

## Display Pressure Switch



### Product description

The DPS 8381 is the ideal combination of pressure switch and transmitter with a pressure 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 DPS 8381 suitable for a wide range of demanding applications.

### Applications

- Machine tools
- Hydraulics
- Process technology
- Industrial applications

### 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 range adjustable

EMC: 2014/30/EU

S.I. 2016 No. 1091

RoHS/Reach compliant

UL-listed version

### Technical Data

Measuring principle	Thin-film-on-steel
Measuring range	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi adjustable
Output signal	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, switchable mA or V
Media temperature	-25°C ... +85°C
Ambient temperature	max. -25°C ... +85°C (UL-rated ambient temperature: -20°C ... +80°C) Details see section: Electrical Connection
Logger	Ring buffer: 3518 data points Sampling time: 0.1 ... 999.9 s, Off (0)

### Additional information

Data sheet	<a href="http://www.trafag.com/H72321">www.trafag.com/H72321</a>
Instructions	<a href="http://www.trafag.com/H73320">www.trafag.com/H73320</a>
Accessories	<a href="http://www.trafag.com/H72258">www.trafag.com/H72258</a>
Video	<a href="https://youtu.be/OZkTVgewaTk">https://youtu.be/OZkTVgewaTk</a>

## Ordering information/Type code

Ordering information/Type code				8381			XX	XX	XX	XX	XX	XX
Measuring range <sup>1)</sup>	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]	Pressure-measurement-range [psi]	Over pressure [psi]	Burst pressure [psi]						
	0 ... 2.5	7.5	50	75	0 ... 30	90	700	G5				
	0 ... 4	12	60	76	0 ... 50	150	850	G6				
	0 ... 6	18	100	77	0 ... 100	300	1450	G7				
	0 ... 10	30	200	78	0 ... 150	450	2500	G8				
	0 ... 16	48	200	79	0 ... 200	600	2500	GA				
	0 ... 25	75	300	80	0 ... 250	750	2500	G9				
	0 ... 40	120	300	81	0 ... 300	900	4000	HA				
	0 ... 60	180	400	82	0 ... 400	1200	4000	H0				
	0 ... 100	300	500	83	0 ... 500	1500	4000	H1				
	0 ... 160	480	750	85	0 ... 1000	3000	5000	H2				
	0 ... 250	750	1000	74	0 ... 1500	4500	7000	H3				
	0 ... 400	1000	2000	84	0 ... 2000	6000	10000	H5				
	0 ... 600	1500	2500	86	0 ... 3000	9000	14500	G4				
					0 ... 5000	12500	21750	H4				
					0 ... 7500	18750	29000	H6				
	<b>Option 5P: Fivefold overpressure</b>				<b>Option: Maximum Overpressure</b>							
	0 ... 2.5	12.5	60	55	0 ... 30	150	1450	E5				
	0 ... 4	20	100	56	0 ... 50	180	1450	E6				
	0 ... 6	30	200	57	0 ... 100	450	3500	E7				
	0 ... 10	50	200	58	0 ... 150	700	4250	E8				
	0 ... 16	80	300	59	0 ... 200	700	4250	EA				
	0 ... 25	125	300	60	0 ... 250	1150	5750	E9				
	0 ... 40	200	400	61	0 ... 300	1150	5750	FA				
	0 ... 60	300	500	62	0 ... 400	1800	8500	F0				
	0 ... 100	500	750	63	0 ... 500	1800	8500	F1				
	0 ... 160	800	1000	65	0 ... 1000	4600	19000	F2				
<b>Sensor</b>	Relative pressure, accuracy class: 0.5 %; Material pressure connection and housing: 1.4542 (AISI 630)						25					
	Relative pressure, accuracy class: 0.5 %; Material pressure connection and housing: 1.4404 (AISI 316L) <sup>2)3)4)</sup>						35					
<b>Process connections</b>	G1/4" female <sup>2)</sup>						10					
	G1/4" male						17					
	G1/4" male, with integrated damping Ø 0.5 mm						15					
	G1/4" male (Manometer) EN 837 <sup>2)</sup>						53					
	G1/2" male (Manometer) EN 837 <sup>2)</sup>						11					
	1/4" NPT male <sup>2)</sup>						30					
	1/2" NPT male <sup>2)</sup>						51					
	R1/4" male, DIN 3858 <sup>2)</sup>						19					
	M14x1.5 male, DIN 6149-2 <sup>2)</sup>						31					
	7/16"-20UNF male, DIN 3866 <sup>2)5)</sup>						18					
	7/16"-20UNF-2A male, SAE J1926-2 (Heavy Duty) <sup>6)</sup>						69					
	7/16"-20UNF female, SAE J512 with valve opener <sup>2)5)</sup>						24					
	9/16"-18UNF-2A male, SAE J1926-2 (Heavy Duty) <sup>6)</sup>						67					

	8381	XX	XX	XX	XX	XX	XX
<b>Electrical connection</b>	Male electrical connector M12x1, 4-pole, material PA (Accessories P3, P4)						32
	Male electrical connector M12x1, 5-pole, material PA (Accessories P1, P2)						35
<b>Output signal</b>	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
<b>Accessories</b>	Pressure peak damping element $\varnothing$ 1.0 mm, material 1.4305 <sup>7)</sup>						40
	Pressure peak damping element $\varnothing$ 0.4 mm, material 1.4305 <sup>7)</sup>						44
	Seal FKM, -18°C ... +125°C						61
	Seal EPDM, -40°C ... +125°C						63
	Seal NBR, -25°C ... +100°C						83
	Female electrical plug M12x1, 5-pole <sup>8)</sup>						33
	Parametrisation standard for output signal PS, T1 (see table "Parameters")						Z5
	Parametrisation 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
	Enhanced condensation protection						CP
	Protective cap, 1 pc. F89051, package of 5 pcs. F89052, package of 25 pcs. F89075						
	Adapter with flange connection, 1 pc. F82054						
	UL-listed version						UL
	Pin configuration, see table: Electrical connection						

<sup>1)</sup> Extended overpressure as well as customized pressure ranges upon request

<sup>2)</sup> Upon request, whereas minimum order quantities may apply

<sup>3)</sup> Only with pressure connection 17 (G1/4")

<sup>4)</sup> Only for pressure ranges  $\geq$  10 bar

<sup>5)</sup> max. allowable pressure range 60 bar at 120 bar overpressure

<sup>6)</sup> Measuring range max. 630 bar according to SAE J1926-2 (Heavy Duty)

<sup>7)</sup> Not for pressure connections 10, 11, 15, 18, 24, 53

<sup>8)</sup> For electrical connections 32 and 35

## Ordering-no. for process connections

	Combination with UL
Measuring range	All ranges on datasheet
Sensor	All codes on datasheet
Pressure connection	All codes on datasheet
Electrical connection	All codes on datasheet
Output signal	All codes except PS and T1
Accessories	All codes except GA, GS and GU

## Compatibility matrix pressure connection and accessories

Code	Pressure connection	Damping		Seal		
		Ø 0.4 mm (Code 44)	Ø 1.0 mm (Code 40)	FKM (Code 61)	EPDM (Code 63)	NBR (Code 83)
10	G1/4" female					
17	G1/4" male	✓	✓	✓	✓	✓
15	G1/4" male, with integrated damping Ø 0.5 mm			✓	✓	✓
53	G1/4" male (Manometer) EN 837					
11	G1/2" male (Manometer) EN 837					
30	1/4" NPT male	✓	✓			
51	1/2" NPT male	✓	✓			
19	R1/4" male, DIN 3858	✓	✓			
31	M14x1.5 male, DIN 6149-2	✓	✓	✓		
18	7/16"-20UNF male, DIN 3866					
69	7/16"-20UNF-2A male, SAE J1926-2 (Heavy Duty)	✓	✓	✓	✓	
24	7/16"-20UNF female, SAE J512 with valve opener					
67	9/16"-18UNF-2A male, SAE J1926-2 (Heavy Duty)	✓	✓	✓	✓	

## Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Overpressure max. [bar]	Supply [VDC]	Accuracy @ 25°C typ. [%]
DPS2.5PAP1	8381 75 2517 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 2.5	7.5	15 ... 30	± 0.5
DPS4.0PAP1	8381 76 2517 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 4	12	15 ... 30	± 0.5
DPS6.0PAP1	8381 77 2517 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 6	18	15 ... 30	± 0.5
DPS10.0PAP1	8381 78 2517 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 10	30	15 ... 30	± 0.5
DPS16.0PAP1	8381 79 2517 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 16	48	15 ... 30	± 0.5
DPS25.0PAP1	8381 80 2517 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 25	75	15 ... 30	± 0.5
DPS40.0PAP1	8381 81 2517 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 40	120	15 ... 30	± 0.5
DPS60.0PAP1	8381 82 2517 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 60	180	15 ... 30	± 0.5
DPS100.0PAP1	8381 83 2517 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 100	300	15 ... 30	± 0.5
DPS160.0PAP1	8381 85 2517 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 160	480	15 ... 30	± 0.5
DPS250.0PAP1	8381 74 2517 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 250	750	15 ... 30	± 0.5
DPS400.0PAP1	8381 84 2517 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 400	1000	15 ... 30	± 0.5
DPS600.0PAP1	8381 86 2517 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 600	1500	15 ... 30	± 0.5

## Specifications

<b>Electrical data</b>	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 time	typ. 200 ms
	Inverse-polarity protection, short-circuit strength @ 25°C during 5 min.	Integrated
	Resistance of insulation	> 10 MΩ, 50 VDC
	Dielectric strength	50 VAC, 50 Hz
	Current limiting output signal	4 ... 20mA: appr. 25 mA max.
	<b>Environmental conditions</b>	Media temperature
Ambient temperature		max. -25°C ... +85°C (UL-rated ambient temperature: -20°C ... +80°C) Details see section: Electrical Connection
Storage temperature		-20°C ... +40°C
Protection		IP67 Details see section: Electrical Connection
Humidity		max. 95 % relative
Vibration		10 g (10 ... 2000 Hz)
Shock		50 g/3 ms
<b>EMC protection</b>		Emission
	Immunity	EN/IEC 61000-6-2
<b>Mechanical data</b>	Sensor (wetted parts)	1.4542 (AISI630)
	Pressure connection (wetted parts)	1.4542 (AISI630) or 1.4404 (AISI316L) <sup>1)</sup>
	Housing	Zinc based die-casting alloy nickel plated display housing plastic
	Sealing	FPM, NBR, EPDM
	Male electrical connector	See ordering information
	Mounting torque	15 ... 20 Nm
	Housing alignment	Display 335° rotatable, max. 2.5 Nm Electrical connection 343° rotatable, max. 5 Nm

<sup>1)</sup> See ordering information for sensor

## 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 $\geq$ 1 % FS	SP1	
Reset point RP1 (hysteresis mode) Lower switch point FL1 (window mode)	25 % Measuring range	RP1 < SP1 FL1 < FH1 Hysteresis $\geq$ 1 % FS	RP1	
Switch point SP2 (hysteresis mode) Upper switch point FH2 (window mode)	75 % Measuring range	SP2 > RP2 FH2 > FL2 Hysteresis $\geq$ 1 % FS	SP2	
Reset point RP2 (hysteresis mode) Lower switch point FL2 (window mode)	25 % Measuring range	RP2 < SP2 FL2 < FH2 Hysteresis $\geq$ 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	
Pressure units	bar	bar, psi, MPa, kPa, mWC, inchWC	uni	
Measuring range adjustment	100 % Nominal pressure	50 ... 100 % Nominal	P_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 pressure value	Pressure value: current, highest, lowest, display off Current value: decimal places selectable (max. 3)	dis	
Display actualisation	2	1, 2, 5, 20 Hz	duPd	

## Analogue output

			Accuracy class 0.5 %
Output signal	Switchable 4 ... 20 mA or voltage		
Accuracy	TEB @ -25 ... +85°C	[% FS typ.]	± 1.75
	Accuracy @ +25°C	[% FS typ.]	± 0.5
	NLH @ +25°C (BSL)	[% FS typ.]	± 0.2
	TC zero point and span	[% FS/K typ.]	± 0.03
	Long term stability 1 year @ +25°C	[% FS typ.]	± 0.1
Current limiting output signal	4 ... 20 mA: 25 mA (Overload)		
	0 ... 10 VDC: < 40 mA (Short-circuit)		
Damping (Rise time)	0.01 ... 3.00 s / 10 ... 90 % Nominal pressure		
Zero set; <sup>1)</sup> Offset correction of analogue output and display indication	± 0.2 % FS		
Measuring range zero point adjustment (P_nP) <sup>1)</sup>	0 ... 50 % FS <sup>2)</sup>		
Measuring range end point adjustment (P_EP)	50 ... 100 % FS <sup>2)</sup>		
Zero point adjustment analogue output (o_nP) <sup>1)</sup>	Voltage output: 0 ... 2 VDC Current output: 3.9 ... o_EP - 8 mA		
End point adjustment analogue output (o_EP) <sup>1)</sup>	Voltage output: o_nP + 4 ... 10.5 VDC Current output: o_nP + 8 ... 20.1 mA		

<sup>1)</sup> Available with optional function package, see section: Accessories

<sup>2)</sup> P\_EP - P\_nP ≥ 50 % FS

## Switching output

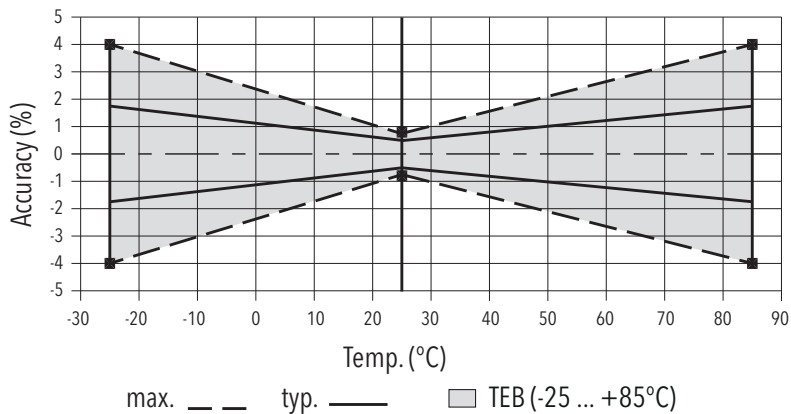
			Accuracy class 0.5 %
Accuracy	Accuracy @ +25°C	[% FS typ.]	± 0.5
	TEB @ -25 ... +85°C	[% FS typ.]	± 1.0
	Long term stability 1 year @ +25°C	[% FS typ.]	≤ ± 0.3
Setting range of switchpoints	0 ... 100 % FS		
Switching hysteresis	≥ 1 % FS		
	Switchpoint > reset point		
Switching resistance	≤ 3 Ω		
Output function	Hysteresis, Window; normally closed (NO), normally open (NC)		
Switching current	≤ 0.5 A each switching output		
Current limiting	≤ 2 A each switching output		
Life time	> 100 x 10 <sup>6</sup> cycles		
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 <sup>1)</sup>	Display zero point: -999 ... 9998 Display end point: -998 ... 9999

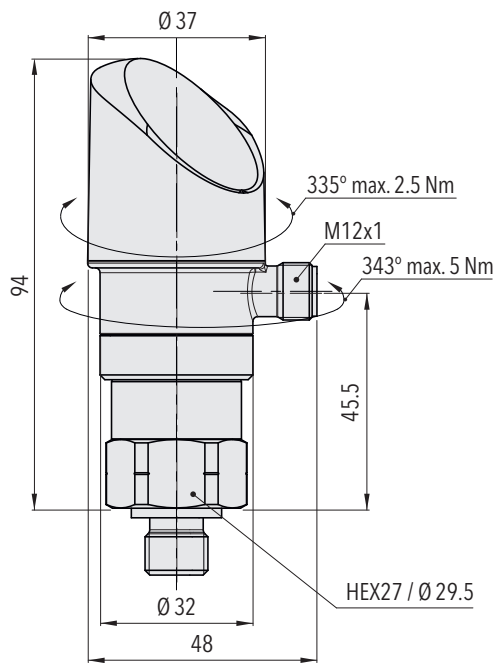
<sup>1)</sup> Available with optional function package, see section: Accessories

## Accuracy class 0.5 %

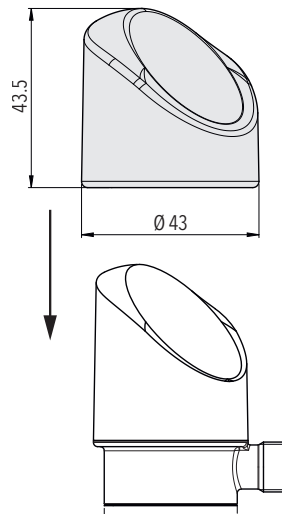


# DPS 8381

## Dimensions

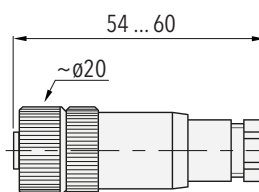
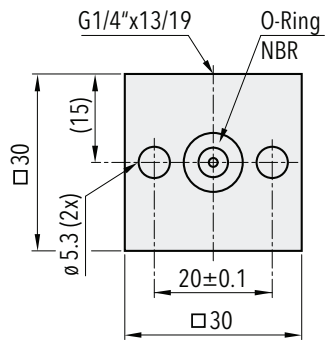


### Protective cap



8381.XX.XXXX.35/32.XX.XX

### Flange adapter

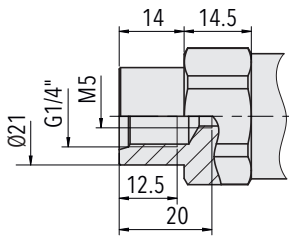


**F82054**  
Mounting accessory included

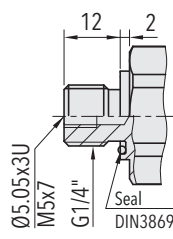
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# DPS 8381

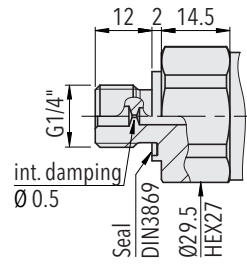
## Dimensions



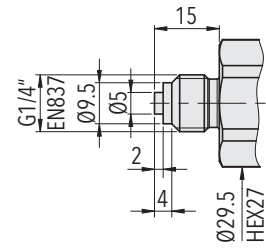
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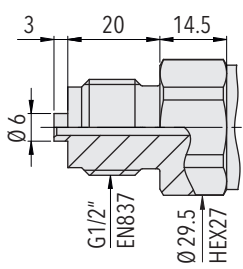
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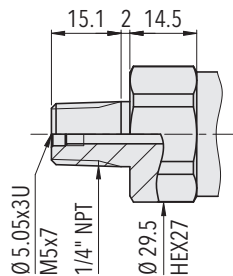
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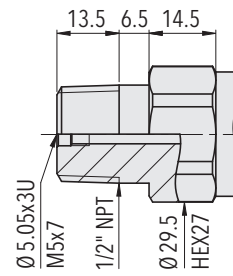
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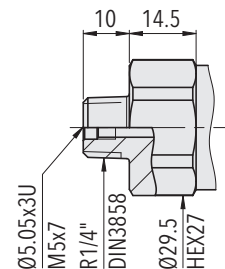
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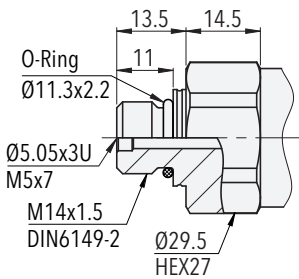
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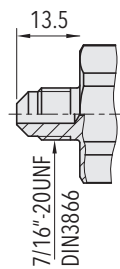
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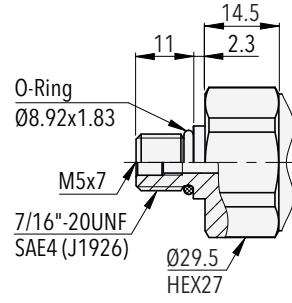
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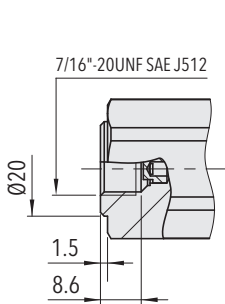
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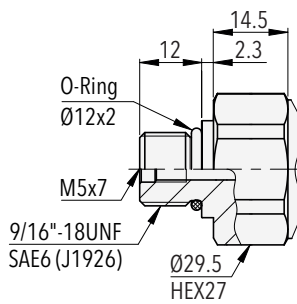
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8381.XX.XX69.XX.XX.XX



8381.XX.XX24.XX.XX.XX



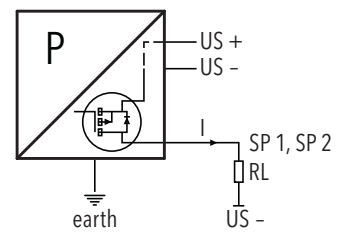
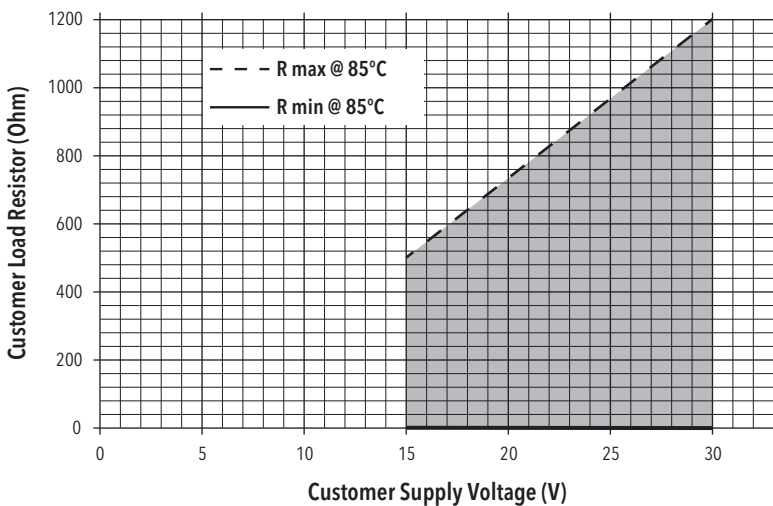
8381.XX.XX67.XX.XX.XX

## Electrical connection

	M12x1, 5-pole		M12x1, 4-pole	
	35		32	
	IP67 <sup>1)</sup>		IP67 <sup>1)</sup>	
<b>Ambient temperature</b>	-25°C ... +85°C		-25°C ... +85°C	
<b>UL-rated ambient temperature</b>	-20°C ... +80°C		-20°C ... +80°C	
<b>Pin assignment type code</b>	<b>P1</b>	<b>P2</b>	<b>P3</b>	<b>P4</b>
<b>PA</b>	✓	✓	✓	
<b>PU</b>	✓	✓	✓	
<b>PV</b>	✓	✓	✓	
<b>PW</b>	✓	✓	✓	
<b>PS</b>				✓
<b>Pin assignment type code</b>	<b>P1</b>	<b>P2</b>	<b>P3</b>	<b>P4</b>
<b>Output signal</b> 8381.xx.xxxx.xx.PA/PU/PV/PW/PS				
	1 3 2 4 5 Shield <sup>2)</sup>	1 3 5 4 2 Shield <sup>2)</sup>	1 3 2 4 Shield <sup>2)</sup>	1 3 - 4 2 Shield <sup>2)</sup>

See ordering information for sensor

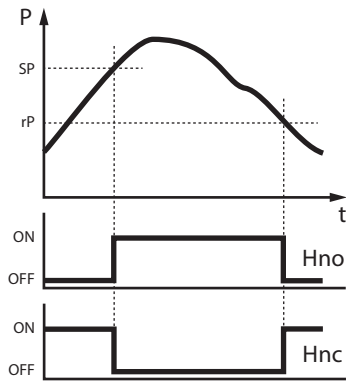
4...20mA: min./max resistor vs. supply voltage @ Pmax = 100%



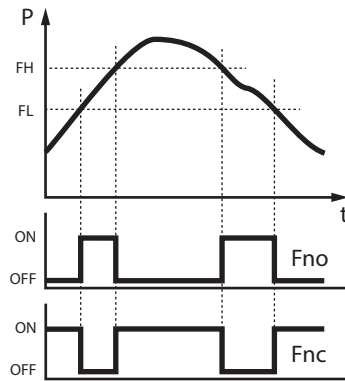
Connection of loads to switching output

## Functions switching output

### Hysteresis



### Window



### Delay

