Level | Pressure | Flow | Temperature | Liquid Analysis | Registration | Systems Components | Services | Solutions

Technical Information

Liquiphant M FTL51C

Vibration Limit Switch
Level limit switch for all liquids.
With highly corrosion-resistant coating.
Also suitable for use in hazardous areas.

Application

The Liquiphant M is a level limit switch for use in all liquids
- for temperatures from -50 °C to 150 °C (up to 230 °C on request)
- for pressures up to 40 bar
- for viscosity up to 10000 mm^2/s
- for densities 0.5 g/cm^3 or 0.7 g/cm^3, other settings on request
- foam detection on request

The function is not affected by flow, turbulence, bubbles, foam, vibration, solids content or build-up. The Liquiphant is thus the ideal substitute for float switches.

As all wetted parts of the sensor (process connection, extension pipe and tuning fork) are coated in enamel or various plastics, the unit can be used in very aggressive liquids.

EEx ia, EEx de and EEx d protection enable it to be used in hazardous areas.

Your benefits

- Use in safety systems requiring functional safety to SIL2/SIL3 in accordance with IEC 61508/ IEC 61511-1
- Optimally adapted to the process thanks to various materials for corrosion-resistant coating
- Large number of process connections to choose from
  - flanges of various standards
  - universal use
- Wide variety of electronics, e.g. NAMUR, relay, thyristor, PFM signal output: the right connection for every process control system
- PROFIBUS PA protocol: for commissioning and maintenance
- No calibration: quick, low-cost start-up
- No mechanically moving parts: maintenance-free, no wear, long operating life
- Monitoring of fork for damage: guaranteed function
- FDA approved materials (PFA Edlon)

TI347F/00/en

Endress+Hauser

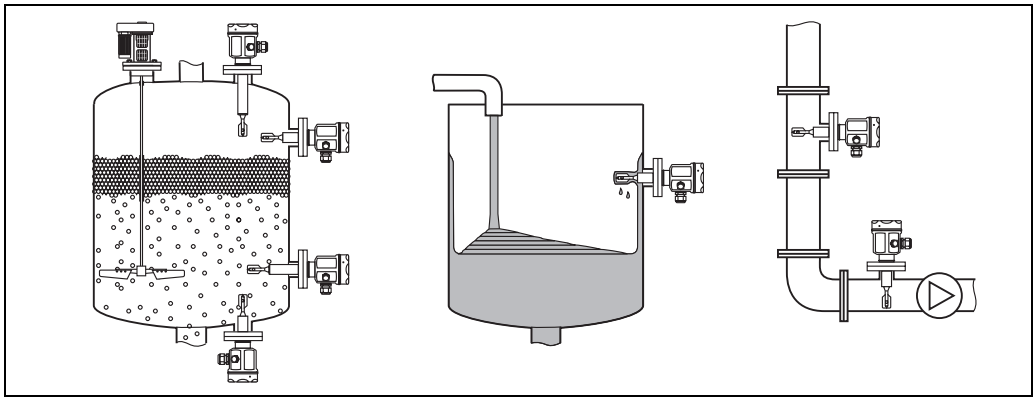
People for Process Automation

Table of contents

Application

Level limit detection

Maximum or minimum detection in tanks or pipes containing all kinds of liquids, also in hazardous areas. Particularly suited to very aggressive liquids thanks to high degree of corrosion protection.



L00-FTL51Cxx-11-05-xx-xx-001

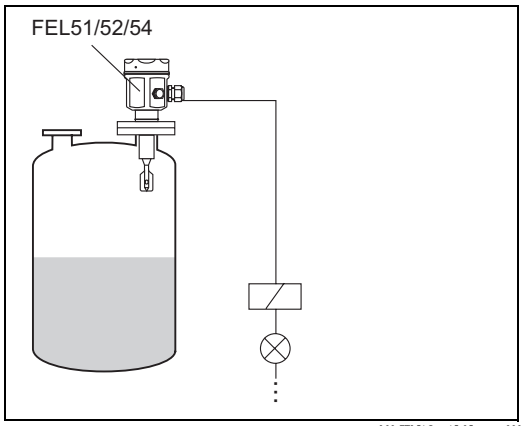
Function and system design

Measuring principle

The sensor's fork vibrates at its intrinsic frequency.
This frequency is reduced when covered with liquid. This change in frequency causes the limit switch to switch.

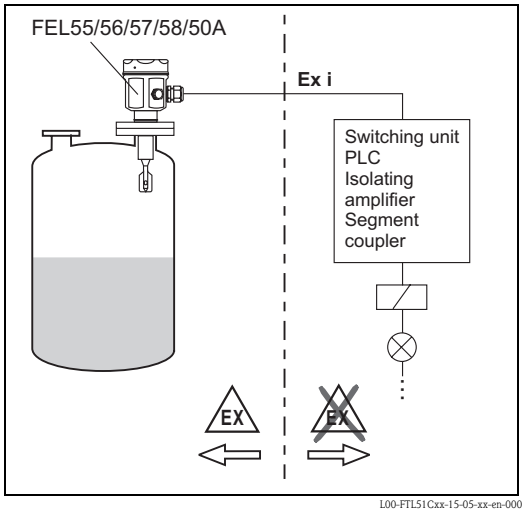
Modularity

Level limit switch
Liquiphant M FTL with electronic versions
FEL51, FEL52, FEL54



L00-FTL51Cxx-15-05-xx-xx-000

Level sensor
Liquiphant M FTL with electronic versions
FEL55, FEL56, FEL57, FEL58
for connecting to a separate switching unit
or an isolating amplifier FEL50A
for connecting to PROFIBUS PA segment



L00-FTL51Cxx-15-05-xx-en-000

Electronic versions for level limit switches	FEL51: Two-wire AC version; Switch the load directly into the power supply circuit via the thyristor. FEL52: Three-wire DC version; Switch the load via the transistor (PNP) and separate connection. FEL54: Universal current version with relay output; Switch the loads via 2 floating change-over contacts.
Electronic versions for level sensor	FEL55: For separate switching unit; signal transmission H-L edge 16/8 mA along two-wire cabling (AI module 4-20 mA to EN 61131-2). FEL56: For separate switching unit; signal transmission L-H edge 0.6…1.0 / 2.2…2.8 mA to NAMUR (IEC 60947-5-6) on two-wire cabling. FEL58: For separate switching unit; signal transmission H-L edge 2.2…3.5 / 0.6…1.0 mA to NAMUR (IEC 60947-5-6) on two-wire cabling. Checking of connecting cabling and other devices by pressing a key on the electronic insert. FEL57: For separate switching unit; PFM signal transmission; Current pulses superposed on the power supply along the two-wire cabling. Cyclical checking from the switching unit without changing levels. FEL50A: For connecting to PROFIBUS PA; Cyclic and acyclic data exchange acc. to PROFIBUS PA Profile 3.0 Discrete Input
Galvanic isolation	FEL51, FEL52, FEL50A: Between sensor and power supply FEL54: Between sensor and power supply and load FEL55, FEL56, FEL57, FEL58: See switching unit connected
Design	FTL51C: With flange and extension pipe, with the same coating

Input

Measured variable	Level (limit value)
Measuring range (detection range)	Given by the installation point or the length of the sensor with an extension pipe (up to 3000 mm for plastic coating, up to 1200 mm for enamel coating)
Product density	Adjustment on the electronic insert > 0.5 g/cm³ or > 0.7 g/cm³ (other on request)

Electronic insert FEL51 (AC 2-wire)

Power supply

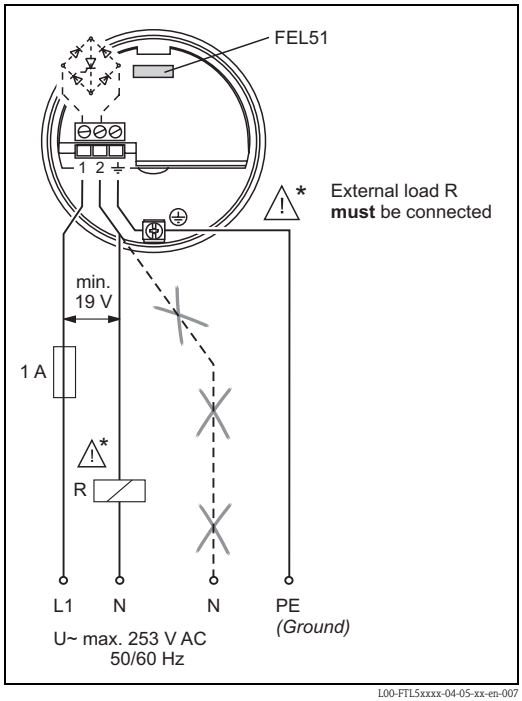
Supply voltage: 19...253 V AC
Power consumption: < 0.83 W
Residual current consumption: < 3.8 mA
Short-circuit protection
FEM51 overvoltage protection: overvoltage category III

Electrical connection

Two-wire AC connection

Always connect in series with a load!

Check the following:
- The residual current in blocked state (up to 3.8 mA)
- that for low voltage
  - the voltage drop across the load is such that the minimum terminal voltage at the electronic insert (19 V) when blocked is not undershot.
  - the voltage drop across the electronics when switched through is observed (up to 12 V)
- that a relay cannot de-energise with holding power below 3.8 mA. If this is the case, a resistor should be connected parallel to the relay. (RC module available on request).
- When selecting the relay, pay attention to the holding power/rated power (See "Connectable load")



L00-FTL5xxxx-04-05-xx-en-007

Output signal

I_L = load current (switched through)

< 3.8 mA = residual current (blocked)

☼ = lit

● = unlit

L00-FTL2xxxx-07-05-xx-xx-000

Safety mode	Level	Output signal	LEDs green	LEDs red
Max.		1 —I_L→ 2	☼	●
		1 - - -< 3.8 mA- - -→ 2	☼	☼
Min.		1 —I_L→ 2	☼	●
		1 - - -< 3.8 mA- - -→ 2	☼	☼

L00-FTL51Cxx-04-05-xx-xx-001

Signal on alarm

Output signal on power failure or in the event of damaged sensor: < 3.8 mA

Connectable load

- For relays with a minimum holding power/rated power > 2.5 VA at 253 V AC (10 mA) or > 0.5 VA at 24 V AC (20 mA)
- Relays with a lower holding power/rated power can be operated by means of an RC module connected inparallel
- For relays with a maximum holding power/rated power < 89 VA at 253 V AC or < 8.4 VA at 24 V AC
- Voltage drop across FEL51 max. 12 V
- Residual current with blocked thyristor max. 3.8 mA
- Load switched directly into the power supply circuit via the thyristor. Transient (40 ms) max. 1.5 A, max. 375 VA at 253 V or max. 36 VA at 24 V (not short-circuit proof)

Electronic insert FEL52 (DC PNP)

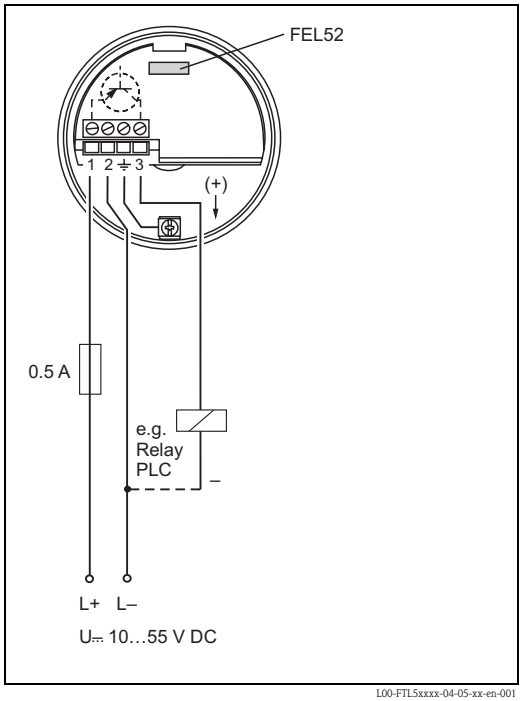
Power supply

Supply voltage: 10…55 V DC
Ripple: max. 1.7 V, 0…400 Hz
Current consumption: max. 15 mA
Power consumption: max. 0.83 W
Reverse polarity protection
Overvoltage protection FEL52: overvoltage category III

Electrical connection

Three-wire DC connection

Preferably used with programmable logic controllers (PLC).
DI module as per EN 61131-2.
Positive signal at switching output of the electronics (PNP);
Output blocked on reaching limit.



L00-FTL5xxxx-04-05-xx-en-001

Output signal

I_L = load current (switched through)

< 100 µA = residual current (blocked)

☼ = lit

● = unlit

L00-FTL2xxxx-07-05-xx-xx-000

Safety mode	Level	Output signal	LEDs green	LEDs red
Max.		L+ 1 → I_L → + 3	☼	●
		< 100 µA 1 - - - → 3	☼	☼
Min.		L+ 1 → I_L → + 3	☼	●
		< 100 µA 1 - - - → 3	☼	☼

L00-FTL51Cxx-04-05-xx-xx-004

Signal on alarm

Output signal on power failure or in the event of damaged sensor: < 100 µA

Connectable load

- Load switched via the transistor and separate PNP connection, max. 55 V DC
- Load current max. 350 mA (pulsed overload and short-circuit protection)
- Residual current < 100 µA (with transistor blocked)
- Capacitive load max. 0.5 µF at 55 V, max. 1.0 µF at 24 V
- Residual voltage < 3 V (with transistor switched through)

Electronic insert FEL54 (AC/DC with relay output)

Power supply

Supply voltage: 19…253 V AC, 50/60 Hz or 19…55 V DC
Power consumption: max. 1.3 W
Reverse polarity protection
Overvoltage protection FEL54: overvoltage category III

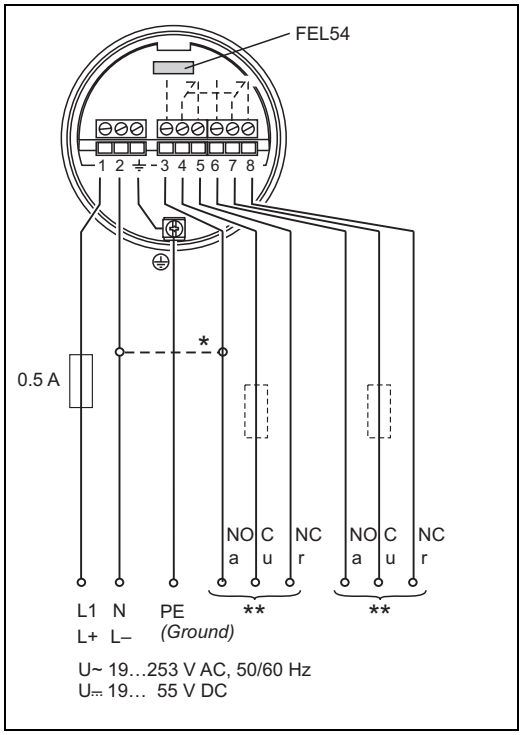
Electrical connection

Universal current connection with relay output

Power supply:
Please note the different voltage ranges for AC and DC.

Output:
When connecting an instrument with high inductance, provide a spark arrester to protect the relay contact.
A fine-wire fuse (depending on the load connected) protects the relay contact on short-circuiting.
Both relay contacts switch simultaneously.

* When jumpered, the relay output works with NPN logic.



L00-FTL5xxxx-04-05-xx-xx-002

Output signal

= relay energised
= relay de-energised
= lit
= unlit

L00-FTL2xxxx-07-05-xx-xx-001

Safety mode	Level	Output signal	LEDs green	LEDs red
Max.		3 4 5 6 7 8	☼	●
		3 4 5 6 7 8	☼	☼
Min.		3 4 5 6 7 8	☼	●
		3 4 5 6 7 8	☼	☼

L00-FTL51Cxx-04-05-xx-xx-005

Signal on alarm

Output signal on power failure or in the event of damaged sensor: relay de-energised

Connectable load

- Loads switched via 2 floating change-over contacts (DPDT)
- I~ max. 6 A (EEx de 4 A), U~ max. 253 V AC; P~ max. 1500 VA, cos φ = 1, P~ max. 750 VA, cos φ > 0.7
- I⎓ max. 6 A (EEx de 4 A) to 30 V, I⎓ max. 0.2 A to 125 V
- When connecting a low-voltage circuit with double isolation according to IEC 1010 the following applies: total of voltages of relay output and power supply max. 300 V

Electronic insert FEL55 (8/16 mA)

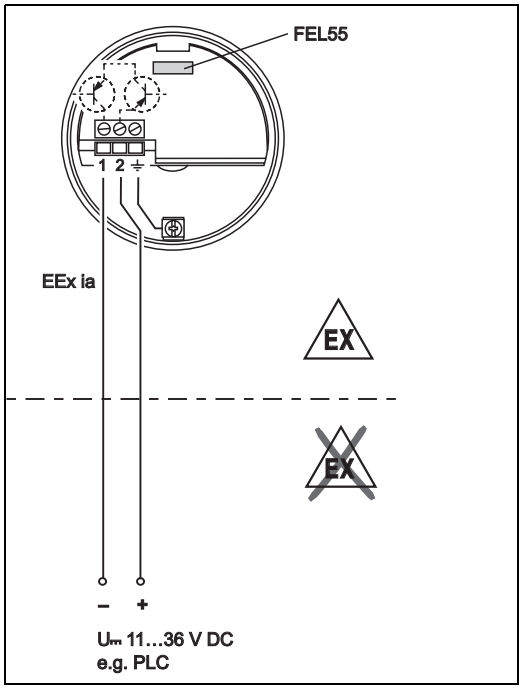
Power supply

Supply voltage: 11...36 V DC
Power consumption: < 600 mW
Reverse polarity protection
Overvoltage protection FEL55: overvoltage category III

Electrical connection

Two-wire connection for separate switching unit

For connecting to programmable logic controllers (PLC).
AI module 4...20 mA to EN 61131-2.
Output signal jump from high to low current on limit.



L00-FTL5xxxx-04-05-xx-en-000

Output signal

~ 16 mA = 16 mA ± 5 %

~ 8 mA = 8 mA ± 6 %

☼ = lit

● = unlit

L00-FTL2xxxx-07-05-xx-xx-000

Safety mode	Level	Output signal	LEDs green	LEDs red
Max.		+ 2 ~16 mA 1	☼	●
		+ 2 ~8 mA 1	☼	☼
Min.		+ 2 ~16 mA 1	☼	●
		+ 2 ~8 mA 1	☼	☼

L00-FTL51Cxx-04-05-xx-xx-000

Signal on alarm

Output signal on power failure or in the event of damaged sensor: < 3.6 mA

Connectable load

- R = (U - 11 V) : 16.8 mA
- U = connection voltage: 11…36 V DC

Electronic insert FEL56 (NAMUR L-H edge)

Power supply

Power consumption: < 6 mW bei I < 1 mA; < 38 mW bei I = 2,2...4 mA
Connection data interface: IEC 60947-5-6

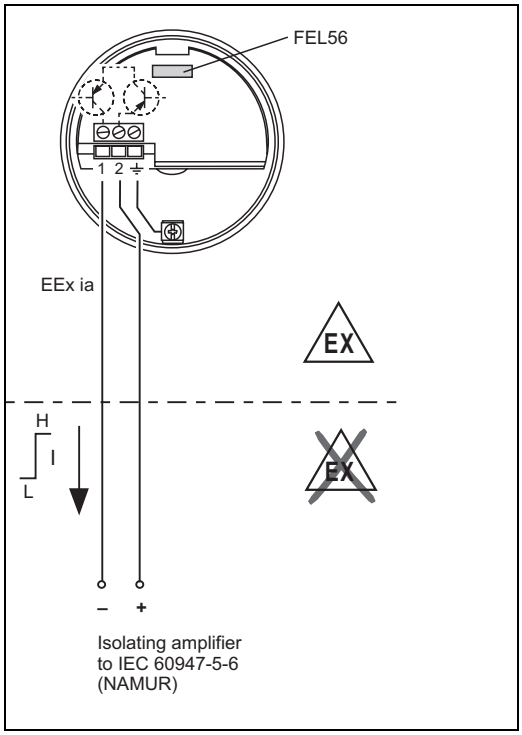
Electrical connection

Two-wire connection for separate switching unit

For connecting to isolating amplifiers acc. to NAMUR (IEC 60947-5-6), e.g. FXN421, FXN422, FTL325N, FTL375N or Commutec SIN100, SIN110 from Endress+Hauser.
Output signal jump from low to *high current on limit*.

(L-H edge)

Connecting to multiplexer:
Set clock time to min. 2 s.



L00-FTL5xxxx-04-05-xx-en-004

Output signal

= lit
= flashes
= unlit

L00-FTL5xxxx-07-05-xx-xx-002

Safety mode	Level	Output signal	LEDs green	LEDs red
Max.		+ 2 — 0.6 … 1.0 mA → 1	◔	●
		+ 2 — 2.2 … 2.8 mA → 1	◔	☼
Min.		+ 2 — 0.6 … 1.0 mA → 1	◔	●
		+ 2 — 2.2 … 2.8 mA → 1	◔	☼

L00-FTL51Cxx-04-05-xx-xx-003

Signal on alarm

Output signal in the event of damaged sensor: > 2.2 mA

Connectable load

- See Technical Data of isolating amplifier connected according to IEC 60947-5-6 (NAMUR)

Electronic insert FEL58 (NAMUR H-L edge)

Power supply

Power consumption: < 6 mW bei I < 1 mA; < 38 mW bei I = 2,2...4 mA
Connection data interface: IEC 60947-5-6

Electrical connection

Two-wire connection for separate switching unit

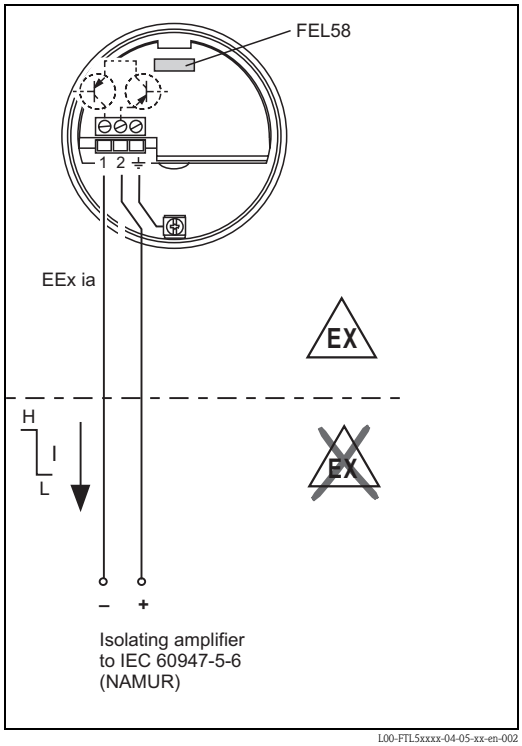
For connecting to isolating amplifiers acc. to NAMUR (IEC 60947-5-6), e.g. FXN421, FXN422, FTL325N, FTL375N or Commutec SIN100, SIN110 from Endress+Hauser.
Output signal jump from high to *low current on limit*.

(H-L edge)

Additional function:
Test key on the electronic insert.
Pressing the key breaks the connection to the isolating amplifier.

Note!
For Ex-d applications, the additional function can only be used if the housing is not exposed to an explosive atmosphere.

Connecting to multiplexer:
Set clock time to min. 2 s.



L00-FTL5xxxx-04-05-xx-en-002

Output signal

= lit
= flashes
= unlit

L00-FTL5xxxx-07-05-xx-xx-002

Safety mode	Level	Output signal	LEDs green	LEDs yellow
Max.		+ 2 — 2.2 … 3.5 mA — 1	☼	☼
		+ 2 — 0.6 … 1.0 mA — 1	☼	●
Min.		+ 2 — 2.2 … 3.5 mA — 1	☼	☼
		+ 2 — 0.6 … 1.0 mA — 1	☼	●

L00-FTL51Cxx-04-05-xx-xx-007

Signal on alarm

Output signal in the event of damaged sensor: < 1.0 mA

Connectable load

- See Technical Data of isolating amplifier connected according to IEC 60947-5-6 (NAMUR)
- Connection also to isolating amplifiers which have special safety circuits (I > 3.0 mA)

Electronic insert FEL57 (PFM)

Power supply

Supply voltage: 9,5...12,5 V DC
Current consumption: 10...13 mA
Power consumption: < 150 mW
Reverse polarity protection

Electrical connection

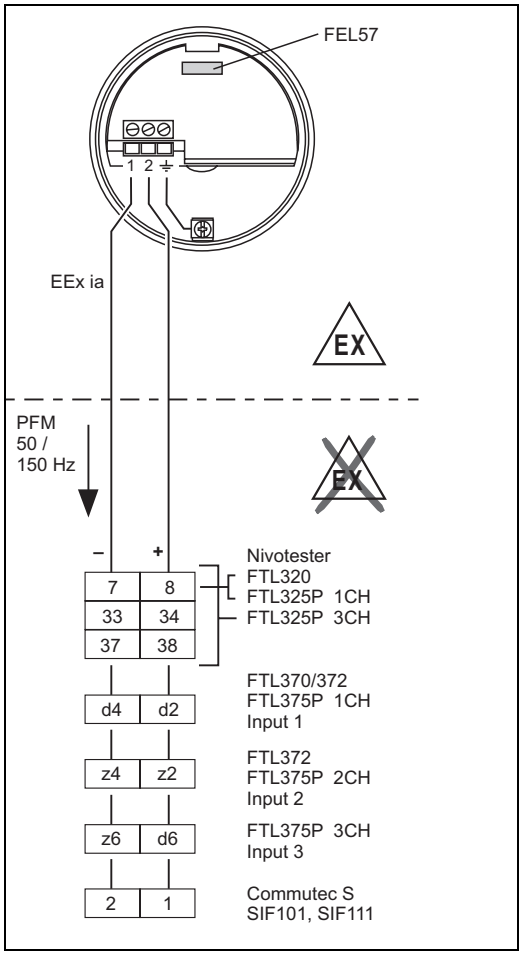
Two-wire connection for separate switching unit

For connecting to switching units
Nivotester FTL320, FTL325P,
FTL370, FTL372, FTL375P
(also with cyclical checking)
Commutec SIF101, SIN111
from Endress+Hauser.
Output signal jump of PFM signal
from high to low frequency
when sensor is covered.
Switching between minimum/maximum
safety in the Nivotester.

Additional function "cyclical checking":
After interruption of the power supply,
a test cycle is activated which checks
the sensor and electronics without any
change in level.
Approved for overfill protection acc. to WHG,
Germany.
The following can be switched at the
electronic insert:

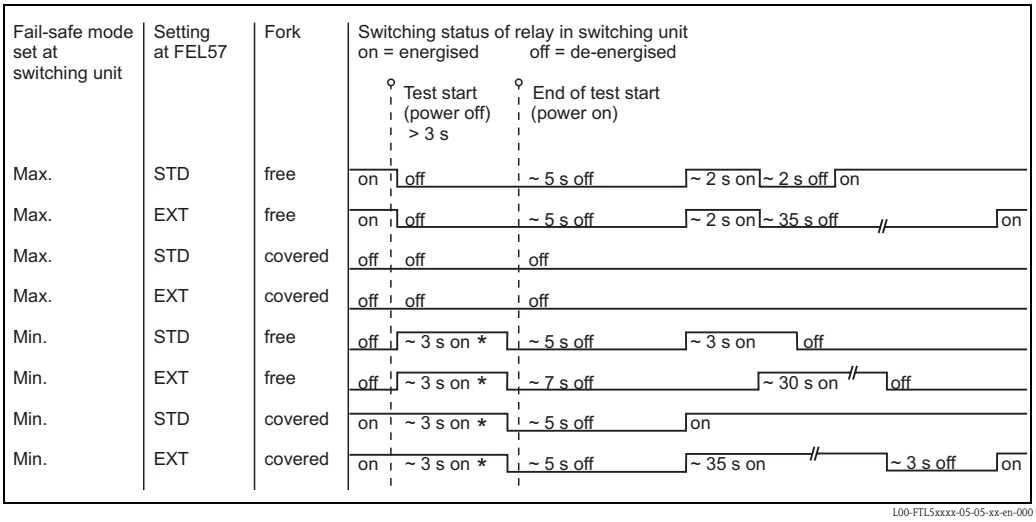
– Standard (STD):
  for low corrosive liquids;
  simulation approx. 8 s
  tuning fork exposed – covered – exposed.
– Extended (EXT):
  for highly corrosive liquids;
  simulation approx. 41 s
  tuning fork exposed – covered – corroded – exposed.

The check is activated and monitored at the switching unit.



L00-FTL5xxxx-04-05-xx-en-003

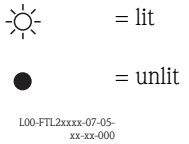
Switching behaviour of the connected device:

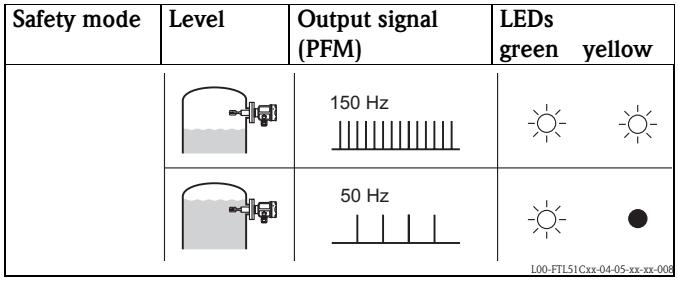


* De-energised on power supply failure

Please note this switching response and function of the plant, especially when replacing a Liquiphant with an EL17Z or FEL37 electronic insert by a Liquiphant M with the FEL57 electronic insert.

Output signal





Signal on alarm

Output signal on power failure or in the event of damaged sensor: 0 Hz

Connectable load

- Floating relay contacts in the connected switching unit Nivotester FTL320, FTL325P, FTL370, FTL372, FTL375P or Commutec SIF101, SIF111
- For contact load see the Technical Data of the switching unit

Electronic insert FEL50A (PROFIBUS PA)

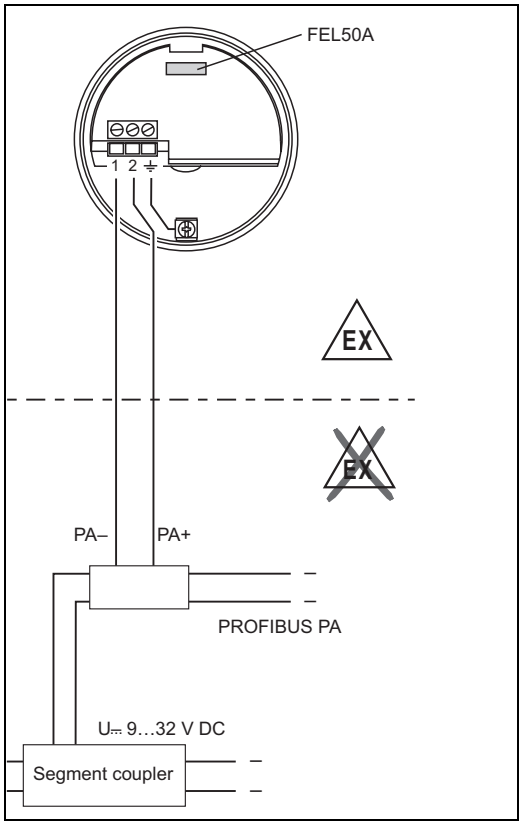
Electrical connection

Two-wire connection for power supply and data transfer

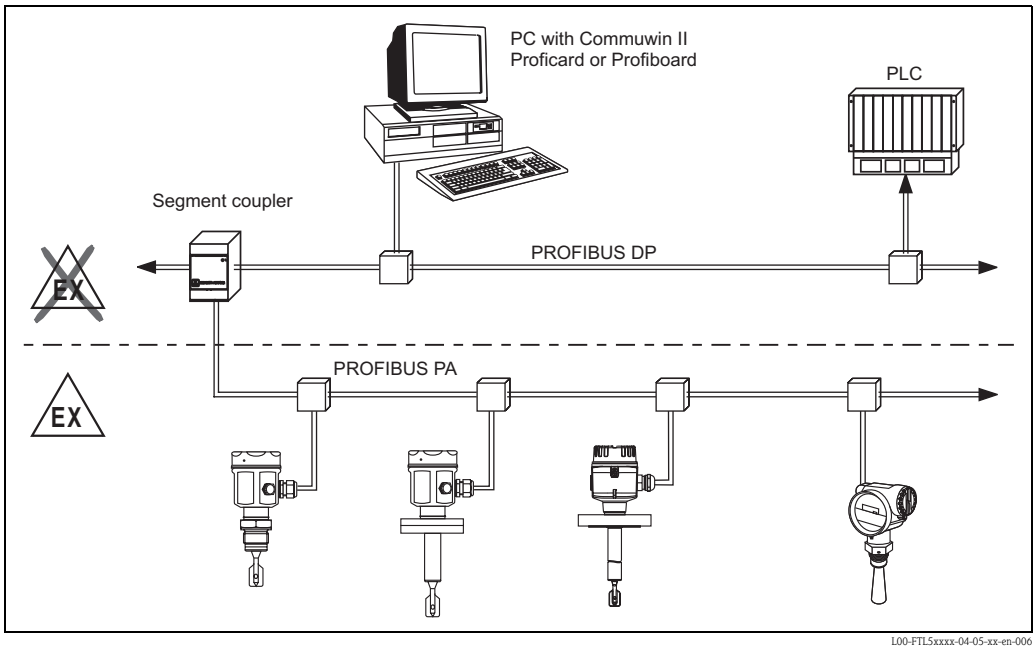
For connecting to PROFIBUS PA

Additional functions:

- Digital communication enables the representation, reading and editing of the following parameters: Fork frequency, switch-on frequency, switch-off frequency, switch-on time and switch-off time, status, measured value, density switch.
- Matrix locking possible
- Switch to WHG mode possible (WHG approval).
- For a detailed description see BA198F
- You can also visit www.profibus.com for more information



L00-FTL5xxxx-04-05-xx-en-005



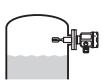
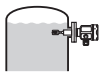
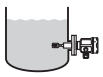
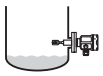
L00-FTL5xxxx-04-05-xx-en-006

Output signal

☼ = lit

● = unlit

L00-FTL2xxxx-07-05-xx-xx-000

Setting	Level	LEDs green	LEDs yellow	FEL50A
not inverted		☼	●	OUT_D = 0 PA bus signal
		☼	☼	OUT_D = 1 PA bus signal
inverted		☼	☼	OUT_D = 1 PA bus signal
		☼	●	OUT_D = 0 PA bus signal

L00-FTL51Cxx-04-05-xx-xx-009

Signal on alarm

- Failure information can be opened using the following interfaces:
  Yellow LED flashing, status code, diagnostic code; see BA198F

Connection and function

Connecting cables

- Electronic inserts: cross-section max. 2.5 mm²; strand in ferrule to DIN 46228
- Protective earth in housing: cross-section max. 2.5 mm²
- External equipotential bonding connection on housing: cross-section max. 4 mm²

Safety mode

Minimum/maximum residual current safety selectable on electronic insert (with FEL57 on Nivotester only)

Max. = maximum safety:
The output switches to the power fail response when the fork is covered
For use with overfill protection for example

Max. = minimum safety:
The output switches to the power fail response when the fork is exposed
For use with dry running protection for example

Switching time

When fork is covered: approx. 0.5 s
When fork is exposed: approx. 1.0 s
(Other switching times on request.)

Additionally configurable for PROFIBUS PA: 0.5...60 s

Switch-on behaviour

When switching on the power supply, the output assumes the alarm signal. After max. 3 s it assumes the correct switching mode (exception: FEL57)

Performance characteristics

Reference operating conditions

Ambient temperature: 23 °C

Medium temperature: 23 °C

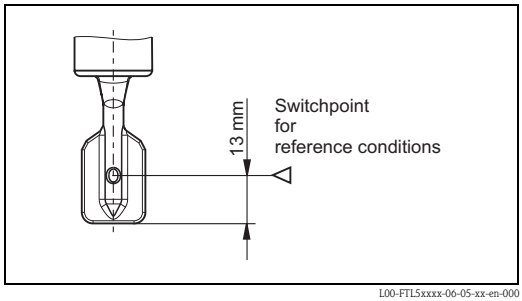
Product density: 1 g/cm³ (water)

Viscosity: 1 mm²/s

Medium pressure p_e: 0 bar

Sensor mounting: vertical from above

Density switch: to > 0.7



L00-FTL5xxxx-06-05-xx-en-000

Maximum measured error

Specified by mounting position: max. +/–1mm

Repeatability

0.1 mm

Hysteresis

ECTFE: approx. 2 mm

PFA: approx. 2 mm

Enamel: approx. 2.5 mm

Influence of medium temperature

ECTFE: max. +1.4 mm…–2.8 mm (–50 °C…+120 °C)

PFA: max. +1.4 mm…–2.8 mm (–50 °C…+150 °C)

Enamel: max. +0.6 mm…–1.5 mm (–50 °C…+150 °C)

Influence of product density

Max. +4.8 mm … –3.5 mm (0.5 g/cm³ … 1.5 g/cm³)

Influence of medium pressure

ECTFE: max. 0 mm…–2.0 mm (0 bar…40 bar)

PFA: max. 0 mm…–2.0 mm (0 bar…40 bar)

Enamel: max. 0 mm…–1.0 mm (0 bar…25 bar)

Operating conditions

Installation

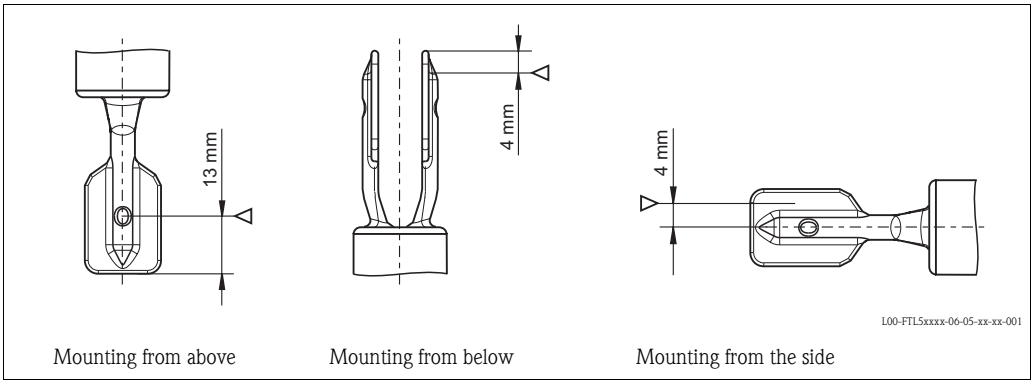
Installation instructions

Switch points ▷ on the sensor depend on the mounting position, with reference to water,

Density 1 g/cm³, 23 °C, p_e 0 bar.

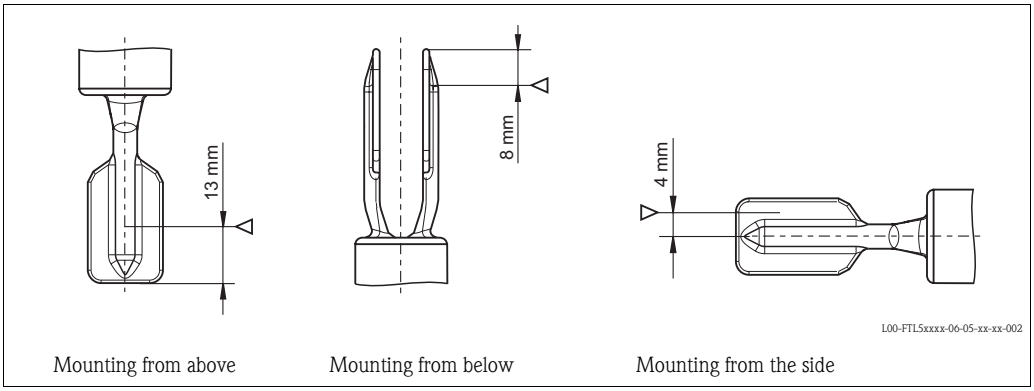
Note!
The switchpoints of the Liquiphant **M** are at other positions to those of the previous version Liquiphant **II**.

Plastic coating:



Mounting from above | Mounting from below | Mounting from the side

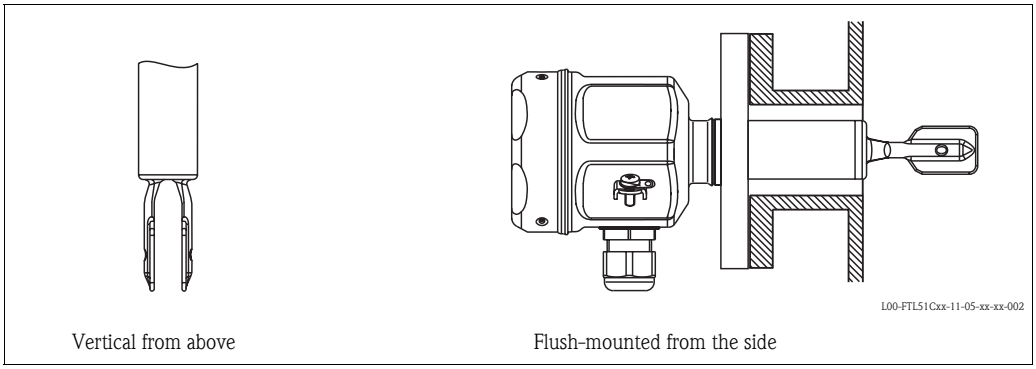
Enamel coating:



Mounting from above | Mounting from below | Mounting from the side

Examples of mounting with regard to the viscosity ν of the liquid and the tendency to form build-up

Optimum mounting, without problem even with high viscosity:

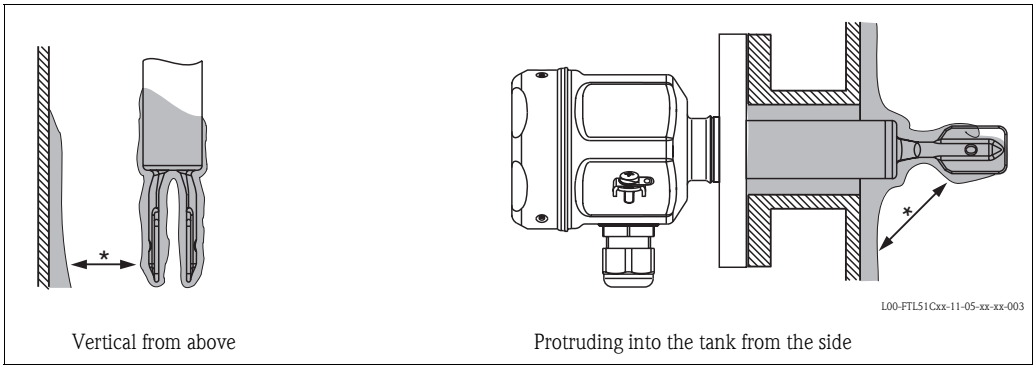


Vertical from above | Flush-mounted from the side

Note!
Position the fork so that the narrow edges of the tines are vertical so that the liquid can drain off easily.

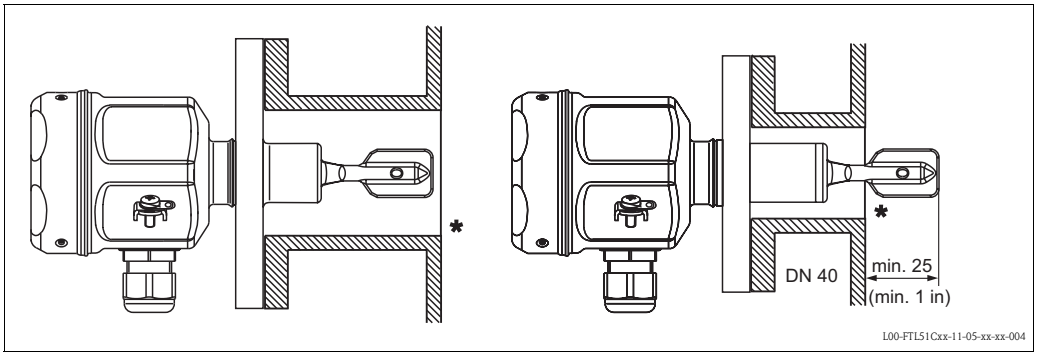
With build-up on the tank walls:

* Ensure that there is sufficient distance between the build-up expected on the tank wall and the fork.



Vertical from above | Protruding into the tank from the side

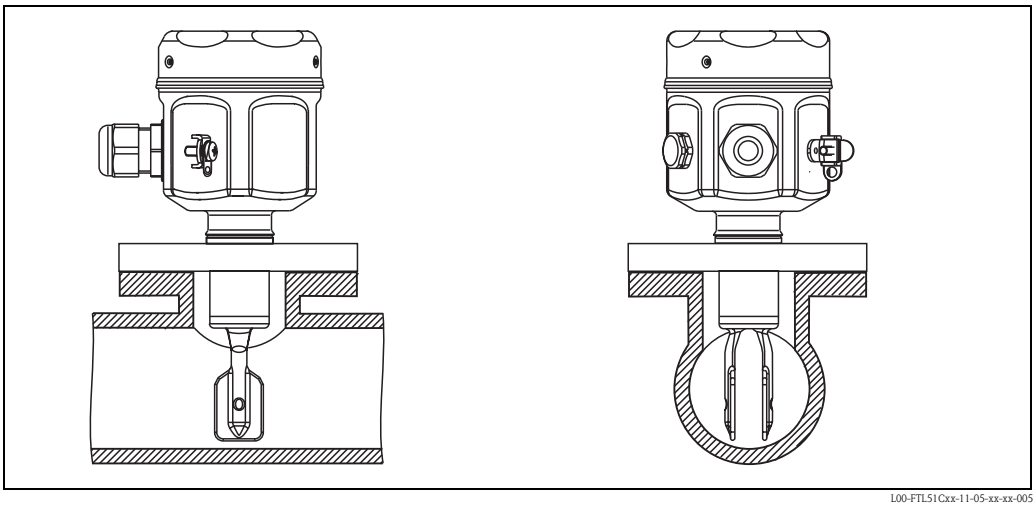
Mounting positions with low viscosity (up to 2000 mm^2/s):



* Deburr the nozzle surfaces

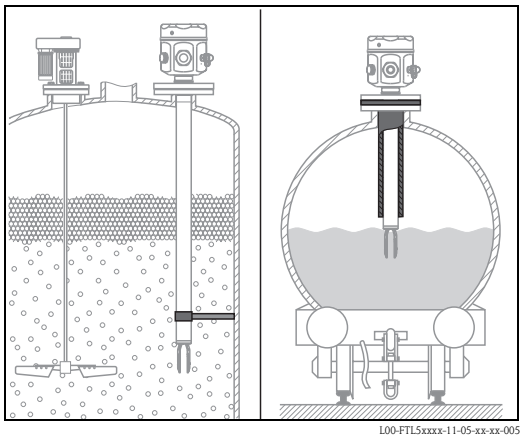
Mounting in piping from 2"

Fluid velocities up to 5 m/s for viscosity 1 mm^2/s and density 1 g/cm^3.
(Check the function for other operating conditions.)



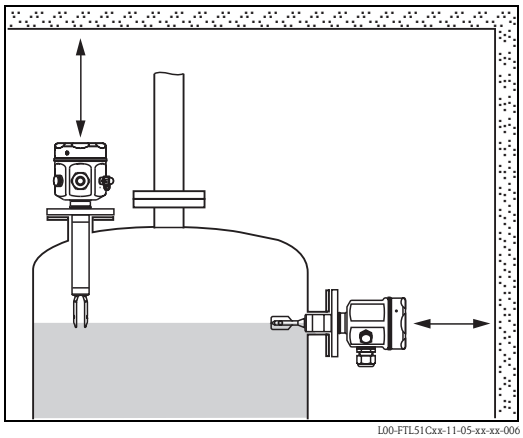
L00-FTL51Cxx-11-05-xx-xx-005

Support Liquiphant M FTL51C
in the event of severe dynamic load



L00-FTL5xxxx-11-05-xx-xx-005

Ensure adequate space outside the tank for
mounting, electrical connection and configuration



L00-FTL51Cxx-11-05-xx-xx-006

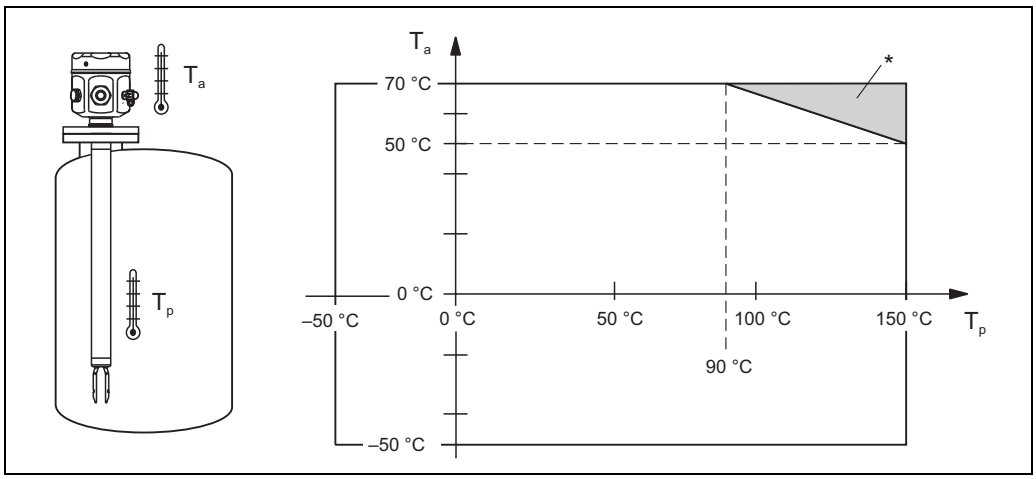
Orientation

FTL51C with short pipe (up to approx. 500 mm) – any orientation,
FTL51C with long pipe – vertical

Environment

Ambient temperature range

Permitted ambient temperature T_a at the housing depending on the medium temperature T_p in the tank:



* Additional temperature range for devices with a temperature spacer or flameproof bushing

Medium temperatures up to 230 °C on request!

The temperature difference between the process and ambient side (T_p – T_a) of the flange may not exceed max. 60 °C for ECTFE and PFA. For this reason, the flange may have to be included in the tank insulation if necessary.

Ambient temperature limits

–50 °C…+70 °C (function with restricted data)

Storage temperature

–50 °C…+80 °C

Climate class

Climate protection to IEC 68, Part 2-38, Fig. 2a

Degree of protection

- Polyester, steel and aluminium housings: IP66/IP67 to EN 60529
- Aluminium housing (EEx d, EEx de): IP66/IP68 to EN 60529 (1 m, 24 h)

Vibration resistance

To IEC 68, Part 2-6 (10…55 Hz, 0.15 mm, 100 cycles)

Electromagnetic compatibility

Interference emission to EN 61326, Electrical Equipment Class B
Interference immunity to EN 61326; Annex A (Industrial) and NAMUR Recommendation NE 21 (EMC)

If the fork tines are joined together on account of build-up, the useful signal is attenuated to such an extent that the original EMC values can no longer be completely observed.
(EN 61000-4-3 Electromagnetic fields, EN 61000-4-6 HF coupling)

Medium conditions

Medium temperature range	ECTFE: max. +1.4 mm…–2.8 mm (–50 °C…+120 °C) PFA: max. +1.4 mm…–2.8 mm (–50 °C…+150 °C/to 230 °C on request) Enamel: max. +0.6 mm…–1.5 mm (–50 °C…+150 °C/to 200 °C on request)
Thermal shock	Max. 120 °C/s
Medium pressure p_e	ECTFE: –1 bar…+40 bar PFA: –1 bar…+40 bar Enamel: –1 bar…+25 bar over the entire temperature range; for exceptions, see Process connections
Test pressure	Max. 100 bar (1.5 times the medium pressure p_e); no function during test pressure Burst pressure of diaphragm 200 bar
Pressure shock	Max. 20 bar/s
State of aggregation	Liquid
Density	Min. 0.5 g/cm^3 Other density settings on request
Viscosity	Max. 10000 mm^2/s
Solids content	Max. ø5 mm

Mechanical construction

Design

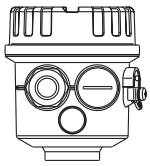
Summary of all electrical and mechanical versions

Plug-in electronic inserts to mount in the housing

L00-FTL5xxxx-03-05-xx-xx-000

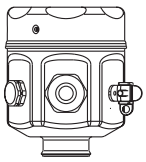
FEL51:	Two-wire AC connection
FEL52:	Three-wire DC connection PNP
FEL54:	Universal current connection, 2 relay outputs
FEL55:	Output 16/8 mA for separate switching unit
FEL56:	Output 0.6…1.0 / 2.2…2.8 mA for separate switching unit (NAMUR)
FEL58:	Output 2.2…3.5 / 0.6…1.0 mA for separate switching unit (NAMUR)
FEL57:	Output 150/50 Hz, PFM, for separate switching unit (Nivotester)
FEL50A:	Digital communication PROFIBUS PA

Housing



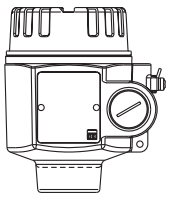
L00-FTL5xxxx-03-05-xx-xx-001

F16
Polyester (PBT)



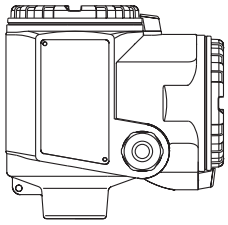
L00-FTL5xxxx-03-05-xx-xx-002

F15
Steel (316L)



L00-FTL5xxxx-03-05-xx-xx-003

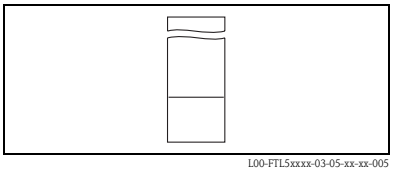
F17/F13
Aluminium
(also for EEx d),
coated



L00-FTL5xxxx-03-05-xx-xx-004

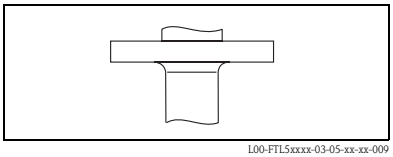
T13
Aluminium with separate
connection compartment
(also EEx de and EEx d), coated

Bushings
Temperature spacer and flameproof bushing



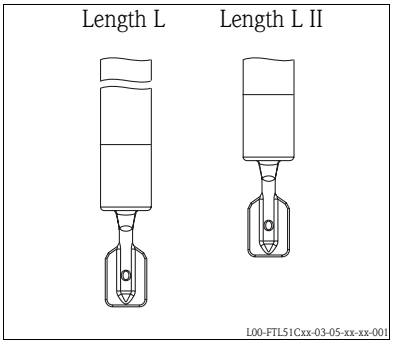
L00-FTL5xxxx-03-05-xx-xx-005

Process connections
Flanges to DIN, ANSI, JIS as of DN 40 / 1½"



L00-FTL5xxxx-03-05-xx-xx-009

Sensors
With extension pipe up to 3 m
or special length "L II" (see also page 24)

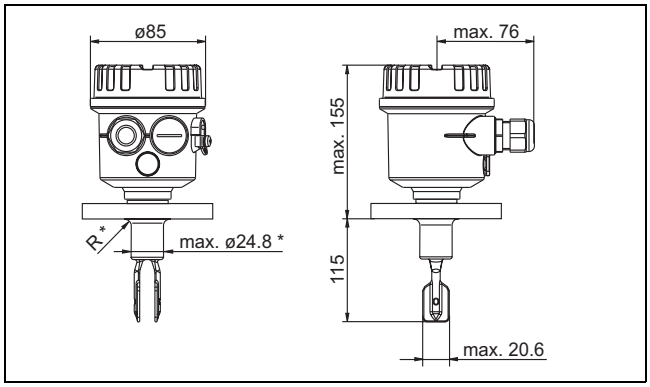


L00-FTL51Cxx-03-05-xx-xx-001

Dimensions (in mm)

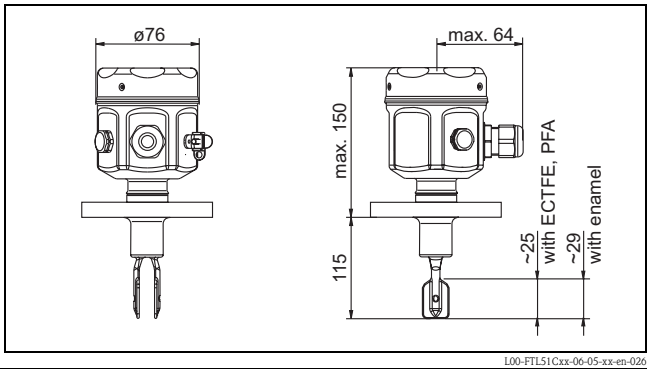
Housing and sensor FTL51C

Polyester housing

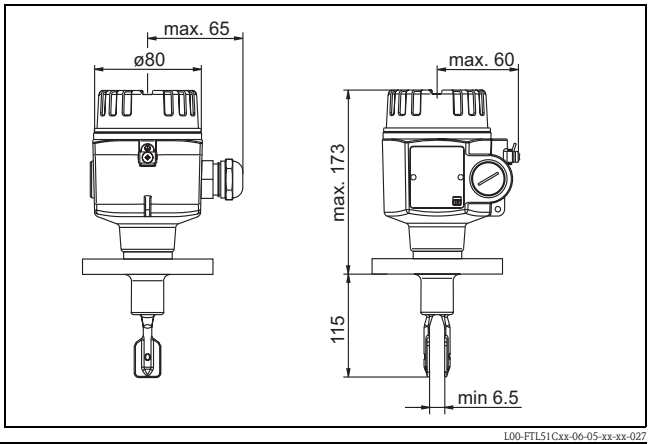


* For DN 25/ANSI 1" the following applies:
Pipe diameter max. 24.2 mm,
Radius R max. 4 mm.
Please take into account for counterflange!

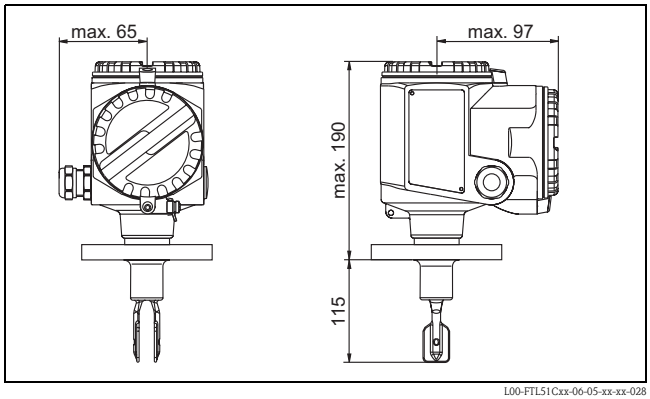
Steel housing



Aluminium housing



Aluminium housing
with separate connection compartment

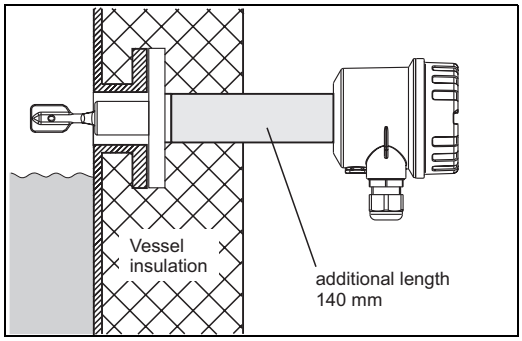


Note!
The switchpoints of the Liquiphant **M** are at other positions to those of the previous version Liquiphant **II**.

Bushings: temperature spacer, flameproof bushing

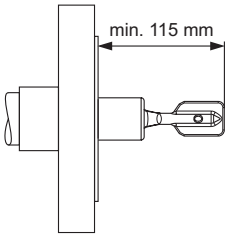
Temperature spacer
Provides sealed insulation
for the vessel and normal ambient
temperatures for the housing.

Flameproof bushing
Protects the housing from pressures
up to 40 bar if the sensor is damaged.
Provides sealed insulation
for the vessel and normal ambient
temperatures for the housing.

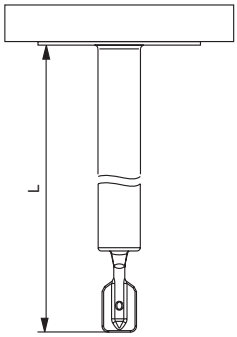


L00-FTL51Cxx-11-05-xx-en-000

Process connections

Process connection		Dimensions	Accessories	Pressure Temperature
Flanges ANSI B16.5 (RF) EN 1092-1 (DIN 2527 form B) JIS B 2238 (RF)	A## B## C## K##	 L00-FTL51Cxx-06-05-xx-xx-024	For plastic coating: PTFE seal supplied For enamel coating: Seal at place of installation	See nominal pressure of flange, however For ECTFE: Max. 40 bar / Max. 120 °C For PFA (Edlon*): Max. 40 bar / Max. 150 °C For enamel: Max. 25 bar / Max. 150 °C
*) FDA approved materials according to 21 CFR Part 177.1550/2600				

Sensor length L
for FTL51C



L00-FTL5xxxx-06-05-xx-xx-018

Any length L:
148 mm...3000 mm (6 in...115 in) for plastic coating
148 mm...1200 mm (6 in... 48 in) for enamel coating

Note!
The switchpoints of the Liquiphant **M** are at other positions to those of the previous version Liquiphant **II**.

Special length "L II":
115 mm (4.5 in)
With vertical mounting from above the same switchpoint as for the Liquiphant II
FTL360, FTL365, FDL30, FDL35

Weights See Product structure

Material

– Wetted parts:
  Process connection and extension pipe: AISI 316L (1.4435) or 2.4610 (Alloy C4)
  Tuning fork: AISI 316L (1.4435) or 2.4610 (Alloy C4)
– Polyester housing: PBT-FR
  with PBT-FR cover or with PA12 cover with sight glass,
  Cover seal: EPDM
– Steel housing: AISI 316L
  Cover seal: silicone
– Aluminium housing: EN-AC-AlSi10Mg, plastic-coated,
  Cover seal: EPDM
– Compact housing: valve connector or M12 connector
– Cable gland: polyamide or brass, nickel-plated
– Temperature spacer: AISI 316L (1.4435)
– Flameproof bushing: AISI 316L (1.4435)

Coating

Layer thickness	ECTFE	PFA (Edlon™)	PFA (RubyRed)	PFA (conductive)	Enamel
Lower limit	0.5 mm	0.45 mm	0.45 mm	0.45 mm	0.4 mm
Upper limit	1.6 mm	1.6 mm	1.6 mm	1.6 mm	0.8 mm

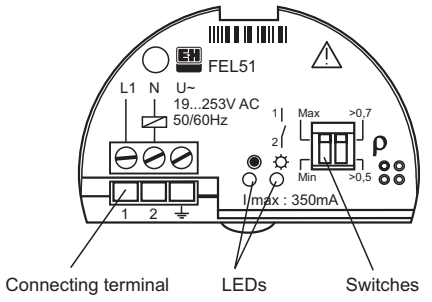
Process connections

Flanges to EN/DIN from DN 25, for standards see Product structure, to ANSI B16.5 from 1",
to JIS B 2238 (RF) as of DN 50

Human interface

Electronic inserts

With FEL51, FEL52, FEL54, FEL55:
2 switches for safety mode and density change,
green LED to indicate operational status,
red LED to indicate the switching status,
flashes in the event of corrosion damage on sensor
or if the electronics are defect



L00-FTL5xxxx-03-05-xx-en-001

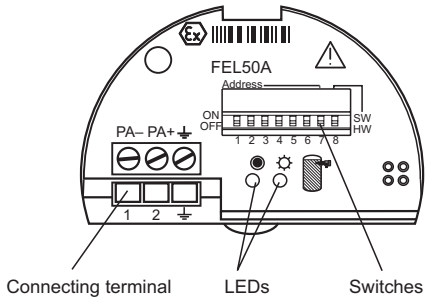
With FEL56:
2 switches for safety mode and density change,
green LED flashes to indicate the operational status,
red LED to indicate the switching status,
flashes in the event of corrosion damage on sensor
or if the electronics are defect

With FEL57:
2 switches for density change and cyclical checking,
green LED to indicate operational status,
yellow LED to indicate the covered status,
flashes in the event of corrosion damage on sensor
or if the electronics are defect

With FEL58:
2 switches for safety mode and density change,
green LED flashes quickly to indicate the
operational status
flashes slowly in the event of corrosion damage
on sensor or if the electronics are defect,
yellow LED to indicate the switching status,
Test key - breaks the cable connection

L00-FTL5xxxx-03-05-xx-xx-013

With FEL50A:
8 switches for configuring the device address,
green LED to indicate operational status,
pulsing to indicate communication;
yellow LED to indicate the switching status,
flashes in the event of corrosion damage on sensor
or if the electronics are defect



L00-FTL5xxxx-03-05-xx-en-002

Operating concept

On-site configuration

Certificates and approvals

Certificates

See Product structure

Combinations of coatings, housings and electronic inserts

Based on the various certificates, permissible combinations of coatings, housings* and electronic inserts are given in the following table.
*) Abbreviations: Polyester = PBT, Steel 1.4301/1.4435 (AISI 316L) = St., Aluminium = Alu
Aluminium housing with separate connection compartment = Alu/sep.

Coating: ECTFE, PFA, enamel			
Certificate, applications		**Housing**	**Electronic inserts**
A	Without any special certificate (for non-hazardous area)	PBT, St., Alu, Alu/sep.	FEL51/52/54, FEL55/56/57/58/50A
D	Overfill protection to WHG (Germany)	PBT, St., Alu, Alu/sep.	FEL51/52/54, FEL55/56/57/58/50A
R	FM, NI, Cl. I, Div. 2, Gr. A-D	St., Alu, Alu/sep. with NPT cable entry	FEL51/52/54, FEL55/56/57/58
		PBT with NPT cable entry	FEL51/52, FEL55/56/57/58
U	CSA, General Purpose	St., Alu, Alu/sep. with NPT cable entry	FEL51/52/54, FEL55/56/57/58
		PBT with NPT cable entry	FEL51/52, FEL55/56/57/58
Y	Other certificate (for non-hazardous area)	PBT, St., Alu, Alu/sep.	FEL51/52/54, FEL55/56/57/58/50A
Coating: Enamel or PFA **(conductive)**			
Certificate, applications		**Housing**	**Electronic inserts**
B	ATEX II 3G EEx nC IIC T6, WHG	PBT, St., Alu, Alu/sep.	FEL54
	ATEX II 3G EEx nC IIC T6, WHG ATEX II 3D T85°C, WHG	St., Alu, Alu/sep.	FEL54
C	ATEX II 3G EEx nA IIC T6, WHG	PBT, St., Alu, Alu/sep.	FEL51/52/54, FEL55/56/57/58/50A
	ATEX II 3G EEx nA IIC T6, WHG ATEX II 3D T85°C, WHG	St., Alu, Alu/sep.	FEL51/52/54, FEL55/56/57/58/50A
E	ATEX II 1/2 G, EEx de IIC T6, WHG	Alu/sep.	FEL51/52/54, FEL55/56/57/58/50A
F	ATEX II 1/2 G, EEx ia IIC T6, WHG	PBT, St., Alu, Alu/sep.	FEL55/56/57/58/50A
	ATEX II 1/2 G, EEx ia IIC T6, WHG ATEX II 1/2 D, T80°C	St., Alu, Alu/sep.	FEL51/52/54, FEL55/56/57/58/50A

L	ATEX II 1/2 G, EEx d IIC T6, WHG	Alu	FEL51/52/54, FEL55/56/57/58/50A
P	FM, IS, Cl. I, II, III, Div. 1, Gr. A-G	PBT, St., Alu, Alu/sep. with NPT cable entry	FEL55/56/57/58
Q	FM, XP, Cl. I, II, III, Div. 1, Gr. A-G	Alu with NPT cable entry	FEL51/52/54, FEL55/56/57/58
S	CSA, IS, Cl. I, II, III, Div. 1, Gr. A-G	PBT, St., Alu, Alu/sep. with NPT cable entry	FEL55/56/57/58
T	CSA, XP, Cl. I, II, III, Div. 1, Gr. A-G	Alu with NPT cable entry	FEL51/52/54, FEL55/56/57/58
Coating: ECTFE, PFA **(not conductive)**			
Certificate, applications		**Housing**	**Electronic inserts**
1	ATEX II 1/2 G, EEx ia IIB T6, WHG	PBT, St., Alu, Alu/sep.	FEL55/56/57/58/50A
2	ATEX II 1/2 G, EEx d IIB T6, WHG	Alu	FEL51/52/54, FEL55/56/57/58/50A
3	ATEX II 1/2 G, EEx de IIB T6, WHG	Alu/sep.	FEL51/52/54, FEL55/56/57/58/50A
4	ATEX II 1/2 G, EEx ia IIC** T6, WHG	PBT, St., Alu, Alu/sep.	FEL55/56/57/58/50A
5	ATEX II 1/2 G, EEx d IIC** T6, WHG	Alu	FEL51/52/54, FEL55/56/57/58/50A
6	ATEX II 1/2 G, EEx de IIC** T6, WHG	Alu/sep.	FEL51/52/54, FEL55/56/57/58/50A
**) With note: "Avoid electrostatic charge"			

Ordering information

Liquiphant M
FTL51C product structure

Design							*Basic weight*
FTL51C	With extension pipe						0.6 kg

10	Approval:			
	A	Non-hazardous area		
	B	ATEX II 3 G	EEx nC II T6	Overfill protection to WHG (Germany)
		ATEX II 3 D	T 85°C*	
	C	ATEX II 3 G	EEx nA II T6	Overfill protection to WHG (Germany)
		ATEX II 3 D	T 85°C*	
	D	Non-hazardous area		Overfill protection to WHG (Germany)
	E	ATEX II 1/2 G	EEx de IIC T6	Overfill protection to WHG (Germany)
	F	ATEX II 1/2 G	EEx ia IIC T6	Overfill protection to WHG (Germany)
		ATEX II 1/2 D	T 80°C*	
	L	ATEX II 1/2 G	EEx d IIC T6	Overfill protection to WHG (Germany)
	P	FM	IS, Class I, II, III	Division 1, Group A-G
	Q	FM	XP, Class I, II, III	Division 1, Group B-G, for E5 housing Group A-G
	R	FM	NI, Class I	Division 2, Group A-D
	S	CSA	IS, Class I, II, III	Division 1, Group A-G
	T	CSA	XP, Class I, II, III	Division 1, Group A-G
	U	CSA	General Purpose	
	V	TIIS	Ex ia IIC T3	
	W	TIIS	Ex d IIB T3	
	X	TIIS	EX ia IIC T6	
	Y	Special version		
	1	ATEX II 1/2 G	EEx ia IIB T6	Overfill protection to WHG (Germany)
	2	ATEX II 1/2 G	EEx d IIB T6	Overfill protection to WHG (Germany)
	3	ATEX II 1/2 G	EEx de IIB T6	Overfill protection to WHG (Germany)
	4	ATEX II 1/2 G	EEx ia IIC T6	Overfill protection to WHG (Germany)
		Pay attention to Safety Instructions (XA) (Electrostatic charge)!		
	5	ATEX II 1/2 G	EEx d IIC T6	Overfill protection to WHG (Germany)
		Pay attention to Safety Instructions (XA) (Electrostatic charge)!		
	6	ATEX II 1/2 G	EEx de IIC T6	Overfill protection to WHG (Germany)
		Pay attention to Safety Instructions (XA) (Electrostatic charge)!		
	7	TIIS	Ex d IIC T3	
	8	TIIS	Ex d IIC T6	
		*) Not for PBT		

20	Process Connection:						*Additional weight*
	ACK	1½"	150 lbs	ECTFE	> 316/316L	Flange ANSI B16.5	1.5 kg
	ACL	1½"	150 lbs	PFA (Edlon™)	> 316/316L	Flange ANSI B16.5	1.5 kg
	ACM	1½"	150 lbs	PFA (RubyRed)	> 316/316L	Flange ANSI B16.5	1.5 kg
	ACN	1½"	150 lbs	PFA (conductive)	> 316/316L	Flange ANSI B16.5	1.5 kg
	AEK	2"	150 lbs	ECTFE	> 316/316L	Flange ANSI B16.5	2.4 kg
	AEL	2"	150 lbs	PFA (Edlon™)	> 316/316L	Flange ANSI B16.5	2.4 kg
	AEM	2"	150 lbs	PFA (RubyRed)	> 316/316L	Flange ANSI B16.5	2.4 kg
	AEN	2"	150 lbs	PFA (conductive)	> 316/316L	Flange ANSI B16.5	2.4 kg
	AES	2"	150 lbs	Enamel	> 316/316L	Flange ANSI B16.5	2.4 kg
	AFK	2"	300 lbs	ECTFE	> 316/316L	Flange ANSI B16.5	3.2 kg
	AFL	2"	300 lbs	PFA (Edlon™)	> 316/316L	Flange ANSI B16.5	3.2 kg
	AFM	2"	300 lbs	PFA (RubyRed)	> 316/316L	Flange ANSI B16.5	3.2 kg
	AFN	2"	300 lbs	PFA (conductive)	> 316/316L	Flange ANSI B16.5	3.2 kg
	AFS	2"	300 lbs	Enamel	> 316/316L	Flange ANSI B16.5	3.2 kg
	ALK	3"	150 lbs	ECTFE	> 316/316L	Flange ANSI B16.5	4.9 kg
	ALL	3"	150 lbs	PFA (Edlon™)	> 316/316L	Flange ANSI B16.5	4.9 kg
	ALM	3"	150 lbs	PFA (RubyRed)	> 316/316L	Flange ANSI B16.5	4.9 kg
	ALN	3"	150 lbs	PFA (conductive)	> 316/316L	Flange ANSI B16.5	4.9 kg
	APK	4"	150 lbs	ECTFE	> 316/316L	Flange ANSI B16.5	7.0 kg
	APL	4"	150 lbs	PFA (Edlon™)	> 316/316L	Flange ANSI B16.5	7.0 kg
	APM	4"	150 lbs	PFA (RubyRed)	> 316/316L	Flange ANSI B16.5	7.0 kg
	APN	4"	150 lbs	PFA (conductive)	> 316/316L	Flange ANSI B16.5	7.0 kg
	A8K	1"	150 lbs	ECTFE	> 316/316L	Flange ANSI B16.5	1.0 kg
	A8L	1"	150 lbs	PFA (Edlon™)	> 316/316L	Flange ANSI B16.5	1.0 kg
	A8M	1"	150 lbs	PFA (RubyRed)	> 316/316L	Flange ANSI B16.5	1.0 kg
	A8N	1"	150 lbs	PFA (conductive)	> 316/316L	Flange ANSI B16.5	1.0 kg

20		Process Connection:						*Additional weight*
		BBK	DN32	PN25/40	ECTFE	>316L	Flange EN 1092-1 (DIN 2527)	2.0 kg
		BBL	DN32	PN25/40	PFA (Edlon™)	>316L	Flange EN 1092-1 (DIN 2527)	2.0 kg
		BBM	DN32	PN25/40	PFA (RubyRed)	>316L	Flange EN 1092-1 (DIN 2527)	2.0 kg
		BBN	DN32	PN25/40	PFA (conductive)	>316L	Flange EN 1092-1 (DIN 2527)	2.0 kg
		BDK	DN40	PN25/40	ECTFE	>316L	Flange EN 1092-1 (DIN 2527)	2.4 kg
		BDL	DN40	PN25/40	PFA (Edlon™)	>316L	Flange EN 1092-1 (DIN 2527)	2.4 kg
		BDM	DN40	PN25/40	PFA (RubyRed)	>316L	Flange EN 1092-1 (DIN 2527)	2.4 kg
		BDN	DN40	PN25/40	PFA (conductive)	>316L	Flange EN 1092-1 (DIN 2527)	2.4 kg
		BEK	DN50	PN6	ECTFE	>316L	Flange EN 1092-1 (DIN 2527)	1.6 kg
		BEL	DN50	PN6	PFA (Edlon™)	>316L	Flange EN 1092-1 (DIN 2527)	1.6 kg
		BEM	DN50	PN6	PFA (RubyRed)	>316L	Flange EN 1092-1 (DIN 2527)	1.6 kg
		BEN	DN50	PN6	PFA (conductive)	>316L	Flange EN 1092-1 (DIN 2527)	1.6 kg
		BGK	DN50	PN25/40	ECTFE	>316L	Flange EN 1092-1 (DIN 2527)	3.2 kg
		BGL	DN50	PN25/40	PFA (Edlon™)	>316L	Flange EN 1092-1 (DIN 2527)	3.2 kg
		BGM	DN50	PN25/40	PFA (RubyRed)	>316L	Flange EN 1092-1 (DIN 2527)	3.2 kg
		BGN	DN50	PN25/40	PFA (conductive)	>316L	Flange EN 1092-1 (DIN 2527)	3.2 kg
		BNK	DN80	PN25/40	ECTFE	>316L	Flange EN 1092-1 (DIN 2527)	5.9 kg
		BNL	DN80	PN25/40	PFA (Edlon™)	>316L	Flange EN 1092-1 (DIN 2527)	5.9 kg
		BNM	DN80	PN25/40	PFA (RubyRed)	>316L	Flange EN 1092-1 (DIN 2527)	5.9 kg
		BNN	DN80	PN25/40	PFA (conductive)	>316L	Flange EN 1092-1 (DIN 2527)	5.9 kg
		BQK	DN100	PN10/16	ECTFE	>316L	Flange EN 1092-1 (DIN 2527)	5.6 kg
		BQL	DN100	PN10/16	PFA (Edlon™)	>316L	Flange EN 1092-1 (DIN 2527)	5.6 kg
		BQM	DN100	PN10/16	PFA (RubyRed)	>316L	Flange EN 1092-1 (DIN 2527)	5.6 kg
		BQN	DN100	PN10/16	PFA (conductive)	>316L	Flange EN 1092-1 (DIN 2527)	5.6 kg
		B8K	DN25	PN25/40	ECTFE	>316L	Flange EN 1092-1 (DIN 2527)	1.4 kg
		B8L	DN25	PN25/40	PFA (Edlon™)	>316L	Flange EN 1092-1 (DIN 2527)	1.4 kg
		B8M	DN25	PN25/40	PFA (RubyRed)	>316L	Flange EN 1092-1 (DIN 2527)	1.4 kg
		B8N	DN25	PN25/40	PFA (conductive)	>316L	Flange EN 1092-1 (DIN 2527)	1.4 kg
		CGS	DN50	PN25/40	Enamel	>1.0487	Flange EN 1092-1 (DIN 2527)	3.2 kg
		CNS	DN80	PN25/40	Enamel	>1.0487	Flange EN 1092-1 (DIN 2527)	5.9 kg
		KEK	10 K 50		ECTFE	>316L	Flange JIS B2238	1.7 kg
		KEL	10 K 50		PFA (Edlon™)	>316L	Flange JIS B2238	1.7 kg
		KEM	10 K 50		PFA (RubyRed)	>316L	Flange JIS B2238	1.7 kg
		KEN	10 K 50		PFA (conductive)	>316L	Flange JIS B2238	1.7 kg
		YY9	Special version					

30			Probe Length; Type:			
			BK	..... mm	ECTFE	0.9 kg/m
			BL	..... mm	PFA (Edlon™)	0.9 kg/m
			BM	..... mm	PFA (RubyRed)	0.9 kg/m
			BN	..... mm	PFA (conductive)	0.9 kg/m
			BS	..... mm	Enamel	0.9 kg/m
			CK	..... inch	ECTFE	2.3 kg/100 in
			CL	..... inch	PFA (Edlon™)	2.3 kg/100 in

30	Probe Length; Type:		
CM	..... inch	PFA (RubyRed)	2.3 kg/100 in
CN	..... inch	PFA (conductive)	2.3 kg/100 in
CS	..... inch	Enamel	2.3 kg/100 in
DK	Length: type II**	ECTFE	
DL	Length: type II**	PFA (Edlon™)	
DM	Length: type II**	PFA (RubyRed)	
DN	Length: type II**	PFA (conductive)	
DS	Length: type II**	Enamel	
YY	Special version		

) For device replacement: When a Liquiphant **M FTL51C with length II is installed vertically, the switch point is at the same height as for a Liquiphant **II** FTL360, FTL365, FDL30, FDL35

40	Electronics; Output:	
A	FEL50A	PROFIBUS PA
1	FEL51	2-wire 19...253 V AC
2	FEL52	3-wire PNP 10...55 V DC
4	FEL54	relay DPDT 19...253 V AC, 19...55 V DC
5	FEL55	8/16 mA, 11...36 V DC
6	FEL56	NAMUR (L-H signal)
7	FEL57	2-wire PFM
8	FEL58	NAMUR + test button (H-L signal)
9	Special version	

50	Housing; Cable Entry:			
E4	F16 Polyester	NEMA4X;	thread NPT ½	
E5	F13/F17 Alu	NEMA4X;	thread NPT ¾	0.5 kg
E6	F15 316L	NEMA4X;	thread NPT ½	0.1 kg
E7	T13 Alu	coated IP66;	thread NPT ¾	0.9 kg
	separate connection compartment			
F4	F16 Polyester	IP66;	thread G ½	
F5	F13/F17 Alu	IP66;	thread G ½	0.5 kg
F6	F15 316L	IP66;	thread G ½	0.1 kg
F7	T13 Alu	coated IP66;	thread G ½	0.9 kg
	separate connection compartment			
G4	F16 Polyester	IP66;	gland M20	
G5	F13/F17 Alu	IP66;	gland M20 (EEx d > thread M20)	0.5 kg
G6	F15 316L	IP66;	gland M20	0.1 kg
G7	T13 Alu	coated IP66;	gland M20	0.9 kg
	separate connection compartment		(EEx d > thread M20)	
N4	F16 Polyester	IP66;	plug M12	
N5	F13/F17 Alu	IP66;	plug M12	
N6	F15 316L	IP66;	plug M12	
Y9	Special version			

60	Additional Option 1:
A	Not selected
S	GL/ABS marine certificate (max. 1600 mm)
Y	Special version

70	Additional Option 2:
A	Not selected
B	Temperature spacer
C	2nd line of defence > pressure tight feed through
Y	Special version

FTL51C -	Complete product designation

Note!
The basic weight includes the compact sensor, thread adapter G ¾, electronic insert, polyester housing

Accessories

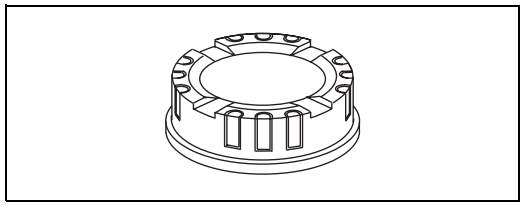
Cover with sight glass

for polyester housing

Material: PA 12

Weight: 0.04 kg

Order number: 943461-0001



L00-FTL5xxxx-03-05-xx-xx-016

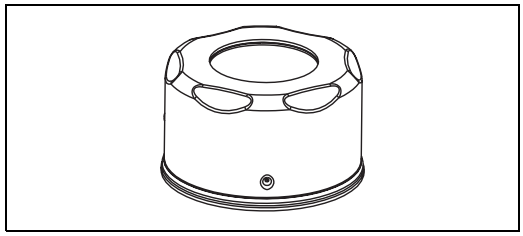
Cover with clear screen

for steel housing

Material: AISI 316L

Weight: 0.16 kg

– With glass screen
  Order number: 943301-1000
– With PC screen
  Order number: 52001403
  (Not for CSA, General Purpose)



L00-FTL5xxxx-03-05-xx-xx-017

Supplementary Documentation

Operating Instruction

Electronic insert FEL50A for Liquiphant M/S
PROFIBUS PA
BA141F/00/en

Liquiphant M FTL51C
KA162F/00/a6

Liquiphant M FTL51C-########7##
KA165F/00/a6

Technical Information

Nivotester FTL370/372, switching units in Racksyst design
for Liquiphant M with electronic insert FEL57
TI198F/00/en

Nivotester FTL320, switching unit in Minipac design
for Liquiphant M with electronic insert FEL57
TI203F/00/en

General instructions for electromagnetic compatibility
(Test procedure, installation recommendation)
TI241F/00/en

Isolating amplifier FXN421/422, switching units for top-hat rail mounting
for Liquiphant M with electronic insert FEL56, FEL58
TI332F/00/en

Liquiphant M FTL51C, wetted parts with highly corrosion-resistant coating
made of ECTFE, PFA or enamel
TI347F/00/en

Isolating amplifier FTL325P, 1 or 3-channel switching units for top-hat rail mounting
for Liquiphant M/S with electronic insert FEL57
TI350F/00/en

Isolating amplifier FTL325N, 1 or 3-channel switching units for top-hat rail mounting
for Liquiphant M/S with electronic insert FEL56, FEL58
TI353F/00/en

Liquiphant S FTL70/71, for medium temperatures up to 280 °C
TI354F/00/en

Isolating amplifier FTL375P, 1 to 3-channel switching units for top-hat rail mounting
for Liquiphant M/S with electronic insert FEL57
TI360F/00/en

Isolating amplifier FTL375N, 1 to 3-channel switching units for top-hat rail mounting
for Liquiphant M/S with electronic insert FEL56, FEL58
TI361F/00/en

Funktionale Sicherheit (SIL)

Liquiphant M/S + Nivotester FTL325P
SD111F/00/en

Liquiphant M/S + Nivotester FTL375P
SD113F/00/en

Liquiphant M/S with FEL58 + Nivotester FTL325N (MAX)
SD161F/00/en

Liquiphant M/S with electronic insert FEL54 (MAX)
SD162F/00/en

Liquiphant M/S with electronic insert FEL52 (MAX)
SD163F/00/en

Liquiphant M/S with electronic insert FEL51 (MAX)
SD164F/00/en

Liquiphant M/S with electronic insert FEL55 (MAX)
SD167F/00/en

Liquiphant M/S with FEL56 + Nivotester FTL325N (MAX)
SD168F/00/en

Liquiphant M/S with FEL58 + Nivotester FTL325N (MIN)
SD170F/00/en

Liquiphant M/S with electronic insert FEL51 (MIN)
SD185F/00/en

Liquiphant M/S with electronic insert FEL52 (MIN)
SD186F/00/en

Liquiphant M/S with electronic insert FEL54 (MIN)
SD187F/00/en

Liquiphant M/S with FEL56 + Nivotester FTL325N (MIN)
SD188F/00/en

Safety Instructions (ATEX)

CE ⟨Ex⟩ II 1/2 G, EEx d IIC/B
(KEMA 99 ATEX 1157)
XA031F/00/a3

CE ⟨Ex⟩ II 1/2 G, EEx ia/ib IIC/B
(KEMA 99 ATEX 0523)
XA063F/00/a3

CE ⟨Ex⟩ II 1 G, EEx ia IIC/B
(KEMA 99 ATEX 5172 X)
XA064F/00/a3

CE ⟨Ex⟩ II 1/2 G, EEx de IIC/B
(KEMA 00 ATEX 2035)
XA108F/00/a3

CE ⟨Ex⟩ II 3 G, EEx nA/nC II
(EG 01 007-a)
XA182F/00/a3

System Information

Liquiphant M, System Information
SI040F/00/en

Note!
The specified certificates and approvals are available on www.endress.com.

International Head Quarter

Endress+Hauser
GmbH+Co. KG
Instruments International
Colmarer Str. 6
79576 Weil am Rhein
Deutschland

Tel. +49 76 21 9 75 02
Fax +49 76 21 9 75 34 5
www.endress.com
info@ii.endress.com

Endress+Hauser

People for Process Automation

TI347F/00/en/03.06
SL/FM+SGML6.0 ProMoDo