



## Product overview





## Safe and reliable

### **Level and pressure instrumentation for the process industry**

Production processes are becoming even more complex. So it's important that the measurement technology used to control and monitor them is all the more understandable and intuitive. VEGA has set itself the goal of developing innovative measurement technology that is easy to install and operate while providing maximum safety and reliability. Leading the way in a worldwide trend towards "intelligent factories", the VEGA instrumentation concept "plics®" provides a modular instrument platform with a standardized adjustment concept that encompasses all measuring principles.

VEGA employs over 1,200 people worldwide, 600 of whom work at its headquarters in Schiltach in the Black Forest. This is where, for over 50 years now, solutions to demanding measuring tasks are being conceived and brought to realization: for chemical and pharmaceutical plants, the food industry, drinking water supply systems, sewage treatment works, landfills, mining operations, power generation, oil exploration and production, ships and airplanes.

VEGA is active in over 80 countries with its global network of subsidiaries and distributors. The company and its products have all the necessary certificates and approvals for worldwide application. This applies to the technical safety, as well as the quality of all products and services.

Trend-setting measurement technology orientates itself around the people who use it. Every plics® sensor is assembled according to the customer's specifications, fulfilling their application requirements perfectly.

VEGA has thought the "easy is better" principle through from start to finish. plics® is perfectly positioned to solve measuring tasks from the most demanding level and pressure challenges.

### The plics® modular principle

The idea is simple: each instrument is assembled from prefabricated components after the order is received. This way VEGA customers get the optimal device to meet their requirements, made to measure and fast. This is where the plics® modular concept pays dividends, as these instruments are more cost efficient over their entire life cycle.

### The components

Every plics® instrument consists of multiple components: First, the sensing element is combined with the process fitting required and a housing of plastic, aluminium or stainless steel. Then, the electronics module is inserted. On top of that comes the universal display and adjustment module PLICSCOM. The optional Bluetooth feature also allows any transmitter to be adjusted wirelessly from a distance of approximately 25 meters.

### VEGA makes measurement technology easy

Handling measurement technology always means responsibility. Its good to know that VEGA is constantly working to make both instrument configuration and adjustment even more simple. That's because the simpler and easier something is to use, the more reliable it becomes: reducing the probability of mistakes and increasing functional reliability.

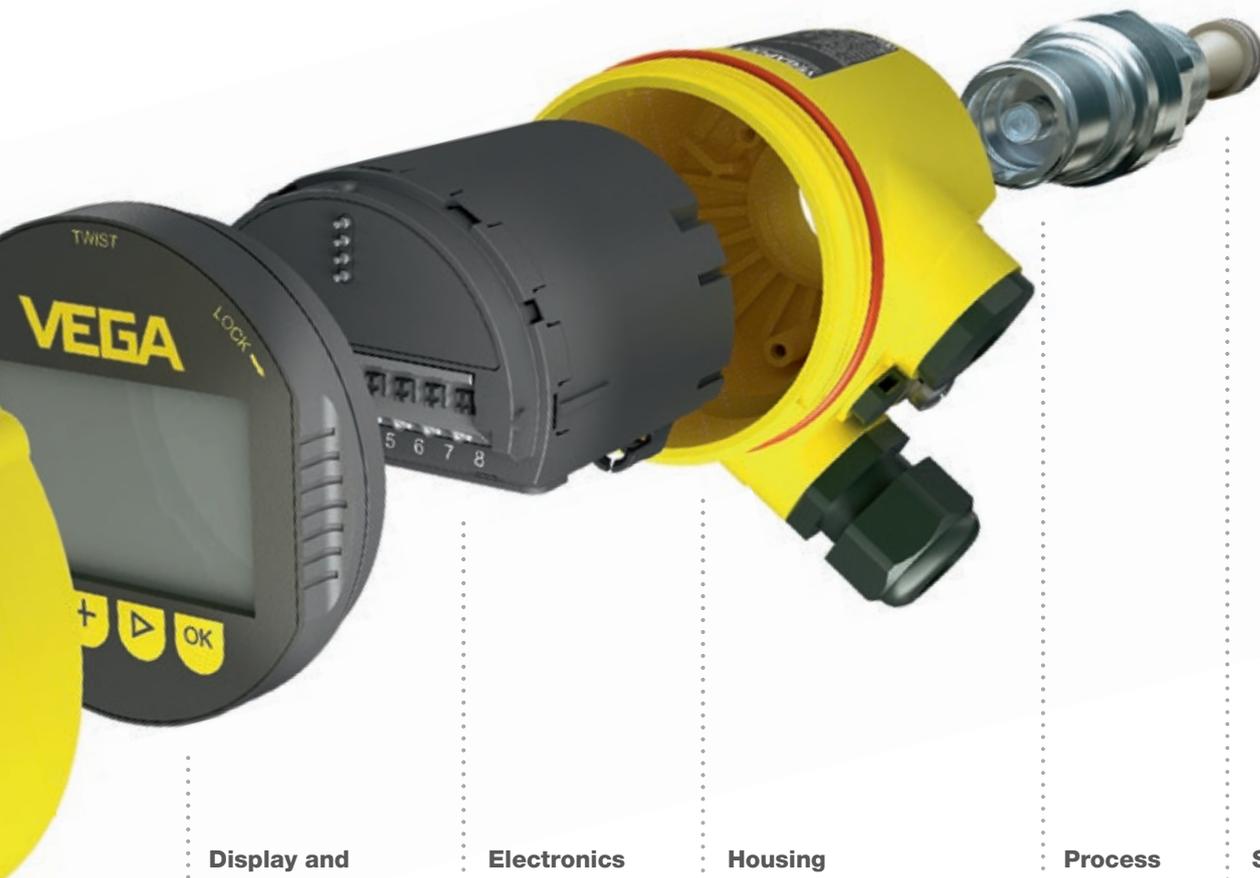


	● Malfunction
	● Maintenance required
	● Check function
	● Outside of specification

Event memory (List of the parameter changes and event in the instrument)

Graph:

Date/Time	Status	Event type	Event description	Value
21.06.2012 13:27:35	Change	By PC (directly)	Linearization type	Spher
21.06.2012 13:27:35	Change	By PC (directly)	Vessel height D	4000
21.06.2012 13:27:35	Change	By PC (directly)	Socket correction h	200 r
21.06.2012 13:21:20	Incoming	F105 (Failure)	Measured value is determined	2200
21.06.2012 13:21:20	Outgoing	F105 (Failure)	Measured value is determined	2200
21.06.2012 13:21:15	Outgoing	F105 (Failure)	Measured value is determined	2200
21.06.2012 13:21:14	Incoming	F105 (Failure)	Measured value is determined	2200
21.06.2012 13:21:13	Change	By PC (directly)	False signal suppression - Activity Creat	
21.06.2012 13:21:13	Change	By PC (directly)	False signal suppression - Soundr	900 r
21.06.2012 13:19:14	Outgoing	F105 (Failure)	Measured value is determined	2200
21.06.2012 13:19:13	Incoming	F105 (Failure)	Measured value is determined	2200
21.06.2012 13:19:09	Outgoing	F105 (Failure)	Measured value is determined	2200
21.06.2012 13:19:08	Incoming	F105 (Failure)	Measured value is determined	2200



**Display and adjustment module**



PLICSCOM



VEGACONNECT



PLICSLLED

**Electronics**



4 ... 20 mA/  
HART



Profibus PA



Foundation  
Fieldbus



Level switch

**Housing**



Plastic



Stainless steel



Aluminium



Plastic double  
chamber



Stainless steel  
double chamber



Aluminium  
double chamber

**Process fitting**



Thread



Flange



Hygienic  
fitting



Customer-  
specific



Radar



Ultrasonic



Vibration



Process  
pressure



Differential  
pressure



Guided radar



Microwave  
barrier



Capacitive



Hydrostatic

# Quickfinder

				Liquids					Bulk solids				Gases	Process		
				Conduc- tive	Non-con- ductive	Non- contact	Varying products	Interface	Powders	Granules	Varying products	Non- contact		up to +100 °C	up to +150 °C	
		page														
Continuous level measurement	Radar	VEGAPULS	9													
	Guided radar	VEGAFLEX	15													
	Ultrasonic	VEGASON	19													
	Capacitive	VEGACAL	21													
	Hydrostatic	VEGABAR	39													
		VEGAWELL	43													
	Radiation-based	FIBERTRAC	47													
		SOLITRAC	47													
	Differential pressure	VEGADIF	45													
Point level detection	Vibration	VEGASWING	29													
		VEGAVIB	31													
		VEGAWAVE	33													
	Capacitive	VEGACAP	25													
	Conductive	VEGAKON	35													
		EL	36													
	Radar	VEGAMIP	13													
	Radiation-based	MINITRAC	48													
		POINTRAC	48													
Pressure measurement	Process pressure	VEGABAR	39													
	Hydrostatic	VEGABAR	39													
		VEGAWELL	43													
	Differential pressure	VEGADIF	45													
Flow measurement	Differential pressure	VEGADIF	45													
	Radiation-based	MINITRAC	48													
		WEIGHTRAC	48													
Density measurement	Differential pressure	VEGADIF	45													
	Hydrostatic	VEGABAR	39													
		VEGAWELL	43													
	Radiation-based	MINITRAC	48													
Signal processing	Software and display instruments	PLICSCOM	52													
		PLICSLED	52													
		VEGACONNECT	52													
		VEGADIS	53													
	Signal conditioning instruments	VEGAMET	55													
		VEGASCAN	56													
		VEGATOR	57													
		VEGASTAB	59													
	Wireless communication	PLICSMOBILE	61													
	Separating and protective instruments		62													





## Level | Radar



### Area of application

Radar sensors of the VEGAPULS series are used for non-contact level measurement of liquids and bulk solids. They measure all kinds of liquids, even under high pressure and extreme temperatures, in simple as well as aggressive liquids, and they are suitable for applications with stringent hygiene requirements. The sensors can also measure from the lightest to the heaviest bulk solids with absolute reliability, even in the presence of dust and noise, without being affected by buildup or condensation.

### Measuring principle

The measuring instrument sends out short radar pulses toward the measured product via the antenna system. The product surface reflects the signal waves, which are then received back by the antenna system. The instrument calculates the level from the running time of the radar pulses and the entered tank height.

### Advantages

Non-contact radar technology is characterized by a particularly high measurement accuracy. The measurement is affected neither by fluctuating product properties nor by changing process conditions such as temperature, pressure or intense dust generation. User-friendly adjustment without vessel filling and emptying saves time.



	VEGAPULS WL S 61	VEGAPULS WL 61	VEGAPULS 61
			
Application	Water processing, wastewater management and gauge monitoring	Water processing and sewage water applications, flow measurement in open flumes and gauge monitoring	Liquids in small vessels under simple process conditions
Measuring range	up to 8 m	up to 15 m	up to 35 m
Antenna	Plastic horn antenna of PP	Plastic horn antenna of PP	Plastic horn antenna of PP or encapsulated horn antenna of PVDF
Process fitting	Thread G1½, mounting strap	Thread G1½, mounting strap, compression flanges from DN 80, 3"	Thread G1½, 1½ NPT mounting strap, compression flanges from DN 80, 3" adapter flanges from DN 100, 4"
Process temperature	-40 ... +60 °C	-40 ... +80 °C	-40 ... +80 °C
Process pressure	-1 ... +2 bar (-100 ... +200 kPa)	-1 ... +2 bar (-100 ... +200 kPa)	-1 ... +3 bar (-100 ... +300 kPa)
Accuracy	±5 mm	±2 mm	±2 mm
Frequency range	K-band	K-band	K-band
Signal output	4 ... 20 mA	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus
Display/Adjustment	PACTware, VEGADIS 82	PACTware, VEGADIS 82	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82
Approvals	–	ATEX, IEC, EAC (GOST), UKR Sepro, CSA	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2
Benefit	<ul style="list-style-type: none"> <li>▪ Economical solution through diverse and easy mounting options</li> <li>▪ Immersion-proof IP 68 housing enables continuous maintenance-free operation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Economical solution through diverse and easy mounting options</li> <li>▪ Immersion-proof IP 68 housing enables continuous maintenance-free operation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Economical solution through wide variety of mounting options</li> <li>▪ Maintenance-free operation with encapsulated antenna system</li> </ul>

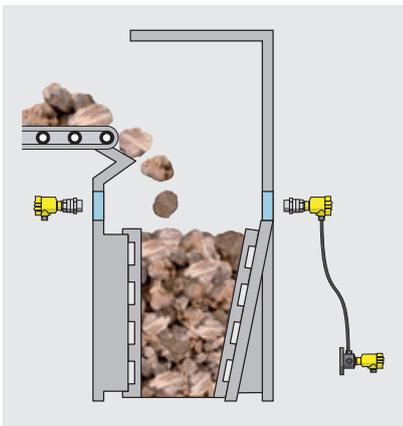
# Level I Radar

	VEGAPULS 62	VEGAPULS 63	VEGAPULS 64
			
Application	Storage containers, reactors and process vessels with various process conditions	Aggressive liquids or with hygienic requirements	Liquids under simple process conditions or hygienic requirements
Measuring range	up to 35 m	up to 35 m	up to 30 m
Antenna	Horn antenna, parabolic antenna or standpipe antenna ½" of 316L	Hygienically encapsulated horn antenna of PTFE or PFA	Plastic horn antenna of PP, thread with integrated horn antenna, flange with encapsulated antenna system
Process fitting	Thread from G1½, 1½ NPT flanges from DN 50, 2"	Flanges from DN 50, 2" slotted nut hygienic fittings	Mounting strap, Thread from G¾, ¾ NPT, flanges from DN 50, 2", compression flanges from DN 80, 3", hygienic fittings
Process temperature	-196 ... +450 °C	-196 ... +200 °C	-196... +200 °C
Process pressure	-1 ... +160 bar (-100 ... +16000 kPa)	-1 ... +16 bar (-100 ... +1600 kPa)	-1 ... +25 bar (-100 ... +2500 kPa)
Accuracy	±2 mm	±2 mm	±1 mm
Frequency range	K-band	K-band	W-band
Signal output	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus	4 ... 20 mA/HART
Display/Adjustment	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82
Approvals	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship
Benefit	<ul style="list-style-type: none"> <li>• Optimal solution for nearly all applications through different antenna versions</li> <li>• Simple planning and engineering thanks to large temperature and pressure range</li> </ul>	<ul style="list-style-type: none"> <li>• Continuous maintenance-free operation through high chemical resistance</li> <li>• Optimal cleaning to meet strict hygienic requirements thanks to front-flush mounting</li> </ul>	<ul style="list-style-type: none"> <li>• Ideal solution for very small and narrow vessels through extreme signal focusing</li> <li>• High plant availability, hence insensitive to buildup and contamination</li> </ul>

	VEGAPULS 66	VEGAPULS 67	VEGAPULS 68 (SR 68)	VEGAPULS 69
				
	Liquids under difficult process conditions	Bulk solids for smaller to average vessel heights	Bulk solids for average to large vessel heights	Bulk solids for smaller or very large vessels
	up to 35 m	up to 15 m	up to 75 m, SR 68: up to 30 m	up to 120 m
	Horn antenna of 316L or enamel or standpipe 2" of 316L	Completely encapsulated plastic horn antenna of PP	Horn or parabolic antenna of 316L	Plastic horn antenna of PP, metal jacketed lens antenna with rinsing air connection of PEEK, thread with integrated horn antenna
	Flanges from DN 50, 2"	Mounting strap compression flanges from DN 80, 3"	Thread from G1½, 1½ NPT flanges from DN 50, 2"	Mounting strap, compression flanges from DN 80, 3"; flanges from DN 80, 3", thread G1½, 1½ NPT
	-60 ... +400 °C	-40 ... +80 °C	-196 ... +450 °C SR 68: -40 ... +250 °C	-40 ... +200 °C
	-1 ... +160 bar (-100 ... +16000 kPa)	-1 ... +2 bar (-100 ... +200 kPa)	-1 ... +160 bar (-100 ... +16000 kPa) SR 68: -1 ... +100 bar (-100 ... +10000 kPa)	-1 ... +20 bar (-100 ... +2000 kPa)
	±8 mm	±2 mm	±2 mm	±5 mm
	C-band	K-band	K-band	W-band
	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus
	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82
	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2	ATEX, IEC, FM, CSA, SIL2, EAC (GOST), UKR Sepro	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, only 68: Ship, SIL2	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro
	<ul style="list-style-type: none"> <li>• Universal use through different antenna versions</li> </ul>	<ul style="list-style-type: none"> <li>• Economical solution through wide variety of mounting options</li> <li>• Maintenance-free operation with encapsulated antenna system</li> </ul>	<ul style="list-style-type: none"> <li>• Optimal solution for almost all applications via different antenna versions and materials</li> <li>• Simple planning and engineering thanks to large temperature and pressure range</li> </ul>	<ul style="list-style-type: none"> <li>• Ideal solution for very narrow or very large containers through extreme signal focusing</li> <li>• Maintenance-free operation with encapsulated antenna system</li> </ul>



## Point level detection | Radar



### Area of application

The microwave barriers of the VEGAMIP series are suitable for non-contact point level detection of liquids and bulk solids of any kind. Even point level detection of high-purity liquids through the container wall is possible. When it comes to bulk solids, the microwave barrier lends itself well for heavy and dust-generating media or for blockage detection in conveying systems.

### Measuring principle

The microwave barrier works like a light barrier: if the microwave beam between transmitter and receiver is blocked by the rising medium, the measuring signal is damped. This change is detected by the receiver and converted into a switching signal.



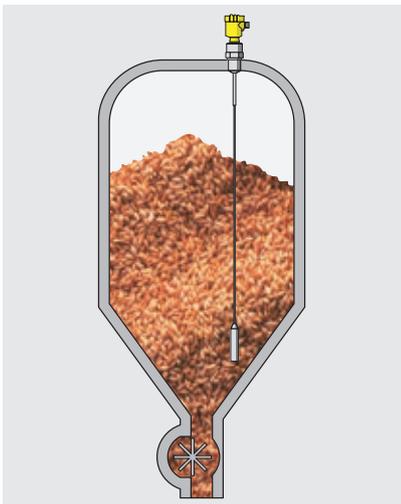
### Advantages

This method allows point level detection without direct contact with the measured product. Dirt, buildup and abrasion on the sensor are eliminated, allowing a wear and maintenance-free operation.

	VEGAMIP T61	VEGAMIP R61	VEGAMIP R62
			
Application	Bulk solids, liquids	Bulk solids, liquids	Bulk solids, liquids in dangerous mounting locations or locations difficult to access
Version	Emitter	Receiver	Receiver with separate version
Measuring range	up to 100 m	up to 100 m	up to 100 m
Antenna	Inside horn antenna with PTFE cover, plastic horn antenna with PP cover	Inside horn antenna with PTFE cover, plastic horn antenna with PP cover	Inside horn antenna with PTFE cover, plastic horn antenna with PP cover
Process fitting	Thread G1½, 1½ NPT, flanges, clamp, mounting strap	Thread G1½, 1½ NPT, flanges, clamp, mounting strap	Thread G1½, 1½ NPT, flanges, clamp, mounting strap
Process temperature	-40 ... +80 °C +450 °C with mounting adapter	-40 ... +80 °C +450 °C with mounting adapter	-40 ... +80 °C +450 °C with mounting adapter
Process pressure	-1 ... +4 bar (-100 ... +400 kPa)	-1 ... +4 bar (-100 ... +400 kPa)	-1 ... +4 bar (-100 ... +400 kPa)
Frequency range	K-band	K-band	K-band
Signal output	–	Relay, transistor	Relay, transistor
Approvals	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro	ATEX, IEC, CSA
Benefit	<ul style="list-style-type: none"> <li>• Simple installation and mounting, as transmitter requires no parameterization</li> <li>• Universal transmitter for VEGAMIP R61 and VEGAMIP R62 saves time during planning and reduces costs of stockkeeping</li> </ul>	<ul style="list-style-type: none"> <li>• Compact instrument saves time and money when installing and connecting, as no separate signal conditioning instrument is required</li> </ul>	<ul style="list-style-type: none"> <li>• Separate instrument version allows installation in hard-to-reach or dangerous locations</li> <li>• Simple adjustment procedure saves time and money when setting up and commissioning</li> </ul>



## Level | Guided Wave Radar



### Area of application

The GWR sensors of the VEGAFLEX series are suitable for level measurement in liquids and bulk solids. In liquids, they can also detect the interface between two products. They measure liquids reliably, even under high pressure and extreme temperatures. They can be used in simple as well as in aggressive liquids and are suitable for applications with stringent hygiene requirements. The sensors can also be used to measure light and heavy bulk solids with absolute reliability, even in the presence of dust and noise, and without being affected by buildup or condensation.

### Measuring principle

High-frequency radar pulses are coupled onto a cable (bulk solids) or rod (liquids) and guided along the probe. The pulse is reflected by the product surface. The instrument calculates the level from the running time of the radar pulses and the entered tank height.

### Advantages

GWR sensors operate independently of noise, pressure or temperature fluctuations and are also completely unaffected by changes in density, foaming, steam or dust. Buildup on the probe or on the container wall does not affect the measurement either. This allows simple, straightforward system design and engineering. The menu-driven adjustment routines enable simple, time-saving and confident setup.

	VEGAFLEX 81	VEGAFLEX 82
		
Application	All kind of liquids, applications with steam, buildup, foam generation, condensation as well as ammonia	Light-weight and heavy-weight bulk solids of all kind, applications with strong dust generation, condensation or buildup
Measuring range	Cable probe up to 75 m of 316 or Alloy C22 Rod probe up to 6 m of 316L, Alloy C22, Alloy C276, Duplex, 304L or Alloy 400 Coax probe up to 6 m of 316L, Alloy C22 or 304L	Cable probe up to 75 m of 316 or 316 PA coated Rod probe up to 6 m of 316L or Alloy C22
Version	Exchangeable cable (ø 2 mm, ø 4 mm) Exchangeable rod (ø 8 mm, ø 12 mm) Coax (ø 21.3 mm, ø 42.2 mm)	Exchangeable cable (ø 4 mm, ø 6 mm, ø 11 mm) Exchangeable rod (ø 16 mm)
Process fitting	Thread from G $\frac{3}{4}$ , $\frac{3}{4}$ NPT, flanges from DN 25, 1"	Thread G $\frac{3}{4}$ , $\frac{3}{4}$ NPT, flanges from DN 25, 1"
Process temperature	-60 ... +200 °C	-40 ... +200 °C
Process pressure	-1 ... +40 bar (-100 ... +4000 kPa)	-1 ... +40 bar (-100 ... +4000 kPa)
Accuracy	±2 mm	±2 mm
Signal output	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus, MODBUS	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus, MODBUS
Display/Adjustment	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82
Approvals	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, FDA, INMETRO, NEPSI, KOSHA, CCOE	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, INMETRO, NEPSI, KOSHA, CCOE
Benefit	<ul style="list-style-type: none"> <li>Comprehensive diagnostic options ensure low-maintenance operation and thus high plant availability</li> <li>Shortenable probes enable simple standardization and maximum flexibility in planning</li> </ul>	<ul style="list-style-type: none"> <li>Factory calibration simplifies setup considerably</li> <li>Shortenable probes enable simple standardization and maximum flexibility in planning</li> </ul>

# Level I Guided Wave Radar

	VEGAFLEX 83	VEGAFLEX 86
		
Application	Aggressive liquids or liquid media with stringent hygienic requirements, applications with steam, buildup, foam generation or condensation	Virtually all liquids under extreme pressure and temperature conditions, applications with buildup, foam generation or condensation
Measuring range	Cable probe up to 32 m of PFA Rod probe up to 4 m of PFA or 1.4435 (BN)	Cable probe up to 75 m of 316 or Alloy C22 Rod probe up to 6 m of 316L or Alloy C22 Coax probe up to 6 m of 316L, Alloy C22, Duplex or Alloy C276
Version	Cable (ø 4 mm) Rod (ø 8 mm, ø 10 mm)	Exchangeable cable (ø 2 mm, ø 4 mm) Exchangeable rod (ø 8 mm, ø 16 mm) Coax (ø 21.3 mm, ø 42.2 mm)
Process fitting	Flanges from DN 25, 1", hygienic fittings, clamp, slotted nut	Thread from G $\frac{3}{4}$ , $\frac{3}{4}$ NPT, flanges from DN 25, 1"
Process temperature	-40 ... +150 °C	-196 ... +450 °C
Process pressure	-1 ... +16 bar (-100 ... +1600 kPa)	-1 ... +400 bar (-100 ... +40000 kPa)
Accuracy	±2 mm	±2 mm
Signal output	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus, MODBUS	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus, MODBUS
Display/Adjustment	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82
Approvals	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, EHEDG/3A, FDA, INMETRO, NEPSI, KOSHA, CCOE	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, steam boiler, Overfill protection, Ship, SIL2, INMETRO, NEPSI, KOSHA, CCOE
Benefit	<ul style="list-style-type: none"> <li>• Gap-free hygienic design ensures good cleanability with simple methods</li> <li>• Maintenance-free operation increases profitability of the plant</li> </ul>	<ul style="list-style-type: none"> <li>• Comprehensive diagnostic options guarantee low-maintenance operation and thus high plant availability</li> <li>• Shortenable probes enable simple standardization and maximum flexibility in planning</li> </ul>

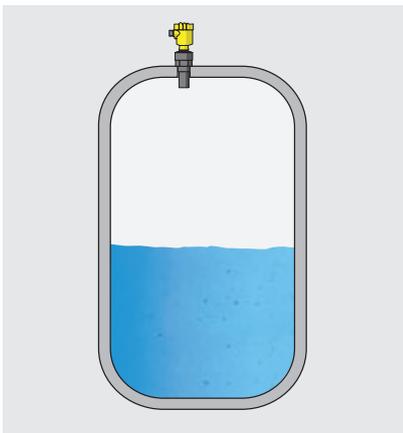
## VEGAPASS 81



Application	Bypass for level and point level sensors, e.g. the VEGAFLEX or VEGASWING series
Measuring range	up to 4 m
Version	According to ASME or PED
Process fitting vessel	Flanges from DN 20, 1"
Process temperature	-196 ... +450 °C; dependent on the installed sensor
Process pressure	0 ... +205 bar; dependent on the installed sensor
Accuracy	Dependent on the installed sensor
Signal output	Dependent on the installed sensor
Display/Adjustment	Dependent on the installed sensor
Approvals	Dependent on the installed sensor
Benefit	<ul style="list-style-type: none"><li>▪ Maintenance-free system without moving parts</li><li>▪ Simple, robust and proven mechanical design</li></ul>



## Level | Ultrasonic

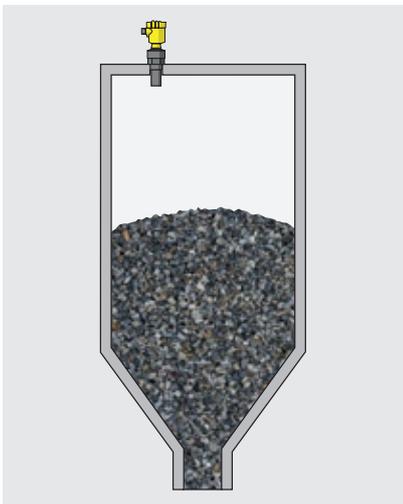


### Area of application

The ultrasonic sensors of the VEGASON series are suitable for non-contact level measurement of liquids and bulk solids in simple applications with stable measuring conditions. Typical applications with liquids are storage tanks and open basins. Bulk solids applications usually involve level measurement in open containers and small vessels.

### Measuring principle

VEGASON sends short ultrasonic pulses in the direction of the measured medium. These pulses are reflected by the material surface and then received by the sensor. The instrument calculates the level from the running time of the sound wave and the entered tank height.



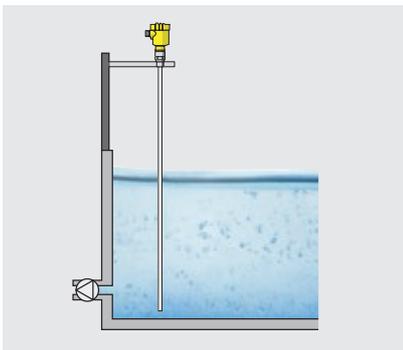
### Advantages

The compact design allows for easy installation of the sensor. Since the properties of the medium do not affect the level measurement, setup and commissioning can be carried out without medium. The low-cost, non-contact measuring method allows wear and maintenance-free operation.

	VEGASON 61	VEGASON 62	VEGASON 63
			
Application	Liquids and bulk solids in small vessels	Liquids and bulk solids in small vessels	Liquids and bulk solids in all industries
Measuring range	Liquids: 0.25 ... 5 m Bulk solids: 0.25 ... 2 m	Liquids: 0.4 ... 8 m Bulk solids: 0.4 ... 3.5 m	Liquids: 0.6 ... 15 m Bulk solids: 0.6 ... 7 m
Transducer	of PVDF	of PVDF	of UP, 316L, PPH
Process fitting	Thread G1½, 1½ NPT	Thread G2, 2 NPT	Compression flange DN 100, mounting strap
Process temperature	-40 ... +80 °C	-40 ... +80 °C	-40 ... +80 °C
Process pressure	-0.2 ... +2 bar (-20 ... +200 kPa)	-0.2 ... +2 bar (-20 ... +200 kPa)	-0.2 ... +1 bar (-20 ... +100 kPa)
Accuracy	±10 mm	±10 mm	±10 mm
Signal output	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus
Display/Adjustment	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82
Approvals	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Ship, SIL2	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Ship, SIL2	Ship, SIL2
Benefit	<ul style="list-style-type: none"> <li>• Maintenance-free operation through non-contact measuring method</li> <li>• Reliable measurement, independent of medium properties</li> <li>• Low-cost solution for simple applications</li> </ul>		



## Level | Capacitive

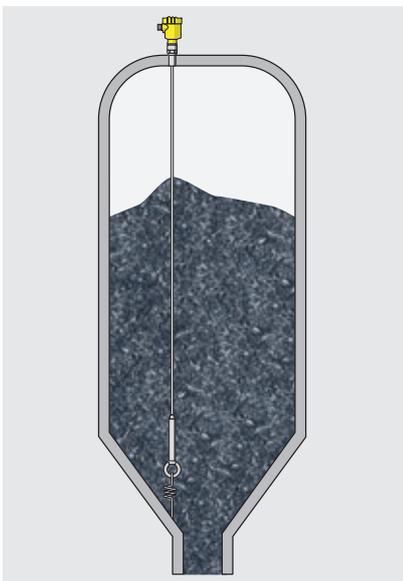


### Area of application

The robust level sensors of the VEGACAL series are used for level measurement in bulk solids and homogeneous liquids that have stable electrical properties. With the fully insulated instrument version, aggressive liquids as well as very adhesive products can be measured. The partly insulated version is preferably used for bulk solids.

### Measuring principle

In capacitive level measurement, sensor and vessel form the two electrodes of a capacitor. Any change in capacitance due to a level change is converted into a level signal.



### Advantages

This level measuring method is very economical and allows measurement over the entire sensor length without dead band. Thanks to shortenable cable and rod versions, the sensors can be adapted to any application and are very easy to install. Its robust mechanical design is the basis for reliable, trouble and maintenance-free operation and a long service life.

	VEGACAL 62	VEGACAL 63	VEGACAL 64
			
Application	Bulk solids, non-conductive liquids	Liquids	Adhesive liquids
Measuring range	up to 6 m	up to 6 m	up to 4 m
Version	Partly insulated rod of steel, 316L, PTFE	Fully insulated rod of steel, 316L, PE, PTFE	Fully insulated rod of steel, 316L, FEP
Process fitting	Thread from G $\frac{1}{2}$ , $\frac{1}{2}$ NPT, flanges from DN 25, 1"	Thread from G $\frac{1}{2}$ , $\frac{1}{2}$ NPT, flanges from DN 25, 1"	Thread from G $\frac{3}{4}$ , $\frac{3}{4}$ NPT, flanges from DN 25, 1"
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)
Signal output	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus
Display/Adjustment	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82
Approvals	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, NEPSI, KOSHA	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, NEPSI, KOSHA	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, NEPSI, KOSHA
Benefit	<ul style="list-style-type: none"> <li>• Maximum container utilization, because entire probe length is used for measuring</li> <li>• Cost savings thanks to simple installation and setup</li> </ul>		

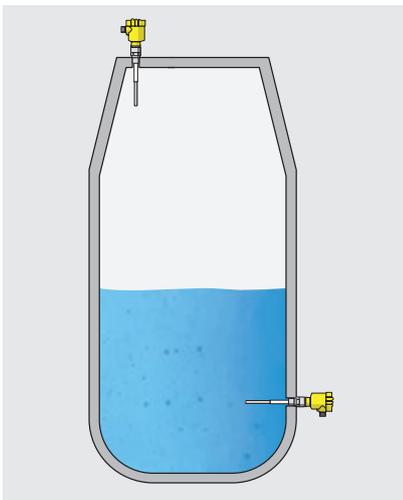
# Level I Capacitive

	VEGACAL 65	VEGACAL 66
		
Application	Bulk solids, non-conductive liquids	Liquids and bulk solids, not abrasive
Measuring range	up to 32 m	up to 32 m
Version	Partly insulated cable of steel, 316L, PTFE, PA	Fully insulated cable of steel, 316L, PTFE
Process fitting	Thread from G1, 1 NPT, flanges from DN 50, 2"	Thread from G1, 1 NPT, flanges from DN 50, 2"
Process temperature	-50 ... +200 °C	-50 ... +150 °C
Process pressure	-1 ... +64 bar (-100 ... +6400 kPa)	-1 ... +40 bar (-100 ... +4000 kPa)
Signal output	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus
Display/Adjustment	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82
Approvals	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, NEPSI, KOSHA	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, NEPSI, KOSHA
Benefit	<ul style="list-style-type: none"> <li>• Maximum container utilization, because entire probe length is used for measuring</li> <li>• Cost savings thanks to simple installation and setup</li> </ul>	

	VEGACAL 67	VEGACAL 69
		
	Bulk solids with high process temperatures	Liquids in non-conductive vessels
	Rod up to 6 m; cable up to 40 m	up to 4 m
	Rod or cable of 316, 316L, PTFE, ceramic	Double rod of PTFE, PP, FEP
	Thread from G1½, 1½ NPT, flanges from DN 50, 2"	Flanges from DN 50, 2"
	-50 ... +400 °C	-50 ... +100 °C
	-1 ... +16 bar (-100 ... +1600 kPa)	-1 ... +2 bar (-100 ... +200 kPa)
	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus
	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 28	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82
	–	ATEX, IEC, EAC (GOST), UKR Sepro
	<ul style="list-style-type: none"> <li>▪ Exact measuring results in almost all bulk solids and high temperature ranges</li> </ul>	<ul style="list-style-type: none"> <li>▪ Simple, fast installation thanks to compact, double rod design</li> </ul>



## Point level | Capacitive

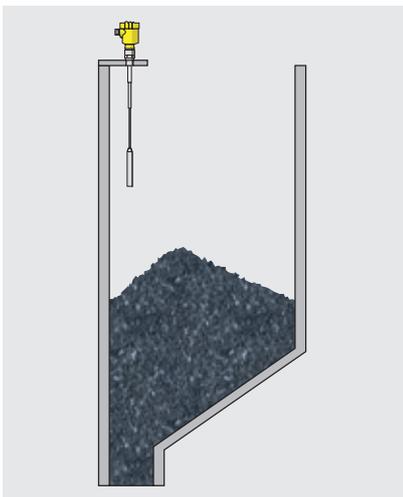


### Area of application

The point level sensors of the VEGACAP series are used in homogeneous liquids and bulk solids in tanks and pipes that have stable electrical properties. They are used for overfill protection, dry run protection, oil/water detection as well as foam detection. For liquid applications, the fully insulated versions are mainly used. These allow point level detection in aggressive liquids or in very adhesive products. For bulk solids applications, partly insulated versions are preferred.

### Measuring principle

In capacitive level measurement, sensor and vessel form the two electrodes of a capacitor. Any change in capacitance due to product level change is converted into a switching signal. The capacitive measuring principle places no special requirements on installation and mounting.



### Advantages

These low-cost point level sensors can be installed in tanks or pipes in any position. Thanks to versions with shortenable cables and rods, the sensors can be adapted to any application and are very easy to install. Their robust mechanical design is the basis for reliable, trouble and maintenance-free operation and a long service life.

	VEGACAP 62	VEGACAP 63	VEGACAP 64
			
Application	Liquids and bulk solids	Liquids and bulk solids, not abrasive	Adhesive liquids and light-weight bulk solids, not abrasive
Measuring range	up to 6 m	up to 6 m	up to 4 m
Version	Partly insulated rod of steel, 316L, PTFE	Fully insulated rod of 316L, PE, PTFE, Alloy, steel	Fully insulated rod of 316L, PTFE, steel
Process fitting	Thread from G $\frac{1}{2}$ , $\frac{1}{2}$ NPT, flanges from DN 25, 1"	Thread from G $\frac{1}{2}$ , $\frac{1}{2}$ NPT, flanges from DN 25, 1"	Thread from G $\frac{3}{4}$ , $\frac{3}{4}$ NPT, flanges from DN 25, 1"
Process temperature	-50 ... +200 °C	-50 ... +200 °C	-50 ... +200 °C
Process pressure	-1 ... +64 bar (-100 ... +6400 kPa)	-1 ... +64 bar (-100 ... +6400 kPa)	-1 ... +64 bar (-100 ... +6400 kPa)
Signal output	Relay, transistor, two-wire output, contactless electronic switch	Relay, transistor, two-wire output, contactless electronic switch	Relay, transistor, two-wire output, contactless electronic switch
Approvals	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, NEPSI	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, NEPSI	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, NEPSI
Benefit	<ul style="list-style-type: none"> <li>▪ Rugged, resistant designs with capability to ignore buildup on sensor</li> <li>▪ Cost savings thanks to simple installation and setup</li> </ul>		

# Point level | Capacitive

	VEGACAP 65	VEGACAP 66	VEGACAP 67
			
Application	Liquids and bulk solids	Liquids and bulk solids, not abrasive	Bulk solids with high process temperatures
Measuring range	up to 32 m	up to 32 m	Rod up to 6 m; cable up to 40 m
Version	Partly insulated cable of steel, 316L, PTFE, PA	Fully insulated cable of 316L, PTFE, steel	Rod or cable of steel, 316L, PTFE, ceramic
Process fitting	Thread from G1, 1 NPT, flanges from DN 50, 2"	Thread from G1, 1 NPT, flanges from DN 50, 2"	Thread from G1½, 1½ NPT, flanges from DN 50, 2"
Process temperature	-50 ... +200 °C	-50 ... +150 °C	-50 ... +400 °C
Process pressure	-1 ... +64 bar (-100 ... +6400 kPa)	-1 ... +40 bar (-100 ... +4000 kPa)	-1 ... +16 bar (-100 ... +1600 kPa)
Signal output	Relay, transistor, two-wire output, contactless electronic switch	Relay, transistor, two-wire output, contactless electronic switch	Relay, transistor, two-wire output, contactless electronic switch
Approvals	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, NEPSI	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, NEPSI	–
Benefit	<ul style="list-style-type: none"> <li>• Rugged, resistant designs with capability to ignore buildup on sensor</li> <li>• Cost savings thanks to simple installation and setup</li> </ul>		<ul style="list-style-type: none"> <li>• Universal use in bulk solids thanks to wide temperature range</li> </ul>

VEGACAP 69	VEGACAP 27	VEGACAP 35	VEGACAP 98
			
Liquids, also in non-conductive vessels	Adhesive, conductive liquids	Bulk solids	Liquids, bulk solids
up to 4 m	up to 4 m	up to 20 m	up to 2 m
Double rod	Fully insulated rod of steel, 316Ti, PTFE, PFA	Insulated cable of steel, 316Ti, PE, PA12	Fully insulated rod of PP
Flanges from DN 50, 2"	Thread from G1, 1 NPT, Clamp 1½"	Thread G1½, 1½ NPT	Thread G1½
-50 ... +100 °C	-50 ... +200 °C	-40 ... +80 °C	-40 ... +80 °C
-1 ... +2 bar (-100 ... +200 kPa)	-1 ... +63 bar (-100 ... +6300 kPa)	-1 ... +16 bar (-100 ... +1600 kPa)	Unpressurized operation
Relay, transistor, two-wire output, contactless electronic switch	Relay output	Relay output	Relay output
ATEX, EAC (GOST), UKR Sepro	Overfill protection	Overfill protection	Overfill protection
<ul style="list-style-type: none"> <li>• Simple, fast installation thanks to compact, double rod design</li> <li>• Minimal time and cost expenditure thanks to simple setup without medium</li> <li>• Exact switching point even with heavy buildup</li> </ul>			



## Point level | Vibration | Liquids



### Area of application

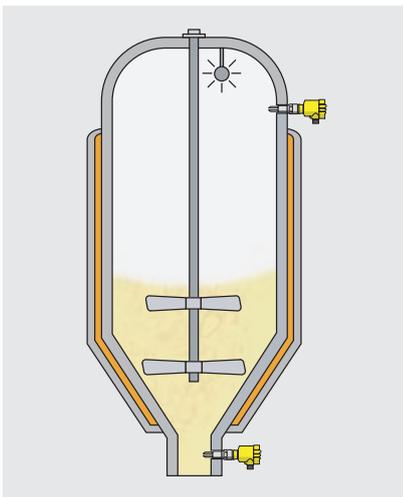
The point level sensors of the VEGASWING series are used for overfill and dry run protection in liquids. They are also suitable for safety-related applications up to SIL2. Special materials and coated versions also allow their use in aggressive media.

### Measuring principle

The tuning fork of VEGASWING is made to vibrate by a piezo drive. If the tuning fork comes in contact with the medium, the frequency is damped. The electronics responds by triggering a switching signal.

### Advantages

With a tuning fork only 40 mm long, VEGASWING works reliably in all liquids – regardless of the installation position. Pressure, temperature, foam and viscosity do not influence the switching accuracy. The low-cost point level sensors are easy to install and can be set up and commissioned without medium.

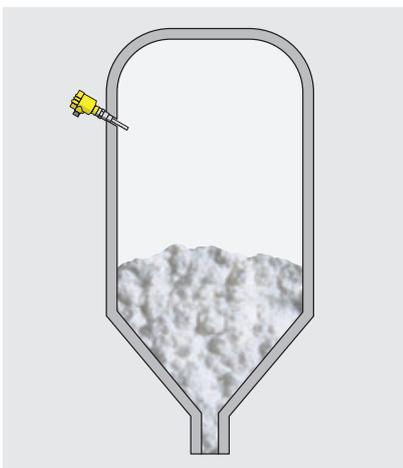


	VEGASWING 51	VEGASWING 61/63	VEGASWING 66
			
Application	Liquids	Liquids	Liquids under high and low temperatures
Version	Compact version	VEGASWING 61: Compact version VEGASWING 63: Tube extension up to 6 m	Compact version or with tube extension up to 3 m
Material	316L	316L, ECTFE, PFA, enamel, Alloy 400, Duplex, Alloy C22	Inconel 718 (tuning fork), 316L, Alloy C22
Process fitting	Thread from G½, ½ NPT, hygienic fittings	Thread from G¾, ¾ NPT, flanges from DN 25, 1", hygienic fittings	Thread from G1, 1 NPT, flanges from DN 50, 2"
Process temperature	-40 ... +150 °C	-50 ... +250 °C	-196 ... +450 °C
Process pressure	-1 ... +64 bar (-100 ... +6400 kPa)	-1 ... +64 bar (-100 ... +6400 kPa)	-1 ... +160 bar (-100 ... +16000 kPa)
Signal output	Transistor output, contactless electronic switch	Relay, transistor, two-wire, NAMUR output, contactless electronic switch	Relay, transistor, two-wire output
Approvals	Overfill protection, Ship	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, KOSHA, NEPSI, INMETRO	ATEX, IEC, CSA, EAC (GOST), UKR Sepro, Overfill protection, steam boiler, Ship, SIL2, KOSHA, NEPSI, INMETRO, VdTÜV 100
Benefit	<ul style="list-style-type: none"> <li>Minimal time and cost expenditure thanks to simple setup without medium</li> <li>Accurate and reliable function through product-independent switching point</li> <li>Minimal costs for maintenance and servicing</li> </ul>		

Signal conditioning instruments see page 54 – 59



## Point level | Vibration | Bulk solids



### Area of application

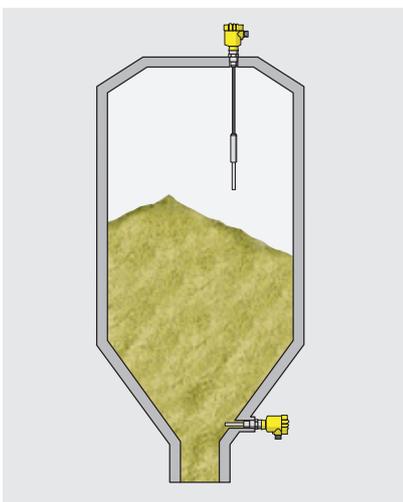
The point level sensors of the VEGAVIB series are used as overfill protection and as empty detector in silos and bunkers containing bulk solids. Typical applications include materials such as plastic granules, pellets and non-adhesive media. The sensors are also suitable for safety-related applications up to SIL2.

### Measuring principle

The rod element of VEGAVIB is made to vibrate by a piezo drive. If this vibrating rod comes in contact with the medium, the vibration amplitude is damped. The electronics responds by triggering a switching signal.

### Advantages

The sensors are easy to clean and therefore ideal for use in food and pharmaceutical products. Mounting position and grain size have no effect on their functional reliability. The sensors are easy to install and can be set up and commissioned without medium.

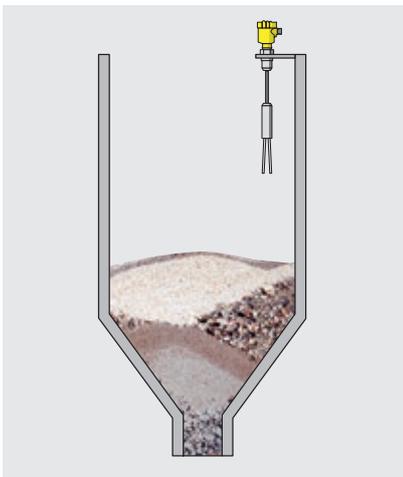


	VEGA VIB S61	VEGA VIB 61/63	VEGA VIB 62
			
Application	Granuled and coarse-grained bulk solids	Granuled and coarse-grained bulk solids	Granuled and coarse-grained bulk solids (with suspension cable up to 80 m)
Version	Compact version or with tube extension up to 1.5 m	VEGA VIB 61: Compact version VEGA VIB 63: Tube extension up to 6 m	Suspension cable up to 80 m
Measuring range	Bulk solids from 100 g/l	Bulk solids from 20 g/l	Bulk solids from 20 g/l
Material	316L	316L, Carbocer coating	316L and PUR or FEP, Carbocer coating
Process fitting	Thread from G1	Thread from G1, 1 NPT, flanges from DN 32, 1½", hygienic fittings	Thread from G1, 1 NPT, flanges from DN 32, 1½", hygienic fittings
Process temperature	-50 ... +250 °C	-50 ... +250 °C	-40 ... +150 °C
Process pressure	-1 ... +16 bar (-100 ... +1600 kPa)	-1 ... +16 bar (-100 ... +1600 kPa)	-1 ... +6 bar (-100 ... +600 kPa)
Signal output	Relay, transistor output	Relay, transistor, two-wire, NAMUR output, contactless electronic switch	Relay, transistor, two-wire, NAMUR output, contactless electronic switch
Approvals	ATEX	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, SIL2, KOSHA, NEPSI, INMETRO	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, SIL2, KOSHA, NEPSI, INMETRO
Benefit	<ul style="list-style-type: none"> <li>Minimal time and cost expenditure thanks to simple setup without medium</li> <li>Reliable function through product-independent switching point</li> <li>Minimal costs for maintenance and servicing</li> </ul>		

Signal conditioning instruments see page 54 – 59



## Point level | Vibration | Powders

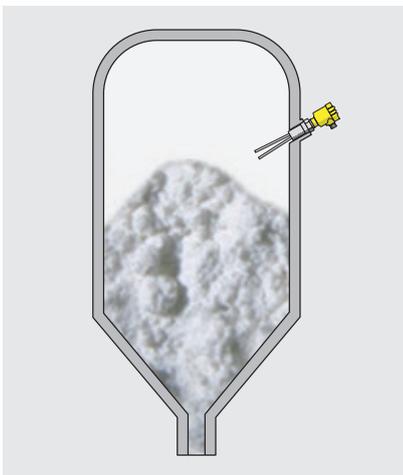


### Area of application

The point level sensors of the VEGAWAVE series are used as overfill protection and empty detector in silos and bunkers containing powdery bulk solids. Typical applications are silos with powdery products such as flour, cement or sand as well as containers with fine-grained bulk materials such as plastic granules, fine gravel or styrofoam beads. The sensors are also suitable for safety-related applications up to SIL2.

### Measuring principle

The tuning fork of VEGAWAVE is made to vibrate by a piezo drive. When the medium covers the fork, the vibration amplitude is damped. The electronics responds by triggering a switching signal.



### Advantages

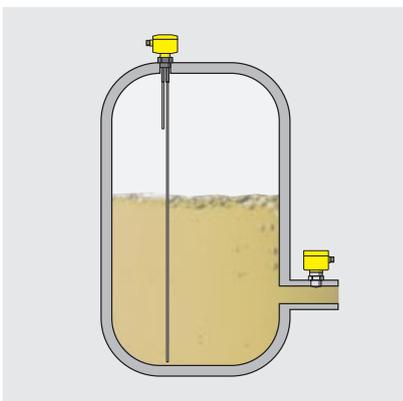
The sensors are robust and non-sensitive to buildup and function reliably in any position. They are easy to install and can be set up and commissioned without medium.

	VEGAWAVE S61	VEGAWAVE 61/63	VEGAWAVE 62
			
Application	Powders and fine-grained bulk solids	Powders and fine-grained bulk solids	Powders and fine-grained bulk solids
Version	Compact version or with tube extension up to 1.5 m	VEGAWAVE 61: Compact version VEGAWAVE 63: Tube extension up to 6 m	Suspension cable up to 80 m
Measuring range	Bulk solids from 8 g/l	Bulk solids from 8 g/l	Bulk solids from 8 g/l
Material	316L	316L, CarboCer coating	316L and PUR or FEP, CarboCer coating
Process fitting	Thread G1½	Thread G1½, 1½ NPT, flanges from DN 50, 2", hygienic fittings	Thread G1½, 1½ NPT, flanges from DN 50, 2", hygienic fittings
Process temperature	-50 ... +150 °C	-50 ... +250 °C	-40 ... +150 °C
Process pressure	-1 ... +25 bar (-100 ... +2500 kPa)	-1 ... +25 bar (-100 ... +2500 kPa)	-1 ... +6 bar (-100 ... +600 kPa)
Signal output	Relay, transistor output	Relay, transistor, two-wire, NAMUR output, contactless electronic switch	Relay, transistor, two-wire, NAMUR output, contactless electronic switch
Approvals	ATEX	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, SIL2	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, SIL2
Benefit	<ul style="list-style-type: none"> <li>Minimal time and cost expenditure thanks to simple setup without medium</li> <li>Reliable function through product-independent switching point</li> <li>Minimal costs for maintenance and servicing thanks to robust design</li> </ul>		

Signal conditioning instruments see page 54 – 59



## Point level | Conductive



### Area of application

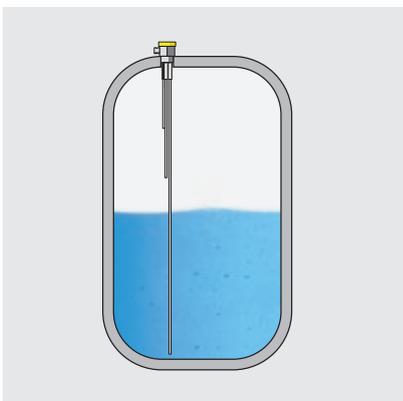
The conductive point level sensors of the VEGAKON series are used in conductive liquids as overflow protection, pump control or dry run protection in vessels and pipelines.

### Measuring principle

When the electrodes of the sensor come in contact with a conductive liquid, a small alternating current begins to flow. The electronics responds by triggering a switching command.

### Advantages

The simple, robust mechanical construction of the sensors ensures maintenance-free, cost-effective and reliable point level detection in all areas of industrial processes. The sensors, which can be installed in any position, provide a direct switching output. All measuring instruments offer the possibility of detecting at several switching points in a vessel. The VEGAKON sensors are designed as compact level switches, while the EL probes are designed to be used in combination with signal conditioning instruments of the VEGATOR series.



	VEGAKON 61	VEGAKON 66
		
Application	Conductive liquids	Conductive liquids
Version	Compact level switch with front-flush partly insulated electrode and one switching point of 316L, PTFE	Compact level switch with partly insulated rod electrodes and max. two switching points of 316Ti, PP
Probe length	–	0.12 ... 4 m
Process fitting	Thread G1, 1 NPT, cone DN 25	Thread G1½
Process temperature	-40 ... +150 °C	-40 ... +100 °C
Process pressure	-1 ... +25 bar (-100 ... +2500 kPa)	-1 ... +6 bar (-100 ... +600 kPa)
Signal output	Relay, transistor output	Relay, transistor output
Approvals	–	–
Benefit	<ul style="list-style-type: none"> <li>• Time and cost saving setup without adjustment with medium</li> <li>• Optimal cleanability thanks to front-flush mounting</li> <li>• Maintenance-free operation ensured by robust measuring probe that is not affected by buildup</li> </ul>	<ul style="list-style-type: none"> <li>• Reliable pump control through multiple-rod probe</li> <li>• Minimal stockkeeping through exchangeable rod probes</li> <li>• Simple and versatile with cut to length probes</li> </ul>

# Point level | Conductive

	EL 1	EL 3	EL 4
			
Application	Conductive liquids	Conductive liquids	Conductive liquids
Probe length	up to 4 m	up to 6 m	up to 4 m
Version	Partly insulated rod with one switching point of 316Ti, PTFE	Partly insulated rod with max. four switching points of 316Ti, PTFE	Partly insulated rod with max. four switching points of 316Ti, PP
Process fitting	Thread G1½	Thread G1½	Thread G1½
Process temperature	-50 ... +130 °C	-50 ... +130 °C	-20 ... +100 °C
Process pressure	-1 ... +63 bar (-100 ... +6300 kPa)	-1 ... +63 bar (-100 ... +6300 kPa)	-1 ... +6 bar (-100 ... +600 kPa)
Signal output	VEGATOR 131, VEGATOR 132	VEGATOR 132	VEGATOR 132
Approvals	ATEX, Overfill protection	ATEX, Overfill protection	–
Benefit	<ul style="list-style-type: none"> <li>▪ Easy installation in confined spaces through small sensor dimensions</li> <li>▪ Low costs for maintenance and repair thanks to robust design</li> <li>▪ Simple and versatile with cut to length probes</li> </ul>	<ul style="list-style-type: none"> <li>▪ Simple setup and commissioning with minimal time and costs</li> <li>▪ Maintenance-free thanks to robust construction</li> <li>▪ Simple and versatile with cut to length probes</li> </ul>	<ul style="list-style-type: none"> <li>▪ Reliable pump control through multiple-rod probe</li> <li>▪ Minimal stockkeeping through use of exchangeable rod probes</li> <li>▪ Simple and versatile with cut to length probes</li> </ul>

Signal conditioning instruments see page 54 – 59

**EL 6**



Conductive liquids

up to 50 m

Partly insulated cable with max. four switching points of 316Ti, PP/FEP

Thread G1½

-20 ... +100 °C

-1 ... +6 bar  
(-100 ... +600 kPa)

VEGATOR 132

–

- Cost-effective pump control through multiple-cable probe
- Minimal stockkeeping through use of exchangeable cable probes
- Simple and versatile with cut to length probes

**EL 8**



Conductive liquids

up to 3 m

Partly insulated rod with one switching point of 316Ti, PE

Thread G½

-10 ... +60 °C

-1 ... +6 bar  
(-100 ... +600 kPa)

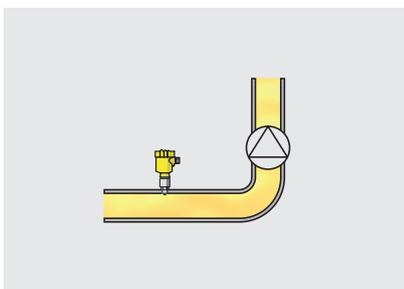
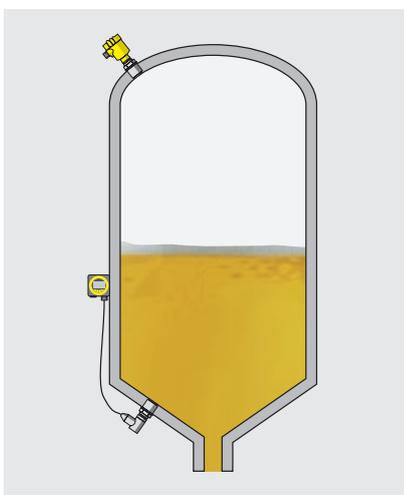
VEGATOR 131, VEGATOR 132

–

- Low-cost point level detection
- Easy installation in confined spaces through small sensor dimensions



## Process pressure



### Area of application

The process pressure transmitters of the VEGABAR series measure the pressures and levels of liquids, gases and vapours. They are designed for use in chemically aggressive liquids as well as in hazardous or hygienic areas. They are ideal for detecting relative or absolute pressure in applications with condensation or rapid temperature changes, and can also measure the temperature of the medium. Their versatility and precision enable use for hydrostatic level measurement in liquids or slurries. All VEGABAR series 80 transmitters can be interconnected to create an electronic differential pressure system.

### Measuring principle

The pressure of the measured medium acts on a pressure measuring cell, which converts it into an electronic signal. There is a range of measuring cell technologies employed in the VEGABAR range: Ceramic-capacitive CERTEC® and MINI-CERTEC®, metallic METEC®, piezoelectric and strain gauge cells – to best meet individual application requirements.

### Advantages

These instruments cover a particularly large measuring range, from vacuum to extremely high pressures. Their integrated self-monitoring function guarantees high operational reliability. An especially high degree of safety and dependability is guaranteed by the process pressure transmitters that use dry, ceramic-capacitive measuring cells. They are characterized by their high overload resistance, long-term stability and thermal shock compensation.

	VEGABAR 14	VEGABAR 17
		
Application	Liquids and gases	Liquids and gases also with high pressures
Deviation	0.3 %	0.5 %
Measuring cell	CERTEC®	Piezoresistive/thin film strain gauge
Process fitting	Thread from G½, ½ NPT of 316L, PVDF	Thread from G½, ½ NPT of 316Ti
Process temperature	-40 ... +100 °C	-40 ... +150 °C
Measuring range	-1 ... +60 bar (-100 ... +6000 kPa)	-1 ... +1000 bar (-100 ... +100000 kPa)
Overload resistance	up to 150-times measuring range	up to 6-times measuring range
Signal output	4 ... 20 mA	4 ... 20 mA
Approvals	EAC (GOST), Ship	ATEX, EAC (GOST), Ship
Benefit	<ul style="list-style-type: none"> <li>▪ High plant availability through very high overload resistance of ceramic measuring cell</li> <li>▪ Low-cost version with extremely small dimensions</li> </ul>	<ul style="list-style-type: none"> <li>▪ Universal application thanks to fully welded measuring cell</li> <li>▪ Low-cost version with extremely small dimensions</li> </ul>

# Process pressure

	VEGABAR 81	VEGABAR 82	VEGABAR 83
			
Application	Liquids and gases with high temperatures	Liquids and gases	Liquids and gases also with high pressures
Deviation	0.2 %	0.2 %; 0.1 %; 0.05 %	0.2 %; 0.1 %; 0.075 %
Measuring cell	Chemical seal system	CERTEC® MINI-CERTEC®	Piezoresistive/thin film strain gauge/METEC®
Process fitting	Thread from G½, ½ NPT, flanges from DN 25, 1", hygienic fittings of 316L, Alloy 400, Tantalum, Gold	Flanges from DN 15, ½", hygienic fittings, thread from G½ of 316L, Duplex, PVDF, Alloy	Thread from G½, ½ NPT, flanges from DN 25, 1", hygienic fittings of 316L, Alloy
Process temperature	-90 ... +400 °C	-40 ... +150 °C	-40 ... +200 °C
Measuring range	-1 ... +1000 bar (-100 ... +100000 kPa)	-1 ... +100 bar (-100 ... +10000 kPa)	-1 ... +1000 bar (-100 ... +100000 kPa)
Overload resistance	Depending on chemical seal system	up to 200-times measuring range	up to 150-times measuring range
Signal output	4 ... 20 mA, 4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus	4 ... 20 mA, 4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus	4 ... 20 mA, 4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus
Display/Adjustment	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82
Approvals	ATEX, IEC, FM, CSA, EAC (GOST), Overfill protection, Ship, SIL2/3	ATEX, IEC, FM, CSA, EAC (GOST), Overfill protection, Ship, SIL2/3	ATEX, IEC, FM, CSA, EAC (GOST), Overfill protection, Ship, SIL2/3
Benefit	<ul style="list-style-type: none"> <li>Optimal process adaptation through selection of various product-contacting materials, filling media and temperature couplers</li> <li>Reliable measurement, even with extreme product temperatures</li> </ul>	<ul style="list-style-type: none"> <li>High resistance to abrasion and corrosion through use of high-quality Sapphire Ceramic®</li> <li>High plant availability through maximum overload resistance and absolute vacuum resistance</li> <li>Absolutely front-flush process fittings ensure maintenance-free operation</li> </ul>	<ul style="list-style-type: none"> <li>Universal application thanks to fully welded measuring cell</li> <li>Reliable measurement even at high pressures</li> <li>Excellent accuracy, even with strongly fluctuating process temperatures</li> </ul>

## Electronic differential pressure



Liquids and gases, even at high pressures and temperatures

0.2 %; 0.1 %; 0.05 %

Depending on the sensor of VEGABAR series 80

Flanges from DN 25, 1", hygienic fittings, thread from G $\frac{1}{2}$  of 316L, Duplex, PVDF, Alloy

-40 ... +400 °C

$\pm 0.025$  ...  $\pm 1000$  bar  
( $\pm 2500$  ...  $\pm 100000$  kPa)

up to 200-times measuring range

4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus

PLICSCOM, PACTware, VEGADIS 82

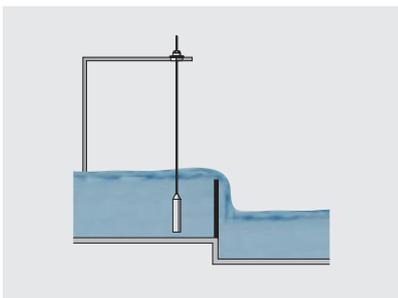
ATEX, IEC, FM, CSA, EAC (GOST), Overfill protection, Ship, SIL2/3

- Exact differential pressure measurement without capillary lines
- Cost savings through simultaneous output of absolute and differential pressure
- Universal use through simple combination of sensors from VEGABAR series 80

Classical differential pressure see page 44 – 45



## Hydrostatic



### Area of application

The hydrostatic pressure transmitters VEGAWELL and VEGABAR were specifically designed to measure levels in a wide range of liquids with widely different properties. They can also measure the temperature of the medium.

### Measuring principle

The hydrostatic pressure of the liquid column acts on a pressure measuring cell, which converts it into an electronic signal. Ceramic-capacitive and metallic pressure measuring cells are used for this purpose in the instruments.

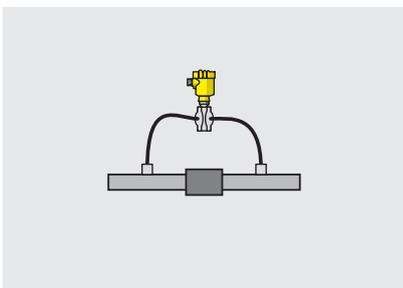
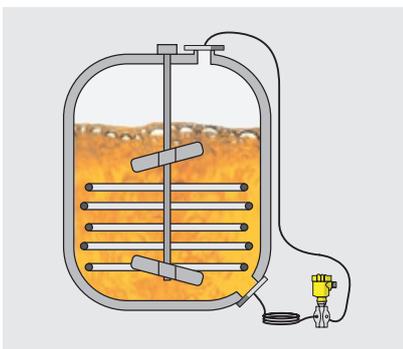
### Advantages

Level measurement by means of pressure measurement is totally unaffected by foam or internal vessel installations. The hydrostatic pressure transmitters can be precisely adapted to the process by selecting an appropriate measuring cell and suitable housing materials.

	VEGAWELL 52	VEGABAR 86	VEGABAR 87
			
Application	Liquids	Liquids	Liquids
Sensor diameter	22 mm or 32 mm	32 mm	40 mm
Deviation	0.1 %; 0.2 %	0.1 %	0.1 %
Measuring cell	CERTEC®/MINI-CERTEC®	CERTEC®	METEC®
Process fitting	Straining clamp, thread, suspension cable, threaded fitting of 316L, PVDF, Duplex, Titanium	Straining clamp, suspension cable, threaded fitting, thread from G1½, 1½ NPT, flanges from DN 40, 2" of 316L, PVDF	Straining clamp, suspension cable, threaded fitting, thread from G1½, 1½ NPT, flanges from DN 50, 2" of 316L
Process temperature	-20 ... +80 °C	-20 ... +100 °C	-12 ... +100 °C
Measuring range	0 ... +60 bar (0 ... +6000 kPa)	0 ... +25 bar (0 ... +2500 kPa)	0 ... +25 bar (0 ... +2500 kPa)
Overload resistance	up to 150-times measuring range	up to 200-times measuring range	up to 150-times measuring range
Signal output	4 ... 20 mA 4 ... 20 mA/HART + PT 100	4 ... 20 mA, 4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus	4 ... 20 mA, 4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus
Display/Adjustment	PACTware, VEGADIS 82	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82
Approvals	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2/3	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2/3
Benefit	<ul style="list-style-type: none"> <li>• High measurement certainty through very high overload and vacuum resistance of the ceramic measuring cell</li> <li>• High plant availability through integrated overvoltage protection</li> <li>• Versatile application thanks to robust housing and cable design</li> </ul>	<ul style="list-style-type: none"> <li>• High plant availability through very high overload and vacuum resistance of the ceramic measuring cell</li> <li>• Self-cleaning effect through front-flush design</li> <li>• Low costs for maintenance and servicing through wear-free ceramic measuring cell</li> </ul>	<ul style="list-style-type: none"> <li>• High measurement certainty even with quickly changing process temperatures</li> <li>• High plant availability through vacuum-proof design</li> <li>• Very good cleanability and high chemical resistance through choice of appropriate materials</li> </ul>



## Differential pressure



### Area of application

The differential pressure gauge VEGADIF was specially developed for level measurement of liquids and gases in pressurized vessels. It is also suitable for pressure monitoring across filters and pumps as well as for flow measurement of gases, vapours and liquids in conjunction with a differential pressure generator (e.g. orifice plate). When used in conjunction with a CSB or CSS chemical seal assembly, VEGADIF can also be deployed for density and interface measurement.

### Measuring principle

Different pressures act on the two sides of an oil-filled differential pressure measuring cell. This converts the pressure differential into an electronic signal. A piezo measuring cell is used as the pressure measuring cell.

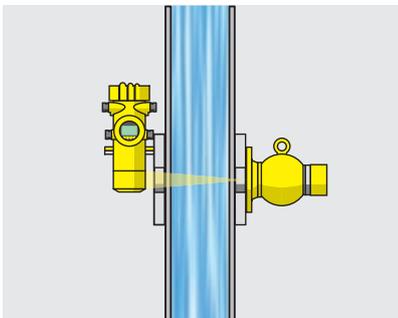
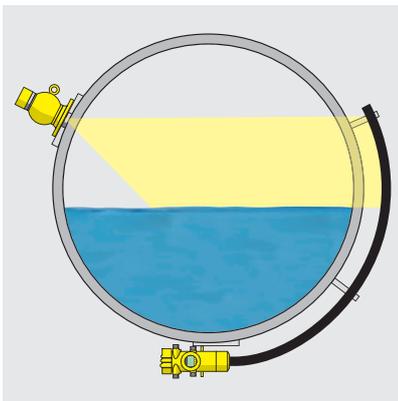
### Advantages

The differential pressure transmitter VEGADIF is characterized by its especially wide application spectrum. Even differential pressures of only a few mbar can be accurately measured. Media at extreme temperatures can be measured by adding a chemical seal assembly.

	VEGADIF 85	Chemical seal CSB	Chemical seal CSS
			
Application	Liquids and gases	Liquids and gases	Liquids and gases
Deviation	< ±0.065 %	–	–
Process fitting	¼-18 NPT, M10, optional with chemical seal assembly, metallic of 316L, Alloy	Flanges from DN 40, 2" cells from DN 50, 2" of 316L, Alloy, Tantalum	Flanges from DN 50, 2" cells from DN 50, 2" of 316L, Alloy, Tantalum
Process temperature	-40 ... +120 °C	-40 ... +400 °C	-40 ... +400 °C
Measuring range	from -10 ... +10 mbar (-1 ... +1 kPa) up to -15 ... +15 bar (-1500 ... +1500 kPa)	from -100 ... +100 mbar (-10 ... +10 kPa) up to -15 ... +15 bar (-1500 ... +1500 kPa)	from -100 ... +100 mbar (-10 ... +10 kPa) up to -15 ... +15 bar (-1500 ... +1500 kPa)
Overload resistance	up to 400 bar	up to 400 bar	up to 400 bar
Signal output	4 ... 20 mA, 4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus	–	–
Display/Adjustment	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82	–	–
Approvals	ATEX, IEC, CSA, EAC (GOST), Overfill protection	In combination with VEGADIF 85	In combination with VEGADIF 85
Benefit	<ul style="list-style-type: none"> <li>• Measurement of extremely low differential pressures through high-precision measurement data acquisition</li> <li>• High operational reliability through integrated overload diaphragm</li> <li>• Universally applicable thanks to wide selection of measuring ranges and process fittings</li> </ul>	<ul style="list-style-type: none"> <li>• High chemical resistance through choice of appropriate diaphragm materials</li> <li>• Versatile solutions through free configurability</li> <li>• Reliable measurement, even in extreme temperatures</li> </ul>	



## Radiation-based



### Area of application

The radiation-based sensors of the PROTRAC series enable precise measurement of liquids and bulk solids under extreme process conditions such as high temperatures and pressures or aggressive media. They can detect level, point level, interface, density or mass flow contactlessly and reliably without interfering with the process. Radiation-based measurement is the solution in applications where other measuring principles reach their limits.

### Measuring principle

A minimally radioactive isotope emits focused gamma rays. The sensor, which is mounted on the opposite side of the process, receives this radiation. Because gamma rays are attenuated when penetrating matter, the sensor can calculate the level, point level, density or mass flow from the intensity of the incoming radiation.

### Advantages

The radiation-based measuring principle offers maximum operational safety and reliability even under the toughest application conditions. Measurement is independent of pressure, temperature and product properties. The measuring system can be installed on the outside of process vessels during ongoing production, without disturbing the process in any way. This saves installation costs and time.

	FIBERTRAC 31	FIBERTRAC 32	SOLITRAC 31
			
Application	Level and interface measurement of liquids and bulk solids	Level and interface measurement of liquids and bulk solids	Level and interface measurement of liquids and bulk solids
Measuring range	up to 7 m	up to 7 m	up to 3 m
Version	Sensor with flexible plastic detector $\varnothing$ 42 mm	Sensor with flexible plastic detector $\varnothing$ 60 mm	Sensor with PVT rod detector
Process pressure	any	any	any
Process temperature	any	any	any
Reproducibility	$\pm 0.5$ %	$\pm 0.5$ %	$\pm 0.5$ %
Mounting	From outside on the vessel	From outside on the vessel	From outside on the vessel
Signal output	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus
Display/Adjustment	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82
Approvals	ATEX, IEC, FM, CSA, EAC (GOST), Overfill protection, SIL2	ATEX, IEC, FM, CSA, EAC (GOST), SIL2	ATEX, IEC, FM, CSA, EAC (GOST), Overfill protection, SIL2
Benefit	<ul style="list-style-type: none"> <li>• Simple installation on round and conical vessels via flexible higher sensitivity detector</li> <li>• Cost savings through the use of only one sensor for a measuring range of up to 7 m</li> </ul>	<ul style="list-style-type: none"> <li>• Simple installation on round and conical vessels via flexible detector</li> <li>• Cost savings through the use of only one sensor for a measuring range of up to 7 m and reduces source size needed</li> </ul>	<ul style="list-style-type: none"> <li>• Maximum accuracy through PVT detector</li> <li>• Simple installation with supplied accessories</li> </ul>

# Radiation-based

	POINTRAC 31	MINITRAC 31	WEIGHTRAC 31
			
Application	Level detection of liquids and bulk solids	Density measurement of liquids and bulk solids	Mass flow determination of bulk solids on belts and in screw conveyors
Measuring range	up to 305 mm	–	up to 2800 mm
Version	Sensor with PVT rod detector	Sensor with integrated NaI detector	With PVT rod detector in protective tube of 316L
Process pressure	any	any	any
Process temperature	any	any	any
Reproducibility	–	±0.1 %	±1 % of measuring range final value
Mounting	From outside on pipeline or on vessel	From outside on pipeline or on vessel	Through supplied measuring frame
Signal output	8/16 mA, Profibus PA, Foundation Fieldbus	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus
Display/Adjustment	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82	PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82
Approvals	ATEX, IEC, FM, CSA, EAC (GOST), Overfill protection, SIL2	ATEX, IEC, FM, CSA, EAC (GOST), Overfill protection,	ATEX, IEC, FM, CSA, EAC (GOST),
Benefit	<ul style="list-style-type: none"> <li>• High process reliability through buildup detection</li> <li>• Simple installation with supplied accessories</li> </ul>	<ul style="list-style-type: none"> <li>• Simple retrofitting during ongoing production processes</li> <li>• Exact measuring results independent of process conditions</li> </ul>	<ul style="list-style-type: none"> <li>• Wear-free due to non-contact measurement</li> </ul>

	VEGASOURCE 31	VEGASOURCE 35	SHLD1
			
Application	Source container for radioactive isotope	Source container for radioactive isotope	Source container for radioactive isotope
Measuring range	–	–	–
Version	Cs-137: For activities up to 18.5 GBq (500 mCi) Co-60: For activities up to 0.74 GBq (20 mCi)	Cs-137: For activities up to 111 GBq (3000 mCi) Co-60: For activities up to 3.7 GBq (100 mCi)	Cs-137: For activities up to 3.7 GBq (100 mCi)
Process pressure	any	any	any
Process temperature	any	any	any
Reproducibility	–	–	–
Mounting	Flange DN 100 PN 16, 4" 150 lbs	Flange DN 100 PN 16, 4" 150 lbs	Mounting plate or L profile 152 mm (6")
Signal output	–	–	–
Display/Adjustment	–	–	–
Approvals	–	–	–
Benefit	<ul style="list-style-type: none"> <li>• Reliable shielding allows use without control areas</li> <li>• Operational safety through optional pneumatic ON/OFF switching</li> </ul>		<ul style="list-style-type: none"> <li>• Ideal for mass flow detection with an aperture angle of 45° and 60°</li> <li>• Simple mounting through compact design and low weight</li> </ul>



## Software and display instruments

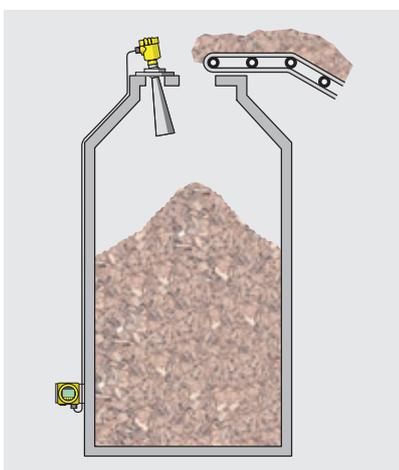


### Area of application

Calibration of sensors and visualization of measured values via on-site display units. The visualization and monitoring of measured values can also be carried out via the web-based VEGA Inventory System.

### Systems

Any sensor can be completely configured with the adjustment software PACTware or the VEGA Tools app. Alternatively, the adjustment module PLICSCOM can be used to configure a sensor directly on site. The web-based visualization software VEGA Inventory System collects readings from sensors connected anywhere in the world and displays them in a clear, well-organized layout.



### Advantages

Depending on the requirements, the user can set up the sensors either on site or comfortably via laptop, tablet or smartphone. Additional display units can be connected in the measurement loop to display the readings at other locations. It is also very easy to set up a visualization system that allows the readings to be displayed worldwide via a standard browser.

	DTM Collection	VEGA Inventory System	VEGA Tools
			
Application	Adjustment software for configuration, parameter adjustment, documentation and diagnosis for field devices	System for inventory monitoring as well as remote enquiry and visualization of measured values	App for wireless configuration, parameter adjustment and diagnosis of field devices
Recommended operating systems	Windows 7 (32 or 64 Bit) Windows 8 (32 or 64 Bit) Windows 10 (32 or 64 Bit)	<ul style="list-style-type: none"> <li>• VEGA Hosting Service: independent of operating system</li> <li>• Local Server: MS Windows Server 2012 or higher as well as MS SQL Server 2012 or higher</li> </ul>	from iOS 8 from Android 4.3
Adjustment	via computer	with standard web browser	with Smartphone with Tablet
Versions	<ul style="list-style-type: none"> <li>• Standard version</li> <li>• Full version</li> </ul>	<ul style="list-style-type: none"> <li>• VEGA Hosting Service (VH)</li> <li>• Local Server (LS)</li> </ul>	–
Technology	FDT/DTM	Web-based	Bluetooth/App
Benefit	<ul style="list-style-type: none"> <li>• User-friendly, standardized adjustment program for the PC</li> <li>• Extremely user friendly thanks to graphical user interface, project storage and documentation</li> <li>• Extended functional range as full version with additional features such as multiviewer, tank calculation, echo curve storage and advanced diagnostics</li> </ul>	<ul style="list-style-type: none"> <li>• High availability of all measured values through access to live data around the clock</li> <li>• Simple delivery planning through consumption forecasting</li> <li>• Real-time alerts enable fast response when inventory limits are reached</li> </ul>	<ul style="list-style-type: none"> <li>• Simple, intuitive and unique adjustment for all plics® sensors as well as sensors with integrated Bluetooth</li> <li>• Can be used for instruments as from 2002 through retrofitting of PLICSCOM with Bluetooth, without software update of the sensor</li> <li>• Secure connection through authentication and encrypted communication</li> </ul>

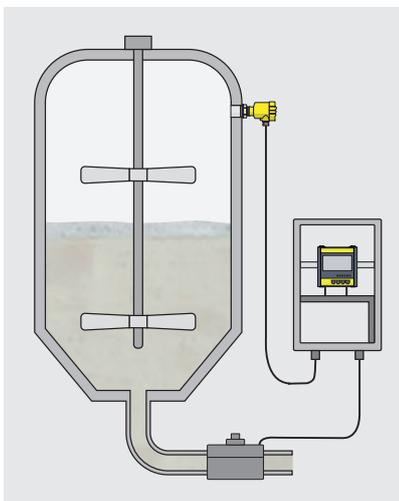
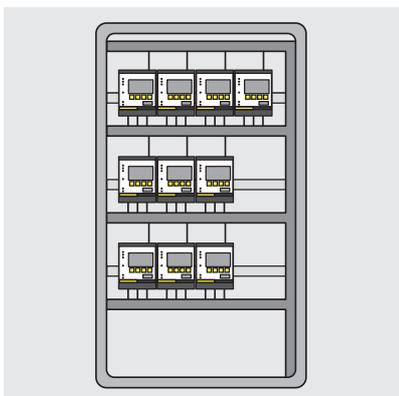
# Software and display instruments

	VEGACONNECT	PLICSCOM	PLICSLED
			
Application	Interface adapter between PC and VEGA instruments	Measured value indication and adjustment on plics® sensors	Switching status indication directly on the sensor
Sensors	All communication-capable VEGA sensors	All plics® sensors	All plics® sensors with relay output
Mounting	Directly in the sensor or handheld	Directly in the sensor or in VEGADIS 81, 82	Directly in the sensor
Ambient temperature	-20 ... +60 °C	-20 ... +70 °C	-40 ... +80 °C
Signal	Standard interface or HART on the VEGA instrument, USB interface on the PC, on Fieldbus and Modbus sensors	Standard interface on the sensor Bluetooth (optional) magnetic pen adjustment (optional)	–
Lighting	–	Integrated	Red-green or yellow-green
Protection	IP 40	IP 66/67 in the sensor	IP 66/67 in the sensor
Voltage supply	Via USB interface on the PC	Via standard interface on the sensor	20 ... 253 V AC/DC, 50/60 Hz
Voltage loss	–	–	–
Approvals	ATEX, EAC (GOST), UKR Sepro	–	–
Benefit	<ul style="list-style-type: none"> <li>• Universally applicable, because compatible with all communication-capable VEGA instruments</li> <li>• Simple connection via supplied adapter</li> </ul>	<ul style="list-style-type: none"> <li>• Good readability through graphics-capable LCD display and built-in lighting</li> <li>• Simple and reliable handling via 4-button operation and intuitive menu structure with plain text display</li> <li>• Universally applicable, because compatible with all plics® sensors, independent of the measuring principle</li> </ul>	<ul style="list-style-type: none"> <li>• Clearly visible switching status display, even in bright daylight</li> <li>• Minimal installation time, as no external wiring is required</li> <li>• Universally applicable</li> <li>• High protection category via integrated module in plics® sensor housing</li> </ul>

	VEGADIS 81	VEGADIS 82	VEGADIS 176
			
	External measured value indication and adjustment of plics® sensors	External measured value indication and adjustment of 4 ... 20 mA/HART sensors	Switching cabinet measured value indication of 4 ... 20 mA/HART sensors
	All plics® sensors	Sensors with HART protocol	4 ... 20 mA/HART sensors (active or passive)
	Tube, wall mounting or carrier rail	Tube, panel, wall mounting or carrier rail	Panel mounting
	-20 ... +70 °C	-20 ... +70 °C	-10 ... +60 °C
	Standard interface Bluetooth magnetic pen adjustment	4 ... 20 mA 4 ... 20 mA/HART	4 ... 20 mA 4 ... 20 mA/HART
	Integrated	Integrated	Integrated
	IP 66/67	IP 66/67	IP 65 front, IP 20 rear
	Via standard interface on sensor	Via 4 ... 20 mA current loop	Via 4 ... 20 mA current loop
	–	Standard < 1.7 V, with lighting < 3.2 V	Standard < 1 V, with lighting < 2.9 V
	ATEX, IEC, CSA, EAC (GOST), UKR Sepro	ATEX, IEC, CSA	ATEX, IEC, FM, CSA
	<ul style="list-style-type: none"> <li>Measured value display and sensor operation at easily accessible locations (up to 50 m away from the sensor)</li> <li>Good readability and simple adjustment via integrated PLICSCOM</li> <li>Universally applicable, because compatible with all plics® sensors, independent of the measuring principle</li> </ul>	<ul style="list-style-type: none"> <li>Measured value display and sensor operation at easily accessible locations (up to 1500 m away from the sensor)</li> <li>Good readability and simple adjustment via integrated PLICSCOM</li> <li>Universally applicable thanks to compatibility with all 4 ... 20 mA sensors and integrated adjustment functions for VEGAPULS WL 61 and VEGAWELL 52</li> </ul>	<ul style="list-style-type: none"> <li>Convenient measured value display in accessible places (up to 1500 m away from the sensor)</li> <li>Excellent visibility via large display</li> <li>Universally applicable thanks to freely scalable display range</li> </ul>



## Signal conditioning instruments



### Area of application

Together with connected sensors, signal conditioning instruments enable a variety of measuring tasks, such as e.g. level, gauge, differential pressure, process pressure, distance, interface and temperature measurement.

### Principle of operation

Sensors detect physical values in a vessel and forward them to the signal conditioning instrument. Through an adjustment in the signal conditioning instrument, the readings can be adapted to the specific conditions of the measuring point. They appear on its display and can be retransmitted via the integrated current outputs connected to field mounted indicators or higher-level control systems. In addition, point level signals can be used to control pumps or other actuators via integrated relays.

### Advantages

Versatile use through scalable outputs. Simple integration into higher-level systems. Easy installation via mounting rails. Cost savings through integrated sensor supply, even in explosion protected areas.

	VEGAMET 381	VEGAMET 391
		
Application	Measured value indication and simple control functions	Measured value indication and simple control functions, remote enquiry of measured values
Input	1x 4 ... 20 mA sensor input	1x 4 ... 20 mA/HART sensor input
Hysteresis	Adjustable	Adjustable
Output	1x 0/4 ... 20 mA current output 2x operating relay 1x fail safe relay	1x 0/4 ... 20 mA current output 6x operating relay or 5x operating relay and 1x fail safe relay  1x Ethernet (optional) 1x RS232 (optional)
Operating voltage	20 ... 253 V AC, 50/60 Hz, 20 ... 253 V DC	20 ... 253 V AC, 50/60 Hz, 20 ... 253 V DC
Mounting	Front panel or wall mounting Carrier rail 35 x 7.5 acc. to EN 50022	Front panel or wall mounting Carrier rail 35 x 7.5 acc. to EN 50022
Display	Large digital and quasi-analogue indication	Graphic-capable clear text indication with background lighting
Approvals	ATEX, IEC, EAC (GOST), UKR Sepro, SIL2	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, SIL2
Benefit	<ul style="list-style-type: none"> <li>• Simple connection of sensor thanks to integrated power supply</li> <li>• Excellent visibility via large display</li> </ul>	

# Signal conditioning instruments

	VEGAMET 624	VEGAMET 625	VEGASCAN 693
			
Application	Measured value indication, simple control functions as well as remote enquiry of measured values for one 4 ... 20 mA/HART sensor	Measured value indication, simple control functions as well as remote enquiry of measured values for two HART sensors	Measured value indication and remote enquiry of measured value for up to 15 HART sensors
Input	1x 4 ... 20 mA/HART sensor input	2x HART sensor input	15x HART sensor input
Hysteresis	Adjustable	Adjustable	–
Output	3x 0/4 ... 20 mA current output 3x operating relay 1x fail safe relay  1x Ethernet (optional) 1x RS232 (optional)	3x 0/4 ... 20 mA current output 3x operating relay 1x fail safe relay  1x Ethernet (optional) 1x RS232 (optional)	1x fail safe relay 1x Ethernet (optional) or 1x RS232 (optional)
Operating voltage	20 ... 253 V AC, 50/60 Hz, 20 ... 253 V DC	20 ... 253 V AC, 50/60 Hz, 20 ... 253 V DC	20 ... 253 V AC, 50/60 Hz, 20 ... 253 V DC
Mounting	Carrier rail 35 x 7.5 acc. to EN 50022	Carrier rail 35 x 7.5 acc. to EN 50022	Carrier rail 35 x 7.5 acc. to EN 50022
Display	Graphic-capable clear text indication with background lighting	Graphic-capable clear text indication with background lighting	Graphic-capable clear text indication with background lighting
Approvals	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Ship	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Ship	ATEX, IEC, FM, CSA, EAC (GOST), UKR Sepro, Ship
Benefit	<ul style="list-style-type: none"> <li>• Simple connection of sensor thanks to integrated power supply</li> <li>• Versatile use through relay and current outputs as well as integrated web server</li> <li>• Excellent visibility via large display</li> </ul>		

	VEGATOR 111/112	VEGATOR 121/122
		
	Transmission of NAMUR signals for level signalling	Transmission of 8/16 mA signals for level signalling
	VEGATOR 111: single channel VEGATOR 112: double channel	VEGATOR 121: single channel VEGATOR 122: double channel
	Fix	Fix
	VEGATOR 111: 1x operating relay (SPDT), optional 1x fail safe relay (SPDT) VEGATOR 112: 2x operating relay (SPDT)	VEGATOR 121: 1x operating relay (SPDT), optional 1x fail safe or operating relay (SPDT) VEGATOR 122: 2x operating relay (SPDT)
	20 ... 253 V AC/DC, 50/60 Hz	20 ... 253 V AC/DC, 50/60 Hz
	Carrier rail 35 x 7.5 acc. to EN 50022	Carrier rail 35 x 7.5 acc. to EN 50022
	1x LED supply 1x LED switching signal per channel 1x LED false signal per channel	1x LED supply 1x LED switching signal per channel 1x LED false signal per channel
	ATEX, IEC, EAC (GOST), Overfill protection, Ship, SIL2, UL	ATEX, IEC, EAC (GOST), Overfill protection, Ship, SIL2, UL
	<ul style="list-style-type: none"> <li>▪ Rapid implementation of simple control and regulatory functions</li> <li>▪ Increased operational reliability through line monitoring and test button</li> <li>▪ Easy installation via carrier rail</li> </ul>	

# Signal conditioning instruments

	VEGATOR 131/132	VEGATOR 141/142
		
Application	Signal conditioning instrument for conductive probes	Signal conditioning instrument for 4 ... 20 mA signals for level detection
Input	VEGATOR 131: 1x conductive probes VEGATOR 132: 2x conductive probes	VEGATOR 141: single channel VEGATOR 142: double channel
Hysteresis	Adjustable (max. 200 kOhm)	Adjustable
Output	VEGATOR 131: 1x operating relay, optional 1x fail safe relay output (SPDT) VEGATOR 132: 2x operating relay (SPDT)	VEGATOR 141: 1x operating relay (SPDT), optional 1x fail safe relay output (SPDT) VEGATOR 142: 2x operating relay (SPDT)
Operating voltage	20 ... 253 V AC/DC, 50/60 Hz	20 ... 253 V AC/DC, 50/60 Hz
Mounting	Carrier rail 35 x 7.5 acc. to EN 50022	Carrier rail 35 x 7.5 acc. to EN 50022
Display	1x LED supply 1x LED switching signal per channel 1x LED false signal per channel	1x LED supply 1x LED switching signal per channel 1x LED false signal per channel
Approvals	ATEX, IEC, Overfill protection	ATEX, IEC, EAC (GOST), Overfill protection, Ship, SIL2, UL
Benefit	<ul style="list-style-type: none"> <li>• Rapid implementation of simple control and regulatory functions</li> <li>• Increased operational reliability through line monitoring</li> <li>• Easy installation via carrier rail</li> </ul>	

	VEGASTAB 690	GPRS/EDGE-ROUTER
		
Application	Voltage supply of two analogue sensors	For connection of signal conditioning instruments to the internet (router, modem or Ethernet Port)
Input	–	Signal conditioning instruments with Ethernet interface
Hysteresis	–	–
Output	2x 24 V DC (floating)	GPRS
Operating voltage	20 ... 253 V AC, 50/60 Hz, 20 ... 72 V DC	10 ... 30 V DC
Mounting	Carrier rail 35 x 7.5 acc. to EN 50022	Carrier rail 35 x 7.5 acc. to EN 50022
Display	1x LED voltage supply	–
Approvals	–	–
Benefit	<ul style="list-style-type: none"> <li>▪ Simple connection of two sensors via integrated and galvanically isolated power supplies</li> <li>▪ High reliability through permanently short-circuit proof circuits</li> <li>▪ Uninterruptible current measurement via interlock diode</li> </ul>	<ul style="list-style-type: none"> <li>▪ Simple remote enquiry of measurement data and remote parameterization via standardized interfaces</li> <li>▪ Simple setup and commissioning via combination of router, modem and Ethernet port(s)</li> </ul>



## Wireless communication

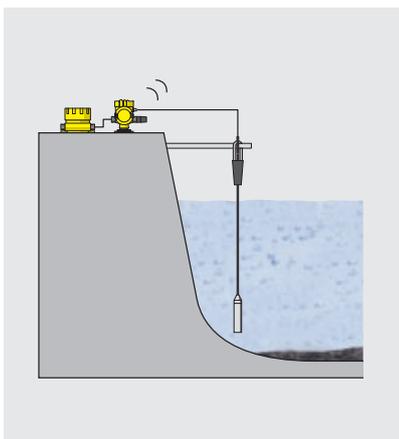


### Area of application

Wireless communication devices are used when measured values have to be transferred from remote monitoring stations or mobile tanks to data collection centres. This makes them ideal for use in conjunction with VEGA Inventory System, the software for automatic inventory monitoring. They also enable wireless remote diagnostics and maintenance of their connected sensors.

### Principle of operation

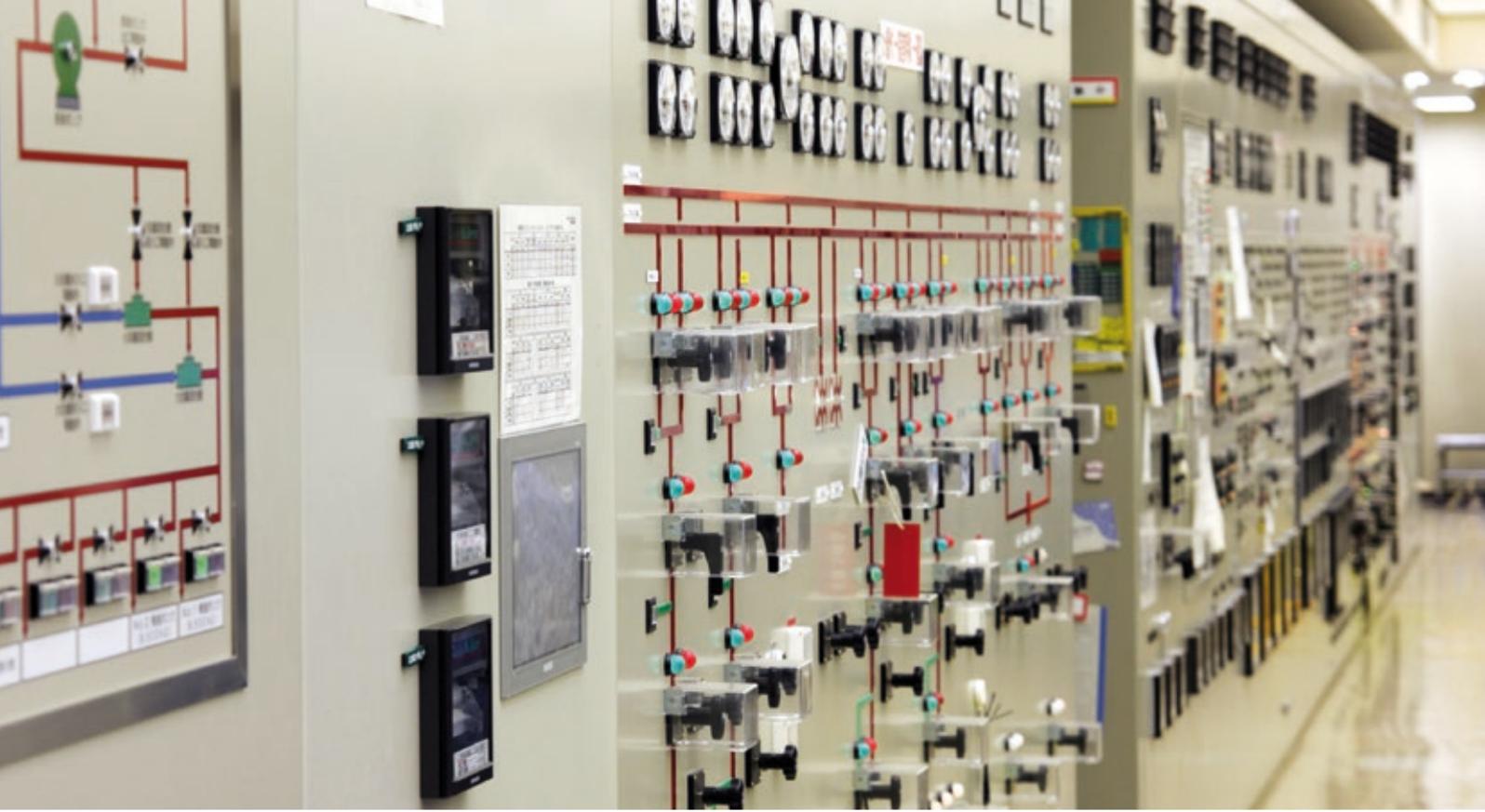
Only the transmitting unit is required for wireless communication. It is connected to the sensors via a serial bus cable or via the standard 4 ... 20 mA/HART signal cable. The transmitting unit provides the voltage supply for the sensors, reads out the measured values and transmits them to a data collection centre via the local mobile phone network.



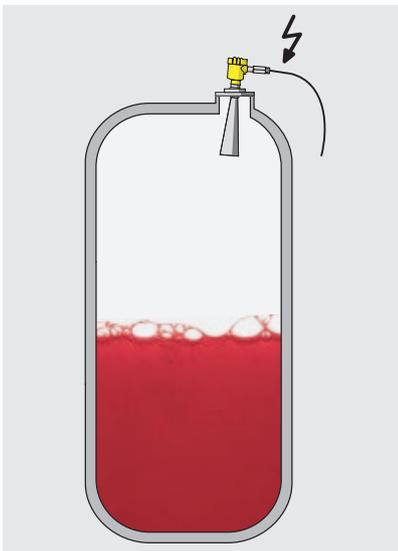
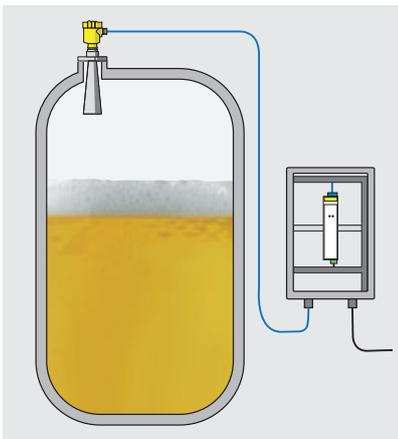
### Advantages

Simple operation through the use of open and standardized frequency bands (multi-band technology). High flexibility for the user thanks to free choice of mobile network. Especially fast setup as well as maintenance-free operation when using the VEGA service package "Wireless Data Transmission".

	PLICSMOBILE T81	PLICSMOBILE in the sensor	PLICSMOBILE B81
			
Application	Remote enquiry of measured values and remote parameter adjustment for up to 15 HART sensors	Remote enquiry of measured values and remote parameter adjustment for up to 15 HART sensors	Battery and accumulator unit for PLICSMOBILE
Input	1 to 15 HART sensors	1x plics® sensor (integrated) 1 to 15 HART sensors	1x solar panel
Output	VEGA Inventory System, e-mail, SMS	VEGA Inventory System, e-mail, SMS	Power supply of PLICSMOBILE and the connected sensors
Display/Adjustment	PACTware and DTM/ VEGA Tools app	PLICSCOM/ PACTware and DTM/ VEGA Tools app	–
Technology	GSM/GPRS/UMTS/GPS/ Bluetooth	GSM/GPRS/UMTS/GPS/ Bluetooth	–
Mounting	Wall or tube mounting	Integrated in field device	Wall or tube mounting
Temperature range	-20 ... +65 °C	-20 ... +65 °C	Battery: -10 ... +50 °C, -40 ... +80 °C (lithium) Battery pack: -20 ... +50 °C
Voltage supply	9.6 ... 32 V DC	9.6 ... 32 V DC	Battery: 4x 1.5 V, 4x 3.6 V (lithium) Battery pack: 4x 1.2 V
Approvals	ATEX, IEC	ATEX, IEC	ATEX, IEC
Benefit	<ul style="list-style-type: none"> <li>• Cost-effective solution for remote enquiry of measurement data and remote parameterization of 1–15 sensors</li> <li>• World-wide application through multi-band technology</li> <li>• High flexibility through free choice of mobile network operator</li> <li>• Increased operating time with battery or accumulator via integrated power management</li> </ul>	<ul style="list-style-type: none"> <li>• Cost-effective solution for remote enquiry of measurement data and remote parameterization via radio module integrated in plics® sensor</li> </ul>	<ul style="list-style-type: none"> <li>• Cost-effective solution for autonomous operation of PLICSMOBILE with battery or accumulator supply</li> <li>• Increased operating time with accumulator via integrated charging circuit and connected external solar panels</li> </ul>



## Isolation and protection devices



### Area of application

Isolation devices are used in all applications where hazardous area regulations must be observed. In addition to powering the sensors in the field, they ensure electrical isolation from the connected PLC or process control system.

### Principle of operation

Isolation devices separate intrinsically safe circuits from non-intrinsically safe circuits. Distinguishing features are the type of power supply and the size of the Ex-specific characteristic values.

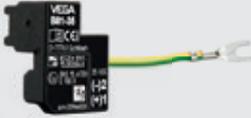
### Advantages

Reliable separation of intrinsically safe and non-intrinsically safe circuits. Simple installation, as no additional power supply is required. Simple installation via carrier rail mounting.

	VEGATRENN 141/142	VEGATRENN 151/152	Safety barrier 9001
			
Application	Separator for 4 ... 20 mA/HART sensors	Separator for 4 ... 20 mA/HART sensors	Single channel safety barrier for measuring current transmission
Sensors	4 ... 20 mA	4 ... 20 mA	4 ... 20 mA
Input and power supply	VEGATRENN 141: 1x 4 ... 20 mA signal circuit VEGATRENN 142: 2x 4 ... 20 mA signal circuit	VEGATRENN 151: 1x 4 ... 20 mA sensor input VEGATRENN 152: 2x 4 ... 20 mA sensor input	1x 4 ... 20 mA signal circuit
Output	VEGATRENN 141: 1x 4 ... 20 mA VEGATRENN 142: 2x 4 ... 20 mA	VEGATRENN 151: 1x 4 ... 20 mA VEGATRENN 152: 2x 4 ... 20 mA	1x 4 ... 20 mA
Operating voltage	20 ... 253 V AC/DC, 50/60 Hz	Via 4 ... 20 mA current loop	Via 4 ... 20 mA current loop
Mounting	Carrier rail 35 x 7.5 acc. to EN 50022	Carrier rail 35 x 7.5 acc. to EN 50022	Carrier rail 35 x 7.5 acc. to EN 50022
Approvals	ATEX, IEC, Ship, SIL2	ATEX, IEC, Ship, SIL2	ATEX
Benefit	<ul style="list-style-type: none"> <li>Secure supply and reliable separation of intrinsically safe and non-intrinsically safe measuring circuits</li> <li>Complete HART permeability allows unrestricted access to sensor settings</li> <li>Easy installation via rail mounting and removable, coded terminals</li> </ul>	<ul style="list-style-type: none"> <li>Reliable separation of intrinsically safe and non-intrinsically safe measuring circuits.</li> <li>Simple installation, as no additional power supply is required</li> <li>Easy installation via rail mounting and removable, coded terminals</li> </ul>	<ul style="list-style-type: none"> <li>Reliable separation of intrinsically safe and non-intrinsically safe measuring circuits.</li> <li>Simple installation, as no additional power supply is required</li> <li>Simple installation via DIN rail mounting</li> </ul>

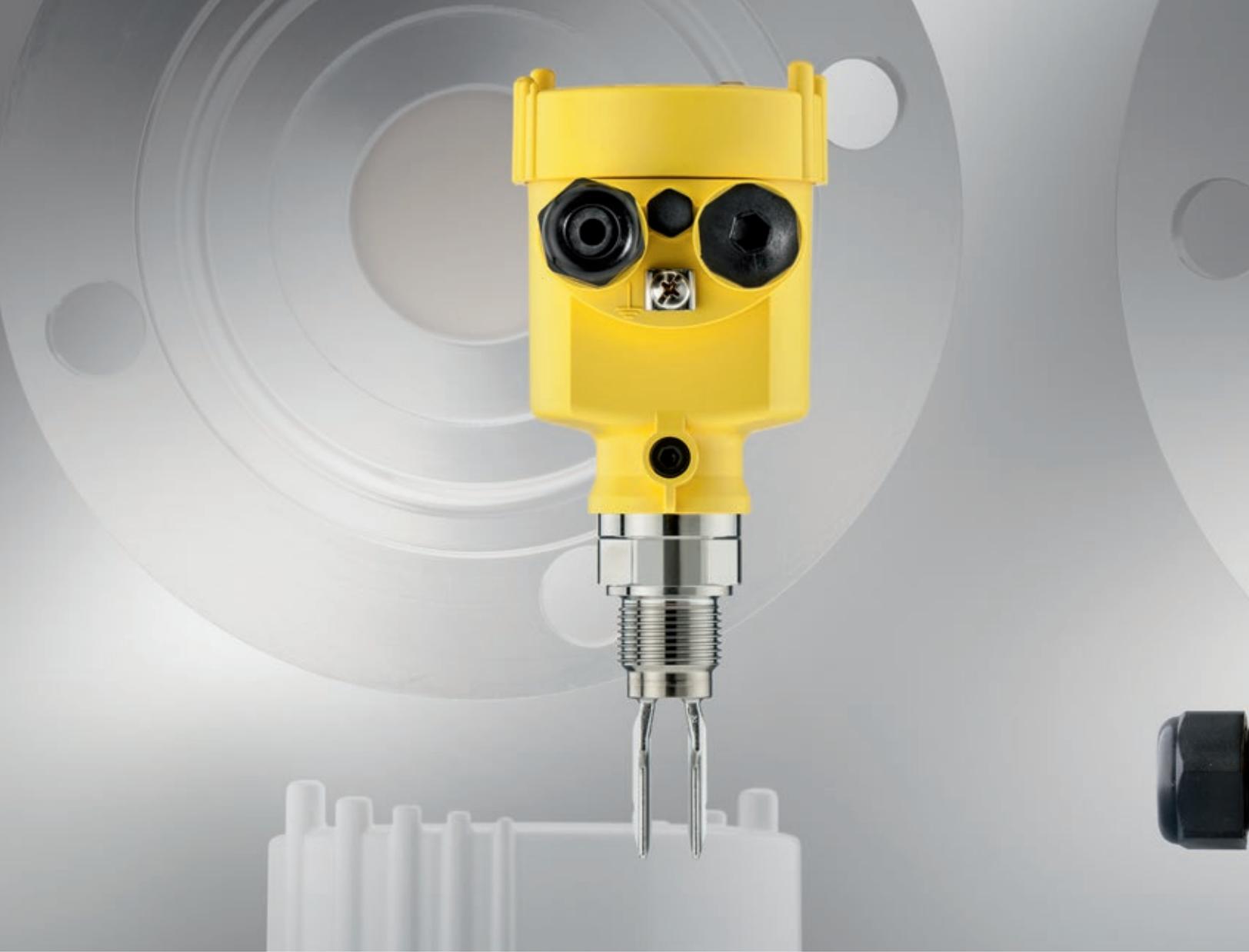
# Isolation and protection devices

	B53-19/B61-300/B61-300 FI	B62-36G/B62-30W
		
Application	<p>B53-19: Overvoltage arresters for conductive probes</p> <p>B61-300: Overvoltage arresters of supply and control cables</p> <p>B61-300FI: Overvoltage arresters of supply and control cables with FI protective circuits</p>	<p>B62-36G: Overvoltage arresters for two-wire circuits</p> <p>B62-30W: Overvoltage arresters for Profibus PA and Foundation Fieldbus circuits</p>
Mounting	Carrier rail 35 x 7.5 acc. to EN 50022 or on carrier rail 32 mm acc. to EN 50035	Carrier rail 35 x 7.5 acc. to EN 50022 or on carrier rail 32 mm acc. to EN 50035
Operating voltage	<p>B53-19: max. 19 V AC, 27 V DC</p> <p>B61-300/B61-300 FI: 110 ... 300 V AC/DC, max. 16 A</p>	<p>B62-36G: 9.6 ... 36 V DC, max. 450 mA</p> <p>B62-30W: 12 ... 36 V DC, max. 450 mA</p>
Nominal leak current	< 10 kA	< 10 kA
Protection	IP 20	IP 20
Temperature range	-40 ... +60 °C	-40 ... +60 °C
Approvals	ATEX	ATEX
Benefit	<ul style="list-style-type: none"> <li>• High operational reliability even with impermissible voltage surges</li> <li>• Simple installation via carrier rail mounting</li> </ul>	

	B63-48/B63-32	B81-35
		
	<p>B63-48: Overvoltage arresters for two-wire circuits</p> <p>B63-32: Overvoltage arresters for Profibus PA and Foundation Fieldbus circuits</p>	<p>Pluggable overvoltage arresters for supply and signal circuits</p>
	<p>Direct mounting in the cable entry of the field device</p>	<p>Pluggable to the plics® mains electronics of VEGAPULS series 60, VEGAFLEX series 80, VEGABAR series 80 and VEGADIS 82</p>
	<p>B63-48: 12 ... 48 V DC B63-32: max. 32 V DC</p>	<p>max. 35 V DC</p>
	<p>&lt; 10 kA</p>	<p>&lt; 10 kA</p>
	<p>IP 66</p>	<p>-</p>
	<p>-40 ... +85 °C</p>	<p>-40 ... +85 °C</p>
	<p>ATEX</p>	<p>ATEX, IEC, EAC</p>
	<ul style="list-style-type: none"> <li>▪ High operational reliability even with impermissible voltage surges</li> <li>▪ Simple installation in the cable gland of the field instrument</li> <li>▪ No additional, separate on-site assembly</li> </ul>	<ul style="list-style-type: none"> <li>▪ High operational reliability of the measuring point through surge protection</li> <li>▪ Simple installation in the terminal compartment of the field instrument through compact design</li> <li>▪ Easy retrofitting in already installed sensors</li> </ul>

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