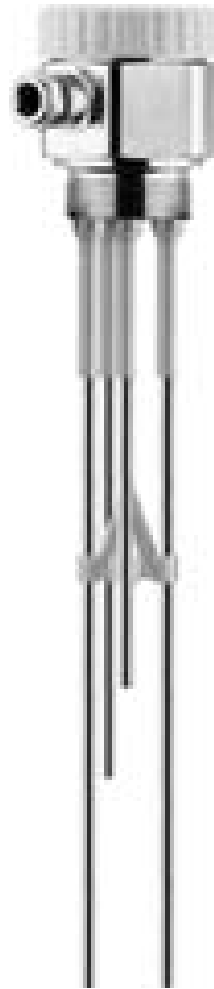


Level detection in liquid

Conductive

**VEGAKON 61**  
**VEGAKON 66**  
**Probes EL 1, 3, 4, 6,**  
**8**



**Product Information**



**VEGA**

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### Take note of safety instructions for Ex applications



Please note the Ex specific safety information which you can find on our homepage [www.vega.com/services/downloads](http://www.vega.com/services/downloads) and which comes with every instrument. In hazardous areas you should take note of the appropriate regulations, conformity and type approval certificates of the sensors and power supply units. The sensors must only be operated on intrinsically safe circuits. The permissible electrical values are stated in the certificate.

## 1 Description of the measuring principle

### Measuring principle

Conductive probes are used for level detection in conductive liquids.

The instruments are designed for industrial use in all areas of process technology.

Conductive probes detect the product resistance when their electrodes get covered by the product. A small alternating current, measured continuously by the electronics of the compact instrument or a separate signal conditioning instrument, is checked for amplitude and phase position and converted into a switching signal.

A conductive probe consists of a ground electrode and a level-related measuring electrode.

The switching signal is determined by the length or mounting position of the respective measuring electrode.

In conductive vessels, the vessel wall can be used as the ground electrode. The measuring probe can then consist of only one measuring electrode.

The sensors are maintenance free and rugged and can be implemented in all areas of industrial measurement engineering.

### 1.1 Application examples

#### Overflow protection

Measuring system for detection of the max. level in an electrically conductive vessel (e.g. as overflow protection)

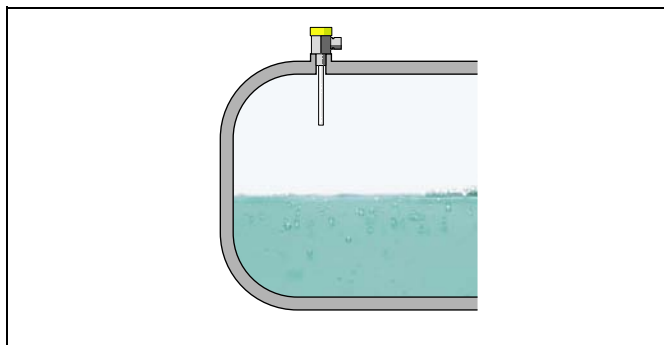


Fig. 1: Overflow protection

Simple, inexpensive level detection, e.g. as overflow protection in watery liquids.

Advantages:

- Easy, reliable sensors
- Small installation dimensions

#### Pump control

Due to the many possible ways of application, conductive level switches are ideal for all measuring tasks in connection with water and aqueous solutions. The large number of electrical and mechanical versions guarantees simple integration into existing processes.

Pump control is a frequent application in the area of water and waste water.

To empty a pump sump automatically with a pump when a certain level is exceeded and to switch the pump off again when the min. level is reached, the pump can be controlled with a conductive measuring probe.

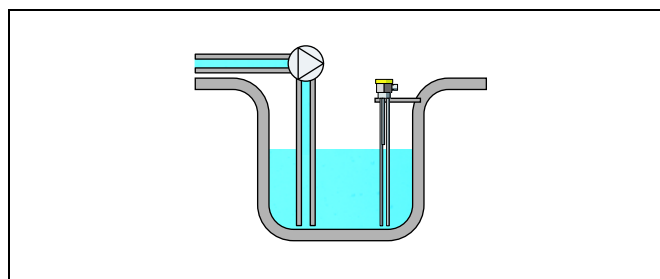


Fig. 2: Pump control with an EL 3 conductive measuring probe

Advantages:

- Up to five switching points with one sensor possible

#### Dry run protection in pipelines

Thanks to its virtually front-flush conical electrode, the conductive level switch VEGAKON 61 is ideal for use in pipelines. Its flow-efficient profile does not change the pipe cross section and thus prevents turbulence.

The VEGAKON 61 measures the field strength at its tip, and is thus insensitive to buildup.

VEGAKON 61 calibrates itself automatically and therefore needs no adjustment.

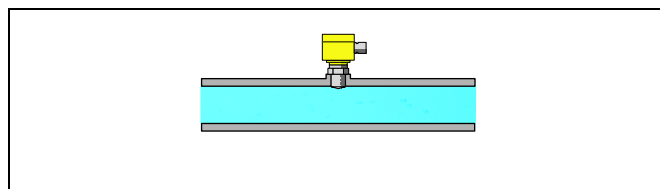


Fig. 3: Dry run protection in pipelines

Advantages:

- Insensitive to buildup
- Adjustment free
- Causes no turbulence
- Does not change pipe cross sectional area
- Robust and abrasion resistant

## 2 Type overview

**VEGAKON 61**



Preferred application: Conductive liquids, pipelines  
 Version: Compact level switch, partly insulated  
 Insulation: PTFE  
 Length: -  
 Process fitting: Thread G1 A, conus, Tuchenhagen  
 Process temperature: -40 ... +150 °C (-40 ... +302 °F)  
 Process pressure: -1 ... 25 bar/-100 ... 2500 kPa (-14.5 ... 363 psi)

**VEGAKON 66**



Preferred application: Conductive liquids  
 Version: Compact level switch, rod - partly insulated  
 Insulation: PP  
 Length: 0.12 ... 4 m (0.394 ... 13.12 ft)  
 Process fitting: Thread G1½ A  
 Process temperature: -40 ... +100 °C (-40 ... +212 °F)  
 Process pressure: -1 ... 6 bar/-100 ... 600 kPa (-14.5 ... 87 psi)

**EL 1**



Preferred application: Conductive liquids  
 Version:<sup>1)</sup> Rod - partly insulated  
 Insulation: PTFE  
 Length: 0.04 ... 4 m (0.131 ... 13.12 ft)  
 Process fitting: Thread G½ A  
 Process temperature: -50 ... +130 °C (-58 ... +266 °F)  
 Process pressure: -1 ... 63 bar/-100 ... 6300 kPa (-14.5 ... 914 psi)

**EL 3**



Preferred application: Conductive liquids  
 Version: Rod - partly insulated  
 Insulation: PTFE  
 Length: 0.1 ... 4 m (0.328 ... 13.12 ft)  
 Process fitting: Thread G1½ A  
 Process temperature: -50 ... +130 °C (-58 ... +266 °F)  
 Process pressure: -1 ... 63 bar/-100 ... 6300 kPa (-14.5 ... 914 psi)

**EL 4**



Preferred application: Conductive liquids  
 Version: Rod - partly insulated  
 Insulation: PP  
 Length: 0.1 ... 4 m (0.328 ... 13.12 ft)  
 Process fitting: Thread G1½ A  
 Process temperature: -20 ... +100 °C (-4 ... +212 °F)  
 Process pressure: -1 ... 6 bar/-100 ... 600 kPa (-14.5 ... 87 psi)

<sup>1)</sup> For connection to a VEGATOR signal conditioning instrument.

EL 6



Preferred application:	Conductive liquids
Version: <sup>2)</sup>	Cable - partly insulated
Insulation:	FEP
Length:	0.22 ... 50 m (0.722 ... 164.04 ft)
Process fitting:	Thread G1½ A
Process temperature:	-20 ... +100 °C (-4 ... +212 °F)
Process pressure:	-1 ... 6 bar/-100 ... 600 kPa (-14.5 ... 87 psi)

EL 8



Preferred application:	Conductive liquids
Version: <sup>2)</sup>	Rod - partly insulated
Insulation:	PE
Length:	0.03 ... 1 m (0.098 ... 3.281 ft)
Process fitting:	Thread G1½ A
Process temperature:	-10 ... +60 °C (+14 ... +140 °F)
Process pressure:	-1 ... 6 bar/-100 ... 600 kPa (-14.5 ... 87 psi)

<sup>2)</sup> For connection to a VEGATOR signal conditioning instrument.

### 3 Mounting instructions

#### Switching point

Mount the probe in such a way that the rod or cable electrodes do not touch the vessel wall during operation.

#### Agitators

Due to agitators, vibrations or similar, the probe can be subjected to strong lateral forces.

Excessive system vibration or shocks, e.g. caused by agitators or turbulence in the vessel (e.g. from fluidisation) can cause the rod probe to vibrate in resonance. This can lead to increased material stress. Should a longer rod probe be necessary, you can provide a suitable insulated support or guy directly above the end of the probe to stabilise it.

In case of strong product movements, foam generation and flow in the vessel, the probe can be also mounted in bypass tubes.

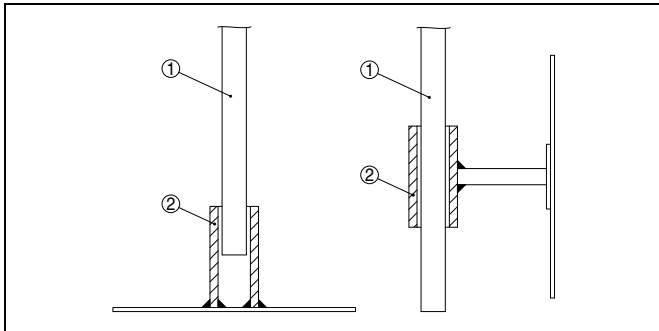


Fig. 4: Fasten the probe

- 1 Probe
- 2 Plastic socket on the probe end
- 3 Probe
- 4 Plastic socket laterally mounted

#### Inflowing medium

If the conductive sensors are mounted in the filling stream, unwanted false measuring signals may be triggered. For this reason, mount the instruments at a position in the vessel where no disturbances, e.g. from filling openings, agitators, etc., can occur.

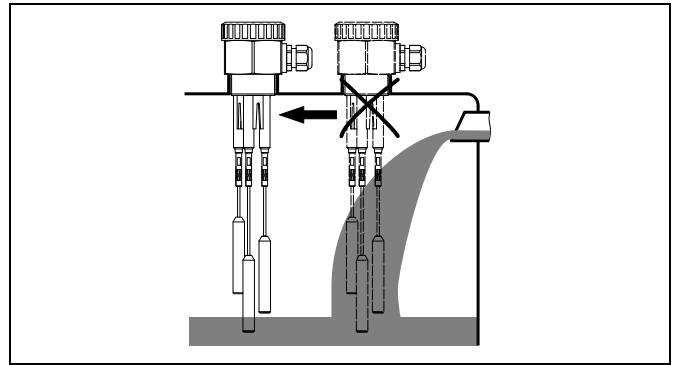


Fig. 5: Inflowing medium

#### Pressure/Vacuum

The process fitting must be sealed if there is gauge or low pressure in the vessel. Check if the seal material is resistant against the measured product and the process temperature.

Insulating measures in metal vessels such as e.g. covering the thread with teflon tape can interrupt the necessary electrical connection to the vessel. Ground the probe on the vessel.

#### Shorten the probe

The rods of the probe can be shortened individually.

#### Metal vessel

If probes without ground electrode are used, you must make sure that the mechanical connection of the probe is connected electrically conductive to the vessel to ensure sufficient grounding.

Use conductive seals such as e.g. copper, lead etc.

Insulating measures such as e.g. covering the thread with teflon tape can interrupt the necessary electrical connection. If this is necessary, use the ground terminal on the housing to connect the instrument with the vessel.

A ground electrode must be provided for probes EL 4 and 6 as well as with VEGAKON 66.

#### Non-conductive vessels

Generally use probes with a ground electrode in non-conductive vessels, e.g. plastic tanks.

#### Horizontal mounting

If you mount a VEGAKON 66 laterally, we recommend mounting it approx. 20° inclined so that the liquid medium can drain off more easily and no buildup can generate on the isolation.

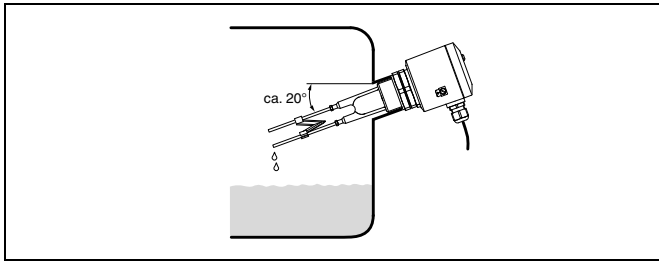


Fig. 6: Horizontal mounting

### Ground connection

If probes without ground electrode are used, you must make sure that the mechanical connection of the probe is connected electrically conductive to the vessel to ensure sufficient grounding.

Use conductive seals such as e.g. copper or lead etc. Insulating measures, such as covering the thread with Teflon tape, can interrupt the necessary electrical connection with metal vessels. For this reason, ground the probe on the vessel or use a conductive seal material.

## 4 Electrical connection

### 4.1 Preparing the connection

#### Note safety instructions

Always keep in mind the following safety instructions:

- Connect only in the complete absence of line voltage

#### Take note of safety instructions for Ex applications



In hazardous areas you should take note of the appropriate regulations, conformity and type approval certificates of the sensors and power supply units.

#### Select power supply

Connect the power supply according to the following diagrams. Oscillator with relay output is designed in protection class 1. To maintain this protection class, it is absolutely necessary that the ground conductor be connected to the internal ground terminal. Take note of the general installation regulations. As a rule, connect VEGAKON to vessel ground (PA), or in case of plastic vessels, to the next ground potential. On the side of the housing there is a ground terminal between the cable entries. This connection serves to drain off electrostatic charges. In Ex applications, the installation regulations for hazardous areas must be given priority.

The data for voltage supply are specified in chapter "Technical data".

#### Selecting connection cable

VEGAKON and probes EL are connected with standard cable with round cross section. An outer cable diameter of 5 ... 9 mm (0.2 ... 0.35 in) ensures the seal effect of the cable gland.

If cable with a different diameter or wire cross section is used, exchange the seal or use an appropriate cable connection.



In hazardous areas, only use approved cable connections for approved instruments.

#### Select connection cable for Ex applications



Take note of the corresponding installation regulations for Ex applications.

### 4.2 Wiring schematic VEGAKON 61, 66

#### Relay output

Is used to switch external voltage sources to relays, contactors, magnetic valves, horns etc.

We recommend connecting VEGAKON in such a way that the switching circuit is open when there is a level signal, line break or failure (safe condition).

The relays are always shown in non-operative condition.

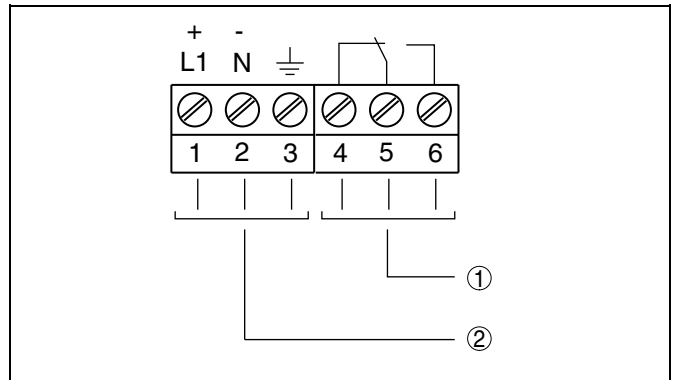


Fig. 7: VEGAKON 61 - electronics with relay output

- 1 Relay output
- 2 Power supply

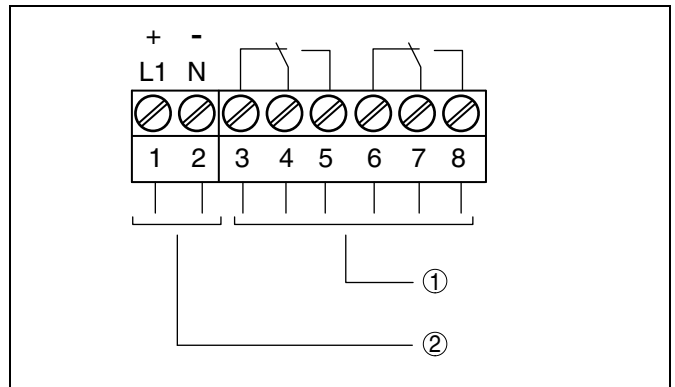


Fig. 8: VEGAKON 66 - electronics with relay output

- 1 Relay output
- 2 Power supply

#### Transistor output

Is used to switch external voltage sources to relays, contactors, magnetic valves, horns etc.

We recommend connecting VEGAKON in such a way that the switching circuit is open when there is a level signal, line break or failure (safe condition).

The instrument is used to control relays, contactors, magnet valves, warning lights, horns as well as PLC inputs.

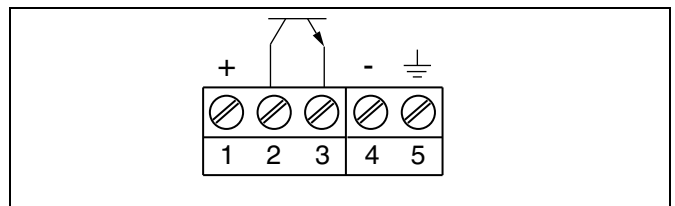


Fig. 9: VEGAKON 61 - transistor output



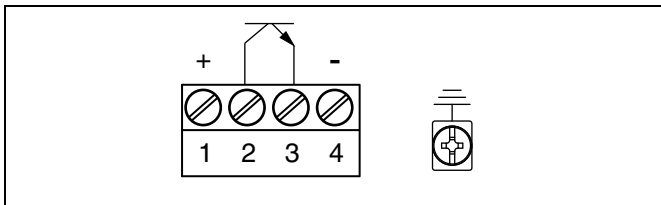


Fig. 10: VEGAKON 66 - transistor output

The transistor switches the supply voltage of the electronic module to the binary input of a PLC or an electrical load. Through different connections of the consumer (load), PNP or NPN action can be attained.

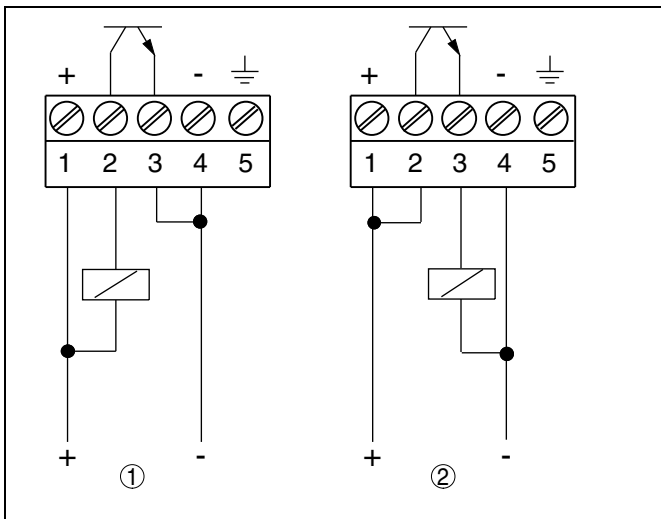


Fig. 11: VEGAKON 61 - electronics with transistor output

- 1 NPN action
- 2 PNP action

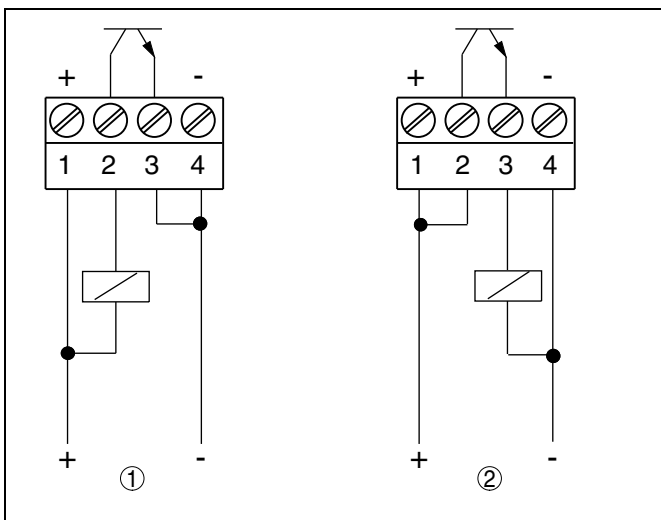


Fig. 12: VEGAKON 66 - electronics with transistor output

- 1 NPN action
- 2 PNP action

### 4.3 Wiring plan EL 1, EL 3, EL 4, EL 6, EL 8

#### For connection to a signal conditioning instrument

You can find the electrical connection of VEGAKON in the product information manual "Signal conditioning instruments for conductive electrodes".

You will find suitable signal conditioning instruments in chapter "Technical data".

#### Selecting connection cable

To ensure the seal effect of the cable gland, VEGAKON is connected with standard cable with round cross-section. The outer diameter of the cable is stated in chapter "Technical data".

#### Line monitoring

To realize a line monitoring, a resistor of 220 kΩ must be integrated in the connection housing of the probe between terminal 1 and 2.

When a fault message is generated, the switching output is simultaneously activated.

If a fault message is not wanted, a bridge must be provided on the signal conditioning instrument instead of the resistor in the connection housing of the probe.

The line monitoring is thus deactivated and the fault message rendered invalid.



With Ex versions, this resistor of 220 kΩ is already integrated Ex factory in the connection housing of the probe. The Ex measuring system (max. and ground connection cable of the probe to the signal conditioning instrument) is generally monitored for line break.

- Terminal 1 = longest rod (ground)
- Terminal 2 = shortest rod (max.)

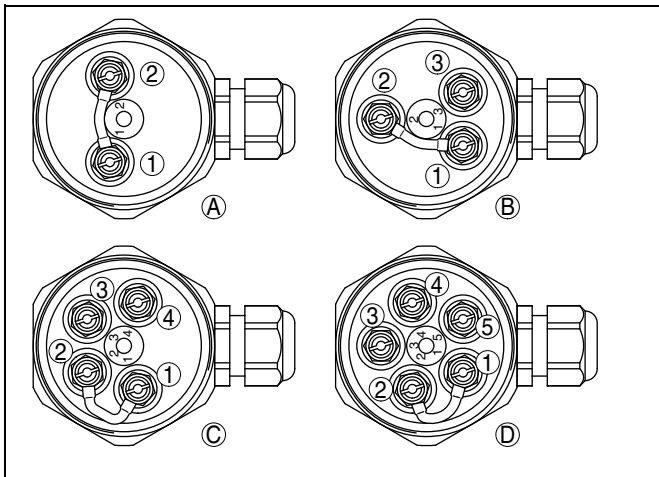


Fig. 13: Connection compartment of the probe - 220 k $\Omega$  resistor between terminals 1 and 2

- 1 Connection terminal 1 = longest rod
- 2 Connection terminal 2 = shortest rod
- A Probe with 2 rods
- B Probe with 3 rods
- C Probe with 4 rods
- D Probe with 5 rods

## 5 Operation

### 5.1 Adjustment elements VEGAKON 61 R, 61 T

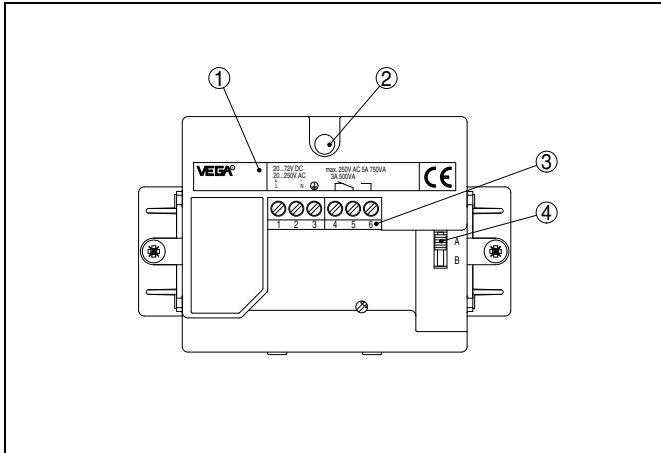


Fig. 14: Electronics module VEGAKON 61 R (relay output)

- 1 Type label
- 2 Signal lamp (LED)
- 3 Connection terminals
- 4 Mode switch (A/B)

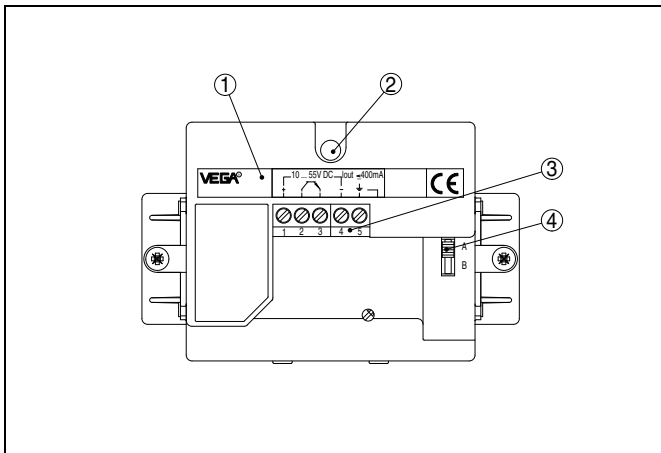


Fig. 15: Electronics module VEGAKON 61 T (transistor output)

- 1 Type label
- 2 Signal lamp (LED)
- 3 Connection terminals
- 4 Mode switch (A/B)

#### Mode adjustment (4)

With the mode adjustment (A/B) you can change the switching condition of the output. It allows you to set the required mode (A - max. detection or overflow protection, B - min. detection or dry run protection).

#### Signal lamp (2)

The signal lamp shows the switching status of the output and can be checked with closed housing.

### 5.2 Adjustment elements VEGAKON 66 R, 66 T

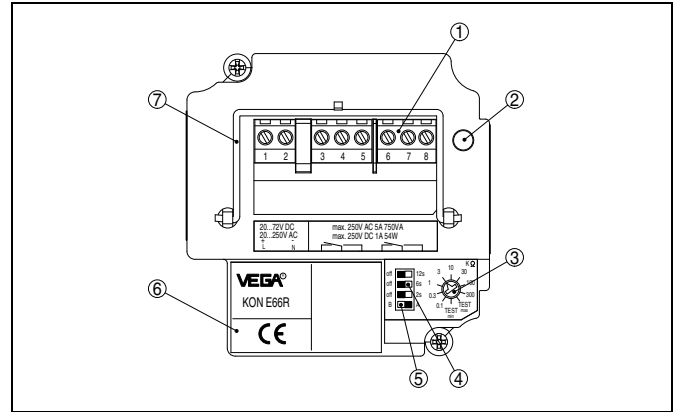


Fig. 16: Electronics module VEGAKON 66 R (relay output)

- 1 Connection terminals
- 2 Signal lamp (LED)
- 3 Rotary switch: Adjustment of the conductivity value
- 4 Selection switch: Integration time
- 5 Selection switch: Mode (A/B) VEGAKON
- 6 Type label
- 7 Tensile proving ring

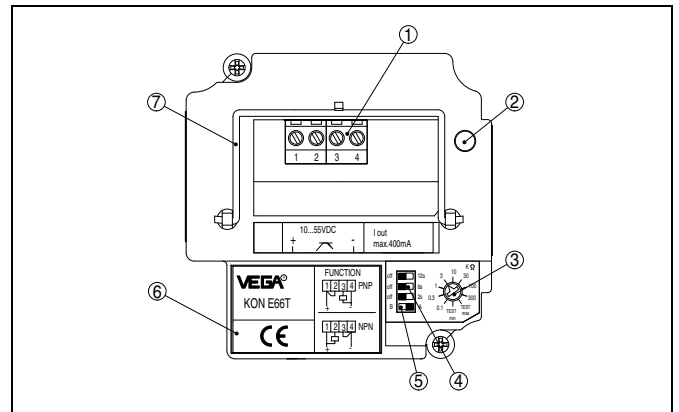


Fig. 17: Electronics module VEGAKON 66 T (transistor output)

- 1 Connection terminals
- 2 Signal lamp (LED)
- 3 Rotary switch: Adjustment of the conductivity value
- 4 Selection switch: Integration time
- 5 Selection switch: Mode (A/B) VEGAKON
- 6 Type label
- 7 Tensile proving ring

#### Signal lamp (2)

The signal lamp shows the switching status of the output and can be checked with closed housing.

#### Rotary switch: Adjustment of the conductivity value (3)

With the rotary switch you can adjust the sensitivity of the instrument. Position 0.1 kΩ is less sensitive and switch position 300 kΩ is most sensitive.

**Selection switch: Integration time (4)**

There are three switches on the DIL switch block by which you can adjust the switching on and off delay. This prevents, e.g. the instrument from permanent switching if the level is within the limits.

The delay refers to the switching status of both relay outputs.

With the switches (2 s, 6 s, 12 s) you can set the integration time respectively in the range of 0 to 20 seconds. The times of the activated timers add up. If e.g. the switches 2 s and 12 s are activated, the integration time will be 14 s.

**Mode adjustment (5)**

With the mode adjustment (A/B) you can change the switching condition of the output. You can set the required mode (A - max. detection or overflow protection, B - min. detection or dry run protection).

**Tensile proving ring (7)**

Loosen the holding screws of the electronics module. Fold the tensile proving ring upward. With the tensile proving ring you can pull the electronics module out of the instrument housing.

**5.3 Adjustment probes EL 1, EL 3, EL 4, EL 6, EL 8**

The adjustment of probes EL is carried out via a suitable signal conditioning instrument. The adjustment possibilities are specified in the product information manual "*Signal conditioning instruments for conductive probes*".

## 6 Technical data

### General data

Material 316L corresponds to 1.4404 or 1.4435

#### VEGAKON 61

Materials, wetted parts

– Process fitting - thread	316Ti
– Process fitting - Cone	316Ti
– Electrode	316Ti
– Insulation ring	PTFE
– Process seal	Klengersil C-4400

Materials, non-wetted parts

– Housing	plastic PBT (Polyester)
– Temperature adapter	316Ti
– Seal between housing and housing cover	Silicone
– Ground terminal	316L

Weight

– Basic weight	600 g (21 oz)
– Temperature adapter	150 g (5.3 oz)

Process fittings

– Thread	G1 A (PN 25)
– Cone	DN 25 (PN 25)

– Tuchenhagen

Measurement voltage

1 V<sub>ss</sub>, 5 kHz

Measurement current

< 1 mA

#### VEGAKON 66

Materials, wetted parts

– Process fitting - thread	PP
– Electrode	316Ti
– Process seal	Klengersil C-4400

Materials, non-wetted parts

– Housing	Plastic PBT (polyester), Alu die-casting powder-coated
– Temperature adapter	316Ti
– Seal between housing and housing cover	Silicone
– Ground terminal	316L

Weight

– with plastic housing	550 g (19.4 oz)
– with Aluminium housing	850 g (30 oz)
– Electrode	100 g/m (1.1 oz/ft)
Probe length	0.12 ... 4 m (0.394 ... 13.12 ft)
Insulation length (L1 ... L5)	0.12 ... 4 m (0.394 ... 13.12 ft)

Process fittings

– Thread	G1½ A (PN 25)
----------	---------------

Measurement voltage

3 V<sub>eff</sub>

Measurement current

< 3 mA

#### EL 1

Materials, wetted parts

– Process fitting - thread	316L
– Process fitting	316L
– Process seal	Klengersil C-4400
– insulation (partly insulated)	PTFE
– Electrode (rod PTFE partly insulated: ø 10 mm/0.394 in)	316L, Hastelloy C4 (2.4610)

Materials, non-wetted parts

– Housing	316L
– Housing cover	PBT
– Seal between housing and housing cover	NBR
– Cable gland	brass nickel-plated
Process fitting	G½ A

Weight

– Basic weight	400 g (14 oz)
– Rod weight: ø 10 mm (0.394 in)	400 g/m (4.3 oz/ft)
Sensor length (L)	0.04 ... 4 m (0.13 ... 13 ft)
Insulation length (L1)	0.04 ... 4 m (0.13 ... 13 ft)

**EL 3**

## Materials, wetted parts

– Process fitting - thread	316Ti
– Process fitting	316Ti
– Process seal	Klingsil C-4400
– insulation (partly insulated)	PTFE
– Probe (rod PTFE partly insulated: $\varnothing$ 6 mm/0.236 in)	316Ti, Hastelloy C4 (2.4610)

## Materials, non-wetted parts

– Housing	316Ti
– Housing cover	PBT
– Seal between housing and housing cover	NBR
– Cable gland	brass nickel-plated
Process fitting	G1½ A

## Weight

– Basic weight	900 g (32 oz)
– Rod weight: $\varnothing$ 6 mm (0.236 in)	220 g/m (2.4 oz/ft)
Sensor length (L1 - L5)	0.1 ... 4 m (0.328 ... 13.12 ft)
Insulation length	78 mm (3.071 in)

**EL 4**

## Materials, wetted parts

– Process fitting - thread	PP
– Process fitting	PP
– Process seal	Klingsil C-4400
– insulation (partly insulated)	PP
– Electrode (rod PP partly insulated: $\varnothing$ 4 mm/0.157 in)	316Ti, Hastelloy C4 (2.4610)

## Materials, non-wetted parts

– Housing	PP
– Housing cover	PBT
– Seal between housing and housing cover	NBR
– Cable gland	PA
Process fitting	G1½ A

## Weight

– Basic weight	400 g (14 oz)
– Rod weight: $\varnothing$ 4 mm (0.157 in)	100 g/m (1.1 oz/ft)
Sensor length (L1 - L5)	0.1 ... 4 m (0.328 ... 13.12 ft)
Insulation length	78 mm (3.071 in)

**EL 6**

## Materials, wetted parts

– Process fitting - thread	PP
– Process fitting	PP
– Process seal	Klingsil C-4400
– insulation (partly insulated)	FEP
– Probe (cable FEP partly insulated: $\varnothing$ 2.5 mm/0.098 in)	316Ti

## Materials, non-wetted parts

– Housing	PP
– Housing cover	PBT
– Seal between housing and housing cover	NBR
– Cable gland	PA
Process fitting	G1½ A

## Weight

– Basic weight	500 g (17.6 oz)
– Rod weight: $\varnothing$ 2.5 mm (0.098 in)	40 g/m (0.4 oz/ft)
Sensor length (L1 - L5)	0.22 ... 50 m (0.722 ... 164.04 ft)
Insulation length	78 mm (3.071 in)

**EL 8**

## Materials, wetted parts

– Process fitting - thread	1.4301
– Process fitting	1.4301
– Process seal	Klingsil C-4400
– insulation (partly insulated)	PE
– Electrode (rod PE partly insulated: $\varnothing$ 4 mm/0.157 in)	316Ti

Materials, non-wetted parts	EPDM
– Housing	G½ A
Process fitting	
Weight	
– Basic weight	100 g (3.5 oz)
– Rod weight: ø 4 mm (0.157 in)	100 g/m (1.1 oz/ft)
Sensor length (L)	0.03 ... 1 m (0.098 ... 3.281 ft)
Insulation length	27 mm (1.063 in)

**Output variable**

**VEGAKON 61 R**

Output Relay output (DPDT), 1 floating spdt

Turn-on voltage

- Min. 10 mV
- Max. 253 V AC, 60 V DC

Switching current

- Min. 10 µA
- Max. 2 A AC, 1 A DC

Breaking capacity

- Min. 50 mW
- Max. 125 VA AC, 54 W DC

If inductive loads or stronger currents are switched through, the gold plating on the relay contact surface will be permanently damaged. The contact is then no longer suitable for switching low-level signal circuits. AgNi or AgSnO and Au plated

Contact material (relay contacts)

Modes (adjustable)

- A Max. detection or overflow protection
- B Min. detection or dry run protection

Integration time approx. 0.5 s

**VEGAKON 61 T**

Output Transistor, floating, overload and permanently short-circuit resistant NPN or PNP reaction (depending on connection)

Max. turn-on voltage

$U_B = 55$  V DC

Max. switching current

$I_B = 400$  mA

Voltage loss on the transistor

$U_{CE} = 1$  V at  $I_B = 400$  mA

Blocking current

$I_O < 10$  µA

Modes (adjustable)

- A Max. detection or overflow protection
- B Min. detection or dry run protection

Integration time approx. 0.5 s

**VEGAKON 66 R**

Output Relay output (DPDT), 2 floating spdts

Turn-on voltage

- Min. 10 mV
- Max. 253 V AC, 253 V DC

Switching current

- Min. 10 µA
- Max. 5 A AC, 1 A DC

Breaking capacity

- Min. 50 mW
- Max. 750 VA AC, 54 W DC

If inductive loads or stronger currents are switched through, the gold plating on the relay contact surface will be permanently damaged. The contact is then no longer suitable for switching low-level signal circuits. AgNi or AgSnO and Au plated

Contact material (relay contacts)

Modes (adjustable)

- A Max. detection or overflow protection
- B Min. detection or dry run protection

Integration time approx. 0.5 ... 20 s

**VEGAKON 66 T**

Output

Transistor, floating, overload and permanently short-circuit resistant NPN or PNP reaction (depending on connection)

Max. turn-on voltage

$U_B = 55 \text{ V DC}$

Max. switching current

$I_B = 400 \text{ mA}$

Voltage loss on the transistor

$U_{CE} 1 \text{ V at } I_B 400 \text{ mA}$

Blocking current

$I_O < 10 \mu\text{A}$

Modes (adjustable)

– A

Max. detection or overflow protection

– B

Min. detection or dry run protection

Integration time approx.

0.5 ... 20 s

**EL 1, EL 3, EL 4, EL 6, EL 8**

Suitable signal conditioning instruments

VEGATOR 256C, 532, 631

**Ambient conditions**

**VEGAKON 61, 66**

Ambient temperature on the housing

-40 ... +70 °C (-40 ... +158 °F)

Ambient temperature with operating voltage > 60 V DC

-40 ... +50 °C (-40 ... +122 °F)

Storage and transport temperature

-40 ... +80 °C (-40 ... +176 °F)

**EL 1, EL 3, EL 4, EL 6, EL 8**

Ambient temperature on the housing

-40 ... +80 °C (-40 ... +176 °F)

Storage and transport temperature

-40 ... +80 °C (-40 ... +176 °F)

**Process conditions**

**VEGAKON 61**

Permissible product temperature

– Without temperature adapter

-40 ... +100 °C (-40 ... +212 °F)

– with temperature adapter

-40 ... +150 °C (-40 ... +302 °F)

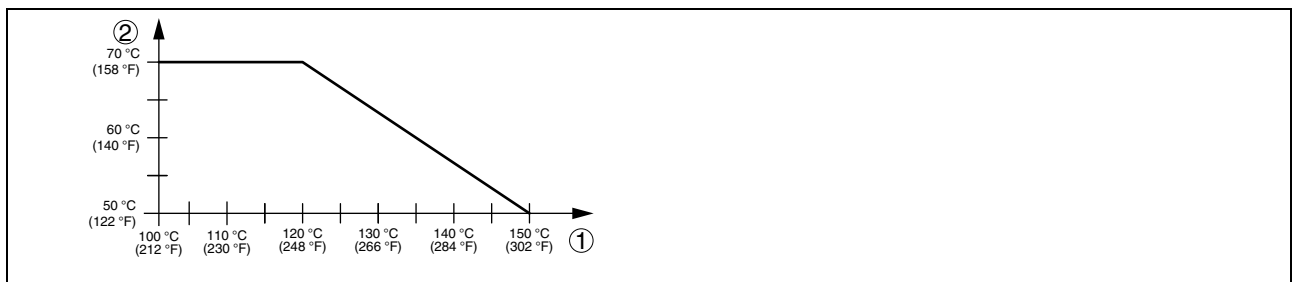


Fig. 18: Ambient temperature - Product temperature

1 Product temperature

2 Ambient temperature

Process pressure

-1 ... 25 bar/-100 ... 2500 kPa (-14.5 ... 362 psi)

Conductive of the medium

> 7.5  $\mu\text{S/cm}$





Fig. 19: Product temperature - Process pressure

- 1 Product temperature
- 2 Process pressure

**VEGAKON 66**

Permissible product temperature -40 ... +100 °C (-40 ... +212 °F)  
 Process pressure -1 ... 6 bar/-100 ... 600 kPa (-14.5 ... 87 psi)  
 Conductive of the medium > 5 µS/cm with 30 mm electrode covering

**EL 1, EL 3**

Process pressure -1 ... 63 bar/-100 ... 6300 kPa (-14.5 ... 914 psi)  
 Process temperature -50 ... +130 °C (-58 ... +266 °F)  
 Conductive of the medium > 7.5 µS/cm

**EL 4, EL 6**

Process pressure -1 ... 6 bar/-100 ... 600 kPa (-14.5 ... 87 psi)  
 Process temperature -20 ... +100 °C (-4 ... +212 °F)  
 Conductive of the medium > 7.5 µS/cm

**EL 8**

Process pressure -1 ... 6 bar/-100 ... 600 kPa (-14.5 ... 87 psi)  
 Process temperature -10 ... +60 °C (+14 ... +140 °F)  
 Conductive of the medium > 7.5 µS/cm

**Electromechanical data**

**VEGAKON 61, 66 - with relay output**

Cable gland 1 x cable entry M20 x 1.5; 1 x blind stopper M20 x 1.5 (cable gland M20 x 1.5 is attached)  
 Screw terminals for wire cross-section up to 1.5 mm<sup>2</sup> (AWG 16)

**VEGAKON 61, 66 - with transistor output**

Cable gland 1 x cable gland M20 x 1.5; 1 x blind stopper M20 x 1.5  
 Screw terminals for wire cross-section up to 1.5 mm<sup>2</sup> (AWG 16)

**EL 1**

Cable entry 1 x cable gland M16 x 1.5 (cable: ø 5 ... 10 mm/0.2 ... 0.35 in)

**EL 3, EL 4, EL 6**

Cable entry 1 x cable gland M20 x 1.5 (cable: ø 5 ... 9 mm/0.2 ... 0.35 in)

**Voltage supply**

**VEGAKON 61 R**

Supply voltage 20 ... 253 V AC, 50/60 Hz, 20 ... 72 V DC (at U > 60 V DC, the ambient temperature can be max. 50 °C/122 °F)  
 Power consumption 1 ... 8 VA (AC), approx. 1.3 W (DC)

**VEGAKON 61 T**

Supply voltage 10 ... 55 V DC  
 Max. power consumption 0.5 W

**VEGAKON 66 R**

Supply voltage 20 ... 253 V AC, 50/60 Hz, 20 ... 72 V DC (at U > 60 V DC, the ambient temperature can be max. 50 °C/122 °F)  
 Power consumption 1 ... 9 VA (AC), approx. 1.5 W (DC)

**VEGAKON 66 T**

Supply voltage 10 ... 55 V DC  
 Max. power consumption 0.5 W

**Electrical protective measures**

**VEGAKON 61**

Protection IP 66  
 Overvoltage category III  
 Protection class I

**VEGAKON 66**

Protection  
 – Plastic housing IP 66  
 – Aluminium housing IP 66/IP 67  
 Overvoltage category II  
 Protection class I

**EL 1, EL 3, EL 4, EL 6**

Protection IP 66/IP 67

**EL 8**

Protection IP 50

**Approvals<sup>3)</sup>**

**EL 1, EL 3**

ATEX ATEX II 1G, 1/2G, 2G EEx ia IIC T6  
 IEC IEC Ex ia IIC T6  
 WHG  
 Ship approval

**EL 4, EL 6**

IEC IEC Ex ia IIC T6  
 Ship approval

**CE conformity**

EMVG (89/336/EWG), Emission: EN 50081-1, Susceptibility:  
 EN 50082-2  
 LVD (73/23/EWG), EN 61010

<sup>3)</sup> Deviating data in Ex applications: see separate safety instructions.

## 7 Dimensions

### VEGAKON 61

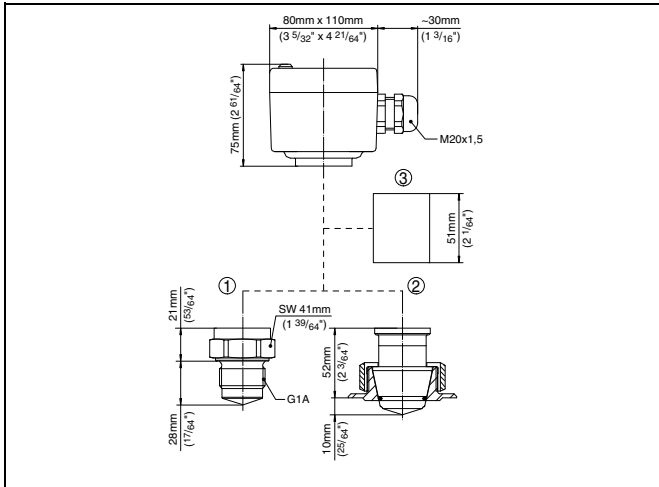


Fig. 20: VEGAKON 61

- 1 Threaded version
- 2 Cone version
- 3 Temperature adapter

### VEGAKON 66

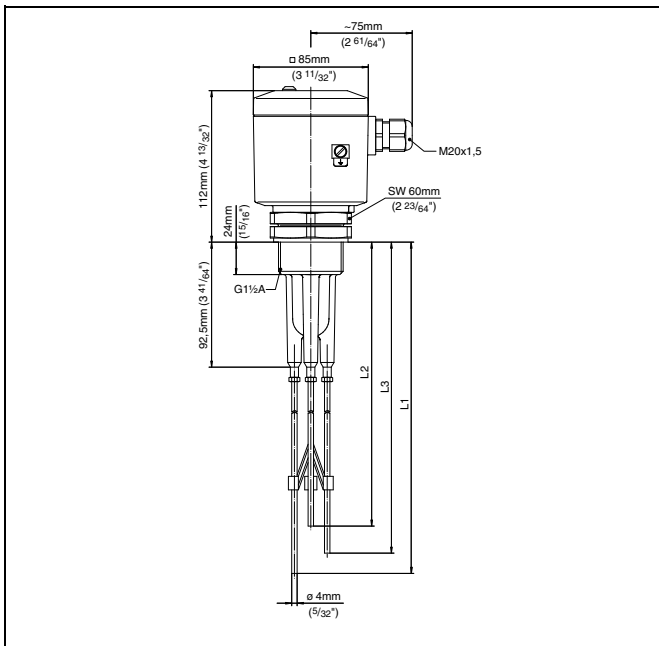


Fig. 21: VEGAKON 66 with three probes

- L1 Length ground probe
- L2 Length max. probe
- L3 Length min. probe

### EL 1

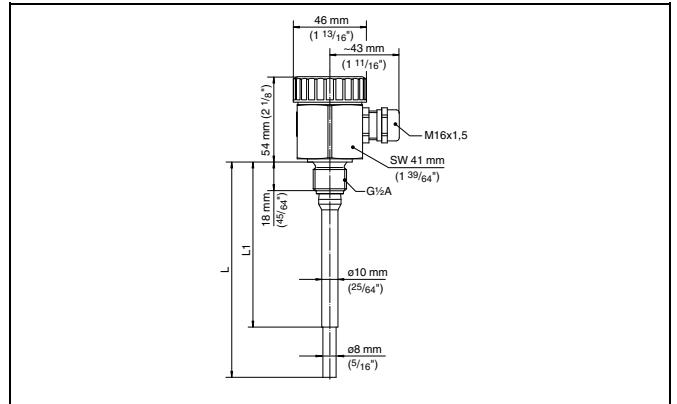


Fig. 22: Conductive rod electrode EL 1

- L Sensor length, see chapter "Technical data"
- L1 Insulation length, see chapter "Technical data"

### EL 3

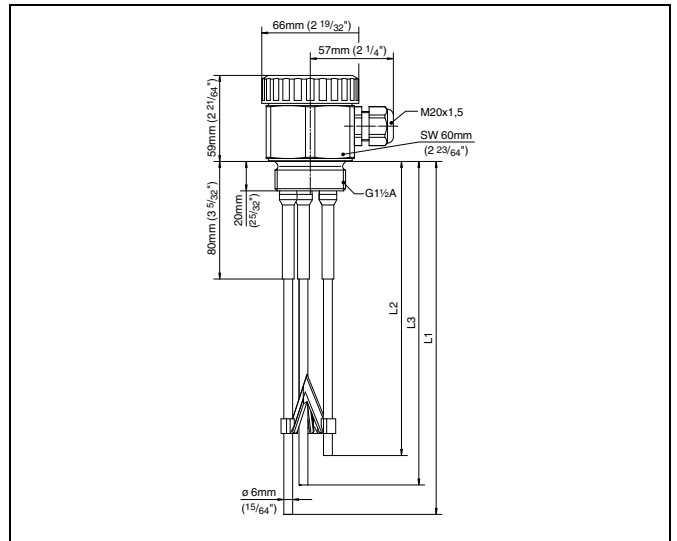


Fig. 23: Conductive multiple rod electrode EL 3

- L1 Sensor length, see chapter "Technical data"
- L2 Sensor length, see chapter "Technical data"
- L3 Sensor length, see chapter "Technical data"

**EL 4**

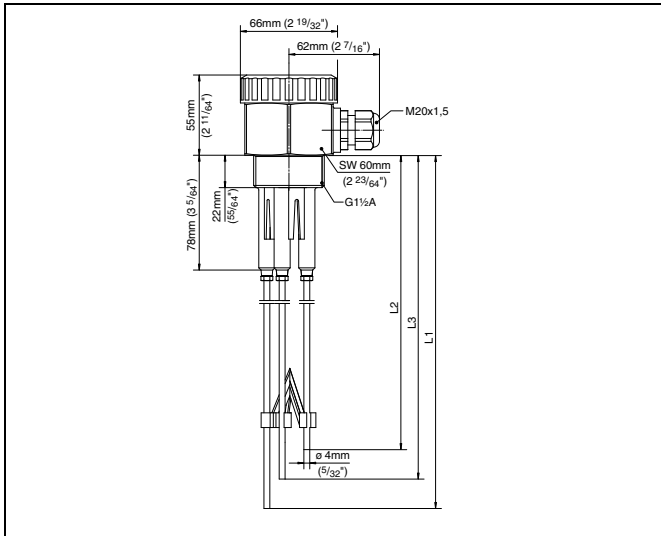


Fig. 24: Conductive multiple rod electrode EL 4

- L1 Sensor length, see chapter "Technical data"
- L2 Sensor length, see chapter "Technical data"
- L3 Sensor length, see chapter "Technical data"

**EL 6**

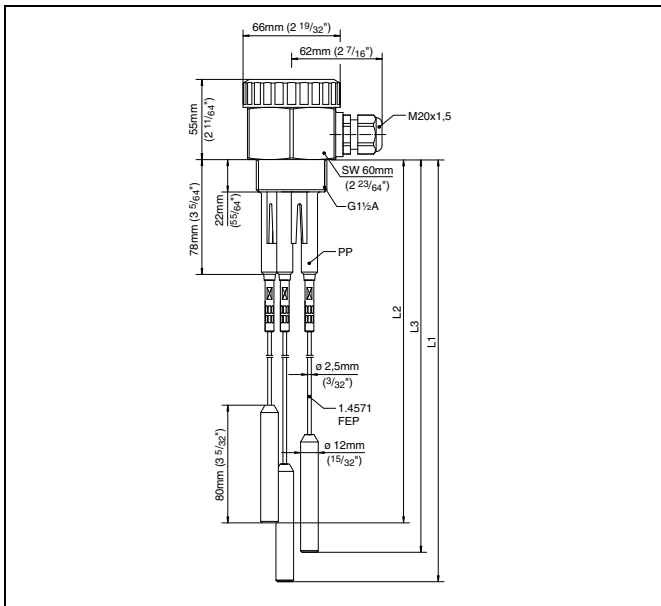


Fig. 25: Conductive multiple cable electrode EL 6

- L1 Sensor length, see chapter "Technical data"
- L2 Sensor length, see chapter "Technical data"
- L3 Sensor length, see chapter "Technical data"

**EL 8**

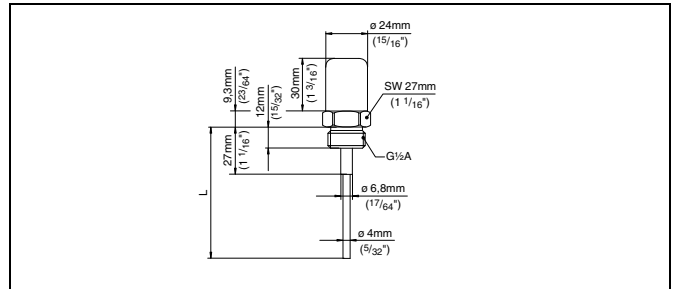
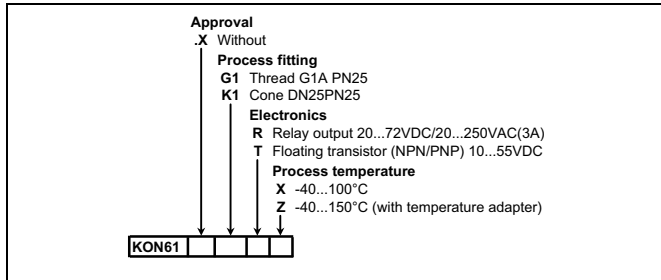


Fig. 26: Conductive rod electrode EL 8

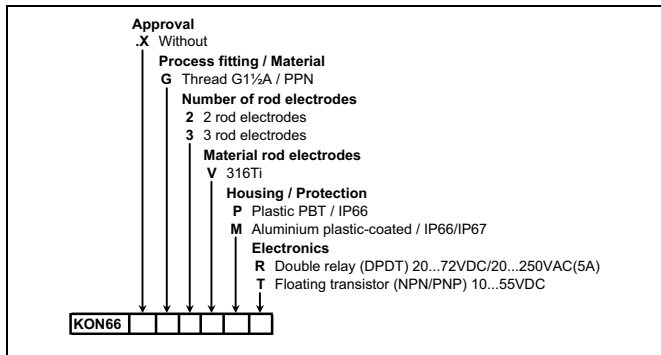
- L Sensor length, see chapter "Technical data"

## 8 Product code

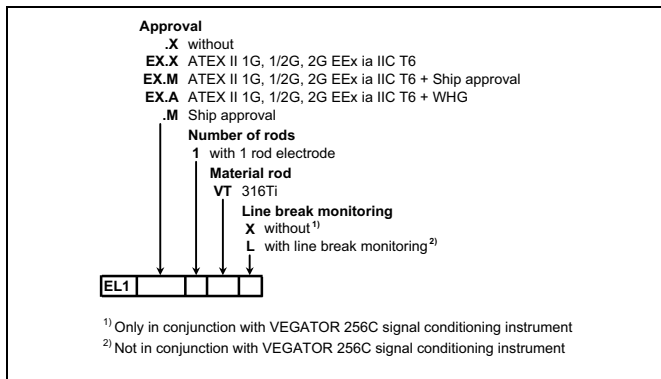
### VEGAKON 61



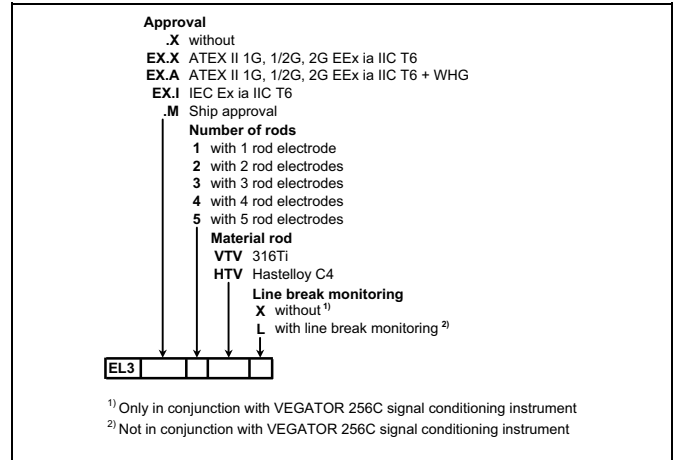
### VEGAKON 66



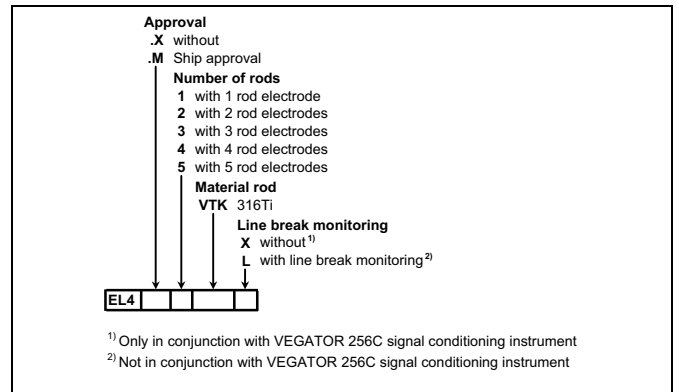
### EL 1



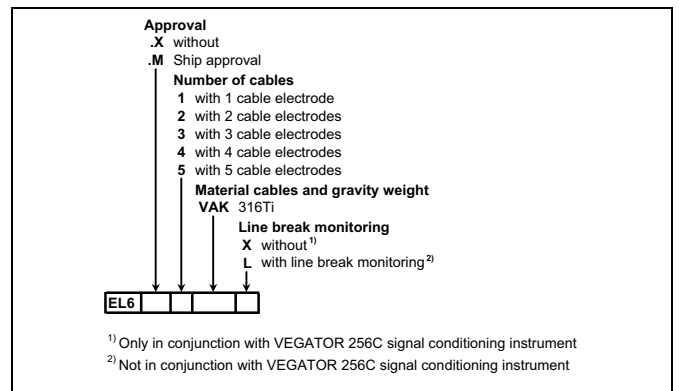
### EL 3



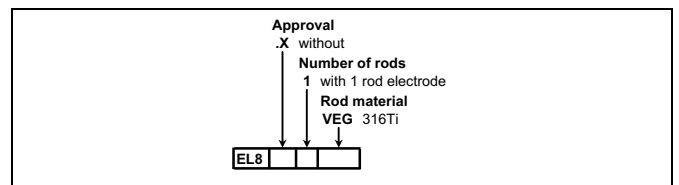
### EL 4



### EL 6



### EL 8









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