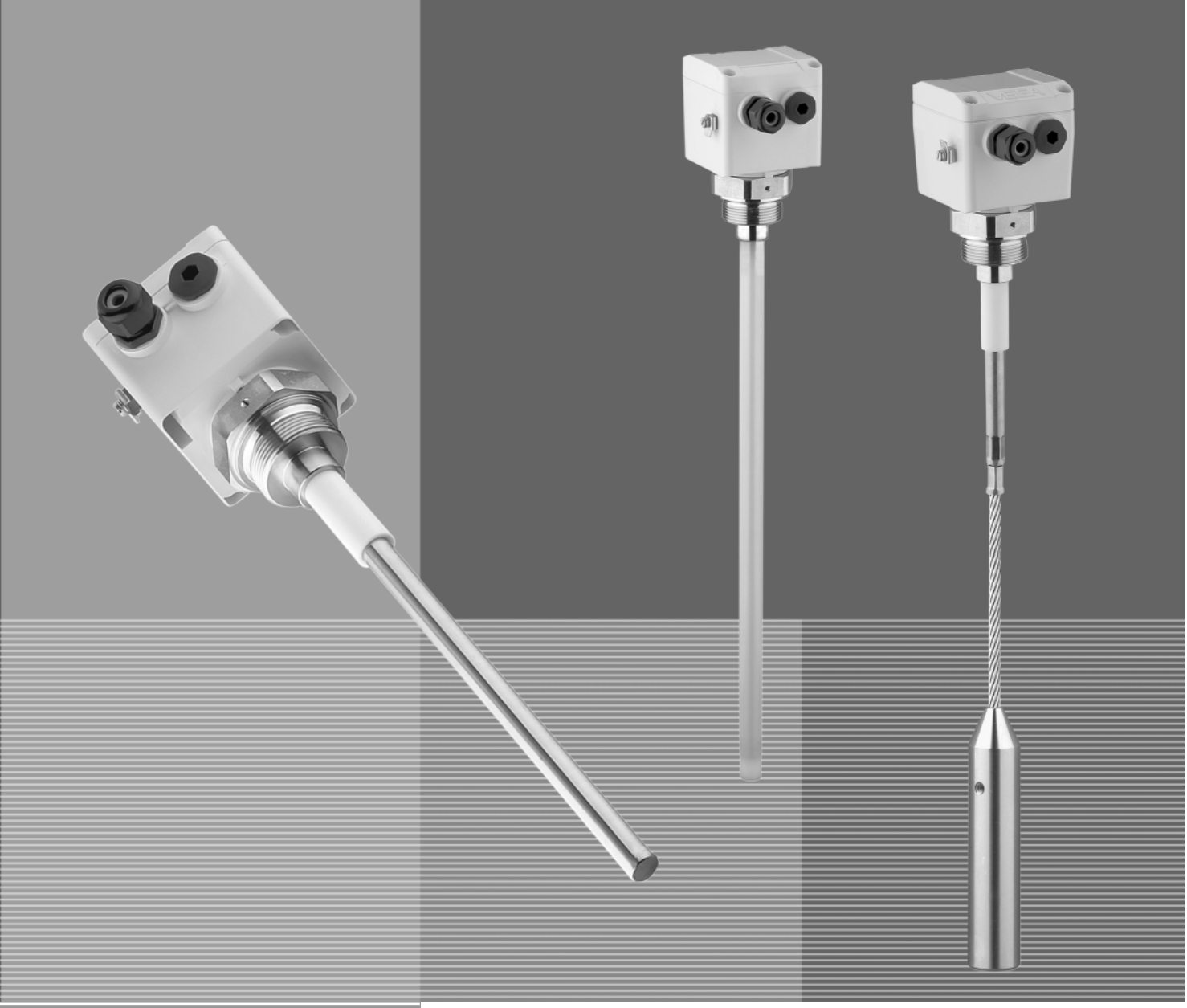
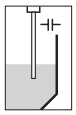


Level measurement - Capacitive



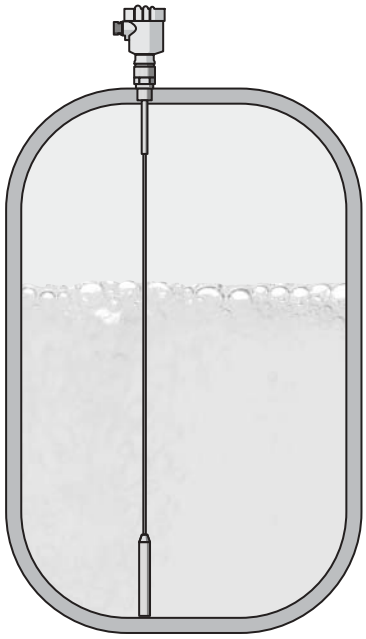
Probes EL:

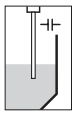
Level measurement in solids and liquids

The proven capacitive measuring principle is one of the widely used level measuring principles.

To the measuring principle:
Sensor and vessel form the two electrodes of a capacitor. A capacitance change caused by a level change is evaluated by the integrated electronics and converted into an appropriate output signal.

The sensors are extremely rugged and maintenance-free. Whereby the fully insulated versions are mainly used in conductive liquids, partly insulated versions are preferably used in solids. Also the measurement of aggressive and adhesive products is no problem.
Thanks to cable and rod versions, suitable instruments are available for all applications.



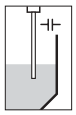


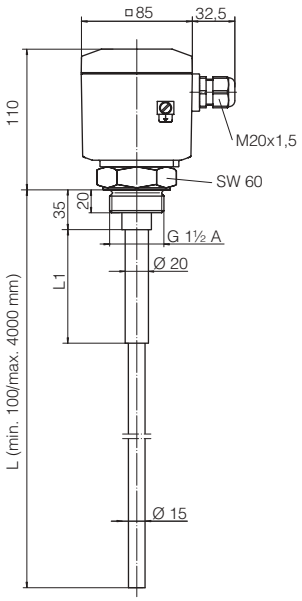
EL 11

Capacitive, partly insulated rod electrode

Preferably for measurement of non-conductive liquids and solids

- easy installation conditions
- high functionality
- rugged and maintenance-free
- electrode can be shortened





Approval
- **.X** without
- **EX0.A** ATEX II 1G,1/2G,2G EEx ia IIC T6 + WHG
- **EXS.K** ATEX II 1/2D IP65T
- **.M** Ship approval

Process connection/Material
- **GBS** Thread G1½A/steel
- **GBV** Thread G1½A/316Ti
- **GAV** Thread G1A/316Ti
- **NBS** Thread 1½NPT/steel
- **NBV** Thread 1½NPT/316Ti
- **FCV** Flange DN50PN40 Form C/316Ti
- **FDV** Flange DN80PN40 Form C/316Ti
- **AGV** Flange 2"150lb ANSI/316Ti
- **AHV** Flange 3"150lb ANSI/316Ti

Material rod
- **V** 316Ti

Material insulation
- **T** PTFE

Screening tube,concentric tube/Material
- **X** without
- **B** Concentric tube/316Ti
- **G** Screening tube/316Ti with closing cone/PTFE

Adapter (from 100°C with temperature adapter)
- **X** without
- **2** Temperature up to 200°C/316Ti

Housing/Protection
- **P** Plastic PBT/IP66
- **O** Plastic PBT/IP66 with test switch
- **B** Plastic PBT/IP66 with integrated indication
- **M** Aluminium plastic-coated/IP66/67
- **R** Al/IP54 with separate housing PBT/IP66 and triax cable

Oscillator mounted in electrode
- **D** E17 for continuous level measurement
- **E** E17Ex for continuous level measurement
- **F** E18 for continuous admittance measurement
- **G** E18Ex for continuous admittance measurement
- **I** 4...20mA
- **H** 4...20mA / HART®
- **P** Profibus PA
- **M** Profibus PA, with MINICOM

Overvoltage arrester integrated in housing
- **X** without
- **B** integrated in housing
- **C** Overvoltage arrester for electrostatic discharges

EL11									

Total length L in mm
per 100 mm of 316Ti
per 100 mm concentric tube of 316Ti

Tube length screening tube in mm
per 100 mm of 316Ti

Probe length: ☐ mm min. 100 mm, max. 6000 mm

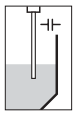
- Further process fittings and options on request

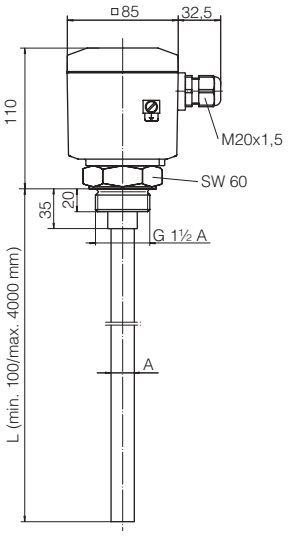
EL 21

Capacitive, fully insulated rod electrode

Preferably for measurement of liquids

- easy installation conditions
- high functionality
- rugged and maintenance-free
- measurement nearly along the complete electrode length





Approval

.X	without
EX0.A	ATEX II 1G,1/2G,2G EEx ia IIC T6 + WHG
.M	Ship approval

Process connection/Material

GBS	Thread G1½A/steel
GBV	Thread G1½A/316Ti
GAV	Thread G1A/316Ti
NBS	Thread 1½NPT/steel
NBV	Thread 1½NPT/316Ti
TBV	Tri-Clamp 1½"/316Ti
TCV	Tri-Clamp 2"/316Ti
RCV	Bolting DN50/316Ti
FCV	Flange DN50PN40 Form C/316Ti
PCV	Flange DN50PN40/316Ti PTFE-plated
FDV	Flange DN80PN40 Form C/316Ti
AGV	Flange 2"150lb ANSI/316Ti
AHV	Flange 3"150lb ANSI/316Ti

Continuation see next page

Material rod
V 316Ti

Material insulation
E PE
D PTFE 2.0 mm insulation thickness
T PTFE 3.2 mm insulation thickness

Screening tube,concentric tube/Material
X without
B Concentric tube/316Ti
G Screening tube/316Ti/PTFE

Adapter (from 100°C with temperature adapter)
X without
2 Temperature up to 200°C/316Ti

Housing/Protection
P Plastic PBT/IP66
O Plastic PBT/IP66 with test switch
B Plastic PBT/IP66 with integrated indication
M Aluminium plastic-coated/IP66/67
R Al/IP54 with separate housing PBT/IP66 and triax cable

Oscillator mounted in electrode
D E17 for continuous level measurement
E E17Ex for continuous level measurement
F E18 for continuous admittance measurement
G E18Ex for continuous admittance measurement
I 4...20mA
H 4...20mA / HART®
P Profibus PA
M Profibus PA, with MINICOM

Overvoltage arrester integrated in housing
X without
B integrated in housing
C Overvoltage arrester for electrostatic discharges

EL21									

Total length L in mm
per 100 mm of 316Ti, PE fully insulated
per 100 mm of 316Ti, PTFE ful ly insulated
per 100 mm of 316Ti, PFA full y insulated
per 100 mm concentric tube of 316Ti

Tube length screening tube in mm
per 100 mm of 316Ti

Probe length: ☐ mm

PE insulation: min. 100 mm, max. 5000 mm
PTFE 2.0 mm insulation: min. 100 mm, max. 4000 mm
PTFE 3.2 mm insulation: min. 100 mm, max. 6000 mm

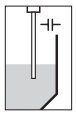
- Further process fittings and options on request

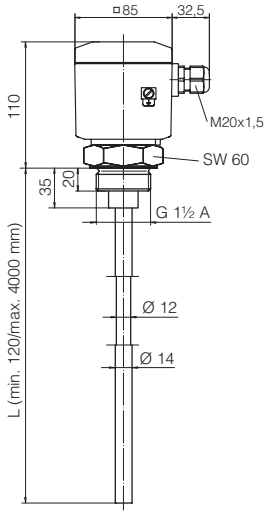
EL 24

Fully insulated admittance electrode in rod version

For level measurement of adhesive, conductive liquids

- easy installation conditions
- exact measurement even with strong buildup
- high linearity
- measurement along nearly the complete electrode length





Approval
.X without
EX0.A ATEX II 1G,1/2G,2G EEx ia IIC T6 + WHG
.M Ship approval

Process connection/Material
GBV Thread G1½A/316Ti
TCV Tri-Clamp 2"/316Ti
RCV Bolting DN50/316Ti

Material rod
V 316Ti

Material insulation
A FEP

Screening tube,concentric tube/Material
X without

Adapter (from 100°C with temperature adapter)
X without

Housing/Protection
P Plastic PBT/IP66
O Plastic PBT/IP66 with test switch
B Plastic PBT/IP66 with integrated indication
M Aluminium plastic-coated/IP66/67
R Al/IP54 with separate housing PBT/IP66 and triax cable

Oscillator mounted in electrode
F E18 for continuous admittance measurement
G E18Ex for cont. admittance measurement
I 4...20mA
H 4...20mA / HART®
P Profibus PA
M Profibus PA, with MINICOM

Overvoltage arrester integrated in housing
X without
B integrated in housing
C Overvoltage arrester for electrostatic discharges

EL24									

Total length L in mm
per 100 mm of 316Ti, FEP full y insulated

Probe length: ☐ mm min. 100 mm, max. 4000 mm

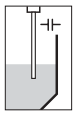
- Further process fittings and options on request

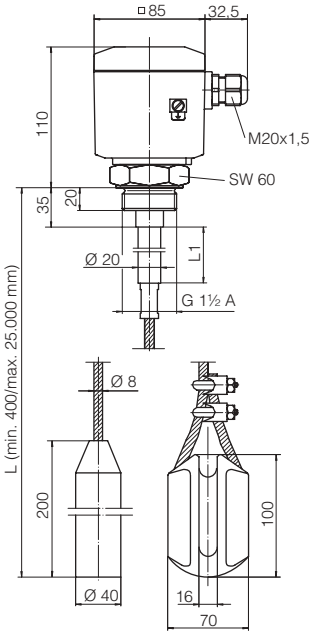
EL 31

Capacitive, partly insulated cable electrode

Preferably for measurement of non-conductive solids and liquids

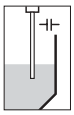
- easy installation conditions
- high functionality
- very rugged and maintenance-free
- electrode can be shortened





Approval
- **.X** without
- **EX0.A** ATEX II 1G,1/2G,2G EEx ia IIC T6 + WHG
- **EXS.K** ATEX II 1/2D IP65T
- **.M** Ship approval

Process connection/Material
- **GBS** Thread G1½A/steel
- **GBV** Thread G1½A/316Ti
- **NBS** Thread 1½NPT/steel
- **NBV** Thread 1½NPT/316Ti
- **FCV** Flange DN50PN40 Form C/316Ti
- **FDV** Flange DN80PN40 Form C/316Ti
- **AGV** Flange 2"150lb ANSI/316Ti
- **AHV** Flange 3"150lb ANSI/316Ti



Material cable
- **V** 316Ti

Material insulation
- **T** PTFE

Screening tube,concentric tube/Material
- **X** without

Adapter (from 100°C with temperature adapter)
- **X** without
- **2** Temperature up to 200°C/316Ti

Gravity weight/Fixing insulator/Material
- **E** Fixing insulator/ceramic and 316Ti

Housing/Protection
- **P** Plastic PBT/IP66
- **O** Plastic PBT/IP66 with test switch
- **B** Plastic PBT/IP66 with integrated indication
- **M** Aluminium plastic-coated/IP66/67
- **R** Al/IP54 with separate housing PBT/IP66 and triax cable

Oscillator mounted in electrode
- **D** E17 for continuous level measurement
- **E** E17Ex for continuous level measurement
- **F** E18 for continuous admittance measurement
- **G** E18Ex for continuous admittance measurement
- **I** 4...20mA
- **H** 4...20mA / HART®
- **P** Profibus PA
- **M** Profibus PA, with MINICOM

Overvoltage arrester integrated in housing
- **X** without
- **B** integrated in housing
- **C** Overvoltage arrester for electrostatic discharges

EL31										

Total length L in mm
per 1000 mm of steel
per 1000 mm of 316Ti

Tube length screening tube tube in mm
per 100 mm of steel
per 100 mm of 316Ti

Probe length: ☐ mm min. 500 mm, max. 40000 mm

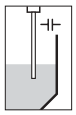
- Further process fittings and options on request

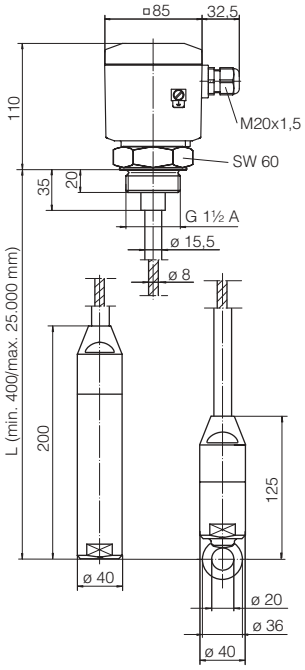
EL 52

Capacitive, PTFE fully insulated cable electrode

For measurement of solids and conductive liquids

- easy installation conditions
- high functionality
- insensitive to condensation
- rugged and maintenance-free





Approval
- **.X** without
- **EX0.X** ATEX II 1G,1/2G,2G EEx ia IIC T6
- **.M** Ship approval

Process connection/Material
- **GBA** Thread G1½A/Aluminium
- **GBS** Thread G1½A/steel
- **GBV** Thread G1½A/316Ti
- **GBT** Thread G1½A/steel with adapter/PTFE
- **GBP** Thread G1½A/steel with adapter/PP
- **NBS** Thread 1½NPT/steel
- **NBV** Thread 1½NPT/316Ti
- **TCV** Tri-Clamp 2"/316Ti
- **AGV** Flange 2"150lb ANSI/316Ti

Material cable
- **V** 316Ti

Material insulation
- **T** PTFE

Screen.tube,conc.tube/Material/Closing cone
- **X** without
- **G** Screening tube/316Ti/PTFE

Adapter (from 100°C with temperature adapter)
- **X** without
- **2** Temperature up to 200°C/316Ti

Gravity weight/Fixing weight/Material
- **N** Gravity weight/316Ti
- **P** Fixing weight/316Ti

Housing/Protection
- **P** Plastic PBT/IP66
- **O** Plastic PBT/IP66 with test switch
- **B** Plastic PBT/IP66 with integrated indication
- **M** Aluminium plastic-coated/IP66/67
- **R** Al/IP54 with separate housing PBT/IP66 and triax cable

Oscillator mounted in electrode
- **D** E17 for continuous level measurement
- **E** E17Ex for continuous level measurement
- **F** E18 for continuous admittance measurement
- **G** E18Ex for continuous admittance measurement
- **I** 4...20mA
- **H** 4...20mA / HART®
- **P** Profibus PA
- **M** Profibus PA, with MINICOM

Overvoltage arrester integrated in housing
- **X** without
- **B** integrated in housing
- **C** Overvoltage arrester for electrostatic discharges

EL52										

Total length L in mm
per 100 mm of 316Ti, PTFE ful ly insulated

Tube length screening tube in mm
per 100 mm of 316Ti

Probe length: ☐ mm min. 400 mm, max. 30000 mm

- Further process fittings and options on request

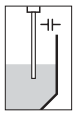
EL 53

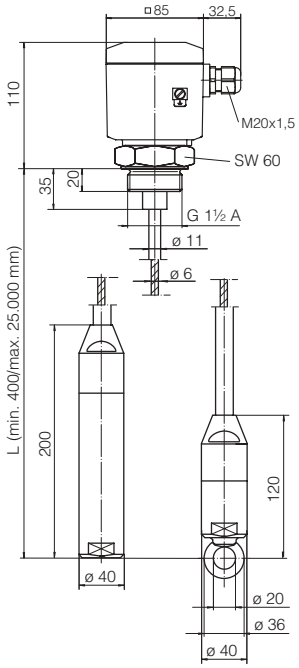
Capacitive, PE/PA12 fully insulated cable electrode

Preferably for measurement of solids

- easy installation conditions
- high functionality
- insensitive to condensation
- rugged and maintenance-free

Process temperature : -40...80°C





Approval

.X without

EX0.X ATEX II 1G,1/2G,2G EEx ia IIC T6

.M Ship approval

Process connection/Material

GBS Thread G1½A/steel

GBV Thread G1½A/316Ti

NBV Thread 1½NPT/316Ti

Material insulation

E PE/PA 12

Screen.tube,conc.tube/Material/Closing cone

X without

Adapter

X without

Gravity weight/Fixing weight/Material

N Gravity weight/316Ti

P Fixing weight/316Ti

Housing/Protection

P Plastic PBT/IP66

O Plastic PBT/IP66 with test switch

B Plastic PBT/IP66 with integrated indication

M Aluminium plastic-coated/IP66/67

Oscillator mounted in electrode

D E17 for continuous level measurement

E E17Ex for continuous level measurement

F E18 for continuous admittance measurement

G E18Ex for continuous admittance measurement

I 4...20mA

H 4...20mA / HART®

P Profibus PA

M Profibus PA, with MINICOM

Overvoltage arrester integrated in housing

X without

B integrated in housing

C Overvoltage arrester for electrostatic discharges

EL53									

Total length L in mm

per 1000 mm of steel, PE/PA12-fully insulated

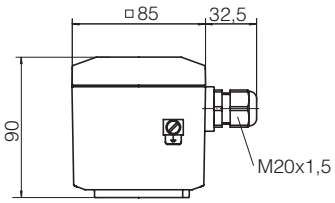
Probe length: ☐ mm min. 400 mm, max. 40000 mm

- Further process fittings and options on request

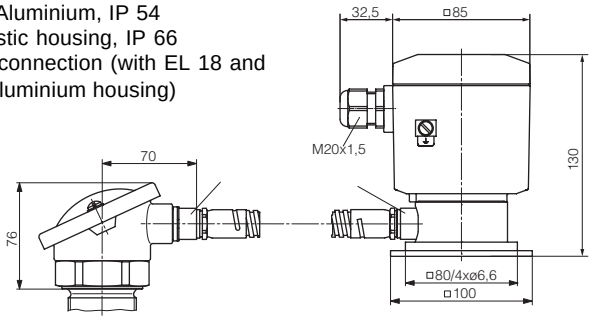
Accessory probes EL

Housing

Housing (P or M) of plastic, IP 66 and
Aluminium IP 66/IP 67

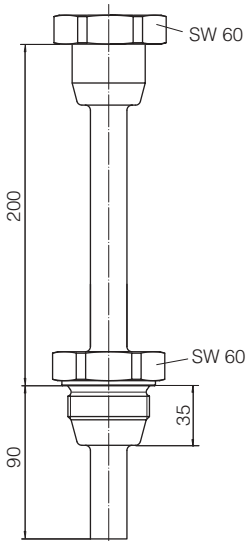


Housing (R) of Aluminium, IP 54 with remote plastic housing, IP 66 and triax cable connection (with EL 18 and EL 28 without Aluminium housing)

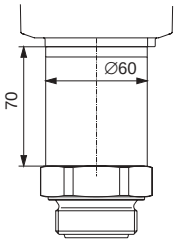


Temperature adapters

of galvanised steel (1) or 1.4571 (2)

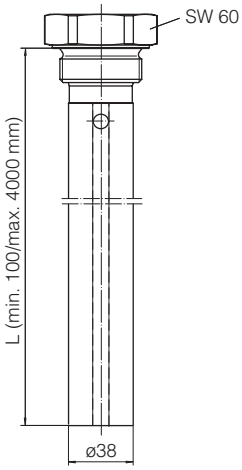


of PA (3)



Concentric tube

of St or 1.4571



Screening tube

of St or 1.4571 with closing cone of PP or PTFE