Technical
Information
TI 122F/00/en

Operating Instructions
017252-1000

Conductive Limit Detection
Three-rod probes 11363, 11363 Z

High resistant probes, for corrosive liquids, for use in plastic vessels

The probe rods and process connections are made from highly corrosion-resistant materials for use with aggressive products

Application

Two-point Control
The probes are for those applications requiring accurate two-point limit detection in plastic vessels and vessels made of non-conducting material.

Limit Detection
High accuracy minimum *and* maximum limit detection – and also overspill protection – in plastic vessels is realized with *one* three point probe.
Three different limit points can be detected with *one* probe in vessels with electrically conducting walls.

Variable Process Connections
- Thread G 1 ½ A (parallel)
- Thread 1 ½“ NPT (tapered)
- Flanges conforming to DIN, from DN 40 to DN 200, PN 16 or PN 40, also available with groove-ring or tongue
- Flanges conforming to ANSI, from 1 ½“ to 4", 150 psi or 300 psi, also available with ring joint (11363 only).

Function Monitoring
An EW 11 Z electronic insert can be installed for continuous cable monitoring with maximum limit indication when using a Nivotester FTW 325 / 470 Z / 570 Z / 520 Z (required when using the probe for overspill protection).

Applications in Ex-Areas
The 11363 Z version can be used
- For applications in explosion hazardous area, Zone 0
- As overspill protection for water polluting liquids (WHG).

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The Power of Know How

The Complete Measuring System

Two-point Control in Plastic Vessels

In addition to the three-rod probe, the complete measuring system comprises *one* conductivity limit switch

- Nivotester FTW 470 Z in Racksyst plug-in board format for the standard calibration range 1 kΩ...50 kΩ

or

- Nivotester FTW 570 Z in Racksyst plug-in board format for the extended calibration range 100 Ω...50 kΩ (for conductive deposits on the probe insulation)

or

- Nivotester FTW 325 in Minipac row housing with the calibration range 1 kΩ...200 kΩ

or

- Nivotester FTW 520 Z in Minipac row housing with the calibration range 100 Ω...50 kΩ

or

- Nivotester FTW 420 im Minipac row housing with the calibration range 0...50 kΩ or 0...1.5 kΩ (FTW 420 S) for non-certified applications.

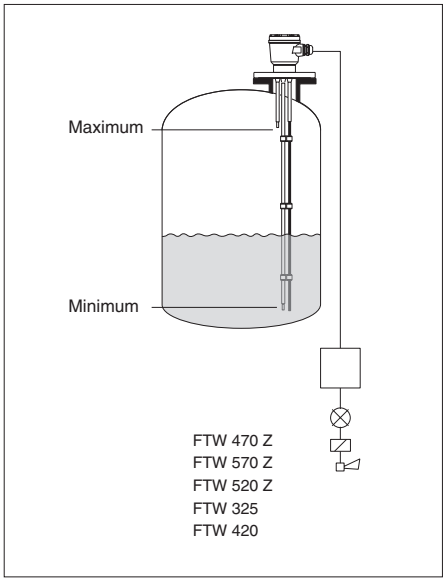
Minimum *and* Maximum Limit Detection in Plastic Vessels

In addition to the three-rod probe, the complete measuring system comprises

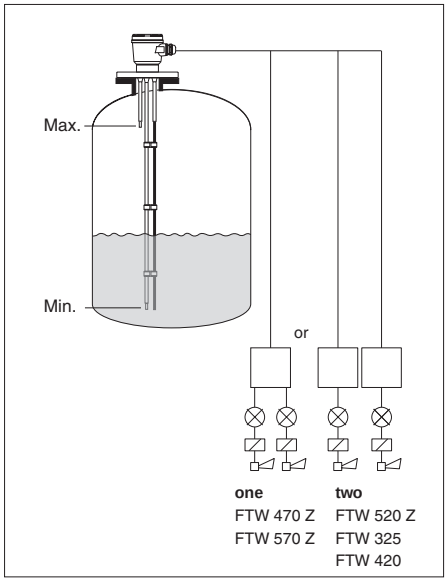
- *One* Nivotester FTW 470 Z or FTW 570 Z conductivity limit switch

or

- *Two* Nivotester FTW 520 Z, FTW 325 or FTW 420 conductivity switches.



Two-point control in a plastic vessel



Detection of a minimum *and* maximum level limit in a plastic vessel

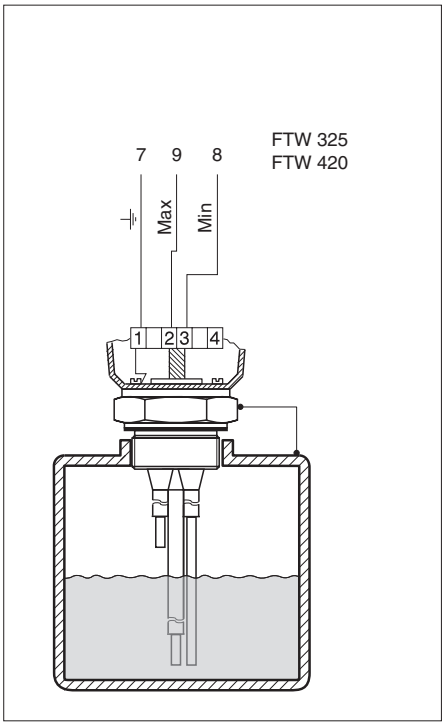
Installation

- The probes are designed to be installed vertically for most applications.
- Compact probes up to approx. 300 mm in length can be installed at any orientation.
- A support is required for those probes subjected to high lateral loads.
- For liquids tending to deposit a conductive layer on the probe insulation, the final spacer should be moved at least 100 mm away from the end for high contact resistance when the probe is exposed.
- If the probe has to be shortened, then clamp the rods such that the insulation is not damaged and that the feed-throughs in the flange or threaded boss are not subject to mechanical force.
  Remove the rod insulation at the probe tip by at least a further 20 mm (see Technical Data).

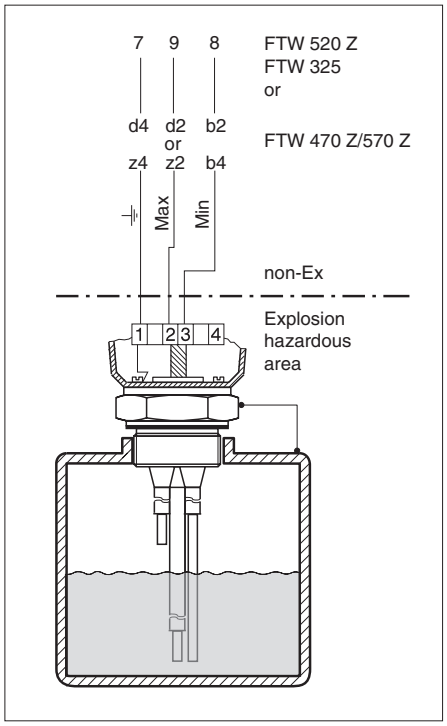
Electrical Connection

The 11363/11363 Z probe is supplied with either an integrated EW 11 Z electronic insert for cable monitoring or an integrated terminal block.

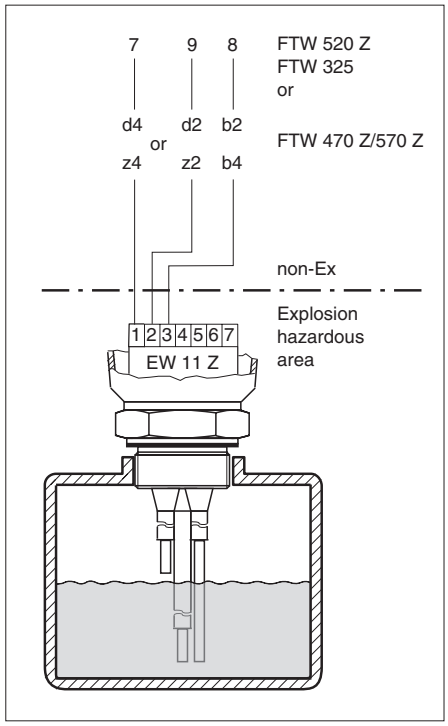
The use of the probe in explosion hazardous areas is not permitted when it is connected to the Nivotester FTW 420. After connecting, make sure that the cable gland and the probe housing are tight.



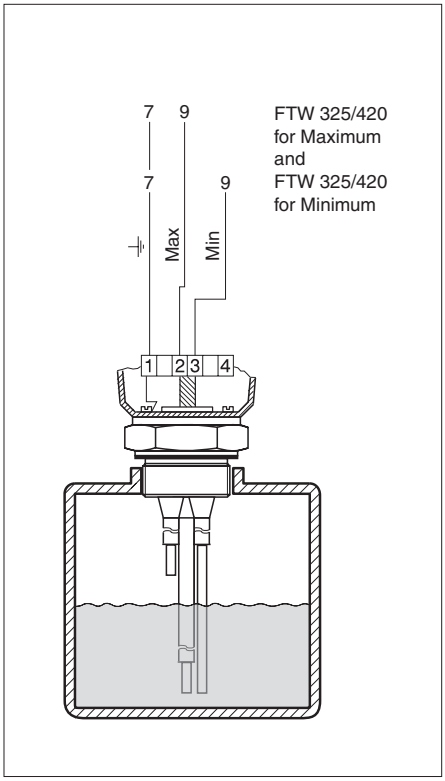
Two-point control
in a plastic vessel
without
cable monitoring



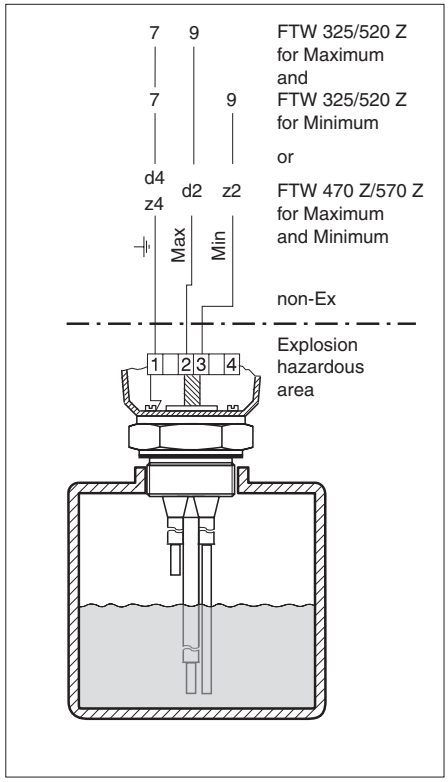
Two-point control
in a plastic vessel
without
cable monitoring
and also for use in
explosion hazardous
areas



Two-point control
in a plastic vessel
with
cable monitoring
up to the maximum
probe and also for use
in explosion hazardous
areas



Independent
two limit detection
in a plastic vessel
without
cable monitoring



Independent
two limit detection
in a plastic vessel
without
cable monitoring
and also for use in
explosion hazardous
areas

Technical Data

The most important data are listed in the ordering diagram

Further Technical Data:

Other Materials
Spacer material: PFA
Seal for version with thread:
elastomer/fibre, non-asbestos

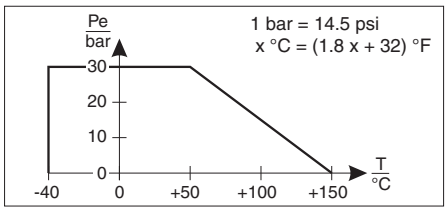
PTFE Insulation Lengths (standard)
for maximum and minimum probe

Probe lenght L	Insulation lenght	
	with EW 11 Z	with terminals
up to 150 mm	L minus 10 mm	L minus 10 mm
150...2000 mm	L minus 20 mm	L minus 20 mm
2000...3000 mm	L minus 30 mm	L minus 30 mm
3000...4000 mm	L minus 30 mm	L minus 70 mm

100 mm = 3.94 in

Operating Pressures and Temperatures

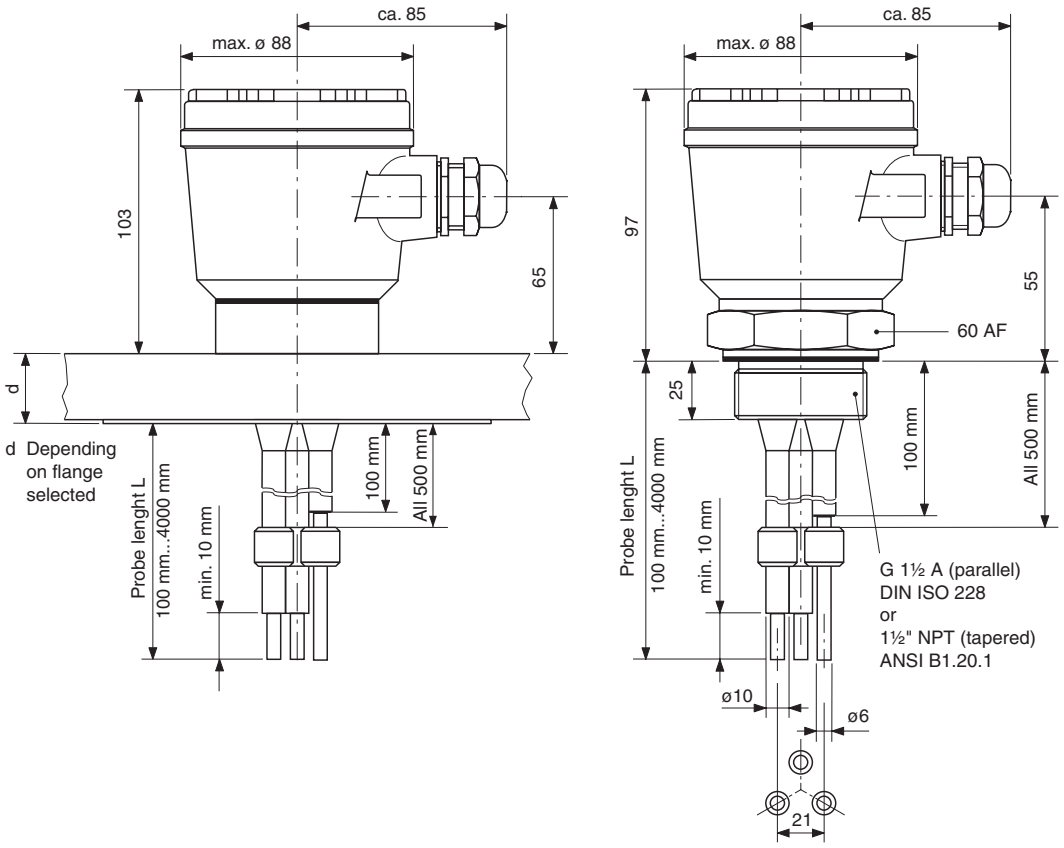
- Metal process connections
  Operating pressure and temperature see drawing below



- Plastic process connections
  Operating pressure p_e: –0.2…+0.2 bar
  Temperature T: –25°C…+80°C

Important
The maximum permissible operating temperature is 80°C when using the EW 11 Z electronic insert

Mechanical Connection
The dimensions of plastic flanges in PP or PTFE correspond to DIN flanges for PN 16 or ANSI flanges for 150 psi.



Dimensions in mm; 100 mm = 3.94 in

Dimensions of the three-rod probes 11363 and 11363 Z. Height and diameter are similar for all housings.

Ordering Diagram

Three-rod probe 11363

Process connection, material

AA1	G 1 ½ A,	Thread	ISO228,	316Ti
AA2	G 1 ½ A,	Thread	ISO228,	Alloy B
AA3	G 1 ½ A,	Thread	ISO228,	Alloy C4
AA4	G 1 ½ A,	Thread	ISO228,	PP
AA5	G 1 ½ A,	Thread	ISO228,	PTFE
AB1	1 ½“ NPT,	Thread	ANSI,	316Ti
AB4	1 ½” NPT,	Thread	ANSI,	PP
AB5	1 ½“ NPT,	Thread	ANSI,	PTFE
HC4	DN 40,	drilled as PN 16 B, DIN2527, PP		
HC7	DN 40,	PN 10/16,	DIN2527, PTFE >316Ti	
ICA	DN 50,	PN 10/16,	DIN2527, Alloy C4 >316Ti	
IC1	DN 50,	PN 10/16 B,	DIN2527, 316Ti	
IC4	DN 50,	PN 16 B,	DIN2527, PP max. 1.5 bar abs	
IC5	DN 50,	PN 10/16 B,	DIN2527, PTFE max. 1.5 bar abs	
IC7	DN 50,	PN 10/16,	DIN2527, PTFE >316Ti	
KC1	DN 65,	PN 10/16 B,	DIN2527, 316Ti	
LCA	DN 80,	PN 10/16,	DIN2527, Alloy C4 >316Ti	
LC1	DN 80,	PN 10/16 B,	DIN2527, 316Ti	
LC5	DN 80,	PN 16 B,	DIN2527, PTFE max. 1.5 bar abs	
MCA	DN 100,	PN 10/16,	DIN2527, Alloy C4 >316Ti	
MC1	DN 100,	PN 10/16 B,	DIN2527, 316Ti	
MC4	DN 100,	PN 16 B,	DIN2527, PP max. 1.5 bar abs	
MC7	DN 100,	PN 10/16,	DIN2527, PTFE >316Ti	
ME7	DN 100,	PN 25/40,	DIN2527, PTFE >316Ti	
2QA	1 ½”,	150 lbs,		ANSI B16.5, Alloy C >316Ti
2Q1	1 ½”,	150 lbs,	RF,	ANSI B16.5, 316Ti
3QA	2”,	150 lbs,		ANSI B16.5, Alloy C >316Ti
3QB	2”,	150 lbs,	RJ,	ANSI B16.5, 316Ti
3Q1	2",	150 lbs,	RF,	ANSI B16.5, 316Ti
3Q7	2”,	150 lbs,		ANSI B16.5, PTFE >316Ti
5Q1	3”,	150 lbs,	RF,	ANSI B16.5, 316Ti
5Q7	3",	150 lbs,		ANSI B16.5, PTFE >316Ti
7Q1	4”,	150 lbs,	RF,	ANSI B16.5, 316Ti
7Q7	4",	150 lbs,		ANSI B16.5, PTFE >316Ti
9Y9	Special version			

Rod material
- A 316Ti
- B Alloy B
- C Alloy C4
- D Titanium
- E Tantalum
- F Monel
- Y Special version

Length of maximum rod L
- 1 .....mm (100 mm...4000 mm)
- 9 Special version

Length of minimum rod L
- 1 .....mm (100 mm...4000 mm)
- 9 Special version

Length of reference rod L
- 1 .....mm (110 mm...4000 mm)
- 9 Special version

Housing (IP66)
- C Aluminium, E-Housing, ½” NPT
- D Aluminium, E-Housing, G ½”
- E Aluminium, E-Housing, M20x1,5
- F Aluminium, E-Housing, HNA24 plug
- L Polyester, E-Housing, ½” NPT
- M Polyester, E-Housing, G ½”
- O Polyester, E-Housing, M20x1,5
- P Polyester, E-Housing, HNA24 plug
- S 316Ti, E-Housing, Pg16 IP66
- T Alu. coated, E-Housing, ½” NPT
- U Alu. coated, E-Housing, G ½”
- V Alu. coated, E-Housing, M20x1,5
- W Alu. coated, E-Housing, HNA24 plug
- Y Special version

Electronic insert
- A without electronic insert
- B Line monitor EW 11 Z installed
- Y Special version

Order code

Please state length of maximum /minimum /reference probe in mm

Three-rod probe 11363 Z

Certificate
- A ATEX II 1/2 G, EEx ia IIC T6, WHG
- K ATEX II 1 G, EEx ia IIC T6
- P ATEX II 1/2 G, EEx ia IIC T6
- R For non-hazardous area use
- W For non-hazardous areas, WHG
- Y Special version

For use with... (Label text)
- 1 FTW 325 / 470 Z / 520 Z / 570 Z
- 8 none specific instrument
- 9 Special version

Process connection, material

AA1	G 1 ½ A,	Thread	ISO228,	316Ti
AA2	G 1 ½ A,	Thread	ISO228,	Alloy B
AA3	G 1 ½ A,	Thread	ISO228,	Alloy C4
AA4	G 1 ½ A,	Thread	ISO228,	PP
AA5	G 1 ½ A,	Thread	ISO228,	PTFE
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HC7	DN 40,	PN 10/16,	DIN2527, PTFE >316Ti	
ICA	DN 50,	PN 10/16,	DIN2527, Alloy C >316Ti	
IC1	DN 50,	PN 10/16 B,	DIN2527, 316Ti	
IC4	DN 50,	PN 16 B,	DIN2527, PP max. 1.5 bar abs	
IC5	DN 50,	PN 10/16 B,	DIN2527, PTFE max. 1.5 bar abs	
IC7	DN 50,	PN 10/16,	DIN2527, PTFE >316Ti	
KC1	DN 65,	PN 10/16 B,	DIN2527, 316Ti	
LCA	DN 80,	PN 10/16,	DIN2527, Alloy C4 >316Ti	
LC1	DN 80,	PN 10/16 B,	DIN2527, 316Ti	
LC5	DN 80,	PN 16 B,	DIN2527, PTFE max. 1.5 bar abs	
MCA	DN 100,	PN 10/16,	DIN2527, Alloy C4 >316Ti	
MC1	DN 100,	PN 10/16 B,	DIN2527, 316Ti	
MC4	DN 100,	PN 16 B,	DIN2527, PP max. 1.5 bar abs	
MC7	DN 100,	PN 10/16,	DIN2527, PTFE >316Ti	
ME7	DN 100,	PN 25/40,	DIN2527, PTFE >316Ti	
2QA	1 ½”,	150 lbs,		ANSI B16.5, Alloy C >316Ti
2Q1	1 ½”,	150 lbs,	RF,	ANSI B16.5, 316Ti
3QA	2”,	150 lbs,		ANSI B16.5, Alloy C >316Ti
3QB	2”,	150 lbs,	RJ,	ANSI B16.5, 316Ti
3Q1	2",	150 lbs,	RF,	ANSI B16.5, 316Ti
3Q7	2”,	150 lbs,		ANSI B16.5, PTFE >316Ti
5Q1	3”,	150 lbs,	RF,	ANSI B16.5, 316Ti
5Q7	3",	150 lbs,		ANSI B16.5, PTFE >316Ti
7Q1	4”,	150 lbs,	RF,	ANSI B16.5, 316Ti
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- 9 Special version

Length of minimum rod L
- 1 .....mm (100 mm...4000 mm)
- 9 Special version

Length of reference rod L
- 1 .....mm (110 mm...4000 mm)
- 9 Special version

Housing (IP66)
- C Aluminium, E-Housing, NPT ½”
- D Aluminium, E-Housing, G ½ A
- E Aluminium, E-Housing, M20x1,5
- F Aluminium, E-Housing, HNA24x1,5
- L Polyester, E-Housing, NPT ½”
- M Polyester, E-Housing, G ½ A
- O Polyester, E-Housing, M20x1,5
- P Polyester, E-Housing, HNA24x1,5
- S 316Ti, E-Housing, Pg16 IP66
- T Alu. besch., E-Housing, NPT ½”
- U Alu. besch., E-Housing, G ½ A
- V Alu. besch., E-Housing, M20x1,5
- W Alu. besch., E-Housing, HNA24x1,5
- Y Special version

Electronic insert
- A without electronic insert
- B Line monitor EW 11 Z installed
- Y Special version

Order code

Please state length of maximum /minimum /reference probe in mm

Supplementary Documentation

❏ Nivotester FTW 470 Z/570 Z
Conductivity limit switch for liquids. Double limit switch in Racksyst format, also for two-point control.
Technical Information TI 039F

❏ Nivotester FTW 520 Z
Conductivity limit switch for liquids in Minipac row housing, also for two-point control.
Technical Information TI 079F

❏ Nivotester FTW 325
Conductivity limit switch for liquids in Minipac row housing, two-point control and limit detection with one switching device.
Technical Information TI 373F

❏ Nivotester FTW 420
Conductivity limit switch for liquids in Minipac row housing, also for two-point control.
Technical Information TI 080F

❏ Double rod probe 11362, 11362 Z.
Technical Information TI 121F

Endress+Hauser
GmbH+Co. KG
Instruments
International
P.O. Box 2222
D-79574 Weil am Rhein
Germany

Tel. (0 76 21) 9 75-02
Fax (0 76 21) 9 75-3 45
http://www.endress.com
info@ii.endress.com

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