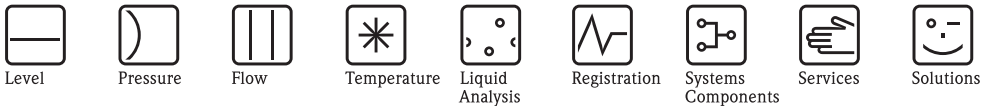


Safety Instructions

Liquicap M
FMI51, FMI52, FTI51, FTI52

Ga/Gb Ex ia IIC T6...T3
Zone 20/21 Ex iaD 20/Ex tD A21 IP65 T 90 °C
IECEx BVS 08.0027X

XA423F-A

Safety instructions for electrical apparatus for explosion-hazardous areas according to IEC standards

XA423F-A/00/en/07.08
71078494

Endress+Hauser
People for Process Automation

Liquicap M
FMI51, FMI52, FTI51, FTI52

Associated Documentation

This document is an integral part of the following Operating Instructions:
BA297F/00, BA298F/00, BA299F/00

The Operating Instructions which are supplied and correspond to the device type apply.

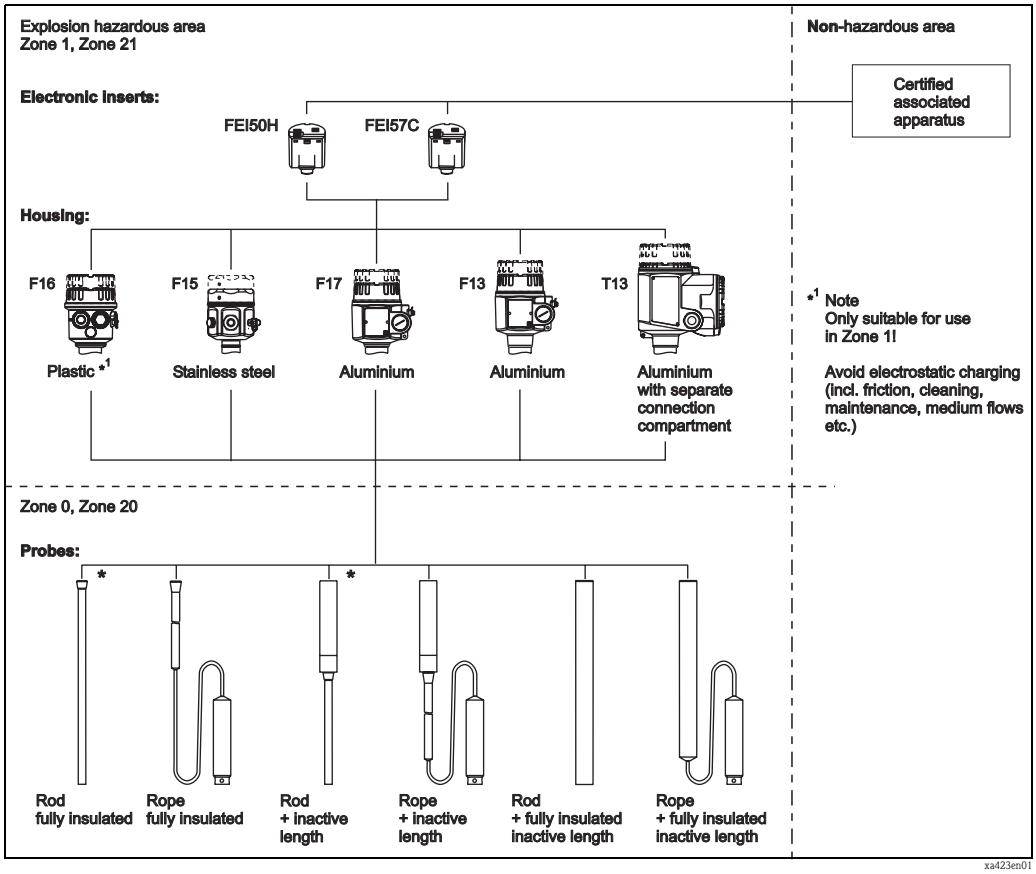
Designation

Explanation of the labelling and type of protection can be found in the explosion protection brochure.

Designation of explosion protection	**Ga/Gb**	**Ex ia IIC T6...T3**
	Zone 20/21	**Ex iaD 20 / Ex tD A21 IP65 T 90 °C**

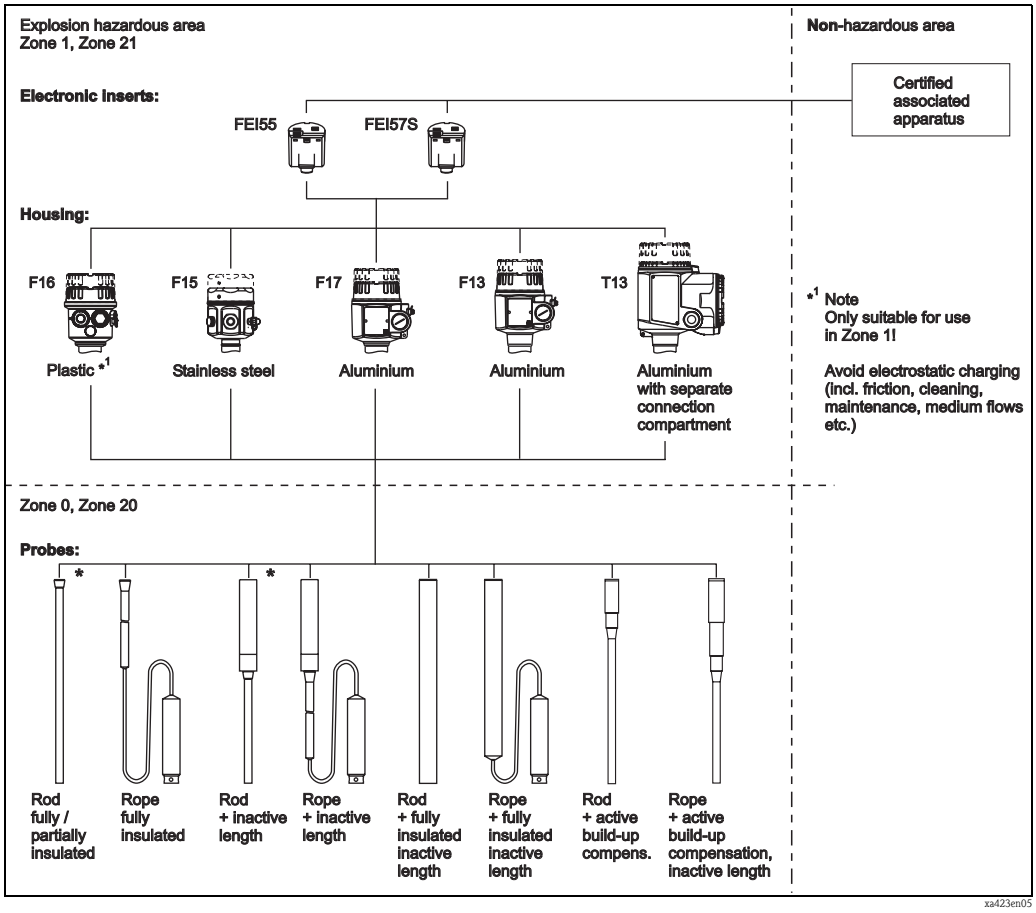
Zone division at the process connection

Continuous level measurement (FEI50H, FEI57C)



** also with ground tube*

Level Limit Switch (FEI55, FEI57S)



** also with ground tube*

Safety instructions:
Zone 0

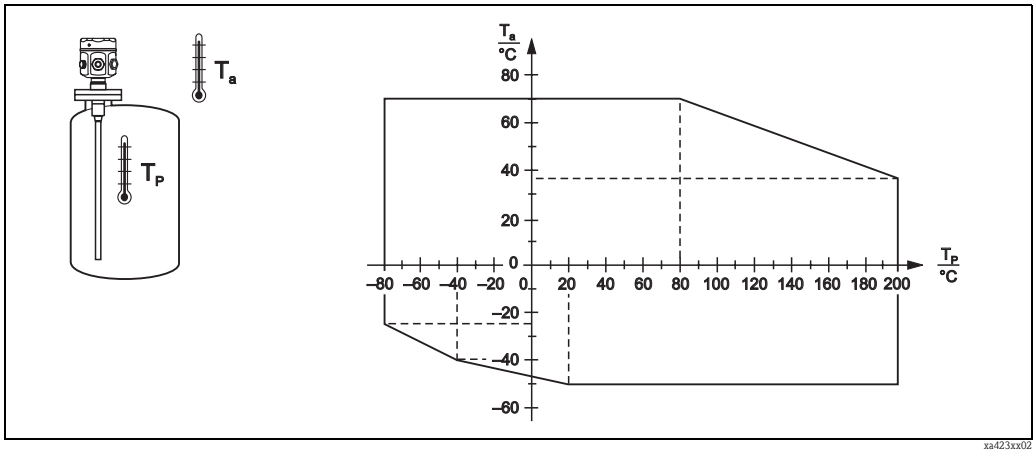
- Only operate devices in potentially explosive gas-air and/or dust-air mixtures under atmospheric conditions: –20 °C ≤ T ≤ +60 °C
  0.8 bar ≤ p ≤ 1.1 bar
- If no potentially explosive mixtures are present, or if additional protective measures have been taken, e.g. according to IEC/EN 60079-14 or EN 1127-1, the transmitters may be operated under other atmospheric conditions in accordance with the manufacturer's specifications.
- Install the device to exclude any mechanical damage or friction during the application. Pay particular attention to flow conditions and tank fittings.
- Mechanically fix probes which are more than 3 m.

Zone 0/1 Application:

Electronic insert	Type of protection	Electrical data	Ambient temperature electronic	Temperature class	Process temperature
FEI50H	Ga/Gb Ex ia IIC	Ui ≤ 30 V Ii ≤ 120 mA Pi ≤ 1 W Ci ≤ 2.4 nF Li ≤ 0	–50 °C ≤ Ta ≤ +60 °C *	T6	see the temperature diagram on the next page
			–50 °C ≤ Ta ≤ +70 °C *	T3...T5	
FEI57C	Ga/Gb Ex ia IIC	Ui ≤ 19.2 V Ii ≤ 108 mA Pi ≤ 1 W Ci ≤ 2.4 nF Li ≤ 0	–50 °C ≤ Ta ≤ +60 °C *	T6	
			–50 °C ≤ Ta ≤ +70 °C *	T3...T5	
FEI55	Ga/Gb Ex ia IIC	Ui ≤ 36 V Ii ≤ 100 mA Pi ≤ 1 W Ci ≤ 2.4 nF Li ≤ 0	–50 °C ≤ Ta ≤ +55 °C *	T6	see the temperature diagram on the next page
			–50 °C ≤ Ta ≤ +70 °C *	T3... T5	
FEI57S	Ga/Gb Ex ia IIC	Ui ≤ 16.1 V Ii ≤ 100 mA Pi ≤ 1 W Ci ≤ 2.4 nF Li ≤ 0	–50 °C ≤ Ta ≤ +55 °C *	T6	
			–50 °C ≤ Ta ≤ +70 °C *	T3...T5	

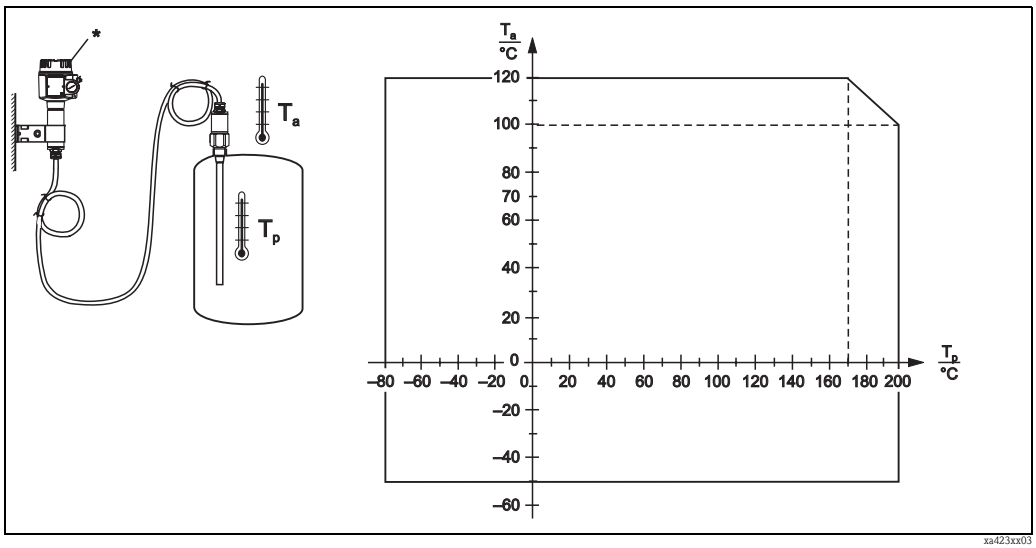
** for F16 housing:*
–40 °C...+55 °C, +60 °C and/or +70 °C

Compact version



T_a = ambient temperature; T_p = process temperature

Version with separate housing



T_a = ambient temperature; T_p = process temperature

** temperature at the separate housing ≤ 70 °C*

Safety instructions: Zone 20, Zone 21

- Only use cable glands with Ex e approval, with an ingress protection of at least IP65, which are suitable for an ambient temperature of –50 °C...+70 °C.
- Lay connection cable and secure.
- Do not open in a potentially explosive dust atmosphere.
- F17, F13, T13 housing: Tighten the cover with torque 12 Nm.
- Avoid electrostatic charging of the sensor cable (e.g. do not rub dry and install outside the filling flow).

Thermal Data:

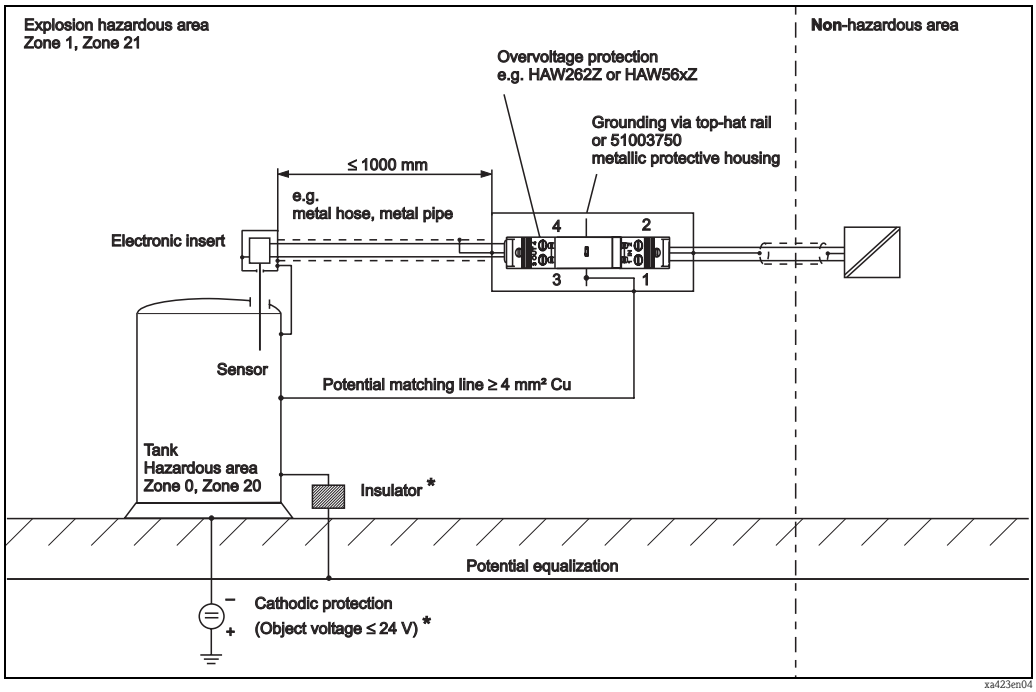
	Probe in Zone 20	**Electronics housing in Zone 21**
Maximum permitted ambient temperature	–50 °C...+200 °C	–50 °C...+70 °C
Maximum surface temperature at 40 °C ambient temperature	+40 °C	+55 °C
Maximum surface temperature at 70 °C ambient temperature	+70 °C	+90 °C
Maximum surface temperature for probe ambient temperatures >80 °C and under simultaneous compliance of the ambient temperature at the electronics housing in accordance with the following table	+200 °C	+90 °C

Zone 20/21 Application:

Maximum permitted medium temperature (process connection), probe in Zone 20	Maximum permitted ambient temperature at the electronics housing dependent on the medium temperature, electronics housing in Zone 21
+40 °C	+70 °C
+80 °C	+70 °C
+200 °C	+38 °C

Electronic insert	Type of protection	Electrical data	Ambient temperature electronic	Maximum surface temperature (Ta max.)	Housing ingress protection
FEI50H	Zone 20/21 Ex iaD 20 / Ex tD A21 IP65 T 90 °C	Ui ≤ 30 V Ii ≤ 120 mA Pi ≤ 1 W Ci ≤ 2.4 nF Li ≤ 0	–50 °C ≤ Ta ≤ +60 °C *	+85 °C	IP65
FEI57C	Zone 20/21 Ex iaD 20 / Ex tD A21 IP65 T 90 °C	Ui ≤ 19.2 V Ii ≤ 108 mA Pi ≤ 1 W Ci ≤ 2.4 nF Li ≤ 0	–50 °C ≤ Ta ≤ +60 °C *	+85 °C	IP65
FEI55	Zone 20/21 Ex iaD 20 / Ex tD A21 IP65 T 90 °C	Ui ≤ 36 V Ii ≤ 100 mA Pi ≤ 1 W Ci ≤ 2.4 nF Li ≤ 0	–50 °C ≤ Ta ≤ +60 °C *	+85 °C	IP65
FEI57S	Zone 20/21 Ex iaD 20 / Ex tD A21 IP65 T 90 °C	Ui ≤ 16.1 V Ii ≤ 100 mA Pi ≤ 1 W Ci ≤ 2.4 nF Li ≤ 0	–50 °C ≤ Ta ≤ +60 °C *	+85 °C	IP65

** for F16 housing:*
–40 °C…+60 °C and/or +70 °C



** optional*

Safety instructions: Installation

- Comply with the installation and safety instructions in the Operating Instructions.
- Install the device according to the manufacturer's instructions and any other valid standards and regulations.
- Only install the devices in media for which the wetted materials have sufficient durability.
- Pay attention to 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.
- The pertinent guidelines must be observed when intrinsically safe circuits are connected together acc. IEC 60079-14 (Proof of Intrinsic Safety).
- To maintain the ingress protection of the housing, install the housing cover and cable glands correctly.
- Close unused entry glands with sealing plugs.

Safety instructions: General

- The potential matching line should lead from the intrinsically safe associated apparatus (in the non-hazardous area) and the probe (in the explosion-hazardous area).
- Level probes with ground tubes are suitable for use in gases of Group IIC, IIB and IIA.
- Level probes without ground tubes are suitable for use in gases of Group IIC and IIB if there is no electrostatic charging of the probes.
  These probes are indicated by the warning sign “Avoid Electrostatic Charge”.
- Install the device to exclude impact and friction sparks on the aluminium housing.
- On installations requiring overvoltage protection to comply with national regulations or standards (e.g. IEC 60079-14), this device shall be installed using an overvoltage protector (e.g. HAW262Z, HAW56xZ from Endress+Hauser).
- The device is designed for operation in Zone 21 or Zone 1 (housing) as well as Zone 20 or Zone 0 (probe). Its suitability in the event of potentially explosive gas-air and dust-air mixtures occurring simultaneously requires further assessment.
- F16 housing: Do not clean the transparent cover in an explosive atmosphere.
- F16 housing: Using a plug is only permitted for gas group IIB.

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