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Safety Instructions
Liquiphant FTL64

Control Drawing XP
Class I, II, III, Div. 1, Groups A-G
Class I, Zone 0/1, AEx/Ex db IIC Ga/Gb
Class I, Div. 2, Groups A-D

C US

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

Certificates and declarations

CSA C/US certificate

Certificate number:
CSA19CA80022351

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	CD	CSA C/US XP Cl. I, II, III, Div. 1, Gr. A-G; Cl. I, Zone 0/1, AEx/Ex db IIC T6 Ga/Gb Cl. I, Div. 2, Gr. A-D

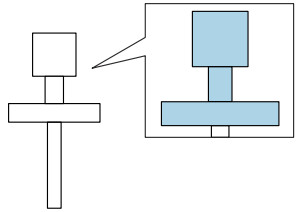
Position 3, 4 (Output)		
Selected option		**Description**
FTL64	A1	FEL61, 2-wire 19 to 253 V_{AC} + test button
	A2	FEL62, 3-wire PNP 10 to 55 V_{DC} + test button
	A3	FEL64DC, relay DPDT 9 to 20 V_{DC} contact 253 V/6 A + test button
	A4	FEL64, relay DPDT 19 to 253 V_{AC}/19 to 55 V_{DC} contact 253 V/6 A + test button
	A7	FEL67, 2-wire PFM + test button
	A8	FEL68, 2-wire NAMUR + test button

Position 5 (Display, Operation)		
Selected option		**Description**
FTL64	A	W/o; switch
	B [1)]	LED module outside visible; switch

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

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:



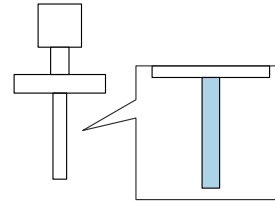
Position 7 (Electrical Connection)		
Selected option		**Description**
FTL64	I	Thread NPT3/4, IP66/68 NEMA Type 4X/6P

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

Position 9 (Surface Refinement)		
Selected option		**Description**
FTL64	A	Standard Ra <3.2 µm (126 µin)
	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 Jx, Kx (Test, Certificate, Declaration)		
Selected option		**Description**
FTL64	JL [1) 2)]	Ambient temperature −50 °C (−58 °F)
	JT [1) 2)]	Ambient temperature −60 °C (−76 °F)

1) Only in connection with Position 3, 4 = A2-A4, A7, A8, Position 5 = A
2) Only in connection with Class I, Groups A-D

ID Nx, Ox (Accessory Mounted)		
Selected option		**Description**
FTL64	NF [1)]	Bluetooth VU121, Labeling: VA13-02
	NG [2)]	Prepared for Heartbeat Verification + Monitoring + Bluetooth VU121, Labeling: VA13-01
	OB	Blind plug marking according to IEC/ATEX Ex d

1) Only in connection with Position 3, 4 = A1-A4, A7, Position 6 = B, M, Position 5 = A
2) Only in connection with Position 3, 4 = A8, Position 6 = B, M, Position 5 = A

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

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

Safety instructions: General

- The device is intended to be used in hazardous locations as defined in the Canadian Electrical Code, Part I or the National Electrical Code (NFPA70). 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.
- 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.
- Avoid electrostatic charging:
  - Of plastic surfaces (e.g. enclosure, sensor element, special varnishing, attached additional plates, ...)
  - Of isolated capacities (e.g. isolated metallic plates)
- Alterations to the device can affect the explosion protection and must be carried out by staff authorized to perform such work by Endress+Hauser.

Safety instructions: Specific conditions of use

- Limitations of the maximum ambient temperature at the electronics enclosure may be required dependent on device configuration, process temperatures and temperature classification.
- Details of temperature limitations: → 12, "Temperature tables".
- 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.
- Flameproof joints are not intended to be repaired.

Basic specification, Position 6 = B, M

- Avoid sparks caused by impact and friction.
- Covers with glass window only permitted for the following ambient temperatures:
  $-50\ ^{\circ}C \leq T_a \leq +70\ ^{\circ}C$

Basic specification, Position 6 = C

Covers with glass window not permitted.

Optional specification, ID Jx, Kx = JL, JT
Not applicable for Class I, Division 2 installation.

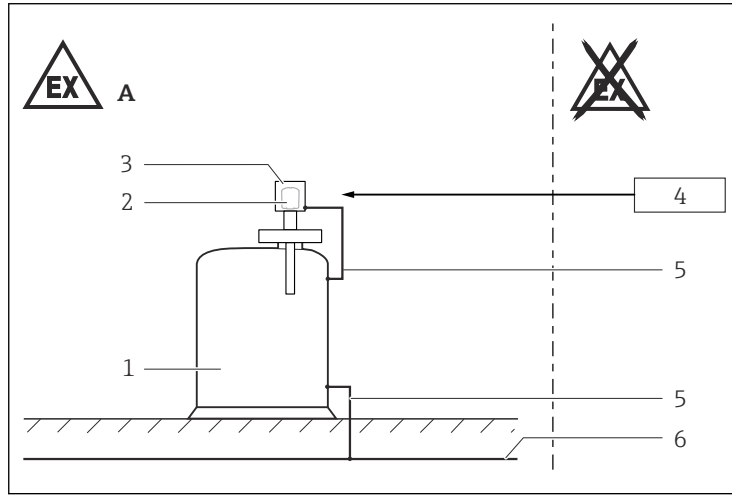
Optional specification, ID Px, Rx = PA
Connect the weather protection cover to the local potential equalization.

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

For hazardous location Group A, B / Device group IIC

Basic specification, Position 9 = R
Due to the surface resistance 1 GΩ (|R| PFA-conductive), this coating is suitable without restrictions.

Safety instructions: Installation



1

A Zone 1; Class I, II, III, Div. 1, Groups A-G
1 Tank; Zone 0 or Zone 1; Class I, II, III, Div. 1, Groups A-G
2 Electronic insert
3 Enclosure
4 Supply unit
5 Potential equalization line
6 Local potential equalization

- Before operation:
  - Screw in the cover all the way.
  - Tighten the securing clamp on the cover.
- 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.
- Continuous service temperature of the connecting cable / cable gland / cable entry:
  - *Basic specification, Position 3, 4 = A1, 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*: $\geq T_a$+40 K
  - *Basic specification, Position 3, 4 = A2 in connection with Optional specification, ID Mx = MR, MS*: $\geq T_a$+20 K
  - *Basic specification, Position 3, 4 = A3, A4 in connection with Optional specification, ID Mx = MR, MS*: $\geq T_a$+25 K
- Perform the following to achieve the degree of protection IP66/68:
  - Screw the cover tight.
  - Mount the cable entry correctly.
- 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.

Accessory high pressure sliding sleeve

The high pressure sliding sleeve can be used for a continuous setting of the switch point and is suited for zone separation if mounted properly (see Operating Instructions).

Potential equalization

Integrate the device into the local potential equalization.

Bluetooth® module

- High cover with inspection window is required.
- Observe the general notes of the Special Documentation SD02389F.
- After installing the Bluetooth® module: Pay attention to the correct installation of the device.

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.

Only use one of the following battery types:

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

Explosionproof / Flameproof

Class I, Div. 1, Groups A, B, C, D, Class II, Div. 1, Groups E, F, G, Class III; Class I, Zone 0/1, AEx/Ex db IIC Ga/Gb

- Install per National Electrical Code (NFPA70) or Canadian Electrical Code, Part I (C22.1), as applicable.
- For the maximum supply voltage: See "Connection data" section.
- Seal unused entries with approved 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.
- Probe is suitable for installation in a Zone 0 location.
- Use a dust-tight seal at the conduit entry in a Class II and III location.
- WARNINGS: Keep covers tight while circuits are alive or when explosive atmosphere is present. Seal entries within 50 mm (2 in) of enclosure.
- Flameproof joints are not intended to be repaired.

Class I, Div. 2, Groups A-D

- The device is a nonincendive (NI) electrical equipment per UL121201 and CSA C22.2 No. 213.
- Install per National Electrical Code (NFPA70) or Canadian Electrical Code, Part I (C22.1), as applicable.
- Enclosure is not required to be explosionproof/flameproof when installed in Class I, Division 2 locations.
- Use wiring methods appropriate for the location.
- Associated apparatus not required.
- Probe is suitable for installation in a Zone 0 location.
- For the maximum supply voltage: See "Connection data" section.
- WARNINGS: Substitution of components may impair suitability for hazardous locations. Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.

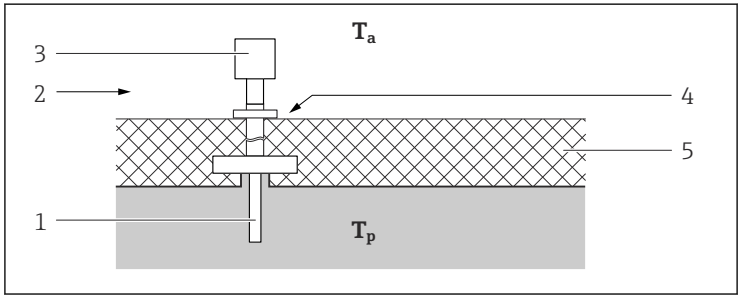
Process seals

The device is rated as a Single Seal device and does not require the use of an external secondary process seal.

Explosion protection with heat insulation

Basic specification, Position 8 = D, E, R, 9

- While observing the "temperature derating", the device is suitable for process temperatures up to 300 °C.
- When operating, ensure that you rule out contact between hot component surfaces and potentially explosive atmospheres beyond the limits of the corresponding temperature class. Suitable measures: e.g. thermal insulation at container and/or pipes.
- The temperature of 85 °C specified at the reference point may not be exceeded.
- To protect the electronics, observe the specified ambient temperature at the electronics enclosure.



2

T_a *Ambient temperature*
T_p *Process temperature*
1 Sensor
2 Temperature class, e.g. T6
3 Enclosure
4 Reference point: max. +85 °C
5 E.g. thermal insulation

Temperature tables

Description notes

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

Class I, Div. 1/Div. 2 / Zone 0, Zone 1

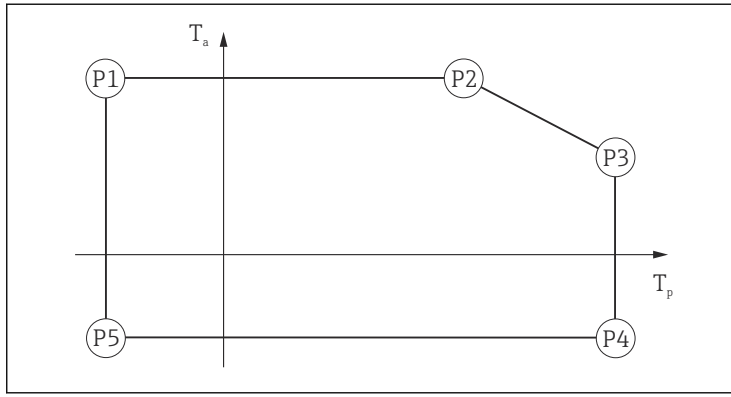
1st column: Position 8 = A, B, ...

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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Class II, III, Div. 1

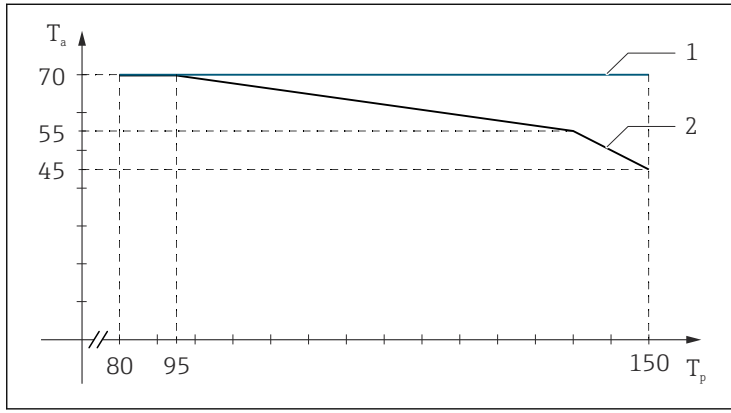
1st column: Position 8 = A, B, ...

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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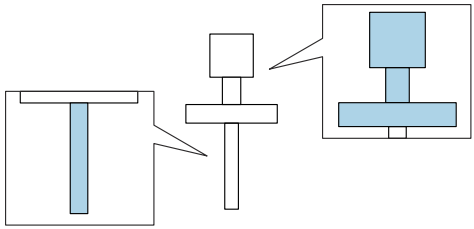
T_a *Ambient temperature in °C*

T_p *Process temperature in °C*

Class I, Div. 1/Div. 2 / Zone 0, Zone 1

Zone 0 or Zone 1;
Cl. I, Div. 1 or Div. 2



Zone 1;
Cl. I, Div. 1 or Div. 2

Position 3, 4 = A1 and Position 6 = 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**
	180 mA											
		T6	–60	61	69	61	80	60	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	193	70	195	69	195	–40	–60	–40
		T2	–60	70	193	70	230	65	230	–40	–60	–40
	350 mA											
		T6	–60	37	57	37	80	36	80	–40	–60	–40
		T5	–60	52	72	52	95	51	95	–40	–60	–40
		T4	–60	69	69	69	130	66	130	–40	–60	–40
		T3	–60	69	69	69	195	63	195	–40	–60	–40
		T2	–60	69	69	69	230	61	230	–40	–60	–40

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**
	180 mA											
		T6	–60	61	72	61	80	60	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)]	67	280 290 [1)]	–40	–60	–40
		T1	–60	70	230	70	280 300 [1)]	67	280 300 [1)]	–40	–60	–40
	350 mA											
		T6	–60	37	58	37	80	36	80	–40	–60	–40
		T5	–60	52	73	52	95	51	95	–40	–60	–40
		T4	–60	69	69	69	130	66	130	–40	–60	–40
		T3	–60	69	69	69	195	63	195	–40	–60	–40
		T2	–60	69	69	69	280 290 [1)]	59	280 290 [1)]	–40	–60	–40
		T1	–60	69	69	69	280 300 [1)]	59	280 300 [1)]	–40	–60	–40

1) Only in connection with Position 8 = 9

Position 3, 4 = A1 and Position 6 = 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**
	180 mA											
		T6	–60	63	68	63	80	62	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	230	70	230	–40	–60	–40
	350 mA											
		T6	–60	37	57	37	80	36	80	–40	–60	–40
		T5	–60	52	72	52	95	51	95	–40	–60	–40
		T4	–60	69	69	69	130	66	130	–40	–60	–40
		T3	–60	69	69	69	195	63	195	–40	–60	–40
		T2	–60	69	69	69	230	61	230	–40	–60	–40

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**
	180 mA											
		T6	–60	63	70	63	80	60	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	280	70	280 290 [1)]	70	280 290 [1)]	–40	–60	–40
		T1	–60	70	280	70	280 300 [1)]	67	280 300 [1)]	–40	–60	–40
	350 mA											
		T6	–60	37	58	37	80	36	80	–40	–60	–40
		T5	–60	52	73	52	95	51	95	–40	–60	–40
		T4	–60	69	69	69	130	66	130	–40	–60	–40
		T3	–60	69	69	69	195	63	195	–40	–60	–40
		T2	–60	69	69	69	280 290 [1)]	62	280 290 [1)]	–40	–60	–40
		T1	–60	69	69	69	280 300 [1)]	59	280 300 [1)]	–40	–60	–40

1) Only in connection with Position 8 = 9

Position 3, 4 = A2 and Position 6 = 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	55	55	55	80	53	80	−40 −50 [1] −60 [2]	−60	−40 −50 [1] −60 [2]
		T5	−60	70	70	70	95	68	95		−60	
		T4	−60	70	102	70	130	68	130		−60	
		T3	−60	70	102	70	195	64	195		−60	
		T2	−60	70	102	70	230	62	230		−60	

1) Only in connection with Optional specification, ID Jx, Kx = JL
2) Only in connection with Optional specification, ID Jx, Kx = JT

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 −50 [1] −60 [2]	−60	−40 −50 [1] −60 [2]
		T5	−60	70	71	70	95	69	95		−60	
		T4	−60	70	112	70	130	69	130		−60	
		T3	−60	70	112	70	195	66	195		−60	
		T2	−60	70	112	70	280 290 [3]	62	280 290 [3]		−60	
		T1	−60	70	112	70	280 300 [3]	62	280 300 [3]		−60	

1) Only in connection with Optional specification, ID Jx, Kx = JL
2) Only in connection with Optional specification, ID Jx, Kx = JT
3) Only in connection with Position 8 = 9

Position 3, 4 = A2 and Position 6 = 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	54	71	54	80	53	80	−40 −50 [1] −60 [2]	−60	−40 −50 [1] −60 [2]
		T5	−60	69	86	69	95	68	95		−60	
		T4	−60	70	130	70	130	70	130		−60	
		T3	−60	70	133	70	195	67	195		−60	
		T2	−60	70	133	70	230	65	230		−60	

1) Only in connection with Optional specification, ID Jx, Kx = JL
2) Only in connection with Optional specification, ID Jx, Kx = JT

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	54	77	54	80	53	80	−40 −50 [1] −60 [2]	−60	−40 −50 [1] −60 [2]
		T5	−60	69	70	69	95	68	95		−60	
		T4	−60	70	130	70	130	70	130		−60	
		T3	−60	70	154	70	195	68	195		−60	
		T2	−60	70	154	70	280 290 [3]	65	280 290 [3]		−60	
		T1	−60	70	154	70	280 300 [3]	65	280 300 [3]		−60	

1) Only in connection with Optional specification, ID Jx, Kx = JL
2) Only in connection with Optional specification, ID Jx, Kx = JT
3) Only in connection with Position 8 = 9

Position 3, 4 = A3, A4 and Position 6 = 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	53	52	80	50	80	−40 −50 [1] −60 [2]	−60	−40 −50 [1] −60 [2]
		T5	−60	67	68	67	95	65	95		−60	
		T4	−60	70	110	70	130	68	130		−60	
		T3	−60	70	110	70	195	65	195		−60	
		T2	−60	70	110	70	230	63	230		−60	
	4 A											
		T6	−60	42	51	42	80	40	80	−40 −50 [1] −60 [2]	−60	−40 −50 [1] −60 [2]
		T5	−60	57	66	57	95	55	95		−60	
		T4	−60	69	78	69	130	66	130		−60	
		T3	−60	69	78	69	195	62	195		−60	
		T2	−60	69	78	69	230	60	230		−60	

1) Only in connection with Optional specification, ID Jx, Kx = JL
2) Only in connection with Optional specification, ID Jx, Kx = JT

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	53	52	80	50	80	–40 –50 [1] –60 [2]	–60	–40 –50 [1] –60 [2]
		T5	–60	67	68	67	95	65	95		–60	
		T4	–60	70	122	70	130	69	130		–60	
		T3	–60	70	122	70	195	66	195		–60	
		T2	–60	70	122	70	280 290 [3]	63	280 290 [3]		–60	
		T1	–60	70	122	70	280 300 [3]	62	280 300 [3]		–60	
	4 A											
		T6	–60	42	54	42	80	40	80	–40 –50 [1] –60 [2]	–60	–40 –50 [1] –60 [2]
		T5	–60	57	69	57	95	55	95		–60	
		T4	–60	69	81	69	130	66	130		–60	
		T3	–60	69	81	69	195	64	195		–60	
		T2	–60	69	81	69	280 290 [3]	60	280 290 [3]		–60	
		T1	–60	69	81	69	280 300 [3]	59	280 300 [3]		–60	

1) Only in connection with Optional specification, ID Jx, Kx = JL
2) Only in connection with Optional specification, ID Jx, Kx = JT
3) Only in connection with Position 8 = 9

Position 3, 4 = A3, A4 and Position 6 = 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 −50 [1] −60 [2]	−60	−40 −50 [1] −60 [2]
		T5	−60	70	76	70	95	69	95		−60	
		T4	−60	70	130	70	130	70	130		−60	
		T3	−60	70	176	70	195	69	195		−60	
		T2	−60	70	176	70	230	67	230		−60	
	4 A											
		T6	−60	45	66	45	80	44	80	−40 −50 [1] −60 [2]	−60	−40 −50 [1] −60 [2]
		T5	−60	60	81	60	95	59	95		−60	
		T4	−60	70	124	70	130	69	130		−60	
		T3	−60	70	124	70	195	66	195		−60	
		T2	−60	70	124	70	230	65	230		−60	

1) Only in connection with Optional specification, ID Jx, Kx = JL
2) Only in connection with Optional specification, ID Jx, Kx = JT

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 –50 [1] –60 [2]	–60	–40 –50 [1] –60 [2]
		T5	–60	70	77	70	95	69	95		–60	
		T4	–60	70	130	70	130	70	130		–60	
		T3	–60	70	195	70	195	70	195		–60	
		T2	–60	70	208	70	280 290 [3]	67	280 290 [3]		–60	
		T1	–60	70	208	70	280 300 [3]	66	280 300 [3]		–60	
	4 A											
		T6	–60	45	73	45	80	44	80	–40 –50 [1] –60 [2]	–60	–40 –50 [1] –60 [2]
		T5	–60	60	88	60	95	59	95		–60	
		T4	–60	70	130	70	130	70	130		–60	
		T3	–60	70	142	70	195	68	195		–60	
		T2	–60	70	142	70	280 290 [3]	65	280 290 [3]		–60	
		T1	–60	70	142	70	280 300 [3]	64	280 300 [3]		–60	

1) Only in connection with Optional specification, ID Jx, Kx = JL
2) Only in connection with Optional specification, ID Jx, Kx = JT
3) Only in connection with Position 8 = 9

Position 3, 4 = A7, A8 and Position 6 = B, C, M

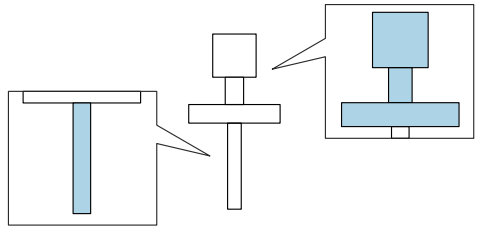
E, R			**P1**		**P2**		**P3**		**P4**		**P5**	
			T_p	**T_a**	**T_p**	**T_a**	**T_p**	**T_a**	**T_p**	**T_a**	**T_p**	**T_a**
		T6	–60	70	80	70	80	70	80	–40 –50 [1] –60 [2]	–60	–40 –50 [1] –60 [2]
		T5	–60	70	95	70	95	70	95		–60	
		T4	–60	70	130	70	130	70	130		–60	
		T3	–60	70	195	70	195	70	195		–60	
		T2	–60	70	200	70	230	67	230		–60	

1) Only in connection with Optional specification, ID Jx, Kx = JL
2) Only in connection with Optional specification, ID Jx, Kx = JT

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 –50 [1] –60 [2]	–60	–40 –50 [1] –60 [2]
		T5	–60	70	95	70	95	70	95		–60	
		T4	–60	70	130	70	130	70	130		–60	
		T3	–60	70	195	70	195	70	195		–60	
		T2	–60	70	230	70	280 290 [3]	69	280 290 [3]		–60	
		T1	–60	70	279	70	280 300 [3]	68	280 300 [3]		–60	

1) Only in connection with Optional specification, ID Jx, Kx = JL
2) Only in connection with Optional specification, ID Jx, Kx = JT
3) Only in connection with Position 8 = 9

Class II, III, Div. 1



Position 3, 4 = A1

E, R				
	150 mA			
		$-60 \leq T_p \leq +80$	$-40 \leq T_a \leq +70$	T80
		$-60 \leq T_p \leq +95$	$-40 \leq T_a \leq +70$	T95
		$-60 \leq T_p \leq +130$	$-40 \leq T_a \leq +70$	T130
		$-60 \leq T_p \leq +195$	$-40 \leq T_a \leq +70$	T195
		$-60 \leq T_p \leq +230$	$-40 \leq T_a \leq +70$	T230
	350 mA			
		$-60 \leq T_p \leq +80$	$-40 \leq T_a \leq +70$	T80
		$-60 \leq T_p \leq +95$	$-40 \leq T_a \leq +70$	T95
		$-60 \leq T_p \leq +130$	$-40 \leq T_a \leq +70$	T130
		$-60 \leq T_p \leq +195$	$-40 \leq T_a \leq +67$	T195
		$-60 \leq T_p \leq +230$	$-40 \leq T_a \leq +66$	T230

D, 9				
	150 mA			
		$-60 \leq T_p \leq +80$	$-40 \leq T_a \leq +70$	T80
		$-60 \leq T_p \leq +95$	$-40 \leq T_a \leq +70$	T95
		$-60 \leq T_p \leq +130$	$-40 \leq T_a \leq +70$	T130
		$-60 \leq T_p \leq +195$	$-40 \leq T_a \leq +70$	T195
		$-60 \leq T_p \leq +280$ $-60 \leq T_p \leq +290$ [1]	$-40 \leq T_a \leq +70$	T280 T290 [1]
		$-60 \leq T_p \leq +280$ $-60 \leq T_p \leq +300$ [1]	$-40 \leq T_a \leq +65$	T280 T300 [1]
	350 mA			
		$-60 \leq T_p \leq +80$	$-40 \leq T_a \leq +70$	T80
		$-60 \leq T_p \leq +95$	$-40 \leq T_a \leq +70$	T95
		$-60 \leq T_p \leq +130$	$-40 \leq T_a \leq +70$	T130
		$-60 \leq T_p \leq +195$	$-40 \leq T_a \leq +69$	T195
		$-60 \leq T_p \leq +280$ $-60 \leq T_p \leq +290$ [1]	$-40 \leq T_a \leq +65$	T280 T290 [1]
		$-60 \leq T_p \leq +280$ $-60 \leq T_p \leq +300$ [1]	$-40 \leq T_a \leq +65$	T280 T300 [1]

1) Only in connection with Position 8 = 9

Position 3, 4 = A2

E, R				
	350 mA			
		$-60 \leq T_p \leq +80$	$-40 \leq T_a \leq +60$	T80
		$-60 \leq T_p \leq +95$	$-40 \leq T_a \leq +70$	T95
		$-60 \leq T_p \leq +130$	$-40 \leq T_a \leq +70$	T130
		$-60 \leq T_p \leq +195$	$-40 \leq T_a \leq +70$	T195
		$-60 \leq T_p \leq +230$	$-40 \leq T_a \leq +70$	T230

D, 9				
	350 mA			
		$-60 \leq T_p \leq +80$	$-40 \leq T_a \leq +60$	T80
		$-60 \leq T_p \leq +95$	$-40 \leq T_a \leq +70$	T95
		$-60 \leq T_p \leq +130$	$-40 \leq T_a \leq +70$	T130
		$-60 \leq T_p \leq +195$	$-40 \leq T_a \leq +70$	T195
		$-60 \leq T_p \leq +280$ $-60 \leq T_p \leq +290$ [1)]	$-40 \leq T_a \leq +70$	T280 T290 [1)]
		$-60 \leq T_p \leq +280$ $-60 \leq T_p \leq +300$ [1)]	$-40 \leq T_a \leq +70$	T280 T300 [1)]

1) Only in connection with Position 8 = 9

Position 3, 4 = A3, A4

E, R				
	2 A			
		$-60 \leq T_p \leq +80$	$-40 \leq T_a \leq +60$	T80
		$-60 \leq T_p \leq +95$	$-40 \leq T_a \leq +70$	T95
		$-60 \leq T_p \leq +130$	$-40 \leq T_a \leq +70$	T130
		$-60 \leq T_p \leq +195$	$-40 \leq T_a \leq +70$	T195
		$-60 \leq T_p \leq +230$	$-40 \leq T_a \leq +70$	T230

D, 9				
	2 A			
		$-60 \leq T_p \leq +80$	$-40 \leq T_a \leq +60$	T80
		$-60 \leq T_p \leq +95$	$-40 \leq T_a \leq +70$	T95
		$-60 \leq T_p \leq +130$	$-40 \leq T_a \leq +70$	T130
		$-60 \leq T_p \leq +195$	$-40 \leq T_a \leq +70$	T195
		$-60 \leq T_p \leq +280$ $-60 \leq T_p \leq +290$ [1)]	$-40 \leq T_a \leq +70$	T280 T290 [1)]
		$-60 \leq T_p \leq +280$ $-60 \leq T_p \leq +300$ [1)]	$-40 \leq T_a \leq +70$	T280 T300 [1)]

1) Only in connection with Position 8 = 9

Position 3, 4 = A7, A8

E, R				
		$-60 \leq T_p \leq +80$	$-40 \leq T_a \leq +70$	T80
		$-60 \leq T_p \leq +95$	$-40 \leq T_a \leq +70$	T95
		$-60 \leq T_p \leq +130$	$-40 \leq T_a \leq +70$	T130
		$-60 \leq T_p \leq +195$	$-40 \leq T_a \leq +70$	T195
		$-60 \leq T_p \leq +230$	$-40 \leq T_a \leq +70$	T230

D, 9				
		$-60 \leq T_p \leq +80$	$-40 \leq T_a \leq +70$	T80
		$-60 \leq T_p \leq +95$	$-40 \leq T_a \leq +70$	T95
		$-60 \leq T_p \leq +130$	$-40 \leq T_a \leq +70$	T130
		$-60 \leq T_p \leq +195$	$-40 \leq T_a \leq +70$	T195
		$-60 \leq T_p \leq +280$ $-60 \leq T_p \leq +290$ [1)]	$-40 \leq T_a \leq +70$	T280 T290 [1)]
		$-60 \leq T_p \leq +280$ $-60 \leq T_p \leq +300$ [1)]	$-40 \leq T_a \leq +70$	T280 T300 [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 circuit**	**Output**
A1	U = 19 to 253 V_{AC}, 50/60 Hz; P_{max} < 2 VA	I_{max} = 180 mA I_{max} = 350 mA [1]
A2	U = 10 to 55 V_{DC}; P_{max} < 0.5 W, P_{max} < 1.2 W [2]	I_{max} = 350 mA
A3	U = 9 to 20 V_{DC}; P_{max} < 1 W, P_{max} < 1.7 W [2]	2 potential free change-over contacts; 4 A
A4	U = 19 to 253 V_{AC}, 50/60 Hz or 19 to 55 V_{DC}; P_{max} < 25 VA or < 1.3 W, P_{max} < 31 VA or < 2 W [2]	
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

1) Only in connection with Position 8 = A, B, Optional Specification ID Mx = MR, MS
2) Only in connection with Position 5 = B

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Endress+Hauser

People for Process Automation