

Overview

Applications

The Vibranivo series VN 7000 is a level limit switch for detection of liquids. It works in all types of vessels, pipes or agitator tanks within a wide range of applications like:

- Food, brewery, dairy, beverage and pharmaceuticals
- Chemical and petrochemical
- Water and waste water
- Machine building industry

It can also be used for leakage detection in double walled vessels, tanks or collecting ponds

Features

Process

- Level limit detection in liquids
- Wide range of applications
- Full-, demand-, empty detector
- Overfill and Leakage detection
- Independent from dielectricity and conductivity
- Insensitive to material buildup, flow, turbulences and air bubbles
- Allows measurement of most applications without sensitivity setting
- CIP and SIP capable
- No maintenance

Approvals

- CE, UKCA, cFMus, WHG, VLAREM, EHEDG

Electronics

- IO-Link, PNP, NPN or Push-Pull output (configurable)
- 3-wire PNP
- 2-wire without contact
- M12 plug, Valve plug
- Bright signal LED, selectable colours
- Sensitivity and signal delay setting by IO-Link

Mechanics

- Compact unit
- Short vibration fork lenght
- Pipe extension
- Optional sliding sleeve allows to change the switch point easily during operation
- Various process connections
- Resistant to temperature, vibration, humidity, condensation
- Corrosion resistant construction (316L stainless steel)
- Hygienic design

Overview

Specification

Process

Ambient temperature	-40 .. +75°C (-40 .. +167°F)		
Process temperature	-40 .. +100/150°C (-40 .. +185/302°F)		
Process pressure	-1 .. +40 bar (-14.5 .. +580 psi)		
Sensitivity	Density 0,7 .. 2,5 g/cm ³ (44 .. 156 lb/ft ³)	Optional	0,5 .. 2,5 g/cm ³ (31 .. 156 lb/ft ³)
Viscosity	Dynamic viscosity, max. 10.000 mPa s (10.000 cP)		

Approvals

CE, usFMc, UKCA	General purpose
EHEDG	Type EL class I, Hygiene
WHG	Overfill and leakage protection

Electronics

3/4-wire IO-Link	IO-Link with PNP, NPN, Push Pull signal output 10,8 - 30 V DC (operation with IO-Link min. 18 V) Connection by plug M12 x 1,5		
3-wire PNP	10,8 - 30 V DC Connection by plug M12 x 1,5 or Valve plug		
2-wire without contact	20 - 253V AC/DC Connection by Valve plug		

Mechanics

Enclosure	Ø31mm (1.2") 1.4404 (316L)	
Lid	Plug M12 x 1,5: Valve plug:	PC transparent or 1.4404 (316L) PC transparent
Ingress protection	Type 4X / IP67 Type 6P / IP69k with Lid 1.4404 (316L)	
Length of extension	VN 7120: VN 7130:	64 mm (2.52") 75 mm (2.95"), G1" hygienic 104 mm (4.09"), elongated switchpoint 115 mm (4.53"), elongated switchpoint G1" hygienic 115 (4.53") ... 4.000 mm (157") 115 (4.53") ... 1.500 mm (59"), 1/2" process connection 115 (4.53") ... 1.000 mm (39.4"), hygienic
Process connection	Thread: Thread hygiene adapter: Tri-clamp: Flanges (threaded):	G 1/2", G 3/4", G 1" DIN ISO 228-1 NPT 1/2", NPT 3/4", NPT 1" G 3/4", G 1"; DIN ISO 228-1 M24 x 1,5 DIN 13 DN25 (1"), DN40 (1 1/2"), DN50 (2") DN 25, DN 40, DN 50, ASME 1", 1 1/2". 2"
Wetted sensor material	Metal parts: Flat sealing:	1.4404 (316L) AFM30 (with G-threads, non hygienic)
Wetted sensor surface	Ra < 3.2 µm (126 µin) Ra < 0.76 µm (30 µin), threads for hygiene adapter	

Overview



VN7120
 100°C version
 M12 x 1,5 plug
 Lid PC transparent
 G 1/2" thread



VN7120
 150°C version
 M12 x 1,5 plug
 Lid PC transparent
 G 1/2" thread



VN7120
 100°C version
 M12 x 1,5 plug
 G 1" thread
 Elongated
 switchpoint



VN7120
 100°C version
 Valve plug
 G 3/4" thread
 Elongated
 switchpoint



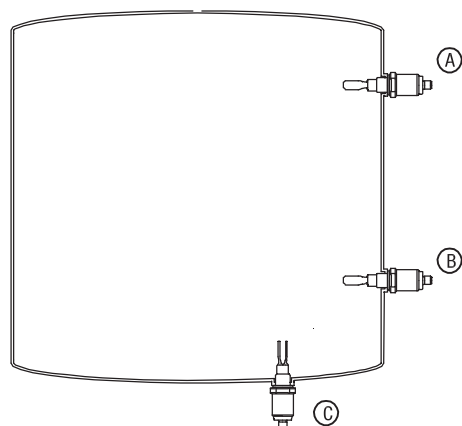
VN7130
 100°C version
 M12 x 1,5 plug
 Lid 1.4404 (316L)
 G 3/4" thread



VN7130
 150°C version
 M12 x 1,5 plug
 G 1/2" thread

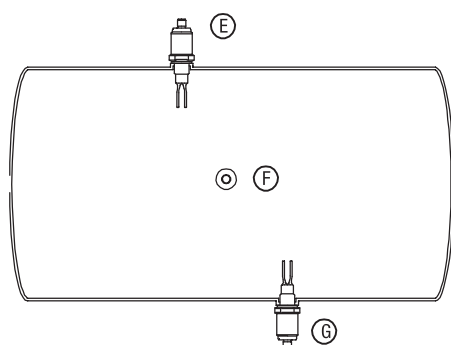
Applications

VN 7120



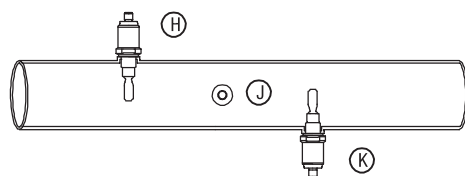
Vertical vessel

- A** Full detector horizontal
- B** Demand or empty detector horizontal
- C** Empty detector vertical from the bottom



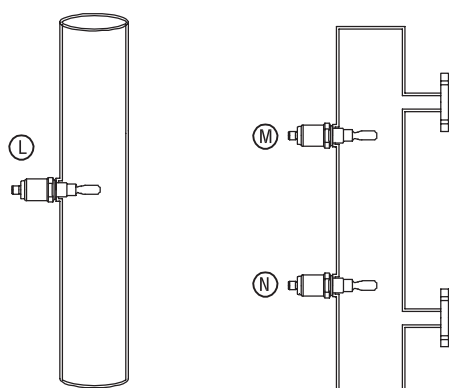
Horizontal vessel

- E** Full detector vertical
- F** Demand or empty detector horizontal
- G** Empty detector vertical from the bottom



Horizontal pipe

- H** Full detector vertical
- J** Demand or empty detector horizontal
- K** Empty detector vertical from the bottom



Vertical pipe

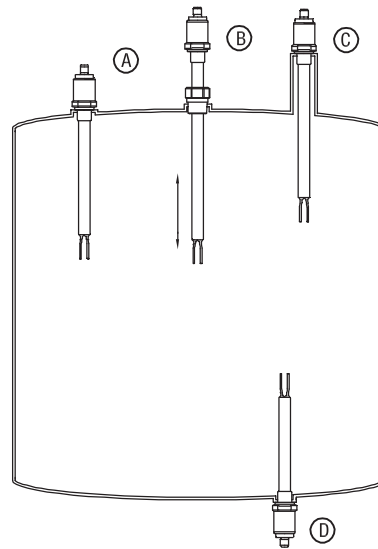
- L** Full, demand or empty detector horizontal

Bypass

- M** Full detector horizontal
- N** Demand or empty detector horizontal

Applications

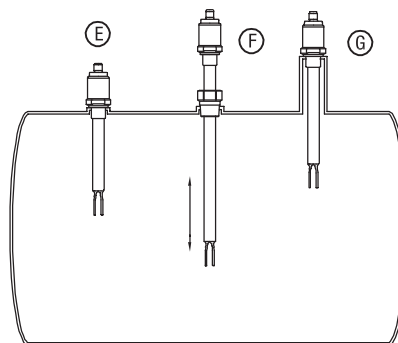
VN 7130



Vertical vessel

Full, demand or empty detector:

- A** Vertical
- B** Vertical with sliding sleeve
- C** Vertical with long mounting socket
- D** Vertical from bottom



Horizontal vessel

- E** Full, demand or empty detector vertical
- F** Vertical with sliding sleeve
- G** Vertical with long mounting socket



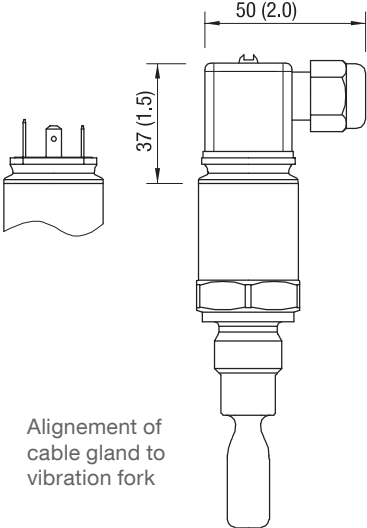
Bypass

- H** Full, demand or empty detector vertical

Dimensions

All dimensions in mm (inch)

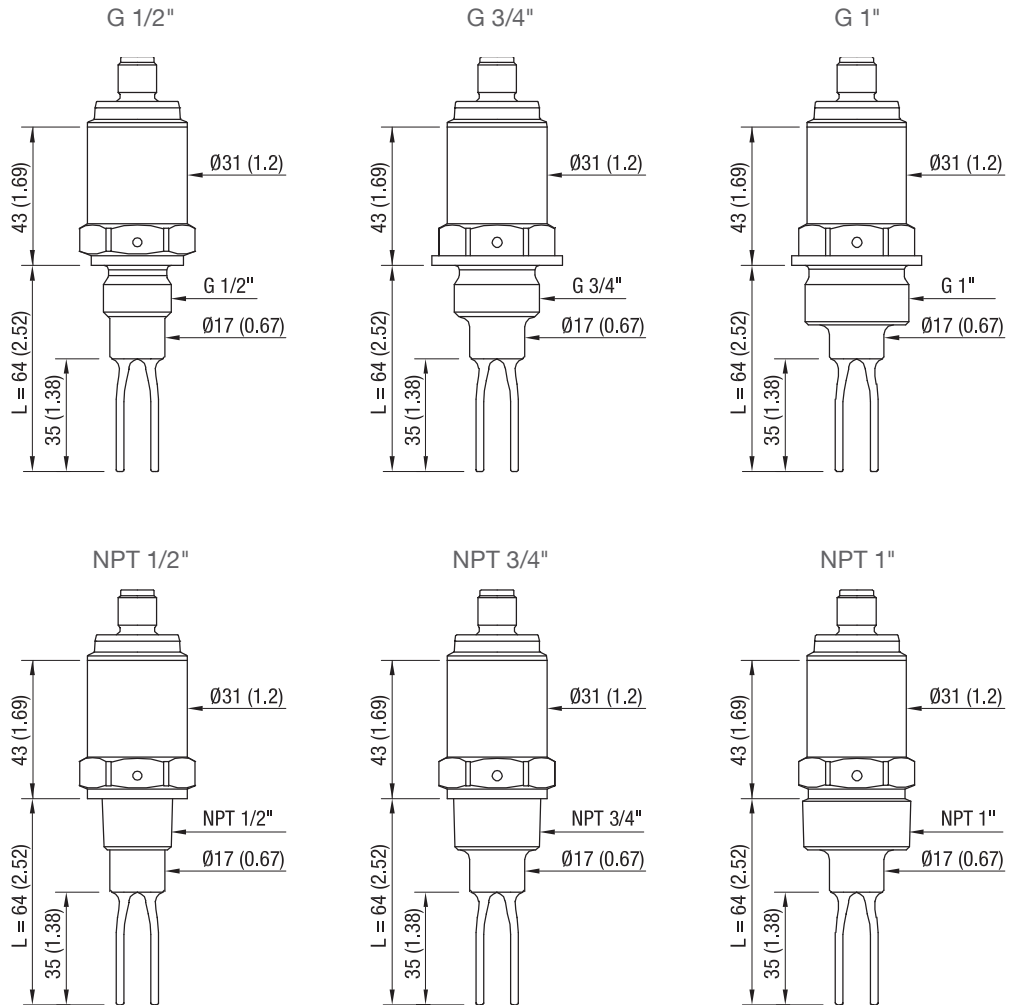
Plugs

Plug	M12 with lid PC (transparent)	M12 with lid 1.4404 (316L)	Valve
Available for electronics	IO-Link 3-wire PNP	IO-Link 3-wire PNP	2-wire without contact 3-wire PNP
	 22 (0.9)	 22 (0.9)	 50 (2.0) 37 (1.5) Alignment of cable gland to vibration fork

Dimensions

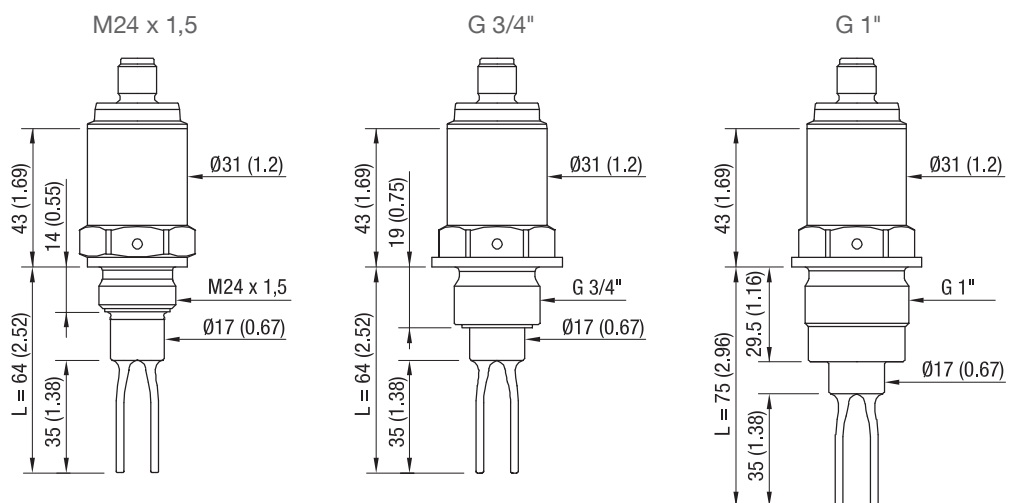
VN 7120 compact version

Thread



Stated versions 100°C (212°F)

Thread for hygiene adapter



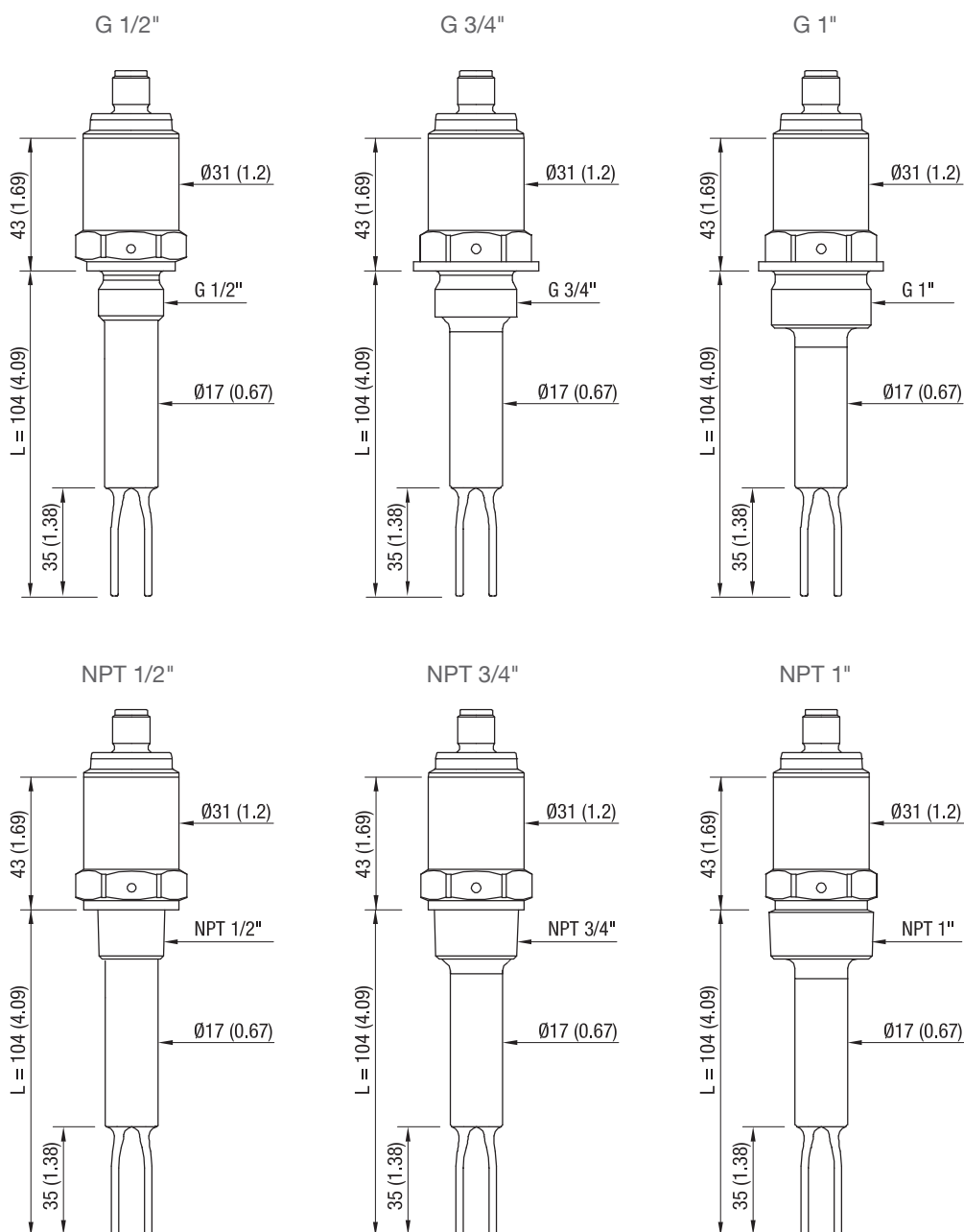
Stated versions 100°C (212°F)

Available with certificate EHEDG EL class I in combination with hygiene adapter

Dimensions

VN 7120 with elongated switchpoint

Thread

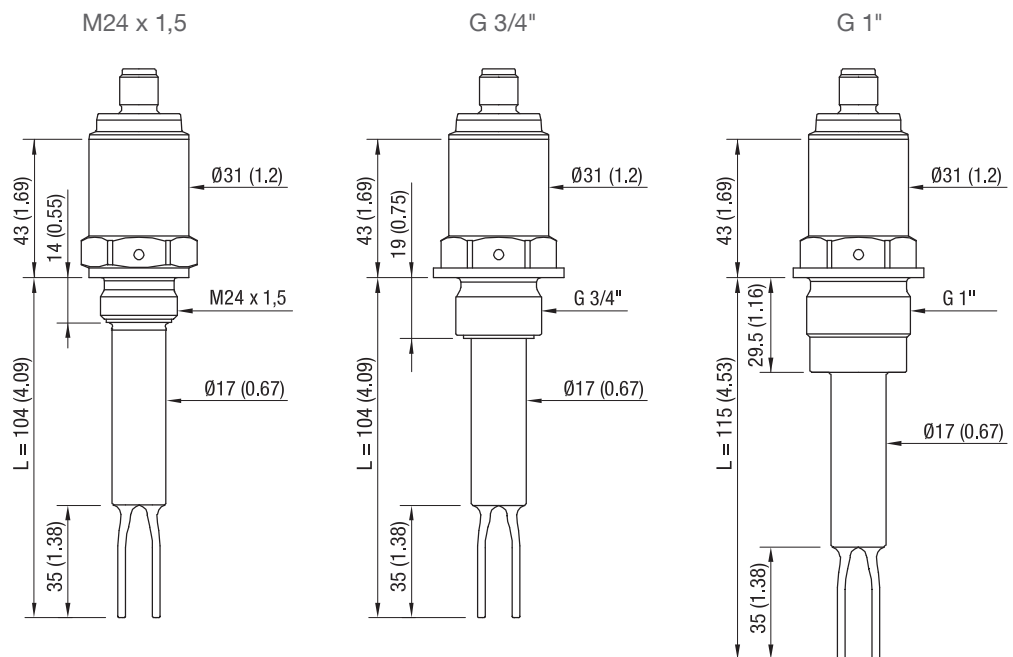


Stated versions 100°C (212°F)

Dimensions

VN 7120 with elongated switchpoint

Thread
 for hygiene
 adapter

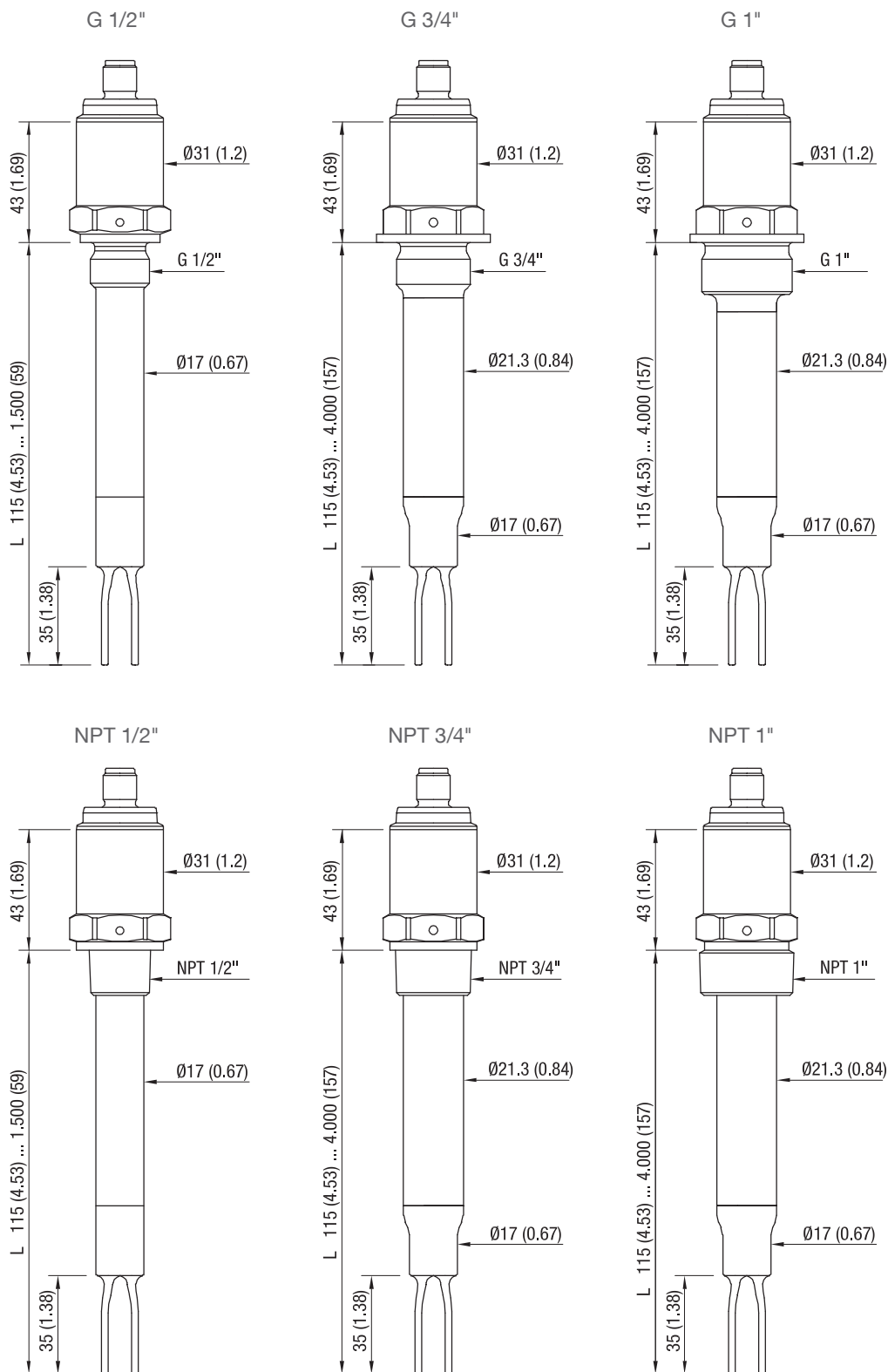


Stated versions 100°C (212°F)

Dimensions

VN 7130

Thread

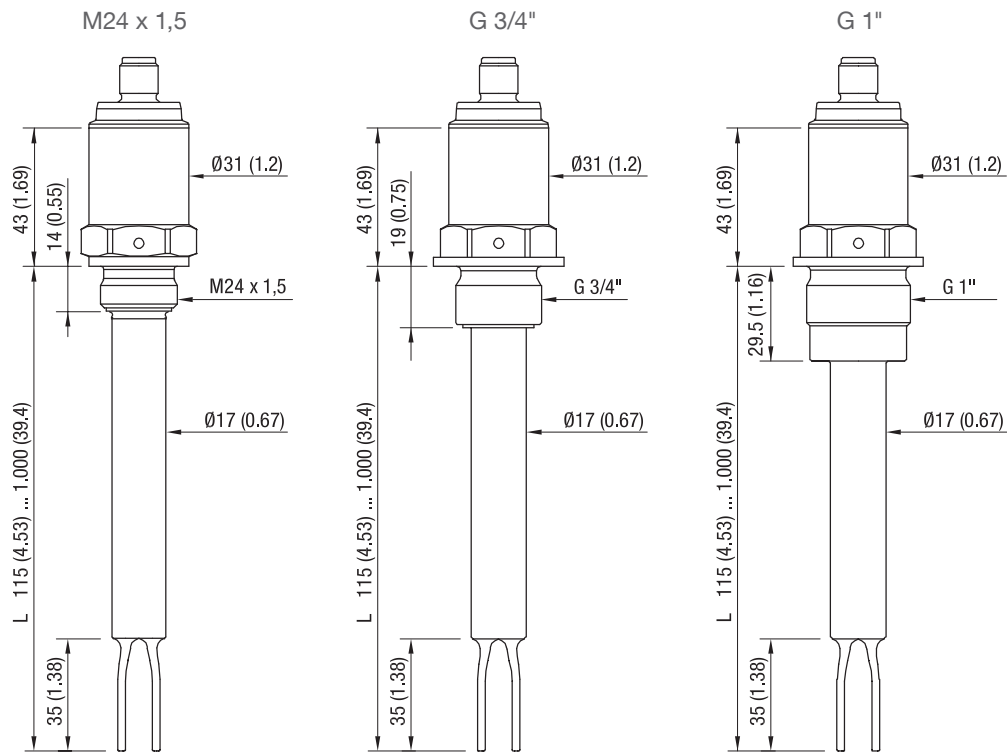


Stated versions 100°C (212°F)

Dimensions

VN 7130

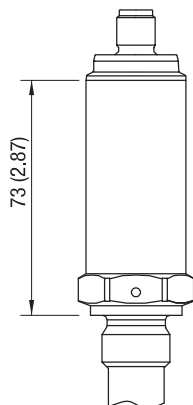
Thread
for hygiene
adapter



Stated version 100°C (212°F)

Available with certificate EHEDG EL class I in combination with hygiene adapter

VN 7120 / VN 7130 Version 150°C (302°F)

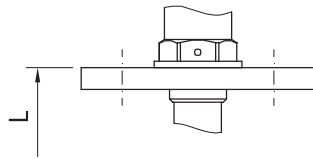


See VN 7120 and VN 7130 for:

- Dimensions not shown
- Various process connections

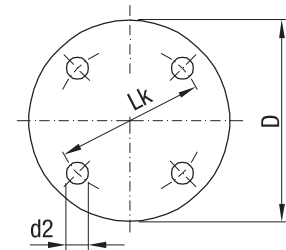
Dimensions

Flange

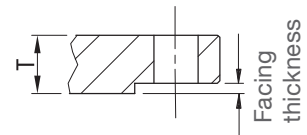


VN 7120 and VN7130
 Flange is screwed to
 G 3/4" thread process connection

	Code	Type	Number of holes	d2 mm (Inch)	Lk mm (Inch)	D mm (Inch)	T thickness mm (Inch)
ASME B16.5, raised face	R	1" 150 lbs	4	15,9 (0.63)	79,3 (3.12)	108,0 (4.25)	14,3 (0.56)
	S	1" 300 lbs	4	19,1 (0.75)	88,9 (3.5)	123,8 (4.87)	17,5 (0.69)
	T	1½" 150 lbs	4	15,9 (0.63)	98,6 (3.88)	127,0 (5.0)	17,5 (0.69)
	U	1½" 300 lbs	4	22,2 (0.87)	114,3 (4.5)	155,6 (6.13)	20,6 (0.81)
	V	2" 150 lbs	4	19,1 (0.75)	120,7 (4.75)	152,4 (6.01)	19,1 (0.75)
	W	2" 300 lbs	8	19,1 (0.75)	127,0 (5.0)	165,1 (6.5)	22,2 (0.87)
EN 1092-1 type A, flat faced	N	DN25 PN16/40	4	14,0 (0.55)	85,0 (3.35)	115,0 (4.53)	18,0 (0.71)
	P	DN40 PN16/40	4	18,0 (0.71)	110,0 (4.33)	150,0 (5.91)	18,0 (0.71)
	Q	DN50 PN16/25/40	4	18,0 (0.71)	125,0 (4.92)	165,0 (6.5)	18,0 (0.71)



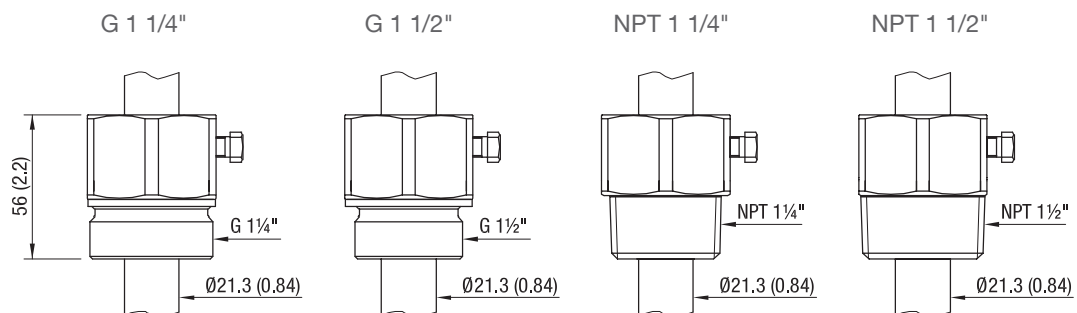
Raised face



Type	Facing thickness
ASME 150 lbs ASME 300 lbs	2 mm (0.08")

Sliding sleeve VN 7130 (option)

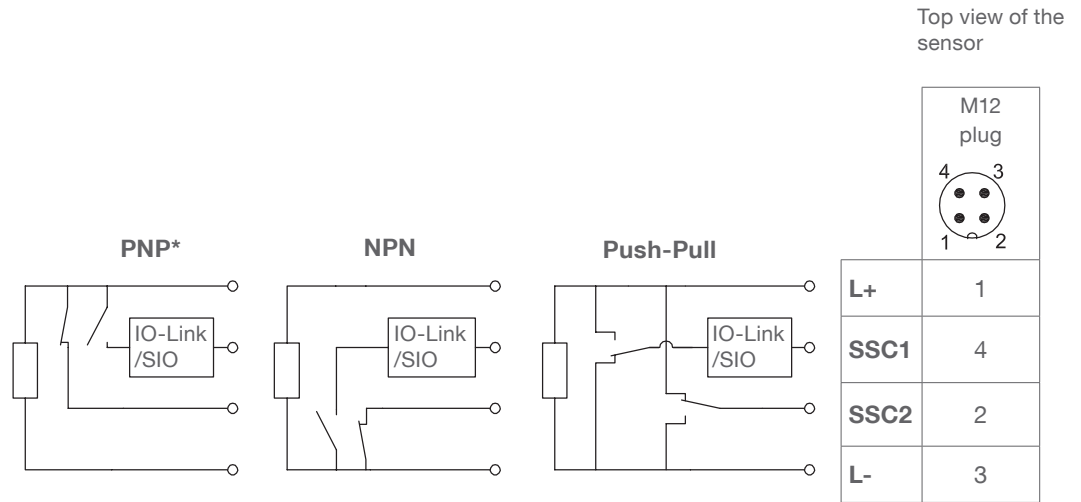
G 1 1/4", G 1 1/2"; DIN ISO 228-1
 NPT 1 1/4", NPT 1 1/2"; ASME B 1.20.1
 Material: 1.4404 (316L)
 Sealing material to the extension pipe: FKM
 Max. process pressure: -1 to 10 bar (146 psi)



Electrical installation

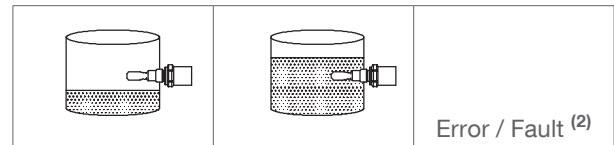
IO-Link

Wiring diagram



*Factory setting
 Change to NPN or Push-Pull can be done in IO-Link registers.
 External fuse in L+: max. 0,5A, fast or slow, HBC, 250V

Output logic and LED's



SSC1 ⁽¹⁾	FSL	PNP/NPN			
		Push-Pull			
SSC2 ⁽¹⁾	FSH	PNP/NPN			
		Push-Pull			

LED on transparent lid ⁽³⁾

	Green			
	Yellow			
	Red			

LED's on M12 connector ⁽⁴⁾

	Green (Power)			
	Yellow (SSC1)			
	Yellow (SSC2)			
	Red (Failure)	—	—	—

Electrical installation

(1) SSC1 and SSC2

Factory setting:

SSC1 is set to FSL and PNP.

SSC2 is set to FSH and PNP.

Settings can be changed in IO-Link registers.

FSL = Fail safe low. Contact opens in case of uncovered vibration fork (safe state).

FSH = Fail safe high. Contact opens in case of covered vibration fork (safe state).

(2) Error / Fault:

The stated output logic (safe state, open contacts) is present in case of Fault (unit defect).

In case of Error (remediable), the outputs go to safe state (open contacts) and recover after the Error is cleared.

(3) LED on transparent lid:

The internal LED is visible on the transparent lid.

Yellow LED is ON in case of covered vibration fork.

Note: This concept is used for all VN7 devices with M12 plug.

Red LED Flashing: Error remediable:

Output current overload, incorrect wiring, too high temperature, testmagnet too long present

Red LED ON: Fault, unit defect

(4) LED's on M12 connector:

For devices with 316L lid, internal LED is not present, instead LED's on M12 connector are used.

The stated colours (green, yellow) are typically used in M12 connectors, check datasheet of used connector.

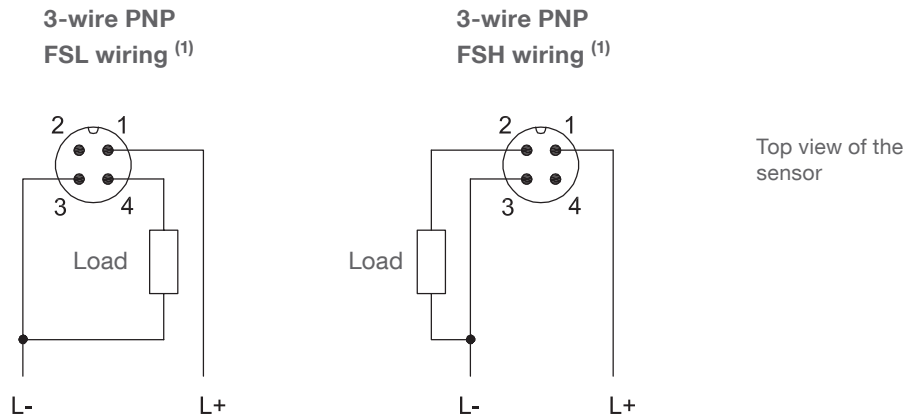
Yellow LEDs are ON in case of closed SSC1 and SSC2 contacts (dependent on FSL/FSH setting).

Red LED is not present.

Electrical installation

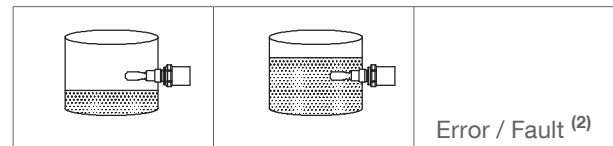
3-wire PNP with M12 plug

Wiring diagram



Connect either as FSL wiring or as FSH wiring, depending on required output logic (see below)
 If required, both outputs (pin 2 and pin 4) can be connected (antivalent).
 External fuse in L+: max. 0,5A, fast or slow, HBC, 250V

Output logic and LED's



FSL wiring ⁽¹⁾	1 — 4	1 — 4	1 — 4
FSH wiring ⁽¹⁾	1 — 2	1 — 2	1 — 2

LED on transparent lid ⁽³⁾

	Green	☀	●	●
	Yellow	●	☀	●
	Red	●	●	☀

LED's on M12 connector ⁽⁴⁾

	Green (Power)	☀	☀	☀
	Yellow (Pin 4)	●	☀	●
	Yellow (Pin 2)	☀	●	●
	Red	—	—	—

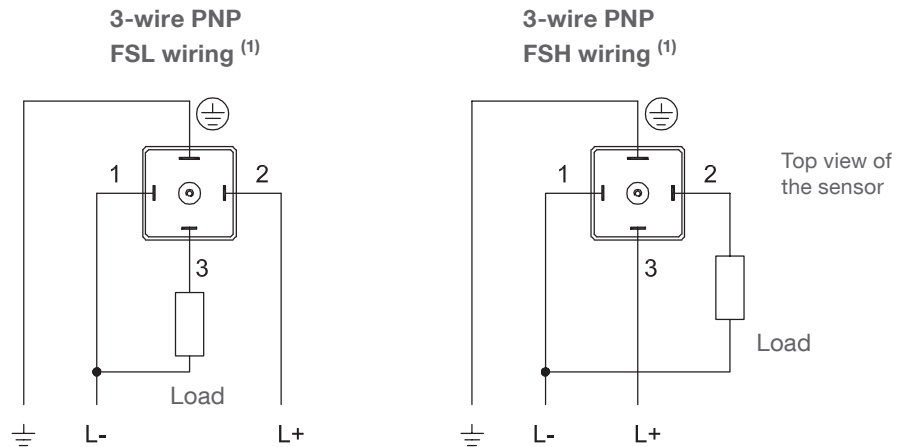
Electrical installation

- (1) FSL = Fail safe low. Contact opens in case of uncovered vibration fork (safe state).
 FSH = Fail safe high. Contact opens in case of covered vibration fork (safe state).
- (2) Error / Fault:
 The stated output logic (safe state, open contacts) is present in case of Fault (unit defect).
 In case of Error (remediable), the outputs go to safe state (open contacts) and recover after the Error is cleared.
- (3) LED on transparent lid:
 The internal LED is visible on the transparent lid.
 Yellow LED is ON in case of covered vibration fork.
 Note: This concept is used for all VN7 devices with M12 plug.
 Red LED Flashing: Error remediable:
 Output current overload, incorrect wiring, too high temperature, testmagnet too long present
 Red LED ON: Fault, unit defect
- (4) LED's on M12 connector:
 For devices with 316L lid, internal LED is not present, instead LED's on M12 connector are used.
 The stated colours (green, yellow) are typically used in M12 connectors, check datasheet of used connector.
 Yellow LED's are ON in case of closed Pin 4 and Pin 2 contacts (dependent on FSL/FSH setting).
 Red LED is not present.

Electrical installation

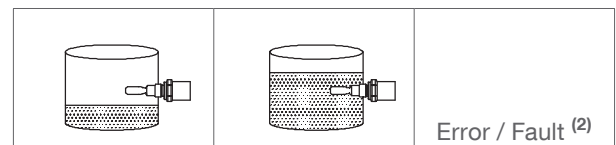
3-wire PNP with Valve plug

Wiring diagram



Connect either as FSL wiring or as FSH wiring, depending on required output logic (see below)
 External fuse in L+: max. 0,5A, fast or slow, HBC, 250V

Output logic and LED's



FSL wiring ⁽¹⁾		3 — 2	3 — 2	3 — 2
	Green	☀	●	●
	Yellow	●	☀	●
	Red	●	●	☀ ☀

FSH wiring ⁽¹⁾		2 — 3	2 — 3	2 — 3
	Green	●	☀	●
	Yellow	☀	●	●
	Red	●	●	☀ ☀

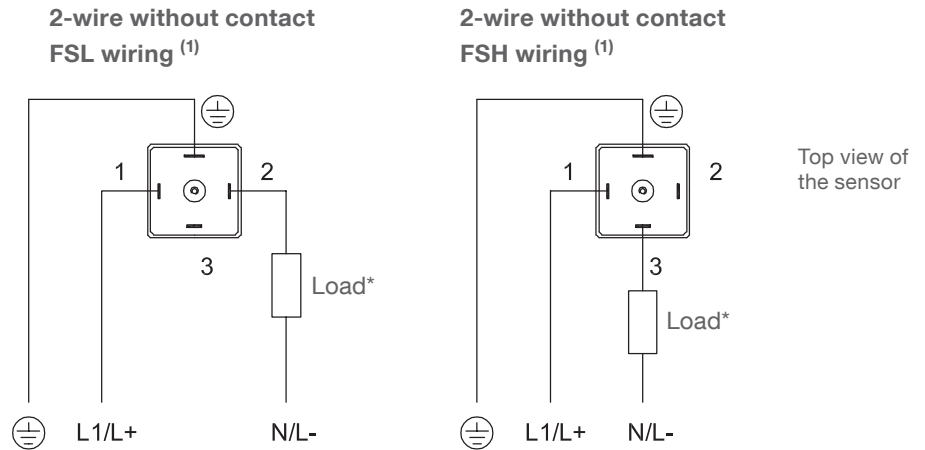
Electrical installation

- (1) FSL = Fail safe low. Contact opens in case of uncovered vibration fork (safe state).
FSH = Fail safe high. Contact opens in case of covered vibration fork (safe state).
- (2) Error / Fault:
The stated output logic (safe state, open contacts) is present in case of Fault (unit defect).
In case of Error (remediable), the outputs go to safe state (open contacts) and recover after the Error is cleared.
- (3) LED:
The internal LED is visible on the transparent lid.
Yellow LED is ON in case of closed contact.
Note: This concept is used for all VN7 devices with Valve plug.
Red LED Flashing: Error remediable:
Output current overload, incorrect wiring, too high temperature, testmagnet too long present
Red LED ON: Fault, unit defect

Electrical installation

2-wire without contact

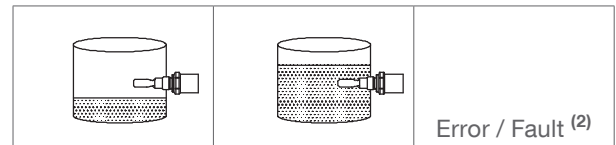
Wiring diagram



Connect either as FSL wiring or as FSH wiring, depending on required output logic (see below)
 External fuse in L1/L+: max. 0,5A, fast or slow, HBC, 250V

* Provide protection against spikes with inductive loads (e.g. relay)

Output logic and LED's



FSL wiring ⁽¹⁾		1 — 2	1 — 2	1 — 2
	Green	☀	●	●
	Yellow	●	☀	●
	Red	●	●	☀
FSH wiring ⁽¹⁾		1 — 3	1 — 3	1 — 3
	Green	●	☀	●
	Yellow	☀	●	●
	Red	●	●	☀

Electrical installation

- (1) FSL = Fail safe low. Contact opens in case of uncovered sensor (safe state).
FSH = Fail safe high. Contact opens in case of covered sensor (safe state).
- (2) Error / Fault:
The stated output logic (safe state, open contacts) is present in case of Fault (unit defect).
In case of Error (remediable), the outputs go to safe state (open contacts) and recover after the Error is cleared.
- (3) LED:
The internal LED is visible on the transparent lid.
Yellow LED is ON in case of closed contact.
Note: This concept is used for all VN7 devices with Valve plug.
Red LED Flashing: Error remediable:
Output current overload, short circuit, too high temperature, testmagnet too long present
Red LED ON: Fault, unit defect