GEMÜ 3240

Temperature transducer and temperature switch

EN **Operating instructions**

further information
webcode: GW-3240

Contents

1 General information

1.1 Information

- The descriptions and instructions apply to the standard versions. For special versions not described in this document the basic information contained herein applies in combination with any additional special documentation.
- Correct installation, operation, maintenance and repair work ensure faultless operation of the product.
- Should there be any doubts or misunderstandings, the German version is the authoritative document.
- Contact us at the address on the last page for staff training information.

1.2 Symbols used

The following symbols are used in this document:

Symbol	Meaning
●	Tasks to be performed
▶	Response(s) to tasks
–	Lists

1.3 Warning notes

Wherever possible, warning notes are organised according to the following scheme:

SIGNAL WORD	
Possible symbol for the specific danger	Type and source of the danger ▶ Possible consequences of non-observance. ● Measures for avoiding danger.

Warning notes are always marked with a signal word and sometimes also with a symbol for the specific danger.

The following signal words and danger levels are used:

⚠ DANGER

Imminent danger!

▶ Non-observance can cause death or severe injury.

⚠ WARNING

Potentially dangerous situation!

▶ Non-observance can cause death or severe injury.

⚠ CAUTION

Potentially dangerous situation!

▶ Non-observance can cause moderate to light injury.

NOTICE

Potentially dangerous situation!

▶ Non-observance can cause damage to property.

The following symbols for the specific dangers can be used within a warning note:

Symbol	Meaning
	Danger – high voltage
	Danger from potentially explosive atmosphere

1.4 Warning notes

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NOTICE

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The following symbols for the specific dangers can be used within a warning note:

Symbol	Meaning
	Danger – high voltage

2 Safety information

The safety information in this document refers only to an individual product. Potentially dangerous conditions can arise in combination with other plant components, which need to be considered on the basis of a risk analysis. The operator is responsible for the production of the risk analysis and for compliance with the resulting precautionary measures and regional safety regulations.

The document contains fundamental safety information that must be observed during commissioning, operation and maintenance. Non-compliance with these instructions may cause:

- Personal hazard due to electrical, mechanical and chemical effects.
- Hazard to nearby equipment.
- Failure of important functions.
- Hazard to the environment due to the leakage of dangerous substances.

The safety information does not take into account:

- Unexpected incidents and events, which may occur during installation, operation and maintenance.
- Local safety regulations which must be adhered to by the operator and by any additional installation personnel.

Prior to commissioning:

1. Transport and store the product correctly.
2. Do not paint the screws and plastic parts of the product.
3. Carry out installation and commissioning using trained personnel.
4. Provide adequate training for installation and operating personnel.
5. Ensure that the contents of the document have been fully understood by the responsible personnel.
6. Define the areas of responsibility.
7. Observe the safety data sheets.
8. Observe the safety regulations for the media used.

During operation:

9. Keep this document available at the place of use.
10. Observe the safety information.
11. Operate the product in accordance with this document.
12. Operate the product in accordance with the specifications.
13. Maintain the product correctly.
14. Do not carry out any maintenance work and repairs not described in this document without consulting the manufacturer first.

In cases of uncertainty:

15. Consult the nearest GEMÜ sales office.

3 Product description

3.1 Construction

Temperature transducer/switch

Item	Name	Materials
1*	Pressure connection	1.4404 stainless steel or PVDF
2	Housing	1.4404 stainless steel
3	Display housing	PA 6.6
	Seals*	FPM or EPDM

* Media wetted

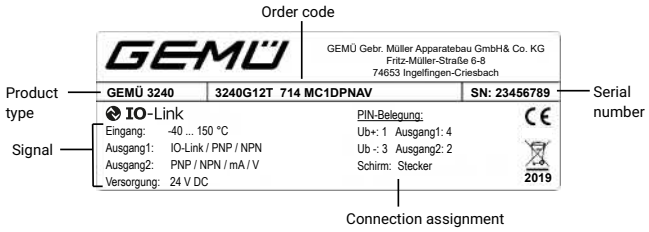
3.2 Description

The GEMÜ 3240 temperature transducer/switch is ideal for precise measurements in a wide temperature range. The sensor is suitable for both highly viscous, as well as contaminated media. It is also suitable for corrosive media thanks to the high-quality material selection. Furthermore, it stands out thanks to its extremely short installation length. The electrical output signals can optionally be changed over between power, current or switching outputs.

3.3 Function

The GEMÜ 3240 temperature transducer converts the physical variable of temperature into an electrical signal.

3.4 Product label



4 Correct use

⚠ DANGER

Danger of explosion!

- ► GRisk of death or severe injury.
- ● Do **not** use the product in potentially explosive zones.

⚠ WARNING

Improper use of the product!

- ► Risk of severe injury or death.
- ► Manufacturer liability and guarantee will be void.
- ● Only use the product in accordance with the operating conditions specified in the contract documentation and in this document.

The product is not intended for use in potentially explosive areas.

5 Order data

The order data provide an overview of standard configurations.

Please check the availability before ordering. Other configurations available on request.

Order codes

1 Type	Code
Temperature transducer, temperature switch	3240

2 Connection size	Code
G 1/2	G12

3 Type of measurement	Code
Temperature	T

4 Material	Code
1.4404	7
PVDF	20

5 Seal material	Code
FPM	4
EPDM	14

6 Electrical connection	Code
M12 x 1 plug, 4-pin	M

7 Voltage/Frequency	Code
24 V DC	C1

8 Display	Code
With display	D

9 Output	Code
PNP, NPN, 4-20mA, 0-10V, IO-Link switchable	PNAV

Order example

Order option	Code	Description
1 Type	3240	Temperature transducer, temperature switch
2 Connection size	G12	G 1/2
3 Type of measurement	T	Temperature
4 Material	7	1.4404
5 Seal material	4	FPM
6 Electrical connection	M	M12 x 1 plug, 4-pin
7 Voltage/Frequency	C1	24 V DC
8 Display	D	With display
9 Output	PNAV	PNP, NPN, 4-20mA, 0-10V, IO-Link switchable

6 Technical data

6.1 Temperature

Media temperature:	Stainless steel (code 7):	-40 to 150 °C
	PVDF (code 20):	-30 to 125 °C
Ambient temperature:	Stainless steel (code 7):	-40 to 85 °C
	PVDF (code 20):	-30 to 85 °C
Storage temperature:	Stainless steel (code 7):	-40 to 85 °C
	PVDF (code 20):	-30 to 85 °C

6.2 Pressure

Operating pressure:	Stainless steel (code 7):	max. 160 bar
	PVDF (code 20):	max. 60 bar

6.3 Product compliance

EMC Directive:	2014/30/EU

6.4 Mechanical data

Installation position:	Optional
Protection class:	IP 67 acc. to EN 60529
Measuring range:	Stainless steel (code 7): -40 to 150 °C PVDF (code 20): -30 to 125 °C
Weight:	220 g
Switch-on time:	110 ms
Strength:	10 g / 25 Hz to 2 kHz to DIN EN 60068-2-6 500 g / 1 ms to DIN EN 60068-2-27

6.5 Electrical data

6.5.1 Power supply standard

Supply voltage:	24 V DC (-5/+10%)
Current consumption:	≤ 40 mA
Reverse battery protection:	Yes
Short-circuit proof:	Yes
Duty cycle:	Continuous duty
Electrical connection type:	M12 connector, 4-pin Plug design A, DIN EN 175301-803

6.5.2 Electrical output

Supply voltage:	18 - 30 V DC
Output signal:	Output 1: Switchable between NPN, PNP switching outputs, IO-Link output 2: Switchable between NPN, PNP switching outputs, 4 to 20 mA, 0 to 10 V
Load resistor:	R_{min} = 10 kΩ R_{max} = 330 Ω
Max. switching current:	200 mA
Accuracy:	≤ ± 0.35% FSO **Switching output** Switch point: ≤ ± 0.5% FSO Characteristic deviation in accordance with IEC 60770 – limiting value adjustment (non-linearity, hysteresis, reproducibility) Repetition: ≤ ± 0.2% FSO
Temperature drift:	≤ ± 0.3 °C + 0.005 + T
Switching frequency:	Max. 170 Hz
Switching cycles:	> 100 x 10^6

7 Specific data relating to IO-Link

Transmission rate: 38,400 baud, COM2

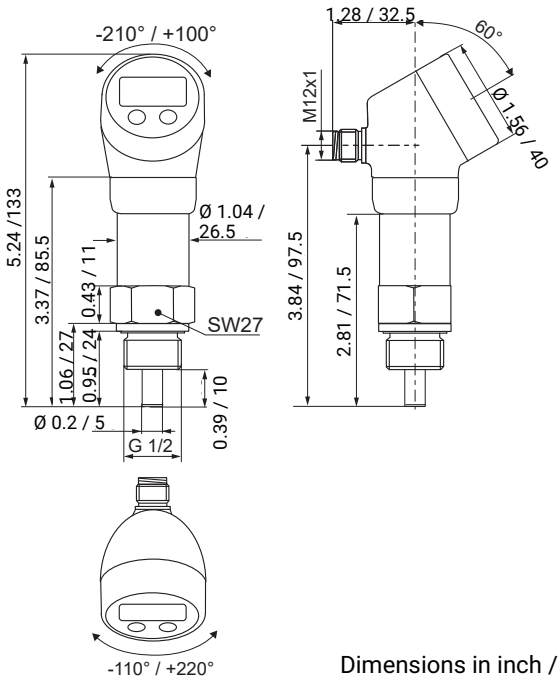
IO-Link specification: V1.1, slave

SIO operation: Yes

IEC Guideline: 61131-9

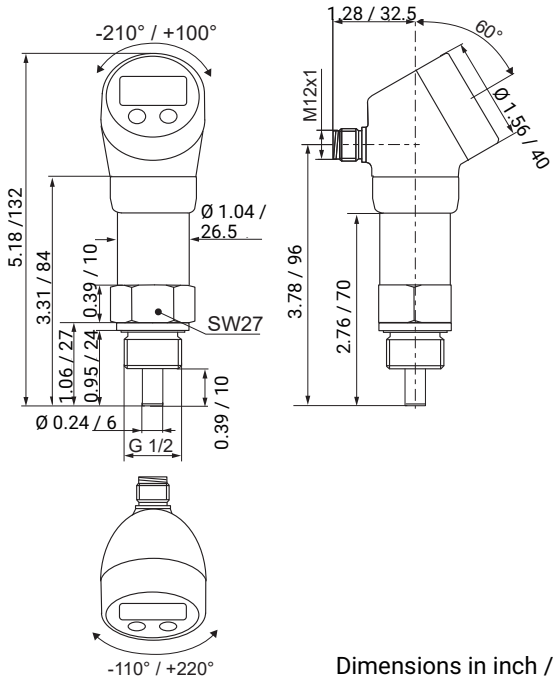
8 Dimensions

8.1 Device with pressure connection 1.4404 (code 7)



Dimensions in inch / mm

8.2 Device with pressure connection PVDF (code 20)



Dimensions in inch / mm

9 Manufacturer's information

9.1 Delivery

- Check that all parts are present and check for any damage immediately upon receipt.

The product's performance is tested at the factory. The scope of delivery is apparent from the dispatch documents and the design from the order number.

9.2 Transport

1. Only transport the product by suitable means. Do not drop. Handle carefully.
2. After the installation dispose of transport packaging material according to relevant local or national disposal regulations / environmental protection laws.

9.3 Storage

1. Store the product free from dust and moisture in its original packaging.
2. Avoid UV rays and direct sunlight.
3. Do not exceed the maximum storage temperature (see chapter "Technical data").
4. Do not store solvents, chemicals, acids, fuels or similar fluids in the same room as GEMÜ products and their spare parts.

10 Installation in piping

10.1 Installation and safety information

⚠ DANGER

Risk of lightning strike!

► If there is an elevated risk of the device being damaged by lightning or overvoltage, an effective lightning protection system must additionally be put in place.

⚠ DANGER

Use of the product as a stepladder

► The housings are not designed to be used as a stepladder for climbing in the plant. They can be damaged if used in this way and their function impaired. If the housing is damaged, water, dirt and combustible material can accumulate in the housing interior. This can cause a short-circuit. Furthermore, the deposits can cause the device to overheat and may result in an explosion.

NOTICE

► All interconnected components must be intrinsically safe. The operator is responsible for ensuring that the entire system (the entire circuit) is intrinsically safe.

NOTICE

► Handle the unprotected diaphragm with extreme care, as it is very easily damaged.

NOTICE

► For use in steam pipes, provide a cooling zone.

NOTICE

► During installation, avoid high mechanical stresses on the pressure connection. This can result in the characteristic shifting or in damage, particularly for very narrow pressure ranges and for devices with a plastic pressure connection.

NOTICE

► With hydraulic systems, orientate the device such that the pressure connection is facing upwards. (Vent hole)

NOTICE

► If the device is to be installed with the pressure connection at the top, make sure that no liquid flows away along the housing as this could result in moisture and dirt blocking the gauge reference in the housing and, in turn, to the equipment malfunctioning. Where necessary, remove dust and dirt from the edge of the electrical connection's union.

NOTICE

► Make sure that you do not remove the packaging and protection caps from the device until you are just about to install it, so that you do not damage the diaphragm or the threads.

► Keep the protection caps. Dispose of packaging properly.

10.2 Installing outdoors and in damp conditions

1. Electrically connect the device as soon as it is installed, or take measures to prevent the ingress of moisture, e.g. using a suitable protection cap. (The stated protection class applies to the device once it is connected.)
2. When installing the device, position it such that splashed water and condensation can drain away. Liquid must not be allowed to accumulate on sealing surfaces.
3. For devices with a cable outlet, the outgoing cable must be routed downwards. If the cable has to be routed upwards, this must be implemented in an elbow that is directed downwards.
4. Install the device such that it is protected from direct sunlight. In the worst case scenario, exposure to direct sunlight can result in the permissible operating temperature being exceeded. This must be completely avoided when using the device in Ex areas.
5. Install devices with a gauge reference in the housing (small hole next to the electrical connection) such that the gauge reference needed for the measurement is protected from dirt and moisture. If the measuring transducer is exposed to liquid, the gauge reference will become blocked, preventing the air pressure from equalizing. It is not possible to measure accurately in this situation, and the measuring transducer may be damaged as a result.

10.3 Installation steps for connections in accordance with DIN 3852

NOTICE

► Do not use any additional sealing material such as oakum, hemp or Teflon tape.

The O-ring must sit in the groove provided.

The O-ring is not damaged.

The sealing surface of the part that accommodates it must be free of defects. (R_Z 3.2)

1. Screw the device onto the mounting thread by hand.
2. Devices with a knurled collar must be screwed on tightly by hand
3. Devices with a wrench surface must be tightened with a suitable open-end wrench.
   Steel wrench surface:
   G1/4": Approx. 5 Nm
   G1/2": Approx. 10 Nm
   Plastic wrench surface:
   Max. 3 Nm

10.4 Installation steps for connections in accordance with EN 837

A suitable seal that is compatible with the measurement medium and the temperature that is to be measured must be provided (e.g. a copper gasket).

The sealing surface of the part that accommodates it must be flawless (R_Z 6.3).

1. Screw the device onto the mounting thread by hand.
2. Then tighten it with the open-end wrench:
   G1/4": Approx. 20 Nm
   G1/2": Approx. 50 Nm

NOTICE

► Observe the permissible pressures in accordance with EN 837

G1/4" EN 837	$P_N \leq 600$ bar	The counterpart must be made from steel in accordance with DIN 17440 with a strength of $R_{p0.2} \geq 190$ N/mm^2.
G1/2" EN 837	$P_N \leq 1000$ bar	
G1/4" EN 837	$P_N > 600$ bar, $P_N \leq 1000$ bar	The counterpart must be made from steel in accordance with DIN 17440 with a strength of $R_{p0.2} \geq 260$ N/mm^2.
G1/2" EN 837	$P_N > 1000$ bar, $P_N \leq 1600$ bar	

11 Electrical connection

Connect the product in accordance with the pin assignment.

11.1 Connection and safety information

Devices with cable glands and cable sockets

1. Ensure that the outside diameter of the cable used is within the permissible clamping range (cable gland M12 x 1.5 cable dia. 3–6.5 mm, cable socket ISO 4400 cable dia. 4.5–10 mm). In addition, make sure that the cable is seated securely in the cable gland, without any gaps.
2. Use a shielded, twisted multicore cable for the electrical connection.

Devices with a cable outlet

Comply with the following minimum bend radii when laying the cable:

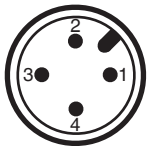
- Cable without air hose:
  Fixed in place: 5 x cable diameter
  Flexible use: 10 x cable diameter
- Cable with air hose:
  Fixed in place: 10 x cable diameter
  Flexible use: 20 x cable diameter

On devices with a cable outlet and integrated vent tube, the PTFE filter on the cable end on the gauge tube must not be damaged or removed.

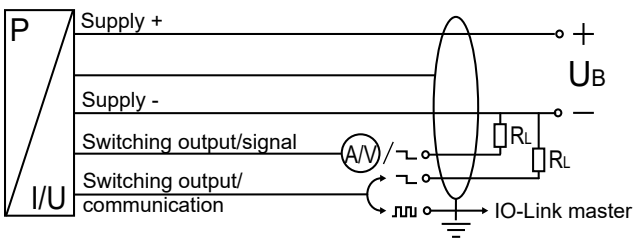
NOTICE

► Cables used for gauge devices have a vent tube for equalizing the pressure. Route the cable end into an area or suitable terminal box that is as free from moisture and corrosive gases as possible in order to prevent damage.

11.2 3-wire system (output code PNAV)



Pin	Description
1	Supply +
2	Switching output / Signal
3	Supply -
4	Switching output / Communication



12 Commissioning

1. The device must be properly installed
2. The device must not exhibit any visible defects
3. The device must be operated within the specifications (see datasheet and EC type examination certificate).

13 Operation

13.1 Operating and display elements

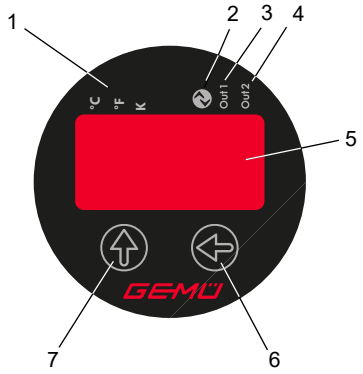


Fig. 1: Operating screen for device with two switching outputs

1 = Three LEDs for displaying units

2 = LED IO-Link red: Status indication IO-Link

3 = LED Out 1 yellow: Switching output 1 status indication

4 = LED Out 2 green: Switching output 2 status indication

5 = Seven-segment display for measured value and parameters

6 = Key for moving within a menu

7 = Key for moving from menu to menu

LED status in normal mode		
Red LED	On	IO-Link active (master slave operation)
	Off	IO-Link inactive (no master slave operation)
Yellow LED	On	Switch point 1 reached, switching output active
	Off	Switch point not reached
Green LED	On	Switch point 2 reached, switching output active
	Off	Switch point not reached

Tastenfunktion		
↑	Press briefly	Scroll from menu 1 to menu 5, then return to the display
	Press and hold	Increase parameter values quickly
↵	Press briefly	Select a menu item in a menu
	Press and hold	Apply the set parameter and return to the current menu item
↑ + ↵	Press both keys at the same time	Return to the display

The device is configured in accordance with VDMA 24574-1.

13.2 Switching and switch-back characteristics

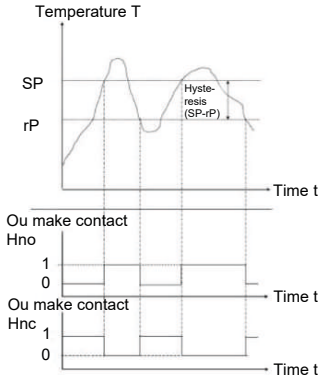


Fig. 2: Switching and switch-back characteristics for the hysteresis function in the temperature-time diagram

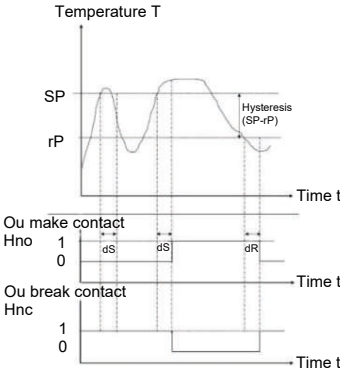


Fig. 3: Switching and switch-back delay for the hysteresis function in the temperature-time diagram

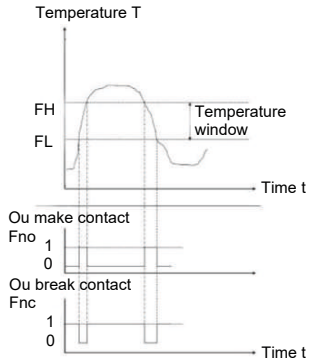
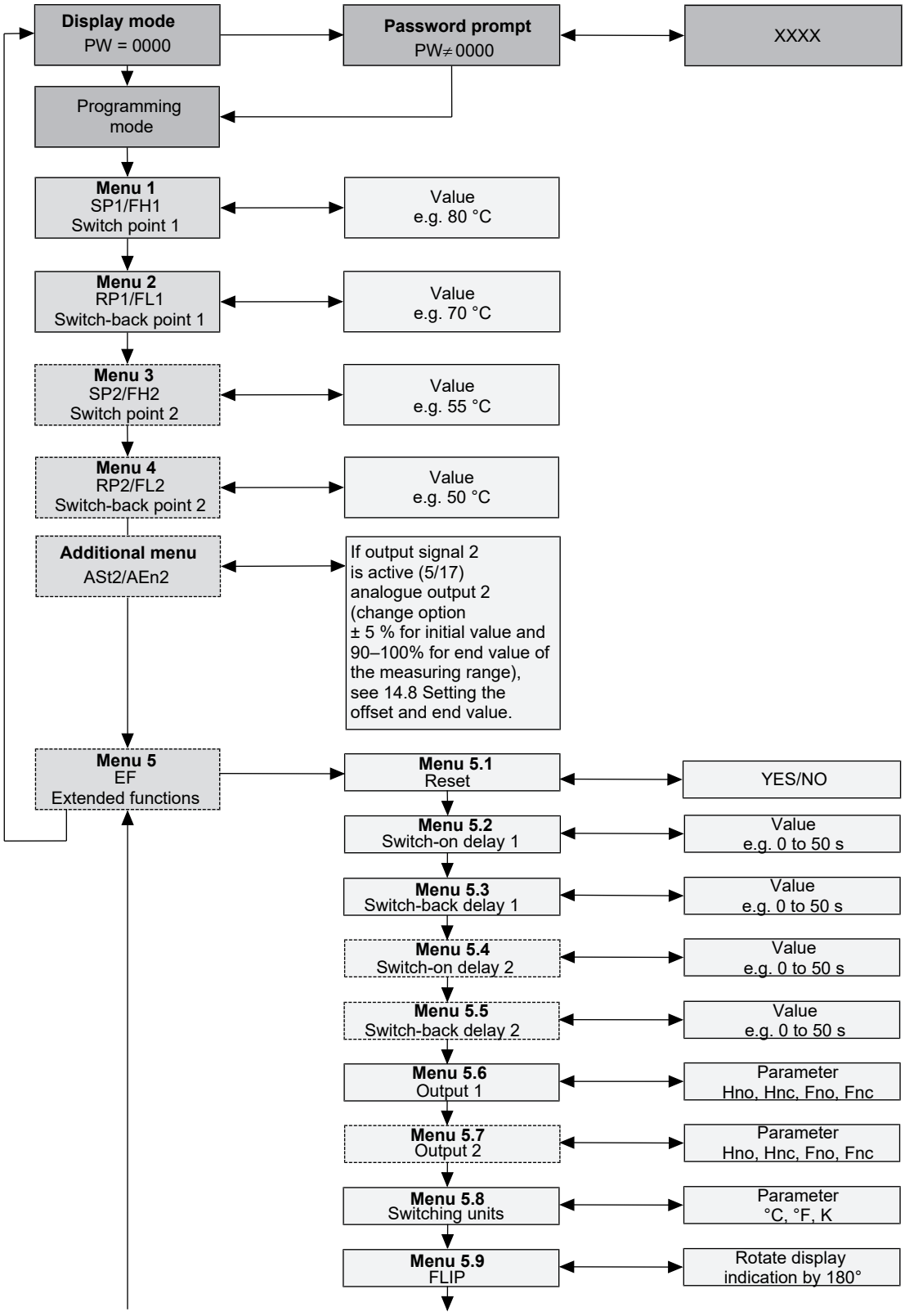
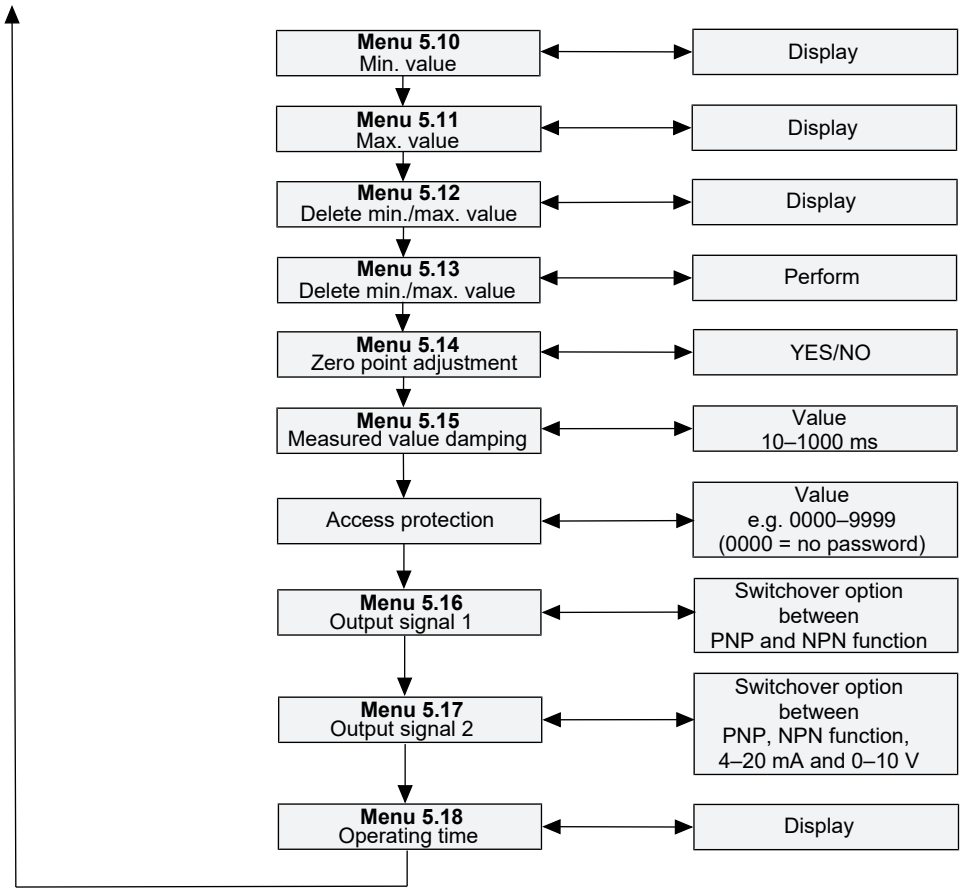


Fig. 4: Switching and switch-back characteristics for the window function in the temperature-time diagram

13.3 Structure of the menu system





Using the menu

1. Call up menu 1 with the left key.
2. Display the values for switch point 1 using the right key. The selected value flashes.
3. Select a value with the left key. Confirm the selected value with the right key and return to menu 1.
4. Call up the next menu with the left key and set the value as described in points 2 and 3.
5. Call up menu 5 with the left key.
6. Call up the first submenu 5.1 with the right key and set the value as described in points 2 and 3.

Note:
If no key is pressed for 60 seconds, the program returns to the display without saving the changed value.
The menus with dotted edges are not included on sensors with analogue output.

13.4 Menu list

First menu level	
SP 1 / SP2 FH 1 / FH2 **Menu: 1** and 3	**Setting the switch on points** Setting the respective value from which the switch point 1 or 2 should be activated. If the window function in the menu 5/6 or 5/7 is activated, the value of the switch point is the upper temperature limit of the window (**W**indow**H**igh).
rP 1* / rP 2* FL 1 / FL2 **Menu: 2** and 4	**Setting the switch-back points** Setting the respective value from which the switch-back point 1 and 2 should be activated. If the window function in the menu 5/6 or 5/7 is activated, the value of the switch-back point is the lower temperature limit of the window (**W**indow**L**ow).
ASt2 / AEn2	If output signal 2 is active (5/17)
*** Additional menu**	Analogue output 2 (change option ± 5% for initial value and 90–100% for end value of the measuring range), see **14.8 Setting the offset and end value.**
EF **Menu: 5**	**Extended functions** (Transition to menu level two)

Second menu level	
rES **Menu: 5/1**	**Reset** Restore all adjustable parameters to the as-delivered state and delete the min. and max. values
dS 1 / ds 2 **Menu: 5/2** and 5/4	**Setting the switch-on delay** Setting the value for the switch-on delay after reaching switch-on point 1 or 2 (adjustable 0.0 to 50.0 s)
dr 1 / dr 2 **Menu: 5/3** and 5/5	**Setting the switch-off delay** Setting the value for the switch-off delay after reaching switch-off point 1 or 2 (adjustable 0.0 to 50.0 s)
ou1 / ou2 **Menu: 5/6** and 5/7	**Setting the switching outputs 1 and 2** **Switching function of the switching outputs:** Hno = Hysteresis function, make contact Hnc = Hysteresis function, break contact Fno = Window function, make contact Fnc = Window function, break contact
Uni **Menu: 5/8**	**Switching units** Select the physical unit of measure for the displayed and set pressure values: **C = °C F = °F** **K = K**
FLIP **Menu: 5/9**	**Rotate display indication by 180°**
Lo **Menu: 5/10**	**Min. value** (display only) Display of the minimum temperature that was present during measurement (the value is lost if the power supply is interrupted)
Hi **Menu: 5/11**	**Max. value** (display only) Display of the maximum temperature that was present during measurement (the value is lost if the power supply is interrupted)
---- **Menu: 5/12**	**Delete the min. and max. values** The display confirms that the values have been deleted
Set0 **Menu: 5/13**	**Zero point adjustment** Setting/correction of the zero point of the display indication and the analogue output signal by up to ± 3% of the measuring range
dAP **Menu: 5/14**	**Measured value damping** Setting the value for damping (0 to 1000 ms in 10 ms steps)

Second menu level	
codE **Menu: 5/15**	**Access protection** Setting the password for access protection of the menu 0000 = no password (deactivated); 1000–9999 adjustable (activated) To reset the password, please contact GEMÜ.
o1 **Menu: 5/16**	**Output signal 1** Switchover option between PNP and NPN function
o2 **Menu: 5/17**	**Output signal 2** Switchover option between PNP, NPN function, 4 to 20 mA and 0 to 10 V
Hcnt **Menu: 5/18**	**Display of the operating time in [h]**
Display	

Menu item	Designation	Default setting	Own setting
Menu 1 SP1/FH1	Switch point 1 / WindowHigh 1	75% of the nominal temperature	
Menu 2 rP1/FL1	Switch-back point 1 / WindowLow 1	74% of the nominal temperature	
Menu 3 SP2/FH2	Switch point 2 / WindowHigh 2	85% of the nominal temperature	
Menu 4 rP2/FL2	Switch-back point 2 / WindowLow 2	84% of the nominal temperature	
Menu 5:2 dS1	Delay switching time 1	0 sec	
Menu 5:3 dr1	Delay back switching time 1	0 sec	
Menu 5:4 dS2	Delay switching time 2	0 sec	
Menu 5:5 dr2	Delay back switching time 2	0 sec	
Menu 5:6 ou1	Switching function of output 1	Hno	
Menu 5:7 ou2	Switching function of output 2	Hno	
Menu 5:8 uni	Units	°C	
Menu 5:14 dAP	Measured value damping	0 ms	
Menu 5:15 code	Password	0000	
Menu 5:16 01	Output signal 1	PNP	
Menu 5:17 02	Output signal 2	PNP	

14 IO-Link Interface

14.1 General device information

Baud rate	COM 2 (38.4 kBaud)
Process data length input	2 bytes
Minimum cycle time	5 ms
IO-Link version	V1.1
SIO mode	Yes

14.2 SIO mode (standard IO mode)

In this mode, the sensor operates in the same way as a normal temperature sensor with standard output signals. The digital output is always at pin 4 (output 1) of the M12 plug. Pin 2 (output 2) can be an analogue or additional digital output, depending on the version.

14.3 IO-Link mode (communication mode)

The temperature sensor switches to the IO-Link communication mode when it is operating under an IO-Link master. IO-Link communication is only possible via pin 4 of the M12 plug.

14.4 Process data

The process data length of the sensor is 16 bits. Both the switching states (BCD1 and BCD2) and the current measured values are transferred. The 14 bits of the measured value are scaled according to the sensor's measuring range.

15 bits	**14–2**	**1**	**0**
Signed Bit	Measured value	BDC2 / output 2	BDC1 / output 1

14.5 Error Codes

Error Code	Description
0x8011	Index not available
0x8012	Subindex not available
0x8023	Access Denied
0x8030	Parameter value out of range
0x8033	Parameter length overrun
0x8034	Parameter length underrun

14.6 Event Codes

	IO-Link 1.1 Event Codes	IO-Link 1.0 Event Codes	Device status	Type
No malfunction	0x0000	0x0000	0	Notification
General malfunction. Unknown error	0x1000	0x1000	4	Error
Process variable range overrun. Process Data uncertain	0x8C10	0x8C10	2	Warning
Process variable range under-run. Process Data uncertain	0x8C30	0x8C10	2	Warning

14.7 Parameter data

The parameter data of the temperature sensor complies with the smart sensor profile (V1.0).

Index hex	Subindex hex	Object name	Single Value		Default	Comment
0x02	0x00	System Commands	0x81 = Delete min./max. value 0x82 = res 0xA0 = Set0			The action is performed by writing to the subindex
0x03	0x00	Data Storage Index	0x01: Upload Start 0x02: Upload End 0x03: Download Start 0x04: Download End 0x05: Datastorage Break			
0x0C	0x00	Device Access Lock	0x00: Unlocked 0x01: Parameter access - Lock 0x02: Data storage - Lock 0x04: Local parameterization - Lock 0x08: Local user interface - Lock 0x03: Parameter access & Data Storage - Lock 0x05: Parameter access & Local parameterization - Lock 0x09: Parameter access & Local user interface - Lock 0x06: Data Storage & Local parameterization - Lock 0x0A: Data Storage & Local user interface - Lock 0x07: Data Storage & Parameter access & Local parameterization - Lock 0x0B: Data Storage & Parameter access & Local user interface - Lock		0x00: Unlocked	
0x24	0x00	Device Status	0x00 Device is operating properly 0x02 Out-of-Specification 0x04 Failure			
0x3D	0x01	SetPoint Logic 1	0x00: Value as specified			
0x3D	0x02	SetPoint Mode 1	0x80: Hysteresis NO	0x82: Window NO	0x80: HNo	
			0x81: Hysteresis NC	0x83: Window NC		
0x3D	0x03	SetPoint Hysteresis 1	0x0000: No Hysteresis			
0x3F	0x01	SetPoint Logic 2	0x00: Value as specified			
0x3F	0x02	SetPoint Mode 2	0x80: Hysteresis NO	0x82: Window NO	0x80: HNo	
			0x81: Hysteresis NC	0x83: Window NC		
0x3F	0x03	SetPoint Hysteresis 2	0x0000: No Hysteresis			
0x93	0x00	SetPoint type 1	0x01 – NPN Output 0x00 – PNP Output			
0x97	0x00	SetPoint type 2	0x01 – NPN Output	0x02 – 0 to 10 V Output		
			0x00 – PNP Output	0x03 – 4 to 20 mA		
0xD4	0x00	Unit	0x00 °C 0x01 °F 0x02 K		0x00: °C temperature unit	Temperature unit for the display is changed, the IO-Link process data is not changed

Index hex	Subindex hex	Object name	Access	Length	Value Range	Gradient	Unit	Default
0x3C	0x01	SetPoint 1 = SP1	R/W	2 bytes	Process Data			75%
0x3C	0x02	SetPoint 2 = rP1	R/W	2 bytes	Process Data			74%
0x3E	0x01	SetPoint 1 = SP2	R/W	2 bytes	Process Data			85%
0x3E	0x02	SetPoint 2 = rP2	R/W	2 bytes	Process Data			84%
0x57	0x00	Operating hours	R	4 bytes	0 to 4294967295	1	h	0
0x60	0x00	Password	W	2 bytes	0000–9999			0
0xD0	0x00	Delay Switching Time 1	R/W	2 bytes	0–500	0.1	sec	0
0xD1	0x00	Delay Back Switching Time 1	R/W	2 bytes	0–500	0.1	sec	0
0xD2	0x00	Delay Switching Time 2	R/W	2 bytes	0–500	0.1	sec	0
0xD3	0x00	Delay Back Switching Time 2	R/W	2 bytes	0–500	0.1	sec	0
0xD5	0x00	Min Temperature Value	R	2 bytes	Process Data			
0xD6	0x00	Max Temperature Value	R	2 bytes	Process Data			
0xD7	0x00	Damping	R/W	2 bytes	0–1000 in increments of 10 ms	1	ms	0
0x0010	0	Get Vendor Name	R	64 byte	Process Data			
0x0011	0	Get Vendor Text	R	64 byte	Process Data			
0x0012	0	Get Product Name	R	64 byte	Process Data			
0x0013	0	Get Product ID	R	64 byte	Process Data			
0x0014	0	Get Product Text	R	64 byte	Process Data			
0x0015	0	Get Serial Number	R	64 byte	Process Data			
0x0016	0	Get Hardware Revision	R	64 byte	Process Data			
0x0017	0	Get Software Revision	R	64 byte	Process Data			

14.8 Setting of offset and end value

Measuring range	Offset ± 5%		End value 90–100%	
	min.	max.	min.	max.
-40 to 125 °C	-8 °C	+8 °C	109 °C	125 °C

15 Troubleshooting

Error	Error cause	Troubleshooting
No output signal	Wrongly connected	Check connections
	Cable break	Check all cable connections
	Faulty measurement device (signal input)	Check the ammeter (miniature fuse) or the analogue input of the signal processing unit
Analogue output signal too low	Load resistance too high	Check the load resistance
	Supply voltage too low	Check the output voltage of the power supply unit
	Faulty energy supply	Check the power supply unit and the supply voltage across the device
Output signal slightly shifted	Temperature sensor is heavily contaminated	Clean it with a non-abrasive cleaning solution and soft brush or sponge
	Temperature sensor is calcified or encrusted	Recommendation: Have it descaled or cleaned by GEMÜ
Output signal significantly shifted	Temperature sensor is damaged (due to gauge pressure or having a mechanical cause)	Check the diaphragm. If it is damaged, send the device to GEMÜ for repair.
Incorrect output signal or no output signal	Cable damage having a mechanical, thermal or chemical cause	Check the cable. Check the housing for pitting. If it is damaged, send the device to GEMÜ for repair.

16 Inspection and maintenance

- The product is designed to be low maintenance.
- Make sure that the product is switched off and clean it with a damp cloth and a non-abrasive cleaning solution.
- If deposits or contaminants build up on the sensor, we recommend that you set appropriate maintenance intervals.
- Make sure that the product has been properly shut down and clean the sensor with a non-abrasive cleaning solution and soft brush or sponge.
- If limescale has built up on the sensor, descale the product.

● Carry out inspection and maintenance for products in the potentially explosive area to DIN EN 60079-17.

17 Disposal

1. Pay attention to adhered residual material and gas diffusion from penetrated media.
2. Dispose of all parts in accordance with the disposal regulations/environmental protection laws.

18 Returns

Legal regulations for the protection of the environment and personnel require that the completed and signed return delivery note is included with the dispatch documents. Returned goods can be processed only when this note is completed. If no return delivery note is included with the product, GEMÜ cannot process credits or repair work but will dispose of the goods at the operator's expense.

1. Clean the product.
2. Request a return delivery note from GEMÜ.
3. Complete the return delivery note.
4. Send the product with a completed return delivery note to GEMÜ.

19 Declaration of conformity according to 2014/30/EU (EMC Directive)

EU Declaration of Conformity

in accordance with 2014/30/EU (EMC Directive)

We, the company

GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Fritz-Müller-Strasse 6–8
74653 Ingelfingen-Criesbach, Germany

declare that the product listed below complies with the safety requirements of the EMC Directive 2014/30/EU.

Description of the product: GEMÜ 3240

Technical standards used:

- DIN EN 61326-1 (industrial processes)

2019-02-11

Joachim Brien
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