XA03390F-A/00/EN/01.24-00
71675976
2025-04-01

Safety Instructions
Liquiphant FTL64

Ex ec IIC T6...T1 Gc
Ex ec nC IIC T6...T1 Gc
Ex tc IIIC T* °C Dc

Segurança
OCP 0004 INMETRO

Endress+Hauser
People for Process Automation

Liquiphant FTL64

Table of contents

About this document

The document number of these Safety Instructions (XA) must match the information on the nameplate.

Associated documentation

All documentation is available on the Internet:
www.endress.com/Deviceviewer
(enter the serial number from the nameplate).

To commission the device, please observe the Operating Instructions pertaining to the device:

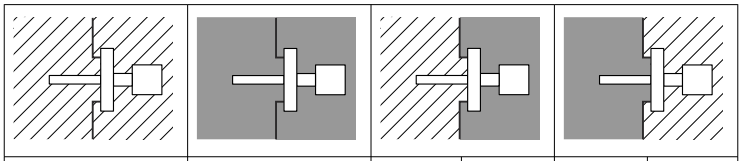
BA02037F

Supplementary documentation

Explosion protection brochure: CP00021Z

The explosion protection brochure is available on the Internet:
www.endress.com/Downloads

General notes: Combined approval



Ex ec IIC Zone 2	Ex tc IIIC Zone 22	Ex ec IIC Zone 2	Ex tc IIIC Zone 22	Ex tc IIIC Zone 22	Ex ec IIC Zone 2

The device is designed for operation in explosive gas or explosive dust atmosphere as shown in the sketch above. In the event of potentially explosive gas-air and dust-air mixtures occurring simultaneously: Suitability requires further assessment.

A sequential change between gas and dust explosion protection is only possible if:
- A period with non-explosive atmosphere is realized during the transition or
- Special examinations are done which are not covered by the certificate

Certificates and declarations

Certificate of Conformity

Certificate number:

Production Maulburg, Germany
TÜV 23.1271 X

Production Itatiba, Brazil
TÜV 19.1701 X

Production Greenwood, Indiana, USA
TÜV 23.1272 X

Affixing the certificate number certifies conformity with the following standards (depending on the device version):

- ABNT NBR IEC 60079-0:2020
- ABNT NBR IEC 60079-7:2018
- ABNT NBR IEC 60079-15:2019
- ABNT NBR IEC 60079-31:2014

Manufacturer address

Endress+Hauser SE+Co. KG
Hauptstraße 1
79689 Maulburg, Germany

Address of the manufacturing plant: See nameplate.

Extended order code

The extended order code is indicated on the nameplate, which is affixed to the device in such a way that it is clearly visible. Additional information about the nameplate is provided in the associated Operating Instructions.

Structure of the extended order code

FTL64	–	**********	+	A*B*C*D*E*F*G*..
(Device type)		*(Basic specifications)*		*(Optional specifications)*

* = Placeholder
At this position, an option (number or letter) selected from the specification is displayed instead of the placeholders.

Basic specifications

The features that are absolutely essential for the device (mandatory features) are specified in the basic specifications. The number of

positions depends on the number of features available.
The selected option of a feature can consist of several positions.

Optional specifications

The optional specifications describe additional features for the device (optional features). The number of positions depends on the number of features available. The features have a 2-digit structure to aid identification (e.g. JA). The first digit (ID) stands for the feature group and consists of a number or a letter (e.g. J = Test, Certificate). The second digit constitutes the value that stands for the feature within the group (e.g. A = 3.1 material (wetted parts), inspection certificate).

More detailed information about the device is provided in the following tables. These tables describe the individual positions and IDs in the extended order code which are relevant to hazardous locations.

Extended order code: Liquiphant

The following specifications reproduce an extract from the product structure and are used to assign:
- This documentation to the device (using the extended order code on the nameplate).
- The device options cited in the document.

Device type

FTL64

Basic specifications

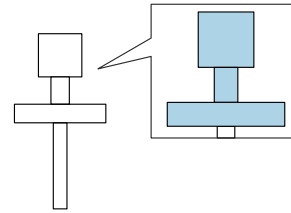
Position 1, 2 (Approval)		
Selected option		**Description**
FTL64	ML	INMETRO Ex ec IIC T6...T1 Gc [1] INMETRO Ex ec nC IIC T6...T1 Gc [2] INMETRO Ex tc IIIC T* °C Dc

1) Only in connection with Position 3, 4 = A2, A7, A8
2) Only in connection with Position 3, 4 = A3, A4

Position 3, 4 (Output)		
Selected option		**Description**
FTL64	A2	FEL62, 3-wire PNP 10-55VDC + test button
	A3	FEL64DC, relay DPDT 9-20VDC
	A4	FEL64, relay DPDT 19-253VAC/19-55VDC contact 253V/6A + test button
	A7	FEL67, 2-wire PFM + test button
	A8	FEL68, 2-wire NAMUR + test button

Position 6 (Housing, Material)		
Selected option		**Description**
FTL64	B	Single compartment; Alu, coated
	C	Single compartment; 316L, cast
	M	Dual compartment L-shape; Alu, coated

Shown in the temperature tables exemplary as follows:



Position 7 (Electrical Connection)		
Selected option		**Description**
FTL64	B [1)]	Gland M20, brass nickel plated, IP66/68 NEMA Type 4X/6P
	C [2)]	Gland M20, 316L, IP66/68 NEMA Type 4X/6P
	F	Thread M20, IP66/68 NEMA Type 4X/6P
	G	Thread G1/2, IP66/68 NEMA Type 4X/6P
	I	Thread NPT3/4, IP66/68 NEMA Type 4X/6P
	Y	Special version: Thread NPT1/2, IP66/68 NEMA Type 4X/6P

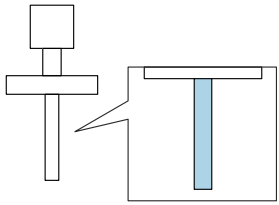
1) Only in connection with Position 6 = B, M
2) Only in connection with Position 6 = B, C

Position 8 (Application)		
Selected option		**Description**
FTL64	D	Process max 280°C/536°F, max 100bar
	E	Process max 230°C/446°F, max 100bar
	R	Process max 230°C/446°F, max 40bar (PFA)
	9	Special version: Process max 300°C/572°F, max 100bar

Position 9 (Surface Refinement)		
Selected option		**Description**
FTL64	A	Standard Ra<3,2um/126uin
	R	Coating PFA (conductive)

Position 10 (Type of Probe)		
Selected option		**Description**
FTL64	1	Compact version
	2	Extension tube

Shown in the temperature tables exemplary as follows:



Optional specifications

ID Nx, Ox (Accessory Mounted)		
Selected option		**Description**
FTL64	NF [1)]	Bluetooth
	NG [2)]	Bluetooth for NAMUR output

1) Only in connection with Position 3, 4 = A2-A4, A7, Position 6 = B, M
2) Only in connection with Position 3, 4 = A8, Position 6 = B, M

ID Px, Rx (Accessory Enclosed)		
Selected option		**Description**
FTL64	PA [1]	Weather protection cover, 316L
	PB [2]	Weather protection cover, plastic
	R6 [3]	Test magnet

1) Only in connection with Position 6 = M
2) Only in connection with Position 6 = B, C
3) Only in connection with Position 3, 4 = A2-A4, A8

Safety instructions: General

- The device is intended to be used in explosive atmospheres as defined in the scope of IEC 60079-0 or equivalent national standards. If no potentially explosive atmospheres are present or if additional protective measures have been taken: The device may be operated according to the manufacturer's specifications.
- Staff must meet the following conditions for mounting, electrical installation, commissioning and maintenance of the device:
  - Be suitably qualified for their role and the tasks they perform
  - Be trained in explosion protection
  - Be familiar with national regulations
- Install the device according to the manufacturer's instructions and national regulations.
- Do not operate the device outside the specified electrical, thermal and mechanical parameters.
- Only use the device in media to which the wetted materials have sufficient durability.
- Avoid electrostatic charging:
  - Of plastic surfaces (e.g. enclosure, sensor element, special varnishing, attached additional plates, ...)
  - Of isolated capacities (e.g. isolated metallic plates)
- Refer to the temperature tables for the relationship between the permitted ambient temperature for the sensor and/or transmitter, depending on the range of application and the temperature class.
- Alterations to the device can affect the explosion protection and must be carried out by staff authorized to perform such work by Endress+Hauser.
- If the degree of protection IP66/67 or IP66/68 is ensured, the device may be installed in an environment of pollution degree 4.

Safety instructions: Specific conditions of use

Permitted ambient temperature range at the electronics enclosure:
$-40\ °C \leq T_a \leq +70\ °C$

- Limitations of the maximum ambient temperature at the electronics enclosure may be required dependent on device configuration, process temperatures and temperature classification.
- Details of limitations: → 🖹 13, "Temperature tables".
- In the case of process connections made of polymeric material or with polymeric coatings, avoid electrostatic charging of the plastic surfaces.
- To avoid electrostatic charging: Do not rub surfaces with a dry cloth.
- In the event of additional or alternative special varnishing on the enclosure or other metal parts or for adhesive plates:
  - Observe the danger of electrostatic charging and discharge.
  - Do not install in the vicinity of processes (≤ 0.5 m) generating strong electrostatic charges.
- The device shall only be used in an area of pollution degree 2 or better.

Basic specification, Position 6 = B, M
Avoid sparks caused by impact and friction.

Optional specification, ID Px, Rx = PA
Connect the weather protection cover to the local potential equalization.

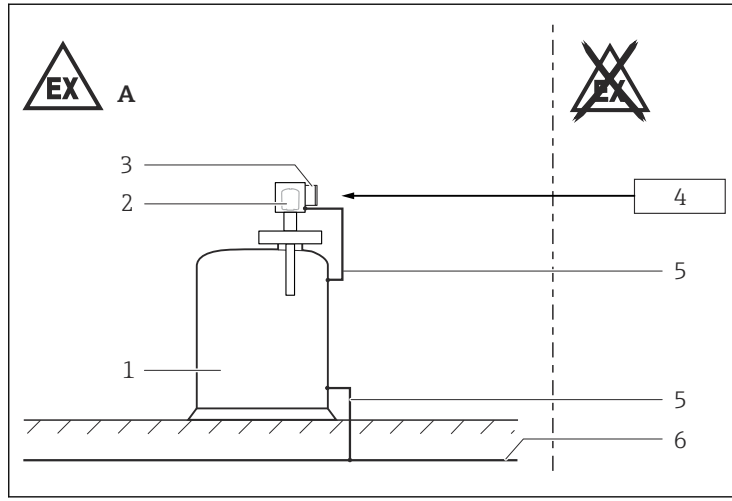
Optional specification, ID Px, Rx = PB
Avoid electrostatic charging of the weather protection cover (e.g. friction, cleaning, maintenance, strong medium flow).

Optional specification, ID Px, Rx = R6
Suitable for use in explosion hazardous areas.

Device group IIC and Device group III

Basic specification, Position 9 = R
- Due to the surface resistance 1 GΩ (|R| PFA-conductive), this coating is suitable without restrictions.
- Prevent damage to the conductive surface layer (e.g. by abrasion).

Safety instructions: Installation



1

A Zone 2, Zone 22
1 Tank; Zone 2, Zone 22
2 Electronic insert; Electronics compartment
3 Connection compartment Ex ec (only Basic specification, Position 6 = M)
4 Power supply or power supply unit
5 Potential equalization line
6 Potential equalization

- Perform the following to achieve the degree of protection IP66/67 or IP66/68:
  - Screw the cover tight.
  - Mount the cable entry correctly.
- In potentially explosive atmospheres:
  - Do not disconnect the electrical connection of the power supply circuit when energized.
  - Do not open the connection compartment cover and the electronics compartment cover when energized.
- Continuous service temperature of the connecting cable / cable gland / cable entry:
  - *Basic specification, Position 3, 4 = A7, A8*: $\geq T_a+20$ K
  - *Basic specification, Position 3, 4 = A2*: $\geq T_a+35$ K
  - *Basic specification, Position 3, 4 = A3, A4*: $\geq T_a+45$ K
- Observe the maximum process conditions according to the manufacturer's Operating Instructions.
- At high medium temperatures, note flange pressure load capacity as a factor of temperature.

- Install the device to exclude any mechanical damage or friction during the application. Pay particular attention to flow conditions and tank fittings.
- Support extension tube of the device if a dynamic load is expected.
- Only use certified cable entries suitable for the application. Observe national regulations and standards. Accordingly, the connection terminal does not include any ignition sources.
- When operating the transmitter enclosure at an ambient temperature under −20 °C, use appropriate cables and cable entries permitted for this application.
- Supplied cable glands and metallic sealing plugs comply with the requirements of type of protection marked on the nameplate.
- The device can be equipped with the Bluetooth® module: refer to the Operating Instructions and specifications in the "Bluetooth® module" chapter.
- Seal unused entry glands with approved sealing plugs that correspond to the type of protection. The plastic transport sealing plug does not meet this requirement and must therefore be replaced during installation.
- Before operation:
  - Screw in the cover all the way.
  - Tighten the securing clamp on the cover.

Cross section connecting wire	Tightening torque of terminal screw	Stripped insulation
0.2 to 2.5 mm^2	0.5 to 0.6 Nm	8 mm

Device group III, Application in dust

- To ensure the ingress protection IP66/67: Only use the unit-mounted cable entries, sealing plugs and O-rings.
- Supplied cable glands and metallic sealing plugs comply with the requirements of type of protection marked on the nameplate.

Accessory: Sliding sleeve

The sliding sleeve can be used for a continuous setting of the switch point (see Operating Instructions).

Potential equalization

Integrate the device into the local potential equalization.

Optional specification, ID Px, Rx = PA
Connect the weather protection cover to the local potential equalization.

Bluetooth® module

Basic specification, Position 3, 4 = A7
If the device is equipped with the Bluetooth® module, no battery is required or allowed.

Basic specification, Position 3, 4 = A8
- If the device is equipped with the Bluetooth® module, a battery is required.
- Removal or replacement of the battery is only permitted in non-hazardous areas.
- Connection or disconnection of the Bluetooth® module is permitted in hazardous areas.

Only use one of the following battery types:

Manufacturer	Battery type
Tadiran	SL-360/S
XENO ENERGY	ER14505 / XL-060F

Temperature tables

General notes

Ex ec IIC

Optional specification, ID Px, Rx = PB
When using the weather protection cover: Reduce the values T_a of P1, P2, P3 by 16 K.

Ex tc IIIC

Optional specification, ID Px, Rx = PB
When using the weather protection cover: Reduce the values T_a by 16 K.

Description notes

Unless otherwise indicated, the positions always refer to the basic specification.

Zone 2

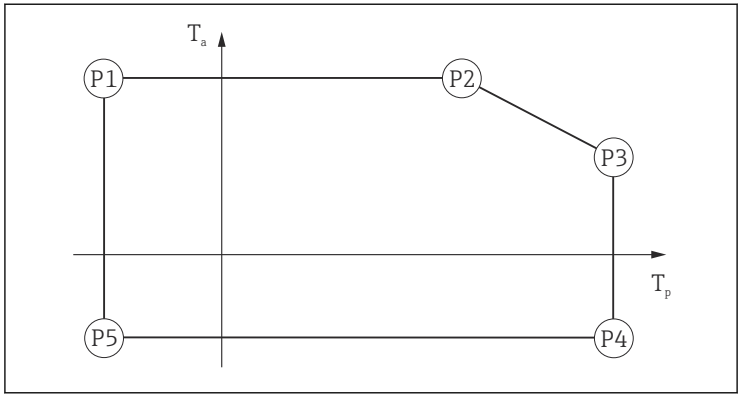
1st line: Position 6 = A, B, ...

1st column: Position 8 = A, B, ...

2nd column: Maximum load current

3rd column: Temperature classes T6 (85 °C) to T1 (450 °C)

Column P1 to P5: Position (temperature value) on the axes of the derating
- T_a: Ambient temperature in °C
- T_p: Process temperature in °C



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Zone 22

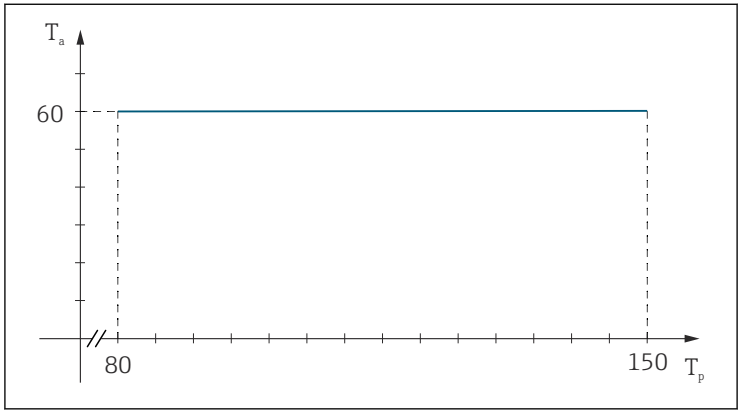
1st column: Position 8 = A, B, ...

2nd column: Maximum load current

3rd column: Process temperature range in °C

4th column: Ambient temperature range in °C

5th column: Maximum surface temperature in °C



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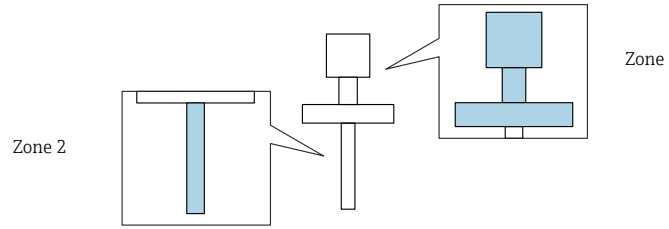
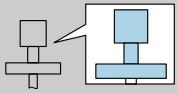
T_a *Ambient temperature in °C*

T_p *Process temperature in °C*

Zone 2

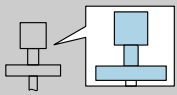


Position 3, 4 = A2



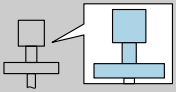
= *B, C*

E, R			P1		P2		P3		P4		P5	
			T_p	T_a	T_p	T_a	T_p	T_a	T_p	T_a	T_p	T_a
	350 mA											
		T6	−60	52	65	52	80	51	80	−40	−60	−40
		T5	−60	67	80	67	95	66	95	−40	−60	−40
		T4	−60	67	82	67	130	64	130	−40	−60	−40
		T3	−60	67	82	67	195	60	195	−40	−60	−40
		T2...T1	−60	67	82	67	230	58	230	−40	−60	−40



= *M*

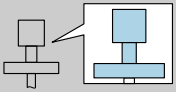
E, R			P1		P2		P3		P4		P5	
			T_p	T_a	T_p	T_a	T_p	T_a	T_p	T_a	T_p	T_a
	350 mA											
		T6	−60	55	55	55	80	53	80	−40	−60	−40
		T5	−60	70	70	70	95	68	95	−40	−60	−40
		T4	−60	70	130	70	130	70	130	−40	−60	−40
		T3	−60	70	133	70	195	67	195	−40	−60	−40
		T2...T1	−60	70	133	70	230	65	230	−40	−60	−40



= *B, C*

D, 9			P1		P2		P3		P4		P5	
			T_p	T_a	T_p	T_a	T_p	T_a	T_p	T_a	T_p	T_a
	350 mA											
		T6	−60	52	71	52	80	51	80	−40	−60	−40
		T5	−60	67	86	67	95	66	95	−40	−60	−40
		T4	−60	67	87	67	130	65	130	−40	−60	−40
		T3	−60	67	87	67	195	62	195	−40	−60	−40
		T2	−60	67	87	67	280 290 [1]	58	280 290 [1]	−40	−60	−40
		T1	−60	67	87	67	280 300 [1]	58	280 300 [1]	−40	−60	−40

1) Only in connection with Position 8 = 9

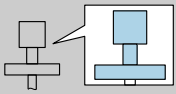


= *M*

D, 9			P1		P2		P3		P4		P5	
			T_p	T_a	T_p	T_a	T_p	T_a	T_p	T_a	T_p	T_a
	350 mA											
		T6	−60	55	56	55	80	54	80	−40	−60	−40
		T5	−60	70	71	70	95	69	95	−40	−60	−40
		T4	−60	70	130	70	130	70	130	−40	−60	−40
		T3	−60	70	154	70	195	68	195	−40	−60	−40
		T2	−60	70	154	70	280 290 [1]	65	280 290 [1]	−40	−60	−40
		T1	−60	70	154	70	280 300 [1]	65	280 300 [1]	−40	−60	−40

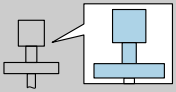
1) Only in connection with Position 8 = 9

Position 3, 4 = A3, A4



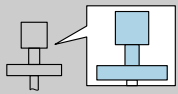
= *B, C*

E, R			P1		P2		P3		P4		P5	
			T_p	T_a	T_p	T_a	T_p	T_a	T_p	T_a	T_p	T_a
	2 A											
		T6	−60	52	60	52	80	50	80	−40	−60	−40
		T5	−60	67	75	67	95	65	95	−40	−60	−40
		T4	−60	70	118	70	130	69	130	−40	−60	−40
		T3	−60	70	118	70	195	64	195	−40	−60	−40
		T2...T1	−60	70	118	70	230	61	230	−40	−60	−40
	4 A											
		T6	−60	43	58	43	80	41	80	−40	−60	−40
		T5	−60	58	73	58	95	56	95	−40	−60	−40
		T4	−60	70	80	70	130	67	130	−40	−60	−40
		T3	−60	70	80	70	195	63	195	−40	−60	−40
		T2...T1	−60	70	80	70	230	59	230	−40	−60	−40



= *M*

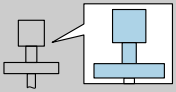
E, R			P1		P2		P3		P4		P5	
			T_p	T_a	T_p	T_a	T_p	T_a	T_p	T_a	T_p	T_a
	2 A											
		T6	–60	55	61	55	80	54	80	–40	–60	–40
		T5	–60	70	76	70	95	69	95	–40	–60	–40
		T4	–60	70	130	70	130	70	130	–40	–60	–40
		T3	–60	70	176	70	195	69	195	–40	–60	–40
		T2…T1	–60	70	176	70	230	67	230	–40	–60	–40
	4 A											
		T6	–60	45	66	45	80	44	80	–40	–60	–40
		T5	–60	60	81	60	95	59	95	–40	–60	–40
		T4	–60	70	124	70	130	69	130	–40	–60	–40
		T3	–60	70	124	70	195	66	195	–40	–60	–40
		T2…T1	–60	70	124	70	230	65	230	–40	–60	–40



= *B, C*

D, 9			**P1**		**P2**		**P3**		**P4**		**P5**	
			T_p	**T_a**	**T_p**	**T_a**	**T_p**	**T_a**	**T_p**	**T_a**	**T_p**	**T_a**
	2 A											
		T6	−60	52	64	52	80	51	80	−40	−60	−40
		T5	−60	67	79	67	95	66	95	−40	−60	−40
		T4	−60	70	130	70	130	70	130	−40	−60	−40
		T3	−60	70	139	70	195	67	195	−40	−60	−40
		T2	−60	70	139	70	280 290 [1)]	63	280 290 [1)]	−40	−60	−40
		T1	−60	70	139	70	280 300 [1)]	63	280 300 [1)]	−40	−60	−40
	4 A											
		T6	−60	43	66	43	80	42	80	−40	−60	−40
		T5	−60	58	80	58	95	57	95	−40	−60	−40
		T4	−60	70	85	70	130	68	130	−40	−60	−40
		T3	−60	70	85	70	195	65	195	−40	−60	−40
		T2	−60	70	85	70	280 290 [1)]	61	280 290 [1)]	−40	−60	−40
		T1	−60	70	85	70	280 300 [1)]	60	280 300 [1)]	−40	−60	−40

1) Only in connection with Position 8 = 9

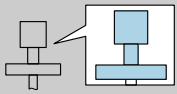


= *M*

D, 9			**P1**		**P2**		**P3**		**P4**		**P5**	
			T_p	**T_a**	**T_p**	**T_a**	**T_p**	**T_a**	**T_p**	**T_a**	**T_p**	**T_a**
	2 A											
		T6	–60	55	62	55	80	54	80	–40	–60	–40
		T5	–60	70	77	70	95	69	95	–40	–60	–40
		T4	–60	70	130	70	130	70	130	–40	–60	–40
		T3	–60	70	195	70	195	70	195	–40	–60	–40
		T2	–60	70	208	70	280 290 [1]	67	280 290 [1]	–40	–60	–40
		T1	–60	70	208	70	280 300 [1]	66	280 300 [1]	–40	–60	–40
	4 A											
		T6	–60	45	73	45	80	44	80	–40	–60	–40
		T5	–60	60	88	60	95	59	95	–40	–60	–40
		T4	–60	70	130	70	130	70	130	–40	–60	–40
		T3	–60	70	142	70	195	68	195	–40	–60	–40
		T2	–60	70	142	70	280 290 [1]	65	280 290 [1]	–40	–60	–40
		T1	–60	70	142	70	280 300 [1]	64	280 300 [1]	–40	–60	–40

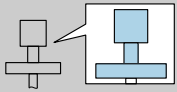
1) Only in connection with Position 8 = 9

Position 3, 4 = A7, A8



= *B, C, M*

E, R		**P1**		**P2**		**P3**		**P4**		**P5**	
		T_p	**T_a**	**T_p**	**T_a**	**T_p**	**T_a**	**T_p**	**T_a**	**T_p**	**T_a**
	T6	–60	70	80	70	80	70	80	–40	–60	–40
	T5	–60	70	95	70	95	70	95	–40	–60	–40
	T4	–60	70	130	70	130	70	130	–40	–60	–40
	T3	–60	70	195	70	195	70	195	–40	–60	–40
	T2...T1	–60	70	200	70	230	67	230	–40	–60	–40

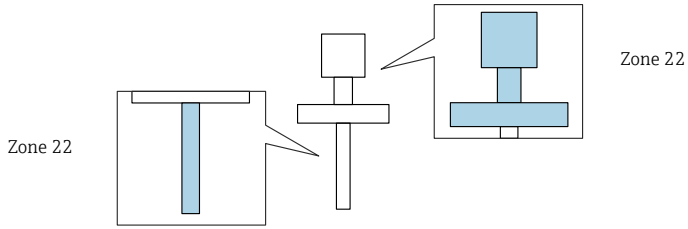


= *B, C, M*

D, 9		**P1**		**P2**		**P3**		**P4**		**P5**	
		T_p	**T_a**	**T_p**	**T_a**	**T_p**	**T_a**	**T_p**	**T_a**	**T_p**	**T_a**
	T6	–60	70	80	70	80	70	80	–40	–60	–40
	T5	–60	70	95	70	95	70	95	–40	–60	–40
	T4	–60	70	130	70	130	70	130	–40	–60	–40
	T3	–60	70	195	70	195	70	195	–40	–60	–40
	T2	–60	70	230	70	280 290 [1)]	69	280 290 [1)]	–40	–60	–40
	T1	–60	70	279	70	280 300 [1)]	68	280 300 [1)]	–40	–60	–40

1) Only in connection with Position 8 = 9

Zone 22



Position 3, 4 = A2

E, R				
	350 mA			
		$-60 \le T_p \le +80$	$-40 \le T_a \le +60$	T 80
		$-60 \le T_p \le +95$	$-40 \le T_a \le +70$	T 95
		$-60 \le T_p \le +130$	$-40 \le T_a \le +70$	T 130
		$-60 \le T_p \le +195$	$-40 \le T_a \le +70$	T 195
		$-60 \le T_p \le +230$	$-40 \le T_a \le +70$	T 230

D, 9				
	350 mA			
		$-60 \le T_p \le +80$	$-40 \le T_a \le +60$	T 80
		$-60 \le T_p \le +95$	$-40 \le T_a \le +70$	T 95
		$-60 \le T_p \le +130$	$-40 \le T_a \le +70$	T 130
		$-60 \le T_p \le +195$	$-40 \le T_a \le +70$	T 195
		$-60 \le T_p \le +280$ $-60 \le T_p \le +290$ [1)]	$-40 \le T_a \le +70$	T 280 T 290 [1)]
		$-60 \le T_p \le +280$ $-60 \le T_p \le +300$ [1)]	$-40 \le T_a \le +70$	T 280 T 300 [1)]

1) Only in connection with Position 8 = 9

Position 3, 4 = A3, A4

E, R				
	2 A, 4 A, 6 A			
		$-60 \leq T_p \leq +80$	$-40 \leq T_a \leq +60$	T 80
		$-60 \leq T_p \leq +95$	$-40 \leq T_a \leq +70$	T 95
		$-60 \leq T_p \leq +130$	$-40 \leq T_a \leq +70$	T 130
		$-60 \leq T_p \leq +195$	$-40 \leq T_a \leq +70$	T 195
		$-60 \leq T_p \leq +230$	$-40 \leq T_a \leq +70$	T 230

D, 9				
	2 A, 4 A, 6 A			
		$-60 \leq T_p \leq +80$	$-40 \leq T_a \leq +60$	T 80
		$-60 \leq T_p \leq +95$	$-40 \leq T_a \leq +70$	T 95
		$-60 \leq T_p \leq +130$	$-40 \leq T_a \leq +70$	T 130
		$-60 \leq T_p \leq +195$	$-40 \leq T_a \leq +70$	T 195
		$-60 \leq T_p \leq +280$ $-60 \leq T_p \leq +290$ [1)]	$-40 \leq T_a \leq +70$	T 280 T 290 [1)]
		$-60 \leq T_p \leq +280$ $-60 \leq T_p \leq +300$ [1)]	$-40 \leq T_a \leq +70$	T 280 T 300 [1)]

1) Only in connection with Position 8 = 9

Position 3, 4 = A7, A8

E, R			
	$-60 \leq T_p \leq +80$	$-40 \leq T_a \leq +70$	T 80
	$-60 \leq T_p \leq +95$	$-40 \leq T_a \leq +70$	T 95
	$-60 \leq T_p \leq +130$	$-40 \leq T_a \leq +70$	T 130
	$-60 \leq T_p \leq +195$	$-40 \leq T_a \leq +70$	T 195
	$-60 \leq T_p \leq +230$	$-40 \leq T_a \leq +70$	T 230

D, 9			
	$-60 \leq T_p \leq +80$	$-40 \leq T_a \leq +70$	T 80
	$-60 \leq T_p \leq +95$	$-40 \leq T_a \leq +70$	T 95
	$-60 \leq T_p \leq +130$	$-40 \leq T_a \leq +70$	T 130
	$-60 \leq T_p \leq +195$	$-40 \leq T_a \leq +70$	T 195
	$-60 \leq T_p \leq +280$ $-60 \leq T_p \leq +290$ [1)]	$-40 \leq T_a \leq +70$	T 280 T 290 [1)]
	$-60 \leq T_p \leq +280$ $-60 \leq T_p \leq +300$ [1)]	$-40 \leq T_a \leq +70$	T 280 T 300 [1)]

1) Only in connection with Position 8 = 9

Connection data

Optional specification, ID Nx, Ox = NF, NG
When using the Bluetooth® module: No changes to the connection values.

Basic specification, Position 3, 4	**Power supply**	
A2	U = 10 to 55 V_{DC}; P_{max} < 0.5 W	I_{max} = 350 mA
A3	U = 9 to 20 V_{DC}; P_{max} < 1 W	2 potential free change-over contacts; 2 A Ex e, 6 A Ex t
A4	U = 19 to 253 V_{AC}, 50/60 Hz or 19 to 55 V_{DC}; P_{max} < 25 VA or < 1.3 W	
A7	U = 9.5 to 12.5 V_{DC}; PFM; I_{max} = 12 mA Connection only to power supply unit FTL325P or FTL375P from Endress+Hauser.	
A8	U = 8.2 V_{DC} ±20 %	NAMUR; I_{max} = 3.8 mA

Cable entry parameters

Cable gland: *Basic specification, Position 7 = B*

mandatory for Position 6 = B, M

Thread	Clamping range	Material	Sealing insert	O-ring
M20x1,5	ø 8 to 10.5 mm	Ms, nickel-plated	Silicone	EPDM (ø 17x2)

Cable gland: *Basic specification, Position 7 = C*

preferably for Position 6 = C and possible for Position 6 = B, M

Thread	Clamping range	Material	Sealing insert	O-ring
M20x1,5	ø 7 to 12 mm	1.4404	NBR	EPDM (ø 17x2)

- The tightening torque refers to cable glands installed by the manufacturer:
  - Recommended torque to connect the cable gland into the enclosure: 3.75 Nm
  - Recommended torque to tighten the cable into the cable gland: 3.5 Nm
  - Maximum torque to tighten the cable into the cable gland: 10 Nm
- This value may be different depending on the type of cable. However, the maximum value must not be exceeded.

- Only suitable for fixed installation. The operator must pay attention to a suitable strain relief of the cable.
- To maintain the ingress protection of the enclosure: Install the enclosure cover, cable glands and blind plugs correctly.
- The cable glands are suitable for a low risk of mechanical danger (4 Joule) and must be mounted in a protected position if larger impact energy levels are expected.

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