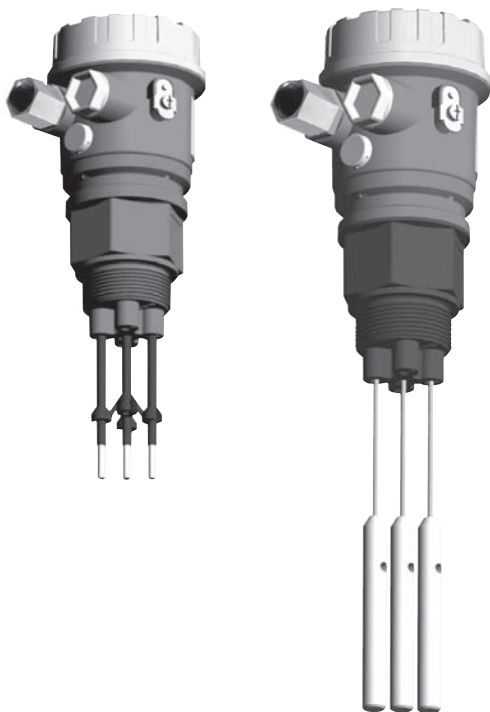


Technical Information

Liquipoint T FTW 31, FTW 32

Level limit switch for multiple point detection in conductive liquids



Applications

The Liquipoint T sensors are used in conductive liquids (down to $10 \mu\text{S}/\text{cm}$) for determining level limits. Depending on the number of measuring points (up to five rods or cables), the measuring sensors provide overspill protection, dry running protection, two-point control of pumps, or multiple point detection. All points can be implemented using a single process connection.

Your benefits

- Detect up to five level points with one unit
- Two-point control and additional maximum and minimum detection
- Select either rod or cable version for optimal adaptation to the application
- Flexible instrumentation:
 - with built-in electronic insert, either transistor or relay output for 2 or 3 rod/cable probes
 - for connection to a separate transmitter power supply
- No calibration 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 overspill approval
- Four measuring ranges can be set; 100Ω , $1 \text{ k}\Omega$, $10 \text{ k}\Omega$, or $100 \text{ k}\Omega$
- Cost-effective probe for conductive liquids
- Electronic inserts for:
 - NAMUR output
 - Relay output
 - Transistor output (PNP)

Table of contents

Function and system design	3	Certificates and approvals	20
Measuring principle	3	CE mark	20
Measuring system	3	Overspill protection	20
Input	4	Other standards and guidelines	20
Measured variable	4	Ex-approvals	20
Measuring range (application)	4	Type of protection	20
Input signal	5	Ordering information	21
Output	5	Liquipoint FTW 31	21
Electronic insert FEW 52 (DC-PNP)	5	Liquipoint FTW 32	22
Electronic insert FEW 54 (relay)	6	Accessories	23
Electronic insert FEW 58 (NAMUR)	7	Liquipoint T	23
Cable monitoring	8	Supplementary Documentation	23
Power supply	8	Operating Instructions	23
Electrical connection (wiring diagrams)	8	Certificates	23
Cable entry	11		
Cable specifications	11		
Accuracy with built-in electronic insert	11		
Reference operating conditions	11		
Measuring error	11		
Repeatability	11		
Hysteresis	11		
Switch-on delay	12		
Influence of ambient temperature	12		
Installation conditions	12		
Installation instructions	12		
Environment	14		
Ambient temperature range	14		
Storage temperature	14		
Climate class	14		
Degree of protection	14		
Shock resistance	14		
Vibration resistance (at min. rod length)	14		
Electromagnetic compatibility	14		
Process conditions	14		
Medium temperature limits	14		
Conductivity	14		
Limiting medium pressure range	14		
Mechanical construction	15		
Design, dimensions	15		
Weight	17		
Material	17		
Fitted electrodes	17		
Human interface	19		
Operating elements	19		
Display elements	19		

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 maximum probe rod, a measurable current flows and the Liquipoint T switches. With level limit detection, the Liquipoint T switches back as soon as the liquid clears the maximum probe. With two-point control, the Liquipoint T does not switch back until the MAX and MIN probe is cleared.

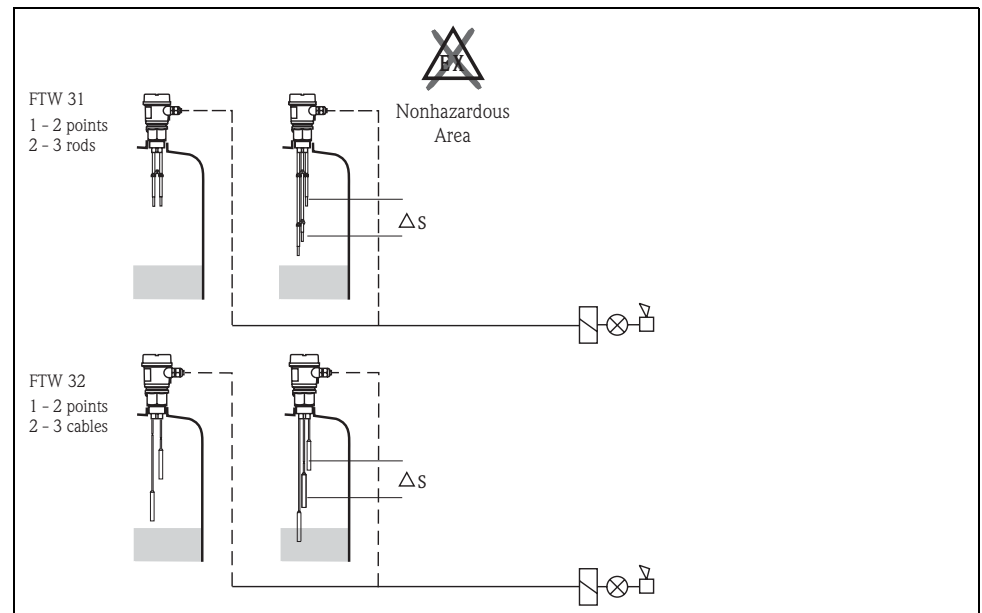
Using alternating voltage prevents corrosion of the probe rods and electrolytic destruction of the product. The material used for the tank walls is not important for measurement because the system is designed as a closed potential-free circuit between the probe rods and the electronics. There is absolutely no danger if the probe rods are touched during operation.

Measuring system

Probes with integrated electronic insert (compact-instrument version)

The measuring system consists of:

- FTW 31, FTW 32 with two/three rods or cables and an electronic insert
- Control units, switches or signal transmitters, e.g. process control systems PLC, relays, etc.



Independent of the tank material



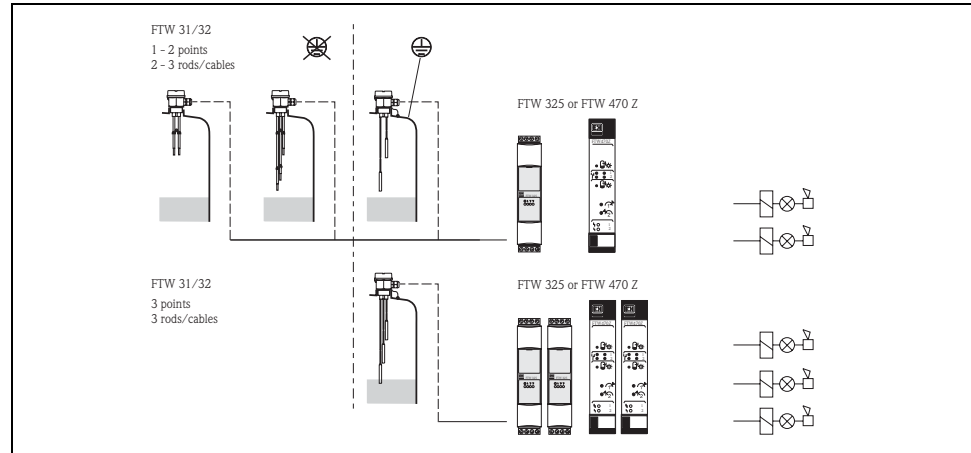
Note!

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

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

The measuring system consists of:

- FTW 31, FTW 32 with two/three rods or cables
- Nivotester FTW 325 or FTW 470 Z
- Control units, switches or signal transmitters, e.g. process control systems PLC, relays, etc.



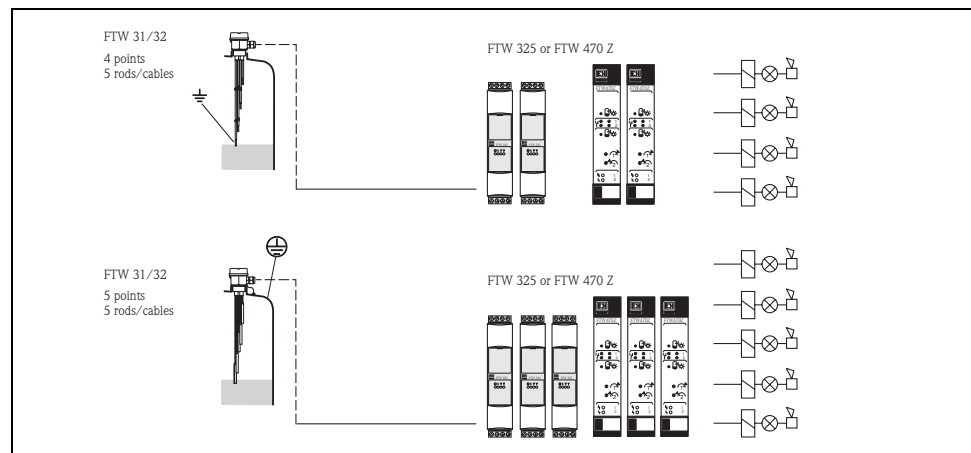
L00-FTW3xxxx-14-05-xx-en-002

Switch points dependent on the tank material

Probes without integrated electronic insert for multiple point detection

The measuring system consists of:

- FTW 31, FTW 32 with five rods or cables
- Two Nivotester FTW 325 or FTW 470 Z
- Control units, switches or signal transmitters, e.g. process control systems PLC, relays, etc.



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Switch points dependent on the tank material

Input

Measured variable Resistance change between two conductors caused by the presence or absence of a conductive product.

Measuring range (application) The measuring range is dependent on the mounting location of the probes. Rod probes can have a max. length of 160" (4000 mm) and cable probes up to 50 feet (15 m).

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 FEW 52 (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 level limit is reached.

Fail-safe mode	Switch point	Output signal	Red
Max. 		* ¹ $L+ \xrightarrow{I_L} 3$	* ³ 
		* ² $1 \xrightarrow{< 100 \mu A} 3$	* ⁴ 
Min. 		$L+ \xrightarrow{I_L} 3$	
		+ $1 \xrightarrow{< 100 \mu A} 3$	

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

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

If the probe is covered and the red LED flashes continuously, the next more sensitive measuring range has to be set. This 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 output always runs in quiescent current fail-safe.

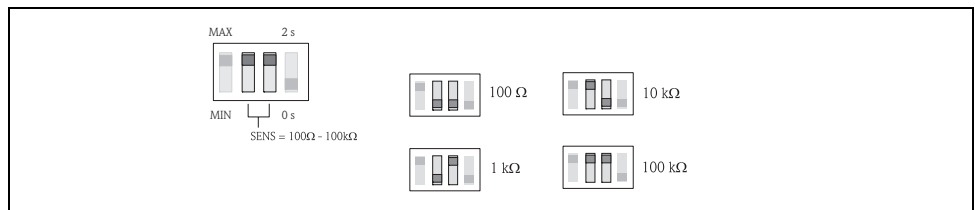
- Maximum fail-safe: the output voltage is 0 V if the switch point is exceeded (probe covered), a fault occurs or the power supply fails.
- Minimum fail-safe: the output voltage is 0 V if the switch point is undershot (probe uncovered), a fault occurs or the power supply fails.

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.

Measuring ranges

A total of four measuring ranges (100 Ω; 1 kΩ; 10 kΩ; 100 kΩ) can be set via two DIL switches (SENS). The setting on delivery is 100 kΩ.



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

Signal on alarm

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

Load

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

Electronic insert FEW 54 (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	Red
MAX Max.			*3
			*4
Min. MIN			
			*4

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 next more sensitive measuring range has to be set. This 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.

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

Measuring ranges

A total of four measuring ranges (100 Ω; 1 kΩ; 10 kΩ; 100 kΩ) can be set via two DIL switches (SENS). The setting on delivery is 100 kΩ.



L00-FTW3xxxx-15-05-xx-en-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 φ = 1, P~ max. 700 VA, cos φ > 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 FEW 58 (NAMUR)













Output signal

For connecting to isolating amplifiers acc. to NAMUR (IEC 60947-5-6)

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

-  = lit
-  = flashes
-  = unlit

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

Fail-safe circuit	Level	Output signal	LEDs gn	ye
Max.		+ 2.2 to 6.5 mA 2 → 1		
		+ 0.4 to 1.0 mA 2 → 1		
Min.		+ 2.2 to 6.5 mA 2 → 1		
		+ 0.4 to 1.0 mA 2 → 1		

L00-FTW3xxxx-04-05-xx-xx-000

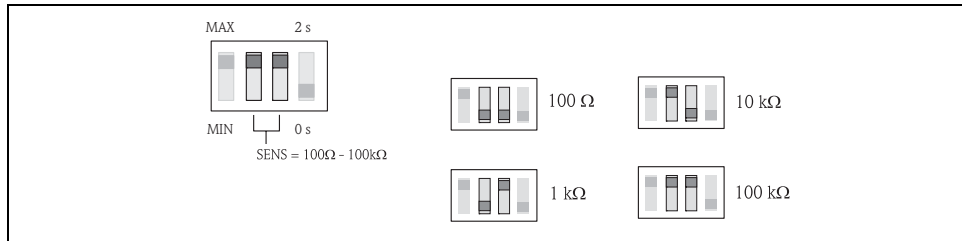
Fail-safe mode

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

- Maximum 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.
- Minimum 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.

Measuring ranges

A total of four measuring ranges (100 Ω; 1 kΩ; 10 kΩ; 100 kΩ) can be set via two DIL switches (SENS). The setting on delivery is 100 kΩ.



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

Refere to "Technical Data" date sheet 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/cable 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)

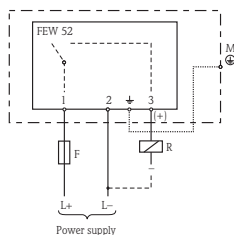
Compact instrumentation with FEW 52

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 FEW 52 electronic insert.

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

Power supply (FEW 52)

- Supply voltage: V = 10.8 V to 45 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)

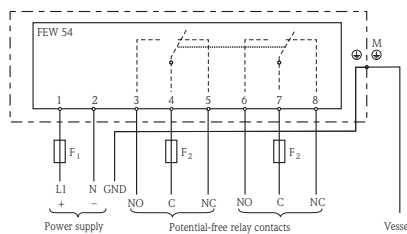
Compact instrumentation with FEW 54

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 FEW 54 electronic insert.

- F_1 : Fine-wire fuse 500 mA, semi-time lag
- F_2 : Fine-wire fuse to protect the relay contact, load-dependent
- M: Ground connection to earth ground (GND)

Power supply (FEW 54)

- Supply voltage: $V = 20 \text{ to } 55 \text{ VDC}$ or $V = 20 \text{ V to } 253 \text{ VAC}$, 50/60 Hz
- Peak inrush current: max. 2 A, max. 400 μs
- Output: two potential-free change-over contacts
- Contact load capacity: $V \text{ max. } 253 \text{ VAC}$, $I \text{ max. } 4 \text{ A}$, $V = 30 \text{ VAC}/4 \text{ A}$; $150 \text{ VAC}/0.2 \text{ A}$

Power consumption

- $P < 2.0 \text{ W}$

Current consumption

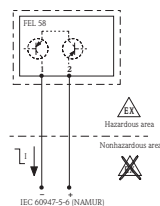
- 60 mA

Compact instrumentation with FEW 58

To be used with isolating amplifiers acc. to NAMUR (IEC 60947-5-6) Output signal jump from high to low current on limit (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.



L00-FTW3xxxx-04-05-xx-en-005

Connecting the FEW 58 electronic insert.

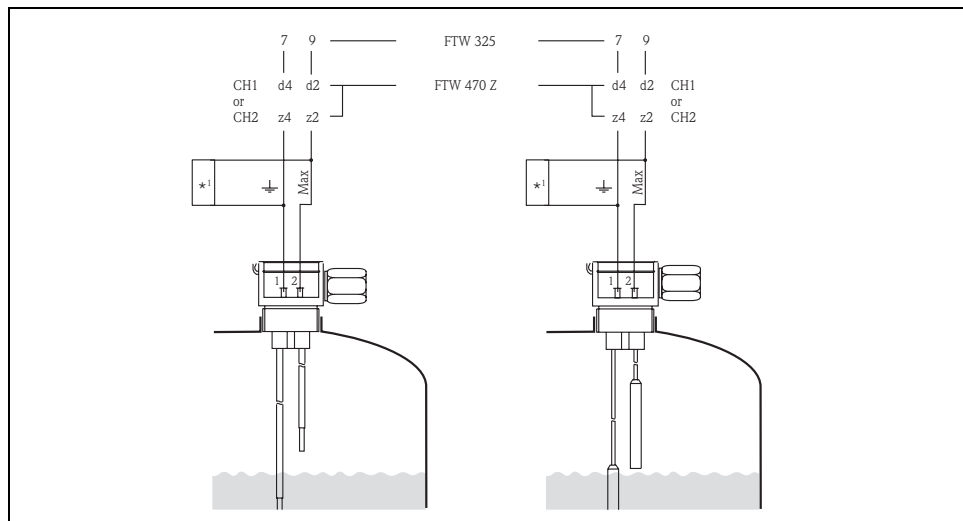
Power supply (FEW 58)

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

Signal on alarm

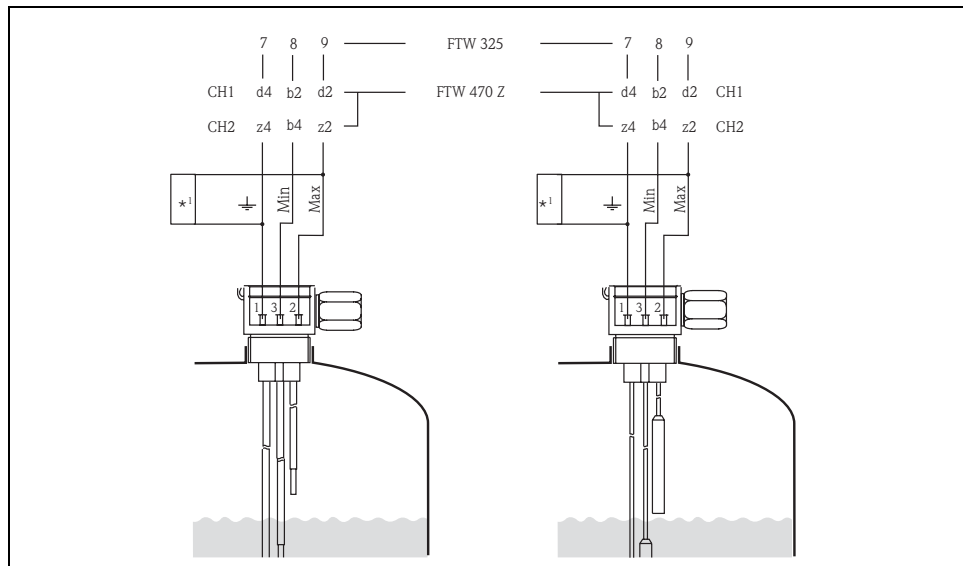
- Output signal with damaged sensor: < 1.0 mA

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



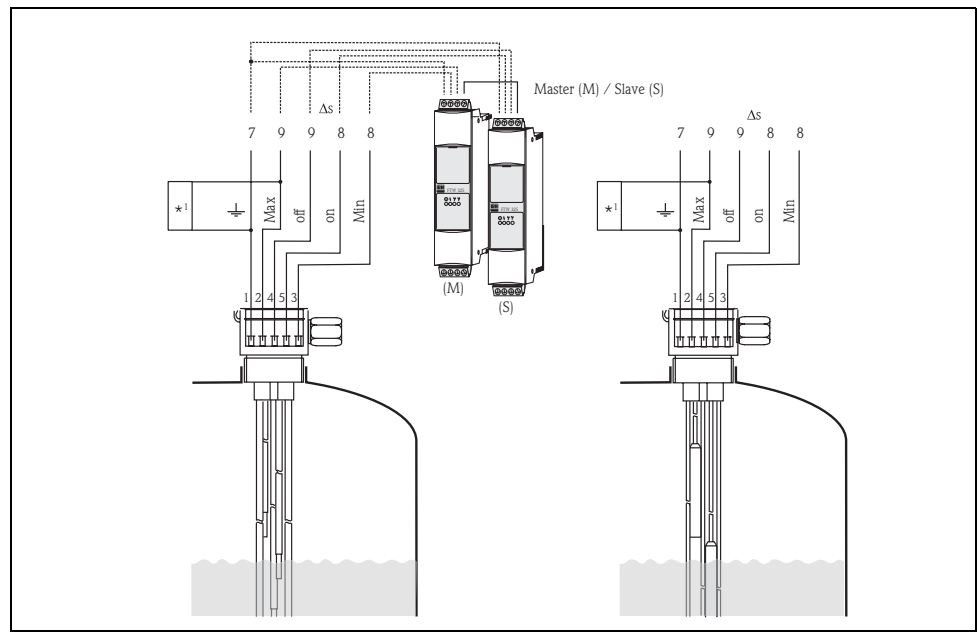
*1 Printed circuit board for cable monitoring
The power supply and evaluation are provided by switching units, e.g. Nivotester FTW 325 or FTW 470 Z

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



*1 Printed circuit board for cable monitoring
The power supply and evaluation are provided by switching units, e.g. Nivotester FTW 325 or FTW 470 Z

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



*1 Printed circuit board for cable monitoring

The power supply and evaluation are provided by switching units, e.g. Nivotester FTW 325 or FTW 470 Z

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

Cable entry

M 20x1.5

- Degree of protection: NEMA 4 (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): 0.1" (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: 73°F (23°C)
- Medium temperature: 73°F (23°C)
- Medium viscosity: medium must release the probe again (drain off).
- Medium pressure p_c : 0 psi (0 bar) bar
- Probe installation: vertically from above

Measuring error

$\pm 10\%$ at 100 Ω - 100 k Ω
 $\pm 5\%$ at 1 k Ω - 10 k Ω

Repeatability

$\pm 5\%$ at 100 Ω - 100 k
 $\pm 1\%$ at 1 k - 10 k

Hysteresis

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

Switch-on delay < 3 s

Influence of ambient temperature < 0.05 %/K

Installation conditions

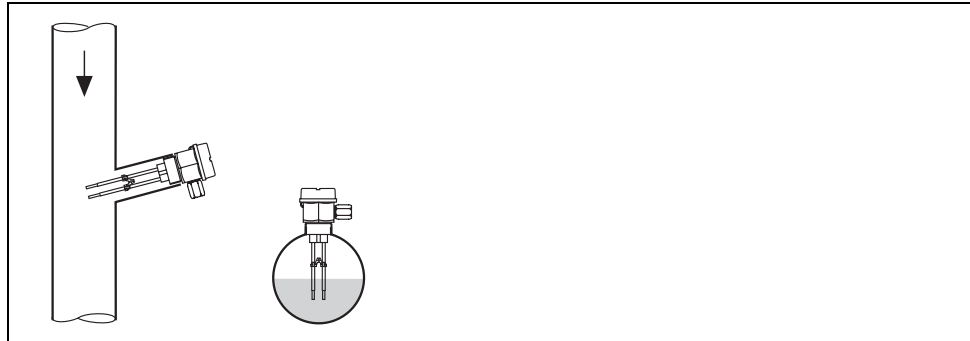
Installation instructions

Mounting location

The rod and cable probes are mounted predominantly in tanks made of plastic or metal.

Piping (partially filled)

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

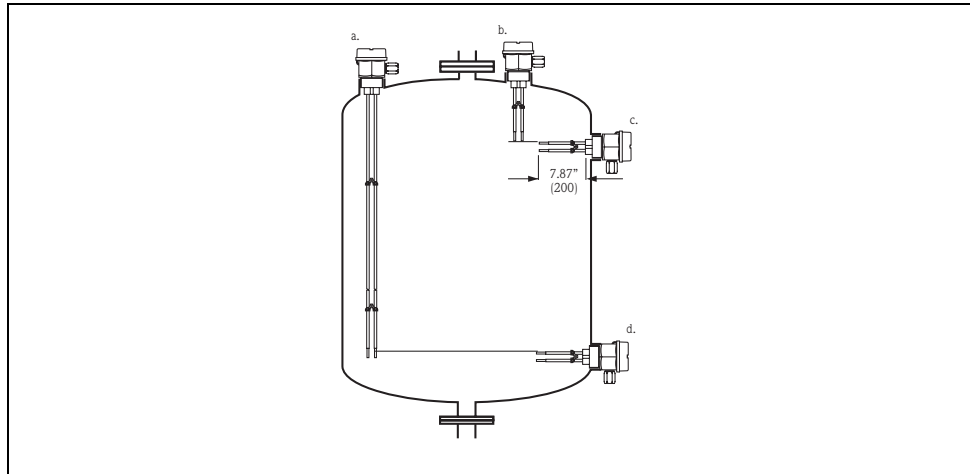


L00-FTW3xxxx-11-05-xx-xx-001

Orientation

Rod probes, dimensions in inches (mm)

Level limit detection for standard applications in tanks made of plastic or metal.

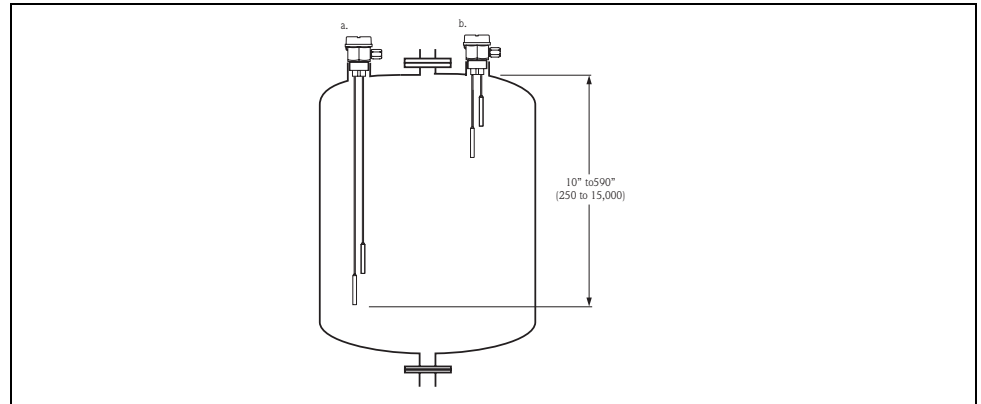


L00-FTW3xxxx-11-05-xx-xx-002

- Vertical mounting, minimum detection; Probe length set to the level limit required; Rods must not come into contact with the tank.
- Vertical mounting, maximum detection; Probe length set to the level limit required
- Lateral mounting, maximum detection; Maximum probe length 8" (200 mm), only applies to two-rod probes.
- Lateral mounting, minimum detection; Maximum probe length 8" (200 mm), only applies to two-rod probes.

Cable probes, dimensions in inches (mm)

Level limit detection for standard applications in tanks made of plastic or metal.

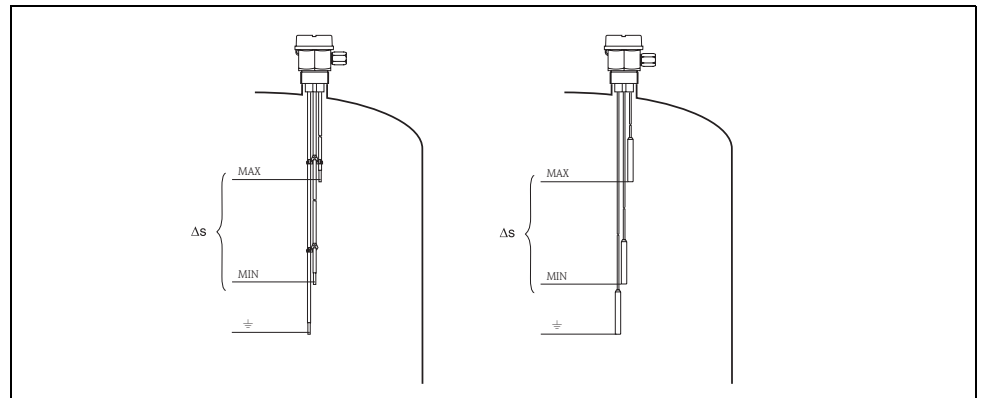


L00-FTW3xxxx-11-05-xx-xx-003

- a. Vertical mounting, minimum detection; Cable length set to the level limit required; Cable ends must not come into contact with the tank
- b. Vertical mounting, maximum detection; Cable length set to the level limit required

Example applications

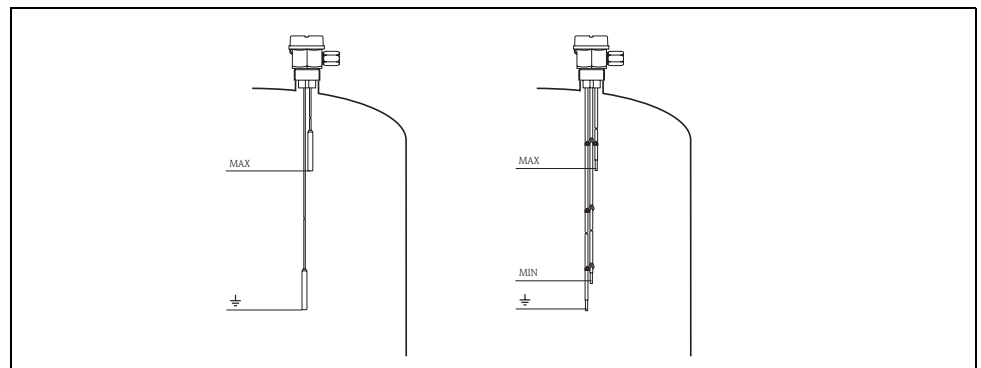
Level limit detection (standard applications)



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

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

Level limit detection (standard applications)



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

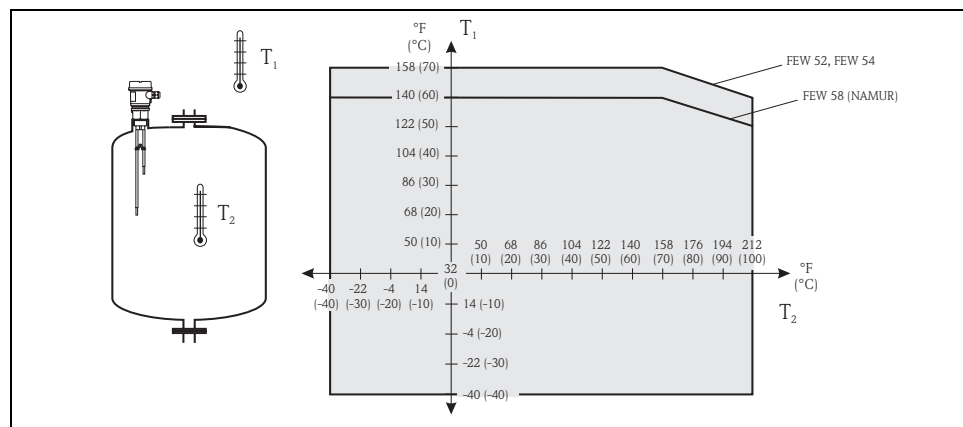
Level limit detection (MAX), maximum and minimum detection for compact-instrument devices only possible with Δs .

Environment

Ambient temperature range	Non-hazardous area -40 to +158°F (-40 to 70°C) -40 to +140°F (-40 to 60°C), for FEW 58 NAMUR
Storage temperature	-40 to +176°F (-40 to 80°C)
Climate class	Tropicalized as per DIN EEC 68, part 2-38
Degree of protection	NEMA 4 (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	<ul style="list-style-type: none"> • Interference Emission to EN 61326, Electrical Equipment Class B Interference Immunity to EN 61326, Annex A (Industrial) • Use for separately-instrumented probes a shielded cable between the probe and the switching unit. For installation instructions for shielded cables and general instructions for EMC inspection conditions of E+H devices, see also TI 241F.

Process conditions

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



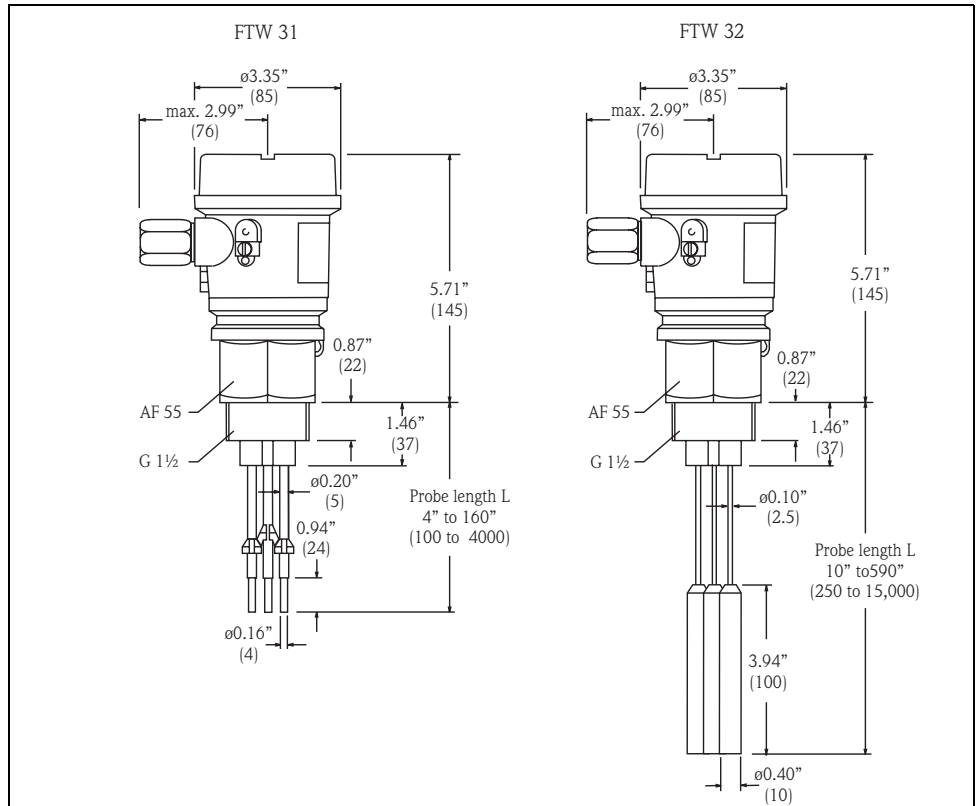
Note!
For separately instrumented devices (without FEW 5x) there are no restrictions in the indicated temperature range.

Conductivity	$\geq 10 \mu\text{S}$
Limiting medium pressure range	-14.5 to 145 psi (-1 to 10 bar)

Mechanical construction

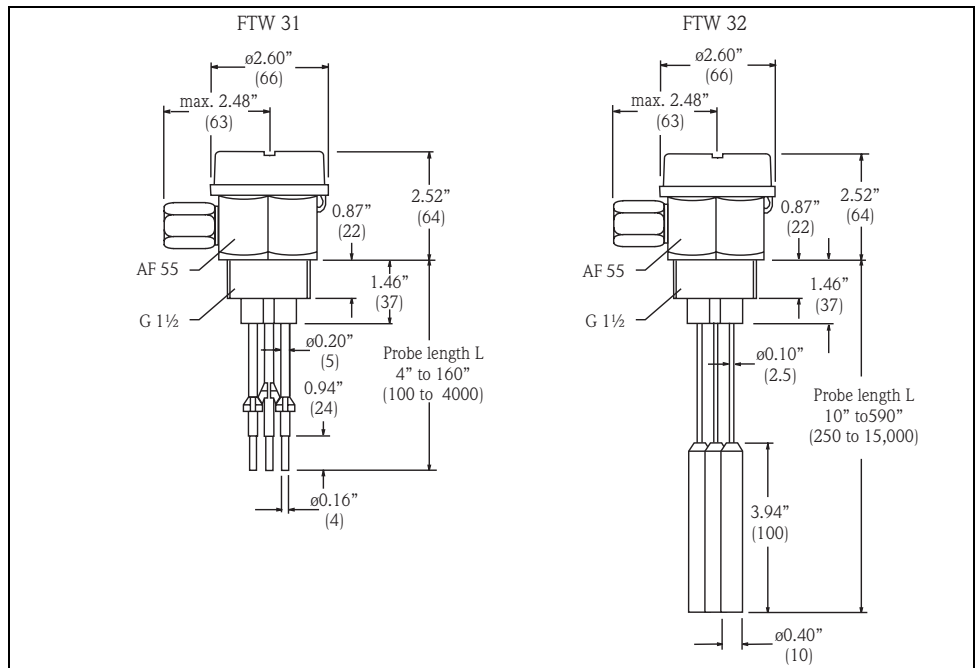
Design, dimensions

Rod and cable version with G 1 1/2" (compact-instrument version with electronic insert)



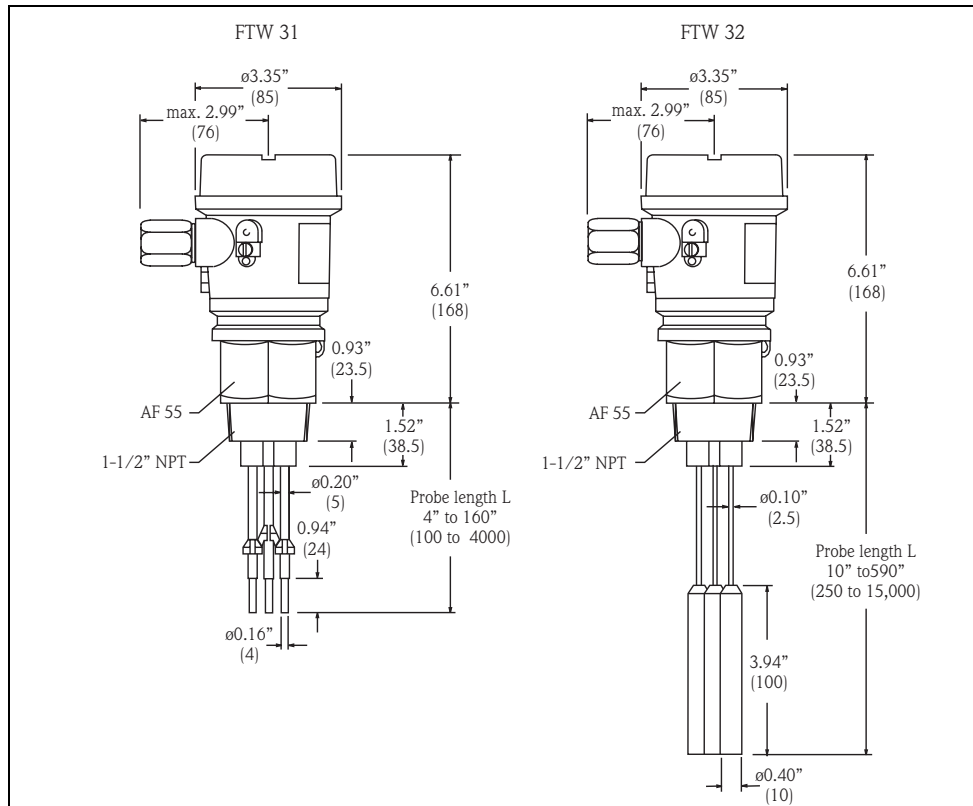
L00-FTW3xxxx-06-05-xx-en-001

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

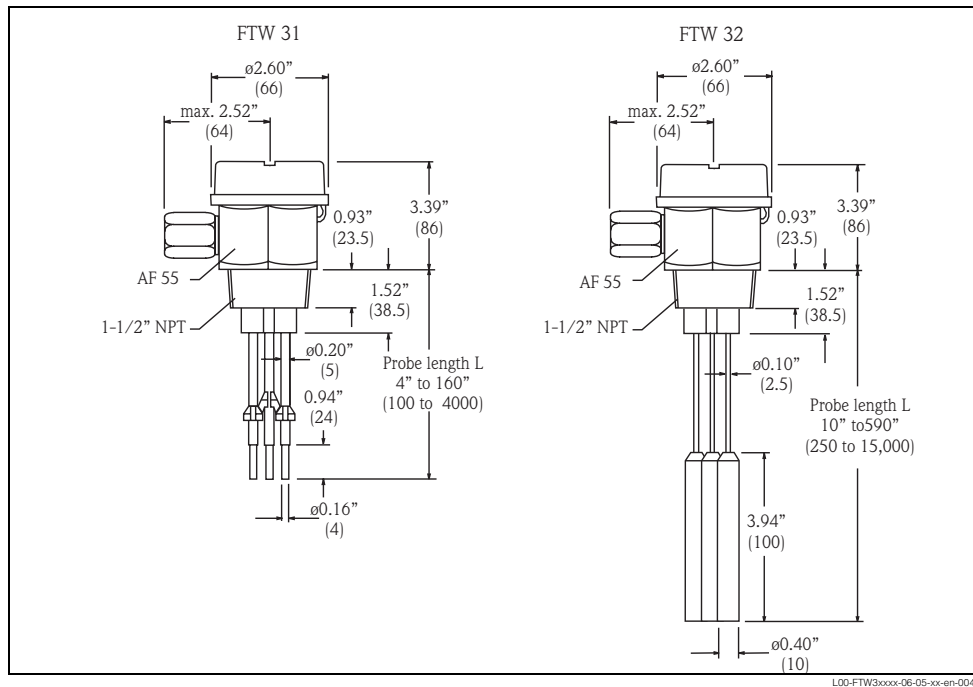


L00-FTW3xxxx-06-05-xx-en-002

Rod and cable version with NPT 1-1/2" (compact-instrument version with electronic insert)



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



Weight**Separate-instrument version**

Rod, 3 ft (1 m) long

FTW 31 with 2, 3 or 5 rods; 0.9 lb, 1.2 lb, 1.7 lb (415 g, 530 g, 760 g)

Cable, 3 ft (1 m) long

FTW 32 with 2, 3 or 5 cables; 0.8 lb, 1 lb, 1.4 lb (390 g, 470 g, 640 g)

Compact-instrument version

Rod, 3 ft (1 m) long

FTW 31 with 2 or 3 rods; 1.3 lb, 1.6 lb (600 g, 720 g)

Cable, 3 ft (1 m) long

FTW 32 with 2 or 3 cables; 1.5 lb, 1.8 lb (710 g, 800 g)

Material**Probes**

Rods

- Rod: 316L SS (1.4404)
- Insulation: PP

Cables

- Cable: 316Ti SS (1.4571)
- Insulation: FEP
- Weight: 317L SS (1.4435)

Housing

F24 (separate-instrument version)

- Housing: PPS
- Cover: PBT

F16 (compact-instrument version)

- Housing: PBT
- Cover: PBT
- Adapter: PBT

Process connections

- G 1 1/2
- 1-1/2" NPT

Fitted electrodes**Rod probes**

Compact-instrument version: 2 or 3 rods; Separate-instrument version: 2, 3 or 5 rods

- Diameter without insulation: 0.16" (4 mm)
- Maximum rod length: 157" (4000 mm)
- Minimum rod length: 4" (100 mm)
- Thickness of insulation: 0.02" (0.5 mm)
- Length of non-insulated area (tip of rod): 0.78" (20 mm)
- Extraction forces (parallel probe rod): 225 lbf (1000 N)

Cable probes

Compact-instrument version: 2 or 3 cables; Separate-instrument version: 2, 3 or 5 cables

- Diameter without insulation: 0.04" (1 mm)
- Maximum cable length: 50 feet (15 m)
- Minimum cable length: 10" (250 mm)
- Thickness of insulation: 0.03" (0.75 mm)
- Weight length: 4" (100 mm), not insulated
- Weight diameter: 0.39" (10 mm)
- Extraction forces (parallel probe rod): 112 lbf (500 N)

Human interface

Operating elements

FEW 52, FEW 54, FEW 58

One DIL switch for min/max position
 One DIL switch for 0 s or 2 s switching delay
 Two DIL switches for setting the measuring ranges 100 Ω, 1 kΩ, 10 kΩ, 100 kΩ

Display elements

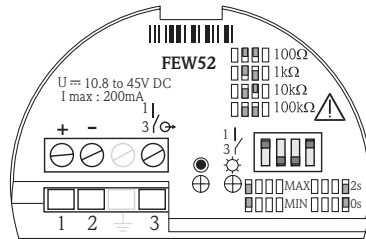
Separate-instrument version

Dependent on the connected switching unit (e.g. FTW 325 or FTW 470 Z)

Compact-instrument version

FEW 52

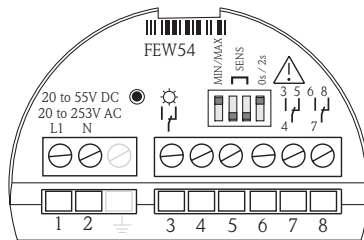
One red light emitting diode: fault message, switching status
 One green light emitting diode: operation



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

FEW 54

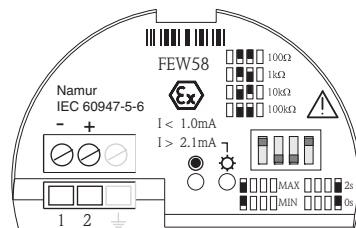
One red light emitting diode: fault message, switching status
 One green light emitting diode: operation



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

FEW 58

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

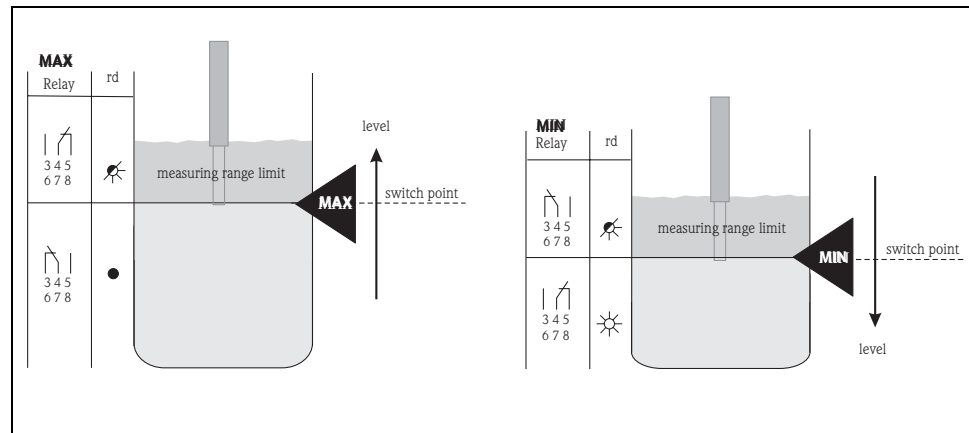


L00-FTW3xxxx-07-05-xx-xx-003



Note! For FEW 52, FEW 54

If the probe is covered and the red LED flashes continuously, the next more sensitive measuring range has to be set. This 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.

Overspill protection

Approvals

- WHG
- Leak test (Leakage)

Other standards and guidelines

Other standards and guidelines that were observed during the design and development of the Liquipoint T FTW 31 and FTW 32.

- 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

The Endress+Hauser sales office provides information on the currently supplyable Ex versions (ATEX EEx ia and ATEX EEx nA/C(L)). All data relevant for explosion protection can be found in separate Ex documentation (see: Supplementary Documentation on page 26). This can be viewed as necessary.

Type of protection

- [EEx ia] IIC (FEW 58)
- [EEx na/C(L)] IIC (FEW 52, FEW 54)

Ordering information

Liquipoint FTW 31

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	
D		ATEX II 2 G EEx ia IIC T6	
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 rods	
A2		2 rods, 316L	
A3		3 rods, 316L	
A5		5 rods, 316L	
Y9		Special version	
40		Length of probe L, 4" to 157" (100 to 4000 mm)	
A		mm L, probe length	
B		inch L, probe length	
C		40" (1000 mm) L, probe length	
D		80" (2000 mm) 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		Without electronic insert	
1		FEW 52/54 retrofit	
2		FEW 52 output PNP 10.8 to 45 V DC	
4		FEW 54 relay output 20 to 253 V AC, 20 to 55 V DC	
8		FEW 58 output NAMUR	
9		Special version	
70		Additional equipment	
A		Without additional equipment	
Y		Special version	
FTW 31			complete product designation

Liquipoint FTW 32

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		
	D	ATEX II 2 G EEx ia IIC T6		
	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 cables			
	D2	2 cables, 316Ti SS		
	D3	3 cables, 316Ti SS		
	D5	5 cables, 316Ti SS		
	Y9	Special version		
40	Length of probe L, 10" to 590" (250 to 15000 mm)			
	A	mm L, probe length		
	B	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	Without electronic insert		
	1	FEW 52/54 retrofit		
	2	FEW 52 output PNP 10.8 to 45 V DC		
	4	FEW 54 relay output 20 to 253 V AC, 20 to 55 V DC		
	8	FEW 58 output NAMUR		
	9	Special version		
70	Additional equipment			
	A	Without additional equipment		
	Y	Special version		
FTW 32				complete product designation

Accessories

Liquipoint T

Lock nut G 1 1/2"
Hexagon, AF 60
TN 52014146

Electronic insert FEW 52
Output PNP 10.8 to 45 V DC
PN 52017271

Electronic insert FEW 54
Output Relay, 20 to 253 V AC, 20 to 55 V DC
PN 52017272

Electronic insert FEW 58
Output NAMUR (IEC 60947-5-6)
PN 52017273

Supplementary Documentation

Operating Instructions

- Liquipoint T: FTW 31, FTW 32 (separate-instrument version), KA 203F/00
- Liquipoint T: FTW 31, FTW 32 (compact-instrument version), KA 204F/00

Certificates

WHG

- Liquipoint T: ZE 043F/00

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

- Liquipoint T: XA 226F/00

ATEX II 2G EEx ia IIC T6

- Liquipoint T: XA 230F/00

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