

IO-LINK FLUSH MEMBRANE TRANSMITTER / SWITCH

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The FPI 8237 IO-Link Flush Membrane pressure transmitter impresses with an absolutely smooth and robust flush-mounted measuring diaphragm made of corrosion-resistant duplex steel. The transmitter is designed as a smart sensor and provides application-relevant information in addition to the process data. Trafag's proprietary thin-film-on-steel sensor technology ensures a wide temperature range and excellent long-term stability.



Applications

- Machine tools
- Food Industry
- Process technology
- Water treatment
- Hydraulics

Features

- Flush membrane with smooth and plain surface, Duplex steel 1.4462
- Media temperature measurement
- Completely welded sensor system
- Excellent long-term stability
- 2 Switching outputs PNP/NPN configurable

Technical Data

Measuring principle	Thin-film-on-steel	Accuracy @ 25°C typ.	± 0.5 % FS typ.
Measuring range	-0.5 ... 0.5 to 0 ... 100 bar correlating with -14.5 ... 14.5 to 0 ... 1450 psi	Media temperature	-10°C ... +125°C
Output signal	IO-Link 1.1 , COM3, min. process cycle time 1 ms, Smart Sensor Profile ED2 2 Switching outputs PNP/NPN	Ambient temperature	-10°C ... +125°C
NLH @ 25°C (BSL) typ.	± 0.1 % FS typ.		

07/2022
Data sheet H72622_2

Subject to change

Ordering information/type code

							8237 . XX	XX	XX	XX	XX	XX	
Measuring range ¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]	Pressure measurement range ²⁾ [psi]	Over pressure [psi]	Burst pressure [psi]							
	-0.5 ... 0.5	5	7.5	-7.2 ... 7.2	60	90	A7						
	-1 ... 0	5	7.5	-14.5 ... 0	60	90	D4						
	-1 ... 1.0	5	7.5	-14.5 ... 14.5	60	90	B1						
	-1 ... 1.6	5	7.5	-14.5 ... 23.2	60	90	B3						
	-1 ... 2.5	5	7.5	-14.5 ... 36.2	60	90	B4						
	-1 ... 4	8	12	-14.5 ... 58	100	150	B6						
	-1 ... 6	12	15	-14.5 ... 87	200	250	B7						
	-1 ... 10	20	25	-14.5 ... 145	300	375	B8						
	-1 ... 16	32	40	-14.5 ... 232	500	625	B9						
	-1 ... 25	50	75	-14.5 ... 362	800	1200	C0						
	0 ... 1.0	5	7.5	0 ... 14.5	60	90	71						
	0 ... 1.6	5	7.5	0 ... 23.2	60	90	73						
	0 ... 2.5	5	7.5	0 ... 36.2	60	90	75						
	0 ... 4	8	12	0 ... 58	100	150	76						
	0 ... 6	12	15	0 ... 87	200	250	77						
	0 ... 10	20	25	0 ... 145	300	375	78						
	0 ... 16	32	40	0 ... 232	500	625	79						
	0 ... 25	50	75	0 ... 362	800	1200	80						
	0 ... 40	80	100	0 ... 580	1000	1250	81						
	0 ... 100	200	300	0 ... 1500	3000	4500	83						
Sensor	Relative pressure 0.5 %, process data include media temperature												23
	Relative pressure 0.5 %, process data include device temperature												D3
Pressure connection	G1/2" male, flush membrane												93
Electrical connection	Male electrical connector M12x1, 5-pol., Mat. PA												35
Output signal	IO-Link												50
Accessories	Seal FKM												61
	Female electrical plug M12x1, 5-pole												33
	Standard electrical connection: Pin 1 L+, Pin 2 Out 2 I/Q, Pin 3 L, Pin 4 Out 1 C/Q, Pin 5 n/c, for male electrical connector 35, M12x1, 5-pole)												0K
	Parameterization according to customer specification (refer to the interface description)												ZC
	Parameterization standard (refer to the interface description)												ZS

¹⁾ Extended overpressure as well as customized pressure ranges upon request

²⁾ Pressure values in [psi] are given for information and correspond to the pressure values in [bar]

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Parameters			
Name	Standard setting (accessory ZS)	Value range	Customer adjustment (accessory ZC)
Switching output OUT1			
Source of measured value	Pressure	-	Pressure
Switching output polarity	PNP	PNP, NPN	
Switch point SP1 ²⁾	75 %	[bar], > SP2, 1 ... 100 % nominal pressure	
Switch point SP2	25 %	[bar], < SP1; 0 ... 99 % nominal pressure Hysteresis SP1 - SP2 ≥ 1 % nominal pressure	
Switching output logic	0 = high active	0 = high active (normally open) 1 = low active (normally closed)	
Function mode	3 = Two Point Mode	0 = Deactivated 1 = Single Point Mode 2 = Window Mode 3 = Two Point Mode	
Hysteresis ¹⁾	0	[bar] Hysteresis ≥ 1 % nominal pressure	
Activation Delay	0	0 ... 65535 [ms]	
Deactivation Delay	0	0 ... 65535 [ms]	
Error behaviour	3	0 = Tri-State 1 = NPN/PNP: Open / PushPull: High 2 = NPN/PNP: Closed / PushPull: Low 3 = Last valid state	
Switching output OUT2			
Source of measured value	P = Pressure	P = Pressure, T = Temperature	
Switching output polarity	PNP	PNP, NPN	
Switch point SP1 ²⁾	P: 75 %	> SP2 [bar] 1 ... 100 % nominal pressure [°C] -40...125°C	
Switch point SP2	P: 25 %	< SP1 [bar] 0 ... 99 % nominal pressure Hysteresis SP1 - SP2 ≥ 1 % nominal pressure [°C] -40...125°C, Hysteresis SP1 - SP2 ≥ 1°C	
Switching output logic	0 = high active	0 = high active (normally open) 1 = low active (normally closed)	
Function mode	3 = Two Point Mode	0 = Deactivated 1 = Single Point Mode 2 = Window Mode 3 = Two Point Mode	
Hysteresis ¹⁾	0	[bar] Hysteresis ≥ 1 % nominal pressure [°C] ≥ 1°C	
Activation Delay	0	0 ... 65535 [ms]	
Deactivation Delay	0	0 ... 65535 [ms]	
Error behaviour	3	0 = Tri-State 1 = NPN/PNP: Open / PushPull: High 2 = NPN/PNP: Closed / PushPull: Low 3 = Last valid state	
Signal processing			
Pressure measurement signal damping for switching outputs	0	0; 1 ... 65535 [ms], time constant "tau"	

¹⁾ Applicable for function modes "Single Pint" and "Window"

²⁾ Applicable for all function modes

³⁾ Applicable for function modes "Window" and "Two Point"

Specifications		
Electrical data	Output / supply voltage	Switching output PNP/NPN: 24 (9...32) VDC IO-Link: 24 (18...32) VDC
	Current consumption / power consumption ²⁾	tbd
	Rise time	tbd
	Power-on delay time	IO-Link readiness: 300ms Data readiness: ca. 700ms
	Inverse-polarity protection, short-circuit strength @ 25°C during 5 min.	IO-Link/Out 1 or Out 2: to Us = 32 VDC
Environmental conditions	Media temperature	-10°C ... +125°C
	Ambient temperature	-10°C ... +125°C
	Protection ¹⁾	IP65, IP67
	Vibration	15 g RMS (20...2000 Hz) acc.to EN 60068-2-64 25 g sin (80...2000 Hz), 1 oct./min, (1x @ 25°C) acc.to EN 60068-2-6
	Shock	50 g / 11 ms
EMC protection	Emission	EN/IEC 61000-6-3
	Immunity	EN/IEC 61000-6-2
Mechanical data	Sensor (wetted parts)	1.4462 (AISI318 LN)
	Pressure connection (wetted parts)	1.4462 (AISI318 LN), 1.4542
	Housing	1.4542
	Sealing	FPM (FKM)
	Weight	~ 80 ... 110 g (without cable)
	Mounting torque	20 ... 25 Nm not lubricated 15 ... 20 Nm lubricated

¹⁾ See electrical connection

²⁾ Without load on the switching outputs

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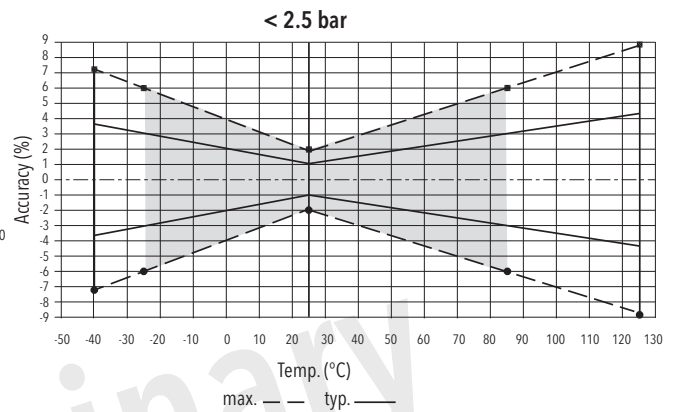
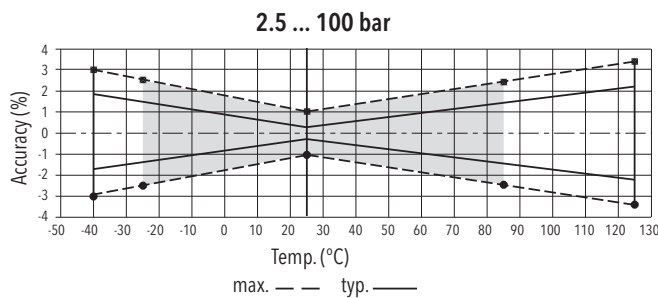
Accuracy

Pressure measuring range		$\geq 0 \dots 2.5 \text{ bar}$	$< 0 \dots 2.5 \text{ bar}$
		$\geq 0 \dots 30 \text{ psi}$	$< 0 \dots 30 \text{ psi}$
TEB @ -25 ... +85°C	[% FS typ.]	± 1.5	± 3.0
Accuracy @ +25°C	[% FS typ.]	$\pm 0.5^{1)}$	$\pm 1.0^{2)}$
Additional mounting torque offset	[% FS typ.]	± 0.2	± 0.5
NLH @ +25°C (BSL)	[% FS typ.]	± 0.1	± 0.2
TC zero point and span	[% FS/K typ.]	± 0.01	± 0.025
Long term stability 1 year @ +25°C	[% FS typ.]	± 0.2	± 0.5

¹⁾ Additional mounting torque offset 0.2 %

²⁾ Additional mounting torque offset 0.5 %

Measuring accuracy



Media temperature measurement ¹⁾

	@ Media temperature	@ Ambient temperature	Accuracy
Accuracy	+25°C	+25°C	± 5.0°C
	+85°C	+85°C	± 7.0°C
	+125°C	+125°C	± 7.0°C
	-40°C	-40°C	± 7.0°C
Temperature range	-40°C ... 125°C		

¹⁾ Media temperature measurement is only available with pressure measurement accuracy of 0.3% (code 23)

Device temperature measurement

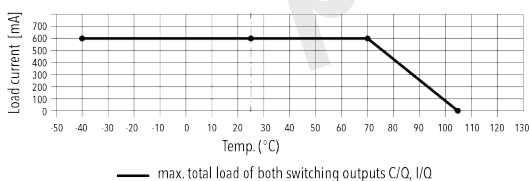
Accuracy	@ 0°C ... +80°C		± 1.5°C
Temperature range	-40°C ... 125°C		

Switching output

Accuracy	refer to table "Pressure measurement accuracy"		
Number of outputs	2 outputs for switching operation (SIO mode; SIO = standard IO)	Out1, Out2	
Switching resistance	≤ 3 Ω		
Output polarity	PNP, NPN configurable		
Output function	Function modes: Single Point Mode, Two Point Mode, Window Mode; normally closed (NO), normally open (NC); switch-on/switch-off delay; damping; configurable via IO-Link interface		
Switching current	-40°C ... +70°C	Ambient temperature	max. 300 mA each switching output
	>70°C ... +105°C	Ambient temperature	refer to the graphic "Switching current"
Current limiting	integrated		
Life time	>100 x 10 ⁶ cycles		
Switching frequency	tbd		

Switching current

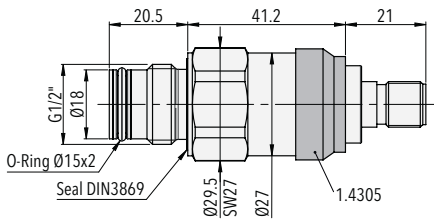
Load depending on ambient temperature



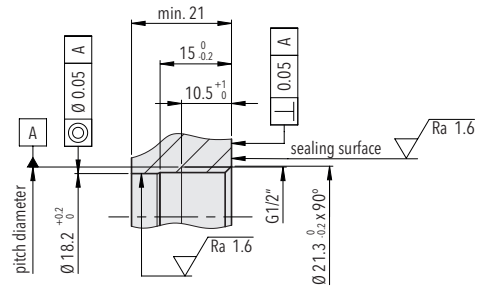
Interface		
Communication interface	SDCI standard IEC 61131-9	IO-Link
Transmission type		COM3 (230,4 kBaud)
IO-Link revision		V1.1
Profiles / function class		Identification and Diagnosis (0x4000), Measurement Data Channel (0x800A) Measuring and Switching Sensor (DMSS), SSP4.1.2
SIO mode		Yes
Required master port class		Class A
Min. process cycle time	[ms]	1
Resolution pressure measurand	Refer to the interface description	
Resolution temperature measurand	[K]	tbd
IO-Link process data (cyclical)	Pressure [Pa]	16 bit
	Switching signal for pressure	2 bit
	Temperature [°C]	16 bit
		media temperature with sensor code 23 device temperature with sensor code D3
	Switching signal for temperature	2 bit
	Device status	4 bit
IO-Link functions (acyclical)	Application specific tag; media temperature, device temperature; operating hours counter; min./max. pressure value; min./max. temperature value; pressure overload counter; temperature overload counter	
IODD download	refer to	

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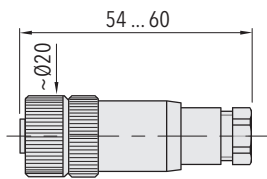
Dimensions



8236.XX.XX.93.35.XX.XX



Mounting thread G1/2"
DIN EN ISO 1179-1



8236.XX.XXXX.XX.XX.33

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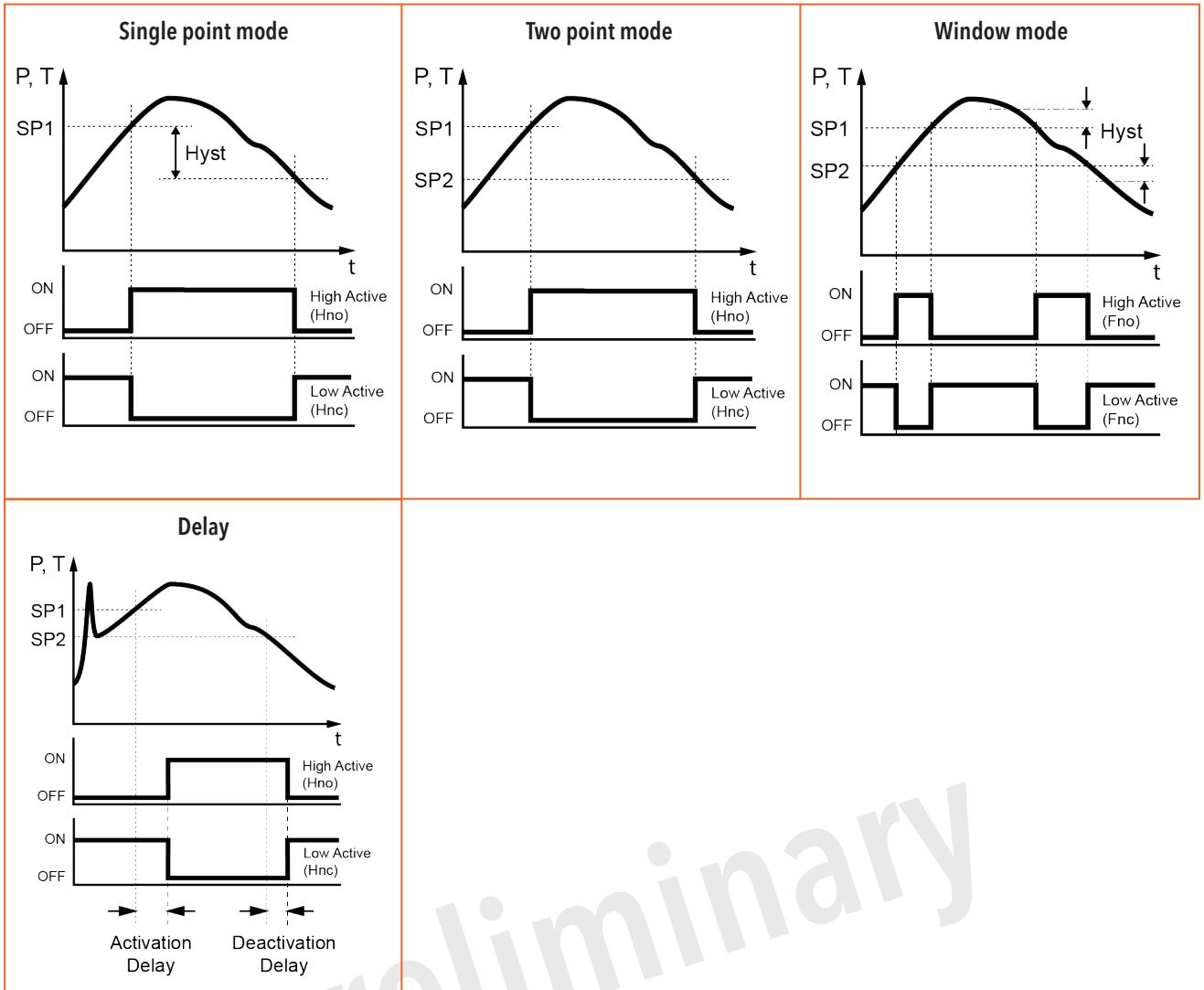
Electrical connection

Protection / electrical connection	
	IP67*) **)
	M12x1 5- pole 35
Output signal	OK
	8237.XX.XXXX.XX.50

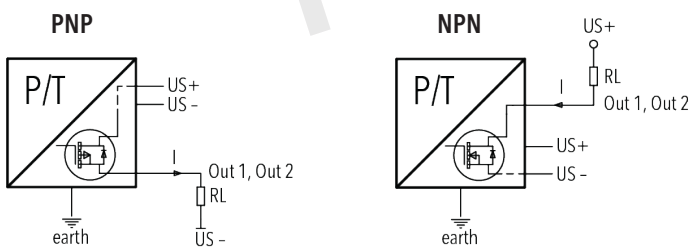
*) Electrical connections 35: provided female electrical plug is mounted according to instructions

**) Ventilation via male electric plug/cable end

Function modes for the switching signal



Switching output polarity



Connection of loads to switching output

Additional information

Documents

Data sheet	www.trafag.com/H72622
Instructions	www.trafag.com/H73622
Interface description	www.trafag.com/H73665
Flyer	www.trafag.com/H70622