Technical
Information
TI 195F/00/en

Operating Instructions
017192-1000

Capacitance Limit Detection
Rope Probes 21 265, 21 265 A, 21 265 S

PA-partially-insulated rope probes for temperatures up to +120 °C (250 °F) and applications without pressure









Applications
The rope probe 21 265 is used primarily for capacitance limit detection in bulk solids at temperatures up to +120 °C in open vessels.

The 21 265 A version with screening is particularly suitable for solid materials which tend to form a strong build-up at the mounting point, e.g. as a result of condensation and dust.

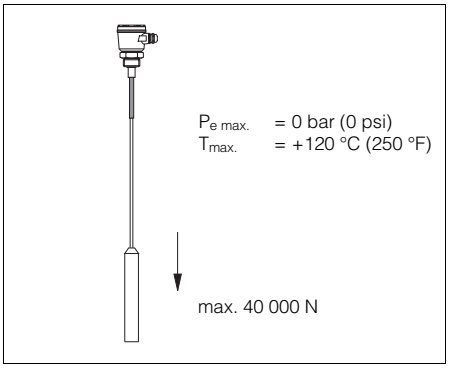
The 21 265 S version is approved for use in Zone 10 dust explosion hazardous areas (Germany).
It is also available with screening.

Benefits
- Rugged probe cable for withstanding heavy loads.
- Optional screening to prevent incorrect switching due to condensation or build-up.
- Probe easily shortened to the exact length required.

Endress+Hauser
Nothing beats know-how

Technical Data

Operating Data

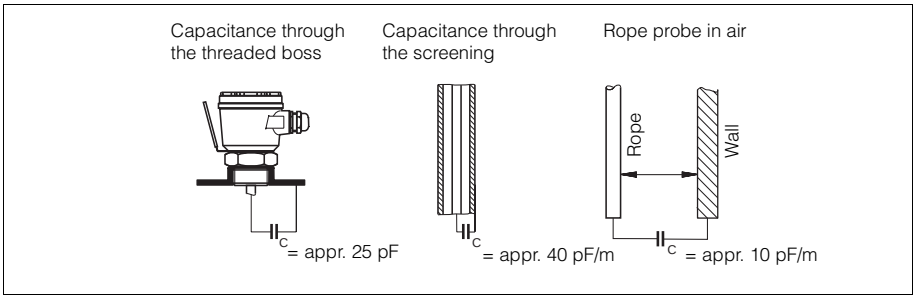


Operating temperature, pressure and loading capacity on the probe

Mounting the Probe Materials

Details of materials used are given in the product structures on Page 4 and 5.

- Threaded boss: galvanised steel or stainless steel 1.4301
- Rope entry: PC
- Rope insulation: PA
- Rope: steel wire (for 21 265 S also stainless steel 1.4401)
- Screening for 21 265 A: steel (for 21 265 S also stainless steel 1.4571)
- Weight: cast iron (for 21 265 S also stainless steel 1.4571)



Capacitance values of the probe

Probe Length

Probe Length

$L_{min.}$: 500 mm, $L_{max.}$: 22 000 mm

When using the rope probe in bulk solids with

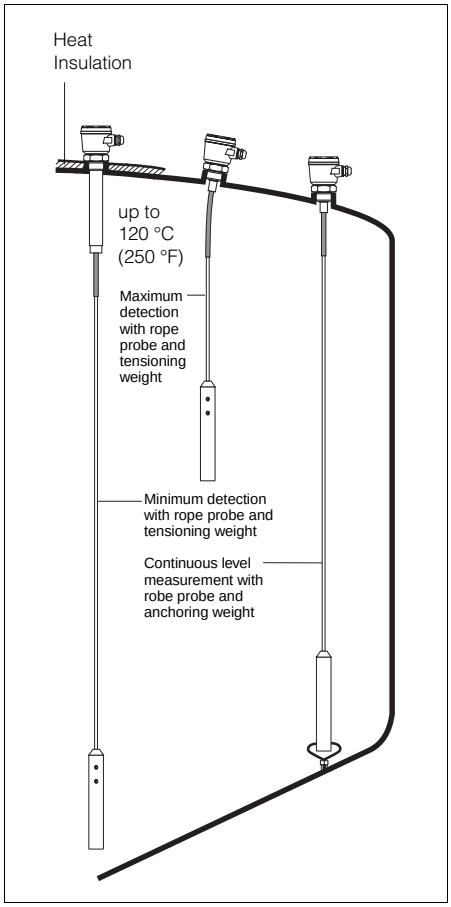
- long ropes
- weight tensioning
- strong material flow
- high lateral forces due to product movement

the maximum tensile load should not exceed 40 000 N.

Probe Length Tolerances

Probe length	Tolerance
up to 3 m	+ 0 mm, –10 mm
3 to 6 m	+ 0 mm, –20 mm
more than 6 m	+ 0 mm, –30 mm

Mounting the Probe, Electronic Insert



The partially insulated rope probes 21 265, 21 265 A and 21 265 S are designed for vertical mounting only.

The rope probe should not be mounted at the outlet where on emptying the tensile forces are greatest. The distance to the vessel wall should be large enough to ensure that when the vessel is empty the weight can swing gently without hitting the vessel wall.

For minimum detection or continuous measurement, ensure that the probes are not subject to excessive strain by collapsing mounds of material.

Electronic Insert

The electronic insert is usually mounted inside the probe housing.
The electronic insert must be mounted in a separate housing if the ambient temperature at the probe housing exceeds that of the maximum permissible operating temperature for the electronic insert (see Supplementary Documentation, Page 6).

Installation

Shortening the Probe with Tensioning Weight

- Loosen the screws on the tensioning weight (3 Allen screws)
- Remove the weight
- Shorten the rope with a slitter (L min.= 500 mm)
- Replace the weight
- Tighten the screws on the tensioning weight so that they cut through the insulation.

The 21 265 S probe with insulated weight and anchoring hole cannot be shortened.

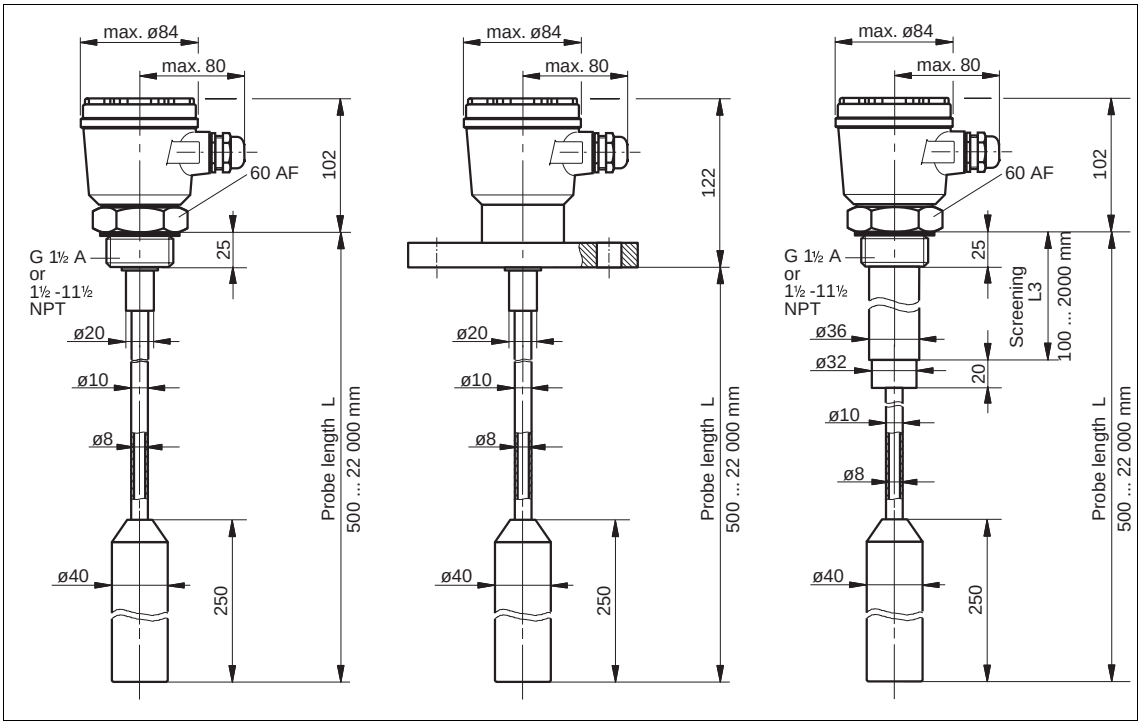
Probe 21 265 S

Observe all local regulations governing explosion protection and the instructions given in the certificates for the probe and electronic inserts.
For Germany:
The special conditions/requirements stated in (A7) 1st and 2nd in the Design Approval Certificate are fulfilled when the electronic insert EC 17 Z, EC 37 Z or EC 47 Z is mounted in the probe.

If an electronic insert is to be removed and not replaced immediately, electrostatic charging of the probe is prevented by connecting the central screw in the probe housing to the ground terminal.

Dimensions

Dimensions in mm
100 mm = 3.94 in
1 in = 25.4 mm



Left:
Rope probe 21 265
with threaded boss

Middle:
Rope probe 21 265
with flange

Right:
Rope probe 21 265 A
with threaded boss and
screening

Product Structure of the Rope Probes 21 265 and 21 265 A

Partly insulated rope probe 21 265 or partly insulated rope probe 21 265 A with screening

Process Connection / Material	**Weight**
G1 Thread G 1 1/2 A / steel	0,6 kg
G2 Thread G1 1/2 A / 1.4581*	0.6 kg
H1 Thread NPT 1 1/2" / steel (for 21 265 only)	0.6 kg
H2 Thread NPT 1 1/2" / 1.4581 (for 21 265 only)	0.6 kg
K1 Flange DN 50 PN16 / steel (for 21 265 only)	3.0 kg
K2 Flange DN 50 PN16 / 1.4571 (for 21 265 only)	3.0 kg
M1 Flange DN 80 PN16 / steel (for 21 265 only)	4.5 kg
M2 Flange DN 80 PN16 / 1.4571 (for 21 265 only)	4.5 kg
P1 Flange DN 100 PN16 / steel (for 21 265 only)	5.4 kg
P2 Flange DN 100 PN16 / 1.4571 (for 21 265 only)	5.4 kg
Q1 Flange ANSI 2" 150psi / steel (for 21 265 only)	3.2 kg
Q2 Flange ANSI 2" 150psi / 1.4571 (for 21 265 only)	3.2 kg
R1 Flange ANSI 4" 150psi / steel (for 21 265 only)	5.4 kg
R2 Flange ANSI 4" 150psi / 1.4571 (for 21 265 only)	5.4 kg
Y9 Others on request	

Screening Material (for 21 265 A only)

A	Steel
Y	Others on request

Length L3 of Screening (for 21 265 A only)

1	400 mm standard length	1.1 kg
9	Others on request	

Rope Material

1	Steel, PA partially insulated	0.3 kg/m
9	Others on request	

Tensioning Weight

A	Cast iron	1.9 kg
Y	Others on request	

Length of Probe (500 ... 22 000 mm)

1	..... mm
2	1000 mm (standard, can be shortened), (for 21 265 only)
3	2500 mm (standard, can be shortened), (for 21 265 only)
4	6000 mm (standard, can be shortened), (for 21 265 only)
9	Others on request

Housing / Cable Gland

A	Aluminium housing IP66, Pg16 (IP55)	0.4 kg
B	Aluminium housing IP66, Pg16 (IP66)	0.4 kg
C	Aluminium housing IP66, NPT 1/2"	0.4 kg
D	Aluminium housing IP66, G 1/2	0.4 kg
E	Aluminium housing IP66, M20x1,5	0.4 kg
F	Aluminium housing IP66, HNA24x1,5	0.4 kg
K	PBTP-plastic housing IP66, Pg16 (IP66)	0.3 kg
L	PBTP-plastic housing IP66, NPT 1/2"	0.3 kg
M	PBTP-plastic housing IP66, G 1/2	0.3 kg
O	PBTP-plastic housing IP66, M20x1,5	0.3 kg
P	PBTP-plastic housing IP66, HNA24x1,5	0.3 kg
R	Aluminium housing coated, IP66, Pg16 (IP66)	0.4 kg
T	Aluminium housing coated, IP66, NPT 1/2"	0.4 kg
U	Aluminium housing coated, IP66, G 1/2	0.4 kg
V	Aluminium housing coated, IP66, M20x1,5	0.4 kg
W	Aluminium housing coated, IP66, HNA24x1,5	0.4 kg
Y	Others on request	

Electronic insert

A	None	
E	EC 11 Z fitted	0.2 kg
C	EC 17 Z fitted	0.2 kg
G	EC 37 Z fitted	0.2 kg
H	EC 47 Z fitted	0.2 kg
B	EC 61 Z fitted	0.2 kg
F	EC 72 Z fitted	0.2 kg
Y	Others on request	

21 265 — ☐☐☐☐☐☐☐☐☐ Product designation Total weight ☐ kg

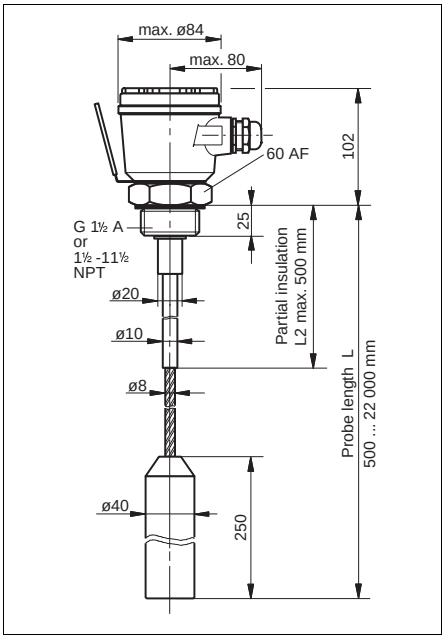
21 265A — ☐☐☐☐☐☐☐☐☐ Product designation

*1.4581 = SS 316 Ti 1.4571 = SS 316 Ti 1 kg = 2.2 lbs

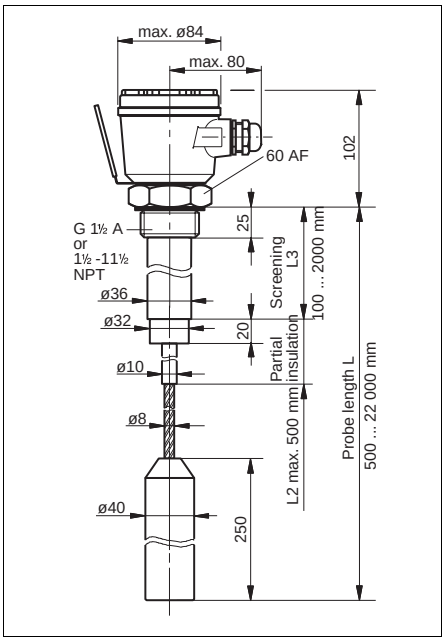
Main types with short delivery times

21 265 — G 1 1 A 2 A A
21 265 — G 1 1 A 3 A A
21 265 — G 1 1 A 4 A A

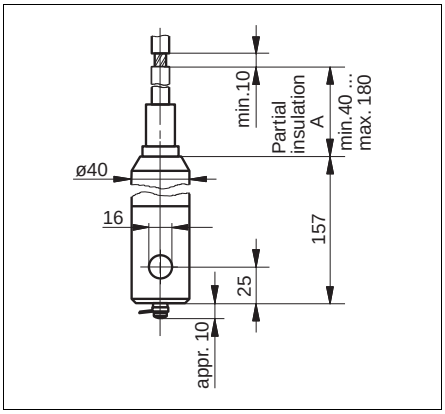
Product Structure of the Rope Probe 21 265 S



21265 S with tensioning weight



21265 S with screening and tensioning weight



Insulated weight with anchoring hole and ground connection

Partly insulated rope probe 21 265 S for Zone 10 dust explosions hazardous areas (Germany)

		Weight
Certificates / Approvals		
D	Dust Ex Zone 10	
Process Connection / Material		
G1	Thread G 1 1/2 A / steel	0.6 kg
G2	Thread G 1 1/2 A / 1.4571*	0.6 kg
H1	Thread 1 1/2" NPT / steel	0.6 kg
H2	Thread 1 1/2" NPT / 1.4571	0.6 kg
G3	Thread G 1 1/2 A, screening / steel	0.6 kg
G4	Thread G 1 1/2 A, screening / 1.4571	0.6 kg
H3	Thread NPT 1 1/2", screening / steel	0.6 kg
H4	Thread NPT 1 1/2", screening / 1.4571	0.6 kg
Y9	Others on request	
Screening L3		
E	None	
A	400 mm standard length steel	1.1 kg
B	400 mm standard length 1.4571	1.1 kg
C	..... mm steel (100-2000 mm)	2.7 kg/m
D	..... mm 1.4571 (100-2000 mm)	2.7 kg/m
Y	Other lengths / material on request	
Rope Material		
2	Steel bare, max. 500 mm partial insulation	0.3 kg/m
3	VA-rope bare, max. 500 mm partial insulation	0.3 kg/m
9	Other on request	
Tensioning Weight		
A	Cast iron 1.9 kg	1.9 kg
B	1.4571 1.9 kg	1.9 kg
C	Steel, insulated, with anchoring hole	1.0 kg
D	1.4571, insulated, with anchoring hole	1.0 kg
Y	Other materials and versions on request	
Length of Probe L (500 ... 22 000 mm)		
1	.... mm	
9	Others on request	
Housing / Cable Gland		
A	Aluminium housing IP66, Pg16 (IP55)	0.4 kg
B	Aluminium housing IP66, Pg16 (IP66)	0.4 kg
C	Aluminium housing IP66, NPT 1/2"	0.4 kg
D	Aluminium housing IP66, G 1/2	0.4 kg
E	Aluminium housing IP66, M20x1,5	0.4 kg
F	Aluminium housing IP66, HNA24x1,5	0.4 kg
K	PBTP-plastic housing IP66, Pg16 (IP66)	0.3 kg
L	PBTP-plastic housing IP66, NPT 1/2"	0.3 kg
M	PBTP-plastic housing IP66, G 1/2	0.3 kg
O	PBTP-plastic housing IP66, M20x1,5	0.3 kg
P	PBTP-plastic housing IP66, HNA24x1,5	0.3 kg
R	Aluminium housing coated, IP66, Pg16 (IP66)	0.4 kg
T	Aluminium housing coated, IP66, NPT 1/2"	0.4 kg
U	Aluminium housing coated, IP66, G 1/2	0.4 kg
V	Aluminium housing coated, IP66, M20x1,5	0.4 kg
W	Aluminium housing coated, IP66, HNA24x1,5	0.4 kg
Y	Others on request	
Electronic insert		
A	None	
C	EC 17 Z fitted	0.2 kg
G	EC 37 Z fitted	0.2 kg
H	EC 47 Z fitted	0.2 kg
Y	Others on request	

21 265 S — D [ ][ ][ ][ ][ ][ ][ ][ ] Product designation

Total weight [ ] kg

*1.4571 = SS 316 Ti

The partly insulated rope probe 21 265 S is approved for connection to instruments with intrinsically safe signal circuits [EEx ia].

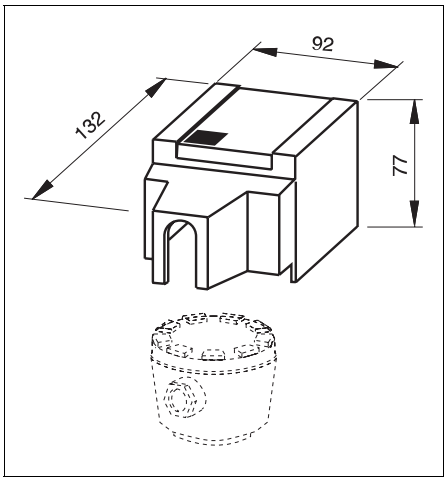
Accessories

Accessories

- Gasket for thread G 1 1/2 A: elastomer / fibre (asbestos-free), supplied
- All-weather cover for aluminium housing
  Material: polyamide
  Maximum ambient temperature: 100 °C (210 °F)

All-Weather Cover

The all-weather cover protects the field-mounted probe with aluminium housing from excess temperatures and from build-up of condensation in the housing which may occur with rapid changes in temperature.



Supplementary Documentation

Electronic Inserts

- ☐ Electronic Insert EC 11 Z / EC 72 Z
  Technical Information TI 270F/00/en
- ☐ Electronic Insert EC 17 Z
  Technical Information TI 268F/00/en
- ☐ Electronic Insert EC 37 Z / EC 47 Z
  Technical Information TI 271F/00/en

Certificates

- ☐ Partially insulated rod probe 21 265 S
  Design Approval Certificate
  BVS 93.Y.8004 B
  Certificate ZE 088F/00/de
- ☐ Electronic insert EC 17 Z
  Certificate of Conformity
  PTB No. Ex-93.C.2061 X
  Certificate ZE 095F/00/a3
- ☐ Electronic inserts EC 37 Z, EC 47 Z
  Certificate of Conformity
  PTB No. Ex-93.C.2062 X
  Certificate ZE 097F/00/a3

Details When Ordering

- ☐ Product designation
- ☐ Length in mm for
  - probe
  - screening
  - partial insulation if required
- ☐ Other version if required
- ☐ Accessories (e.g. all-weather cover)

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