XA02803F-A/97/EN/
02.22
71562723

Safety Instructions
Soliwave FDR16/56, FQR16/56

ATEX: II 1/2 D Ex ta/tb IIIC T_{200}102°C Da/Db
II 2 D Ex tb IIIC T_{200}102°C Db
IECEx: Ex ta/tb IIIC T_{200}102°C Da/Db
Ex tb IIIC T_{200}102°C Db

Endress+Hauser
People for Process Automation

Soliwave FDR16/56, FQR16/56

Table of contents

About this document

This document has been translated into several languages. Legally determined is solely the English source text.

The document translated into EU languages is available:
- In the download area of the Endress+Hauser website: www.endress.com -> Downloads -> Manuals and Datasheets -> Type: Ex Safety Instruction (XA) -> Text Search: ...
- In the Device Viewer: www.endress.com -> Product tools -> Access device specific information -> Check device features

If not yet available, the document can be ordered.

Associated documentation

This document is an integral part of the following Operating Instructions:
BA01684F, BA01901F

Supplementary documentation

Explosion-protection brochure: CP00021Z/11

The Explosion-protection brochure is available:
- In the download area of the Endress+Hauser website: www.endress.com -> Downloads -> Brochures and Catalogs -> Text Search: CP00021Z
- On the CD for devices with CD-based documentation

Manufacturer's certificates

EU Declaration of Conformity

Declaration Number:
EU00987

The EU Declaration of Conformity is available:
In the download area of the Endress+Hauser website:
www.endress.com -> Downloads -> Declaration -> Type: EU Declaration -> Product Code: ...

EU type-examination certificate

Certification number:
BVS 11 ATEX E 064 X

List of applied standards: See EU Declaration of Conformity.

IEC Declaration of Conformity

Certification number:
IECEx BVS 11.0035X

Affixing the certificate number certifies conformity with the following standards (depending on the device version):
- IEC 60079-0 : 2017
- IEC 60079-26 : 2021
- IEC 60079-31 : 2013

Manufacturer 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

FDRx6, FQRx6	-	**********	-	A*B*C*D*E*F*..
(Device type)		*(Basic specifications)*		*(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 information is an excerpt from the product structure and is used to:

- Assign this documentation to the device (based on the extended order code on the nameplate).
- Assign the device options specified in the document.

Device type

FDR16, FQR16

Basic specifications

Position 1 (approval)		
Option selected		**Description**
FDR16, FQR16	BA	ATEX II 1/2 D Ex ta/tb IIIC T_{200}102°C Da/Db ATEX II 2 D Ex tb IIIC T_{200}102°C Db
	IA	Ex ta/tb IIIC T_{200}102°C Da/Db Ex tb IIIC T_{200}102°C Db

Position 2 (power supply; output)		
Option selected		**Description**
FDR16, FQR16	4	18 to 30 V DC; 3-wire PNP

Position 3 (electrical connection)		
Option selected		**Description**
FDR16, FQR16	M	Connector M12

Position 4 (process connection)		
Option selected		**Description**
FDR16, FQR16	WDJ	Thread ISO228 G1, 316L
	WFJ	Thread ISO228 G1-1/2, 316L
	VEJ	Thread ANSI MNPT1-1/2, 316L

Position 5 (window transmission)		
Option selected		**Description**
FDR16, FQR16	1	PTFE

Optional specifications

Position 9 (accessory enclosed)		
Option selected		**Description**
FDR16, FQR16	QM	Connecting cable M12A, Ex, 5m, PUR, right angle socket/right angle plug
	QN	Connecting cable M12A, Ex, 10m, PUR, right angle socket/right angle plug
	QO	Connection cable socket M12A, Ex, 5m, PUR, right angle socket
	QP	Connection cable socket M12A, Ex, 10m, PUR, right angle socket
	QQ [1)]	Connection cable plug M12A, Ex, 5m, PUR, right angle plug
	QR [1)]	Connection cable plug M12A, Ex, 10m, PUR, right angle plug

1) Only for FQR16

Device type

FDR56, FQR56

Basic specifications

Position 1 (approval)		
Option selected		**Description**
FDR56, FQR56	BA	ATEX II 1/2 D Ex ta/tb IIIC T_{200}102°C Da/Db ATEX II 2 D Ex tb IIIC T_{200}102°C Db
	IA	Ex ta/tb IIIC T_{200}102°C Da/Db Ex tb IIIC T_{200}102°C Db

Position 2 (output)		
Option selected		**Description**
FDR56	1	Relay SPDT
	2	4-20 mA
	3	Solid-state relay

Position 3 (supply voltage)		
Option selected		**Description**
FDR56, FQR56	A	85 to 253 V AC, 50/60 Hz
	E	20 to 60 V DC or 20 to 30 V AC, 50/60 Hz

Position 4 (housing)		
Option selected		**Description**
FDR56, FQR56	B	F15 stainless steel hygiene, IP66
	C [1]	F15 stainless steel hygiene, IP66 + sight glass
	D	F34 aluminum, IP66
	E [1]	F34 aluminum, IP66 + sight glass

1) Only for FDR56

Position 5 (electrical connection)		
Option selected		**Description**
FDR56, FQR56	A	Cable gland M20
	D	Thread NPT1/2

Position 6 (process connection)		
Option selected		**Description**
FDR56, FQR56	GG2	Thread ISO228 G1-1/2, 316Ti
	VEA	Thread ANSI NPT1-1/2, aluminum
	VE2	Thread ANSI NPT1-1/2, 316Ti
	XFA	Thread EN10226 R1-1/2, aluminum
	XF2	Thread EN10226 R1-1/2, 316Ti

Position 7 (window transmission)		
Option selected		**Description**
FDR56, FQR56	1	PTFE

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.
- The device is intended for use in potentially explosive atmospheres as defined within the scope of IEC 60079-0 or equivalent national standards. If no explosive atmosphere is present or additional protective measures have been taken: Device can be operated according to the manufacturer's specifications.
- 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 FDR16, FQR16
The suitability of the classification must be checked for the application.

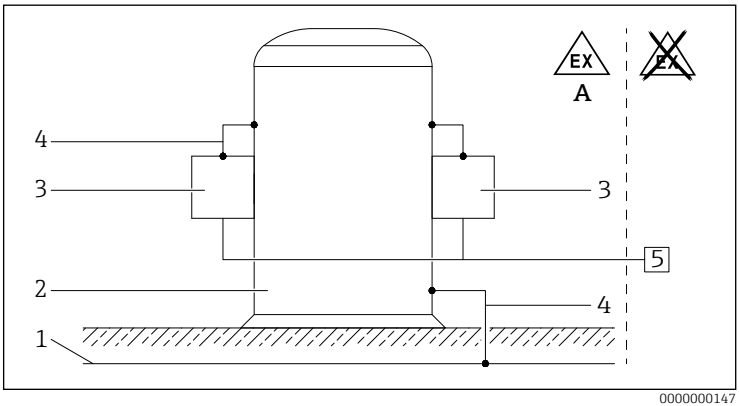
Device type FDR56, FQR56
After installation and connection: Housing must have a protection rating of at least IP66.

Safety instructions: Specific conditions of use

Permitted ambient temperature range at electronics housing:
- FDR16, FQR16: -20 to +60 °C (-4 to +140 °F)
- FDR56, FQR56: -40 to +70 °C (-40 to +158 °F)

Device type FDR16, FQR16
- The connection has to be protected against impact energy > 4 J and UV emitting light.
- Do not separate the connectors when energized.
- The connector conforms to the requirements for an M12 connector in EN 61076-2-101. The counterpart must also conform to this standard.
- Avoid electrostatic charging on plastic units and cables.

Safety instructions: Installation



0000000147

A Zone 21
1 Potential equalization
2 Vessel (Zone 20, Zone 21)
3 FDR16, FQR16, FDR56, FQR56
4 Potential matching line
5 Power and signal circuits

- Pay attention to the installation and safety instructions in the Operating Instructions.
- Observe maximum process conditions in accordance with associated Operating Instructions of the manufacturer.

Device type FDR16, FQR16

- The cables must be firmly laid and effectively protected against damage.
- The relevant installation regulations must be adhered to.
- Avoid direct radiation with high UV components (sunlight), mount the unit in a protected place or use a weather protective cover.
- M12 plugs may only be opened or closed in a sufficiently clean environment.
- Connectors must always be sealed with a counterpart. They may be left open in the field only briefly for servicing purposes.
- Secure the connector by tightening the nut sufficiently.
- Tightening torque approx. 1.2 to 1.5 Nm. This tightening torque is ensured as follows: Hand-fasten the coupling nut (0.4 to 0.5 Nm). Then turn by 3 notches using a open wrench across the flats 14.

Device type FDR56, FQR56

- To maintain IP66 housing protection, install the housing cover, cable entries and plug-in connectors correctly. During operation, screw on cover until the stop and tighten securing clamp on cover.
- 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 20

- In the event of potentially explosive vapor/air mixtures, operate the device only under atmospheric conditions.
  - Temperature:
    -20 to +60 °C (-4 to +140 °F) (FDR16, FQR16) /
    -40 to +70 °C (-40 to +158 °F) (FDR56, FQR56)
  - Pressure: 0.5 to 6.8 bar (7 to 99 psi)
- If no potentially explosive mixtures are present, or if additional protective measures have been taken, the device may also be operated under non-atmospheric conditions in accordance with the manufacturer's specifications.
- Only use the device in media to which the wetted materials have sufficient durability.

Connection data

Device type FQR16

Connection socket/pin	Connection data
1, 2 (supply voltage)	U ≤ 30 V DC I ≤ 120 mA (without load) P ≤ 2.4 W
3, 4 (3-wire PNP)	I ≤ 200 mA

Device type FDR56

Terminal	Connection data
1, 2 (supply voltage)	U ≤ 253 V AC U ≤ 30 V AC / 60 V DC
3, 4, 5 (relay)	U ≤ 250 V AC / 4A, 125 V DC / 0.4 A or 30 V DC / 4 A
3, 4 (4-20 mA)	R_L ≤ 600 Ω
3, 4 (solid-state relay)	U ≤ 30 V AC or 40 V DC I ≤ 0.4 A

Device type FQR56

Terminal	Connection data
1, 2 (supply voltage)	U ≤ 253 V AC U ≤ 30 V AC / 60 V DC

Connecting cable

- FDR16/FQR16
  - Connection cable FQR16 max. 2.5 Ω/core
  - Connecting cable FDR16 with FQR16 max. 5 Ω/core
  - Total capacity < 100 nF
- FDR56/FQR56
  - Maximum 500 m per connection
  - Ci ≤ 200 pF/m
  - Li ≤ 1 µH/m (or 30 µH/Ω)

www.addresses.endress.com

Endress+Hauser

People for Process Automation