

PBS Electronic Pressure Switch with Display



The pressure switch PBS is designed for pressure monitoring and measurement in liquid and gaseous media. It is pressure switch, transmitter and display in one and the same device. In its standard configuration it has two switching points (PNP or NPN). In addition, there are configurations available with one or two switching points and an analog output signal (4...20mA oder 0...10V).

The PBS features the following functionalities:

- Switching point and reset point (Hysteresis)
- Window function
- Normally open or normally closed

- Switching delay
- Min/max memory
- Password protection to prevent from unintended misadjustment
- Change over between pressure units in display

Customer-specific parametrization at factory is available upon request.

The intuitive setup using the three large buttons and the integrated display are according to the recommendation 24574-1 of the German engineering federation VDMA.

The display and the electrical connector can be rotated against the process connector and against each other to allow

well visible display orientation and clean cable routing.

Starting from a smallest measurement range of to 0...1 bar, there is a large number of measurement ranges available up to 600 bar. In addition, the PBS offers absolute and compound ranges. The zero point can be adjusted within a span of +3% of the measurement range.

The PBS has a circularly welded stainless steel membrane. Hence, there are no internal sealing elements and it is well suited for a large variety even of corrosive media. The PBS is wear-free and does not require maintenance. As there is a large multitude of customary process connectors available as standard, no additional adapters are needed.

For electrical connection the PBS has an M12x1 connector.

Benefits

- Compact and robust design
- Rotatable housing for flexible installation
- Safe and simple operation and set-up with three large buttons and clearly legible display
- Wide application range
- Insensitive against corrosive media through hermetically sealed stainless steel membrane

Technical Data

Configurations	Unit	Pressure ranges	Overpressure safety	Burst pressure	Pressure ranges	Overpressure safety	Burst pressure
	bar	0...1	2	5	0...40	80	400
	bar	0...1.6	3.2	10	0...60	120	550
	bar	0...2.5	5	10	0...100	200	800
	bar	0...4	8	17	0...160	320	1000
	bar	0...6	12	34	0...250	500	1200
	bar	0...10	20	34	0...400	800	1700
	bar	0...16	32	100	0...600	1200	2400
	bar	0...25	50	100			
Unit	Pressure ranges	Overpressure safety	Burst pressure	Pressure ranges	Overpressure safety	Burst pressure	
bar abs	0...1	2	5	0...6	12	34	
bar abs	0...1.6	3.2	10	0...10	20	34	
bar abs	0...2.5	5	10	0...16	32	100	
bar abs	0...4	8	17	0...25	50	100	
Unit	Pressure ranges	Overpressure safety	Burst pressure	Pressure ranges	Overpressure safety	Burst pressure	
bar	-1...0	2	5	-1...+9	20	34	
bar	-1...+1.5	3.2	10	-1...+15	32	100	
bar	-1...+3	8	17	-1...+24	50	100	
bar	-1...+5	8	17				
Unit	Pressure ranges	Overpressure safety	Burst pressure	Pressure ranges	Overpressure safety	Burst pressure	
MPa	0...0.1	0.2	0.5	0...4	8	40	
MPa	0...0.16	0.32	1	0...6	12	55	
MPa	0...0.25	0.5	1	0...10	20	80	
MPa	0...0.4	0.8	1.7	0...16	32	100	
MPa	0...0.6	1.2	3.4	0...25	50	120	
MPa	0...1	2	3.4	0...40	80	170	
MPa	0...1.6	3.2	10	0...60	120	240	
MPa	0...2.5	5	10				
Unit	Pressure ranges	Overpressure safety	Burst pressure	Pressure ranges	Overpressure safety	Burst pressure	
MPa abs	0...0.1	0.2	0.5	0...0.6	1.2	3.4	
MPa abs	0...0.16	0.32	1	0...1	2	3.4	
MPa abs	0...0.25	0.5	1	0...1.6	3.2	10	
MPa abs	0...0.4	0.8	1.7	0...2.5	3.2	10	
Unit	Pressure ranges	Overpressure safety	Burst pressure	Pressure ranges	Overpressure safety	Burst pressure	
MPa	-0.1...0	2	5	-0.1...+0.9	2	3.4	
MPa	-0.1...+0.15	3.2	10	-0.1...+2.4	3.2	10	
MPa	-0.1...+0.3	8	17	-0.1...+1.5	3.2	10	
MPa	-0.1...+0.5	8	17				

Technical Data

Configurations	Unit	Pressure ranges	Overpressure safety	Burst pressure	Pressure ranges	Overpressure safety	Burst pressure
	psi	0...15	30	75	0...500	1000	2500
	psi	0...25	60	150	0...1000	1740	7975
	psi	0...30	60	150	0...1500	2900	11600
	psi	0...50	100	250	0...2000	4000	14500
	psi	0...100	200	500	0...3000	6000	17400
	psi	0...160	290	500	0...5000	10000	24650
	psi	0...200	400	600	0...8000	16000	39440
	psi	0...300	600	1500			
Unit	Pressure ranges	Overpressure safety	Burst pressure	Pressure ranges	Overpressure safety	Burst pressure	
psi abs	0...15	30	75	0...100	200	500	
psi abs	0...25	60	150	0...160	290	500	
psi abs	0...30	60	150	0...200	400	600	
psi abs	0...50	100	250	0...300	600	1500	
Unit	Pressure ranges	Overpressure safety	Burst pressure	Pressure ranges	Overpressure safety	Burst pressure	
psi	-30 InHg...0	30	75	-30 InHg...+100	200	500	
psi	-30 InHg...+30	60	150				
Unit	Pressure ranges	Overpressure safety	Burst pressure	Pressure ranges	Overpressure safety	Burst pressure	
kg/cm ²	0...1	2	5	0...40	80	400	
kg/cm ²	0...1.6	3.2	10	0...60	120	550	
kg/cm ²	0...2.5	5	10	0...100	200	800	
kg/cm ²	0...4	8	17	0...160	320	1000	
kg/cm ²	0...6	12	34	0...250	500	1200	
kg/cm ²	0...10	20	34	0...400	800	1700	
kg/cm ²	0...16	32	100	0...600	1200	2400	
kg/cm ²	0...25	50	100				
Unit	Pressure ranges	Overpressure safety	Burst pressure	Pressure ranges	Overpressure safety	Burst pressure	
kg/cm ² abs	0...1	2	5	0...6	12	34	
kg/cm ² abs	0...1.6	3.2	10	0...10	20	34	
kg/cm ² abs	0...2.5	5	10	0...16	32	100	
kg/cm ² abs	0...4	8	17	0...25	50	100	
Unit	Pressure ranges	Overpressure safety	Burst pressure	Pressure ranges	Overpressure safety	Burst pressure	
kg/cm ²	-1...0	2	5	-1...+9	20	34	
kg/cm ²	-1...+1.5	3.2	10	-1...+15	32	100	
kg/cm ²	-1...+3	8	17	-1...+24	50	100	
kg/cm ²	-1...+5	12	17				

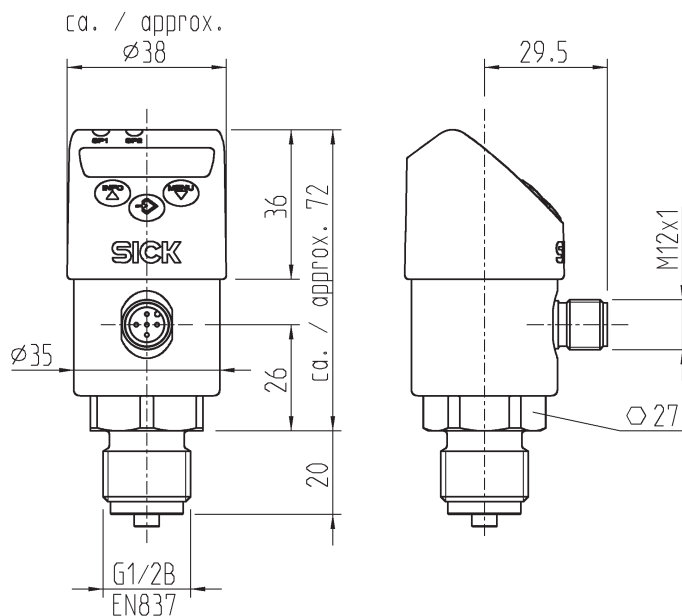
Technical Data

Fatigue life	10 Mio. max. load cycles	
Materials		
■ Wetted parts		
Pressure connection	316 L	
Pressure sensor	316 L (up to 0 ... 10 bar rel 13-8 PH)	
■ Housing		
Lower body	316 L	
Plastic head	PC + ABS	
Buttons	TPE-E	
Display disc	PC	
■ Internal transmission fluid	Silicone oil (only with pressure ranges < 0 ... 10 bar and ≤ 0 ... 25 bar abs)	
Supply voltage L ⁺	15 ... 36VDC	
Signal output and maximum ohmic load R _A	4 ... 20 mA, 3-wire R _A ≤ 0.5 kOhm 0 ... 10 V, 3-wire R _A > 10 kOhm adjustment zero point offset, max 3% of span	
Setting time (analog signal)	3 ms	
Current consumption	≤ 100 mA	
Switching points	Individually adjustable via external control buttons	
■ Type	Transistor switching output PNP or NPN Number: 1 or 2	
■ Function	normally open / normally closed; windows- and hysteresis function freely adjustable	
■ Contact rating	Supply voltage L ⁺ - 1 V [VDC]	
■ Switching current	250 mA	
■ Response time	≤ 10 ms	
■ Switching delay	0 ... 50 s (adjustable)	
■ Rotatability of housing	Display against housing with electrical connection: 330°. Housing against process connection: 320°	
■ Accuracy	≤ 0.5 % of span (setting accuracy)	
Isolation voltage	500 VDC	
Display		
■ Design	14-Segment-LED, blue 4-digits, height 9 mm	
■ Range	-1999 ... 9999, electronic 180° rotatable	
■ Accuracy	≤ 1.0 ± 1 digit % of span	
■ Update	1000, 500, 200, 100ms (adjustable)	
Accuracy	≤ ± 1.0 % of span ^{*)} ^{*)} Including non-linearity, hysteresis, zero point and full scale error (corresponds to error of measurement per IEC 61298-2)	
Non-linearity	≤ ± 0.5 % of span (BFSL) according to IEC 61298-2	
Long-term drift	≤ 0.2 % of span according to IEC 61298-2	
Permissible temperature of		
■ Medium ^{**)}	-20 ... +85 °C	
■ Ambience ^{**)}	-20 ... +80 °C	
■ Storage ^{**)}	-40 ... +80 °C	
	^{**)} Also complies with EN 50178, Tab. 7, Operation (C) 4K4H, Storage (D) 1K4, Transport (E) 2K3	
Rated temperature range	0 ... +80 °C	
Temperature error within rated temperature range	≤ 1.0 % of span typ., ≤ 2.5 max.	
Temperature coefficients within rated temperature range		
■ Mean TC of zero	≤ 0.2% of span / 10 K	
■ Mean TC of span	≤ 0.2 % of span / 10 K	
Relative humidity	90%	
CE-conformity		
■ Pressure equipment directive	This instrument is a pressure accessory as defined by the directive 97/23/EC	
■ EMC directive	2004/108/EEC, EN 61 326 Emission (Group 1, Class B) and immunity (industrial locations)	
Shock resistance	50 according to IEC 60068-2-27 (mechanical shock)	
Vibration resistance	10 according to IEC 60068-2-6 (vibration under resonance)	
Wiring protection		
■ Overvoltage protection	40 VDC	
■ Short-circuit protection	Q _A , Q ₁ , Q ₂ towards M	
■ Reverse polarity protection	L ⁺ towards M	
Weight	Approx. 200g	

Dimensions in mm

Electrical Connections

Circular connector *)
M 12x1



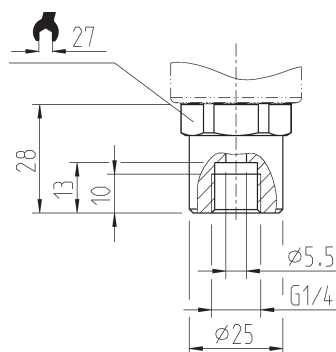
Pressure Connections

G 1/2
EN 837
Type code: GE

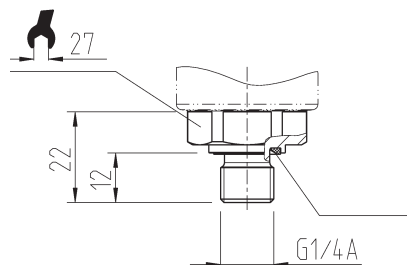
*) Mating connectors are not included in delivery.

Pressure Connections

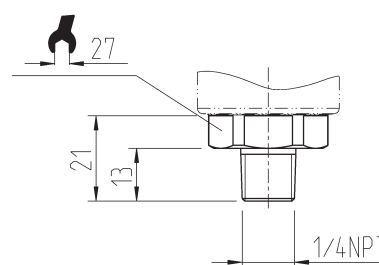
G 1/4
EN 837
Type code: G2



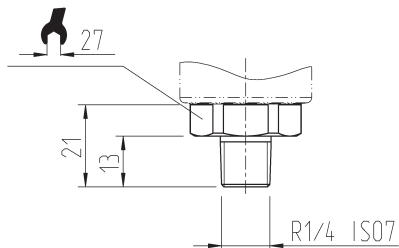
G 1/4
DIN 3852-E
Type code: G1



1/ 4 NPT
per „Nominal size for US
standard tapered
pipe thread NPT“
Type code: N1



R 1/4 ISO7
Type code: R1

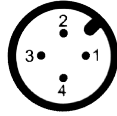


Further pressure connections on request
For installation and safety instructions see the operating instructions for this product.

Pressure Port (0.3 or 0.6 mm) available on request

Wiring connections

Circular connector M12x1, 4-pin



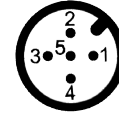
2 switching outputs or
1 switching output +
1 analog output

L⁺ = 1 M = 3 Q₁ = 4 Q₂ = 2
Q_A = 2

Ingress Protection per IEC 60

IP 65 and IP 67

Circular connector M12x1, 5-pin



2 switching outputs + 1 analog output

L⁺ = 1 M = 3 Q₁ = 4 Q₂ = 2 Q_A = 5

IP 65 and IP 67

The ingress protection classes specified only apply while the pressure transmitter is connected with female connectors that provide the corresponding ingress protection.

Legend:

- L⁺ Positive supply connection
- M Negative supply connection
- Q₁ Switching output 1
- Q₂ Switching output 1
- Q_A Analog output

Accessories

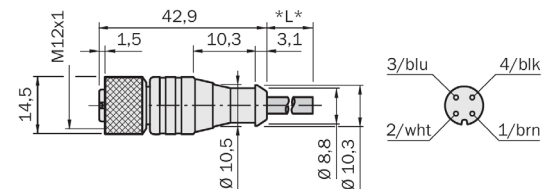
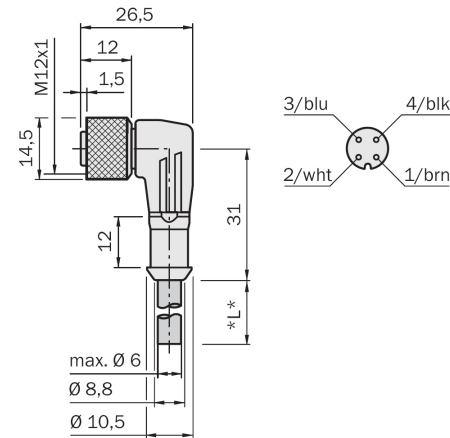
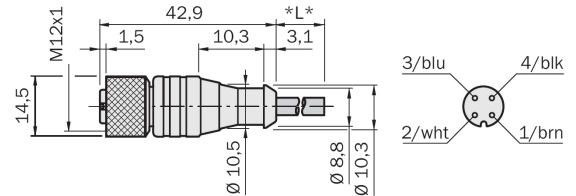
PVC circular plug-in connector, M12, 4-pin



DOL	-	12	04	-	G	02M	6009382	2 m
DOL	-	12	04	-	G	05M	6009866	5 m
DOL	-	12	04	-	G	10M	6010543	10 m
DOL	-	12	04	-	G	15M	6010753	15 m
DOL	-	12	04	-	G	20M	6034401	20 m

DOL	-	12	04	-	W	02M	6009383	2 m
DOL	-	12	04	-	W	05M	6009867	5 m
DOL	-	12	04	-	W	10M	6010541	10 m
DOL	-	12	04	-	W	15M	6036474	15 m
DOL	-	12	04	-	W	20M	6033559	20 m

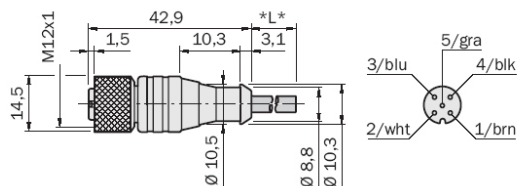
DOL	-	12	04	-	G	01M	S02	6033686	1 m, coating colour gray
DOL	-	12	04	-	G	04M	S02	6033687	4 m, coating colour gray
DOL	-	12	04	-	G	05M	S02	6033688	5 m, coating colour gray
DOL	-	12	04	-	G	07M	S02	6033690	7 m, coating colour gray



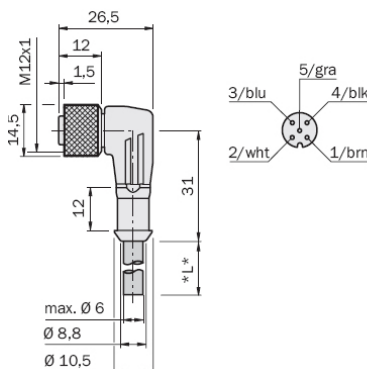
PVC circular plug-in connector, M12, 5-pin



DOL	-	12	-	05	-	G	02M	6008899	2 m
DOL	-	12	-	05	-	G	05M	6009868	5 m
DOL	-	12	-	05	-	G	10M	6010544	10 m
DOL	-	12	-	05	-	G	15M	6029215	15 m



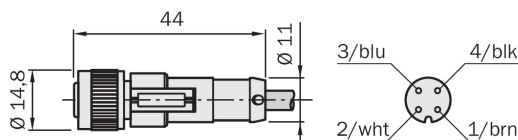
DOL	-	12	-	05	-	W	02M	6008900	2 m
DOL	-	12	-	05	-	W	05M	6009868	5 m
DOL	-	12	-	05	-	W	10M	6010542	10 m



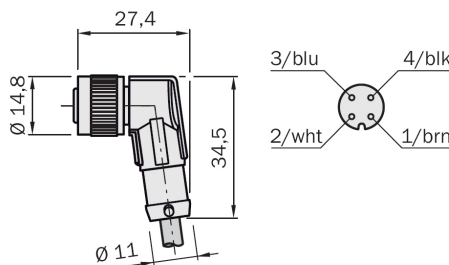
PUR circular plug-in connector, M12, 4-pin



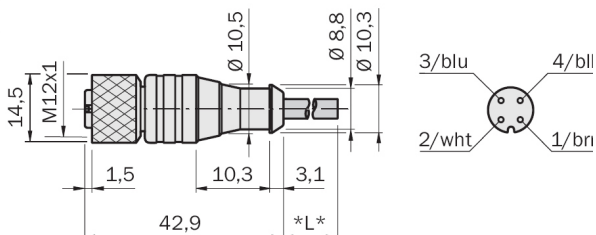
DOL	-	12	-	04	-	G	02M	C	6025900	2 m
DOL	-	12	-	04	-	G	05M	C	6025901	5 m
DOL	-	12	-	04	-	G	10M	C	6025902	10 m
DOL	-	12	-	04	-	G	15M	C	6034749	15 m
DOL	-	12	-	04	-	G	20M	C	6034750	20 m
DOL	-	12	-	04	-	G	25M	C	6034751	25 m



DOL	-	12	-	04	-	W	02M	C	6025903	2 m
DOL	-	12	-	04	-	W	05M	C	6025904	5 m
DOL	-	12	-	04	-	W	10M	C	6025905	10 m
DOL	-	12	-	04	-	W	15M	C	6034752	15 m
DOL	-	12	-	04	-	W	20M	C	6034753	20 m
DOL	-	12	-	04	-	W	25M	C	6034754	25 m



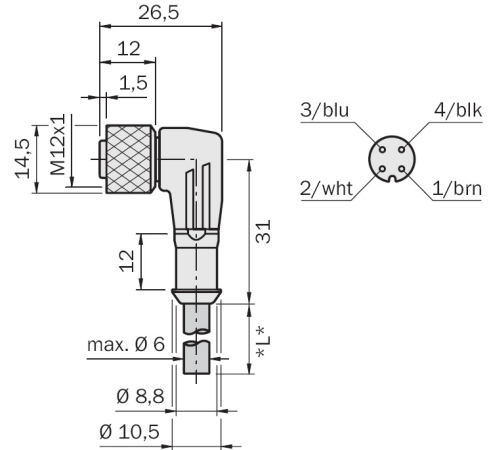
DOL	-	12	-	04	-	G	05M	D	6026250	5 m, welding spark-proof
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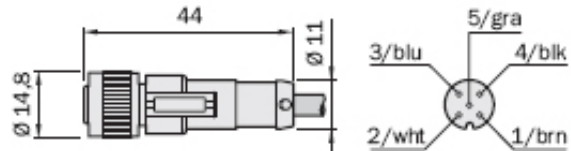
PUR circular plug-in connector, M12, 4-pin



DOL	-	12	-	04	-	W	05M	D	6020399	5 m, welding spark-proof
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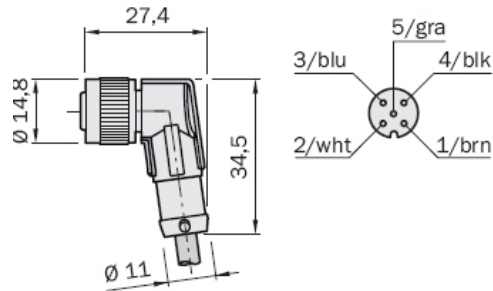
DOL	-	12	-	05	-	G	02M	C	6025906	2 m
DOL	-	12	-	05	-	G	05M	C	6025907	5 m
DOL	-	12	-	05	-	G	10M	C	6025908	10 m



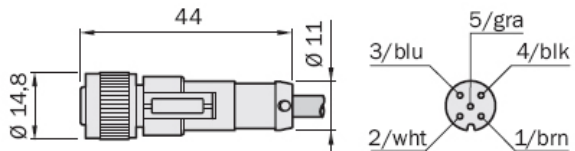
PUR circular plug-in connector, M12, 5-pin



DOL	-	12	-	05	-	W	02M	C	6025909	2 m
DOL	-	12	-	05	-	W	05M	C	6025910	5 m
DOL	-	12	-	05	-	W	10M	C	6025911	10 m

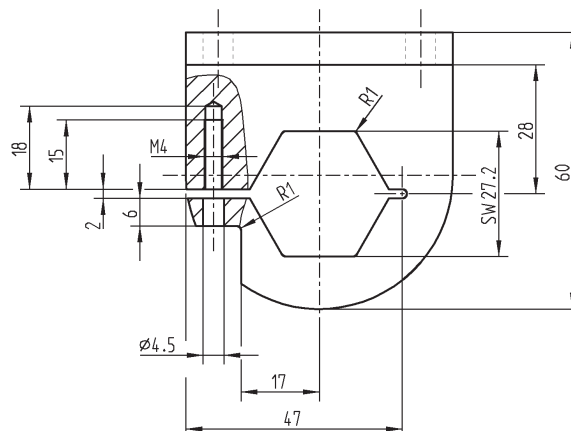
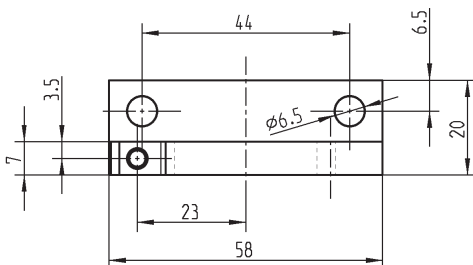


DOL	-	12	-	05	-	G	05M	A	C	6036384	5 m, shielded
DOL	-	12	-	05	-	G	10M	A	C	6036385	10 m, shielded
DOL	-	12	-	05	-	G	20M	A	C	6036386	20 m, shielded



Device fixture

Material	Order-Nr.
Aluminium	6038699



PBS -		Option		
Pressure Port				
Standard		S		
0.3 mm pressure port		N		
0.6 mm pressure port		M		
Sealing				
NBR			N	
FPM/FKM			F	
Copper			C	
Stainless steel			S	
without sealing			0	
Output Signal				
two switching outputs (PNP)				A
one switching output (PNP) +4...20mA				B
one switching output (PNP) +0...10V				C
two switching outputs (PNP) +4...20mA				D
two switching outputs (PNP) +0...10V				E
two switching outputs (NPN)				F
one switching output (NPN) +4...20mA				G
one switching output (NPN) +0...10V				H
two switching outputs (NPN) +4...20mA				I
two switching outputs (NPN) +0...10V				K
Optional: Device type				
Customized factory settings				W 0 0

Some combinations are technically not possible.

Further configurations (e.g. pressure ranges) on request. Please contact SICK sales department.

Australia

Phone +61 3 9497 4100
1800 33 48 02 - tollfree
E-Mail sales@sick.com.au

Belgium/Luxembourg

Phone +32 (0)2 466 55 66
E-Mail info@sick.be

Brasil

Phone +55 11 3215-4900
E-Mail sac@sick.com.br

Ceská Republika

Phone +420 2 57 91 18 50
E-Mail sick@sick.cz

China

Phone +852-2763 6966
E-Mail ghk@sick.com.hk

Danmark

Phone +45 45 82 64 00
E-Mail sick@sick.dk

Deutschland

Phone +49 211 5301-250
E-Mail info@sick.de

España

Phone +34 93 480 31 00
E-Mail info@sick.es

France

Phone +33 1 64 62 35 00
E-Mail info@sick.fr

Great Britain

Phone +44 (0)1727 831121
E-Mail info@sick.co.uk

India

Phone +91-22-4033 8333
E-Mail info@sick-india.com

Israel

Phone +972-4-999-0590
E-Mail info@sick-sensors.com

Italia

Phone +39 02 27 43 41
E-Mail info@sick.it

Japan

Phone +81 (0)3 3358 1341
E-Mail support@sick.jp

Nederlands

Phone +31 (0)30 229 25 44
E-Mail info@sick.nl

Norge

Phone +47 67 81 50 00
E-Mail austefjord@sick.no

Österreich

Phone +43 (0)22 36 62 28 8-0
E-Mail office@sick.at

Polska

Phone +48 22 837 40 50
E-Mail info@sick.pl

Republic of Korea

Phone +82-2 786 6321/4
E-Mail kang@sickkorea.net

Republika Slovenija

Phone +386 (0)1-47 69 990
E-Mail office@sick.si

România

Phone +40 356 171 120
E-Mail office@sick.ro

Russia

Phone +7 495 775 05 34
E-Mail info@sick-automation.ru

Schweiz

Phone +41 41 619 29 39
E-Mail contact@sick.ch

Singapore

Phone +65 6744 3732
E-Mail admin@sicksgp.com.sg

Suomi

Phone +358-9-25 15 800
E-Mail sick@sick.fi

Sverige

Phone +46 10 110 10 00
E-Mail info@sick.se

Taiwan

Phone +886 2 2375-6288
E-Mail sickgrc@ms6.hinet.net

Türkiye

Phone +90 216 587 74 00
E-Mail info@sick.com.tr

USA/Canada/México

Phone +1(952) 941-6780
1 800-325-7425 - tollfree
E-Mail info@sickusa.com

More representatives and agencies
in all major industrial nations at
www.sick.com