

# Safety Instructions

## Nivotester FailSafe FTL825

[Ex ia Ga] IIC  
[Ex iaD]



Document: XA00663F-B  
Safety instructions for electrical apparatus for explosion-  
hazardous areas →  3



# Nivotester FailSafe FTL825

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<b>Associated documentation</b>	<p>This document is an integral part of the following Operating Instructions: BA01038F/00</p>
<b>Supplementary documentation</b>	<p>Explosion-protection brochure: CP00021Z/11 The Explosion-protection brochure is available:</p> <ul style="list-style-type: none"><li>■ In the download area of the Endress+Hauser website: <a href="http://www.endress.com">www.endress.com</a> -&gt; Downloads -&gt; Media Type: Documentation -&gt; Documentation Type: Brochures and catalogs -&gt; Text Search: CP00021Z</li><li>■ On the CD for devices with CD-based documentation</li></ul>
<b>Manufacturer's certificates</b>	<p><b>NEPSI Declaration of Conformity</b></p> <p>Certificate number: GYJ18.1460</p> <p>Affixing the certificate number certifies conformity with the following standards (depending on the device version):</p> <ul style="list-style-type: none"><li>■ GB3836.1-2010</li><li>■ GB3836.4-2010</li><li>■ GB3836.20-2010</li><li>■ GB12476.1-2013</li><li>■ GB12476.4-2010</li></ul>
<b>Manufacturer address</b>	<p>Endress+Hauser SE+Co. KG Hauptstraße 1 79689 Maulburg, Germany Address of the manufacturing plant: See nameplate.</p>
<b>Extended order code</b>	<p>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.</p>

## Structure of the extended order code

FTL825	-	*****	+	A*B*C*D*E*F*G*..
<i>(Device type)</i>		<i>(Basic specifications)</i>		<i>(Optional specifications)</i>

\* = 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: Nivotester FailSafe



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*

FTL825

*Basic specifications*

Position 1, 2 (Approval)		
Selected option	Description	
FTL825	N2	NEPSI [Ex ia Ga] IIC NEPSI [Ex iaD]

Position 3 (Housing)		
Selected option	Description	
FTL825	3	Rail mounting; 45 mm, 1-channel

Position 4 (Power Supply)		
Selected option	Description	
FTL825	A	85-253 VAC/DC
	E	20-30 VAC/20-60 VDC

Position 5 (Switch Output)		
Selected option	Description	
FTL825	4	2x SPST safety contact level + 1x SPST signal contact + 1x SPDT alarm

*Optional specifications*

ID Lx (Additional Approval)		
Selected option	Description	
FTL825	LC	WHG overfill prevention, Leakage
	LE	GL marine certificate
	LF	ABS marine certificate
	LV	VdTÜV100 liquified gas approval

ID Px, Rx (Accessory Enclosed)		
Selected option	Description	
FTL825	PA	Field housing, R4 182x180x165, 5xM20, PC, IP66

**Safety instructions:**  
**General**

- 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
- For installation, use and maintenance of the device, users must also observe the requirements stated in the Operating Instructions and the standards:
  - GB50257-2014: "Code for construction and acceptance of electric device for explosion atmospheres and fire hazard electrical equipment installation engineering".
  - GB3836.13-2013: "Explosive atmospheres, Part 13: Equipment repair, overhaul and reclamation".
  - GB/T 3836.15-2017: "Explosive atmospheres, Part 15: Electrical installations design, selection and erection".
  - GB/T 3836.16-2017: "Explosive atmospheres, Part 16: Electrical installations inspection and maintenance".
  - GB/T 3836.18-2017: "Explosive atmospheres, Part 18: Intrinsically safe electrical systems".
  - GB15577-2007: "Safety regulations for dust explosive prevention and protection". (Only if installed in dust hazardous area.)
  - GB12476.2-2010: "Electrical apparatus for use in the presence of combustible dust, Part 2: Selection and installation". (Only if installed in dust hazardous area.)
- 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.
- Avoid electrostatic charging:
  - Of plastic surfaces (e.g. housing, sensor element, special varnishing, attached additional plates, ..)
  - Of isolated capacities (e.g. isolated metallic plates)
- Modifications 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:**  
**Special conditions**

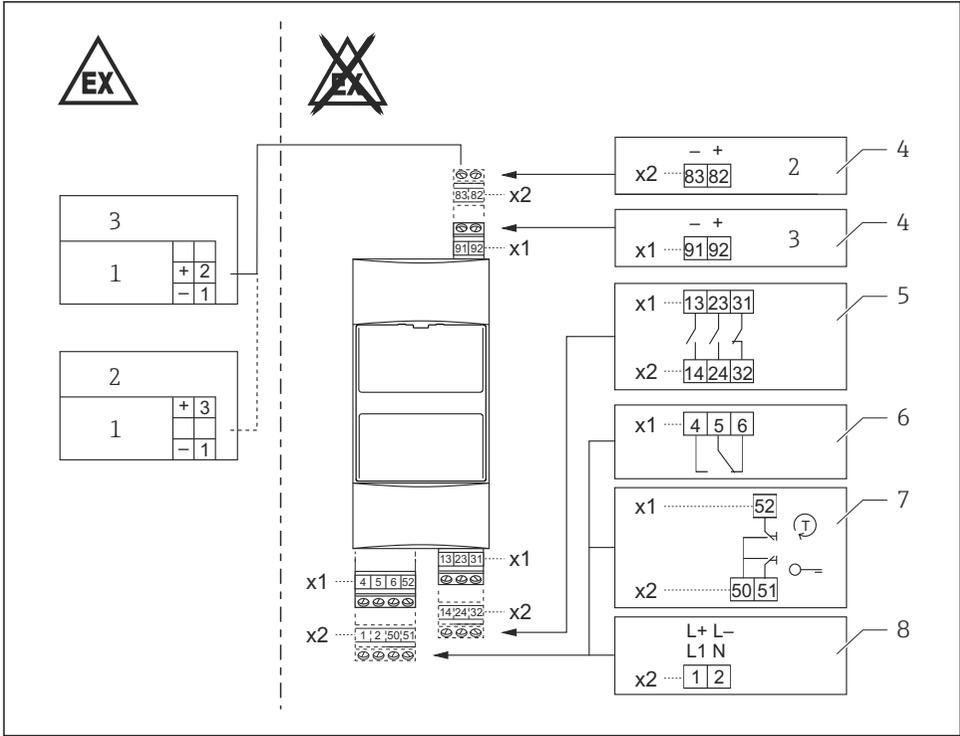
Permitted ambient temperature range at the electronics housing:  
 $-20\text{ °C} \leq T_a \leq +60\text{ °C}$

In case of series installation: Restriction to  $-20\text{ °C} \leq T_a \leq +50\text{ °C}$

In the event of additional or alternative special varnishing on the housing or other metal parts:

- Observe the danger of electrostatic charging and discharge.
- Do not rub surfaces with a dry cloth.

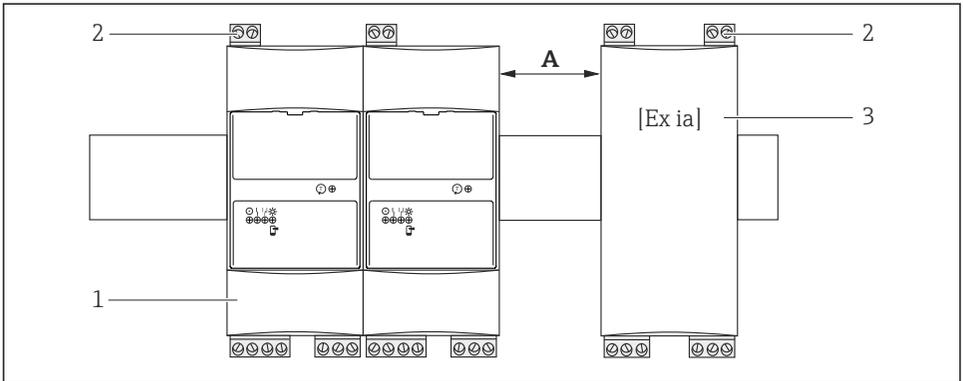
**Safety instructions:**  
**Installation**



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- 1 *Liquiphant FailSafe FTL8x, Ex ia IIC with electronics FEL85*
- 2 *Min. level safety*
- 3 *Max. level safety*
- 4 *Sensor*
- 5 *Level relay*
- 6 *Fault signal relay*
- 7 *Remote operation: test and unlocking*
- 8 *Power supply*



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A *Min. 6 mm*

1 *Nivotester FTL825*

2 *Intrinsically safe contacts*

3 *Other type, other product*

- To achieve an ingress protection of at least IP55: Protect the device from dust and humidity, e.g. in control rooms, or located in a suitable protective housing.
- The device is an associated apparatus: Only use the device outside explosion hazardous areas.
- If an intrinsically safe circuit is connected to the device passes through dust explosion-hazardous areas of Zones 20 or Zone 21, make sure that the devices connected to this circuit meet the requirements of categories 1 D or 2 D and are certified accordingly.
- There must be a distance (thread measure) of at least 50 mm between intrinsically safe and nonintrinsically safe terminals.
- When combining the device with other types and products on the same top-hat rail: Keep the distances comply to the relevant standards and rules.

### Intrinsic safety

The intrinsically-safe input circuits are galvanically isolated from other circuits up to a peak value of the nominal voltage of 375 V.

## Temperature tables

### Ambient temperature range

#### Individual installation

-20 to +60 °C

#### Series installation

-20 to +50 °C

## Connection data

### Power supply circuit

*Basic specification, Position 4 (Power Supply) = A*

#### Terminal 1, 2

Power supply

$U = 85 \text{ to } 253 \text{ V}_{AC}, 50/60 \text{ Hz}$

$P \leq 3.8 \text{ VA}$

$U = 85 \text{ to } 253 \text{ V}_{DC}$

$P \leq 2 \text{ W}$

*Basic specification, Position 4 (Power Supply) = E*

#### Terminal 1, 2

Power supply

$U = 20 \text{ to } 30 \text{ V}_{AC}, 50/60 \text{ Hz}$

$P \leq 3.6 \text{ VA}$

$U = 20 \text{ to } 60 \text{ V}_{DC}$

$P = 2.5 \text{ W}$

### Contact circuit

**Fault signal relay**

**Terminal 4, 5, 6**

**Level relay**

**Terminal 13, 14**

**Terminal 23, 24**

**Terminal 31, 32**

Power supply

$U \leq 253 \text{ V}_{AC}$

$I \leq 2 \text{ A}$

$P \leq 500 \text{ VA at } \cos \varphi > 0.7$

$U \leq 40 \text{ V}_{DC}$

$I \leq 2 \text{ A}$

$P \leq 80 \text{ W}$

## Sensor circuit



Only connect the device to terminals 82 and 83 or terminals 91 and 92, respectively.

<b>Min. level safety</b>	<b>Terminal 82 (+)</b> <b>Terminal 83 (-)</b>			
<b>Max. level safety</b>	<b>Terminal 91 (-)</b> <b>Terminal 92 (+)</b>			
Connection data:	$U_o = 22 \text{ V}$ $I_o = 166 \text{ mA}$ $P_o = 970 \text{ mW}$		$R_i \geq 132 \Omega$ (Characteristic curve: linear) $C_i \leq 1 \text{ nF}$ $L_i = 0$	
	<b>[Ex ia Ga] IIC</b>		<b>[Ex ia Ga] IIB</b>	
	$L_o$	$C_o$	$L_o$	$C_o$
Max. external capacitance at max. external inductance	0.15 mH	100 nF	0.15 mH	700 nF
	0.50 mH	40 nF	0.50 mH	500 nF
	1.00 mH	20 nF	1.00 mH	500 nF
	-	-	2.00 mH	500 nF

	<b>[Ex ia Ga] IIC</b>		<b>[Ex ia Ga] IIB</b>		<b>[Ex ia Ga] IIA</b>	
	$L_o$	$C_o$	$L_o$	$C_o$	$L_o$	$C_o$
Max. external capacitance or max. external inductance	2.8 mH	165 nF	12 mH	1.14 $\mu\text{F}$	30 mH	4.2 $\mu\text{F}$



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