Point level detection based on frequency deviation technology for high-temperature hygienic applications

Article number: 11101289

Overview

- Process temperatures up to 200 °C
- Housing design with 360° status indicatorFor hygienic and industrial applications
- 3-A- and FDA-compliant, EHEDG-certified
- With WHG and cULus approval



Picture similar





Technical data						
Performance characteristic		Output signal				
Measuring principle	CleverLevel level switches (Frequency Sweep)	Output type	PNP NPN Digital (push-pull)			
Hysteresis	± 1 mm	Overitable as In ada	• · · · /			
Media characteristics	DC > 1.5	Switching logic	Normally open (NO) Normally closed (NC)			
Step response time	0.1 s , typ. 0.2 s , max.		Active high Active low			
Damping	0 10 s , adjustable	Voltage drop	PNP: (+Vs -2.5 V) ± 0.5 V, Rload = 1 kΩ			
Repeatability	± 1 mm	voltago drop	NPN: $(+2.5 \text{ V}) \pm 0.5 \text{ V}$, Rload = 1 k Ω Digital (push-pull): $(+\text{Vs} -2.5 \text{ V}) \pm 0.5 \text{ V}$, Rload = 1 k Ω Digital (push-pull): $(+2.5 \text{ V}) \pm 0.5 \text{ V}$, Rload = 1 k Ω			
Process conditions						
Process temperature	- 40 115 °C , continuous @ Tamb < 60 °C 140 °C , < 1 h @ Tamb < 60 °C					
Process pressure	- 1 10 bar , continuous @ Tamb < 60	Current rating	50 mA , max.			
·	°C	Off leak current	< 100 μA , max.			
	- 1 5 bar , T = 140 °C	Short circuit protection Yes				
Process connection		Housing				
Connection variants	G 1/2 A hygienic	Style	Field housing, Ø55 mm			
Mounting position	Any, top, bottom, side	Overall size	Refer to section "Dimensional drawings"			
Wetted parts material	PEEK Natura	Material	AISI 304 (1.4301)			
	AISI 316L (1.4404) EPDM, optional	Electrical connection				
Surface roughness wetted	Ra ≤ 0.8 µm	Connector	M12-A, 4-pin, stainless steel			
parts	τα = 0.0 μπ	Power supply				
Ambient conditions		Voltage supply range	12.5 36 V DC			
Operating temperature range	-40 85 °C	Current consumption (no load)	35 mA , max.			
Storage temperature range	-40 85 °C	Power-up time	<2s			
Degree of protection (EN	IP 67 , with appropriate cable	Reverse polarity protection	Yes			
60529)	(29)		Factory settings			
Humidity	< 98 % RH , condensing	Output polarity	AUTO			
Vibration (sinusoidal) (EN 60068-2-6)	1.6 mm p-p (2 25 Hz), 4 g (25 100 Hz), 1 octave / min.	Switching logic SW1	PNP			

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Technical data				
Factory settings		Compliance and approvals	\$	
Switching range (dielectric constant DC)	< 75.3 % , DC > 2	Hygiene	(EC) No 1935/2004 (EC) No 2023/2006	
Trigger level	80.4 %		(EU) No 10/2011	
Range hysteresis	ange hysteresis 2.4 %		3-A (74-07) EHEDG EL Class I	
Damping	0.1 s		FDA (21 CFR 177.2415)	
Compliance and approvals		Safety	WHG (overfill, leakage)	
EMC Emission	EMC Emission EN 61326, installed in a closed metal tank		USP Class VI (PEEK material)	
EMC Immunity	EN 61326, installed in a closed metal tank		,	

Operating conditions							
			Continuou	Continuous		Temporary (t < 1 h)	
Ordering key	Process connection	BCID	Process temperature @ Tamb < 60 °C	Process pressure	Process temperature max. @ Tamb < 60 °C	Process pressure @ Process temperature max.	
			(° C)	(bar)	(° C)	(bar)	
LFFS-##1.#	G 1/2 A hygienic	A03	-40 115	-1 10	140	-1 5	
LFFS-##2.#	BHC 3A DN 38	B01	-40 115	-1 40	140	-1 40	
LFFS-##3.#	G 1/2 A hygienic, sliding connection, length 100 mm	A03	-40 150	-1 16	N/A	N/A	
LFFS-##4.#	G 1/2 A hygienic, sliding connection, length 250 mm	A03	-40 200	-1 16	N/A	N/A	

For further information on permissible process and ambient temperatures, please refer to the operating instructions.

Compliance and approvals								
Ordering key	Process connection	BCID	EN 1935/2004 EN 10/2011 EN 2023/2006	FDA	3-A	EHEDG EL-Class I	USP Class VI	WHG (overfill, leakage)
LFFS-##1.#	G 1/2 A hygienic	A03	•	•	•	•		
LFFS-##2.#	BHC 3A DN 38	B01	•	•		•		•
LFFS-##3.#	G 1/2 A hygienic, sliding connection, length 100 mm	A03	•	•		•		•
LFFS-##4.#	G 1/2 A hygienic, sliding connection, length 250 mm	A03	•	•		•		•

Information on product characteristics may relate to defined product options.

The requirements of the respective 3-A Sanitary Standard will be only fulfilled in combination with appropriate mounting accessories. Those are marked with the 3-A logo.

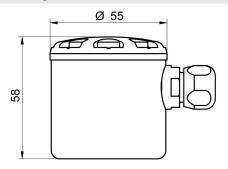
The EHEDG certification is only valid in combination with appropriate mounting accessories. Those are marked with the "EHEDG Certified" logo.

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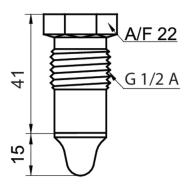
Dimensional drawings (mm)

Housing



Housing with cable gland M16x1.5

Process connection



G 1/2 A hygienic (BCID: A03)

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Active high PNO GND (0 V) SW1 Teach-in 4 GND (0 V) SW1 Teach-in 4 Teach-in 2 GND (0 V) SW1 Teach-in 4 Teach-in 2 GND (0 V) SW1 Teach-in 4 Teach-in 2 SW1 (AH) Teach-in 4 Teach-in 2 SW1 Teach-in 4 Teach-in 4 SW1 Teach-in 4 SW1 Teach-in 4	Output type	Electrical connection	Equivalent circuit	Function	Pin assignment
PNP Normally open (NO) PNP Normally open (NO) SW1 (NO) SW1 (NO) SW1 (NO) SW1 (NO) Feach-in 4 GND (0 V) SW1 5 Teach-in 4 GND (0 V) SW1 4 Teach-in 2 GND (0 V) SW1 5 Teach-in 4 GND (0 V) SW1 5 Teach-in 2 GND (0 V) SW1 5 Teach-in 4 GND (0 V) SW1 5 Teach-in 2 SW1 4 Teach-in 2 SW1 4 Teach-in 2 SW1 5 Teach-in 2 SW1 5 SW1 5 Teach-in 2 SW1 5 Teach-in 2 SW1 5 Teach-in 2 SW1 5 Teach-in 2 SW1 5 Teach-in 4		4 2		11/0	1
PNP Normally open (NO) PNP Normally open (NO) SW1 (NO) GND (0 V) SW1 Feach-in GND (0 V) Teach-in SW1 Feach-in SW1 Feach-in GND (0 V) Teach-in GND (0 V) Teach-in GND (0 V) Teach-in SW1 Feach-in GND (0 V) Teach-in GND (0 V) Teach-in SW1 Feach-in GND (0 V) Teach-in GND (0 V) Teach-in Teach-in GND (0 V) Teach-in GND (0 V) Teach-in Teach-in SW1 Teach-in Teach-in A Teach-in GND (0 V)		4 • • 3	+Vs		
PNP Normally open (NO) SW1 (NO) SW1 (NO)		• •			
Normally open (NO) 1	PNP		U \ —		
Active high PNO GND (0 V) SW1 Teach-in 4 GND (0 V) SW1 Teach-in 4 Teach-in 2 GND (0 V) SW1 Teach-in 4 Teach-in 2 GND (0 V) SW1 Teach-in 4 Teach-in 2 SW1 (AH) Teach-in 4 Teach-in 2 SW1 Teach-in 4 Teach-in 4 SW1 Teach-in 4 SW1 Teach-in 4		5 4	SW1 (NO) —	011D (0 V)	
NPN Normally open (NO) Digital (push-pull) Active high A	, , , ,			+Vs	1
Teach-in 4 GND (0 V) 2		6 ES O ES 3	GND (0 V)		
NPN Normally open (NO) Normally open (NO) NPN Normally open (NO) SW1 (NO) SW1 (NO) SW1 (NO) SW1 (NO) Feach-in 2 SW1 5 Teach-in 4 GND (0 V) 2 Teach-in 4 GND (0 V) 2 Digital (push-pull) Active high SW1 (AH) Feach-in 2 GND (0 V) SW1 (AH) Feach-in 2 GND (0 V) SW1 (AH) Feach-in 2 SW1 (AH) Feach-in 3 Feach-in 2 SW1 (AH) SW1 (AH) Feach-in 4					
NPN Normally open (NO) Normally open (NO) SW1 (NO) SW1 (NO) Figure 1 Figure 1 Figure 2 GND (0 V) SW1 (NO) Figure 3 GND (0 V) SW1 (NO) Figure 3 Figure 4 Figure 5 Figure 4		2 1			
NPN Normally open (NO) Normally open (NO) SW1 (NO) SW1 (NO) Figure 1 Figure 2 GND (0 V) SW1 (NO) Figure 3 GND (0 V) SW1 (NO) Figure 3 Figure 4 Figure 5 Figure 4					
NPN Normally open (NO) Normally open (NO) SW1 (NO) SW1 (NO) Feach-in 2 GND (0 V) 3 +Vs 1 SW1 5 Teach-in 4 GND (0 V) 2 Digital (push-pull) Active high SW1 (AH) Feach-in 2 GND (0 V) SW1 4 Teach-in 2 GND (0 V) SW1 4 Teach-in 2 GND (0 V) SW1 5 Teach-in 4 Teach-in 2 GND (0 V) SW1 5 Teach-in 4		4 3		+Vs	1
NPN Normally open (NO) SW1 (NO)		(• •)	+Vs	SW1	4
Normally open (NO) +Vs 1 SW1 5 Teach-in 4 GND (0 V) 2 Digital (push-pull) Active high SW1 (NO)		1 2		Teach-in	2
#Vs 1 SW1 5 Teach-in 4 GND (0 V) 2 Digital (push-pull) Active high Digital (push-pull) Active high Figure 1 SW1 (AH) SW1 (AH) Figure 2 SW1 (AH) Figure 3 Figure 3 Figure 3 Figure 3 Figure 4		5 4	<u> </u>	GND (0 V)	3
Digital (push-pull) Active high Active high	Normally open (NO)	(a) (a)	OSWI (NO)		
Digital (push-pull) Active high Teach-in 4 GND (0 V) 2 +Vs SW1 Teach-in 2 GND (0 V) 1 Formal 4 GND (0 V) 1 Formal 4 GND (0 V) 1 Formal 4 Forma					1
Digital (push-pull) Active high Teach-in 4 GND (0 V) 2 +Vs 3 SW1 4 Teach-in 2 GND (0 V) 1 SW1 (AH) +Vs 2 SW1 5 Teach-in 4		6(♦)(○)♦)3	GND (0 V)		
Digital (push-pull) Active high Active high Active hi		2 4 1		Teach-in	4
Digital (push-pull) Active high 1				GND (0 V)	2
Digital (push-pull) Active high Active high Active hi		4 3		+Vs	3
Digital (push-pull) Active high SW1 (AH) GND (0 V) 1 +Vs 2 SW1 5 Teach-in 4		(••)	+Vs		
Active high Active high		1 2		Teach-in	2
Active high		5 4	SW1 (AH)	GND (0 V)	1
GND (0 V) SW1 5 Teach-in 4	Active high	3		11/0	2
2 🗸 🔻			GND (0 V)		
(2NI) (0 \)		2 1		GND (0 V)	4

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Output type	Electrical connection	Equivalent circuit	Function	Pin assignment
, ,,		•		•
	4 3		+Vs	3
	(• •)	+Vs	SW1	4
	1 2		Teach-in	2
PNP		<u> </u>	GND (0 V)	1
lormally closed (NC)	5 4	SW1 (NC)		
			+Vs	2
	6 (A) (C) (A) 3	GND (0 V)	SW1	5
		0	Teach-in	4
	2	_	GND (0 V)	1
	4 3		+Vs	3
	(• •)	+\s	SW1	4
	1 2		Teach-in	2
NPN			GND (0 V)	1
ormally closed (NC)	5 4	SW1 (NC)		
		 	+Vs	2
	6 (A) (O) (A) 3	GND (0 V)	SW1	5
		0	Teach-in	4
	2		GND (0 V)	1
	4 3		+Vs	1
		+Vs	SW1	4
	1 2		Teach-in	2
Digital (push-pull)	F 4		GND (0 V)	3
Active low		SW1 (AL)		
			+Vs	1
	6 (S) (O) (S) 3	GND (0 V)	SW1	5
	2 1	0 0 0 0 0	Teach-in	4
			GND (0 V)	2