DLF-8980

DIGITAL LEVEL SWITCH METER

ANALOG OUTPUT + 2 PNP SWITCHES

imsystem
Technologies for Automation

The DLF 8980 is the ideal combination of a float level and transmitter with display. The parameters are set on the device or in a timesaving way via an NFC - smartphone App. The settings in combination with a comprehensive set of options make the DLF 8980 suitable for a wide range of industrial applications. The magnetic float which activates reed contacts inside the guiding rod provides a measuring resolution of 5, 10 or 20mm.

Applications

- Water treatment
- Machine tools
- Mobile hydraulics
- Food & Beverages
- Chemical & Pharmaceutical

Features

- Parameterization also via NFC-smartphone App (Android)
- Display and electrical connection are independently rotatable 335°/343°
- Analogue output switchable mA or V
- Integrated datalogger
- Measuring resolution 5, 10, 20 mm

Technical Data			
Measuring principle	Magnetic float with reed contacts	Media temperature	-30°C ... +105°C -30°C ... +90°C PP floats -30°C ... +60°C PVC floats
Measuring range	Max. Level 2000 mm	Ambient temperature	-30°C ... +85°C
Output signal	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, switchable mA or V	Unit for display	mm, inch, user scale, %FS
Switching output	2 transistors PNP	Logger	Ring buffer: 3518 data points Sampling time: 0.1 ... 999.9 s, Off (0)
Accuracy @ 25°C typ.	Resolution of 5, 10 or 20 mm. With resolution 5mm max. stem length 1099 mm		

Data sheetH72450b

Subject to change

Ordering information/type code

8980 - X - XX - XXX - XX - XXXX - XXX - XX - X - XX

1. Float and Stem Material [1]

Brass and Spansil	0
AISI316 L	S
PP or PVDF or PVC	P

2. Measuring resolution [2]

05 mm	05
10 mm	10
20 mm	20

3. Floats [2 - 5]

Float material	Type	Dimension (in mm)		Float material	Type	Dimension (in mm)	
Spansil	8980-O	Ø 30x20	B20	PVDF	8980-P	Ø 49x53	F49
		Ø 20x28	B28	PP	8980-P	Ø 49x53	P49
		Ø 30x45	B45	PVC	8980-P	Ø 49x53	V49
		Ø 44x50	B44				
AISI316 L	8980-S	Ø 30x32	S29	Special float [6]			Z99
		Ø 52x68	S52				
		Ø 52	S53				
		Ø 100	S10				

4. Output signal

Switching output PNP, current output 4 ... 20 mA, switchable to 0 ... 10 VDC; output detail see accessories P1, P2, P3	PA
Switching output PNP, voltage output 1 ... 6 VDC; output detail see accessories P1, P2, P3	PU
Switching output PNP, voltage output 0 ... 10 VDC; output detail see accessories P1, P2, P3	PV
Switching output PNP, voltage output 0 ... 5 VDC; output detail see accessories P1, P2, P3	PW
Switching output PNP; output detail see accessory P4	PS

5. Stem length [5]

"L0" max 2000 mm	XXXX

6. Process connection [3]

Outside, G 1" m	G25	Flange type DIN (to specify dimension for ex. 2")	DN1
Outside, 1" NPT m	N25	Flange type ANSI (to specify dimension for ex. DN40 PN16)	DN2
Outside, G 1 ½" m	G40	Flange 6 holes on Ø60 mm in brass	FOH
Outside, 1 ½" NPT m	N40	Flange 6 holes on Ø60 mm in SS	FSH
Outside, G 2" m	G50	Special process connection [7]	X99
Outside, 2" NPT m	N50		

7. Electrical connection [4]

Male electrical plug M12x1, 4-pole, Mat. PA (Accessories P3, P4)	32
Male electrical plug M12x1, 5-pole, Mat. PA (Accessories P1, P2)	35

8. Temperature class [2]

Standard	L

8980 - X - XX - XXX - XX - XXXX - XXX - XX - X - XX

9. Accessories		
	Pin configuration 5-pole.; 1: U+, 2: analogue, 3: U-, 4: SP1, 5: SP2	P1
	Pin configuration 5-pole.; 1: U+, 2: SP2 , 3: U-, 4: SP1, 5: analogue	P2
	Pin configuration 4-pole.; 1: U+, 2: analogue, 3: U-, 4: SP1	P3
	Pin configuration 4-pole.; 1: U+, 2: SP2 , 3: U-, 4: SP1	P4
	Female electrical plug M12x1, 5-pole [5]	33
	Parameterization standard for output signal PS, T1 (see table "Parameters")	ZS
	Parameterization according to customer specification (see table "Parameters")	ZC
	Function package 1: Zero set / Measuring range zero point adjustment	Z1
	Function package 2: User scale unit / analogue output adjustment	Z2
	Protective cap, 1 pc. F89051, package of 5 pcs. F89052, package of 25 pcs. F89075	

[1] See table Materials
[2] See table Floats
[3] See table Process connections
[4] See table Electrical Connections
[5] See table Dimensions
[6] For other floats, please contact factory
[7] For other process connections, please contact factory
[8] For other electrical connections, please contact factory
[9] For other options, please contact factory.

Order example

- 8980-S-05-S29-PA-XXXX-G25-35-L-P1-ZS
- 8980-S-20-S52-PA-XXXX-G50-35-L-P1-ZS
- 8980-O-10-B20-PV-XXXX-G25-35-L-P1-ZS
- 8980-O-20-B45-PA-XXXX-G25-35-L-P1-ZS
- 8980-P-05-V49-PA-XXXX-G50-35-L-P1-ZS

Material

Tab. 1

Type	Stem	Float	Process connection	Flange
8980-O xx Bxx	Brass	Spansil	Brass	Brass
8980-S xx Sxx	AISI316	AISI316	AISI316	AISI316
8980-P xx Fxx	PVDF	PVDF	PVDF	PVDF
8980-P xx Pxx	PP	PP	PP	PP
8980-P xx Vxx	PVC	PVC	PVC	PVC

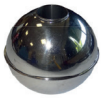
Floats 8980-O

Tab. 2

				
Code	B20	B28	B45	B44
Material	Spansil	Spansil	Spansil	Spansil
Dimension (mm)	Ø30x20	Ø20x28	Ø30x45	Ø44x50
Specific gravity (kg/dm³)	0,4	0,4	0,35	0,45
Measuring Resolution (mm)	5 - 10	5 - 10	5 - 10 - 20	5 - 10 - 20
Max. Pressure (bar)	20	20	20	20
Media temperature max.	105°C	105°C	105°C	105°C

Floats 8980-S

Tab. 2

				
Code	S29	S52	S53	S10
Material	AISI316	AISI316	AISI316	AISI316
Dimension (mm)	Ø30x32	Ø52x68	Ø52	Ø100
Specific gravity (kg/dm³)	0,75	0,65	0,7	0,6
Measuring Resolution (mm)	5	10 - 20	5	10 - 20
Max. Pressure (bar)	30	40	50	15
Media temperature max.	105°C	105°C	105°C	105°C

Floats 8980-P

Tab. 2

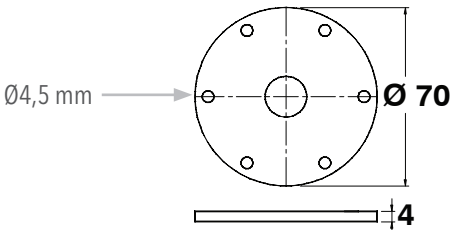
			
Code	**F49**	**P49**	**V49**
Material	PVDF	PP	PVC
Dimension (mm)	Ø49x53	Ø49x53	Ø49x53
Specific gravity (kg/dm³)	0,8	0,45	0,7
Measuring Resolution (mm)	5	5	5
Max. Pressure (bar)	6	3	6
Media temperature max.	105°C	90°C	60°C

Process connection

Tab. 3

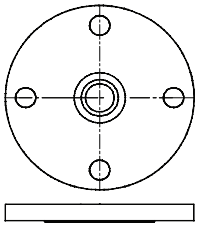
	Type	8980-O				8980-S				8980-P		
Code	**Process Connection**	**B20**	**B28**	**B45**	**B44**	**S29**	**S52**	**S53**	**S10**	**F49**	**P49**	**V49**
G25	G 1" m, mounting from outside	✓	✓	✓		✓						
N25	1" NPT m, mounting from outside		✓									
G40	G 1 ½" m, mounting from outside	✓	✓	✓	✓	✓						
N40	1 ½" NPT m, mounting from outside	✓	✓	✓		✓						
G50	G 2" m	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
N50	2" NPT m	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
DN1	Flange type DIN				✓		✓	✓	✓	✓	✓	✓
DN2	Flage type ANSI				✓		✓	✓	✓	✓	✓	✓
FOH	Flange 6 hole on Ø60mm in brass	✓	✓	✓								
FSH	Flange 6 hole on Ø60mm in SS					✓						

Fig. 1



FOH - FSH
6 holes on Ø60 mm

Fig. 2



DN = DIN – ANSI Flanges

Flanges available

DIN type	ANSI type
DN25 PN6 or PN16 or PN40	1" ANSI 150# RF or 300# RF or 600# RF
DN50 PN6 or PN16 or PN40	2" ANSI 150# RF or 300# RF or 600# RF
DN80 PN6 or PN16 or PN40	3" ANSI 150# RF or 300# RF or 600# RF
DN125 PN6 or PN16 or PN40	4" ANSI 150# RF or 300# RF or 600# RF

Parameters

Name	Standard setting (accessory ZS)	Value range	Short name	Customer adjustment (accessory ZC)
Switch point SP1 (hysteresis mode) Upper switch point FH1 (window mode)	75 % Measuring range	SP1 > RP1 FH1 > FL1 Hysteresis ≥ 1 % FS	SP1	
Reset point RP1 (hysteresis mode) Lower switch point FL1 (window mode)	25 % Measuring range	RP1 < SP1 FL1 < FH1 Hysteresis ≥ 1 % FS	RP1	
Switch point SP2 (hysteresis mode) Upper switch point FH2 (window mode)	75 % Measuring range	SP2 > RP2 FH2 > FL2 Hysteresis ≥ 1 % FS	SP2	
Reset point RP2 (hysteresis mode) Lower switch point FL2 (window mode)	25 % Measuring range	RP2 < SP2 FL2 < FH2 Hysteresis ≥ 1 % FS	RP2	
Switch point delay time SP1 (hysteresis mode) Switch point delay time FH1 (window mode)	0	0 ... 99.99 s	dS1	
Switch point delay time RP1 (hysteresis mode) Switch point delay time FL1 (window mode)	0	0 ... 99.99 s	dR1	
Switch point delay time SP2 (hysteresis mode) Switch point delay time FH2 window mode)	0	0 ... 99.99 s	dS2	
Switch point delay time RP2 (hysteresis mode) Switch point delay time FL2 (window mode)	0	0 ... 99.99 s	dR2	
Functions switching output 1	Hysteresis, closer (Hno)	Hysteresis NO (Hno), Hysteresis NC (Hnc) Window NO (Fno), Window NC (Fnc)	ou1	
Functions switching output 2	Hysteresis, closer (Hno)	Hysteresis NO (Hno), Hysteresis NC (Hnc) Window NO (Fno), Window NC (Fnc)	ou2	
Level unit	mm	mm, inch, %, user scale	uni	
Measuring range adjustment	100 % Nominal	50 ... 100 % Nominal	L-EP	
Damping (analogue output)	0.01 s	0.01 ... 3.00 s (time constant)	dAA	
Display rotation	No	no, yes (180°)	disr	
Display mode	Current value	Value: current, highest, lowest, display off Current value: decimal places selectable (max. 3)	dis	
Display actualisation	2	1, 2, 5, 20 Hz	duPd	

Specifications		
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (15 ... 30) VDC 0 ... 5 VDC: 24 (15 ... 30) VDC 1 ... 6 VDC: 24 (15 ... 30) VDC 0 ... 10 VDC: 24 (15 ... 30) VDC
	Power-on delay	Typ. 200 ms
	Inverse-polarity protection, short-circuit strength @ 25°C during 5 min.	integrated
	Current consumption	≤ 30 mA
Environmental conditions	Media temperature	-30°C ... +105°C
	Ambient temperature	-30°C ... +85°C
	Protection [1)]	IP65, IP67
	Humidity	Max. 95 % relative
	Vibration	0.7g (13.2 ... 100 Hz)
EMC Protection	Emission	EN/IEC 61000-6-3
	Immunity	EN/IEC 61000-6-2
Mechanical Data	Sensor (wetted parts)	see ordering information
	Pressure connection (wetted parts)	see ordering information
	Housing	Zinc based die-casting alloy, nickel plated display housing plastic
	Male electrical plug	See ordering information
	Housing alignment	Display 335° rotatable, max. 2.5 Nm Electrical connection 343° rotatable, max. 5 Nm

[1)] See electrical connection

Analogue output			
Output signal	Switchable 4 ... 20 mA or voltage		
Current limiting output signal	4 ... 20 mA: 25 mA (overload)		
	0 ... 10 VDC: < 40 mA (short-circuit)		
Measuring range zero point adjustment (L_nP) [1]	0 ... 50 % FS [2]		
Measuring range end point adjustment (L_EP)	50 ... 100 % FS [2]		
Zero point adjustment analogue output (o_nP) [1]	Voltage output: 0 ... 2 VDC Current output: 3.9 ... o_EP - 8 mA		
End point adjustment analogue output (o_EP) [1]	Voltage output: o_nP + 4 ... 10.5 VDC Current output: o_nP + 8 ... 20.1 mA		

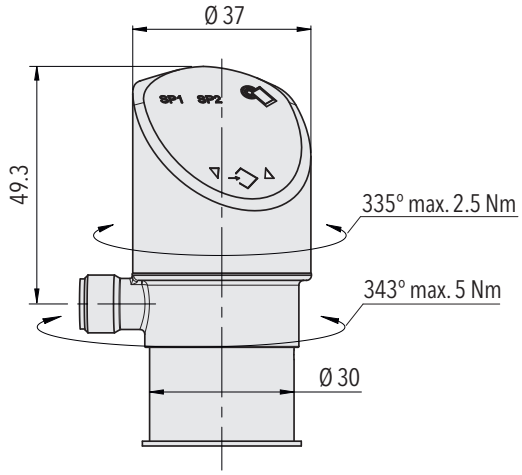
[1] Available with optional function package, see "Accessories"
[2] L_EP – L_nP ≥ 50 % FS

Switching output			
Adjustment range of switchpoints	0 … 100 % FS		
Switching hysteresis	≥ measuring resolution		
	Switchpoint > reset point		
Switching resistance	≤ 3 Ω		
Output function	Hysteresis, Window; normally closed (NO), normally open (NC)		
Switching current	≤ 0.5 A each switching output		
Current limiting	≤ 2 A each switching output		
Switching frequency	max. 200 Hz		
Delay time	0 ... 99.99 s		

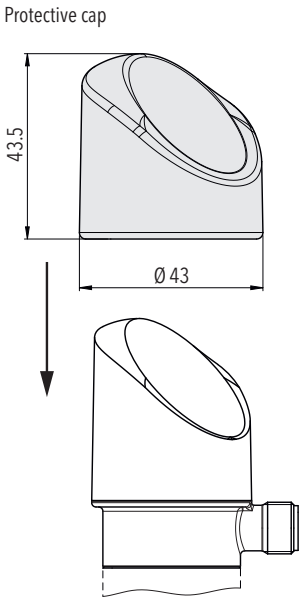
Display	
Display	4-digit 7-segment display 180° flippable with disable function Standard decimal places: ≤ 9: 3 decimal places 10 ... 99: 2 decimal places 100 ... 999: 1 decimal place
Switching status indication	2 LED, red
Operation	With 3 buttons and menu navigation according to VDMA 24574-1
Display resolution	0.1 % FS
Display range	-3 ... 103 % FS
Setting parameters	See table Parameters
User scale unit User defined values for display indication zero point and end point [1]	Display zero point: -999 ... 9998 Display end point: -998 … 9999

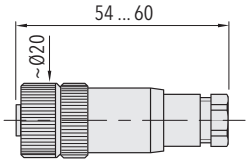
[1] Available with optional function package, see "Accessories"

Dimensions



8980.XX.XXXX.**35/32**.XX.XX





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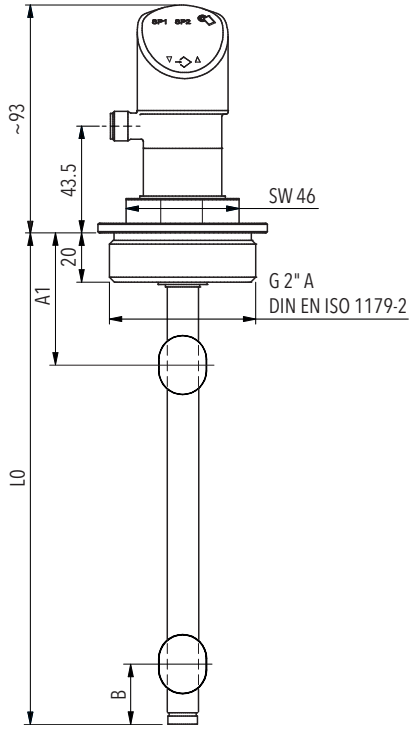
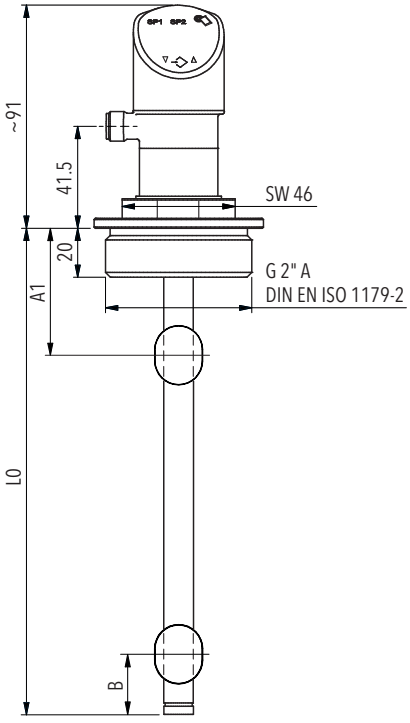
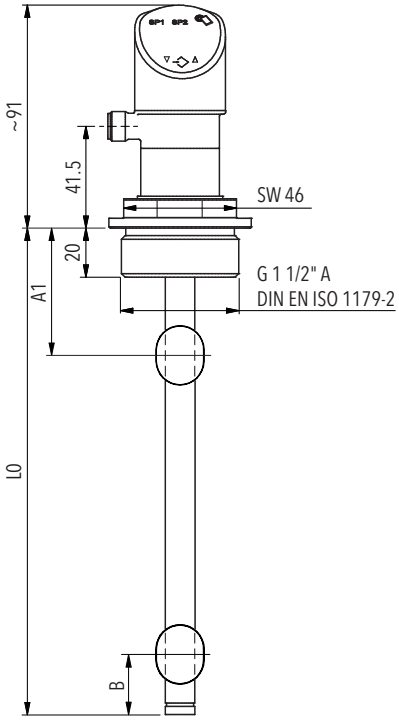


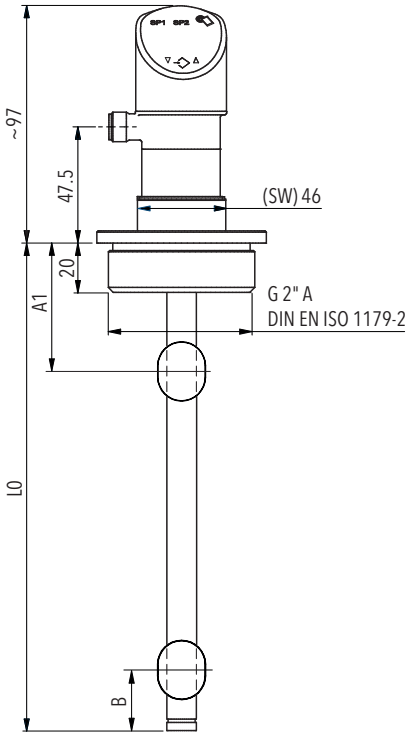
8980-S-XX-**S**XX-**P**X-XXXX-**G50**



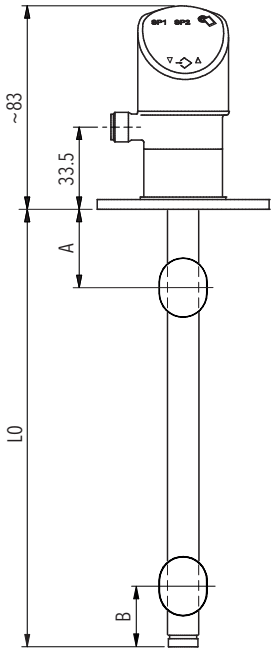
8980-O-XX-**B**XX-**P**X-XXXX-**G50**

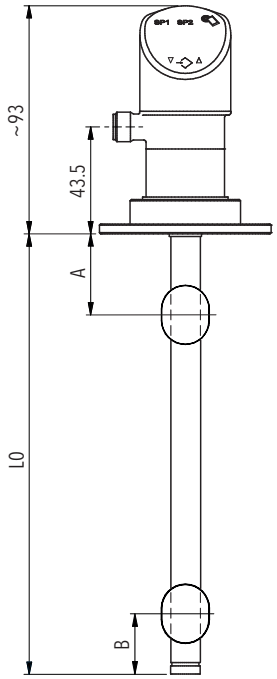


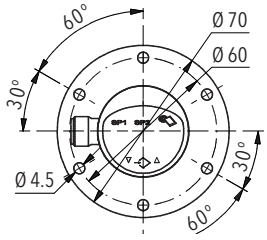
8980-O-XX-**B**XXX-**P**X-XXXX-**G40**
8980-S-XX-**S**XXX-**P**X-XXXX-**G40**



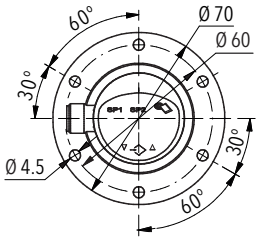
8980-P-XX-X**49**-P**X**-XXXX-**G50**







8980-O-XX-B**XX**-P**X**-XXXX-**FOH**



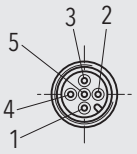
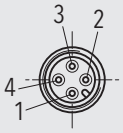
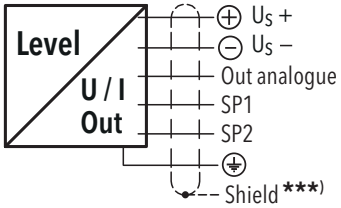
8980-S-XX-S**XX**-P**X**-XXXX-**FSH**

Dimension (mm)

Tab. 5

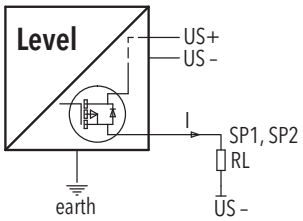
	8980-O				8980-S				8980-P		
Code	**B20**	**B28**	**B45**	**B44**	**S29**	**S52**	**S53**	**S10**	**F49**	**P49**	**V49**
A	10	15	25	25	15	35	25	50	25	25	25
A1	25	30	40	45	35	55	45	-	45	45	45
B	15	20	30	30	25	40	30	60	30	30	30

Electrical connection

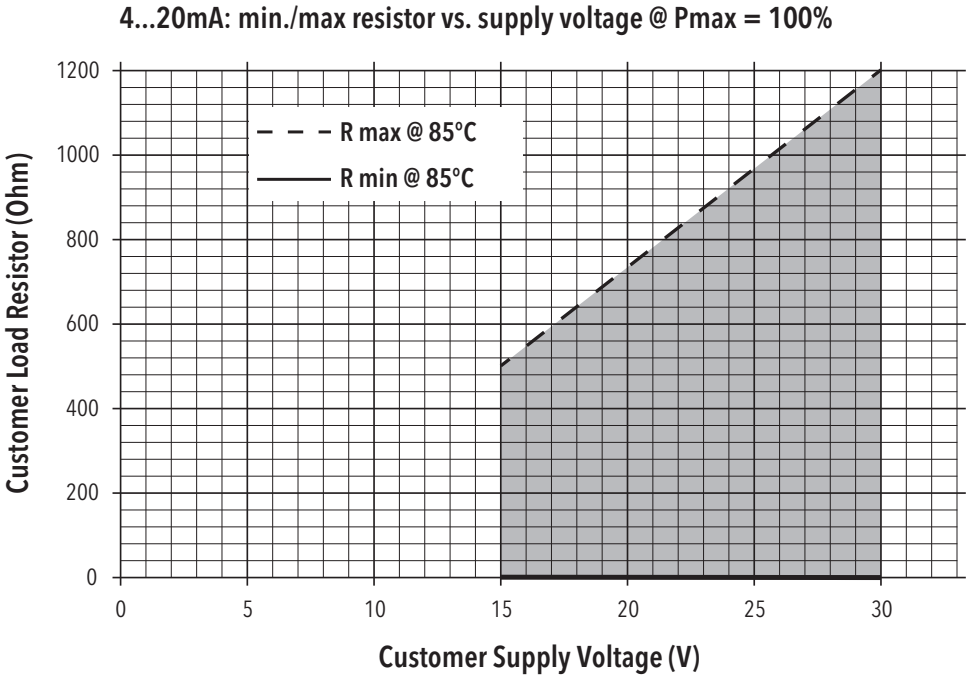
		Protection / electrical connection			
		IP67*)			
		M12x1			
		5-pole **35** 		4-pole **32** 	
Output signal		P1	P2	P3	P4
	PA	✓	✓	✓	
	PU	✓	✓	✓	
	PV	✓	✓	✓	
	PW	✓	✓	✓	
	PS				✓
Pin Configuration	 **8980**.xx.xxxx.xx.**PA/PU/PV/PW/PS**	P1 1 3 2 4 5 Shield ***)	P2 1 3 5 4 2 Shield ***)	P3 1 3 2 4 Shield ***)	P4 1 3 – 4 2

*) Provided female connector is mounted according to instructions

***) The use of a shielded cable is recommended



Connection of loads to switching output



Functions switching output