



## Operating Instruction

### Trimod Besta Level Switch – type I...7, IE9...7




for use in potentially explosive atmospheres acc. to UK SI 2016 No. 1107













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## 1. Used symbols and signs

	<b>Information:</b> Application hints and important information. To be followed for optimal function.
	<b>Attention:</b> Requirements and prohibitions to prevent damages, especially to material and the environment.
	<b>Danger:</b> Dangerous situation that can lead to injury and death if instructions are not followed.

## 2. Safety Instructions

-  The operating manual must be read and understood before installation. If you are uncertain on any point, please contact Bachofen AG, Switzerland.
-  The electrical connection may only be carried out by qualified personnel who have been authorised by the operator.
-  All attached cables and cable bushings must comply with the requirements of EN IEC 60079-0 Appendix A – explosion-proof cables and cable entries.
-  The supply voltage may only be applied after the cover has been closed. Please ensure that you always observe the special regulations concerning work on explosion-proof devices and during work in potentially explosive atmospheres at the operators site.
-  Every Trimod Besta level switch must be selected by qualified, trained personnel in accordance with the specifications stipulated by the customer. These specifications must be kept by the operator in a safe place, together with the operating instruction, the customer-specific designation and the type number (see type plate).
-  In the event of any deviation of the physical quantities (pressure, temperature, density, etc.) from the original specification, the suitability of the level switch must be checked again by qualified, trained personnel or by the manufacturer, with regard to the new specifications.
-  Process vessels / float chambers must be brought to atmospheric pressure before work is carried out and must be appropriately vented.
-  If the device is mounted in a partition wall, which separates zones from one another, and if category 1 or 2 equipment is necessary, an equipotential bond must be made (contact resistance  $\leq M\Omega$ ) between the metal housing of the level switch and the wall of the container.
-  The float and flange module must be included in the regular plant pressure tests.
-  The devices must, under no circumstance, be used as a support aid or security fixture for equipment structures or persons

## 3. Use in accordance with the intended purpose

-  The Trimod Besta level switches type I...7, IE9...7 are used exclusively for monitoring and controlling liquids in tanks in the offshore industry, in shipbuilding, in the chemical and petrochemical industry and in power plant construction. They are intended for use in accordance with the Ex marking [Ex] II 1/2 G Ex ia IIC T6...T2 Ga/Gb. The permissible operational data for the device being used must be observed.


Any other use than that described, calls into question the safety of persons and the equipment and is not permitted. The manufacturer is not liable for damage resulting from non-intended purpose.



Wenn ein Trimod Besta Füllstandschalter in einer sicherheitsrelevanten Anwendung nach IEC 61508 und IEC 61511 eingesetzt wird, muss der Einbau und die Inbetriebnahme gemäss dem Safety Manual erfolgen. Das Safety Manual führt die Einschränkungen und Grenzwerte der IEC 61508-Zertifizierung für Trimod Besta Füllstandschalter auf.

Es kann unter <http://www.trimodbesta.com/downloads/> heruntergeladen werden.



## 4. Conformity of standards

 Trimod Besta level switches type I...7, IE9...7 conform with the requirements of:

EX-protection	EN IEC 60079-0, EN 60079-11, EN 60079-26
RoHS	EN IEC 63000
Safety Integrity Level SIL	IEC 61508:2010

## 5. Technical data


### Ex-protection-data


Explosion protection	 II 1/2 G Ex ia IIC T6...T2 Ga/Gb
Certification no.	EPS 22 UKEX 1261 X
UKCA marking	 8507


### Safety Integrity Level (SIL)

Types	assembled with	SIL Level
I...7, IN...7, IE9...7, INE9...7, HI...7, HIN...7, HIE9...7, HINE9...7, TDI...7, TDIN...7, TDIE9...7, TDINE9...7, etc.	1 inductive proximity switch	SIL 1 (SIL 3 capable)
II...7, IIE9...7, HII...7, HIIIE9...7, TDII...7, TDIIIE9...7 etc.	2 inductive proximity switches	SIL 1 (SIL 3 capable)

### Electrical connection

 The electrical connection should be carried out in accordance with the regulations of NAMUR/EN 60947-5-6 and the safety regulations.


 If temperatures on cable glands are higher than 70°C or higher than 80°C at the branching conductor, then only a certified temperature resistant cable shall be connected.

 Not suitable for the switching of motor loads and incandescent lamp loads. The device is not protected against excess current.


The rated cross-section of the conductor to be considered here must be at least 0,5 mm<sup>2</sup>.

Connection cables may not be bared for a distance of more than 3 mm from the terminal screw.

Wire end ferrules must always be used.


 **Supply voltage**  $U_N$  8.2 VDC  $\pm$ 5% /  $U_B$  5 to 25 VDC  
Electromagnetic compatibility (EMC) acc. to EN 60947-5-2

### Isolating switching amplifier

 The selection of the isolating switching amplifier has an indirect influence on the maximum temperature of the proximity switch. Therefore, the values  $U_0$ ,  $I_0$  and  $P_0$  must all lie below the limit values  $U_i$ ,  $I_i$  and  $P_i$  specified in the relevant certificate of conformity.

Therefore, the following apply:

$U_0$ (isolating switching amplifier)	<	$U_i$ (proximity switch)
$I_0$ (isolating switching amplifier)	<	$I_i$ (proximity switch)
$P_0$ (isolating switching amplifier)	<	$P_i$ (proximity switch)

 The max. ambient temperature  $T_1$  (max.) of the proximity switch is obtained via the certified maximum values and the medium-dependent temperature class acc. to the selection of the isolating switching amplifier by the operator. For correct operation, further consideration must be given to ensure that the isolating switching amplifier satisfies the relevant requirements of the evaluation circuit and the supply circuit, so that the ext. capacitance and inductance (incl. the supply cable values) do not exceed the internal capacitance of the isolating switching amplifier.

Therefore, the following apply:

$C_a$ (isolating switching amplifier)	>	$C_i$ (proximity switch) + $C_{Line}$
$L_a$ (isolating switching amplifier)	>	$L_i$ (proximity switch) + $L_{Line}$

**Recommended evaluation electronics** (Transformer isolated amplifier from Pepperl + Fuchs):

for type I..., IN..., II...	KFA6-SR2-EX1.W KFA6-SR2-EX2.W
for type IE9..., INE9..., IIE9...	KHA6-SH-EX1 ED2-SH-EX2.R1 ED2-SH-EX1.R1



**Principles of use**

Type I...	As high alarm using the closed-circuit principle or as low alarm using the open-circuit principle. Float at the top: proximity switch damped $I \leq 1$ mA. Float at the bottom: proximity switch undamped $I \geq 2.2$ mA.
Type IN...	As low alarm using the closed-circuit principle or as low alarm using the open-circuit principle. Float at the top: proximity switch undamped $I \geq 2.2$ mA. Float at the bottom: proximity switch damped $I \leq 1$ mA.
Type II...	with two proximity switches, Galvanically isolated. Combination of I... and IN...
Type IE9...	TÜV tested. As high alarm using the closed-circuit principle. For self-checking, must be operated using the closed-circuit principle. Float at the top: proximity switch damped $I \leq 1$ mA.
Type INE9...	TÜV tested. As low alarm using the closed-circuit principle. For self-checking, must be operated using the closed-circuit principle. Float at the bottom: proximity switch damped $I \leq 1$ mA.
Type IIE9...	with two proximity switches, Galvanically isolated. Combination of IE9... and INE9... For self-checking, must be operated using the closed-circuit principle.



**Evaluation and supply circuit (Type 1...4)**

Type of protection Intrinsic Safety Ex ia IIC/IIB for connection to intrinsically safe circuits only.

		Type 1	Type 2	Type 3	Type 4
Effective internal voltage	$U_i$	max. 16 VDC	max. 16 VDC	max. 16 VDC	max. 16 VDC
Effective internal current	$I_i$	max. 25 mA	max. 25 mA	max. 52 mA	max. 76 mA
Effective internal power	$P_i$	max. 34 mW	max. 64 mW	max. 169 mW	max. 242 mW

For relationship between type of connected circuit, temperature class, maximum permissible ambient temperature as well as the effective internal reactance for the respective sensor, reference is made to the table below:



**Switch module type I...7 (Proximity switch type NJ2-11-N)**

		Type 1			Type 2			Type 3			Type 4		
Certified internal capacitance $C_i$	Certified internal inductance $L_i$	Maximum permissible ambient temperature in °C for application in temperature class											
		T6	T5	T4 - T1	T6	T5	T4 - T1	T6	T5	T4 - T1	T6	T5	T4 - T1
$\leq 45$ nF	$\leq 50$ µH	73	88	100	66	81	100	45	60	89	30	45	74

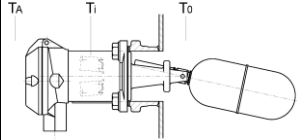


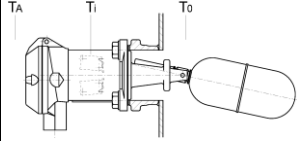
**Switch module type IE9...7 (Proximity switch type NJ2-11-SN)**

		Type 1			Type 2			Type 3			Type 4		
Certified internal capacitance $C_i$	Certified internal inductance $L_i$	Maximum permissible ambient temperature in °C for application in temperature class											
		T6	T5	T4 - T1	T6	T5	T4 - T1	T6	T5	T4 - T1	T6	T5	T4 - T1
$\leq 50$ nF	$\leq 150$ µH	73	88	100	66	81	100	45	60	89	30	45	74

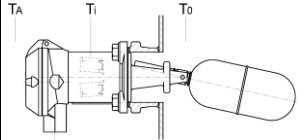
 **Special conditions for safe use**

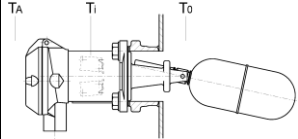
Level switches without heat exchanger (Flat gaskets IP65)

	<b>Limits proximity switch</b> $T_i$	<b>Ambient temperature</b> $T_A$	<b>Operating temperature</b> $T_o$
I...7, IN...7, II...7, 2I...7, 2IN...7, 2II...7, 5I...7, 5IN...7, 5II...7, etc.	-25°C to 100°C	0°C to 70°C	0°C to 150°C
The combinations of the maximum values are to be avoided! Limit value combinations according to temperature diagram <b>3081-025EN</b> in the <b>appendix 1</b>			

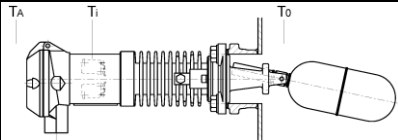
	<b>Limits proximity switch</b> $T_i$	<b>Ambient temperature</b> $T_A$	<b>Operating temperature</b> $T_o$
IE9...7, INE9...7, IIE9...7, 2IE9...7, 2INE9...7, 2IIE9...7, 5IE9...7, 5INE9...7, 5IIE9...7, etc.	-40°C to 100°C	0°C to 70°C	0°C to 150°C
The combinations of the maximum values are to be avoided! Limit value combinations according to temperature diagram <b>3081-030EN</b> in the <b>appendix 2</b>			

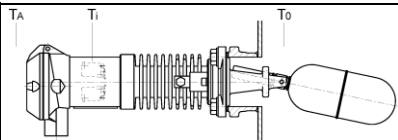
Level switches without heat exchanger (O-rings IP66/IP67)

	<b>Limits proximity switch</b> $T_i$	<b>Ambient temperature</b> $T_A$	<b>Operating temperature</b> $T_o$
DI...7, DIN...7, DII...7, 2DI...7, 2DIN...7, 2DII...7, 5DI...7, 5DIN...7, 5DII...7, etc.	-25°C to 100°C	-20°C to 90°C	-30°C to 120°C
The combinations of the maximum values are to be avoided! Limit value combinations according to temperature diagram <b>3081-026EN</b> in the <b>appendix 3</b>			

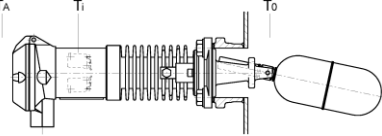
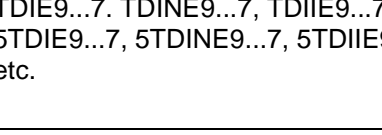
	<b>Limits proximity switch</b> $T_i$	<b>Ambient temperature</b> $T_A$	<b>Operating temperature</b> $T_o$
DIE9...7, DINE9...7, DIIE9...7, 2DIE9...7, 2DINE9...7, 2DIIE9...7, 5DIE9...7, 5DINE9...7, 5DIIE9...7, etc.	-40°C to 100°C	-30°C to 90°C	-30°C to 120°C
The combinations of the maximum values are to be avoided! Limit value combinations according to temperature diagram <b>3081-031EN</b> in the <b>appendix 4</b>			

Level switches with heat exchanger for very high operating temperatures (flat gaskets IP65)

	<b>Limits proximity switch</b> $T_i$	<b>Ambient temperature</b> $T_A$	<b>Operating temperature</b> $T_o$
HI...7, HIN...7, HII...7, 5HI...7, 5HIN...7, 5HII...7, etc.	-25°C to 100°C	0°C to 75°C	0°C to 300°C
The combinations of the maximum values are to be avoided! Limit value combinations according to temperature diagram <b>3081-027EN</b> in the <b>appendix 5</b>			

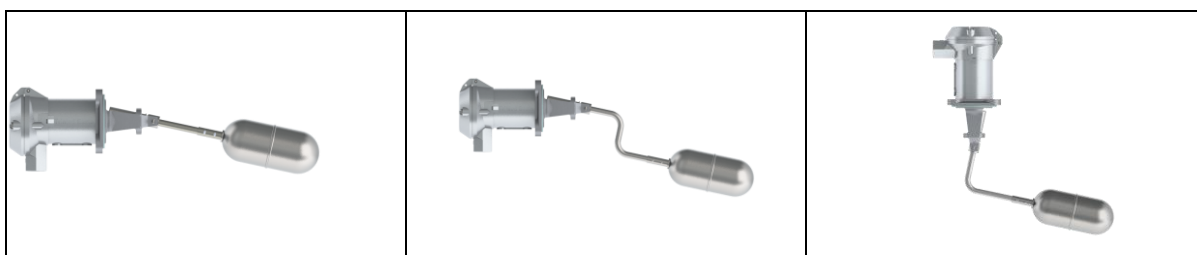
	<b>Limits proximity switch</b> $T_i$	<b>Ambient temperature</b> $T_A$	<b>Operating temperature</b> $T_o$
HIE9...7, HINE9...7, HIIE9...7, 5HIE9...7, 5HINE9...7, 5HIIE9...7, etc.	-40°C to 100°C	0°C to 75°C	0°C to 300°C
The combinations of the maximum values are to be avoided! Limit value combinations according to temperature diagram <b>3081-032EN</b> in the <b>appendix 6</b>			




Level switch with heat exchanger for very low operating temperatures (O-rings IP66/IP67)

	<b>Limits proximity switch</b> $T_i$	<b>Ambient temperature</b> $T_A$	<b>Operating temperature</b> $T_o$
TDI...7, TDIN...7, TDII...7, 5TDI...7, 5TDIN...7, 5TDII...7, etc.	-25°C to 100°C	-10°C to 80°C	-196°C to 270°C
The combinations of the maximum values are to be avoided! Limit value combinations according to temperature diagram <b>3081-028EN</b> in the <b>appendix 7</b>			
	<b>Limits proximity switch</b> $T_i$	<b>Ambient temperature</b> $T_A$	<b>Operating temperature</b> $T_o$
TDIE9...7, TDINE9...7, TDII9...7, 5TDIE9...7, 5TDINE9...7, 5TDII9...7, etc.	-40°C to 100°C	-10°C to 80°C	-196°C to 270°C
The combinations of the maximum values are to be avoided! Limit value combinations according to temperature diagram <b>3081-033EN</b> in the <b>appendix 8</b>			

## 6. Installation and initial start-up

During installation, the correct operating position must be observed.




-  For side mounting, observe the “Top” arrow on the type plate.
-  The float must be able to move freely over the whole range of movement and must not be restricted by the tanks walls or by fittings in the tank.
-  Installation positions that are subject to turbulence impair the function and should always be avoided.

### Process connection flange - Industrial range

For switches in the industrial range with flanges according to EN/DIN, ANSI, etc., the seals <sup>1)</sup> and connecting studs <sup>1)</sup> that are used must correspond to the industry standard for material, pressure class and type of seal and must be tightened to the corresponding tightening torques.

<sup>1)</sup> not a component of the supply.

-  In case of uncertainty on any point, refer to the corresponding standard or consult the manufacturer.

### Process connection flange - Standard range

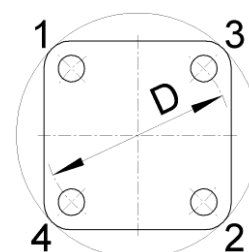
For switches of the standard range PN 25 (360 psi), corresponding seals are supplied with the unit.

Minimum tightening torques and tightening sequence:

Flange	D	Seal	Stud	
			Carbon steel	Stainless steel
01 / 011	92 mm	Garlock Blue-Gard® 3000 Kubo Graflex® SP 3211 <sup>3)</sup>	18 Nm <sup>2)</sup>	22 Nm <sup>2)</sup>

<sup>2)</sup> Data refer to lubricated studs

<sup>3)</sup> High / low temperature application (graphite gasket)





Level switches incl. flange for high / low temperature applications may not be insulated.

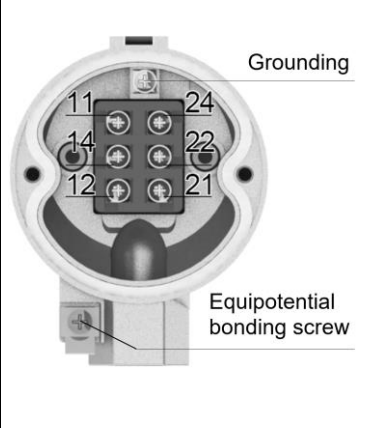
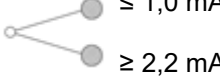
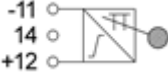
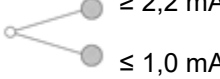
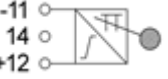
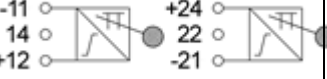
### Connecting

1. Loosen the cover screws, remove the protective plug from the cable entry and fit the cable gland.
2. Insert the cable and connect to the wires according to the connection diagram (see inside the housing cover and instructions). All terminal connections are self-opening.
3. Connect grounding (inside housing) and equipotential bonding screw (outside, beside cable entry)!



4. First close the cover and then apply the supply voltage!

### Connection diagram

	Types	Function	Connection diagram
	1...7, IE9...7, 2I...7, 2IE9...7, 5I...7, 5IE9...7, etc.		
	IN...7, INE9...7, 2IN...7, 2INE9...7 5IN...7, 5INE9...7, etc.		
	II...7 (= I...7 + IN...7) 2II...7 (= 2I...7 + 2IN...7) 5II...7 (= 5I...7 + 5IN...7) IIE9...7 (= IE9...7 + INE9...7) 2IIE9...7 (= 2IE9...7 + 2INE9...7) 5IIE9...7 (= 5IE9...7 + 5INE9...7), etc.		

## 7. Maintenance



Level switches must be checked and cleaned regularly (min. 1x annually).

### Procedure:



1. Before opening the housing, disconnect the supply voltage; electric shocks can be life threatening.



2. Process vessels / float chambers must be brought to atmospheric pressure before work is carried out and must be appropriately vented. If necessary, lower the fill level. If the switch is mounted in a chamber, close the corresponding shut-off valves and, depending on the requirement, empty or vent the chamber.


3. Loosen the flange connection and remove the switch.
4. Check the float and mechanism for damage and contamination.
5. Remove deposits and metal particles by means of suitable and approved methods. Care must be taken to ensure that no mechanical damage occurs as a result of the cleaning.
6. In the case of floats with protective bellows, the bellows must be removed before cleaning and should be cleaned separately, both internally and externally.
7. Check the float and mechanism for complete deflection, as well as for smooth and unrestricted operation.




8. In the event that it becomes necessary to replace individual components, please note that only original spare parts, split pins, float, switch module, etc. may be installed.
9. After completion of the cleaning / inspection work, the switch module must be checked for correct function by means of an acoustic continuity tester or similar device with simultaneous deflection of the float, followed by recording in the inspection log book.
10. In order to guarantee the absence of leaks between process vessel / float chamber, the flange seal must be replaced after each dismantling.
11. After carrying out the inspection work, the device is re-fitted at the intended location.





9. Fit replacement module (together with intermediate temperature piece, for H... and TD... types) and tighten 2 screws.
10. Re-connect wires including grounding- and equipotential bonding connection (see connection diagram inside cover and attached switch operating instruction).
-  11. Energize power supply only when hinged cover is closed!

## 10. Fire protection

-  Trimod Besta level switches must be protected against external fires.

## 11. Disposal



Incorrect disposal can be hazardous to the environment. In case of doubt, obtain information on environmentally sound disposal from the local authority or special disposal companies.

The components of the level switch contain electrical, metal and plastic parts. Therefore, the legal requirements must be observed for disposal (e.g. disposal by an approved disposal company).

Trimod Besta level switches are free of asbestos or otherwise hazardous materials (UK SI 2012 No. 3032 - RoHS).

## 12. Storage & transport

The level switches must be stored dry in the original packaging in a clean place.

It must be ensured that the level switches are protected from mechanical damage and environmental influences during storage.

The storage temperature must not fall below -20°C and must not exceed 40°C.

Damage can occur due to incorrect transport or storage.

Transport the level switches shock-free and protected from the weather in their original packaging and handle them with care.

### 13. UK Declaration of Conformity



## UK Declaration of Conformity acc. to UK SI 2016 No. 1107

T-166

Version 0

11.07.2022 / SIA

● **Name and address of manufacturer**

Bachofen AG  
Ackerstrasse 42  
8610 Uster  
Phone +41 44 944 11 11  
Fax +41 44 944 12 33

Copyright Bachofen AG  
www.bachofen.ch  
**BACHOFEN**

● **Declaration of conformity**

We, Bachofen AG declare under our sole responsibility that the products listed below are in conformity with the listed UK Regulations as indicated below and amended by UK SI 2019 No. 696 and standards.

● **Products**

Type	Description
Z...7	Trimod Besta Level Switch Hermetically sealed 'Ex eb' 'Ex db'
B...7	Trimod Besta Level Switch Intrinsically safe 'Ex ia' (microswitch gold plated contacts)
I...7, IE9...7	Trimod Besta Level Switch Intrinsically safe 'Ex ia' (proximity switch)

● **Regulations and Standards**

UK Regulation	Standards
UK SI 2016 No. 1107 (EX)	EN IEC 60079-0:2018 EN 60079-1:2014 EN IEC 60079-7:2015/A1:2018 EN 60079-11:2012 EN 60079-26:2015
UK SI 2012 No. 3032 (RoHS)	EN IEC 63000:2018

● **Marking and Certificates**

Marking	Certificate	Valid for types
II 1/2 G Ex eb db IIC T5... T6 Ga/Gb	EPS 22 UKEX 1261 X	Z...7
II 1/2 G Ex ia IIC T6 Ga/Gb		B...7
II 1/2 G Ex ia IIC T6... T2 Ga/Gb		I...7, IE9...7

● **Affixed UKCA Marking**



● **Approved Body QM-System**

Bureau Veritas Consumer Products Services Germany GmbH  
Businesspark A96  
86842 Türkheim  
Germany

● **Signatures**

Uster, 20.12.2022

Christof Bolliger  
Director Products + Partner / Member of the Executive Board

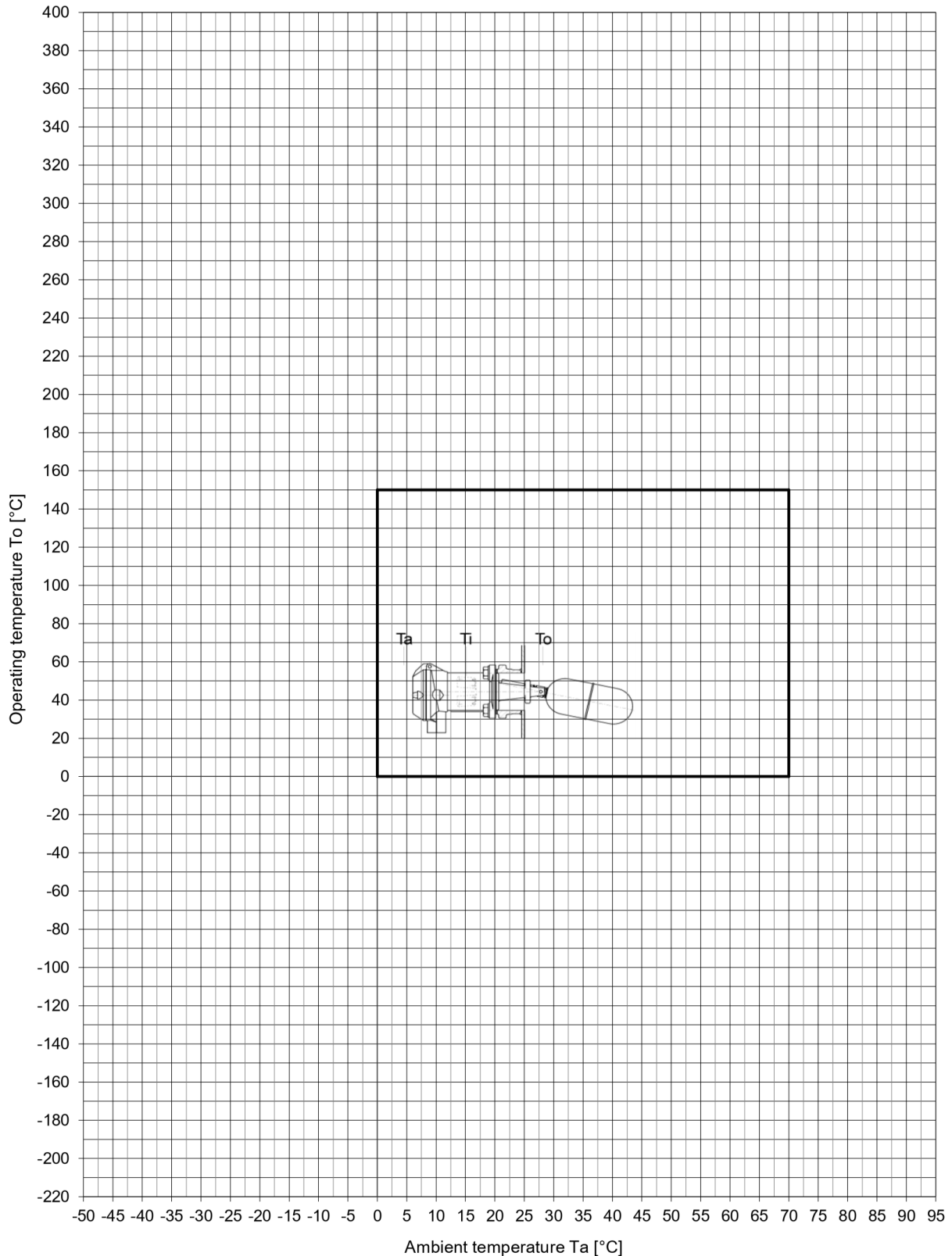
Stefan Vogt  
Product Management + Design Team Leader

# Appendix 1

	<b>Temperature diagram</b> <b>Switch module - I...</b>		<b>3081-025EN</b> Revision 2 / 14.07.2022 / SIA
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Diagram show the limit values of the construction unit and/or the components, independently flange module / float module

- |   |                 |                               |
|---|-----------------|-------------------------------|
| • Limit values - Proximity switch type NJ2-11-N         | -25°C to 100°C  | Data sheet Pepperl & Fuchs    |
| • Limit values - Flat gasket type AFM 38                | -100°C to 200°C | Data sheet 338 Reinz          |
| • Limit values - Flat gasket type Blue-Gard® Style 3000 | -73°C to 205°C  | Data sheet 10/11/2016 Garlock |



Production date:	01.10.2015	File name:	3081-025_Tempdiagr_I_(Ex).xls [english]
Print date:	20.07.2022	Creator:	SIA
			Page: 1 / 1

## Appendix 2



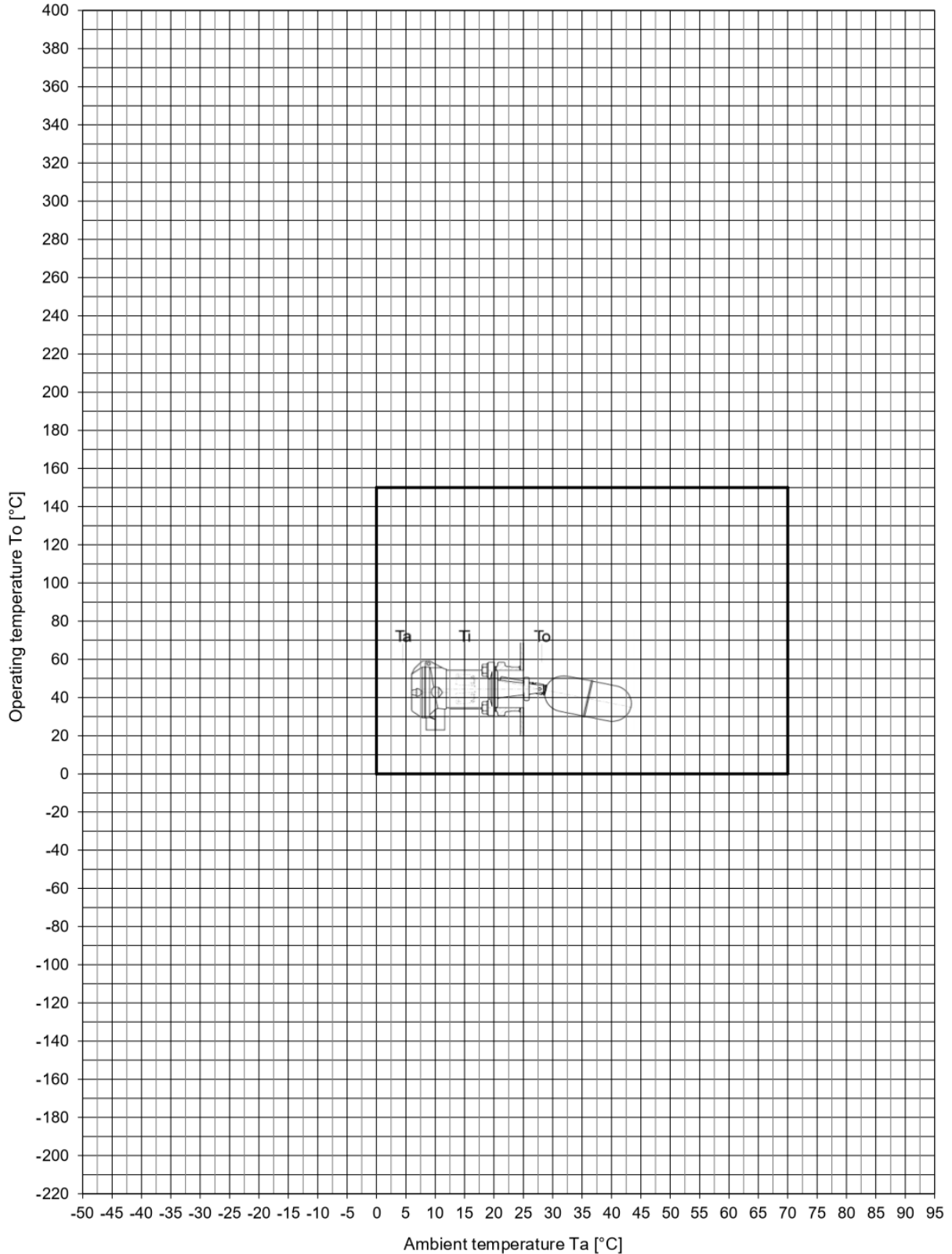
	Temperature diagram		3081-030EN
	Switch module - IE9...		Revision 2 / 14.07.2022 / SIA

Diagram show the limit values of the construction unit and/or the components, independently flange module / float module

• Proximity switch type NJ2-11-SN	-40°C to 100°C	Data sheet	Pepperl & Fuchs
• Flat gasket type AFM 38	-100°C to 200°C	Data sheet	338 Reinz
• Flat gasket type Blue-Gard® Style 3000	-73°C to 205°C	Data sheet	10/11/2016 Garlock



Production date:	01.10.2015	File name:	3081-030_Tempdiagr_IE9_(Ex).xls [english]	
Print date:	02.08.2022	Creator:	SIA	Page: 1 / 1

# Appendix 3



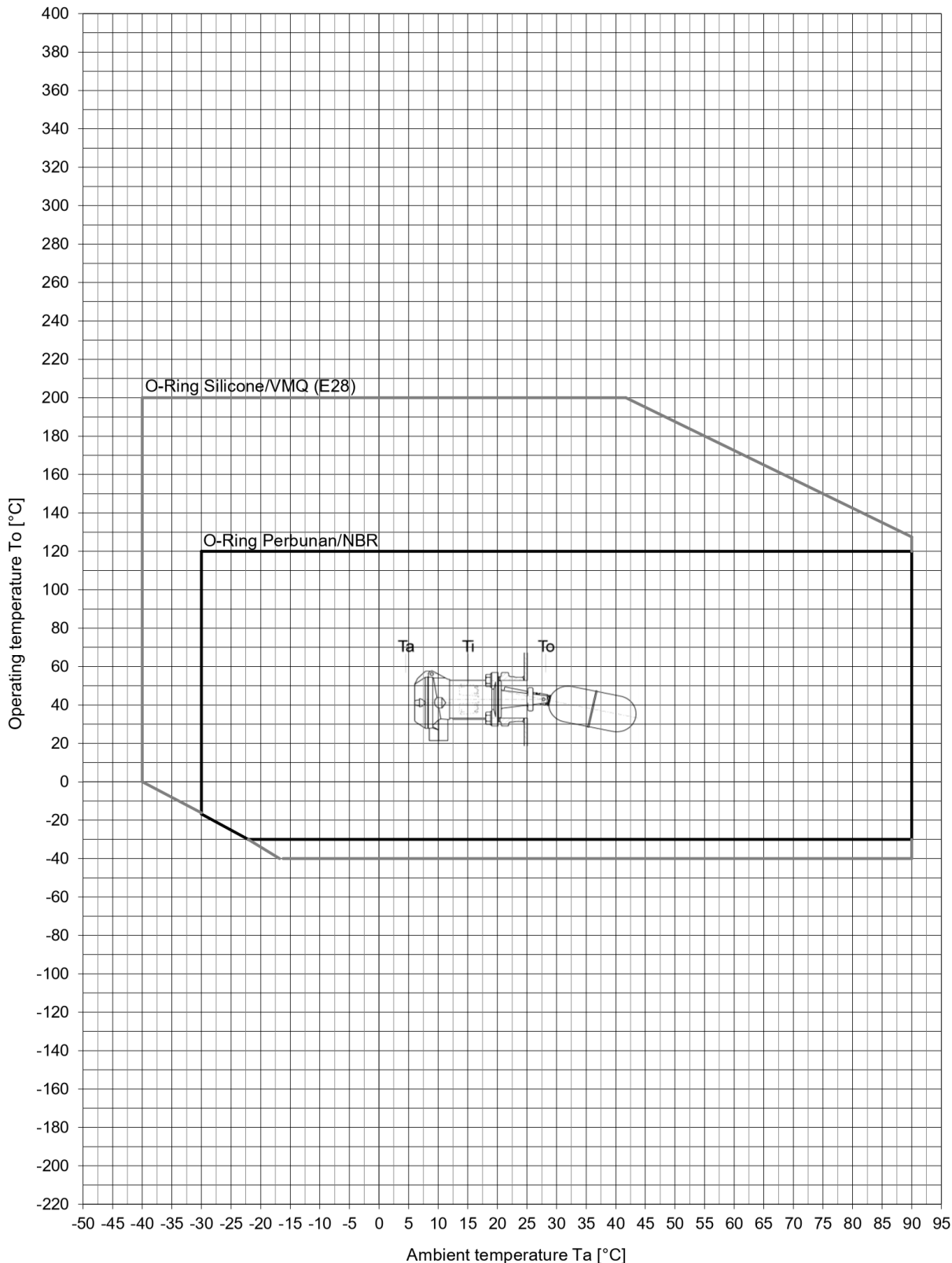
	<b>Temperature diagram</b> Switch module - DI...		<b>3081-026EN</b> Revision 2 / 14.07.2022 / SIA
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Diagram show the limit values of the construction unit and/or the components, independently flange module / float module

- |   |                |                               |
|---|----------------|-------------------------------|
| • Limit values - Proximity switch type NJ2-11-N | -25°C to 100°C | Data sheet Pepperl & Fuchs    |
| • Limit values - O-Ring Perbunan/NBR            | -20°C to 100°C | Data sheet NB7000 (Höfert)    |
| • Limit values - O-Ring Silicone/VMQ            | -50°C to 200°C | Data sheet 111 470 1 (Höfert) |



Production date:	01.10.2015	File name:	3081-026_Tempdiagr_DI_(Ex).xls [english]
Print date:	20.07.2022	Creator:	SIA
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# Appendix 4



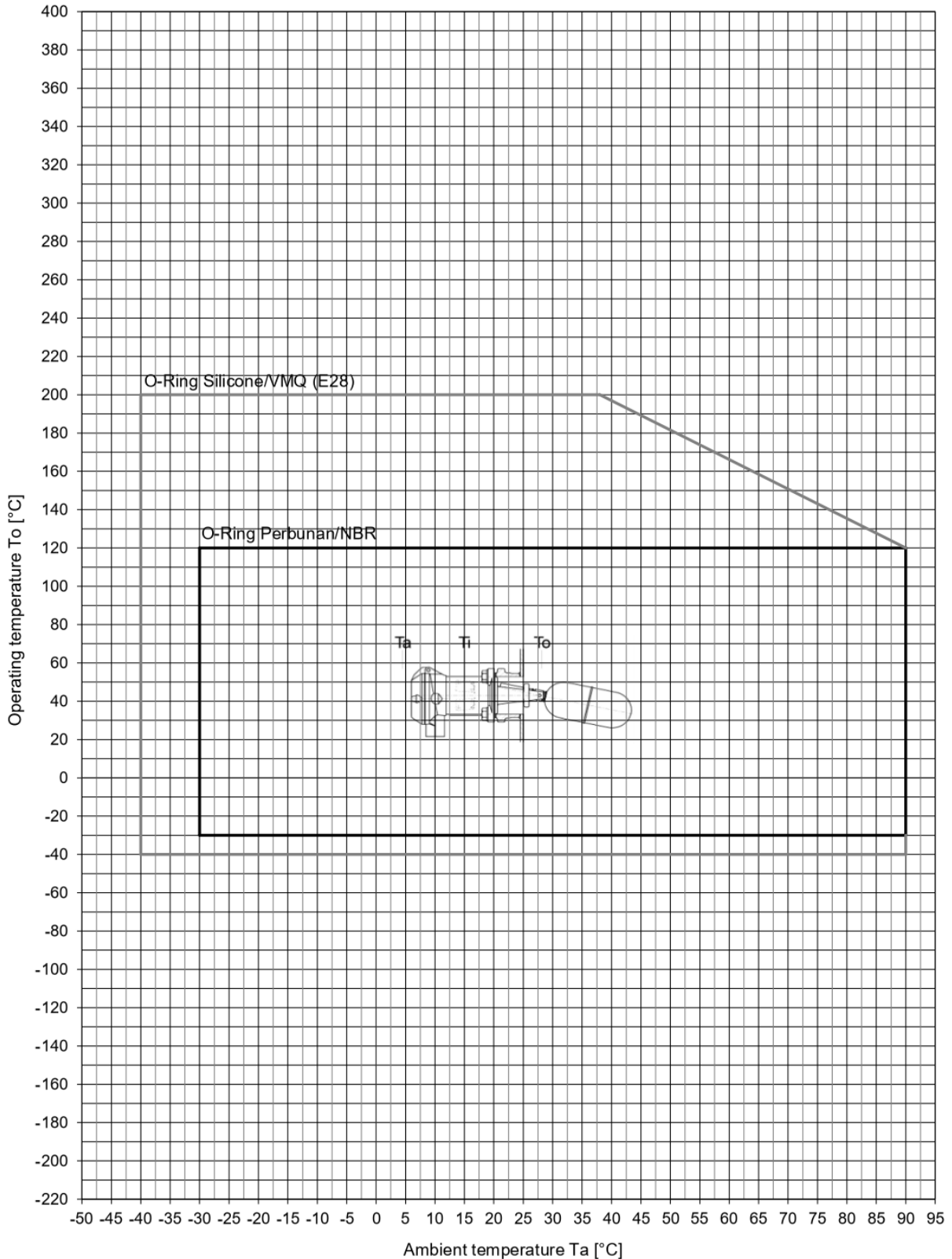
	<b>Temperature diagram</b> <b>Switch module - DIE9...</b>		<b>3081-031EN</b> Revision 2 / 14.07.2022 / SIA
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Diagram show the limit values of the construction unit and/or the components, independently flange module / float module

• Proximity switch type NJ2-11-SN	-40°C to 100°C	Data sheet	Pepperl & Fuchs
• O-Ring type Perbunan/NBR	-20°C to 100°C	Data sheet	NB7000 (Höfert)
• O-Ring type Silicone/VMQ	-50°C to 200°C	Data sheet	111 470 1 (Höfert)



Production date:	01.10.2015	File name:	3081-031_Tempdiagr_DIE9_(Ex).xls [english]
Print date:	02.08.2022	Creator:	SIA
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# Appendix 5


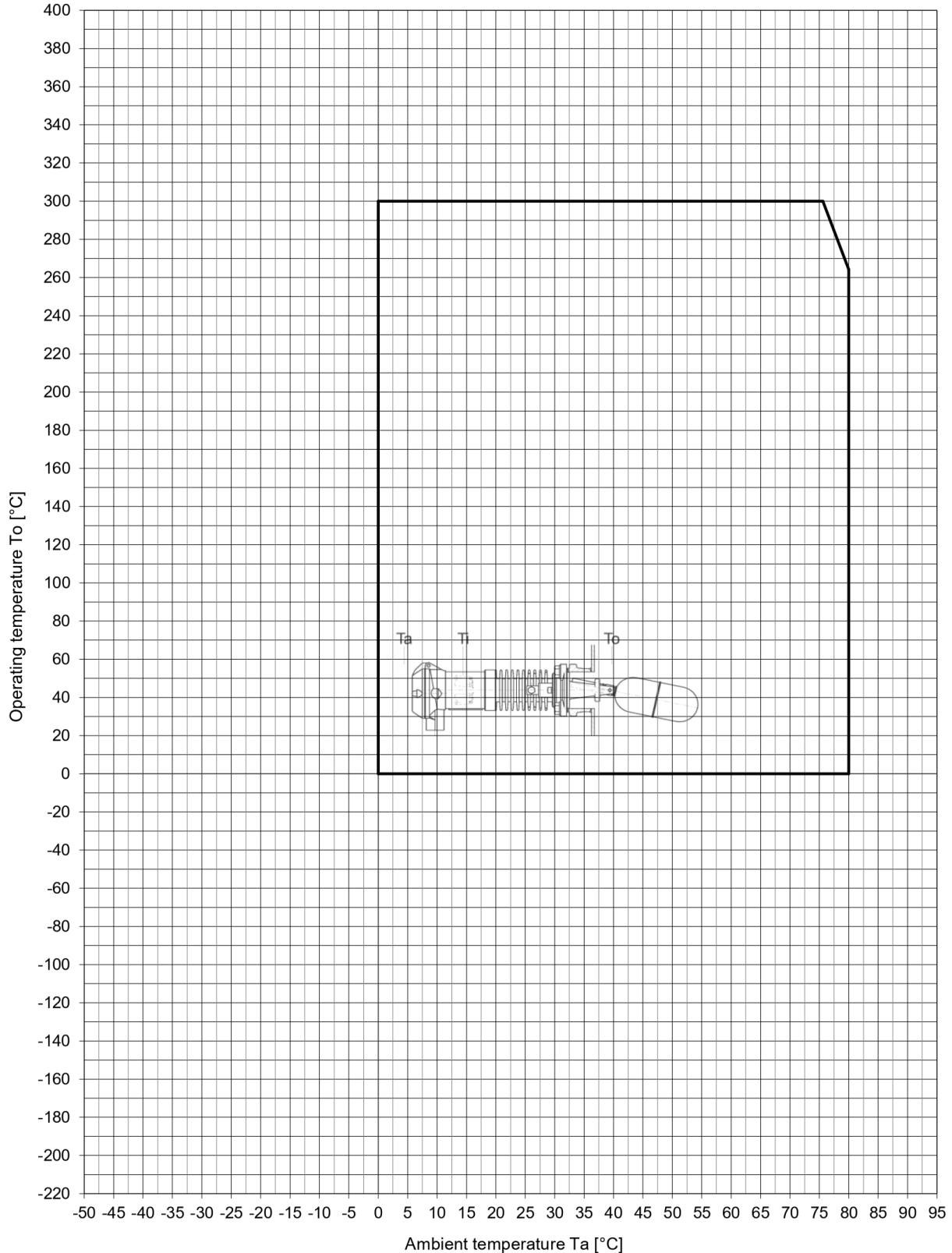
<b>BACHOFEN</b> <small>INDUSTRIAL AUTOMATION</small>	Temperature diagram Switch module - HI...		3081-027EN Revision 2 / 14.07.2022 / SIA
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Diagram show the limit values of the construction unit and/or the components, independently flange module / float module

- |   |                 |                               |
|---|-----------------|-------------------------------|
| • Limit values - Proximity switch type NJ2-11-N         | -25°C to 100°C  | Data sheet Pepperl & Fuchs    |
| • Limit values - Flat gasket type AFM 38                | -100°C to 200°C | Data sheet 338 Reinz          |
| • Limit values - Flat gasket type Blue-Gard® Style 3000 | -73°C to 205°C  | Data sheet 10/11/2016 Garlock |



Production date:	01.10.2015	File name:	3081-027_Tempdiagr_HI_(Ex).xls [english]
Print date:	20.07.2022	Creator:	SIA
			Page: 1 / 1



# Appendix 6



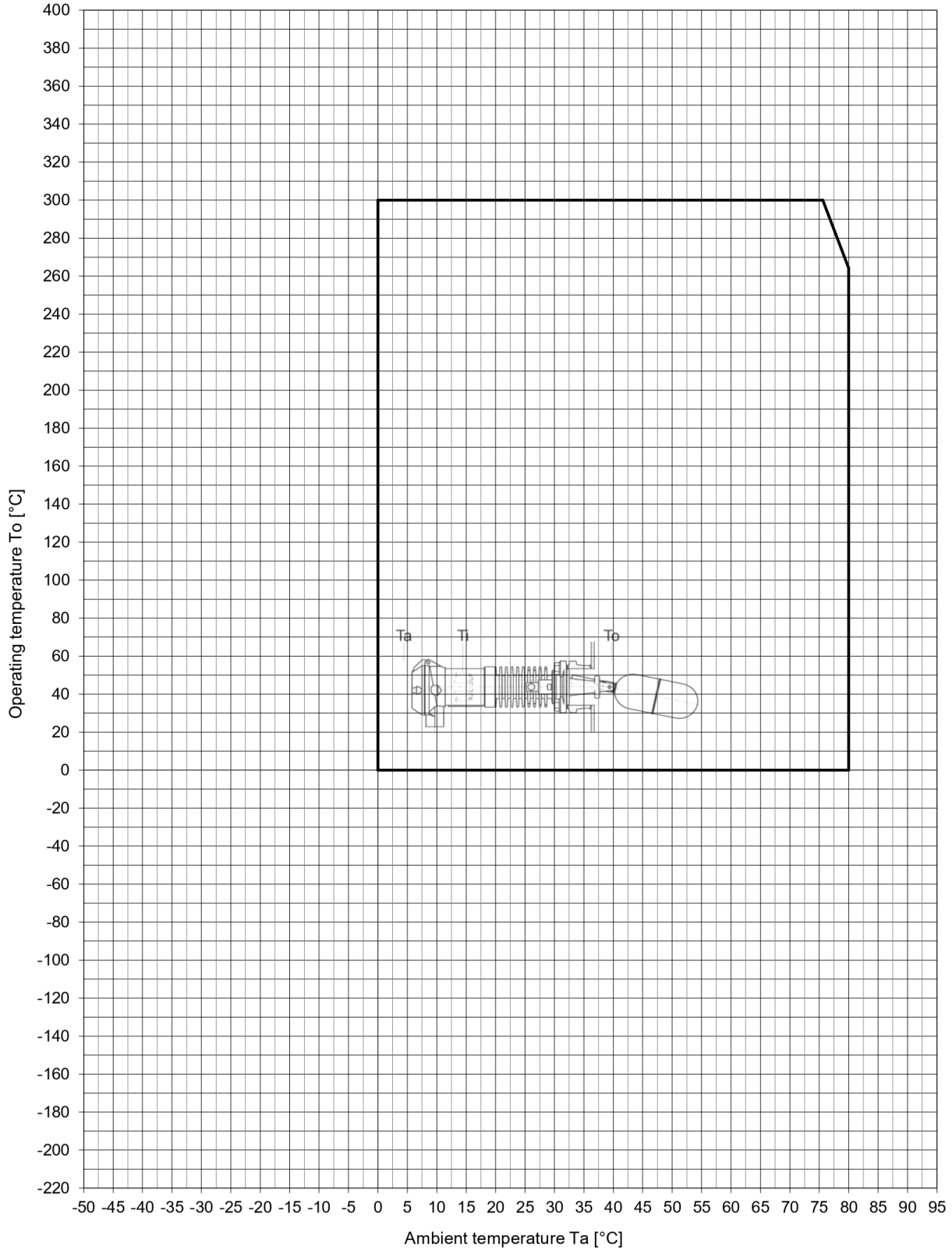
	<b>Temperature diagram</b> <b>Switch module - HIE9...</b>		<b>3081-032EN</b> Revision 2 / 14.07.2022 / SIA
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Diagram show the limit values of the construction unit and/or the components, independently flange module / float module

- |   |                 |                               |
|---|-----------------|-------------------------------|
| • Limit values - Proximity switch type NJ2-11-SN        | -40°C to 100°C  | Data sheet Pepperl & Fuchs    |
| • Limit values - Flat gasket type AFM 38                | -100°C to 200°C | Data sheet 338 Reinz          |
| • Limit values - Flat gasket type Blue-Gard® Style 3000 | -73°C to 205°C  | Data sheet 10/11/2016 Garlock |



Production date:	01.10.2015	File name:	3081-032_Tempdiagr_HIE9_(Ex).xls [english]
Print date:	20.07.2022	Creator:	SIA
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# Appendix 7


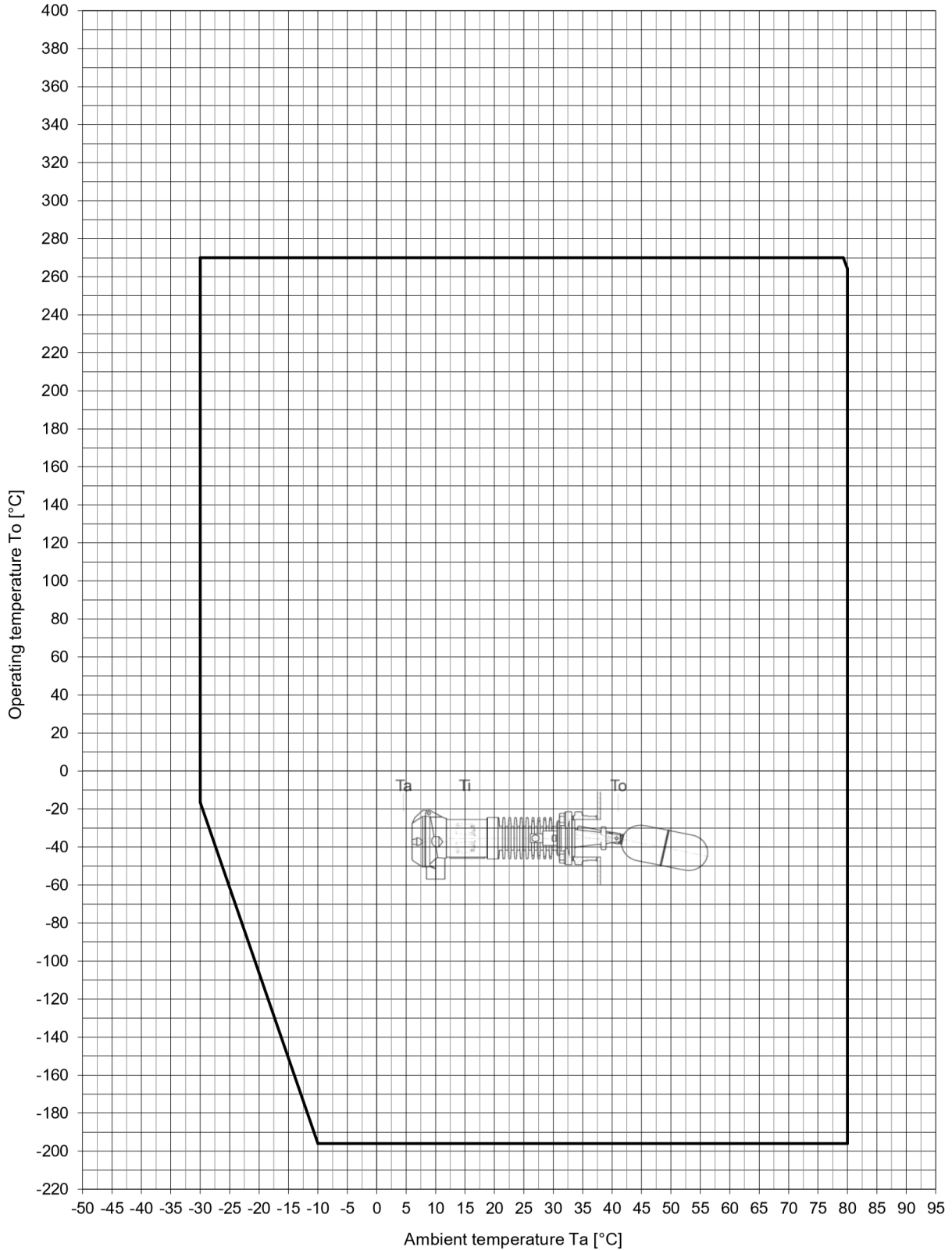
<b>BACHOFEN</b> <small>INDUSTRIAL AUTOMATION</small>	Temperature diagram Switch module - TDI...		3081-028EN Revision 2 / 14.07.2022 / SIA
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Diagram show the limit values of the construction unit and/or the components, independently flange module / float module

- |   |                |                            |
|---|----------------|----------------------------|
| • Limit values - Proximity switch type NJ2-11-N | -25°C to 100°C | Data sheet Pepperl & Fuchs |
| • Limit values - O-Ring Perbunan/NBR            | -20°C to 100°C | Data sheet NB7000 (Höfert) |



Production date:	01.10.2015	File name:	3081-028_Tempdiagr_TDI_(Ex).xls [english]
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Subject to technical modification

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