



Level



Pressure



Flow



Temperature

Liquid
Analysis

Registration

Systems
Components

Services



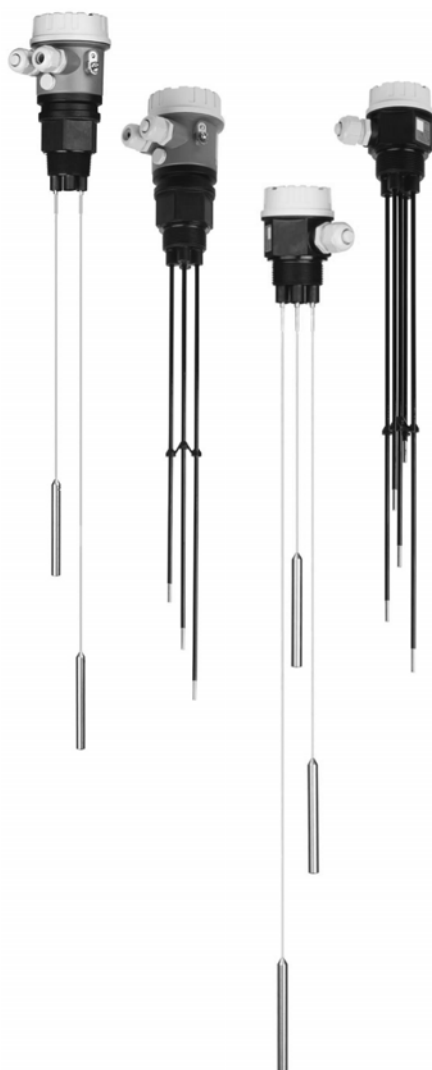
Solutions

Technical Information

Liquipoint T FTW31, FTW32

Conductive

Point level switch for multiple point detection in conductive liquids



Applications

The Liquipoint T point level switch is used in conductive liquids (as of 10 $\mu\text{S}/\text{cm}$) for conductive point level detection.

Depending on the number of measuring points (up to 5 rods or ropes), measuring tasks such as overflow protection, dry running protection, two-point control of pumps or multiple point detection can be implemented with only one process connection.

Your benefits

- Detect up to five point levels with one probe
- Two-point control and additional MAX- and MIN-detection
- Option between rod or rope version for optimum adaptation to the application
- Flexible instrumentation:
 - with built-in electronic insert, either transistor (PNP) or relay output
 - for connection to a separate transmitter power supply unit
- No adjustment required; standard setting for the most common conductive liquids
- No moving parts in the tank:
 - long service life
 - reliable operation with no wear or blockages
- WHG approval
- Simple adaptation to different conductivities

Table of contents

Function and system design	3
Measuring principle	3
Measuring system	3
Input	5
Measured variable	5
Measuring range (application)	5
Input signal	5
Output	5
Electronic insert FEW52 (DC-PNP)	5
Electronic insert FEW54 (relay)	6
Electronic insert FEW58 (NAMUR)	8
Cable monitoring	8
Power supply	9
Electrical connection (wiring diagrams)	9
Cable entry	13
Cable specifications	13
Accuracy with built-in electronic insert	14
Reference operating conditions	14
Measuring error	14
Repeatability	14
Hysteresis	14
Switch-on delay	14
Influence of ambient temperature	14
Installation	14
Installation instructions	14
Environment	17
Ambient temperature range	17
Storage temperature	17
Climate class	17
Degree of protection	17
Shock resistance	17
Vibration resistance (at min. rod length)	17
Electromagnetic compatibility	17
Process	17
Environment	17
Conductivity	17
Limiting medium pressure range	17
Mechanical construction	18
Design, dimensions	18
Weight	20
Material	20
Fitted electrodes	20
Human interface	22
Operating elements	22
Display elements	22

Certificates and approvals	23
CE mark	23
Overfill protection	23
Other standards and guidelines	23
Ex-approvals	23
Type of protection	23
Ordering information	24
Liquipoint FTW31	24
Liquipoint FTW32	25
Accessories	26
Liquipoint T	26
Documentation	26
Operating Instructions	26
Certificates	26

Function and system design

Measuring principle

An alternating voltage exists between the rod probes in an empty tank. As soon as the conductive liquid in the tank creates a connection between the ground probe rod and, for example, the MAX probe rod, a measurable current flows and the Liquipoint T switches. With point level detection, the Liquipoint T switches back as soon as the liquid clears the MAX probe.

With two-point control, the Liquipoint T does not switch back until the MAX and MIN probe is cleared. Using alternating voltage prevents corrosion of the probe rods and electrolytic destruction of the product. The material used for the tank walls is not important for measurement because the system is designed as a closed potential-free circuit between the probe rods and the electronics.

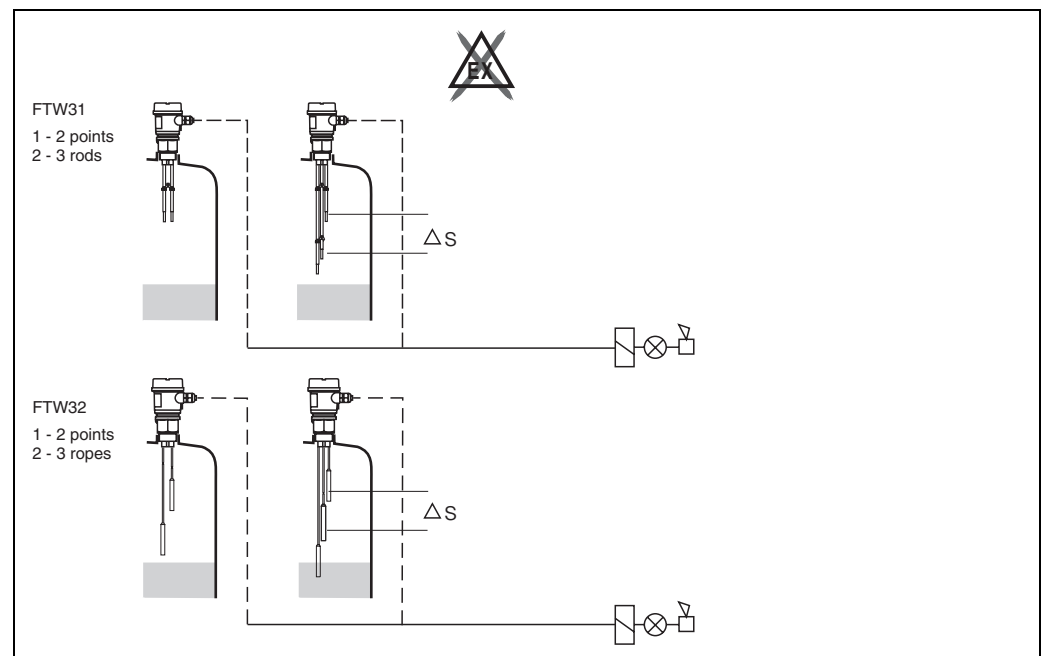
There is absolutely no danger if the probe rods are touched during operation.

Measuring system

Probes with integrated electronic insert (compact instrumentation version)

The measuring system consists of:

- FTW31 with rods or FTW32 with ropes and an electronic insert
- Control units, switches or signal transmitters, e.g. process control systems PLC, relays, etc.



L00-FTW3xxxx-14-05-xx-en-001

Independent of the tank material



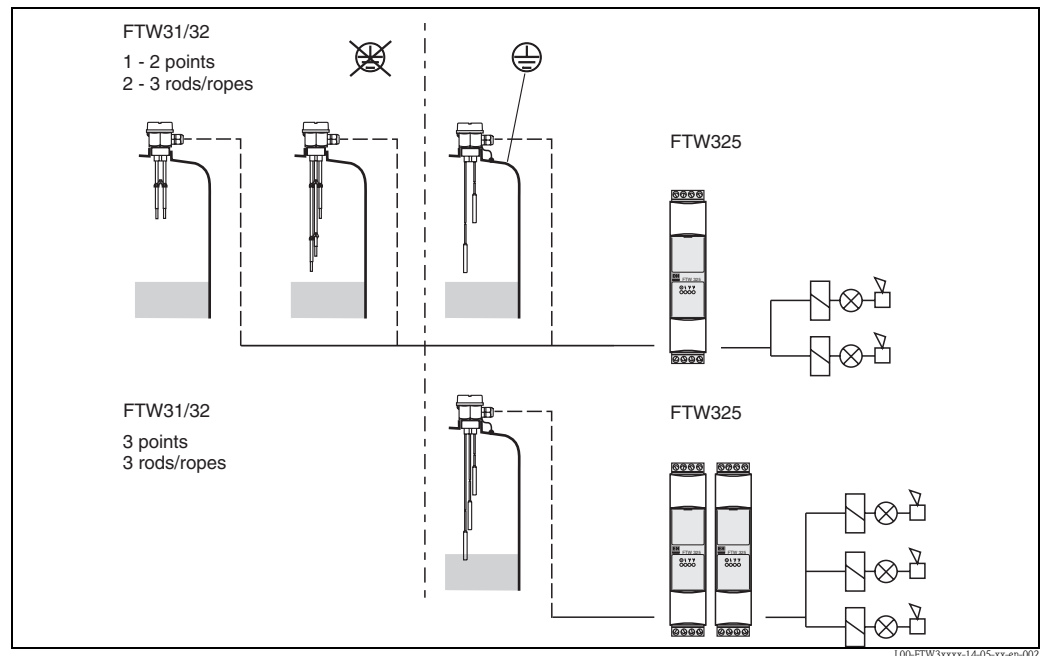
Note!

The compact instrumentation version with three probes or rods is always used in Δs mode.

Probes without integrated electronic insert (separate instrumentation version) for one or two point detection respectively

The measuring system consists of:

- FTW31, FTW32 with two/three rods or ropes
- Nivotester FTW325
- Control units, switches or signal transmitters, e.g. process control systems PLC, relays, etc.

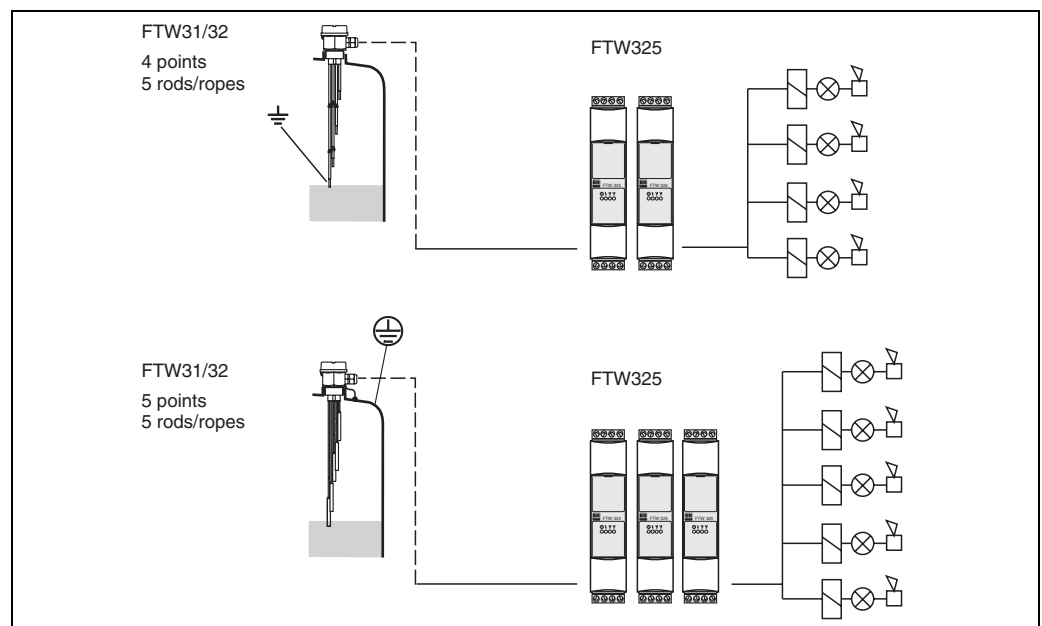


Switch points dependent on the tank material

Probes without integrated electronic insert for multiple point detection

The measuring system consists of:

- FTW31, FTW32 with five rods or ropes
- Two Nivotester FTW325
- Control units, switches or signal transmitters, e.g. process control systems PLC, relays, etc.



Switch points dependent on the tank material

Input

Measured variable	Resistance change between two conductors caused by the presence or absence of a conductive liquid.
Measuring range (application)	The measuring range is dependent on the mounting location of the probes. Rod probes can have a max. length of 4.000 mm and rope probes of 15.000 mm.
Input signal	Probes covered => a measurable current is flowing between the probes. Probes uncovered => there is no measurable current flowing between the probes.

Output

Electronic insert FEW52 (DC-PNP)

Output signal

Three-wire direct current version

Preferred in conjunction with programmable logic controllers (PLC).
Positive signal at the switch output of the electronics (PNP).
The output is blocked after the point level is reached.

Fail-safe mode	Switch point	Output signal	rd
MAX 		$\overset{*1}{L+} \xrightarrow{I_L} 3$	$\overset{*3}{\bullet}$
		$\overset{*2}{1} \xrightarrow{< 100 \mu A} 3$	$\overset{*4}{\odot}$
MIN 		$\overset{+}{1} \xrightarrow{I_L} 3$	$\bullet$
		$\overset{+}{1} \xrightarrow{< 100 \mu A} 3$	$\odot$

L00-FTW3xxxx-15-05-xx-en-001

*1 = load current (connected); *2 residual current (disconnected); *3 LED not lit; *4 LED lit
See also output signal on page → 8.

If the probe is covered and the red LED flashes continuously, the sensitivity was set to high. Set a smaller sensitivity to ensure a safe switch point even if the conductivity of the medium varies slightly.

Fail-safe mode

Selecting the correct fail-safe mode ensures that the output always runs in quiescent current fail-safe.

- **MAX fail-safe:** the output voltage is 0 V if the switch point is exceeded (probe covered), a fault occurs or the power supply fails.
- **MIN fail-safe:** the output voltage is 0 V if the switch point is undershot (probe uncovered), a fault occurs or the power supply fails.

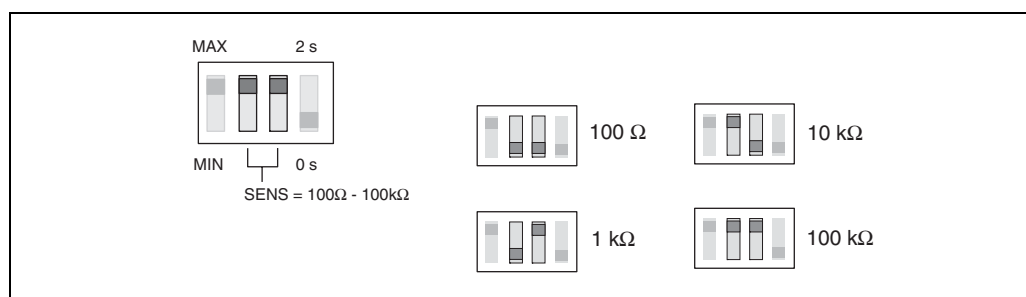
Switching delay

A switching delay of 2.0 s can be activated or deactivated via a DIL switch.
If the switching delay is set to 0 s, the device switches after approx. 0.3 s.

Sensitivity

The device operates in one of four sensitivity levels (100 Ω ; 1 k Ω ; 10 k Ω ; 100 k Ω). The sensitivity level can be set with two DIL switches (SENS).

Setting on delivery: 100 k Ω (highest sensitivity)



L00-FTW3xxxx-15-05-xx-xx-001

Signal on alarm

In the event of a power failure or a damaged probe: < 100 μ A

Load

The load is switched via a transistor (PNP).
Cycled overload and short-circuit protection,
continuous $\leq$ 200 mA (short-circuit proof).
Residual voltage at transistor at $I_{\max} < 2.9$ V

Electronic insert FEW54 (relay)

Output signal

AC/DC connection with relay output

When connecting a device with high inductance, a spark barrier must be fitted to protect the relay contact. A fine-wire fuse (load-dependent) protects the relay contact in the event of a short-circuit. Both relay contacts switch simultaneously.

Fail-safe mode	Switch point	Output signal	rd
MAX 		 3 4 5 6 7 8	* ³
		 3 4 5 6 7 8	* ⁴
MIN 		 3 4 5 6 7 8	
		 3 4 5 6 7 8	

L00-FTW3xxxx-15-05-xx-en-002

*1 = relay energized; *2 relay de-energized; *3 LED not lit; *4 LED lit
See also Electrical connection on page 9.

If the probe is covered and the red LED flashes continuously, the sensitivity was set to high. Set a smaller sensitivity to ensures a safe switch point even if the conductivity of the medium varies slightly.

Fail-safe mode

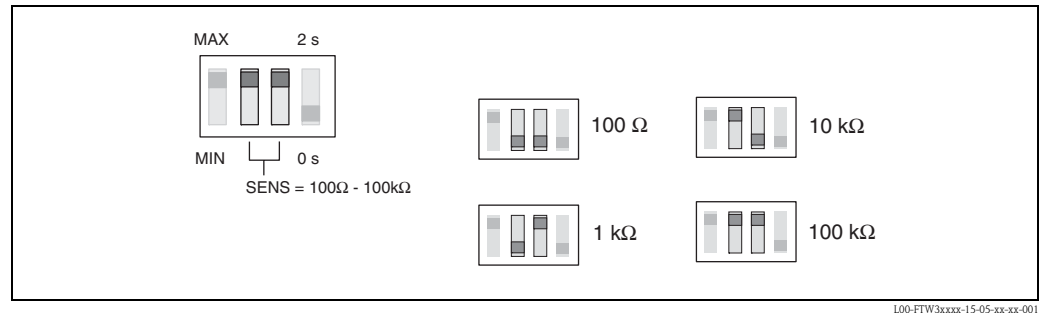
Selecting the correct fail-safe mode ensures that the relay always runs in quiescent current fail-safe.

- MAX fail-safe: the relay de-energizes when the switch point is exceeded (probe covered), a fault occurs or the power supply fails.
- MAX fail-safe: the relay de-energizes when the switch point is undershot (probe uncovered), a fault occurs or the power supply fails.

Sensitivity

The device operates in one of four sensitivity levels (100 Ω ; 1 k Ω ; 10 k Ω ; 100 k Ω). The sensitivity level can be set with two DIL switches (SENS).

Setting on delivery: 100 k Ω (highest sensitivity)



L00-FTW3xxxx-15-05-xx-xx-001

Switching delay

A switching delay of 2.0 s can be activated or deactivated via a DIL switch.

If the switching delay is set to 0 s, the device switches after approx. 0.3 s.

Signal on alarm

Output signal in the event of a power failure or a damaged probe: relay de-energized.

Load

Loads are switched via 2 potential-free change-over contacts.

I~ max. 4 A, U~ max. 253 V;

P~ max. 1000 VA, $\cos \varphi = 1$, P~ max. 700 VA, $\cos \varphi > 0.7$;

I– max. 4 A to 30 V, I– max. 0.2 A to 150 V.

When connecting a functional extra-low voltage circuit with double insulation in accordance with IEC 1010: the sum of the relay output and power supply voltages is max. 300 V.

Galvanic isolation

All input channels, output channels and relay contacts are galvanically isolated from each other.

**Electronic insert FEW58
(NAMUR)****Output signal**

For connecting to isolating amplifiers acc. to NAMUR (IEC 60947-5-6) e.g. Nivotester FTL325N from Endress+Hauser.

Output signal jump from high to low current on point level (H-L edge).

☀ = lit
 ☀ = flashes
 ● = unlit

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

Fail-safe mode	Level	Output signal	LEDs
MAX		+ 2.2 ... 6.5 mA 2 → 1	☀ ☀
		+ 0.4 ... 1.0 mA 2 → 1	☀ ●
MIN		+ 2.2 ... 6.5 mA 2 → 1	☀ ☀
		+ 0.4 ... 1.0 mA 2 → 1	☀ ●

L00-FTW3xxxx-04-05-xx-xx-004

Fail-safe mode

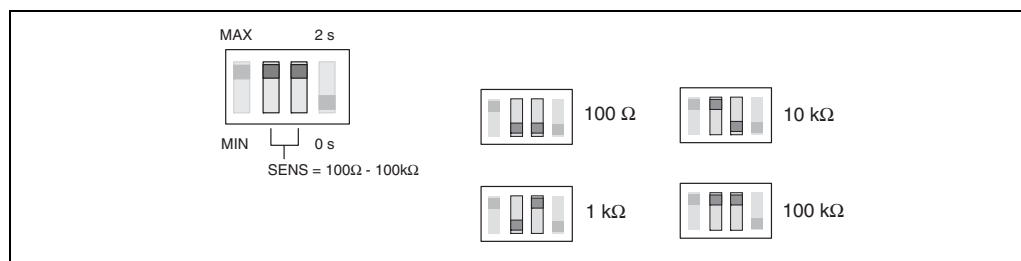
Selecting the correct fail-safe mode ensures that the relay always runs in quiescent current fail-safe.

- MAX fail-safe: the output signal is < 1.0 mA when the switch point is exceeded (probe covered), a fault occurs or the power supply fails.
- MIN fail-safe: the output signal is < 1.0 mA when the switch point is undershot (probe uncovered), a fault occurs or the power supply fails.

Sensitivity

The device operates in one of four sensitivity levels (100 Ω; 1 kΩ; 10 kΩ; 100 kΩ). The sensitivity level can be set with two DIL switches (SENS).

Setting on delivery: 100 kΩ (highest sensitivity)



L00-FTW3xxxx-15-05-xx-xx-001

Switching delay

A switching delay of 2.0 s can be activated or deactivated via a DIL switch.

If the switching delay is set to 0 s, the device switches after approx. 0.3 s.

Load

Refer to the "Technical Data" of the connected isolating amplifier acc. to NAMUR (IEC 60947-5-6)

Cable monitoring

For probes without an electronic insert, an additional printed circuit board must be installed in the housing, which enables cable monitoring. It is always switched or connected between rod/rope 1 and 2.

Note!

When using switching units (transmitters) that do not support cable monitoring, these must be removed.

Power supply

Electrical connection (wiring diagrams)

Compact instrumentation with FEW52

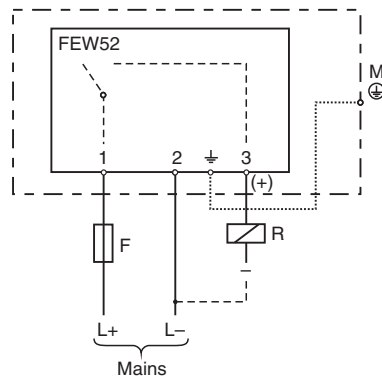
Transistor circuit for load

The load connected to terminal 3 is switched by a transistor, contactless and therefore without bouncing. In normal switching status, terminal 3 has a positive signal.

The transistor is blocked in the event of a level alarm or a power failure.

Protection against voltage peaks

When connecting a device with high inductance, always connect a voltage limiter.



L00-FTW3xxxx-04-05-xx-en-001

Connecting the FEW52 electronic insert.

- F: Fine-wire fuse 500 mA, semi-time lag
- M: Ground connection to protective earth

Supply voltage (FEW52)

- Supply voltage: $U = 10.8 \text{ V to } 45 \text{ V}$
- Load connection: open collector; PNP
- Switching voltage: max. 45 V
- Connected load, continuous: max. 200 mA
- Protected against reverse polarity

Power consumption

- $P < 1.1 \text{ W}$

Current consumption

- $I < 25 \text{ mA}$ (without load)

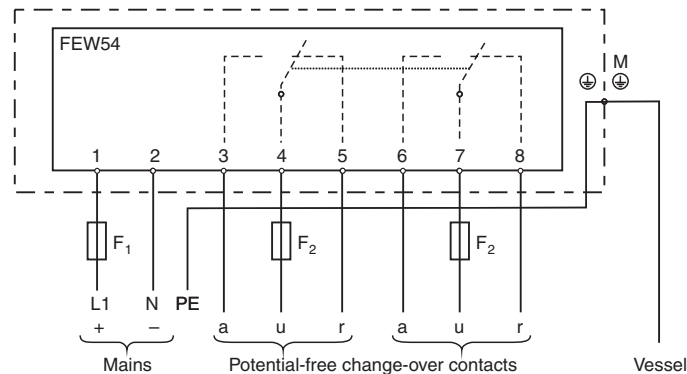
Compact instrumentation with FEW54

Relay contact circuit for load

The connected load is switched via potential-free relay contacts (change-over contact). In the event of a level alarm or a power failure, the relay contacts break the connections between terminals 3 and 4 and terminals 6 and 7. The relays always switch simultaneously.

Protection against voltage peaks and short-circuits

When connecting a device with high inductance, fit a spark barrier to protect the relay contact. A fine-wire fuse (load-dependent) can protect the relay contact in the event of a short-circuit.



L00-FTW3xxxx-04-05-xx-en-002

Connecting the FEW54 electronic insert.

- F₁: Fine-wire fuse 500 mA, semi-time lag
- F₂: Fine-wire fuse to protect the relay contact, load-dependent
- M: Ground connection to protective earth (PE)

Supply voltage (FEW54)

- Supply voltage: U_≐ 20 V to 55 V DC or U_~ 20 V to 253 V AC, 50/60 Hz
- Peak inrush current: max. 2 A, max. 400 μs
- Output: two potential-free change-over contacts
- Contact load capacity: U_~ max. 253 V, I_~ max. 4 A, U_≐ 30 V/4 A; 150 V/ 0.2 A

Power consumption

- P < 2.0 W

Current consumption

- I < 60 mA

Compact instrumentation with FEW58

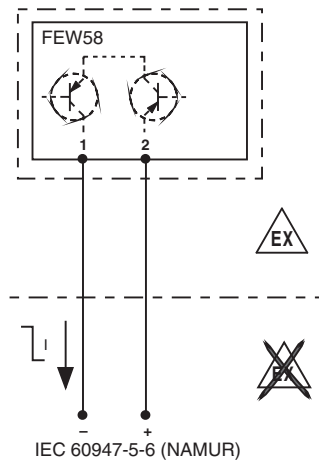
To be used with a separate switching unit acc. to IEC 60947-5-6 (NAMUR) e.g. Nivotester FTL325N from Endress+Hauser;

Output signal jump from high to low current on point level (H-L edge).

Signal transmission on a two-wire line:

H-L-edge 2.2 to 6.5 mA / 0.4 to 1.0 mA

When using a multiplex the cycle time must be set to a minimum of 2 s.



Connecting the FEW58 electronic insert.

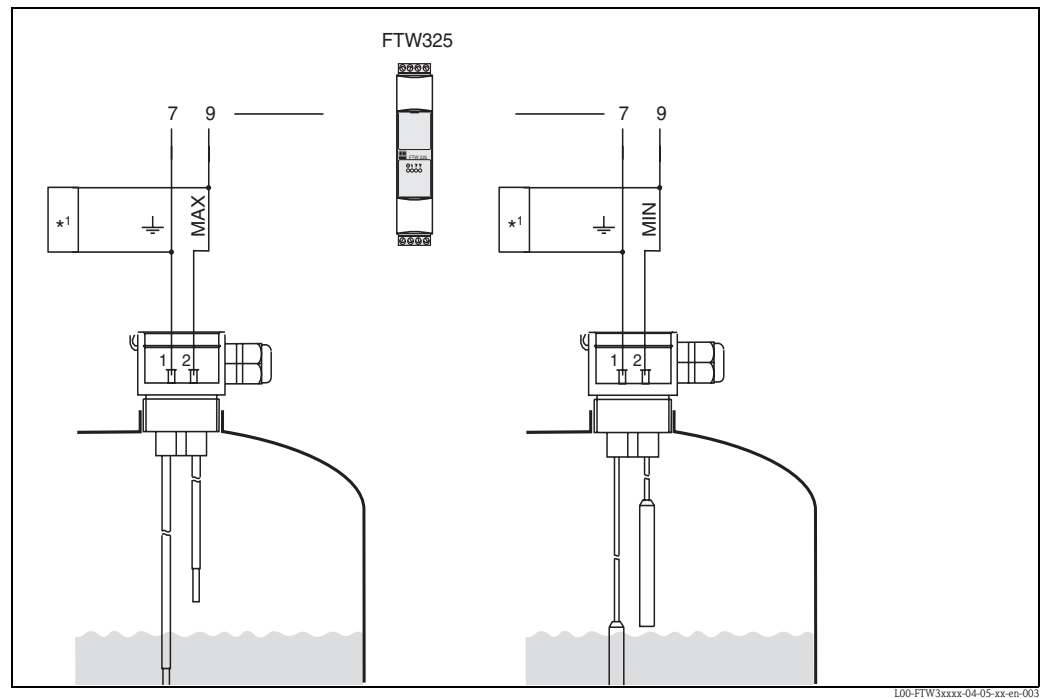
Supply voltage (FEW58)

Refer to the "Technical Data" of the connected isolating amplifier acc. to IEC 60947-5-6 (NAMUR) e.g. Nivotester FTL325N from Endress+Hauser.

Signal on alarm

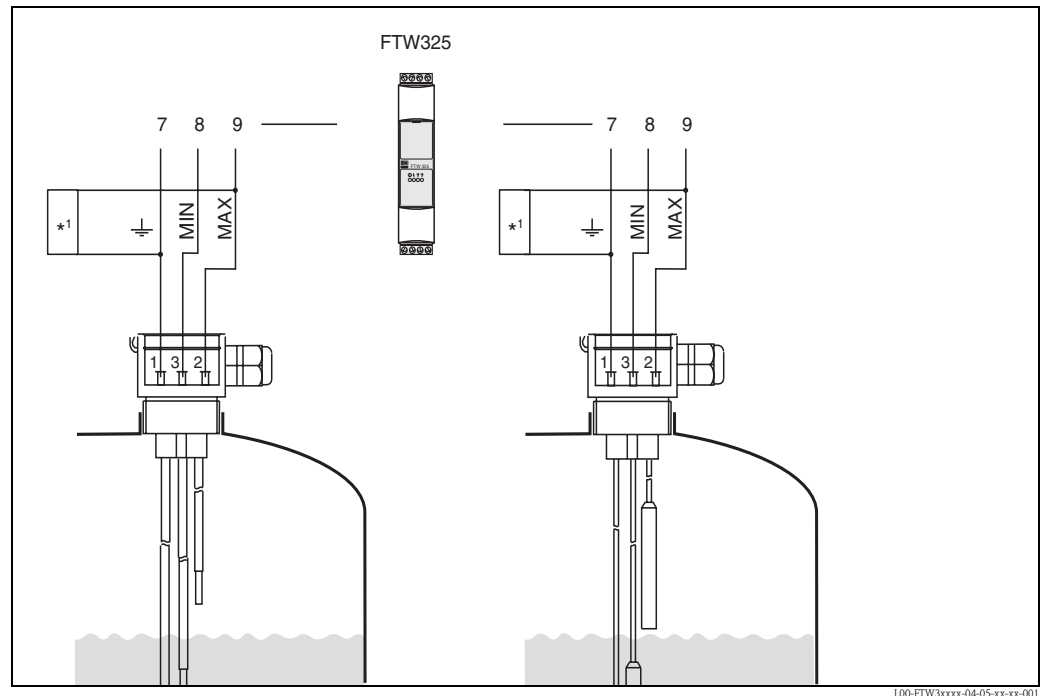
- Output signal with damaged sensor: < 1.0 mA

Separate instrumentation for two-rod or two-rope probes with cable monitoring



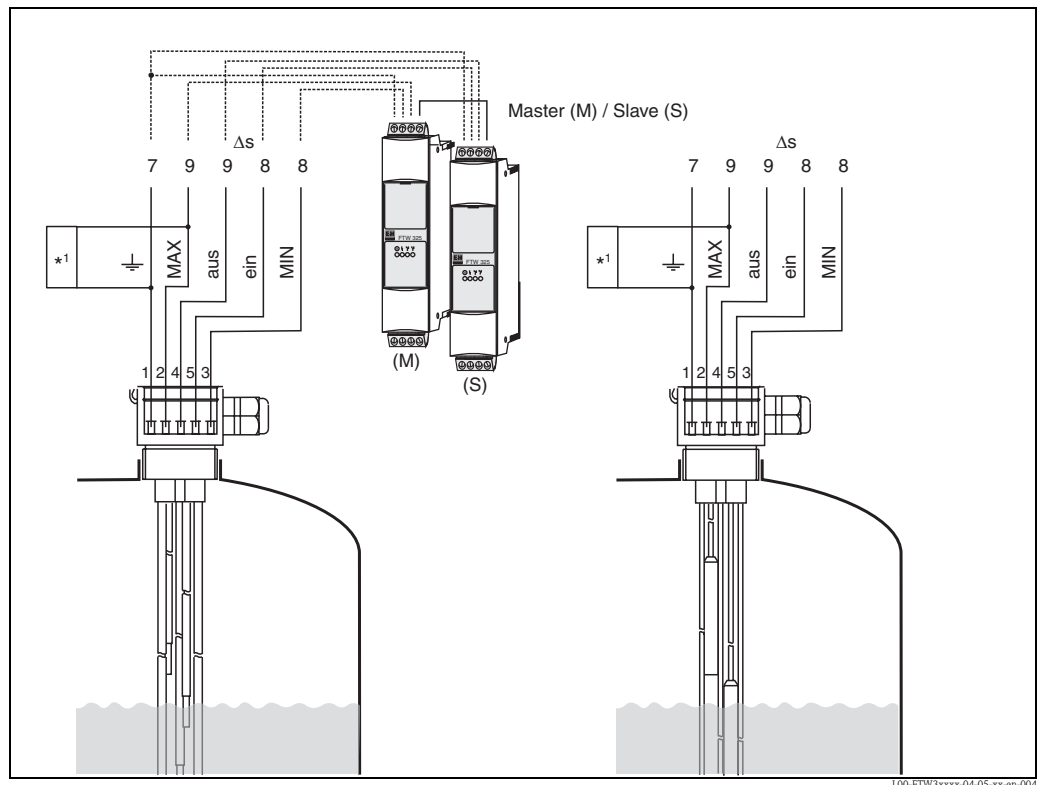
*1 Printed circuit board for cable monitoring (only required for probes with WHG certification.)
The power supply and evaluation are provided by switching units, e.g. Nivotester FTW325

Separate instrumentation for three-rod or three-rope probes with cable monitoring



*1 Printed circuit board for cable monitoring (only required for probes with WHG certification.)
The power supply and evaluation are provided by a switching unit, e.g. Nivotester FTW325

Separate instrumentation for five-rod or five-rope probes with cable monitoring



*1 Printed circuit board for cable monitoring (only required for probes with WHG certification.)
The power supply and evaluation are provided by a switching unit, e.g. Nivotester FTW325

Cable entry

M 20x1.5

- Degree of protection: IP66
- Quantity in F24 housing: 1 (separate instrument version)
- Quantity in F16 housing: 2 (compact instrument version)

NPT 1/2"

- Quantity in F24 housing: 1 (separate instrument version)
- Quantity in F16 housing: 2 (compact instrument version)
- Conductor cross-section (including wire end sleeve): 2.5 mm

Cable specifications

Use a commercially available cable (25 Ω per wire).

Accuracy with built-in electronic insert

Reference operating conditions

- Ambient temperature: 23 °C
- Medium temperature: 23 °C
- Medium viscosity: medium must release the probe again (drain off).
- Medium pressure p_e : 0 bar
- Probe installation: vertically from above

Measuring error

+/- 10 % at 100 Ω - 100 k Ω
 +/- 5 % at 1 k Ω - 10 k Ω

Repeatability

+/- 5 % at 100 Ω - 100 k Ω
 +/- 1 % at 1 k Ω - 10 k Ω

Hysteresis

- 10% for the MAX probe, in reference to the switch point. Δs function disabled.

Switch-on delay

< 3 s

Influence of ambient temperature

< 0.05 %/K

Installation

Installation instructions

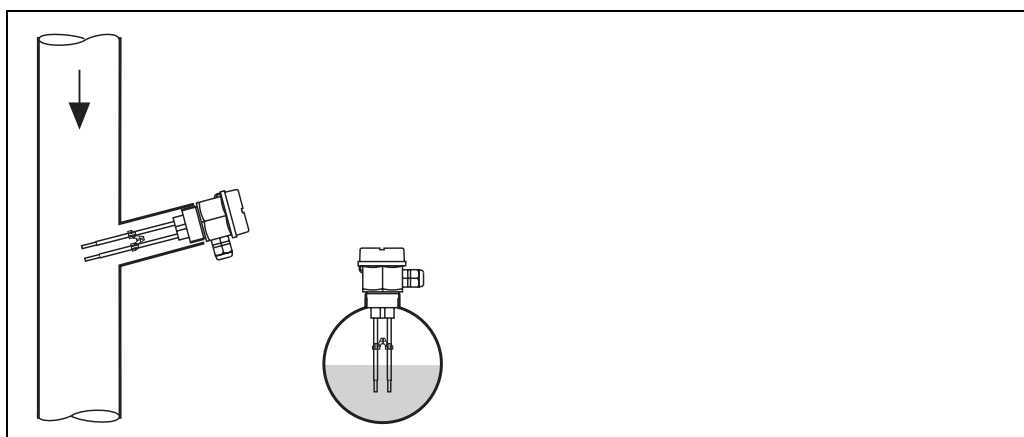
Mounting location

Tanks

The rod and rope probes are mounted predominantly in tanks.

Piping (partially filled)

Two-rod probes can be used in piping as, for example, dry running protection for pumps.

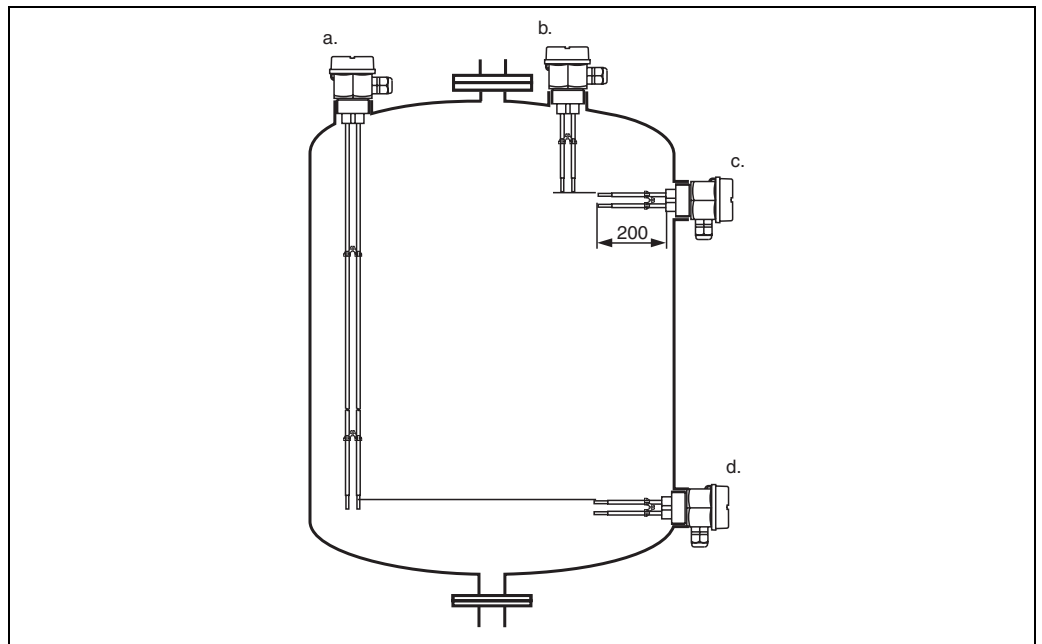


L00-FTW3xxxx-11-05-xx-xx-001

Orientation

Rod probes

Point level detection

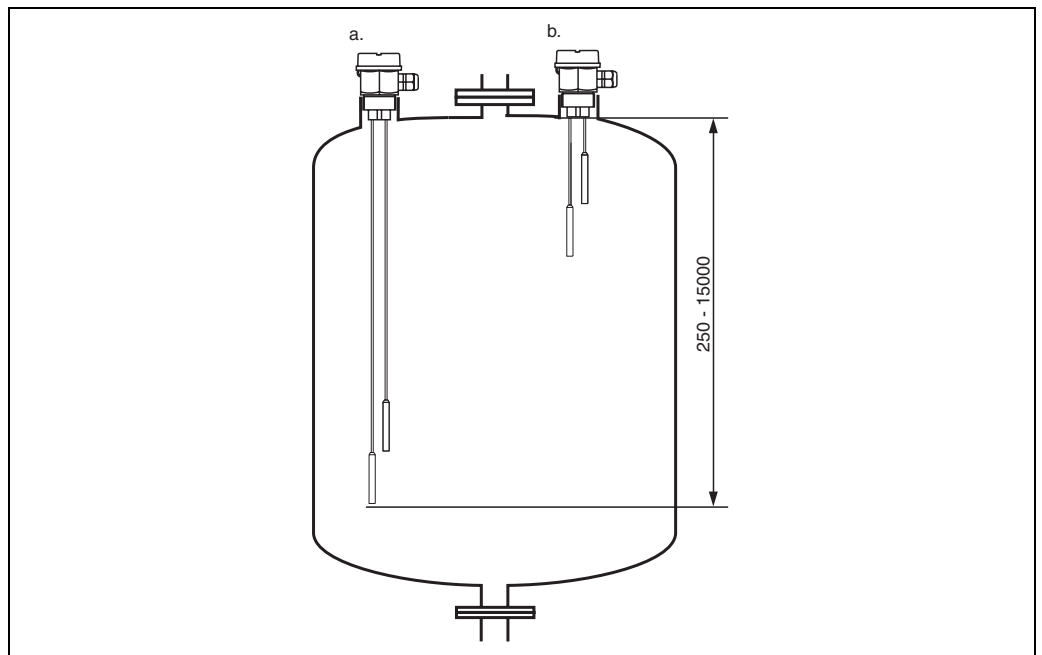


L00-FTW3xxxx-11-05-xx-xx-002

- a. Vertical mounting, MIN-detection; Probe length set to the point level required; (Rods must not come into contact with the tank!)
- b. Vertical mounting, MAX-detection; Probe length set to the point level required
- c. Lateral mounting, MAX-detection; Maximum probe length 200 mm (only applies to two-rod probes).
- d. Lateral mounting, MIN-detection; Maximum probe length 200 mm (only applies to two-rod probes).

Rope probes

Point level detection

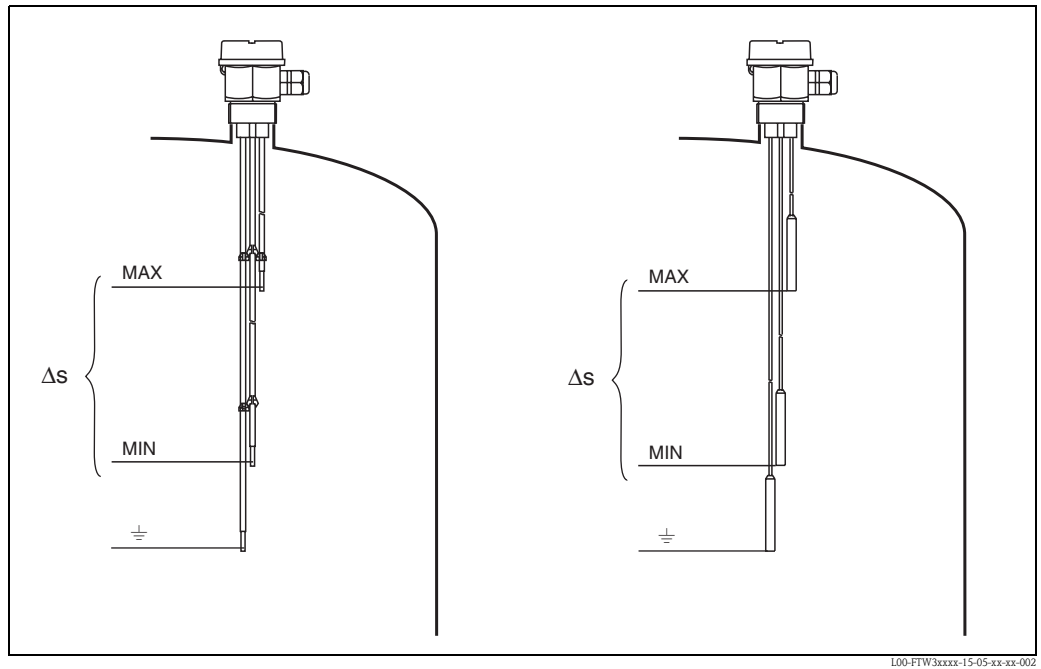


L00-FTW3xxxx-11-05-xx-xx-003

- a. Vertical mounting, MIN-detection; Rope length set to the point level required; (Rope ends must not come into contact with the tank!)
- b. Vertical mounting, MAX-detection; Rope length set to the point level required.

Example applications

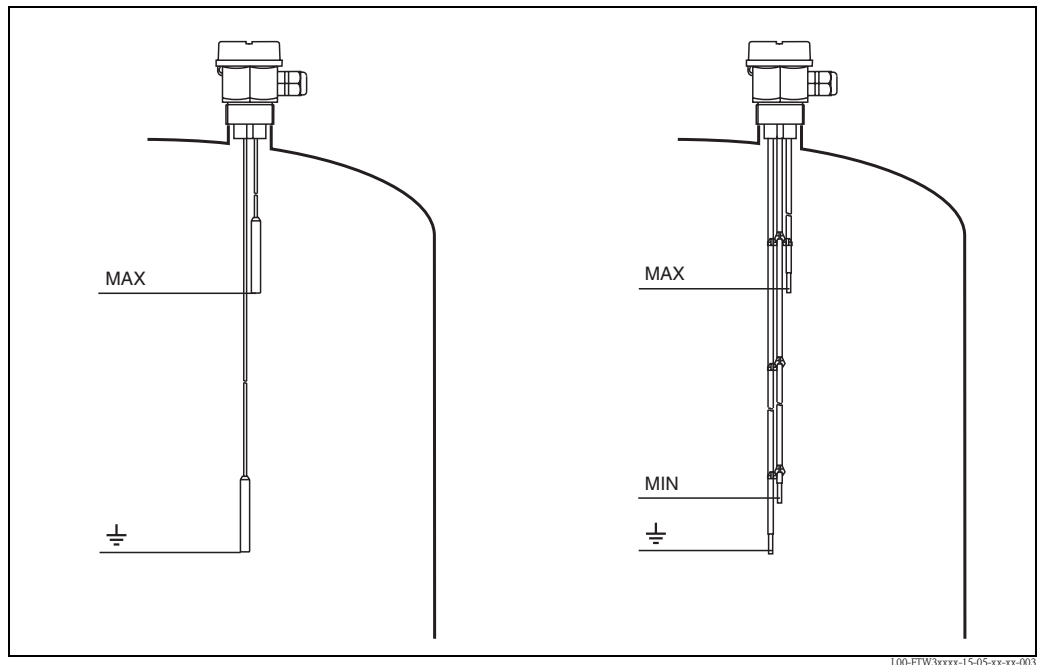
Point level detection: Two-point control (Δs)



L00-FTW3xxxx-15-05-xx-xx-002

Two-point control (Δs) e.g. pump control

Point level detection: MAX-detection or MAX- and MIN-detection



L00-FTW3xxxx-15-05-xx-xx-003

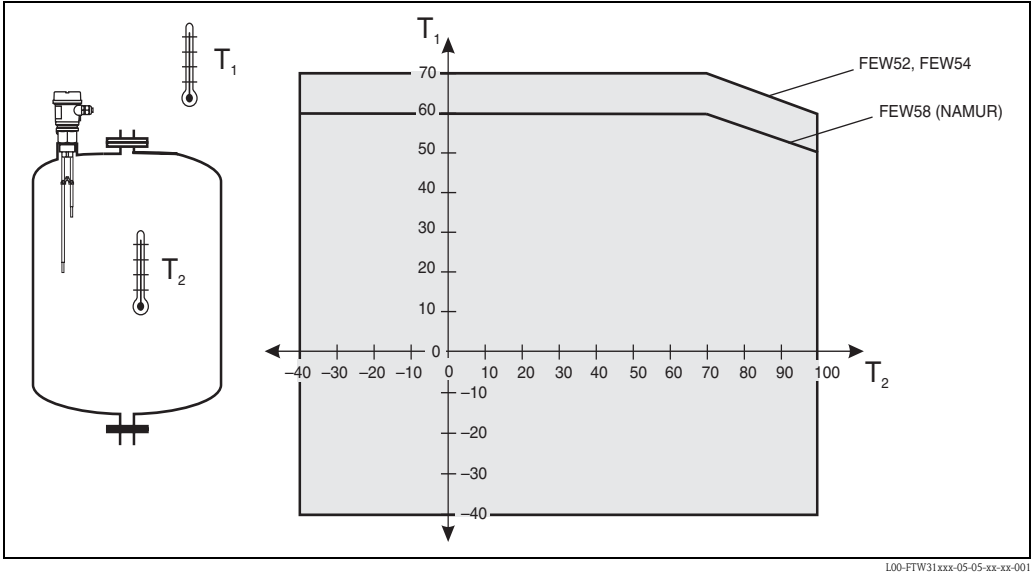
*Point level detection (MAX),
MAX- and MIN-detection for compact instrumentation version only possible with Δs .*

Environment

Ambient temperature range	Non-hazardous area
	–40 to 70 °C
	–40 to 60 °C (for FEW58 NAMUR)
Storage temperature	–40 to 80 °C
Climate class	Tropicalized as per DIN EEC 68, part 2-38
Degree of protection	IP66
Shock resistance	Practical test
Vibration resistance (at min. rod length)	DIN 60068-2-64 / IEC 68-2-64: 20 to 2000 Hz, 1 (m/s ²) ² /Hz
Electromagnetic compatibility	■ Interference Emission to EN 61326, Electrical Equipment Class B ■ Interference Immunity to EN 61326, Annex A (Industrial) ■ Use for separate instrumented probes a screened cable between the probe and the switching unit. For installation instructions for screened cables and general instructions for EMC inspection conditions of E+H devices, see also TI 241F.

Process

Environment	Permissible ambient temperature T_1 at the housing as a function of the measuring material temperature T_2 in the vessel:
-------------	---



L00-FTW31.xxx-05-xx-xx-001



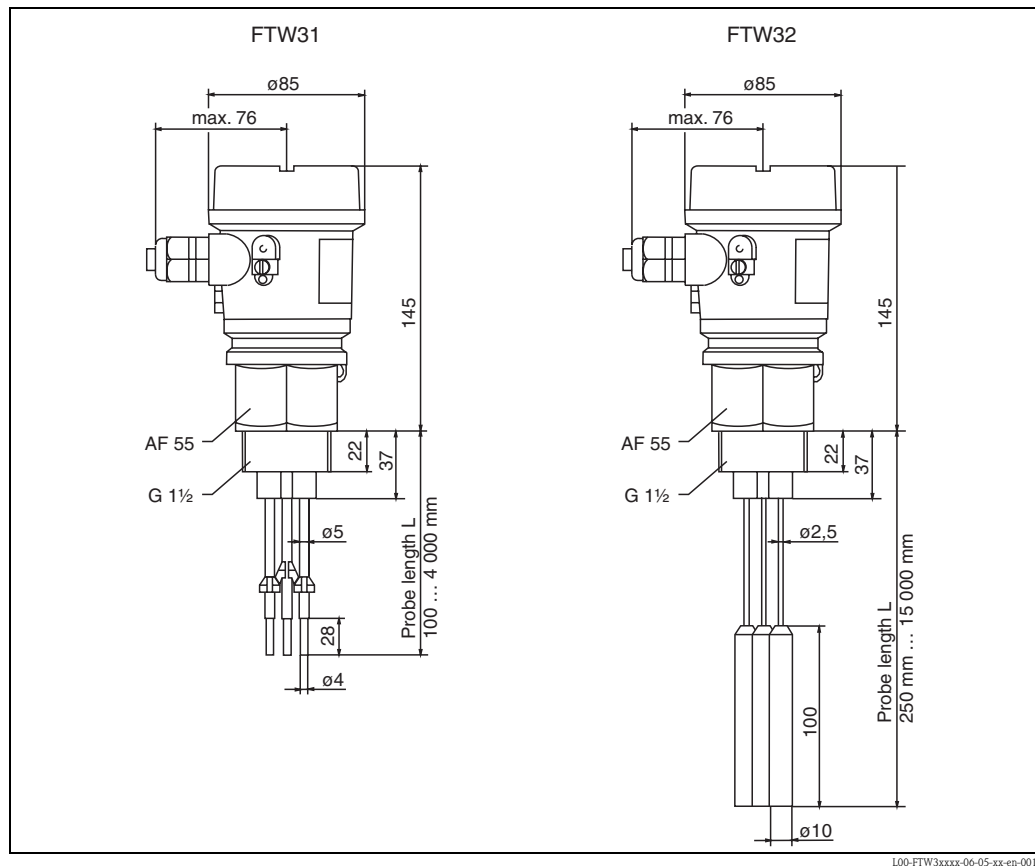
Note!
For separate instrumented devices (without FEW5x) there are no restrictions in the indicated temperature range.

Conductivity	$\geq 10 \mu\text{S}$
Limiting medium pressure range	–1 to 10 bar

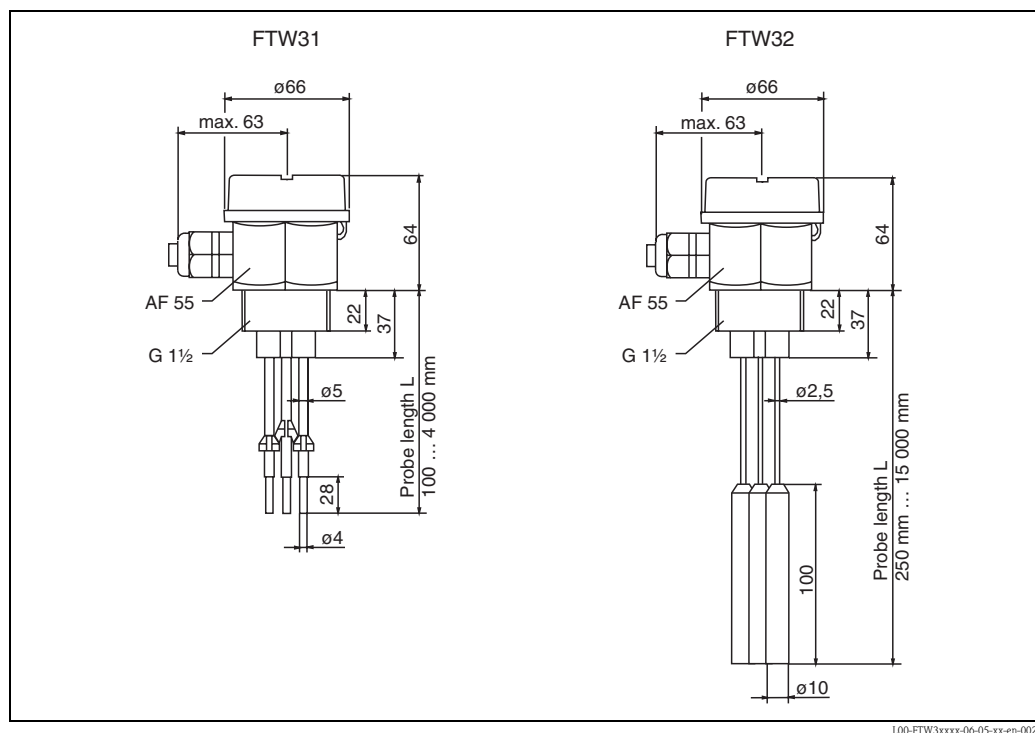
Mechanical construction

Design, dimensions

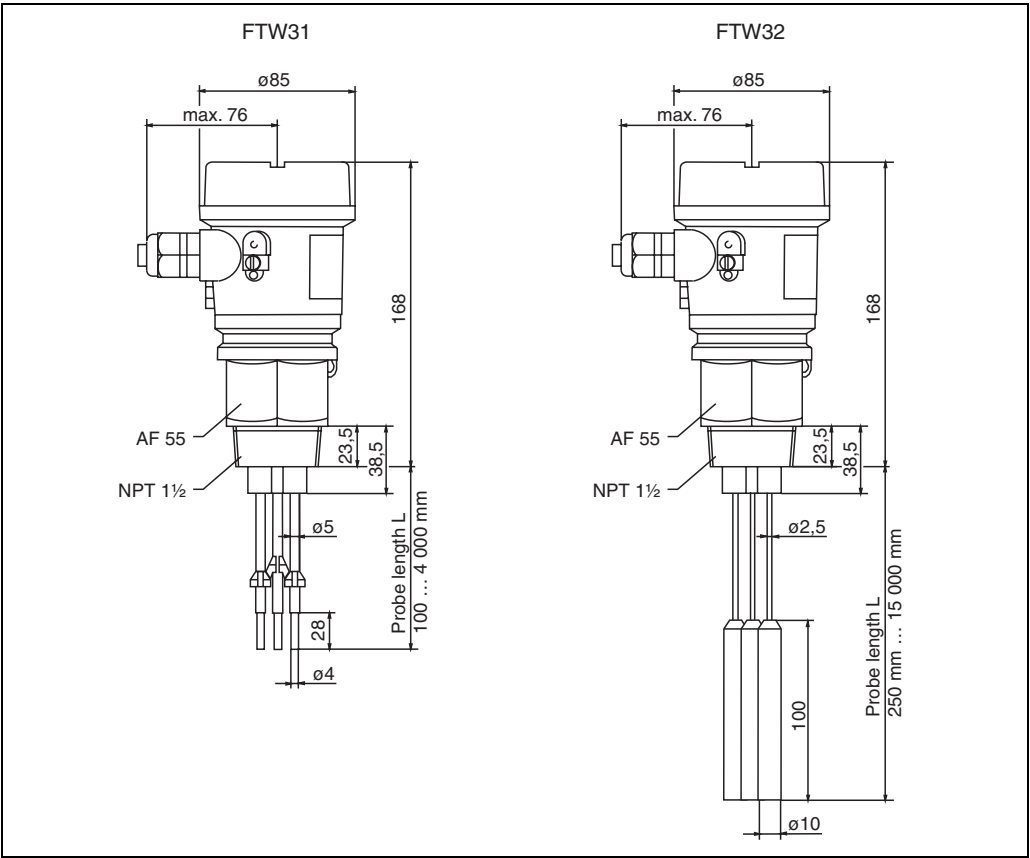
Rod and rope version with G 1 1/2" (compact instrumentation version with electronic insert)



Rod and rope version with G 1 1/2" (separate instrument version without electronic insert)

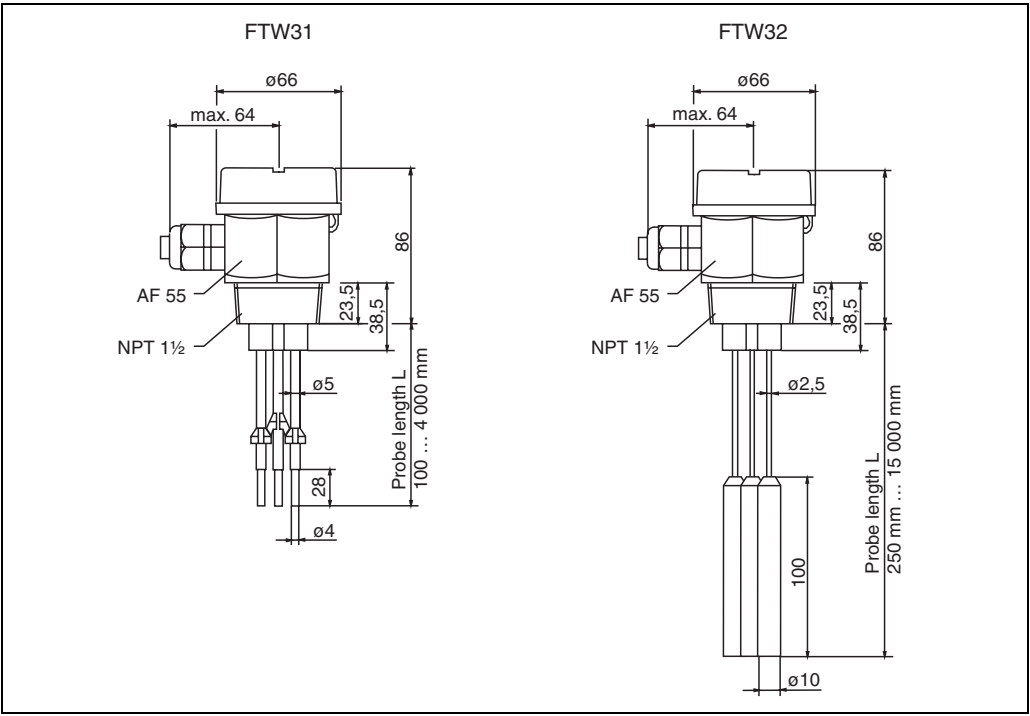


Rod and rope version with NPT 1 1/2" (compact instrumentation version with electronic insert)



L00-FTW3xxxx-06-05-xx-en-003

Rod and rope version with NPT 1 1/2" (separate instrument version without electronic insert)



L00-FTW3xxxx-06-05-xx-en-004

Weight**Separate instrumentation version***Rod, 1 m long*

FTW31 with 2, 3 or 5 rods (415 g; 530 g; 760 g)

Rope, 1 m long

FTW32 with 2, 3 or 5 ropes (390 g; 470 g; 640 g)

Compact instrumentation version*Rod, 1 m long*

FTW31 with 2 or 3 rods (600 g; 720 g)

Rope, 1 m long

FTW32 with 2 or 3 ropes (710 g; 800 g)

Material**Wetted**

Seal between probe rod/probe rope and process connection: EPDM

Spacer: PP

Flat seal for process connection: elastomer fiber, (asbestos-free)

Process connections:

- G 1 1/2: PPS
- NPT 1 1/2: PPS

Probe rods

- Rod: 316L (1.4404) or carbon fiber
- Insulation: PP

Probe ropes

- Rope: 316Ti (1.4571)
- Insulation: FEP
- Weight: 316L (1.4435)

Not wetted

Housing

- Plastic housing F24 (separate instrumentation)
 - Housing: PPS
 - Cover: PBT
- Polyester housing F16: PBT-FR with PBT-FR cover or with PA12 transparent cover,
 - Cover seal: EPDM
 - Adapter: PBT-FR
 - Nameplate, glued: polyester foil (PET)
 - Pressure compensation filter: PBT-GF20

Ground terminal on housing (outside): 304 (1.4301)

Cable gland: polyamide (PA)

Fitted electrodes**Rod probes***Compact instrumentation version: 2 or 3 rods; Separate instrumentation version: 2, 3 or 5 rods*

- Diameter without insulation: 4 mm
- Maximum rod length: 4000 mm
- Minimum rod length: 100 mm
- Thickness of insulation: 0.5 mm

- Length of non-insulated area (tip of rod): 20 mm
- Extraction forces (parallel probe rod): 1000 N

Rope probes

Compact instrumentation version: 2 or 3 rods; Separate instrumentation version: 2, 3 or 5 rods

- Diameter without insulation: 1 mm
- Maximum rope length: 15000 mm
- Minimum rope length: 250 mm
- Thickness of insulation: 0.75 mm
- Weight length: 100 mm (not insulated)
- Weight diameter: 10 mm
- Extraction forces (parallel probe rod): 500 N

Human interface

Operating elements

FEW52, FEW54, FEW58

One DIL switch for MIN or MAX-safety
 One DIL switch for 0 s or 2 s switching delay
 Two DIL switches for setting the sensitivity 100 Ω , 1 k Ω , 10 k Ω or 100 k Ω

Display elements

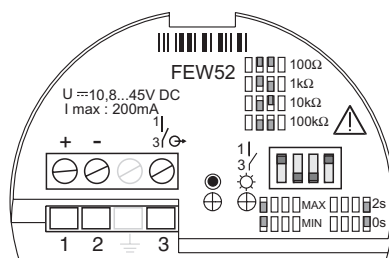
Separate instrumentation version

Dependent on the connected switching unit e.g. FTW325

Compact instrumentation version

FEW52

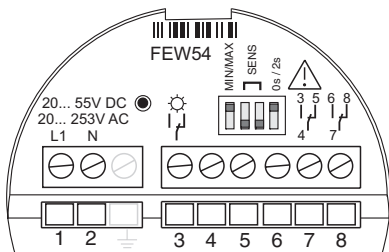
One red light emitting diode: fault message, switching status
 One green light emitting diode: operation



L00-FTW3xxxx-07-05-xx-xx-001

FEW54

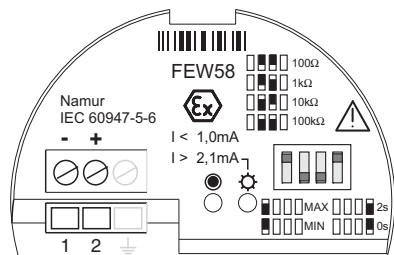
One red light emitting diode: fault message, switching status
 One green light emitting diode: operation



L00-FTW3xxxx-07-05-xx-xx-002

FEW58

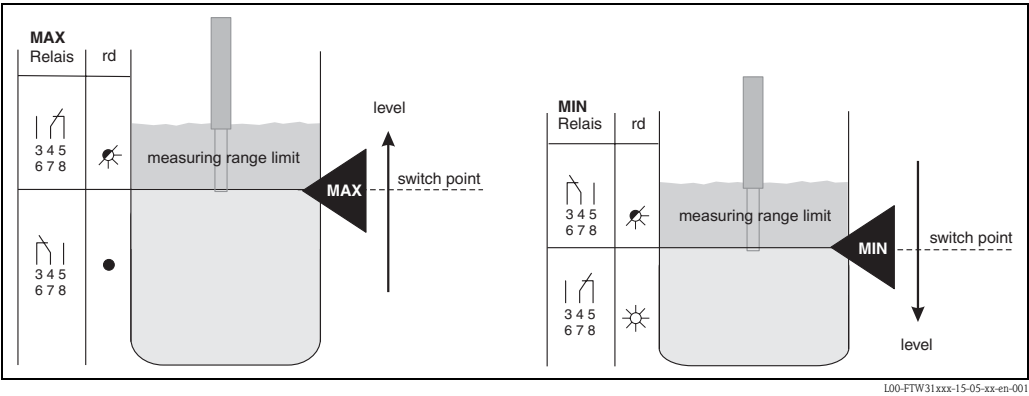
One yellow light emitting diode: fault message, switching status
 One green light emitting diode: operation



L00-FTW3xxxx-07-05-xx-xx-003



Note! For FEW52, FEW54
If the probe is covered and the red LED flashes continuously, the sensitivity was set to high. Set a smaller sensitivity to ensures a safe switch point even if the conductivity of the medium varies slightly.



Certificates and approvals

CE mark	The Liquipoint T meets the legal requirements of the EC directives. Endress+Hauser confirms that the device has been successfully tested by applying the CE mark.
Overfill protection	■ WHG, Leak test (Leakage)
Other standards and guidelines	■ Low voltage equipment directive (73/ 23/ EEC) ■ DIN EN 61010 part 1, 2001 Safety regulations for electrical equipment for measurement, control and laboratory use Part 1: General requirements ■ EN 61326 Electrical equipment for measurement, control and laboratory use EMC requirements
Ex-approvals	For further information please contact your local Endress+Hauser Sales Center.. All data relevant for explosion protection can be found in separate Ex documentation (see: Documentation → 26).
Type of protection	■ [Ex ia] IIC (FEW58) ■ [Ex na/C(L)] IIC (FEW52, FEW54)

Ordering information

Liquipoint FTW31

10		Certificates	
		A	Version for non-hazardous areas
		B	Version for non-hazardous areas, WHG, Leakage detection
		C	ATEX II 3 G EEx nA/C(L) IIC T6, WHG, Leakage detection
		D	ATEX II 2 G EEx ia IIC T6 , WHG, Leakage detection
		Y	Special version
20		Process connection and material	
		1	Threaded connection G1-1/2", PPS
		2	Threaded connection NPT 1-1/2", PPS
		9	Special version
30		Quantity and material of rods	
		A2	2 rods, 316L
		A3	3 rods, 316L
		A5	5 rods, 316L
		C2	2 rods, carbon fiber
		C3	3 rods, carbon fiber
		Y9	Special version
40		Length of probe L, 100 to 4000 mm	
		A	... mm L, probe length, 316L
		B	... inch L, probe length, 316L
		C	1000 mm L, probe length, 316L
		D	2000 mm L, probe length, 316L
		E	72 inch L, probe length, 316L
		F	... mm L, probe length, carbon fiber
		G	... inch L, probe length, carbon fiber
		Y	Special version
50		Housing and cable entry	
		A	Plastic housing IP66, M20x1.5
		B	Plastic housing IP66, NPT 1/2"
		C	Plastic housing IP66, G 1/2"
		Y	Special version
60		Electronic insert	
		0	Separate instrumentation
		1	FEWxx can be retrofitted
		2	FEW52, output: PNP 10.8 to 45 V DC
		4	FEW54, output: relay 20 to 253 V AC, 20 to 55 V DC
		8	FEW58, output: NAMUR
		9	Special version
70		Additional options	
		A	Without additional options
		Y	Special version
FTW31		complete product designation	

Liquipoint FTW32

10	Certificates					
	A	Version for non-hazardous areas				
	B	Version for non-hazardous areas, WHG, Leakage detection				
	C	ATEX II 3 G EEx nA/C(L) IIC T6, WHG, Leakage detection				
	D	ATEX II 2 G EEx ia IIC T6 , WHG, Leakage detection				
	Y	Special version				
20		Process connection and material				
	1	Threaded connection G 1 1/2", PPS				
	2	Threaded connection NPT 1 1/2", PPS				
	9	Special version				
30		Quantity and material of ropes				
	D2	2 ropes, 316Ti				
	D3	3 ropes, 316Ti				
	D5	5 ropes, 316Ti				
	Y9	Special version				
40		Length of probe L, 250 to 15000 mm				
	A	... mm L, probe length				
	B	... inch L, probe length				
	E	180 inch L, probe length				
	Y	Special version				
50		Housing and cable entry				
	A	Plastic housing IP66, M20x1.5				
	B	Plastic housing IP66, NPT 1/2"				
	C	Plastic housing IP66, G 1/2"				
	Y	Special version				
60		Electronic insert				
	0	Separate instrumentation				
	1	FEWxx can be retrofitted				
	2	FEW52, output: PNP 10.8 to 45 V DC				
	4	FEW54, output: relay 20 to 253 V AC, 20 to 55 V DC				
	8	FEW58, output: NAMUR				
	9	Special version				
70		Additional options				
	A	Without additional options				
	Y	Special version				
FTW32						complete product designation

Accessories

Liquipoint T

Lock nut G 1 1/2"
 Hexagon: AF 60
 Material: PC-FR
 Part number: 52014146

Electronic insert FEW52
 Output PNP 10.8 to 45 V DC
 Part number: 52017271

Electronic insert FEW54
 Output relay 20 to 253 V AC, 20 to 55 V DC
 Part number: 52017272

Electronic insert FEW58
 Output NAMUR (IEC 60947-5-6)
 Part number: 52017273

Documentation



Note!

This Additional documentation can be found on our product pages on "www.endress.com".

Operating Instructions

- Liquipoint T
 FTW31, FTW32 (separate instrumentation version)
 KA203F/00
- Liquipoint T
 FTW31, FTW32 (compact instrumentation version)
 KA204F/00

Certificates

WHG

- Liquipoint T
 ZE043F/00

ATEX II 3G EEx nA/C(L) IIC T6

- Liquipoint T
 XA226F/00

ATEX II 2G EEx ia IIC T6

- Liquipoint T
 XA230F/00

For more Endress+Hauser product please visit: www.ainstru.com
Mail: Sales@ainstru.com

Instruments International

Endress+Hauser
Instruments International AG
Kaegenstrasse 2
4153 Reinach
Switzerland

Tel. +41 61 715 81 00
Fax +41 61 715 25 00
www.endress.com
info@ii.endress.com

Endress+Hauser 
People for Process Automation

