibre reinforced
Ambient temperatures	-25 to +60°C
Electrical connection	Cable glands M16, M20 and 4-pins bus connector plug
Internal electr. connection for inputs and outputs	Terminal strip 4 x 6-way, pluggable
Bus connector plug	Terminal strip 4-way, pluggable, M12 circular connector
Dimensions	W x D x H 220 x 120 x 90 mm see drawing p 3
Nominal voltage	9 to 15 V DC (bus powered)
Permissible data for the supply unit	
Trapezium characteristic	15 V; 255 mA; 2.0 W
Linear characteristic	17.5 V; 255 mA; 2.0 W
Operating current without FDE piezo valves	16.5 mA ±6%
Fault current protection (FDE)	5 mA through nominal current
Inputs	8 for NAMUR proximity switches (see ordering chart)
Outputs	4 for pilot valves (see ordering chart)
Fieldbus interface	PROFIBUS-PA acc. IEC 61158-2
Protection class	IP 65
Type of protection	II 2 (1) G EEx ia IIC T6 PTB 99 ATEX 2035
Insulation class	3



Applications



The I/O Box is intrinsically-safe (EEx ia IIC T6) and is mainly used in process control installations for the control of process valves and other pneumatically-operated actuators.

Applications

- Chemical industry
- Phamarceutical Solvent Areas
- Oil and gas industry and pipeline installations
- Industrial waste water treatment

Ordering chart

Ordering chart for standard equipment (further versions see ordering chart for special equipment)

For piezo valves Type 6520 and 6521, PA-profile 3.0

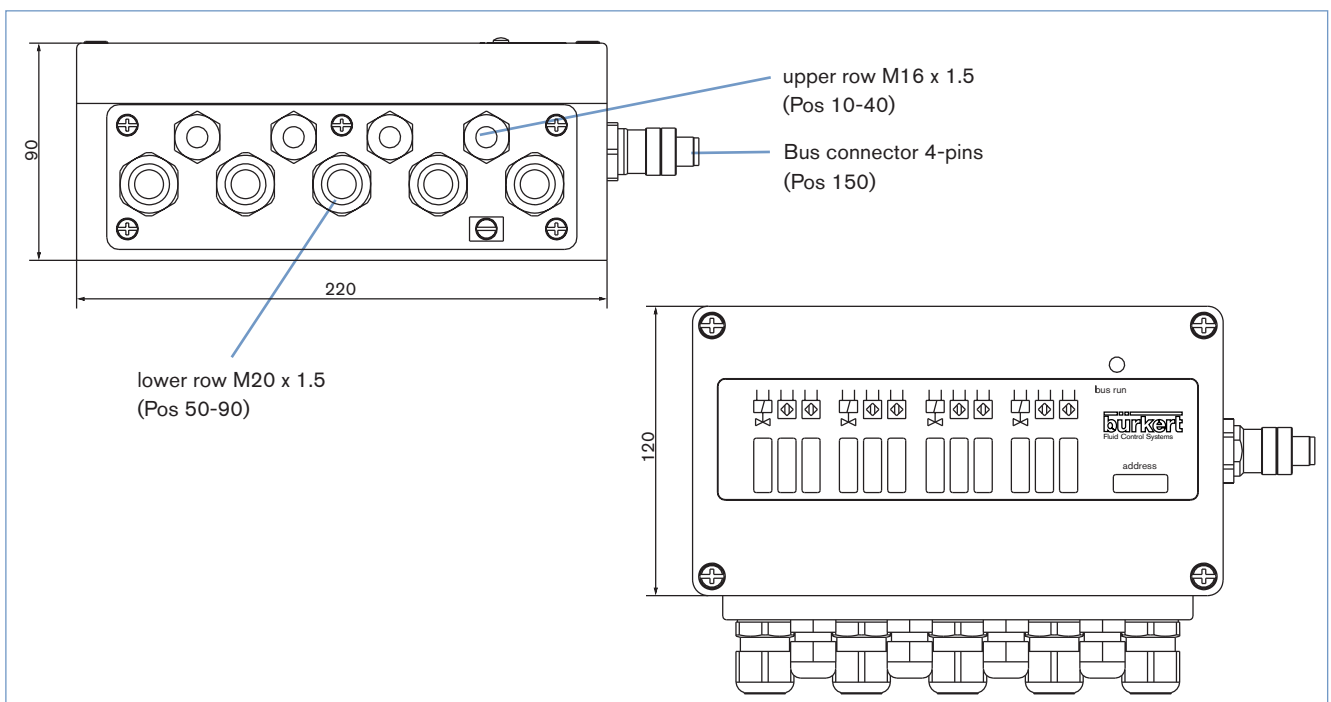
I/O Box version (valve versions from other manufacturers on request)	Versions
Without cable glands, without bus connector plug	144 952
With cable glands PVC blue, 5 x M20; 4 x M16, without bus connector plug	705 313
With cable glands PVC blue, 5 x M20; 4 x M16, with bus connector plug	705 314
With EMV cable glands brass, nickel-plated, 5 x M20; 1 x M16, without bus connector plug	705 315
With EMV cable glands brass, nickel-plated, 5 x M20; 4 x M16, with bus connector plug	705 316
With cable glands, SS, 5 x M20; 4 x M16, without bus connector plug	705 317
With cable glands, SS, 5 x M20; 4 x M16, with bus connector plug	705 318

Ordering chart for special equipment

Possible equipment versions for the openings in the I/O Box

Position no.	Description	Item no.
10 to 40	Cable glands M16, 4-8 mm, polyamide, blue	918 246
	EMV cable glands, M16, 4-8 mm, brass, nickel-plated	918 247
	EMV cable glands, M16, 4-8 mm, SS 1.4305	918 249
	Plug fitting, M16, polyamide, black	918 297
50 to 90	Cable glands M20, 6-12 mm, polyamide, blue	918 126
	Cable glands, M20, 6-12 mm, brass, nickel-plated	918 248
	EMV cable glands, M20, 6-12 mm, SS 1.4305	918 250
	Plug fitting, M20, polyamide, black	918 251
150	Bus connector plug - positioner - plug connector	635 258
	Plug fitting, M20, polyamide, black	918 251

Dimensions [mm]





Pilot valve (NAMUR) Type 6520 EEx i



The pilot valve Type 6520 EEx i, either in 3/2- or 5/2-way version, is particularly suited to be driven from the I/O Box Type 8642.

Technical data	
Body material	Polyamide
Actuator material	Aluminium, anodised
Supply port materials	Brass, nickel-plated; stainless steel ¹⁾
Seal material	NBR, FPM, PUR
Media	Instrument air (unlubricated), neutral gases
Media temperature	-10 to +50°C
Ambient temperature	-25 to +55°C
Port connections	Supply connections 1, 3, 5 Service port 2 and 4
	Threaded port G1/4 NAMUR flange acc. VDI/VDE 3845
Protection class	IP 65
Type of protection	II 2G EEx ia IIC T6 PTB 01 ATEX 2194 X
Operating voltage	24 V DC
Voltage tolerance	±10%
Switching current	4.5 mA
Contact rating	0.11 W
Quiescent current	±0.1 mA at 24 V
Safety class system	3 acc. EN 50178
Electrical connection	1 x M16

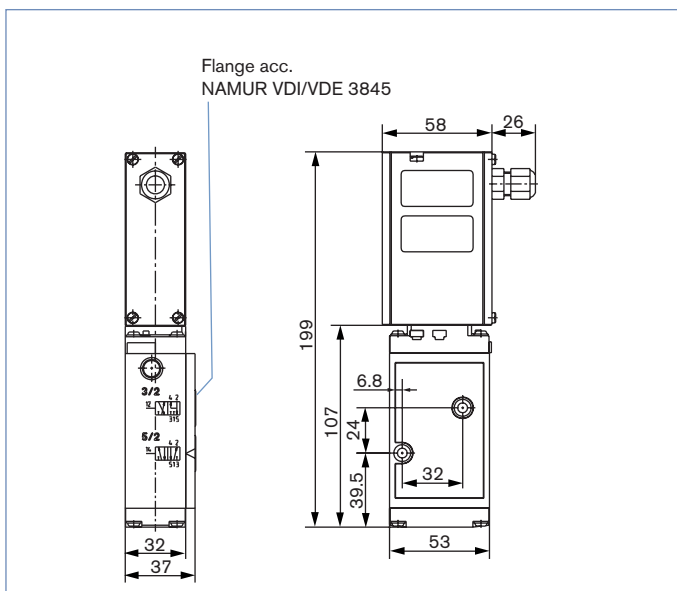
¹⁾ For supply ports made from stainless steel, the mounting and connecting screws are also stainless steel. The complete valve is free of non-ferrous metals.

Ordering chart pilot valve Type 6520 EEx i (further versions on request)

Circuit function	Supply port materials	Orifice [mm]	Minimum air flow supply [l/min]	Q _N -value air [l/min]	Pressure range [bar]	Item no.
C or 3/2-way valve, servo-assisted, in de-energised position port 2 internally to port 4 reconnected	brass, nickel-plated	6.0	≥ 150	380	2.5 - 7	141 722
			≥ 270	900	2.5 - 7	136 667
H 5/2-way valve, servo-assisted, in de-energised position port 2 pressurised and port 4 exhausted	stainless steel ¹⁾	6.0	≥ 150	380	2.5 - 7	141 721
			≥ 270	900	2.5 - 7	139 374

¹⁾ For supply ports made from stainless steel, the mounting and connecting screws are also stainless steel. The complete valve is free of non-ferrous metals.

Dimensions [mm]



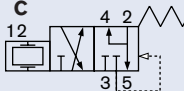
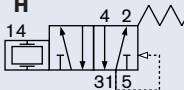
Pilot valve (NAMUR) Type 6521 EEx i



The pilot valve Type 6521 EEx i, either in 3/2- or 5/2-way version, is particularly suited to be driven from the I/O Box Type 8642.

Technical data	
Body material	Aluminium, plastic-coated
Actuator material	Aluminium, hard anodised
Seal materials	
Pilot valve	FPM, NBR
Valve body (pneum. amplifier)	Metal seal
Media	Instrument air (unlubricated), neutral gases
Ambient temperature	-25 to +65°C
Port connections	
Supply connections 1, 3, 5	Threaded port G1/4
Service port 2 and 4	NAMUR flange acc. VDI/VDE 3845
Operating voltage	24 V DC
Voltage tolerance	+15%, -10%
Switching current	approx. 4.5 mA
Quiescent current	≤0.15 mA at 24 V
Duty cycle	100% continuous rating
Protection class	IP 65
Safety class system	3 acc. EN 50178
Type of protection	II 2G EEx ia IIC T6 PTB 01 ATEX 2194 X
Electrical connection	Cable glands M16 for cable diameter 5 to 10 mm

Ordering chart pilot valve Type 6521 EEx i (further versions on request)

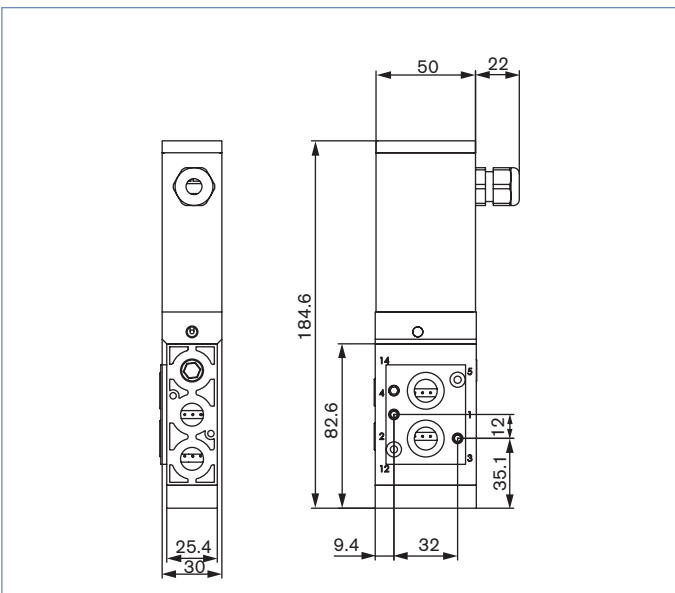
Circuit function	Port connection 2 and 4	Port connection 1, 3 and 5	Orifice [mm]	QnN-value air [l/min]	Pressure range [bar]	Item no.
 <p>C 3/2-way valve, servo-assisted, in de-energised position port 2 exhausted and internally to port 4 reconducted</p>	NAMUR	G 1/4	13	1370	1.2 - 7	195 901
 <p>H 5/2-way valve, servo-assisted, in de-energised position port 2 pressurised and port 4 exhausted</p>	NAMUR	G 1/4	13	1370	1.2 - 7	195 902
	G 1/4	G 1/4	13	1370	1.2 - 7	195 903

Versions as impulse or 5/3-way valves, as well as with auxiliary control air connections, are available on request.

Note:

The piezo valve can also be supplied with a downstream plastic amplifier as Type 6520, which has a QnN value of max. 900 l/m.

Dimensions [mm]





Electrical Position Feedback Type 1062



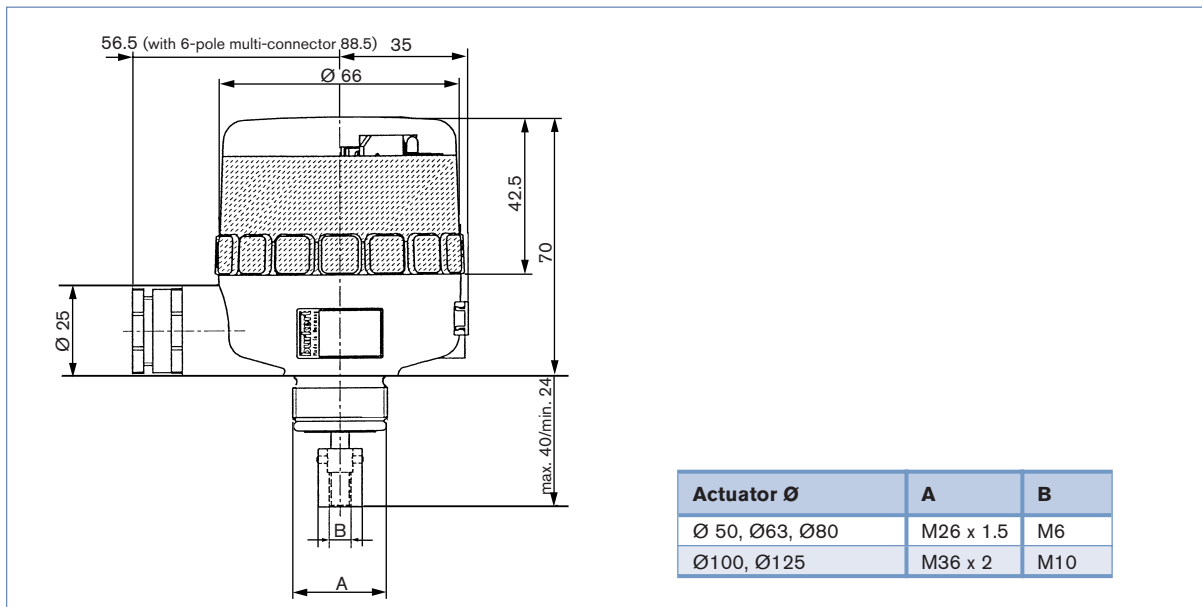
The electrical position feedback Type 1062 indicates the position of the main valve (open/closed) on process valves with pneumatically linear or rotary actuators. The position of the valve is shown via a LED display. This position feedback device can be driven from the I/O Box Type 8642.

Technical data	
Materials	
Body	Polyamide
Cover	Polycarbonate
Ambient temperature	-10 to +80°C
LED display	
green	valve open
red	valve closed
yellow	supply voltage "on" (protected against incorrect polarity)
Electrical connection	
external	PG11 cable gland
internal	Circuit board screw terminal, connection size Ø up to 1.5 mm ²
Protection class	IP 65
Approvals	Limit switches acc. VDE, IEC, UL, CSA, inductive limit switches EEx (II 2GD EEx ia IIC T6, INERIS 03 ATEX 0268X)
Installation	on piston actuators with actuator sizes Ø 50-125 mm
Inductive limit switch acc. DIN 19234 (NAMUR), EEx i	
Operating voltage	8 V DC
Power consumption	
damped	≤ 1 mA
undamped	≤ 3 mA

Ordering chart electrical position feedback Type 1062 with inductive limit switches (closing contacts for DC)

Message	for pneumatically linear actuators		for pneumatically rotary actuators	
	Actuator size Ø [mm]	Item no. NAMUR (EEx i) 8 V DC	Actuator size Ø [mm]	Item no. NAMUR (EEx i) 8 V DC
closed	50 - 80	007 470	63	431 519
open	50 - 80	007 471	63	431 518
open/closed	50 - 80	007 472	63	431 520
closed	100 - 125	007 473	100	431 522
open	100 - 125	007 474	100	431 521
open/closed	100 - 125	007 475	100	431 523

Dimensions [mm]




Approved NAMUR proximity switches for the I/O Box Type 8642 (further versions on request)

Description	Part no.
Manufacturer: Pepperl & Fuchs	
Type of sensor: 1-channel, proximity	
NCB1,5-6,5M25-NO	32 571
NCB1,5-6,5M25-NO-V1	38 181
NCB1,5-8GM25-NO	32 570
NCB1,5-8GM25-NO 10M	39 848
NCB1,5-8GM25-NO 5M	39 847
NCB1,5-8GM25-NO-V1	33 875
NCB2-12GM35-NO	27 419
NCB2-12GM35-NO 10M	39 850
NCB2-12GM35-NO 5M	39 849
NCB2-12GM35-NO-V1	33 877
NCB2-F1-NO	29 627
NCB5-18GM40-NO	27 426
NCB5-18GM40-NO 10M	39 854
NCB5-18GM40-NO 5M	39 853
NCB5-18GM40-NO-V1	33 879
NCN4-12GM35-NO	27 422
NCN4-12GM35-NO 10M	39 852
NCN4-12GM35-NO 5M	39 851
NCN4-12GM35-NO-V1	33 878
NCN8-18GM40-NO	27 427
NCN8-18GM40-NO 5M	39 555
NCN8-18GM40-NO-V1	33 880
NJ 0,8-4,5-N	11 498
NJ 0,8-5GM-N	11 497
NJ 0,8-5GM-N 5M	10 165
NJ 0,8-5GM-N 10M	35 985
NJ 1,5-6,5-N	1 828
NJ 1,5-6,5-N 15M	35 708
NJ 1,5-6,5-N 5M	2 497
NJ 1,5-8GM-N	1 830
NJ 1,5-8GM-N 10M	35 270
NJ 1,5-8GM-N 5M	5 129
NJ 1,5-8GM-N-V1	17 547
NJ 2-11-SN	5 000
NJ 2-11-SN	31 194
NJ 2-11-SN-G	31 195
NJ 2-11-SN-G 10M	43 566
NJ 2-11-SN-G 10M	36 164
NJ 2-11-SN-G 5M	43 565
NJ 2-12GM-N	14 622
NJ 2-12GM-N 10M	23 801
NJ 2-12GM-N21M	35 578
NJ 2-12GM-N 5M	14 623
NJ 2-12GM-N-V1	18 306
NJ 2-12GK-N	7 893
NJ 2-12GK-N 5M	36 906
NJ 2-V3-N	17 905
NJ 2-V3-N-V5	15 658
NJ 3-18GK-S1N	28 408
NJ 5-11-N	7 830
NJ 5-11-N 15M KA	9 329
NJ 5-11-N 5M KA	1 539

Description	Part no.
Manufacturer: Pepperl & Fuchs	
Type of sensor: 1-channel, proximity	
NJ 5-11-N-G	7 831
NJ 5-11-N-G 10M KA	28 419
NJ 5-11-N-G 5M KA	1 653
NJ 5-11-N-G 6M	35 273
NJ 5-30GK-S1N	14 948
NJ 5-30GK-S1N 10M	31 606
NJ 5-30GK-S1N 5M	36 241
NJ 6-22-SN	5 200
NJ 6-22-SN 10M	36 784
NJ 6-22-SN-G	6 204
NJ 6-22-SN-G 10M	37 686
NJ 6-22-SN-G 3M	36 964
Type of sensor: 2-channel, proximity	
NCN3-F24L-N4	85 169
NCN3-F24R-N4	85 168
NCN3-F25F-N4-V1	38 142
NCN3-F25-N4-014	37 852
NCN3-F26-N4-075	41 943
NCN3-F25-N4-V1	38 139
NCN3-F31-N4-K	47 571
NCN3-F31-N4-K-K	48 105
NCN3-F31-N4-V1	130 428
NCN3-F31-N4-V16-K	95 124
NCN3-F31-N4-V16-V16	43 736
NCN3-F31-N4-V18	48 258
Type of sensor: 1-channel, slot	
SC2-N0	37 316
SC3,5-N0	35 372
SC3,5-N0	47 942
SC3,5-N0 BLAU	35 376
SC3,5-N0 GELB	35 373
SC3,5-N0 GRÜN	35 375
SC3,5-N0 WEISS	35 374
SJ 2-N	8 698
SJ 2-N 5M KA	36 195
SJ 2-SN	22 146
SJ 2-SN	31 192
SJ 2-SN	32 583
SJ 2-SN XM KA	36 643
SJ 3,5-G-N	35 400
SJ 3,5-N	1 657
SJ 3,5-N BLAU	1 654
SJ 3,5-N GELB	1 655
SJ 3,5-N GRÜN	1 656
SJ 3,5-N LED	18 628
SJ 3,5-N LED	43 416
SJ 3,5-N0 WEISS	1 659
SJ 3,5-S1N	18 126
SJ 3,5-SN	7 452
SJ 3,5-SN	29 656

Description
Manufacturer: Turck
Type of sensor: 1-channel, proximity
BIM-AKT-Y1X
Type of sensor: 1-channel, slot
Sr 3,5-K10-Y1

Note:

The listed NAMUR proximity switches are not included in the delivery. They can be ordered directly from the manufacturer using the parts numbers given in the above table. Other NAMUR proximity switches can be used on request.

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