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Safety Instructions
Soliwave FQR57, FDR57

Ex ia IIC T4 Ga
Ex ia IIIC T135 °C Da
Ex ia IIC T4 Ga/Gb
Ex ia IIIC T135 °C Da/Db

Nivotester FTR525

[Ex ia Ga] IIC
[Ex ia Da] IIIC

Document: XA01604F-A
Safety instructions for electrical equipment for hazardous areas → 3

Endress+Hauser
People for Process Automation

Soliwave FQR57, FDR57 Nivotester FTR525

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Associated documentation

This document is an integral part of the following Operating Instructions:
- BA01683F/97 (FTR525)
- BA01804F/97 (FQR57, FDR57)

Supplementary documentation

Explosion-protection brochure: CP00021Z/11

The Explosion-protection brochure is available:
- from the Download area of the Endress+Hauser website:
  www.endress.com -> Downloads -> Media Type: Documentation -> Documentation Type: Brochures and Catalogs -> Text Search: CP00021Z
- on the CD (for devices with CD documentation)

Manufacturer's certificates

IEC Declaration of Conformity

Certificate number:
IECEx BVS 18.0033X

Affixing the certificate number certifies conformity with the following standards (depending on the device version):
- IEC 60079-0 : 2017
- IEC 60079-11 : 2011
- IEC 60079-26 : 2014

Manufacturer's address

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

Address of the manufacturing plant: See nameplate.

Other standards

Among other things, the following standards shall be observed in their current version for proper installation:
- IEC/EN 60079-14: "Explosive atmospheres - Part 14: Electrical installations design, selection and erection"
- EN 1127-1: "Explosive atmospheres. Explosion prevention and protection - Part 1: Basic concepts and methodology"

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

FxR57	-	**********	+	A*B*C*D*E*F*G*..
(Device type)		*(Basic specification)*		*(Optional specifications)*

* = Placeholder
An option (number or letter) selected from the specification is displayed in these positions.

- 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 option selected for a feature may consist of several positions.
- Optional specifications
  Additional features for the device (optional features) are specified in the optional specifications. The number of positions depends on the number of features available. The features are denoted by two characters to aid identification (e.g. JA). The first position (ID) stands for the feature group and consists of a number or a letter (e.g. J = test, certificate).The second position indicates the value that stands for the feature within the group (e.g. A = 3.1 material (wetted), inspection certificate).

More detailed information on the device can be found in the following tables. These tables describe the individual positions and IDs specific to hazardous locations within the extended order code.

Extended order code: Soliwave

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

FQR57, FDR57

Basic specifications

Position 1 (approval)		
Option selected		**Description**
FxR57	IA	Ex ia IIC T4 Ga / Ex ia IIIC T135°C Da
	IB	Ex ia IIC T4 Ga/Gb / Ex ia IIIC T135°C Da/Db

Position 2 (housing)		
Option selected		**Description**
FxR57	B	F15 sanitary stainless steel, IP66
	D	F34 aluminum, IP66

Position 3 (electrical connection)		
Option selected		**Description**
FxR57	A	M20 coupling
	D	Thread 1/2 NPT
	E	Binder M12 connector, series 713/763
	F	Binder M12 connector, series 713/763 + suitable mating connector
	H	Harting connector type HAN8D
	J	Harting connector type HAN8D + suitable mating connector

Position 4 (process connection)		
Option selected		**Description**
FxR57	GG2	Thread ISO 228 G1-1/2 (316Ti)
	VE2	Thread ANSI NPT 1½ (316Ti)
	XF2	Thread EN10226 R 1½ (316Ti)

Position 5 (window transmission)		
Option selected		**Description**
FxR57	1	PTFE

Optional specifications

ID Nx (accessory mounted)		
Option selected		**Description**
FxR57	NA [1)]	Sealed electronics

1) Possible only with electrical connection via plug-in connector.

Extended order code: Nivotester

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

FTR525

Basic specifications

Position 1 (approval)		
Option selected		**Description**
FTR525	IA	[Ex ia Ga] IIC / [Ex ia Da] IIIC

Position 2 (output)		
Option selected		**Description**
FTR525	1	1x relay SPDT, 4-20 mA
	2	2x relay SPDT, 4-20 mA
	3	1x SSR, 4-20 mA
	4	2x SSR, 4-20 mA

Position 3 (application)		
Option selected		**Description**
FTR525	1	Point level detection
	2	Point level and bulk flow detection

Optional specifications

No options specific to hazardous locations are available.

Safety instructions: General

- Staff must satisfy 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.
- Use the device only in media to which the process-wetted materials are adequately resistant.
- Avoid electrostatic charge:
  - from plastic surfaces (e.g. housing, special paint, additional labels attached, ..)
  - from insulated capacitors (e.g. insulated metallic labels)
- Modifications to the device may compromise explosion protection and must be carried out by staff authorized by Endress+Hauser.

Device type FQR57, FDR57

- After installation and connection: Housing must have a protection rating of at least IP66.
- To achieve this degree of protection:
  - Close the cover tightly.
  - Install the cable entry or plug-in connector correctly.

Safety instructions: Specific conditions of use

Permitted ambient temperature range at electronics housing:
- *Device type FQR57, FDR57*: −40 °C ≤ Ta ≤ +70 °C
- *Device type FTR525*: −20 °C ≤ Ta ≤ +60 °C

Device type FQR57, FDR57 and basic specification, position 1 (approval) = IA, position 2 (housing) = B, position 3 (electrical connection) = A or D

- The installation of microwave transmitter type FQR57-IAB* / microwave transceiver type FDR57-IAB* in areas requiring EPL Ga or EPL Da equipment shall be carried out in such a way that all metallic parts are in conductive contact with the boundary wall between the EPL Ga / EPL Da area and a less hazardous area. Alternatively, if the boundary wall is made of plastic, all insulated metallic parts shall be integrated into the local potential equalization system.
- The cable gland / adapter or plug-in connector located in the boundary wall between the EPL Ga / EPL Da area and a less hazardous area, which routes the connecting cable into the area requiring EPL Ga / EPL Da equipment, must have a protection rating of IP67 (IP6X) in accordance with IEC 60529.
- The part of the connecting cable located in the areas requiring EPL Ga / EPL Da equipment must be appropriately protected against electrostatic charge / discharge effects in accordance with the installation guidelines.
- The manufacturer's technical information in relation to the use of the microwave transmitter / transceiver in contact with aggressive / corrosive media shall be observed.

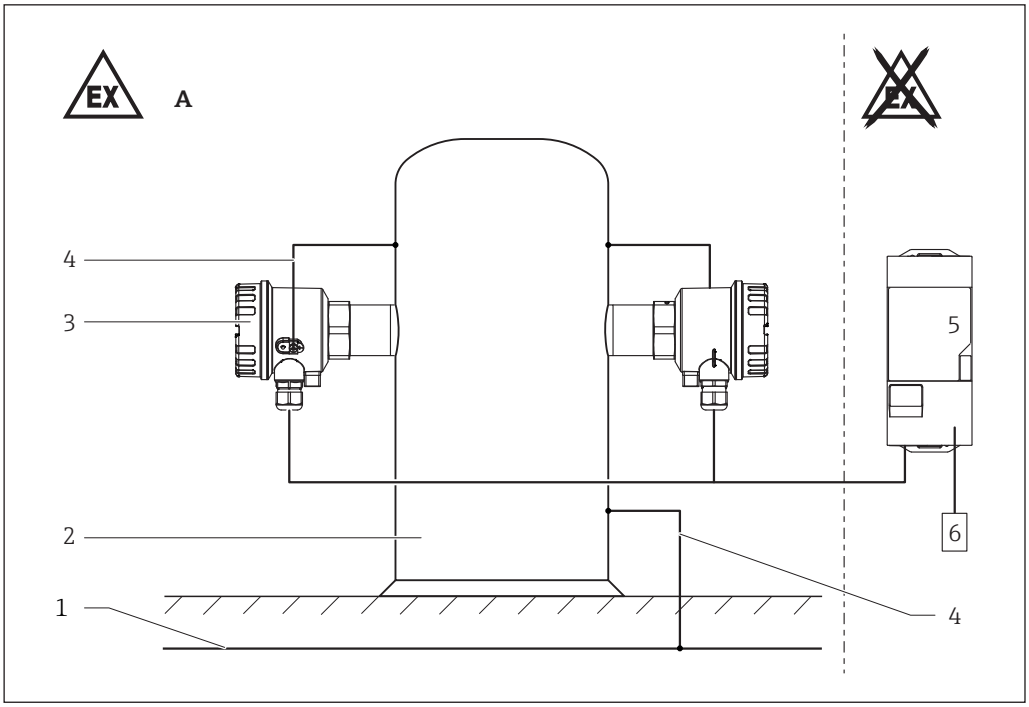
Device type FQR57, FDR57 and basic specification, item 1 (approval) = IB

- The installation of microwave transmitter type FQR57-IB** / microwave transceiver type FDR57-IB** in the boundary wall between an EPL Ga area and a less hazardous area must have a protection rating of IP67 in accordance with IEC 60529.
- The installation of microwave transmitter type FQR57-IB** / microwave transceiver type FDR57-IB** in the boundary wall between an EPL Da area and a less hazardous area must have a protection rating of IP6X in accordance with IEC 60529.
- Installation in the boundary wall between areas requiring EPL Ga or EPL Da equipment and a less hazardous area shall be carried out in such a way that all metallic parts are in conductive contact with the boundary wall. Alternatively, if the boundary wall is made of plastic, all insulated metallic parts shall be integrated into the local potential equalization system.
- The manufacturer's technical information in relation to the use of the microwave transmitter / transceiver in contact with aggressive / corrosive media shall be observed.

Device type FTR525

- Process transmitter type FTR525-IA shall be installed outside the hazardous area and mounted in a housing that provides an IP protection rating ≥ IP20 as per IEC 60529 (including terminals).
- The process transmitter shall be installed in such a way that there is a distance of at least 3 mm between non-insulated conductors of the intrinsically safe circuits and grounded metallic components of the housing. Non-insulated conductors of non-intrinsically safe circuits of other equipment must be positioned at least 50 mm from terminals of intrinsically safe circuits or separated from them by an insulating barrier or grounded metallic barrier as per IEC 60079-11, Section 6.2.1.

Safety instructions: Installation



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A Zone 0, Zone 1 or Zone 20, Zone 21
1 Potential equalization
2 Vessel; Zone 0, Zone 1 or Zone 20, Zone 21
3 FQR57, FDR57
4 Potential matching line
5 FTR525
6 Power and signal circuits (not intrinsically safe)

- Pay attention to the installation and safety instructions in the Operating Instructions.
- Following a housing alignment (turning), re-tighten the locking screw (see Operating Instructions).
- Before operation:
  – Screw on cover until the stop.
  – Tighten securing clamp on cover.
- Observe maximum process conditions in accordance with associated Operating Instructions of the manufacturer.
- To maintain IP66 housing protection, install the housing cover, cable entries and plug-in connectors correctly.
- 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.
- Only permanently routed cables and lines may be introduced or connected. The operator must provide suitable strain relief.
- Observe the maximum thermal load of the cables and lines introduced.

Safety instructions: Zone 0

- In the event of potentially explosive vapor/air mixtures, operate the device only under atmospheric conditions.
  – Temperature: ***Device type FQR57, FDR57:*** −40 to +70 °C, ***device type FTR525:*** −20 to +60 °C
  – Pressure: 80 to 110 kPa (0.8 to 1.1 bar)
  – Air with usual oxygen content, typically 21 % (V/V)
  If no potentially explosive mixtures are present, or if additional protective measures have been taken, the device may also be operated under other atmospheric conditions in accordance with the manufacturer's specifications.
- If there is a risk of hazardous potential differences within Zone 0 (e.g. due to the occurrence of atmospheric electricity), take appropriate measures for intrinsically safe circuits in Zone 0.

Connection data

Device type FTR525

Terminal	Connection data
L+, N- (supply voltage)	Un ≤ 253 V AC/DC Um = 253 V AC/DC
6, 7, 8, nc (FQR57), **6, 7, 8, nc (FDR57)**	Uo = 13 V DC Io = 337 mA Po = 1096 mW Ri ≥ 38.61 Ω
nc, 3, 4, 5 (relay 1), **nc, 15, 16, 17 (relay 2, optional)**	Un ≤ 253 V AC ≤ 40 V DC Um = 253 V AC/DC In = 2 A
nc, 3, 4, nc (SSR 1), **nc, 15, 16, nc (SSR 2, optional)**	Un ≤ 30 V AC ≤ 40 V DC Um = 253 V AC/DC In = 0.4 A
I+, I- (current 4-20 mA)	Un ≤ 28 V DC Um = 28 V DC
C+, C- (open collector)	Un ≤ 28 V DC Um = 28 V DC In = 0.2 A

Device type FQR57, FDR57

Terminal/pin	Connection data
1, 2, 3 (FTR525)	Ui = 13 V DC Ii = 337 mA Pi = 1096 mW Ri ≥ 38.61 Ω

Connection cable

- Maximum 500 m per connection
- Ci ≤ 200 pF/m
- Li ≤ 1 µH/m (or 30 µH/Ω)

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