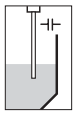
Level measurement – Capacitive

VEGACAL series 60:

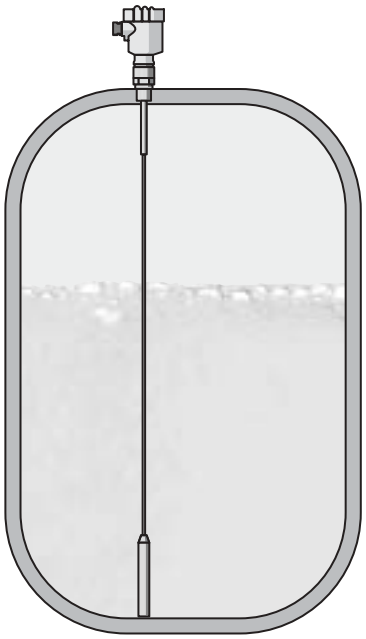
Level measurement in solids and liquids



The proven capacitive measuring principle is one of the widely used level measuring principles in the industrial measurement technology.

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

The sensors are extremely rugged and maintenance-free. Whereby 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.



Overview

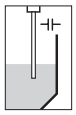
	VEGACAL 62	VEGACAL 63	VEGACAL 64
			
Applications:	solids, non-conductive liquids	conductive liquids	adhesive, conductive liquids
Version:	with partly insulated rod	with fully insulated rod	with fully insulated rod
Process fitting:	from G¾A	from G¾A	from G¾A
Process temperature:	-50…200°C	-50…200°C	-50…150°C
Process pressure:	-1…64 bar (-100…6400 kPa)	-1…64 bar (-100…6400 kPa)	-1…64 bar (-100…6400 kPa)
Replacement for:	EL 11, EL 18, EK 11	EL 21, EK 21	EK 24

	VEGACAL 65	VEGACAL 66	VEGACAL 67
			
Applications:	solids, non-conductive liquids	liquids, solids	liquids, solids
Version:	with cable	with insulated cable	with rod or cable
Process fitting:	from G1A	from G1A	from G1½A
Process temperature:	-50…200°C	-50…150°C	-50…300°C
Process pressure:	-1…64 bar (-100…6400 kPa)	-1…40 bar (-100…4000 kPa)	-1…16 bar (-100…1600 kPa)
Replacement for:	EL 31, 33, 34	EL 52, 53	EL 60, 61

VEGACAL 62

Capacitive rod electrode for level measurement
For use in solids and non-conductive liquids

- robust and maintenance-free
- easy installation and mounting
- measurement along the complete probe length
- PTFE partly insulated
- instrument from the plics® family



Approval

XX without
XM Ship approval
CX ATEX II 1G, 1/2G, 2G EEx ia IIC T6
CA ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + WHG
CM ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + Ship approval
CK ATEX II 1G,1/2G,2G EEx ia IIC T6+ATEX II 1/2D,2D IP6X T [1]
DX ATEX II 1/2G, 2G EEx d ia IIC T6 [2]
GX ATEX II 1/2D, 2D IP6X T [1]

Version / Temperature range

A Standard / -50 ... 150°C
B Standard / -50 ... 200°C
C with screening tube 316L / -50 ... 150°C [3]
D with screening tube 316L / -50 ... 200°C [3]

Process fitting / Material

GA Thread G¾A PN64 / 316L
GC Thread G1A PN64 / 316L
GD Thread G1½ PN64 / 316L
GS Thread G1½A PN64 / Steel

Electronics

H 4...20mA/HART®
X for connection to a signal conditioning instrument
P Profibus PA
F Foundation Fieldbus

Housing / Protection

K Plastic / IP66/IP67
A Aluminium / IP66/IP68 (0.2 bar)
D Aluminium double chamber / IP66/IP68 (0.2 bar)
V Stainless steel 316L / IP66/IP68 (0.2bar)

Cable entry / Plug connection

M M20x1.5 / without
N ½NPT / without

Indicating/adjustment module (PLICSCOM)

X Without
A Top mounted

Additional equipment

X Without

CL62.								

[1] Not in conjunction with Housing / Protection "K"
[2] Only in conjunction with Housing / Protection "D"
[3] Not in conjuction with Process fitting / Material "GA", "GS"

Length in mm (from seal surface)
per 100 mm of 316L

Length screening tube in mm
per 100 mm of 316L

Insulation length in mm
per 100 mm of PTFE

Length: ☐ mm (min. 120 mm; max. 6000 mm)

- Further process fittings and options on request

VEGACAL 63

Fully insulated, capacitive rod electrode for level measurement
For use in conductive liquids

- robust and maintenance-free
- easy installation and mounting
- measurement along the complete probe length
- insulation thickness 2 mm
- instrument from the plics® family

Approval

- **XX** without
- **XM** Ship approval
- **CX** ATEX II 1G, 1/2G, 2G EEx ia IIC T6
- **CA** ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + WHG
- **CM** ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + Ship approval
- **CK** ATEX II 1G,1/2G,2G EEx ia IIC T6+ATEX II 1/2D,2D IP6X T [1)]
- **DX** ATEX II 1/2G, 2G EEx d ia IIC T6 [2)]
- **GX** ATEX II 1/2D, 2D IP6X T [1)]

Version / Temperature range

- **E** PE insulation / -40...80°C
- **F** PTFE insulation / -50...150°C
- **G** PTFE insulation / -50...200°C
- **H** PE insulation and concentric tube 316L / -40...80°C [3)]
- **I** PTFE insulation and concentric tube 316L / -50...150°C [3)]
- **J** PTFE insulation and concentric tube 316L / -50...200°C [3)]

Process fitting / Material

- **GA** Thread G¾A PN64 / 316L
- **GC** Thread G1A PN64 / 316L
- **GD** Thread G1½ PN64 / 316L
- **GS** Thread G1½A PN64 / Steel

Electronics

- **H** 4...20mA/HART®
- **X** for connection to a signal conditioning instrument
- **P** Profibus PA
- **F** Foundation Fieldbus

Housing / Protection

- **K** Plastic / IP66/IP67
- **A** Aluminium / IP66/IP68 (0.2 bar)
- **D** Aluminium double chamber / IP66/IP68 (0.2 bar)
- **V** Stainless steel 316L / IP66/IP68 (0.2bar)

Cable entry / Plug connection

- **M** M20x1.5 / without
- **N** ½NPT / without

Indicating/adjustment module (PLICSCOM)

- **X** Without
- **A** Top mounted

Additional equipment

- **X** Without

CL63.								

[1)] Not in conjunction with Housing / Protection "K"

[2)] Only in conjunction with Housing / Protection "D"

[3)] Not in conjuction with Process fitting / Material "GA", "GS"

Length in mm (from seal surface)

per 100 mm of 316L, PE fully insulated

per 100 mm of 316L, PTFE fully insulated

Length concentric tube in mm

per 100 mm of 316L

Length: ☐ mm (min. 100 mm; max. 6000 mm)

- Further process fittings and options on request

VEGACAL 64

Fully insulated, capacitive rod electrode for level measurement
For use in adhesive, conductive liquids

- robust and maintenance-free
- easy installation and mounting
- measurement along the complete probe length
- insulation thickness 1 mm
- instrument from the plics® family

Approval

- **XX** without
- **XM** Ship approval
- **CX** ATEX II 1G, 1/2G, 2G EEx ia IIC T6
- **CA** ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + WHG
- **CM** ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + Ship approval
- **CK** ATEX II 1G,1/2G,2G EEx ia IIC T6+ATEX II 1/2D,2D IP6X T [1]
- **DX** ATEX II 1/2G, 2G EEx d ia IIC T6 [2]
- **GX** ATEX II 1/2D, 2D IP6X T [1]

Version / Temperature range

- **R** FEP insulation / -50...150°C

Process fitting / Material

- **GA** Thread G¾A PN64 / 316L
- **GC** Thread G1A PN64 / 316L
- **GD** Thread G1½ PN64 / 316L
- **GS** Thread G1½A PN64 / Steel

Electronics

- **H** 4...20mA/HART®
- **X** for connection to a signal conditioning instrument
- **P** Profibus PA
- **F** Foundation Fieldbus

Housing / Protection

- **K** Plastic / IP66/IP67
- **A** Aluminium / IP66/IP68 (0.2 bar)
- **D** Aluminium double chamber / IP66/IP68 (0.2 bar)
- **V** Stainless steel 316L / IP66/IP68 (0.2bar)

Cable entry / Plug connection

- **M** M20x1.5 / without
- **N** ½NPT / without

Indicating/adjustment module (PLICSCOM)

- **X** Without
- **A** Top mounted

Additional equipment

- **X** Without

CL64.								

[1] Not in conjunction with Housing / Protection "K"

[2] Only in conjunction with Housing / Protection "D"

Length in mm (from seal surface)

per 100 mm of 316L, FEP fully insulated

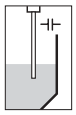
Length: ☐ mm (min. 200 mm; max. 6000 mm)

- Further process fittings and options on request

VEGACAL 65

Capacitive cable electrode for level measurement
For use in non-conductive liquids and solids

- robust and maintenance-free
- easy installation and mounting
- measurement along the complete probe length
- instrument from the plics® family



Approval

XX without
XM Ship approval
CX ATEX II 1G, 1/2G, 2G EEx ia IIC T6
CA ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + WHG
CM ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + Ship approval
CK ATEX II 1G,1/2G,2G EEx ia IIC T6+ATEX II 1/2D,2D IP6X T [1)]
DX ATEX II 1/2G, 2G EEx d ia IIC T6 [2)]
GX ATEX II 1/2D, 2D IP6X T [1)]

Version / Temperature range

K Cable ø 6mm / 316 with gravity weight / -50...150°C
U Cable ø6mm with screening tube a. gr.weight/-50...150°C [3)]
L Cable ø 6mm / 316 with gravity weight / -50...200°C
V Cable ø6mm w.screening tube a. grav.weight/-50...200°C [3)]

Process fitting / Material

GC Thread G1A PN64 / 316L
GD Thread G1½ PN64 / 316L
GS Thread G1½A PN64 / Steel

Electronics

H 4...20mA/HART®
X for connection to a signal conditioning instrument
P Profibus PA
F Foundation Fieldbus

Housing / Protection

K Plastic / IP66/IP67
A Aluminium / IP66/IP68 (0.2 bar)
D Aluminium double chamber / IP66/IP68 (0.2 bar)
V Stainless steel 316L / IP66/IP68 (0.2bar)

Cable entry / Plug connection

M M20x1.5 / without
N ½NPT / without

Indicating/adjustment module (PLICSCOM)

X Without
A Top mounted

Additional equipment

X Without

CL65.								

[1)] Not in conjunction with Housing / Protection "K"
[2)] Only in conjunction with Housing / Protection "D"
[3)] Not in conjuction with Process fitting / Material "GS"

Length in mm (from seal surface)
per 100 mm of 1.4401
per 100 mm of 316

Insulation length in mm
per 100 mm of PTFE

Length: ☐ mm (min. 400 mm; max. 32000 mm)

- Further process fittings and options on request

VEGACAL 66

Fully insulated, capacitive cable electrode for level measurement
For use in liquids and solids

- robust and maintenance-free
- easy installation and mounting
- measurement along the complete probe length
- instrument from the plics® family

Approval

XX without

XM Ship approval

CX ATEX II 1G, 1/2G, 2G EEx ia IIC T6

CA ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + WHG

CM ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + Ship approval

CK ATEX II 1G,1/2G,2G EEx ia IIC T6+ATEX II 1/2D,2D IP6X T [1)]

DX ATEX II 1/2G, 2G EEx d ia IIC T6 [2)]

GX ATEX II 1/2D, 2D IP6X T [1)]

Version / Temperature range

N PTFE insulated cable ø8mm w. gravity weight/-50...150°C

Process fitting/ Material

GC Thread G1A PN40 / 316L

GD Thread G1½ PN40 / 316L

GS Thread G1½A PN40 / Steel

Electronics

H 4...20mA/HART®

X for connection to a signal conditioning instrument

P Profibus PA

F Foundation Fieldbus

Housing / Protection

K Plastic / IP66/IP67

A Aluminium / IP66/IP68 (0.2 bar)

D Aluminium double chamber / IP66/IP68 (0.2 bar)

V Stainless steel 316L / IP66/IP68 (0.2bar)

Cable entry / Plug connection

M M20x1.5 / without

N ½NPT / without

Indicating/adjustment module (PLICSCOM)

X Without

A Top mounted

Additional equipment

X Without

CL66.								

[1)] Not in conjunction with Housing / Protection "K"

[2)] Only in conjunction with Housing / Protection "D"

Length in mm (from seal surface)

per 100 mm of 1.4401 PTFE insulated

Length: ☐ mm (min. 400 mm; max. 32000 mm)

- Further process fittings and options on request

VEGACAL 67

Capacitive, high temperature electrode for level measurement

- robust and maintenance-free
- easy installation and mounting
- electrode can be shortened
- instrument from the plics® family

Approval
XX without

Version / Temperature range
1 Ceramic-insulated rod probe / -50...300°C
3 Ceramic-insulated rod probe / -50...400°C
2 Ceramic-insulated cable probe / -50...300°C
4 Ceramic-insulated cable probe / -50...400°C

Process fitting / Material
GD Thread G1½ PN40 / 316L

Electronics
H 4...20mA/HART®
X for connection to a signal conditioning instrument
P Profibus PA
F Foundation Fieldbus

Housing / Protection
K Plastic / IP66/IP67
A Aluminium / IP66/IP68 (0.2 bar)
D Aluminium double chamber / IP66/IP68 (0.2 bar)
V Stainless steel 316L / IP66/IP68 (0.2bar)
B Lateral cable outlet IP68, ext. housing plastic/IP66/67

Cable entry / Plug connection
M M20x1.5 / without
N ½NPT / without

Indicating/adjustment module (PLICSCOM)
X Without
A Top mounted

Additional equipment
X Without

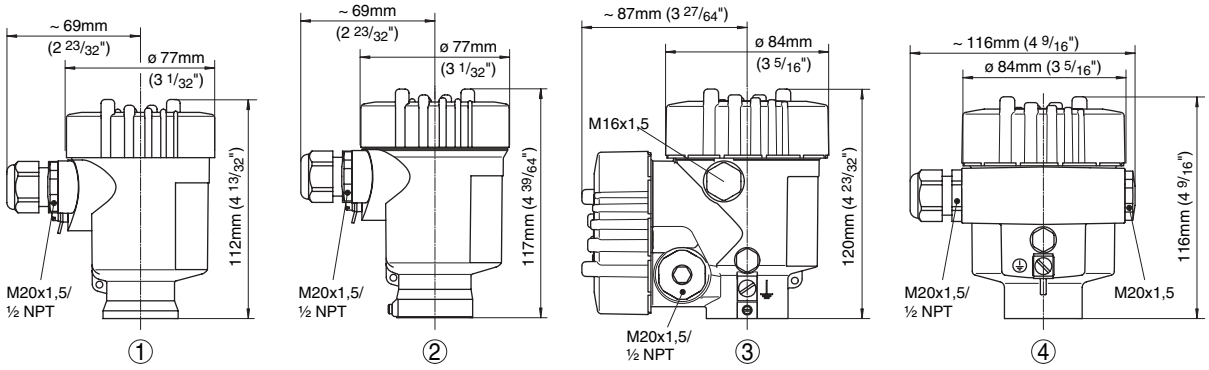
CL67. | | | | | | | | |

Length in mm (from seal surface)
per 100 mm rod of 316L
per 100 mm cable of 316L

Length: ☐☐☐☐☐ mm (min. 400 mm; max. 32000 mm)

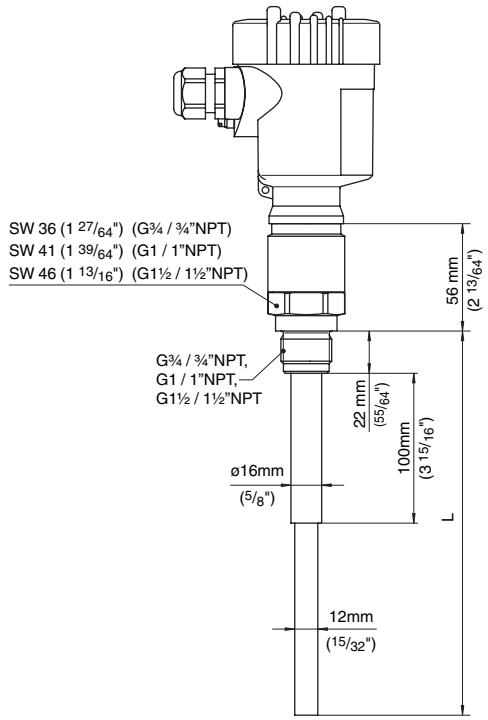
- Further process fittings and options on request

Housings

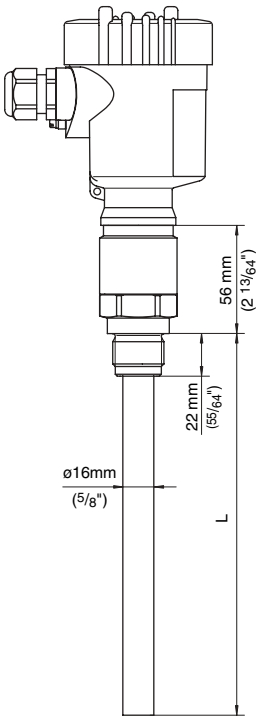


1 Plastic housing
2 Stainless steel housing
3 Aluminium double chamber housing
4 Aluminium housing

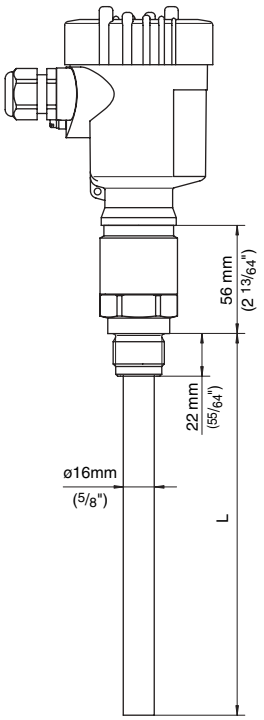
VEGACAL 62



VEGACAL 63

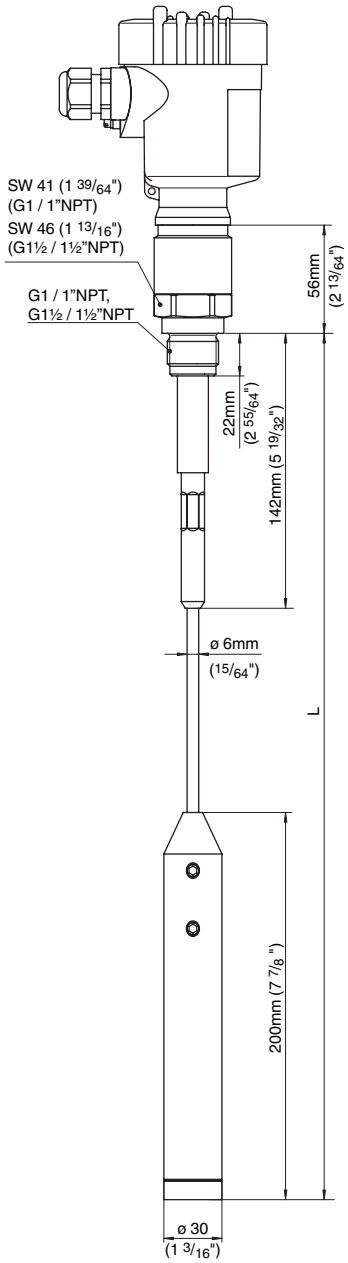


VEGACAL 64

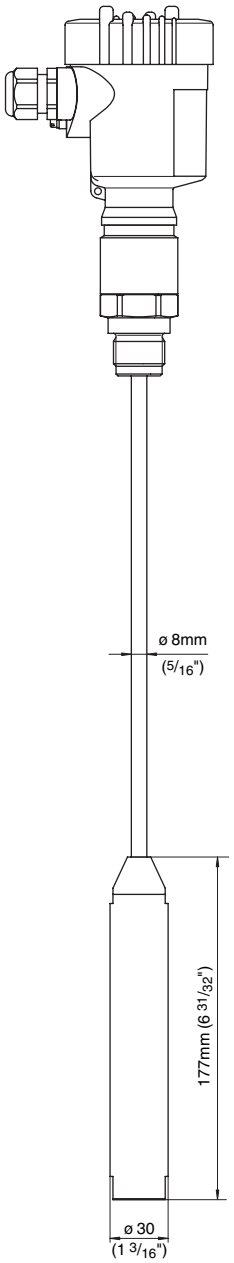


Specifications in mm or inch

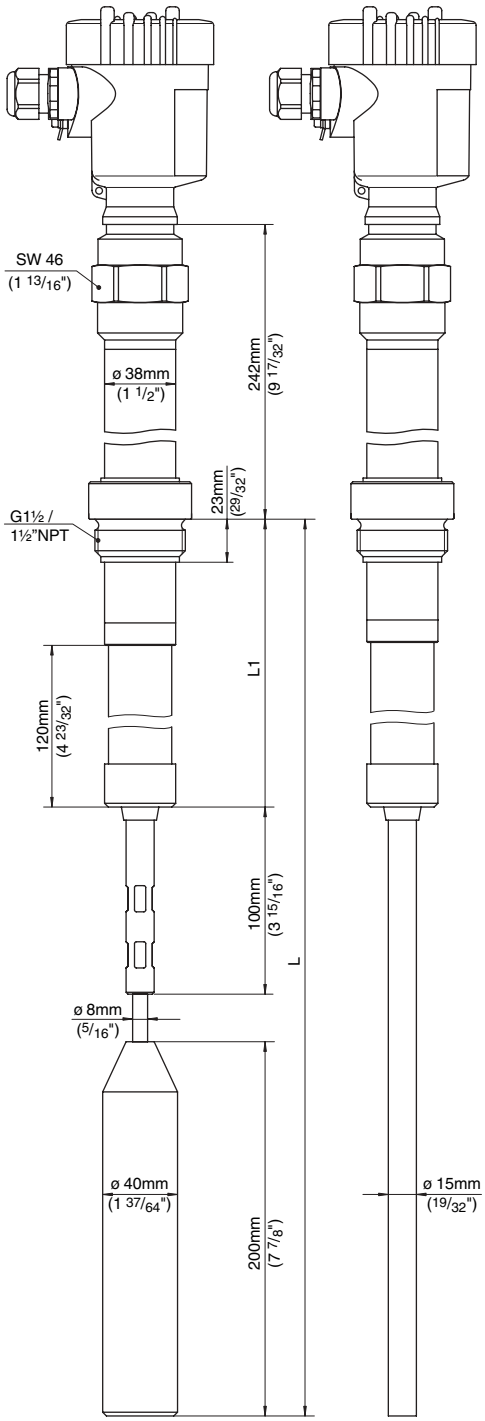
VEGACAL 65



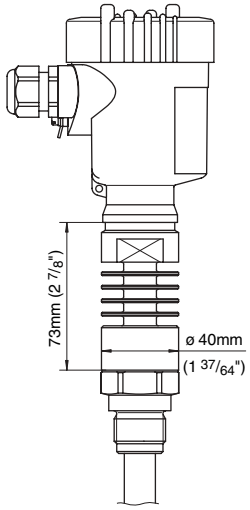
VEGACAL 66



VEGACAL 67



Temperature adapter



Specifications in mm or inch