

Safety Instructions

Nivotester FailSafe

FTL825

[Ex ia Ga] IIC
[Ex iaD]



EN Document: XA00663F-A

Safety instructions for electrical apparatus for explosion-hazardous areas

→ 3

ZH 文档资料代号 : XA00663F-A

防爆危险区中使用的电气设备的安全指南

→ 9

Nivotester FailSafe FTL825

Table of Contents

Associated documentation	4
Supplementary documentation	4
Manufacturer's certificates	4
Extended order code	4
Safety instructions: General	5
Safety instructions: Special conditions	6
Safety instructions: Installation	6
Temperature tables	7
Connection data	7

Associated documentation	<p>This document is an integral part of the following Operating Instructions: BA01038F/00</p> <p>The Operating Instructions pertaining to the device apply.</p>									
Supplementary documentation	<p>Explosion-protection brochure: CP00021Z/11</p> <p>The Explosion-protection brochure is available:</p> <ul style="list-style-type: none"> ■ In the download area of the Endress+Hauser website: www.endress.com → Download → Advanced → Documentation Code: CP00021Z ■ On the CD for devices with CD-based documentation 									
Manufacturer's certificates	<p>NEPSI Declaration of Conformity</p> <p>Certificate number: GYJ14.1058</p> <p>Affixing the certificate number certifies conformity with the standards:</p> <ul style="list-style-type: none"> ■ GB3836.1-2010 ■ GB3836.4-2010 ■ GB3836.20-2010 ■ GB12476.4-2010 									
Extended order code	<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> <p>Structure of the extended order code</p> <table border="0" style="margin-left: 40px;"> <tr> <td style="text-align: center;">FTL825</td> <td style="text-align: center;">- *****</td> <td style="text-align: center;">+ A*B*C*D*E*F*G*..</td> </tr> <tr> <td colspan="3" style="text-align: center;">-----</td> </tr> <tr> <td style="text-align: center;">Device type</td> <td style="text-align: center;">Basic specifications</td> <td style="text-align: center;">Optional specifications</td> </tr> </table> <p>* = Placeholder At this position, an option (number or letter) selected from the specification is displayed instead of the placeholders.</p> <ul style="list-style-type: none"> ■ 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). <p>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.</p>	FTL825	- *****	+ A*B*C*D*E*F*G*..	-----			Device type	Basic specifications	Optional specifications
FTL825	- *****	+ A*B*C*D*E*F*G*..								

Device type	Basic specifications	Optional specifications								

Device type: FTL80, FTL81, FTL85

Basic specifications

Position	Selected option	Description
1, 2 Approval	N2	[Ex ia Ga] IIC [Ex iaD]
3 Housing	3	Rail mounting; 45 mm, 1-channel
4 Power Supply	A E	85-253 VAC/DC 20-30 VAC/20-60 VDC
5 Switch Output	4	2x SPST safety contact level + 1x SPST signal contact + 1x SPDT alarm

Optional specifications

ID	Selected option	Description
Mx Additional Approval	LC LE LF LG LH LI LV	WHG overfill prevention, Leakage GL marine certificate ABS marine certificate LR marine certificate BV marine certificate DNV marine certificate VdTÜV100 liquified gas approval
Nx Accessory Enclosed	PA	Field housing, R4 182x180x165, 5xM20, PC, IP66

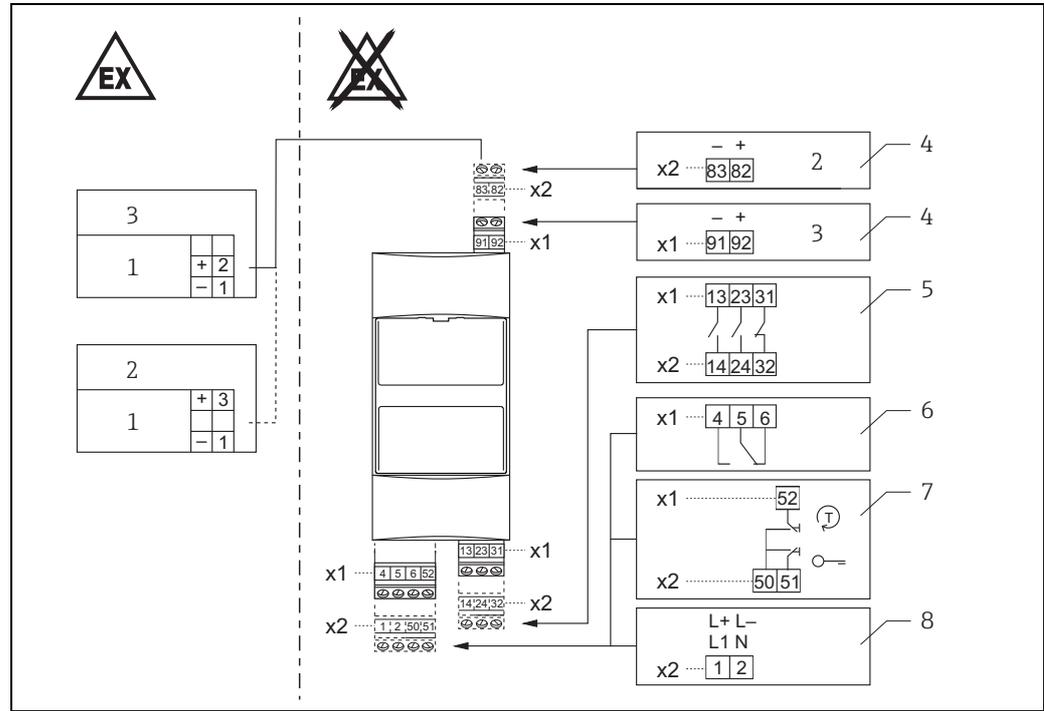
Safety instructions:
General

- 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:
 - GB50257-1996: "Code for construction and acceptance of electric device for explosion atmospheres and fire hazard electrical equipment installation engineering".
 - GB3836.13-1997: "Electrical apparatus for explosive gas atmospheres, Part 13: Repair and overhaul for apparatus used in explosive gas atmospheres".
 - GB3836.15-2000: "Electrical apparatus for explosive gas atmospheres, Part 15: Electrical installations in hazardous area (other than mines)".
 - GB3836.16-2006: "Electrical apparatus for explosive gas atmospheres, Part 16: Inspection and maintenance of electrical installation (other than mines)".
 - GB15577-2007: "Safety regulation for dust explosion prevention and protection".
(Only if installed in dust hazardous areas).
- 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. 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 $-20\text{ °C} \leq T_a \leq +50\text{ °C}$.

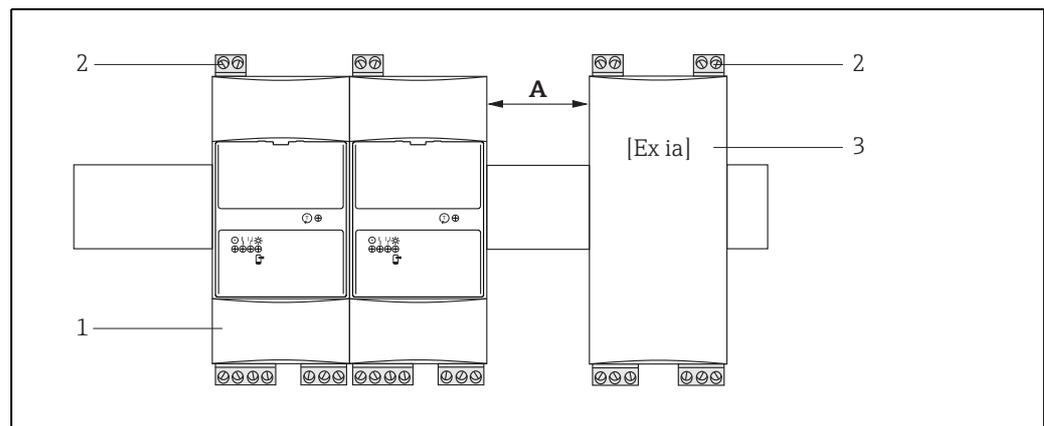
Safety instructions:
Installation



FTL825_01

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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



FTL825_02

2

- 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 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 non-intrinsically safe terminals.
- When combining the device with other types and products on the same top-hat rail: Keep the distances and comply to the relevant standards and rules (→ 2).
- 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

Individual installation
-20...+60 °C

Series installation
-20...+50 °C

Connection data

Power supply circuit

Basic specification, Position 4 (Power Supply) = A

Terminal 1, 2
Power supply: U = 85...253 V AC, 50/60 Hz P ≤ 3.8 VA U = 85...253 V DC P ≤ 2.0 W

Basic specification, Position 4 (Power Supply) = E

Terminal 1, 2
Power supply: U = 20...30 V AC, 50/60 Hz P ≤ 3.6 VA U = 20...60 V DC P = 2.5 W

Contact circuit

Fault signal relay: Terminal 4, 5, 6
Level relay: Terminal 13, 14 Terminal 23, 24 Terminal 31, 32
Power supply: U ≤ 253 V AC I ≤ 2 A P ≤ 500 VA at cos φ > 0.7 U ≤ 40 V DC I ≤ 2 A P ≤ 80 W

Signal circuit

Note!

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

Min. level safety: Terminal 82 (+) Terminal 83 (-)				
Max. level safety: Terminal 91 (-) Terminal 92 (+)				
Connection data: $U_0 = 22\text{ V}$, $R_i \geq 132\ \Omega$ (Characteristic curve: linear), $I_0 = 166\text{ mA}$, $C_i \leq 1\text{ nF}$, $P_0 = 970\text{ mW}$, $L_i = 0\text{ mH}$				
	[Ex ia Ga] IIC		[Ex ia Ga] IIB	
	Lo	Co	Lo	Co
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

	[Ex ia Ga] IIC		[Ex ia Ga] IIB		[Ex ia Ga] IIA	
	Lo	Co	Lo	Co	Lo	Co
max. external capacitance or max. external inductance	2.8 mH	165 nF	12.0 mH	1.14 μH	30 mH	4.2 μH

Nivotester FailSafe FTL825

目录

相关文档资料	10
补充文档资料	10
制造商证书	10
扩展订货号	10
安全指南:概述	11
安全指南:特殊条件	12
安全指南:安装	12
温度表	13
连接参数	13

相关文档资料

本文档是下列《操作手册》的组成部分：
BA01038F
各种设备须参考各自的《操作手册》。

补充文档资料

《防爆手册》：
CP00021Z/11
《防爆手册》的获取方式：

- 登陆 Endress+Hauser 网站的下载区：
www.endress.com → 下载 → 高级搜索 → 文档资料代号：CP00021Z
- 设备的随箱 CD 光盘

制造商证书

NEPSI 一致性声明
证书号：
GYJ14.1058
附带证书号的设备符合下列标准：

- GB3836.1-2010
- GB3836.4-2010
- GB3836.20-2010
- GB12476.4-2010

扩展订货号

铭牌上标识有扩展订货号，设备上的铭牌位置应清晰可见。
铭牌的详细信息请参考相关《操作手册》。

扩展订货号的结构

FTL825	-	*****	+	A*B*C*D*E*F*G*..
设备型号		基本规格选项		可选规格选项

* = 占位符
在此位置处，选择的规格选项以数字或字母显示，以替代占位符。

- 基本规格选项
基本规格选项包括设备必须具有的选项 (必选项)。位数取决于选项数量。
选择的特定选项可能占多个位数。
- 可选规格选项
可选规格选项描述了设备的其他特点 (可选项)。
位数取决于可选选项数量。
选项代号由两位字符组成，便于标识 (例如 : JA)。第一位选项 (ID) 表示选项组，由数字或字母组成 (例如 : J = 测试、证书)。第二位选项表示选项组中的特性。
(例如 : A = 3.1 材料 (接液部件)，检测证书)。

设备的详细信息请参考下列表格。表格中介绍了与爆炸危险区相关的每一位标准订货号和扩展订货号的选项 (ID)。

设备型号：FTL80、FTL81、FTL85

基本规格选项

订购选项	选型代号	说明
1、2 认证	N2	[Ex ia Ga] IIC [Ex iaD]
3 外壳	3	导轨安装；45 mm, 单通道
4 电源	A E	85...253 V AC / DC 20...30 V AC / 20...60 V DC
5 开关量输出	4	2 x SPST 安全液位触点 + 1 x SPST 信号触点 + 1 x SPDT 报警触点

可选规格选项

订购选项 (ID)	选型代号	说明
Mx 附加认证	LC LE LF LG LH LI LV	WHG 溢出保护, 泄露 GL 船级认证 ABS 船级认证 LR 船级认证 BV 船级认证 DNV 船级认证 VdTÜV100 液化气认证
Nx 安装附件	PA	现场型外壳, R4 182 x 180 x 165, 5 x M20, PC, IP66

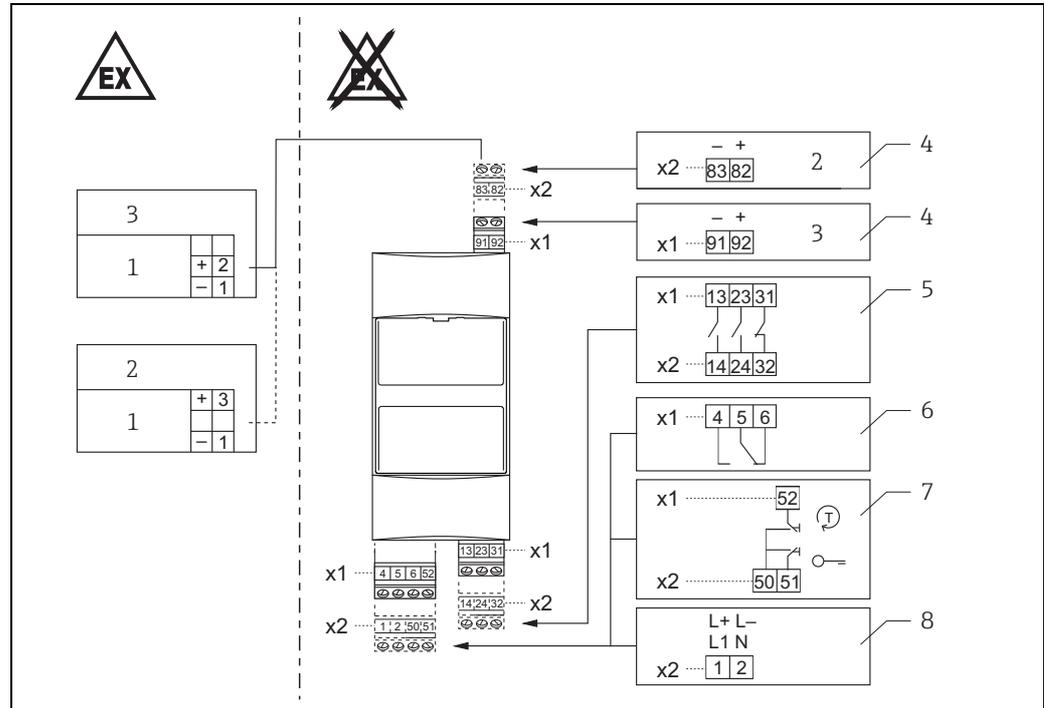
安全指南：概述

- 进行设备安装、电气连接、调试和维护的人员必须满足下列要求：
 - 具有承担任务和执行任务的适当资质
 - 经过防爆保护培训
 - 熟悉国家法规
- 安装、使用和维护设备时，用户必须遵守《操作手册》和标准中列举的要求：
 - GB50257-1996：“电气装置安装工程爆炸和火灾危险环境电气装置施工及验收规范”。
 - GB3836.13-1997：“爆炸性气体环境用电气设备，第13部分：爆炸性气体环境用电气设备的检修”。
 - GB3836.15-2000：“爆炸性气体环境用电气设备，第15部分：危险场所电气安装（煤矿除外）”。
 - GB3836.16-2006：“爆炸性气体环境用电气设备，第16部分：电气装置的检查和维修（煤矿除外）”。
 - GB15577-2007：“粉尘防爆安全规程”。
(仅当在粉尘防爆场合中安装时)。
- 按照制造商说明和国家法规安装设备。
- 超出规定电气参数、热参数和机械参数时，禁止使用设备。
- 仅允许在接液部件材料具有足够耐腐蚀能力的介质中使用。
- 避免静电荷充电：
 - 塑料表面（例如：传感器单元、特殊抛光、安装附加板等）
 - 绝缘电容（例如：绝缘金属板）
- 改装设备可能会影响防爆保护，必须由 Endress+Hauser 授权的专业人员执行此类操作。

安全指南：特殊条件

电子腔外壳上的允许环境温度： $-20\text{ }^{\circ}\text{C} \leq T_a \leq +60\text{ }^{\circ}\text{C}$ 。
 并排安装时，温度范围限制为 $-20\text{ }^{\circ}\text{C} \leq T_a \leq +50\text{ }^{\circ}\text{C}$ 。

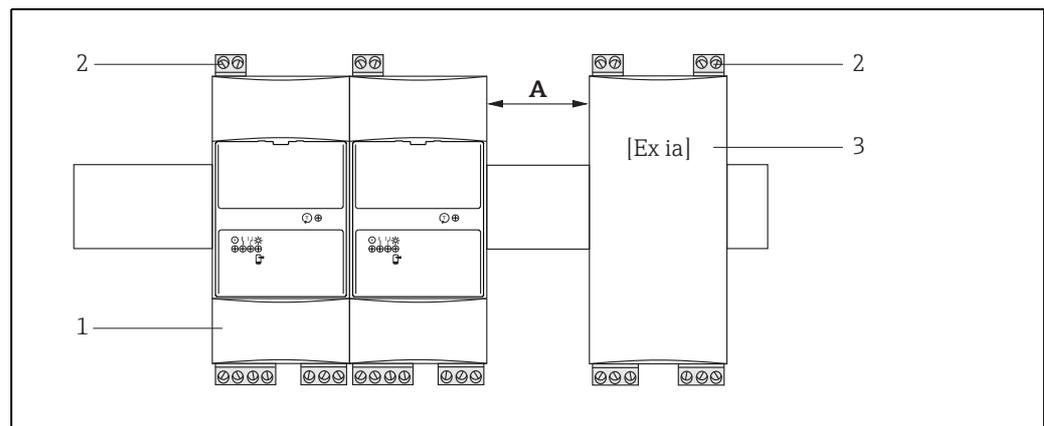
安全指南：安装



FTL825_01

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- 1 Liquiphant FailSafe FTL8x, Ex ia IIC, 带电子插件 FEL85
- 2 低限安全
- 3 高限安全
- 4 传感器
- 5 物位继电器
- 6 故障信号继电器
- 7 远程操作：测试和解锁
- 8 电源



FTL825_02

2

- A Min. 6 mm
- 1 Nivotester FTL825
- 2 本安触点
- 3 其他型号，其他产品

- 为了确保至少 IP55 防护等级：采取措施，避免设备接触粉尘和湿气，例如：安装在控制室中，或安装在合适的防护外壳中。
- 设备为关联设备：仅允许在防爆危险区之外使用设备。
- 本安回路连接 20 区或 21 区粉尘防爆危险区中的设备时，确保连接回路的设备满足类别 1 D 或 2 D 的要求，且通过相关认证。
- 本安和非本安接线端子间至少保留 50 mm 的距离（螺纹测量）。
- 与其他型号的设备或产品同时安装在同一顶帽式导轨上时：保持间距，并遵守相关标准和准则的要求（→ 图 2）。
- 本安输入回路与标称电压的最大峰值为 375 V 的其他回路电气隔离。

温度表

环境温度

单台安装
-20...+60 °C

并排安装
-20...+50 °C

连接参数

供电回路

基本规格选项，订购选项 4 (电源) = A

接线端子 1、2
电源： $U = 85...253 \text{ V AC}, 50/60 \text{ Hz}$ $P \leq 3.8 \text{ VA}$ $U = 85...253 \text{ V DC}$ $P \leq 2.0 \text{ W}$

基本规格选项，订购选项 4 (电源) = E

接线端子 1、2
电源： $U = 20...30 \text{ V AC}, 50/60 \text{ Hz}$ $P \leq 3.6 \text{ VA}$ $U = 20...60 \text{ V DC}$ $P = 2.5 \text{ W}$

触点回路

故障信号继电器： 接线端子 4、5、6
液位继电器： 接线端子 13、14 接线端子 23、24 接线端子 31、32
电源： $U \leq 253 \text{ V AC}$ $I \leq 2 \text{ A}$ $P \leq 500 \text{ VA}, \cos \varphi > 0.7$ 时 $U \leq 40 \text{ V DC}$ $I \leq 2 \text{ A}$ $P \leq 80 \text{ W}$

信号回路



注意！

仅将设备分别连接至接线端子 82 和 83，或接线端子 91 和 92。

低限安全：	接线端子 82 (+) 接线端子 83 (-)			
高限安全：	接线端子 91 (-) 接线端子 92 (+)			
连接参数：	U _o = 22 V, I _o = 166 mA, P _o = 970 mW,	R _i ≥ 132 Ω (特征曲线：线性), C _i ≤ 1 nF, L _i = 0 mH		
	[Ex ia Ga] IIC		[Ex ia Ga] IIB	
	Lo	Co	Lo	Co
最大外部电容值, 或最大外部电感值	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

	[Ex ia Ga] IIC		[Ex ia Ga] IIB		[Ex ia Ga] IIA	
	Lo	Co	Lo	Co	Lo	Co
最大外部电容值, 或最大外部电感值	2.8 mH	165 nF	12.0 mH	1.14 μH	30 mH	4.2 μH



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