Product overview

VEGA HOME OF VALUES

Safe and reliable

Level and pressure instrumentation for the process industry

Production processes are becoming ever 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.

Under extreme conditions on oil platforms and in mining, in mechanical and plant engineering, in hygiene-sensitive industries like food and pharmaceutical, even under wildly fluctuating weather conditions commonly found in water and waste water applications: In virtually every industry VEGA has been demonstrating its application competence, which is founded on over 60 years experience.

With about 2,000 employees worldwide, more than 900 of whom work at the headquarters in Schiltach in the Black Forest, VEGA operates subsidiaries and locations in more than 80 countries. The large sales and service team offers technical consultation and top-quality products that come with all the necessary certificates and approvals for worldwide use.

Product lines VEGA sensors

PRO

Unlimited variety in highest quality and precision.

That means: all integration options available, any mounting situation, all process fittings available, highest pressures, lowest temperatures and use with all conceivable media. Every sensor of the **PRO line** is optimised to meet the individual requirements of various industrial sectors and is precisely tailored to the specific application.

BASIC

Compact and precise all-rounders.

That means: optimal measurement technology for standard processes and basic applications that still has the reassurance of being "made by VEGA". Available in all the important standard versions and with numerous connection variants. Every sensor of the **BASIC line** is easy to integrate and quickly ready for operation.

AIR

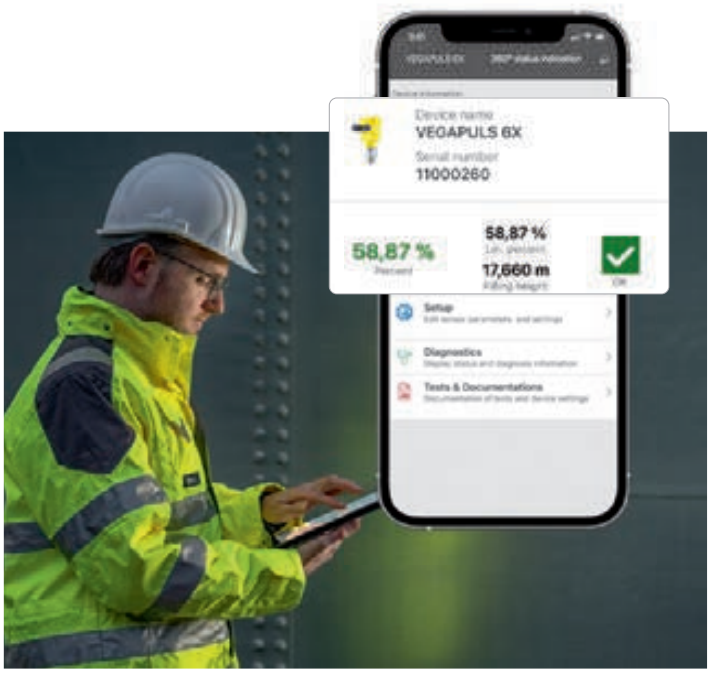
Reliable data security even without cables.

Sensors of the **AIR line** are used in mobile applications wherever reliable and precise levels create added value for work processes. The wireless standards LoRA, NBIoT or LTEM transmit your data securely to the VEGA cloud server. Ideal for automatic reordering or just-in-time emptying – anywhere in the world.

Digitalisation

INDUSTRY 4.0 – THE WAY TO A SMART AGE

In the smart age, intelligent solutions provide an optimal analysis of sensor data and generate an abundance of useful information. This makes the daily work easier and safer. The most important prerequisites for this: trust and stability. VEGA provides future-proof applications, highest possible data security as well as maximum protection and confidentiality. Industry 4.0 with VEGA – for the long term.

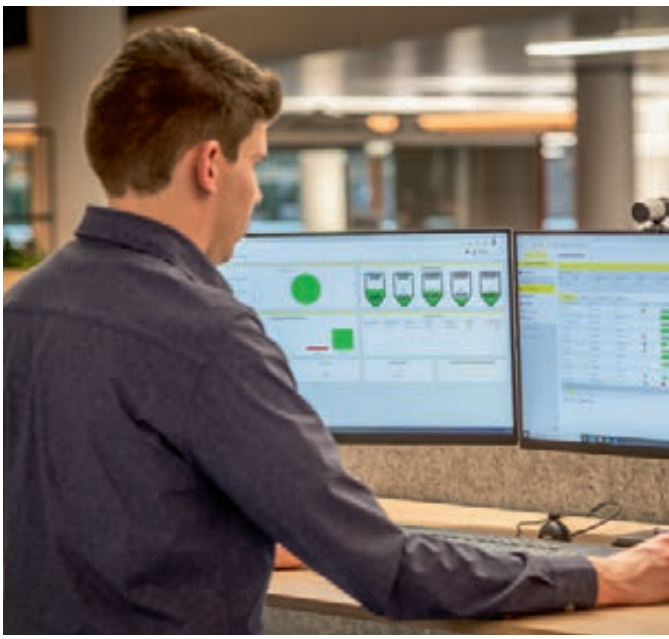


User-friendly and secure – the **VEGA Tools app**

Thanks to the sensor's Bluetooth function, setup and commissioning is easier than ever – especially in hard-to-reach locations or harsh industrial environments. When it comes to data protection and security, VEGA considers it extremely important to comply with the highest standards – from access management to secure data encryption.

VEGA Inventory System

VEGA Inventory System gives the supplier a reliable insight into the inventories of his customers at all times. The current measurement data is combined and compared to the values from the consumption history. This analysis optimises requirement, inventory and delivery planning. It also saves resources and costs.



myVEGA – Advantages in every phase

The myVEGA customer portal provides you with comprehensive information via permanent and complete digital storage of all documents relating to your VEGA products – Discover your benefits in every single phase.

Planning

In your personal customer portal you'll find everything you need to plan your own customised measurement technology. Access a universal configurator, create and store projects and generate 2D and 3D drawings of your configured instruments.

Ordering

After planning, you can view the prices and delivery times via myVEGA and request quotations for your specific products or order directly online. This includes everything from your individually configured instrumentation to accessories and spare parts.

Setup and commissioning

In your personal account, you will find all the important documents and test certificates for setting up and commissioning your VEGA sensors. Manage your access data with “Pins & Codes” for contactless setup and commissioning using the VEGA Tools app.

History

Keep an eye on all your transactions. With myVEGA you can view your entire order history – regardless of the date of your registration. Track the status of your order. The shipment tracking function keeps you informed about the progress of your order.

Quickfinder

				Liquids					Bulk solids				Gases	Process		
			page	Conductive	Non-conductive	Non-contact	Changing media	Interface	Powders	Granules	Changing media	Non-contact		up to +60 °C	up to +100 °C	up to +150 °C
Continuous level measurement	Radar (IIoT)	VEGAPULS Air	9	✓	✓	✓	✓		✓	✓	✓	✓		✓		
	Radar	VEGAPULS	13	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓
	Guided radar	VEGAFLEX	19	✓	✓		✓	✓	✓	✓	✓			✓	✓	✓
	Ultrasonic	VEGASON	25	✓	✓	✓	✓		✓	✓	✓	✓		✓		
	Capacitive	VEGACAL	27	✓	✓				✓	✓				✓	✓	✓
	Hydrostatic	VEGABAR	51	✓	✓								✓	✓	✓	
		VEGAWELL	51	✓	✓									✓		
	Radiation-based	FIBERTRAC	55	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
		SOLITRAC	55	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
	Differential pressure	VEGADIF	53	✓	✓			✓					✓	✓	✓	✓
	Magnetic level gauge/bypass	VEGAMAG	22	✓	✓			✓						✓	✓	✓
		VEGAPASS	23	✓	✓		✓	✓						✓	✓	✓
Point level detection	Vibration	VEGASWING	37	✓	✓		✓							✓	✓	✓
		VEGAVIB	39							✓	✓			✓	✓	✓
		VEGAWAVE	41						✓	✓	✓			✓	✓	✓
	Capacitive	VEGAPOINT	31	✓	✓		✓	✓	✓	✓	✓			✓	✓	
		VEGACAP	33	✓	✓			✓	✓	✓				✓	✓	✓
	Conductive	VEGAKON	43	✓			✓							✓	✓	✓
		EL	44	✓			✓							✓	✓	
	Radar	VEGAMIP	17	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓
	Radiation-based	MINITRAC	56	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
		POINTRAC	56	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Pressure measurement	Process pressure	VEGABAR	47	✓	✓		✓						✓	✓	✓	✓
	Hydrostatic	VEGABAR	51	✓	✓								✓	✓	✓	
		VEGAWELL	51	✓	✓									✓		
	Differential pressure	VEGADIF	53	✓	✓			✓					✓	✓	✓	✓
Flow measurement	Differential pressure	VEGADIF	53	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓
	Radiation-based	MINITRAC	56	✓	✓	✓								✓	✓	✓
		WEIGHTRAC	56						✓	✓		✓		✓	✓	✓
Density measurement	Differential pressure	VEGADIF	53	✓	✓		✓						✓	✓	✓	✓
	Hydrostatic	VEGABAR	51	✓	✓		✓						✓	✓	✓	
		VEGAWELL	51	✓	✓		✓							✓		
	Radiation-based	MINITRAC	56	✓	✓	✓	✓	✓			✓	✓		✓	✓	✓
Signal processing	Software and display instruments	PLICSCOM	62													
		PLICSLED	62													
		VEGACONNECT	62													
		VEGADIS	63													
	Controllers	VEGAMET	65													
		VEGASCAN	67													
		VEGATOR	68													
	Wireless communication	PLICSMOBILE	71													
		Wireless router/ Gateway	72													
	Separating and protective instruments	VEGATRENN	75													

temperature			Process pressure/Measuring range										Measuring range					SIL
up to +250 °C	up to +400 °C	up to +450 °C	Vacuum	up to 2 bar	up to 16 bar	up to 25 bar	up to 40 bar	up to 60 bar	up to 72 bar	up to 160 bar	up to 400 bar	up to 1,000 bar	up to 4 m	up to 10 m	up to 30 m	up to 75 m	up to 120 m	
			✓	✓									✓	✓	✓			
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓
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			✓	✓	✓	✓							✓	✓	✓	✓	✓	✓
			✓	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	
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			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
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			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓						✓
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			✓	✓	✓	✓	✓	✓	✓									
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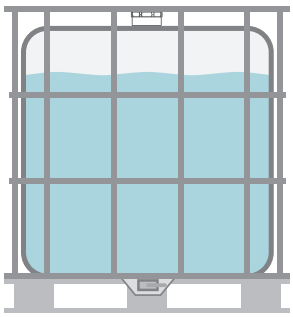
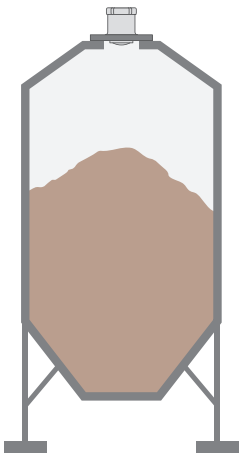
IIoT I Level I VEGAPULS Air series



Autonomous, mobile level measurement: VEGAPULS Air

VEGAPULS Air stand-alone radar sensors measure the levels in silos, mobile containers or liquids in tanks safely and reliably, even in remote or difficult-to-access locations. The battery-powered IIoT sensors communicate their measured values to the cloud wirelessly and require neither expensive cabling nor their own on-site Internet access.



The advantages

- ✓ Easy installation thanks to long-life battery supply and wireless technology
- ✓ Exact measuring results, independent of medium as well as process and ambient conditions
- ✓ Economical IIoT solutions transfer level information to the cloud

	AIR **VEGAPULS Air 23**	AIR **VEGAPULS Air 41**	AIR **VEGAPULS Air 42**
			
Application	Liquids and bulk solids in plastic tanks without process fitting	Liquids and bulk solids in simple process conditions	Liquids and bulk solids in simple process conditions
Measuring range	3 m	15 m	30 m
Antenna	Integrated	Integrated	Integrated
Process fitting	–	Threads: G1½, 1½ NPT, R1½	Compression flanges DN 80, 3" Adapter flanges from DN 100, 4"
Mounting connection	Adhesive adapter, tensioning strap, ceiling mounting	Mounting strap	–
Process temperature	-20 … +60 °C	-20 … +60 °C	-20 … +60 °C
Process pressure	–	-1 … +2 bar (-100 … +200 kPa)	-1 … +2 bar (-100 … +200 kPa)
Accuracy	±5 mm	±2 mm	±2 mm
Frequency range	W-band (80 GHz)	W-band (80 GHz)	W-band (80 GHz)
Signal output	NB-IoT (LTE-CAT-NB1), LTE-M (LTE-CAT-M1), LoRaWAN	NB-IoT (LTE-CAT-NB1), LTE-M (LTE-CAT-M1), LoRaWAN, Bluetooth	NB-IoT (LTE-CAT-NB1), LTE-M (LTE-CAT-M1), LoRaWAN, Bluetooth
Display/adjustment	VEGA Inventory System	VEGA Tools app, PACTware/DTM, VEGA Inventory System	VEGA Tools app, PACTware/DTM, VEGA Inventory System
Voltage supply	Integrated batteries 2x 3.6 V (lithium)	Integrated batteries 5x 3.6 V (lithium), exchangeable	Integrated batteries 5x 3.6 V (lithium), exchangeable
Approvals	ATEX, UKEX, IECEx	–	–
Benefit	✓ Easy mounting “outside”, as it is optimised for measurement through the tank top	✓ Minimal installation work thanks to self-sufficient supply and wireless interface	

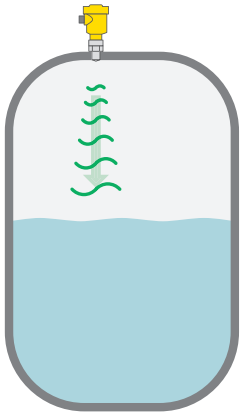
IIoT I Level I VEGAPULS Air series

	LoRa Gateway (indoor)	LoRa Gateway (outdoor)
		
Application	Gateway for connecting LoRaWAN sensors to VEGA Inventory System	Gateway for connecting LoRaWAN sensors to VEGA Inventory System
Input	LoRaWAN	LoRaWAN
Output	GPRS/UMTS/LTE (2G, 3G, 4G)	GPRS/UMTS/LTE (2G, 3G, 4G)
Display	LED	LED
Mounting	Wall mounting	Wall and tube mounting
Temperature range	-20 … +55 °C	-40 … +60 °C
Voltage supply	100 … 230 V AC, 50/60 Hz	100 … 230 V AC, 50/60 Hz, PoE adapter
Benefit	✓ Easy setup and commissioning through preconfigured settings	

VEGA Inventory System

Application	System for inventory monitoring as well as remote enquiry and visualization of measurement and location data
Recommended operating systems	▪ VEGA Hosting Service: independent of operating system ▪ Local server: MS Windows Server 2016 or 2019 as well as MS SQL Server 2014 or higher
Adjustment	With standard web browser
Versions	▪ VEGA Hosting Service (VH) ▪ Local servers (LS)
Technology	Web-based
Benefit	✓ Simple centralized inventory monitoring and management ✓ More transparency through connected assets and facilities ✓ Avoidance of production stoppages and increased supply security ✓ Reduction of transport costs with optimized logistics planning

Level I Radar



Level measurement with radar

In continuous non-contact level measurement with radar, the sensor sends microwave signals towards the medium from above. The surface of the medium reflects the signals back in the direction of the sensor. Using the received microwave signals, the sensor determines the distance to the product surface and calculates the level from it. Liquids and bulk solids are commonly measured with this measuring technique.

The advantages

- ✓ Non-contact level measurement with radar is characterized by especially high measurement accuracy
- ✓ Measurement is unaffected by the measured medium and the process conditions
- ✓ User-friendly adjustment saves time

PRO

VEGAPULS 6X

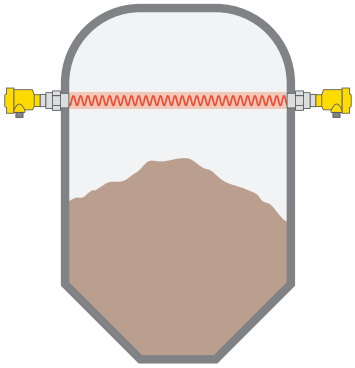
Application	Liquids and bulk solids for all process conditions
Measuring range	up to 120 m
Antenna	Integrated antenna, horn antenna, lens antenna
Process fitting	Thread from G¾", flanges from DN20 / ¾", hygienic fittings
Process temperature	-196 … +450 °C
Process pressure	-1 … +160 bar (-100 … +16000 kPa)
Accuracy	±1 mm
Frequency range	W-band (80 GHz), C-band (6 GHz), K-band (26 GHz)
Signal output	4 … 20 mA/HART, APL, Profibus PA, Foundation Fieldbus, Modbus
Display/adjustment	PLICSCOM, PACTware/DTM, VEGADIS 81, VEGADIS 82, VEGA Tools app
Approvals	ATEX, UKEX, IECEx, FM, CSA, NEPSI, EAC (GOST), INMETRO, TIIS, KOSHA/KTL, CCOE, UKR Sepro, Overfill protection, Ship, SIL2/3, food
Benefit	✓ Universal use through different antenna versions

Level I Radar

	BASIC **VEGAPULS C 11**	BASIC **VEGAPULS C 21/C 22**	BASIC **VEGAPULS C 23**
			
Application	Liquids and bulk solids in simple process conditions	Liquids and bulk solids in simple process conditions	Liquids and bulk solids in simple process conditions
Measuring range	8 m	15 m	30 m
Antenna	Integrated plastic horn antenna made of PVDF	Integrated plastic horn antenna made of PVDF	Integrated plastic horn antenna made of PVDF
Process fitting	Threads G1½, 1½ NPT	Threads G1½, 1½ NPT	–
Mounting connection	Threads G1, 1 NPT	VEGAPULS C 21: Threads G1, 1 NPT VEGAPULS C 22: Adapter for ceiling mounting	Threads G1, 1 NPT
Process temperature	-40 … +60 °C	-40 … +80 °C	-40 … +80 °C
Process pressure	-1 … +3 bar (-100 … +300 kPa)	-1 … +3 bar (-100 … +300 kPa)	-1 … +3 bar (-100 … +300 kPa)
Accuracy	±5 mm	±2 mm	±2 mm
Frequency range	W-band (80 GHz)	W-band (80 GHz)	W-band (80 GHz)
Signal output	4 ... 20 mA	4 ... 20 mA/HART, SDI 12, Modbus	4 ... 20 mA/HART, SDI 12, Modbus
Display/adjustment	VEGA Tools app, PACTware/DTM	VEGA Tools app, PACTware/DTM	VEGA Tools app, PACTware/DTM
Approvals	–	ATEX, UKEX, IECEx, cCSAus, cFMus, NEPSI, EAC, mcerts, INMETRO, KOSHA/KTL, CCOE, CE 1935/2004, FDA, NSF, KTW, WHG, VLAREM, Ship	ATEX, UKEX, IECEx, cCSAus, cFMus, NEPSI, EAC, INMETRO, KOSHA/KTL, CCOE, CE 1935/2004, FDA, NSF, KTW, WHG, VLAREM, Ship
Benefit	✓ User-friendly, wireless setup and diagnosis via Bluetooth with mobile devices		✓ Unaffected by vessel internals thanks to very good signal focusing

	BASIC **VEGAPULS 11**	BASIC **VEGAPULS 21/31**
		
Application	Liquids and bulk solids in simple process conditions	Liquids and bulk solids in simple process conditions
Measuring range	8 m	15 m
Antenna	Integrated plastic horn antenna made of PVDF	Integrated plastic horn antenna made of PVDF
Process fitting	Threads G1½, 1½ NPT	Threads G1½, 1½ NPT
Process temperature	-40 … +60 °C	-40 … +80 °C
Process pressure	-1 … +3 bar (-100 … +300 kPa)	-1 … +3 bar (-100 … +300 kPa)
Accuracy	±5 mm	±2 mm
Frequency range	W-band (80 GHz)	W-band (80 GHz)
Signal output	4 … 20 mA	4 ... 20 mA/HART
Display/adjustment	VEGA Tools app, PACTware/DTM	VEGAPULS 21: VEGA Tools app, PACTware/DTM VEGAPULS 31: Integrated on-site display and 3-key operation, VEGA Tools app, PACTware/DTM
Approvals	–	ATEX, UKEX, IECEx, cCSAus, cFMus, NEPSI, EAC, mcerts, INMETRO, KOSHA/KTL, CCOE, CE 1935/2004, FDA, NSF, KTW, WHG, VLAREM, Ship
Benefit	✓ Low-cost sensor for simple measuring tasks	

Point level detection I Radar



Point level detection with microwave barrier

The microwave barrier functions like a light barrier: when the medium gets in the way of the microwave beam between the transmitter and the receiver, the signal is attenuated. This change is detected by the receiver and converted into a switching signal.

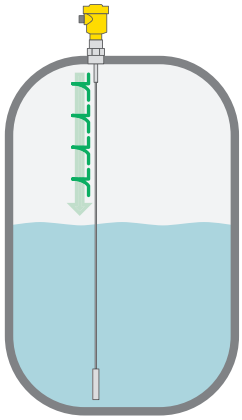
The microwave barrier is ideal for point level detection of liquids and bulk solids. Another area of application is backup detection on conveyor belts.

The advantages

- ✓ Point level detection of high-purity fluids right through the vessel wall, no openings required
- ✓ Microwave barrier is never in contact with the medium, sensor cannot get soiled
- ✓ Wear and maintenance free operation over long periods

	PRO **VEGAMIP T61**	PRO **VEGAMIP R61**	PRO **VEGAMIP R62**
			
Application	Bulk solids, liquids	Bulk solids, liquids	Bulk solids, liquids in dangerous mounting or hard-to-reach locations
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 (24 GHz)	K-band (24 GHz)	K-band (24 GHz)
Signal output	–	Relay, transistor	Relay, transistor
Display	–	Control lamp (LED) or pluggable display module PLICSLED	Control lamp (LED) or pluggable display module PLICSLED
Approvals	ATEX, UKEX, IECEx, NEPSI, FM, CSA, EAC (GOST), UKR Sepro	ATEX, UKEX, IECEx, NEPSI, FM, CSA, EAC (GOST), UKR Sepro	ATEX, UKEX, IECEx, NEPSI, CSA, EAC (GOST)
Benefit	✓ Simple installation and mounting, as emitter requires no parameterization	✓ Compact instrument saves time and money when installing and connecting, as no separate controller is required	✓ Separate instrument version allows installation in hard-to-reach or dangerous locations

Level I Guided Wave Radar



Measurement of level and interface with guided wave radar (GWR)

In level measurement with guided wave radar, microwave pulses are conducted along a cable or rod probe and reflected by the product surface. The measuring probe of the TDR sensor ensures that the signal reaches the medium undisturbed. Liquids, bulk solids and separation layers (interfaces) in liquids are commonly measured with this measuring technique.

The advantages

- ✓ Measurement operates independently of noise, pressure or temperature fluctuations and is completely unaffected by changes in density, foaming, steam or dust
- ✓ Buildup on the probe or on the container wall hardly affects the measurement
- ✓ Menu-driven adjustment allows simple, fast and confident setup

	PRO **VEGAFLEX 81**	PRO **VEGAFLEX 82**
		
Application	All kind of liquids, applications with steam, buildup, foam generation, condensation as well as ammonia	For light to heavy-weight bulk solids of all kinds, applications with strong dust generation, condensation or buildup
Measuring range	Cable probe up to 75 m of 316 or Alloy C22 or Duplex 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 G¾, ¾ NPT, flanges from DN 25, 1"	Thread from G¾, ¾ 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/DTM, VEGADIS 81, VEGADIS 82, VEGA Tools app	PLICSCOM, PACTware/DTM, VEGADIS 81, VEGADIS 82, VEGA Tools app
Approvals	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, FDA, INMETRO, NEPSI, KOSHA, CCOE	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, INMETRO, NEPSI, KOSHA, CCOE
Benefit	✓ Unaffected by temperature, pressure and dust generation	

Level I Guided Wave Radar

	PRO **VEGAFLEX 83**	PRO **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, Alloy C22, Duplex or Alloy C276 Coax probe up to 6 m of 316L or Alloy C22
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 G¾, ¾ 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/DTM, VEGADIS 81, VEGADIS 82, VEGA Tools app	PLICSCOM, PACTware/DTM, VEGADIS 81, VEGADIS 82, VEGA Tools app
Approvals	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, EHEDG, 3-A, FDA, INMETRO, NEPSI, KOSHA, CCOE	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, steam boiler, Overfill protection, Ship, SIL2, INMETRO, NEPSI, KOSHA, CCOE
Benefit	✓ Gap-free hygienic design ensures good cleanability with simple methods	✓ Comprehensive diagnostic options guarantee low-maintenance operation and thus high plant availability

Bypass level indicator without power supply

The bypass magnetic level indicator VEGAMAG 81 signals the level inside a vessel without the need for external energy. The measuring system is particularly suitable for measuring liquids, aggressive liquid media or for interface detection, for example in storage tanks where there is no access to power sources.

The measuring system consists of a bypass that is mounted on the side of the tank as a communicating pipe. An integrated float with a permanent magnet contactlessly transmits the level to the externally mounted magnetic indicator. The colours on the indicating scale change according to the filling level.

The advantages

- ✓ On-site level indicator functions without power source (no auxiliary energy required)
- ✓ The level indication by means of a magnetic roller display cannot become soiled, because the indicator doesn't touch the medium
- ✓ Easy maintenance, as the bypass chamber can be isolated from the process via valves

	VEGAMAG 81
	
Application	Bypass vessel for liquid-holding tanks, for measuring and indicating levels without auxiliary energy (directly communicating vessel)
Measuring range	up to 4 m
Version	ASME B31.3 PED 2014/68/EU EAC 032/2013
Process fitting tank	Flanges from ½", DN 15 Threaded connections from ½" Welding sockets from ½"
Process temperature	-196 °C … +450 °C
Process pressure	0 … +100 bar (0 … +10000 kPa)
Measurement accuracy	±5 mm
Approvals	ASME 31.3 PED 2014/68/EU EAC 032/2013
Benefits	✓ Measurement and on-site indication without auxiliary energy

Bypass for continuous level measurement of liquids

In combination with a level or point level sensor, the VEGAPASS 81 bypass chamber enables continuous level measurement outside a container. Depending on the measuring instrument used, it is especially suitable for measurement in high temperature or pressure environments or for aggressive media.

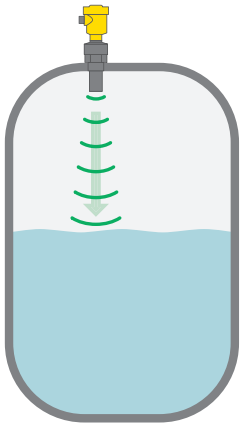
The bypass consists of a standpipe assembly that is attached to the side of the container normally via two valved, isolatable process fittings. This type of mounting ensures that the level in the standpipe and the level in the container are exactly the same. On request, a VEGAPASS chamber and measuring instrument can be ordered together, pre-assembled and calibrated at the factory.

The advantages

- ✓ From one source: optimally matched complete solution consisting of bypass chamber and suitable measurement technology
- ✓ Maintenance-free, as there are no moving parts
- ✓ Tailor-made: customer-specific adaptation to your process

	VEGAPASS 81
	
Application	Bypass chamber for liquid tanks to accommodate level, point level or interface sensors (communicates the direct vessel level)
Measuring range	up to 4 m
Version	ASME B31.3 PED 2014/68/EU EAC 032/2013
Process fitting tank	Flanges from ½", DN 15 Threaded connections from ½" Welding sockets from ½"
Process temperature	-196 °C … +450 °C
Process pressure	0 … +205 bar (0 … +20500 kPA) depends on the built-in sensor
Measurement accuracy	depends on the built-in sensor
Approvals	ASME 31.3 PED 2014/68/EU EAC 032/2013 depends on the sensor technology installed
Benefits	✓ Complete solution comprising bypass vessel and measurement technology

Level I Ultrasonic



Ultrasonic level measurement

In non-contact ultrasonic level measurement, the sensor emits ultrasonic pulses in the direction of the medium, which then reflects them back.

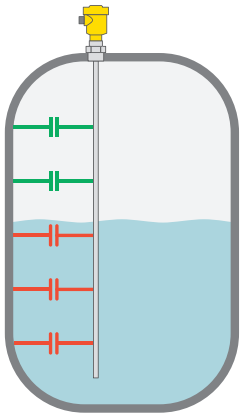
The elapsed time from emission to reception of the signals is proportional to the level in the tank. Ultrasonic sensors are ideal for simple standard applications, both for liquids and bulk solids.

The advantages

- ✓ Non-contact level measurement for a wide range of media
- ✓ Suitable for bulk solids and liquids
- ✓ Adjustment without medium or filling

	PRO **VEGASON 61**	PRO **VEGASON 62**
		
Application	Liquids and bulk solids in small vessels	Liquids and bulk solids in small vessels
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
Transducer	of PVDF	of PVDF
Process fitting	Thread G1½, 1½ NPT	Thread G2, 2 NPT
Process temperature	-40 … +80 °C	-40 … +80 °C
Process pressure	-0.2 … +2 bar (-20 … +200 kPa)	-0.2 … +2 bar (-20 … +200 kPa)
Accuracy	±10 mm	±10 mm
Signal output	4 … 20 mA/HART, Profibus PA, Foundation Fieldbus	4 … 20 mA/HART, Profibus PA, Foundation Fieldbus
Display/adjustment	PLICSCOM, PACTware/DTM, VEGADIS 81, VEGADIS 82	PLICSCOM, PACTware/DTM, VEGADIS 81, VEGADIS 82
Approvals	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, Ship, SIL2	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, Ship, SIL2
Benefit	✓ Maintenance-free operation through non-contact measuring method	

Level I Capacitive



Capacitive level measurement

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

Thanks to versions with shortenable cables and rods, the capacitive level sensors cover a wide variety of applications.

The advantages

- ✓ Capacitive level measurement enables measurement without blind spots over the entire sensor length
- ✓ Fully insulated capacitive sensors also measure aggressive liquids
- ✓ Cost-effective measurement for trouble-free and maintenance-free operation

	PRO VEGACAL 62	PRO VEGACAL 63	PRO 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, Alloy, PTFE, PEEK	Fully insulated rod of steel, 316L, Alloy, PTFE, PE	Fully insulated rod of steel, 316L, Alloy, FEP
Process fitting	Thread from G½, ½ NPT, flanges from DN 25, 1"	Thread from G½, ½ NPT, flanges from DN 25, 1"	Thread from G¾, ¾ 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/DTM, VEGADIS 81, VEGADIS 82, VEGA Tools app	PLICSCOM, PACTware/DTM, VEGADIS 81, VEGADIS 82, VEGA Tools app	PLICSCOM, PACTware/DTM, VEGADIS 81, VEGADIS 82, VEGA Tools app
Approvals	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, NEPSI, KOSHA	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, NEPSI, KOSHA	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, NEPSI, KOSHA
Benefit	✓ Maximum container utilization, because entire probe length is used for measuring		

Level I Capacitive

	PRO **VEGACAL 65**	PRO **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, Alloy, PTFE, PEEK, 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/DTM, VEGADIS 81, VEGADIS 82, VEGA Tools app	PLICSCOM, PACTware/DTM, VEGADIS 81, VEGADIS 82, VEGA Tools app
Approvals	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, NEPSI, KOSHA	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, NEPSI, KOSHA
Benefit	✓ Maximum container utilization, because entire probe length is used for measuring	✓ Cost savings thanks to simple installation and setup

PRO

VEGACAL 67

Bulk solids with high process temperatures

Rod up to 6 m; cable up to 40 m

Rod or cable of steel,
316L, ceramic

Thread from G1½, 1½ NPT,
flanges from DN 50, 2"

-50 … +400 °C

-1 … +16 bar
(-100 … +1600 kPa)

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

PLICSCOM, PACTware/DTM,
VEGADIS 81, VEGADIS 82,
VEGA Tools app

–

✓ Exact measuring results in almost all bulk solids and high temperature ranges

PRO

VEGACAL 69

Liquids in non-conductive vessels

up to 4 m

Fully insulated double rod made
of PTFE, PP, FEP

Flanges from DN 50, 2"

-50 … +100 °C

-1 … +2 bar
(-100 … +200 kPa)

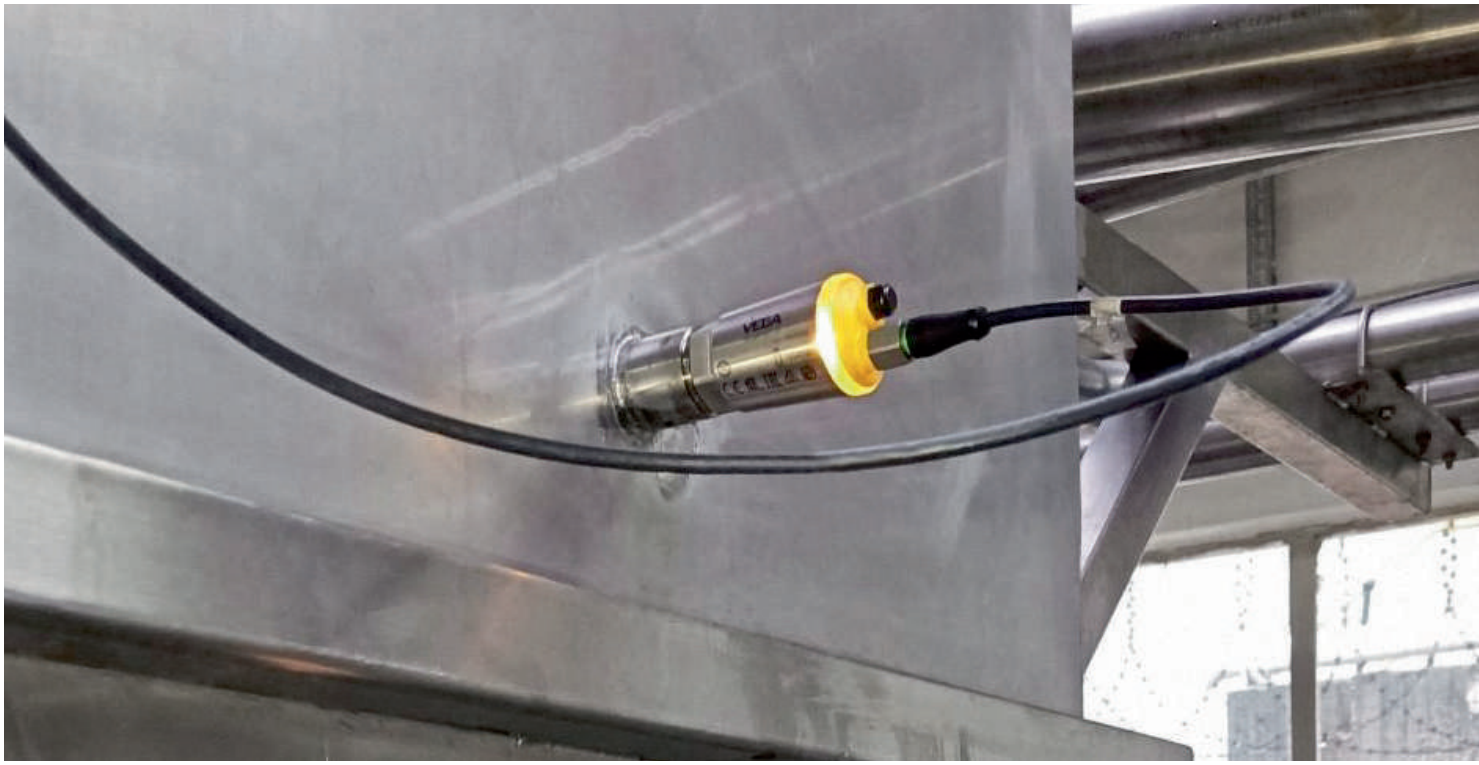
4 ... 20 mA/HART, Profibus PA,
Foundation Fieldbus

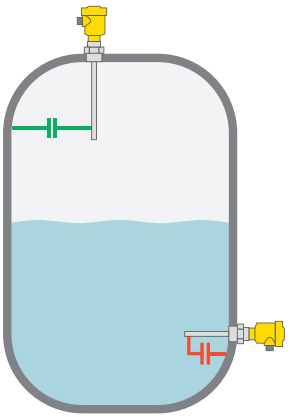
PLICSCOM, PACTware/DTM,
VEGADIS 81, VEGADIS 82,
VEGA Tools app

ATEX, UKEX, IECEx, EAC (GOST), UKR Sepro

✓ Simple, fast installation thanks to compact, double rod design

Point level I Capacitive





Point level detection with capacitive level switches

In capacitive point level detection, the sensor and vessel form the two electrodes of a capacitor. Any capacitance change caused by a level change is converted into a switching signal. Thanks to the shortenable cable and rod versions, level switches can be perfectly adapted to any application. They are often used for overfill or dry run protection as well as oil/water or foam detection.

The advantages

- ✓ The level switch can be installed in any position
- ✓ Fully insulated versions also measure aggressive liquids
- ✓ Low-cost point level detection for maintenance-free operation

	BASIC **VEGAPOINT 11**	BASIC **VEGAPOINT 21/31**
		
Application	Water-based liquids	VEGAPOINT 21: liquids VEGAPOINT 31: bulk solids
Version	Compact version of 316L, PEEK	Compact version of 316L, PEEK
Process fitting	Threads from G½, ½ NPT, universal connector for hygiene adapter	Threads from G½, ½ NPT, universal connector for hygiene adapter
Process temperature	-20 °C ... +100 °C/ 1 h @ +135 °C	-40 °C ... +115 °C/ 1 h @ +135 °C
Process pressure	-1 ... +25 bar (-100 ... +2500 kPa)	-1 ... +64 bar (-100 ... +6400 kPa)
Signal output	Three-wire: IO-Link, transistor (PNP/NPN)	Three-wire: IO-Link, transistor (PNP/NPN)
Display/adjustment	LED	Full-colour multidirectional (360°) switching status indication, Bluetooth
Approvals	CE 1935/2004, FDA, ADI	ATEX, UKEX, IECEx, CE 1935/2004, FDA, 3-A, EHEDG, ASME BPE, USP Class VI, ADI, China FDA, WHG, VLAREM, SVTI, Ship
Benefit	✓ Adjustment-free for easy setup	✓ Highly visible, adjustable full-colour multidirectional (360°) switching status display

Point level I Capacitive

	BASIC **VEGAPOINT 23**	BASIC **VEGAPOINT 24**
		
Application	Liquids and bulk solids	Adhesive media or front flush mounting
Version	Compact version of 316L, PEEK with tube extension up to 1 m	Compact version of 316L, PEEK
Process fitting	Thread from G½, ½ NPT, universal connector for hygiene adapter	Thread from G½, ½ NPT, universal connector for hygiene adapter
Process temperature	Tube extension ≤ 250 mm: -40 °C ... +115 °C/1 h @ +135 °C Tube extension > 250 mm: -40 °C ... +80 °C/1 h @ +135 °C	-40 °C … +115 °C/1 h @ +135 °C
Process pressure	-1 ... +64 bar (-100 ... +6400 kPa)	-1 ... +64 bar (-100 ... +6400 kPa)
Signal output	Three-wire: IO-Link, transistor (PNP/NPN)	Three-wire: IO-Link, transistor (PNP/NPN)
Display/adjustment	Full-colour multidirectional (360°) switching status indication, Bluetooth	Full-colour multidirectional (360°) switching status indication, Bluetooth
Approvals	ATEX, UKEX, IECEx, CE 1935/2004, FDA, 3-A, EHEDG, ASME BPE, USP Class VI, ADI, China FDA, WHG, VLAREM, SVTI, Ship	ATEX, UKEX, CE 1935/2004, FDA, 3-A, EHEDG, USP Class VI, ADI, China FDA, WHG, VLAREM, SVTI
Benefit	✓ Low-cost level switch with selectable switching point position/tube extension	✓ Optimised for adhesive media via front-flush installation

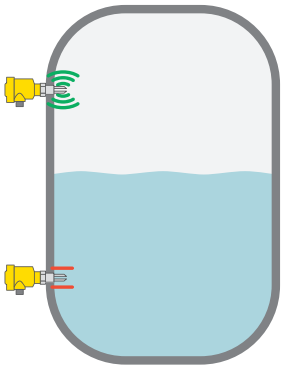
	PRO VEGACAP 62	PRO VEGACAP 63	PRO VEGACAP 64
			
Application	Liquids and bulk solids	Liquids and bulk solids, not abrasive	Adhesive liquids and light-weight bulk solids, not abrasive
Version	Partly insulated rod of steel, 316L, PTFE up to 6 m	Fully insulated rod of steel, 316L, PE, PTFE, Alloy up to 6 m	Fully insulated rod of steel, 316L, PTFE, Alloy up to 4 m
Process fitting	Thread from G½, ½ NPT, flanges from DN 25, 1"	Thread from G½, ½ NPT, flanges from DN 25, 1"	Thread from G¾, ¾ 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
Display/adjustment	Control lamp (LED) or pluggable display module PLICSLED	Control lamp (LED) or pluggable display module PLICSLED	Control lamp (LED) or pluggable display module PLICSLED
Approvals	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, NEPSI	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, NEPSI	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, NEPSI
Benefit	✓ Rugged, resistant designs		

Point level I Capacitive

	PRO **VEGACAP 65**	PRO **VEGACAP 66**	PRO **VEGACAP 67**
			
Application	Liquids and bulk solids	Liquids and bulk solids, not abrasive	Bulk solids with high process temperatures
Version	Partly insulated steel cable, 316L, PTFE, PE up to 32 m	Fully insulated steel cable, 316L, PTFE up to 32 m	Partly insulated steel rod or cable, 316L, ceramic up to 6 m (rod) up to 40 m (cable)
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
Display/adjustment	Control lamp (LED) or pluggable display module PLICSLED	Control lamp (LED) or pluggable display module PLICSLED	Control lamp (LED) or pluggable display module PLICSLED
Approvals	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, NEPSI	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, NEPSI	–
Benefit	✓ Rugged, resistant designs with capability to ignore buildup on sensor		✓ Universal use in bulk solids thanks to wide temperature range

PRO	PRO	PRO	PRO
VEGACAP 69	**VEGACAP 27**	**VEGACAP 35**	**VEGACAP 98**
			
Liquids, also in non-conductive vessels	Adhesive, conductive liquids	Bulk solids	Liquids, bulk solids
Fully insulated double rod of PTFE, PP, FEP up to 4 m	Fully insulated rod of steel, 316Ti, PTFE, PFA up to 4 m	Insulated cable of steel, 316Ti, PE, PA12 up to 20 m	Fully insulated rod of PP up to 2 m
Flanges from DN 50, 2"	Thread from G1, 1 NPT, Clamp 1½"	Thread from G1½, 1½ NPT	Thread from 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
Control lamp (LED) or pluggable display module PLICSLED	Control lamp (LED)	Control lamp (LED)	Control lamp (LED)
ATEX, UKEX, EAC (GOST), UKR Sepro	Overfill protection	Overfill protection	Overfill protection
✓ Simple, fast installation thanks to compact, double rod design	✓ Minimal time and cost expenditure thanks to simple setup without medium		

Point level I Vibration I Liquids



Vibrating level switch for all liquids

VEGASWING level switches detect the levels of liquids reliably with millimetre accuracy, regardless of their mounting position. They can be used universally to signal full or empty levels, protect against overfilling or dry running or protect pumps in containers and pipelines. They are not sensitive to turbulence, foam, vibration and buildup on the tuning fork.

Vibrating level switches operate with a tuning fork that vibrates at its resonance frequency. When the level in the tank changes and the fork is either covered or uncovered, the oscillation frequency changes - this is detected and the output made accordingly.

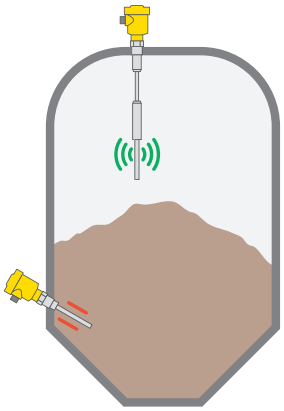
The advantages

- ✓ Simple setup and commissioning without adjustment saves time and costs
- ✓ Reliable point level detection, unaffected by installation position, pressure, temperature, foam and viscosity
- ✓ Low operating costs, self-monitoring and maintenance-free

	BASIC	PRO	PRO
	VEGASWING 51/53	**VEGASWING 61/63**	**VEGASWING 66**
			
Application	Liquids	Liquids	Liquids under high and low temperatures
Version	VEGASWING 51: Compact version VEGASWING 53: Tube extension up to 1 m	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	Three-wire: IO-Link, transistor (PNP/NPN), contactless electronic switch	Relay, transistor, two-wire, NAMUR output, contactless electronic switch	Relay, transistor, two-wire output
Display/adjustment	Control lamp (LED)	Control lamp (LED) or pluggable display module PLICSLED	Control lamp (LED) or pluggable display module PLICSLED
Approvals	VEGASWING 51: Overfill protection, Ship, CSA-OL, EHEDG, FDA, CE 1935/2004, EAC (GOST) VEGASWING 53: Overfill protection, CSA-OL, EHEDG, FDA, CE 1935/2004	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship, SIL2, KOSHA, NEPSI, INMETRO	ATEX, UKEX, IECEx, CSA, EAC (GOST), UKR Sepro, Overfill protection, steam boiler, Ship, SIL2, KOSHA, NEPSI, INMETRO, VdTÜV 100
Benefit	✓ Minimal time and cost expenditure thanks to simple setup without medium		

Controllers see page 64 – 69

Point level I Vibration I Granulated bulk solids



Vibrating level switch for granulated bulk solids

VEGAVIB is a level switch for granulated and coarse-grained bulk solids. VEGAVIB reliably and accurately signals the minimum or maximum limit level. The smooth surface of the vibrating rod, without sharp corners or edges, prevents bulk solids from getting stuck or jammed and is easy to clean.

When VEGAVIB is immersed in bulk solids, its vibration is damped. Its electronics converts this damped signal into a switching command which can be used, for example, to protect against overfilling or empty level.

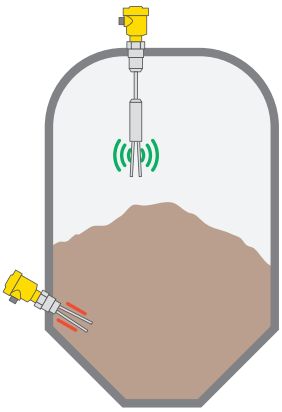
The advantages

- ✓ Simple setup without adjustment
- ✓ Reliable point level detection unaffected by pressure, temperature or dust generation
- ✓ Maintenance-free operation

	BASIC	PRO	PRO
	VEGAVIB S61	**VEGAVIB 61/63**	**VEGAVIB 62**
			
Application	Granuled and coarse-grained bulk solids	Granuled and coarse-grained bulk solids	Granuled and coarse-grained bulk solids
Version	Compact version or with tube extension up to 1.5 m	VEGAVIB 61: Compact version VEGAVIB 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, 1 NPT	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 … +150 °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
Display/adjustment	Control lamp (LED)	Control lamp (LED) or pluggable display module PLICSLED	Control lamp (LED) or pluggable display module PLICSLED
Approvals	ATEX, UKEX	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, SIL2, NEPSI, INMETRO, KOSHA/KTL, CCOE	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, SIL2, NEPSI, INMETRO, KOSHA/KTL, CCOE
Benefit	✓ Minimal time and cost expenditure thanks to simple setup without medium		

Controllers see page 64 – 69

Point level I Vibration I Powders



Vibrating level switch for powders

VEGAWAVE reliably detects both minimum and maximum levels of powdery and fine-grained bulk solids with a grain size of up to 10 mm. The tuning fork is suitable for adhesive and abrasive products as well as bulk solids with very low density. Its design means it is unaffected by buildup.

The vibration of VEGAWAVE is damped when covered by any bulk solids. Its electronics converts this signal into a switching command which can be used, for example, to protect against overfilling or empty level.

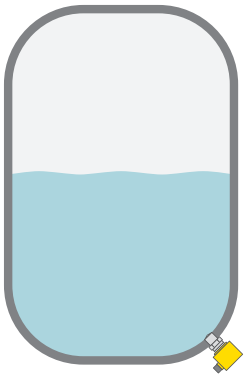
The advantages

- ✓ Simple setup without adjustment
- ✓ Reliable point level detection unaffected by pressure, temperature or dust generation
- ✓ Maintenance-free operation

	BASIC	PRO	PRO
	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 100 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
Display/adjustment	Control lamp (LED)	Control lamp (LED) or pluggable display module PLICSLED	Control lamp (LED) or pluggable display module PLICSLED
Approvals	ATEX, UKEX	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, SIL2, NEPSI, KOSHA/KTL, CCOE	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, SIL2, NEPSI, KOSHA/KTL, CCOE
Benefit	✓ Minimal time and cost expenditure thanks to simple setup without medium		

Controllers see page 64 – 69

Point level I Conductive



Point level detection with conductive point level switches

When the electrodes of the conductive point level sensor come into contact with a conductive fluid, a small alternating current begins to flow.

The electronics then triggers a switching command. Conductive point level sensors are used in all areas of industrial instrumentation, e.g. as overflow protection, pump control or dry run protection.

The advantages

- ✓ Simple, robust and low-cost point level detection
- ✓ Installation of point level sensors possible in any position
- ✓ Detection of multiple switching points within a vessel

	PRO **VEGAKON 61**	PRO **VEGAKON 66**
		
Application	Conductive liquids	Conductive liquids
Version	Compact level switch with front-flush partly insulated electrode and one switching point	Compact level switch with partly insulated rod electrodes and max. two switching points
Probe length	–	0.12 … 4 m
Material	316L, PTFE	316Ti, PP
Process fitting	Thread G1, cone DN 25, Varivent	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
Display/adjustment	Control lamp (LED)	Control lamp (LED)
Approvals	–	–
Benefit	✓ Optimal cleanability thanks to front-flush mounting	✓ Simple and versatile with cut to length probes

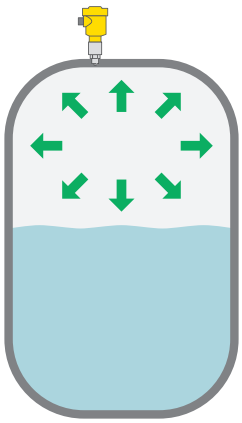
Point level I Conductive

	PRO EL 1	PRO EL 3	PRO 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	Partly insulated rod with max. four switching points	Partly insulated rod with max. four switching points
Material	316Ti, PTFE	316Ti, PTFE	316Ti, PP
Process fitting	Thread G½	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 131, VEGATOR 132	VEGATOR 131, VEGATOR 132
Display/adjustment	–	–	–
Approvals	ATEX, UKEX, Overfill protection	ATEX, UKEX, Overfill protection	–
Benefit	✓ Easy installation in confined spaces through small sensor dimensions	✓ Simple and versatile with cut to length probes	

Controllers see page 64 – 69

PRO	PRO
EL 6	**EL 8**
	
Conductive liquids	Conductive liquids
up to 50 m	up to 3 m
Partly insulated cable with max. four switching points	Partly insulated rod with one switching point
316Ti, PP/FEP	316Ti, PE
Thread G1½	Thread G½
-20 … +100 °C	-10 … +60 °C
-1 … +6 bar (-100 … +600 kPa)	-1 … +6 bar (-100 … +600 kPa)
VEGATOR 131, VEGATOR 132	VEGATOR 131, VEGATOR 132
–	–
–	–
✓ Simple and versatile with cut to length probes	✓ Easy installation in confined spaces through small sensor dimensions

Process pressure



Process pressure measurement

Pressure transmitters measure the pressure of liquids, gases and vapours in pipes or closed vessels. The pressure of the measured medium acts on a pressure measuring cell, which converts it into an electronic signal.

The process pressure transmitters are ideal for detecting the relative or absolute pressure in applications with condensation or rapid temperature changes.

The advantages

- ✓ Pressure transmitters handle a very wide measuring range: from vacuum to extreme pressures
- ✓ High operational reliability through integrated self-monitoring
- ✓ High overload resistance, long-term stability and thermal shock compensation of the dry, ceramic-capacitive measuring cell

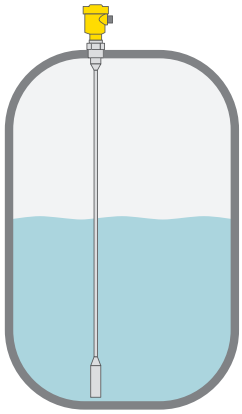
	BASIC **VEGABAR 18**	BASIC **VEGABAR 19**
		
Application	Liquids and gases	Liquids and gases, even at high pressure
Deviation	0.5 %	0.5 %
Measuring cell Measuring cell seal	Ceramic measuring cell FKM	Metallic measuring cell –
Process fitting	½" standard thread, 316L	½", 1", standard thread, optional front-flush; 316L
Process temperature	-40 … +100 °C	-40 … +100 °C
Measuring range	Relative 0 … +25 bar (0 ... +2500 kPa)	Relative 0 … +100 bar (0 ... +10000 kPa)
Overload resistance	Up to 150-fold measuring range	Up to 4-fold measuring range
Signal output	Two-wire: 4 … 20 mA	Two-wire: 4 … 20 mA
Approvals	–	–
Benefit	✓ Low-cost version with extremely small installation dimensions	✓ Universally applicable due to fully welded metallic measuring cell construction

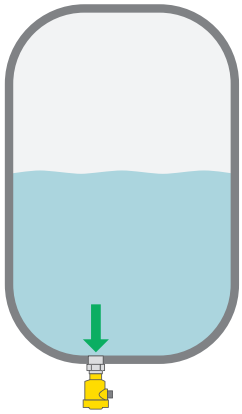
Process pressure

	BASIC **VEGABAR 28**	BASIC **VEGABAR 29**	BASIC **VEGABAR 38**
			
Application	Liquids and gases	Liquids and gases, even at high pressure	Liquids and gases
Deviation	0.3 %	0.3 %	0.3 %
Measuring cell	Ceramic measuring cell	Metallic measuring cell	Ceramic measuring cell
Measuring cell seal	FKM, EPDM, FFKM	–	FKM, EPDM, FFKM
Process fitting	Thread, optionally with front-flush and hygienic fittings, universal connection for hygienic adapter; 316L, Duplex, PEEK	Optional front-flush thread and hygienic fittings, universal connector for hygiene adapter; 316L	Optional front-flush thread and hygienic fittings, universal connector for hygiene adapter; 316L, Duplex, PEEK
Process temperature	-40 … +130 °C/ 1 h @ +135 °C steam	-40 … +130 °C/ 1 h @ +135 °C steam	-40 … +130 °C/ 1 h @ +135 °C steam
Measuring range	Absolute and relative -1 ... +60 bar (-100 ...+6000 kPa)	Absolute and relative -1 ... +1000 bar (-100 ... +100000 kPa)	Absolute and relative -1 ... +60 bar (-100 ...+6000 kPa)
Overload resistance	up to 150-fold measuring range	up to 4-fold measuring range	up to 150-fold measuring range
Signal output	Two-wire: 4 ... 20 mA Three-wire: IO-Link, transistor (PNP/NPN), 4 ... 20 mA (active)	Two-wire: 4 ... 20 mA Three-wire: IO-Link, transistor (PNP/NPN), 4 ... 20 mA (active)	Two-wire: 4 ... 20 mA Three-wire: IO-Link, transistor (PNP/NPN), 4 ... 20 mA (active)
Display/adjustment	PACTware/DTM, VEGA Tools app, IODD, Bluetooth, full-colour multidirectional (360°) switching status indication	PACTware/DTM, VEGA Tools app, IODD, Bluetooth, full-colour multidirectional (360°) switching status indication	Integrated on-site display and 3-key operation, PACTware/DTM, VEGA Tools app, IODD, Bluetooth, full-colour multidirectional (360°) switching status indication
Approvals	ATEX, UKEX, IECEx, cULus, NEPSI, EAC, INMETRO, IA, CCOE, TIIS, KOSHA/KTL, SEPRO, CE 1935/2004, FDA, China FDA, Ship	ATEX, UKEX, IECEx, cULus, NEPSI, EAC, INMETRO, IA, CCOE, TIIS, KOSHA/KTL, SEPRO, CE 1935/2004, FDA, 3-A, EHEDG, China FDA, Ship	ATEX, UKEX, IECEx, cULus, NEPSI, EAC, INMETRO, IA, CCOE, TIIS, KOSHA/KTL, SEPRO, CE 1935/2004, FDA, China FDA, Ship
Benefit	✓ Highly visible, adjustable full-colour multidirectional (360°) switch status indication	✓ Simple integration into control systems through IO-Link communication	✓ Simple setup thanks to large on-site display with VDMA operation and additional texts

BASIC	PRO	PRO	PRO
VEGABAR 39	**VEGABAR 81**	**VEGABAR 82**	**VEGABAR 83**
			
Liquids and gases, even at high pressure	Liquids and gases with high temperatures	Liquids and gases	Liquids and gases also with high pressures
0.3 %	0.1 %	0.2 %; 0.1 %; 0.05 %	0.2 %; 0.1 %; 0.075 %
Metallic measuring cell –	Chemical seal system –	CERTEC®, MINI-CERTEC® FKM, EPDM, FFKM	Piezoresistive/thin film strain gauge/METEC® –
Optional front-flush thread and hygienic fittings, universal connector for hygiene adapter; 316L	Thread from G½, ½ NPT, flanges from DN 25, 1", hygienic fittings of 316L, Alloy, Duplex, Tantalum, gold	Thread from G½, ½ NPT, flanges from DN 15, ½", hygienic fittings; 316L, Alloy, Duplex, PVDF, PEEK	Thread from G¼, ¼ NPT, flanges from DN 25, 1", hygienic fittings; 316L, Alloy
-40 … +130 °C/ 1 h @ +135 °C steam	-90 … +400 °C	-40 … +150 °C	-40 … +200 °C
Absolute and relative -1 ... +1000 bar (-100 ... +100000 kPa)	Absolute and relative -1 … +1000 bar (-100 … +100000 kPa)	Absolute and relative -1 … +100 bar (-100 … +10000 kPa)	Absolute and relative -1 … +1000 bar (-100 … +100000 kPa)
up to 4-fold measuring range	Depending on chemical seal system	up to 200-fold measuring range	up to 150-fold measuring range
Two-wire: 4 ... 20 mA Three-wire: IO-Link, transistor (PNP/NPN), 4 ... 20 mA (active)	4 … 20 mA, 4 … 20 mA/HART, Profibus PA, Foundation Fieldbus, Modbus	4 … 20 mA, 4 … 20 mA/HART, Profibus PA, Foundation Fieldbus, Modbus	4 … 20 mA, 4 … 20 mA/HART, Profibus PA, Foundation Fieldbus, Modbus
Integrated on-site display and 3-key operation, VEGA Tools app, IODD, Bluetooth, full-colour multidirectional (360°) switching status indication	PLICSCOM, PACTware/DTM, VEGADIS 81, VEGADIS 82, VEGA Tools app	PLICSCOM, PACTware/DTM, VEGADIS 81, VEGADIS 82, VEGA Tools app	PLICSCOM, PACTware/DTM, VEGADIS 81, VEGADIS 82, VEGA Tools app
ATEX, UKEX, IECEx, cULus, NEPSI, EAC, INMETRO, IA, CCOE, TIIS, KOSHA/KTL, SEPRO, CE 1935/2004, FDA, 3-A, EHEDG, China FDA, Ship	ATEX, UKEX, IECEx, FM, CSA, NEPSI, EAC (GOST), INMETRO, CCOE, SEPRO, Overfill protection, Ship, SIL2/3, CE 1935/2004, FDA	ATEX, UKEX, IECEx, FM, CSA, NEPSI, EAC (GOST), INMETRO, CCOE, SEPRO, Overfill protection, Ship, SIL2/3, CE 1935/2004, FDA, 3-A	ATEX, UKEX, IECEx, FM, CSA, NEPSI, EAC (GOST), INMETRO, CCOE, SEPRO, Overfill protection, Ship, SIL2/3, CE 1935/2004, FDA, 3-A, EHEDG
✓ Simple setup thanks to large on-site display with VDMA operation and additional texts	✓ Optimal process adaptation through selection of various wetted materials, media and temperature couplers	✓ High resistance to abrasion and corrosion through use of high-quality Sapphire Ceramic®	✓ Reliable measurement even at high pressures

Hydrostatic





Hydrostatic pressure measurement

The measuring cell of the pressure transmitter detects minute changes in hydrostatic pressure, which increases or decreases depending on the filling level. The acting pressure is converted into an output signal by the integrated electronics.

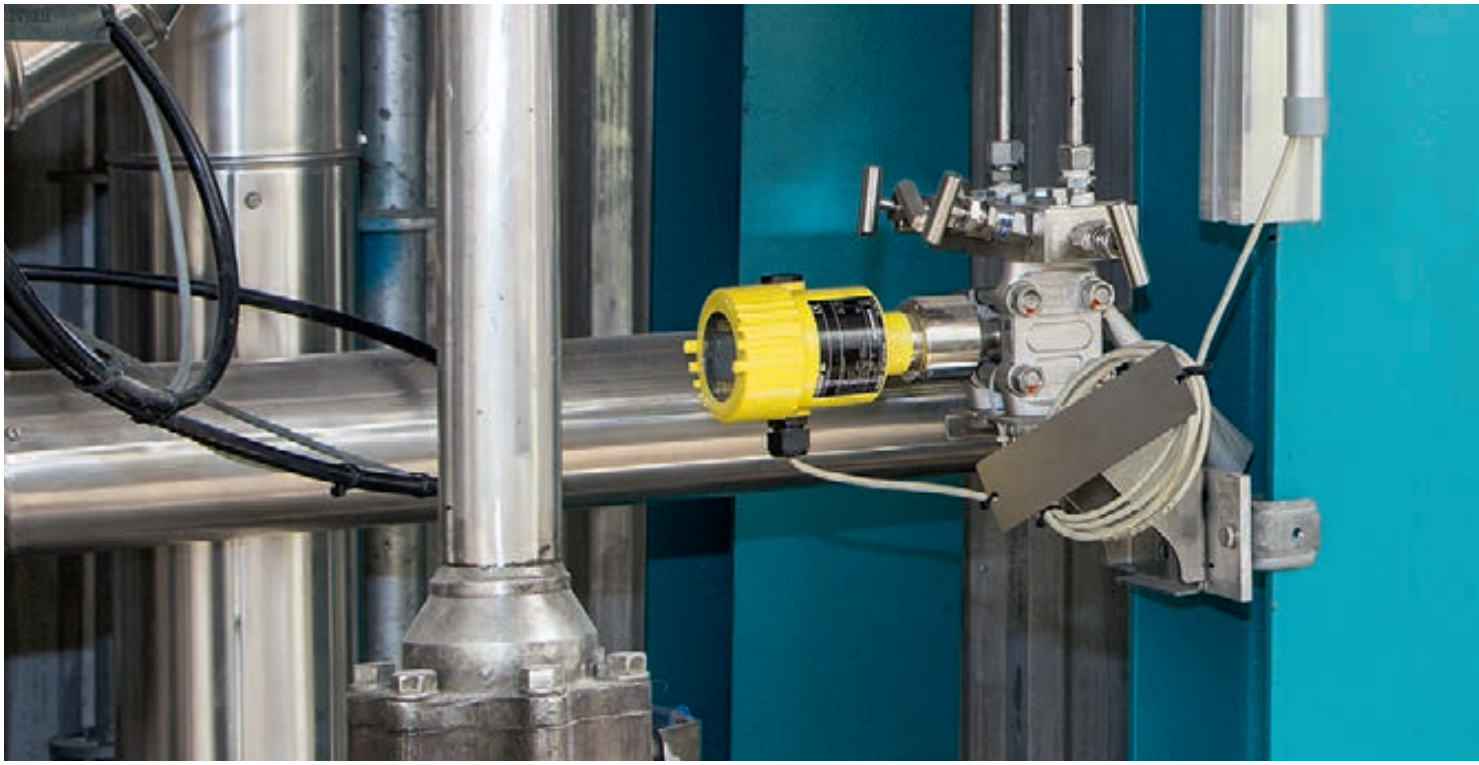
Ceramic-capacitive and metallic measuring cells are used to detect the pressure in hydrostatic pressure measurement.

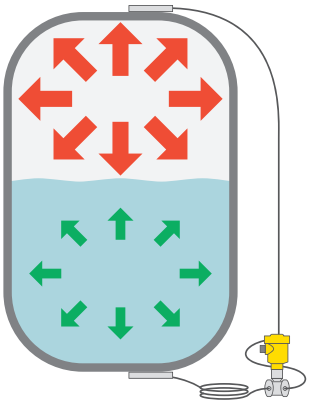
The advantages

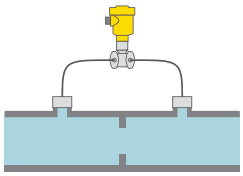
- ✓ The temperature of the medium can also be measured
- ✓ Hydrostatic pressure measurement is not affected by foam generation or vessel internals
- ✓ Precise adaptation to the process through selection of appropriate measuring cells and housing materials

	PRO **VEGAWELL 52**	PRO **VEGABAR 86**	PRO **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 **Measuring cell seal**	CERTEC®/MINI-CERTEC® FKM, EPDM, FFKM	CERTEC® FKM, EPDM, FFKM	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	Absolute and relative 0 … +60 bar (0 … +6000 kPa)	Absolute and relative 0 … +25 bar (0 … +2500 kPa)	Absolute and relative 0 … +25 bar (0 … +2500 kPa)
Overload resistance	up to 150-fold measuring range	up to 200-fold measuring range	up to 150-fold measuring range
Signal output	4 … 20 mA 4 … 20 mA/HART + Pt100	4 … 20 mA, 4 … 20 mA/HART, Profibus PA, Foundation Fieldbus, Modbus	4 … 20 mA, 4 … 20 mA/HART, Profibus PA, Foundation Fieldbus, Modbus
Display/adjustment	PACTware/DTM, VEGADIS 82	PLICSCOM, PACTware/DTM, VEGADIS 81, VEGADIS 82, VEGA Tools app	PLICSCOM, PACTware/DTM, VEGADIS 81, VEGADIS 82, VEGA Tools app
Approvals	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, Overfill protection, Ship	ATEX, UKEX, IECEx, FM, CSA, NEPSI, EAC (GOST), UKR Sepro, INMETRO, CCOE, SEPRO, Overfill protection, Ship, SIL2/3	ATEX, UKEX, IECEx, FM, CSA, NEPSI, EAC (GOST), UKR Sepro, INMETRO, CCOE, SEPRO, Overfill protection, Ship, SIL2/3
Benefit	✓ Versatile application thanks to robust housing and cable design	✓ High plant availability through very high overload and vacuum resistance of the ceramic measuring cell	✓ High measurement certainty even with quickly changing process temperatures

Differential pressure







Differential pressure measurement

In differential pressure measurement, different pressures act on an oil-filled, differential pressure measuring cell from two sides. The instrument converts the differential pressure into an electronic signal.

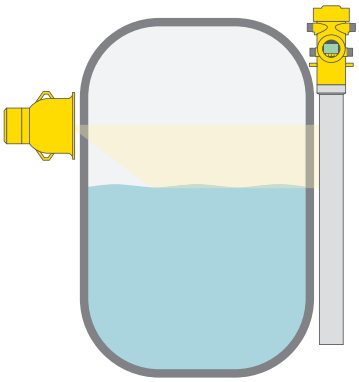
Pressure, level, density and flow of liquids, suspensions, gases and vapours can be measured using the principle of differential pressure.

The advantages

- ✓ Wide application spectrum thanks to large selection of measuring ranges and process fittings
- ✓ Differential pressure transmitters can detect differential pressures of just a few mbar
- ✓ With a chemical seal installed, media with extreme temperatures can also be safely and reliably measured

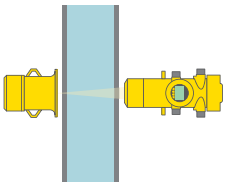
	PRO **VEGADIF 85**	PRO **Chemical seal CSB/CSS**	PRO **Electronic differential pressure**
			
Application	Liquids and gases	Liquids and gases	Liquids and gases, even at high pressures and temperatures
Deviation	< ±0.065 %	–	0.2 %; 0.1 %; 0.05 %
Measuring cell	Metallic measuring cell	–	Depending on the sensor of VEGABAR series 80
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	Thread from G¼, ¼ NPT, flanges from DN 25, 1", hygienic fittings; 316L, Duplex steel, PVDF, Alloy, PEEK
Process temperature	-40 … +105 °C	-40 … +400 °C	-40 … +400 °C
Measuring range	+0.01 … +40 bar (+1 … +4000 kPa)	-16 … +16 bar (-1600 … +1600 kPa)	±0.025 … ±1000 bar (±2.5 … ±100000 kPa)
Overload resistance	up to 400 bar	up to 400 bar	up to 200-fold measuring range
Signal output	4 … 20 mA, 4 … 20 mA/HART, Profibus PA, Foundation Fieldbus	–	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus
Display/adjustment	PLICSCOM, PACTware/DTM, VEGADIS 81, VEGADIS 82, VEGA Tools app	–	PLICSCOM, PACTware/DTM, VEGADIS 81, VEGADIS 82, VEGA Tools app
Approvals	ATEX, UKEX, IECEx, CSA, EAC (GOST), INMETRO, Overfill protection, Ship, SIL2/3	In combination with VEGADIF 85	ATEX, UKEX, IECEx, FM, CSA, NEPSI, EAC (GOST), INMETRO, CCOE, SEPRO, Overfill protection, Ship, SIL2/3
Benefit	✓ Measurement of extremely low differential pressures through high-precision measurement data acquisition	✓ High chemical resistance through choice of appropriate diaphragm materials	✓ Exact differential pressure measurement without capillary lines

Radiation-based



Non-contact measurement with radiation-based measuring principle

Radiation-based measurement is based on focussed gamma rays, i.e. radiation, emitted by a minimally radioactive isotope. The sensor, which is mounted on the opposite side of the container, receives this radiation. Because gamma rays are attenuated when penetrating matter, the highly sensitive sensor can calculate the level, limit level, density or mass flow from the intensity of the incoming radiation recieved.



The advantages

- ✓ Maximum operational reliability even under the toughest operating conditions
- ✓ Measurement independent of pressure, temperature and product toxicity or corrosiveness
- ✓ Measuring system can be installed externally and set up during ongoing production

	PRO FIBERTRAC 31	PRO FIBERTRAC 32	PRO 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 ø 42 mm	Sensor with flexible plastic detector ø 60 mm	Sensor with PVT rod detector
Process pressure	any	any	any
Process temperature	any	any	any
Non-repeatability	≤0.5 %	≤0.5 %	≤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/DTM, VEGADIS 81, VEGADIS 82, VEGA Tools app	PLICSCOM, PACTware/DTM, VEGADIS 81, VEGADIS 82, VEGA Tools app	PLICSCOM, PACTware/DTM, VEGADIS 81, VEGADIS 82, VEGA Tools app
Approvals	ATEX, UKEX, IECEx, NEPSI, FM, CSA, EAC (GOST), INMETRO, CCOE, TIIS, KOSHA/KTL, SIL2	ATEX, UKEX, IECEx, NEPSI, FM, CSA, EAC (GOST), INMETRO, CCOE, TIIS, KOSHA/KTL, SIL2	ATEX, UKEX, IECEx, NEPSI, FM, CSA, EAC (GOST), INMETRO, CCOE, TIIS, KOSHA/KTL, SIL2
Benefit	✓ Simple installation on round and conical vessels via flexible detector	✓ Cost savings through the use of only one sensor for a measuring range of up to 7 m and reduces source size needed	✓ Maximum accuracy through PVT detector

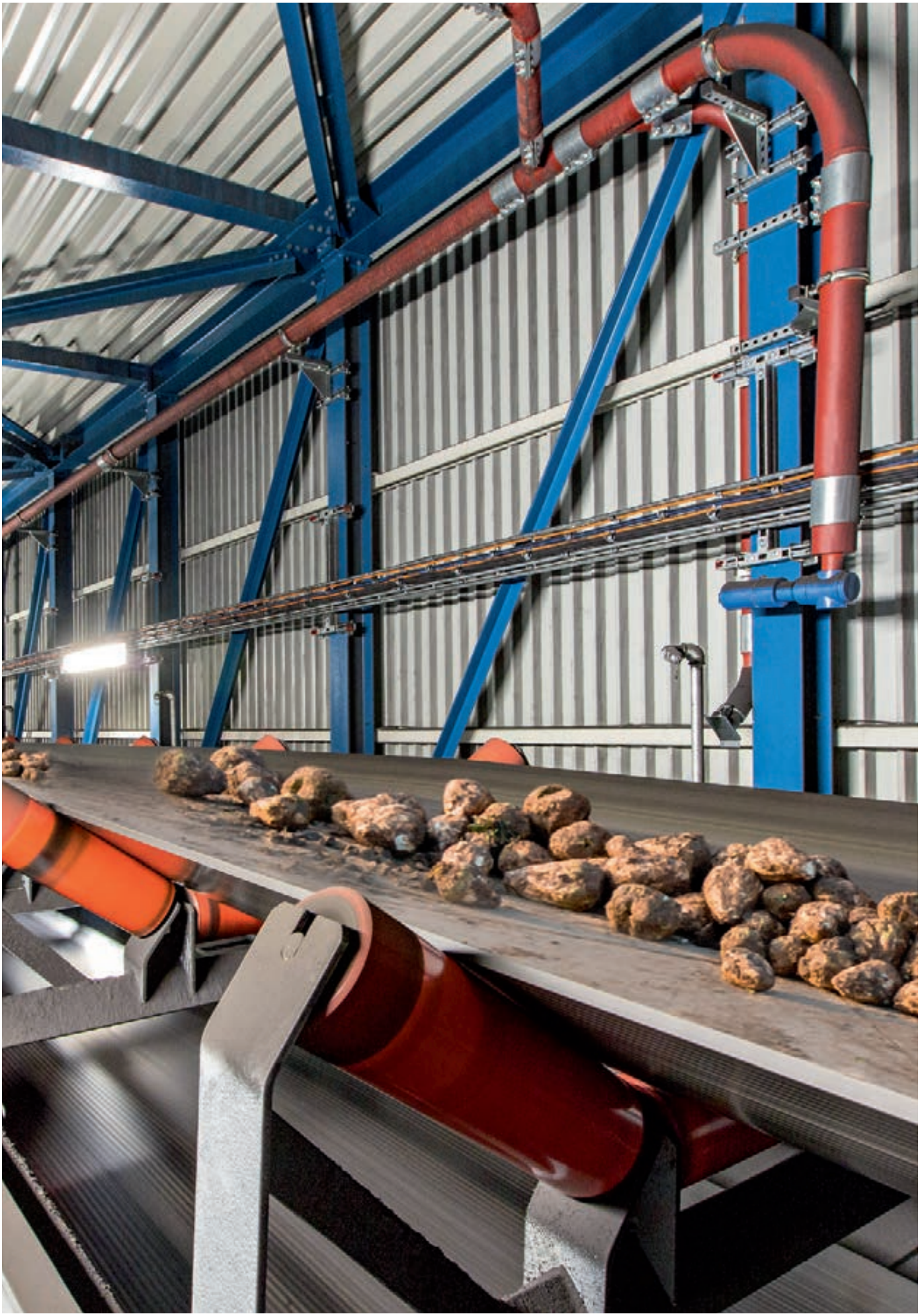
Radiation-based

	PRO **POINTRAC 31**	PRO **MINITRAC 31**	PRO **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 2800 mm (conveyor width)
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
Non-repeatability	≤0.5 %	≤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/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/DTM, VEGADIS 81, VEGADIS 82, VEGA Tools app	PLICSCOM, PACTware/DTM, VEGADIS 81, VEGADIS 82, VEGA Tools app	PLICSCOM, PACTware/DTM, VEGADIS 81, VEGADIS 82, VEGA Tools app
Approvals	ATEX, UKEX, IECEx, NEPSI, FM, CSA, EAC (GOST), INMETRO, CCOE, TIIS, KOSHA/KTL, SIL2	ATEX, UKEX, IECEx, NEPSI, FM, CSA, EAC (GOST), INMETRO, CCOE, TIIS, KOSHA/KTL, SIL2	ATEX, UKEX, IECEx, NEPSI, FM, CSA, EAC (GOST), INMETRO, CCOE, TIIS, KOSHA/KTL
Benefit	✓ Reliable limit level detection by a PVT scintillator eliminates the need for early replacement of the source	✓ Simple, retro installation, even in confined spaces, during ongoing production processes thanks to compact design	✓ Wear-free due to non-contact measurement

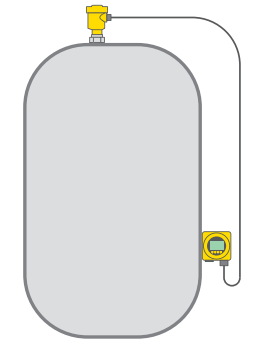
	VEGASOURCE 31	VEGASOURCE 35	SHLD1
			
Application	Source container for radioactive isotope	Source container for radioactive isotope	Source container for radioactive isotope
Measuring range	5°, 20° (±10°), 40° (±20°)	5°, 20° (±10°), 40° (±20°)	0°, 15°, 30°, 45°, 60° (±30°)
Version	Cs-137: For activities 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
Non-repeatability	–	–	–
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	Optionally with ON/OFF position switch	Optionally with ON/OFF position switch	Optionally with ON/OFF position switch
Display/adjustment	manual, pneumatic	manual, pneumatic	manual, pneumatic
Approvals	–	–	–
Benefit	✓ Reliable shielding allows use without control areas		✓ Ideal for mass flow determiniation with an aperture angle of 45° and 60°

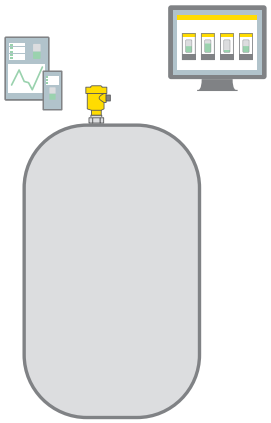
Radiation-based

	VEGASOURCE 81	VEGASOURCE 82	VEGASOURCE 83
			
Application	Source container for radioactive isotope	Source container for radioactive isotope	Source container for radioactive isotope
Measuring range	5°, 30°, 40° (± 20°), 45°, 60° (± 30°)	5°, 30°, 40° (± 20°), 45°, 60° (± 30°)	5°, 30°, 40° (± 20°), 45°, 60° (± 30°)
Version	Cs-137: For activities up to 740 MBq (20 mCi)	Cs-137: For activities up to 11 GBq (300 mCi)	Cs-137: For activities up to 185 GBq (5000 mCi)
Process pressure	any	any	any
Process temperature	any	any	any
Non-repeatability	–	–	–
Mounting	Mounting plate 152 x 152 mm (6 x 6")	Mounting plate 216 x 216 mm (8.5 x 8.5")	Mounting plate 315 x 315 mm (12.4" x 12.4")
Signal output	Optionally with ON/OFF position switch	Optionally with ON/OFF position switch	Optionally with ON/OFF position switch
Display/adjustment	manual, pneumatic	manual, pneumatic	manual, pneumatic
Approvals	–	–	–
Benefit	✓ Minimal space requirement due to compact design with low weight (11 kg)	✓ Trustworthy shielding allows use without control areas (34 kg)	✓ Trustworthy shielding allows use without control areas (82 kg)



Software and display instruments





Display, transmit and evaluate measured values

With our selection of display instruments, adjustment devices and software, measured values are reliably transmitted and every application optimally integrated – regardless of the distance.

The choice is yours: Should display and adjustment take place directly on site local to the sensor? Then you'll be supported by the pluggable display and adjustment module PLICSCOM, or the external adjustment unit VEGADIS. Over short distances up to a maximum of 50 m, Bluetooth can be used. Over long distances, you can receive the data via worldwide mobile networks with the external radio-telemetry unit PLICSMOBILE. Or you can reliably plan and visualise your product stocks anywhere with VEGA Inventory System.

Depending on your requirements, the options range from simple on-site adjustment on the sensor display to laptop, tablet or smartphone.

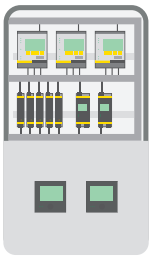
	DTM Collection	VEGA Inventory System	VEGA Tools app
			
Application	Adjustment software for configuration, parameter adjustment, documentation and diagnosis for field devices	System for inventory monitoring as well as remote enquiry and visualization of measurement and location data	App for wireless configuration, parameter adjustment and diagnosis of field devices
Recommended operating systems	Windows 8 Windows 10 Windows 11	▪ VEGA Hosting Service: independent of operating system ▪ Local server: MS Windows Server 2016 or 2019 as well as MS SQL Server 2014 or 2019	from iOS 8 from Android 5.1
Adjustment	Via computer	With any current web browser	With smartphone With tablet
Versions	▪ Standard version ▪ Full version	▪ VEGA Hosting Service (VH) ▪ Local server (LS)	–
Technology	FDT/DTM	Web-based	Bluetooth/App
Benefit	✓ User-friendly, standardized adjustment program for the PC ✓ Extremely user friendly thanks to graphical user interface, project storage and documentation ✓ Extended functional range as full version with additional features such as VEGA DataViewer, tank calculation, echo curve storage and advanced diagnostics	✓ Simple centralized inventory monitoring and management ✓ More transparency through connected assets and facilities ✓ Avoidance of production stoppages through increased supply security ✓ Reduction of transport costs through optimized replenishment planning	✓ Simple, intuitive and unique adjustment for all plics® sensors as well as sensors with integrated Bluetooth ✓ Can be used for instruments as from 2002 through retrofitting of PLICSCOM with Bluetooth, without software update of the sensor ✓ Secure connection through authentication and encrypted commnunication

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 in the junction box	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	Standard interface on the sensor Bluetooth (optional) Magnetic pen adjustment (optional)	–
Lighting	–	Integrated	Red-green or yellow-green
Protection	IP40	IP66/IP67 in the sensor	IP66/IP67 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, UKEX, IECEx, EAC (Gost), UKR Sepro	–	–
Benefit	✓ Universally applicable, because compatible with all communication-capable VEGA instruments ✓ Simple connection via supplied adapter ✓ Fastening by means of hooks or magnets	✓ Good readability through graphics-capable LCD display and built-in lighting ✓ Simple and reliable handling via 4-button operation and intuitive menu structure with plain text display ✓ Universally applicable, because compatible with all plics® sensors, independent of the measuring principle	✓ Clearly visible switching status indication, even in bright daylight ✓ Minimal installation time, as no external wiring is required ✓ Universally applicable ✓ High protection category via integrated module in plics® sensor housing

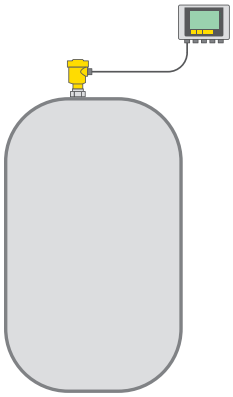
VEGADIS 81	VEGADIS 82	VEGADIS 176
		
External measured value indication and adjustment of plics® sensors	External measured value indication and adjustment of 4 ... 20 mA/HART sensors	Switching cabinet measured value indication of 4 … 20 mA/HART sensors
All plics® sensors	4 … 20 mA/HART sensors	4 … 20 mA/HART sensors
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 (optional) Magnetic pen adjustment (optional)	4 … 20 mA 4 … 20 mA/HART	4 … 20 mA 4 … 20 mA/HART
Integrated	Integrated	Integrated
IP66/IP67	IP66/IP67	IP65 front, IP20 rear
Via standard interface on sensor	Via 4 … 20 mA current loop	Via 4 … 20 mA current loop
–	Standard < 2.0 V, with lighting < 3.2 V	Standard < 1 V, with lighting < 2.9 V
ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, NEPSI, INMETRO, KOSHA	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, NEPSI, INMETRO, KOSHA	ATEX, UKEX, IECEx, FM, CSA
✓ Measured value display and sensor operation at easily accessible locations (up to 50 m away from the sensor)	✓ Measured value display and sensor operation at easily accessible locations (up to 1500 m away from the sensor)	✓ Convenient measured value display in accessible places (up to 1500 m away from the sensor) ✓ Excellent visibility via large display

Controllers



Sensors gather measured values in a vessel and forward them to the controller. By adjusting the settings of the controller, the measured values can be adapted to the specific control requirements of the application.

The values appear in the display and can be output through the integrated current outputs that are used to control external displays or higher-level control devices.



The advantages

- ✓ Versatile application thanks to scalable outputs
- ✓ Simple integration into higher-level systems
- ✓ Easy installation with carrier rails

	VEGAMET 841/842	VEGAMET 861/862
		
Application	Measured value indication, limit value monitoring, pump control, flow measurement in open channels	Measured value indication, limit value monitoring, pump control, flow measurement in open channels, data logger
Input	1/2x 4 … 20 mA sensor input	1/2x 4 … 20 mA/HART sensor input 2/4x digital input
Output	1/2x 0/4 … 20 mA current output 3x operating relay 1x fail safe relay (instead of an operating relay)	1/3x 0/4 … 20 mA current output 4/6x operating relay 1x fail safe relay (instead of an operating relay)
Operating voltage	24 ... 65 V DC 100 ... 230 V AC, 50/60 Hz	24 ... 65 V DC 100 ... 230 V AC, 50/60 Hz
Mounting	Wall/pipe mounting in the field	Wall/pipe mounting in the field
Display	LCD matrix display, black and white backlight with colour change according to status, relay or measured value	LCD matrix display, black and white backlight with colour change according to status, relay or measured value
Adjustment	On-site adjustment with 4 keys, smartphone/tablet/PC via Bluetooth (PACTware/DTM or VEGA Tools app)	On-site adjustment with 4 keys, smartphone/tablet/PC via Bluetooth (PACTware/DTM or VEGA Tools app)
Approvals	ATEX, UKEX, IECEx, cULus, NEPSI, EAC (GOST), INMETRO, TIIS, KOSHA/KTL, SEPRO, CCOE, IA, Overfill protection	ATEX, UKEX, IECEx, cULus, NEPSI, EAC (GOST), INMETRO, TIIS, KOSHA/KTL, SEPRO, CCOE, IA, Overfill protection, mcerts
Benefit	✓ Clear, easy-to-read (at distance), user-programmable display ✓ Fast setup thanks to simple intuitive menu navigation and application wizards ✓ Secure, user-friendly wireless operation via Bluetooth with smartphone, tablet or PC	

Controllers

	VEGAMET 341/342	VEGAMET 391
		
Application	Measured value indication, limit value monitoring, pump control, flow measurement in open channels	Measured value indication and simple control functions, remote data retrieval, data transmission optionally via Ethernet
Input	1/2x 4 … 20 mA sensor input	1x 4 … 20 mA/HART sensor input
Output	1/2x 0/4 … 20 mA current output 3x operating relay 1x fail safe relay (instead of operating relay)	1x 0/4 … 20 mA current output 6x operating relay 1x fail safe relay (instead of operating relay) 1x Ethernet (optional) 1x RS232 (optional)
Operating voltage	24 ... 65 V DC 100 ... 230 V AC, 50/60 Hz	24 … 65 V DC 24 … 230 V AC, 50/60 Hz
Mounting	Panel mounting	Front panel or wall mounting Carrier rail 35 x 7.5 mm acc. to EN 50022
Display	LCD matrix display, black and white backlight with colour change according to status, relay or measured value	LCD matrix display, background lighting
Adjustment	On-site adjustment with rotary knob/push-button, smartphone/tablet/PC via Bluetooth (PACTware/DTM or VEGA Tools app)	On-site adjustment with 4 keys, PACTware/DTM
Approvals	ATEX, UKEX, IECEx, cULus, EAC (GOST), SEPRO, WHG, Ship	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, SIL2
Benefit	✓ Clear, easy-to-read (at distance), user-programmable display ✓ Fast setup thanks to simple intuitive menu navigation and application wizards ✓ Secure, user-friendly wireless operation via Bluetooth with smartphone, tablet or PC	✓ Clear display, readable from a distance ✓ Fast setup and commissioning via simple menu guidance

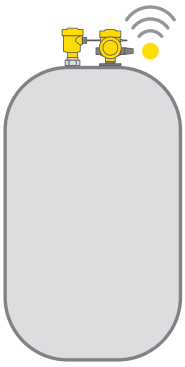
VEGAMET 141/142	VEGAMET 624	VEGAMET 625	VEGASCAN 693
			
Measured value visualisation, limit value monitoring, pump control, flow measurement in open channels	Measured value indication, simple control functions as well as remote enquiry of measured values for one 4 ... 20 mA/HART sensor, data transmission optionally via Ethernet	Measured value indication, simple control functions as well as remote enquiry of measured values for two HART sensors, data transmission optionally via Ethernet	Measured value indication and remote enquiry of measured values for up to 15 HART sensors, data transmission optionally via Ethernet
1/2x 4 … 20 mA sensor input	1x 4 … 20 mA/HART sensor input	2x HART sensor input	15x HART sensor input
1/2x 0/4 … 20 mA current output 3x operating relay 1x fail safe relay (instead of operating relay)	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) 1x RS232 (optional)
24 ... 65 V DC 100 ... 230 V AC, 50/60 Hz	24 … 65 V DC 24 … 230 V AC, 50/60 Hz	24 … 65 V DC 24 … 230 V AC, 50/60 Hz	24 … 65 V DC 24 … 230 V AC, 50/60 Hz
Carrier rail 35 x 7.5 mm acc. to EN 50022	Carrier rail 35 x 7.5 mm acc. to EN 50022	Carrier rail 35 x 7.5 mm acc. to EN 50022	Carrier rail 35 x 7.5 mm acc. to EN 50022
LCD matrix display, black and white backlight with colour change according to status, relay or measured value	LCD matrix display, backlight	LCD matrix display, backlight	LCD matrix display, backlight
On-site adjustment with rotary knob/push-button, smartphone/ tablet/PC via Bluetooth (PACTware/ DTM or VEGA Tools app)	On-site adjustment with 4 keys, PACTware/DTM	On-site adjustment with 4 keys, PACTware/DTM	On-site adjustment with 4 keys, PACTware/DTM
ATEX, UKEX, IECEx, cULus, EAC (GOST), INMETRO, TISS, SEPRO, CCOE, IA, Overfill protection	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, Ship	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, Ship	ATEX, UKEX, IECEx, FM, CSA, EAC (GOST), UKR Sepro, Ship
✓ Compact design with display for on-site checking ✓ Fast setup and commissioning via simple menu navigation and application wizards ✓ Secure, user-friendly wireless operation via Bluetooth with smartphone, tablet or PC	✓ Display for on-site checking ✓ Fast setup and commissioning via simple menu navigation		

Controllers

	VEGATOR 111/112	VEGATOR 121/122
		
Application	Transmission of NAMUR signals for level signalling	Transmission of 8/16 mA signals for level signalling
Input	1/2x NAMUR sensor input	1/2x two-wire 8/16 mA sensor input
Output	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)
Operating voltage	24 … 65 V DC 24 … 230 V AC, 50/60 Hz	24 … 65 V DC 24 … 230 V AC, 50/60 Hz
Mounting	Carrier rail 35 x 7.5 mm acc. to EN 50022	Carrier rail 35 x 7.5 mm acc. to EN 50022
Display	1x LED voltage supply 1x LED switching signal per channel 1x LED false signal per channel	1x LED voltage supply 1x LED switching signal per channel 1x LED false signal per channel
Approvals	ATEX, UKEX, IECEx, cULus, CSA, NEPSI, EAC (GOST), CCOE, Overfill protection, Ship, SIL2	ATEX, UKEX, IECEx, cULus, CSA, NEPSI, EAC (GOST), CCOE, Overfill protection, Ship, SIL2
Benefit	✓ Rapid implementation of simple control functions ✓ Increased operational reliability through line monitoring and test button ✓ Easy installation via carrier rail	

	VEGATOR 131/132	VEGATOR 141/142
		
Application	Controller for conductive measuring probes level signalling	Controller for 4 ... 20 mA signals for level signalling
Input	1/2x conductive rod probe	1/2x 4 ... 20 mA sensor input
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	24 … 65 V DC 24 … 230 V AC, 50/60 Hz	24 … 65 V DC 24 … 230 V AC, 50/60 Hz
Mounting	Carrier rail 35 x 7.5 mm acc. to EN 50022	Carrier rail 35 x 7.5 mm acc. to EN 50022
Display	1x LED voltage supply 1x LED switching signal per channel 1x LED false signal per channel	1x LED voltage supply 1x LED switching signal per channel 1x LED false signal per channel
Approvals	ATEX, UKEX, IECEx, EAC (GOST), Overfill protection	ATEX, UKEX, IECEx, cULus, CSA, NEPSI, EAC (GOST), CCOE, Overfill protection, Ship, SIL2
Benefit	✓ Rapid implementation of simple control functions ✓ Increased operational reliability through line monitoring ✓ Easy installation via carrier rail	

Wireless communication



The wireless communication devices are used when measured values have to be transferred from remote monitoring stations or mobile tanks to data collection centers. They also enable wireless remote diagnostics and maintenance of the connected sensors.

The advantages

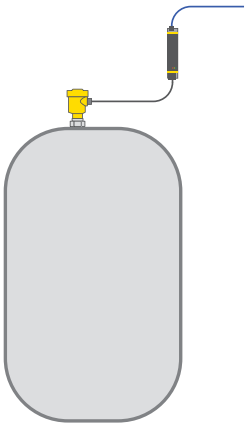
- ✓ Autonomous solution for data acquisition and transmission for IoT projects
- ✓ Simple setup and commissioning via app
- ✓ Integrated energy management
- ✓ Long service life thanks to LTE technology
- ✓ High data transmission security thanks to TLS

	PLICSMOBILE T81	PLICSMOBILE B81
		
Application	Remote data retrieval and remote parameterization for up to 15 HART sensors	Battery and accumulator unit for PLICSMOBILE
Input	1 to 15 HART sensors	1x solar panel
Output	VEGA Inventory System, e-mail, SMS	Power supply of PLICSMOBILE and the connected sensors
Display/adjustment	PACTware/DTM / VEGA Tools app	–
Technology	2G/3G/4G wireless Bluetooth	–
Mounting	Wall or tube mounting	Wall or tube mounting
Temperature range	-20 … +65 °C	Battery: -10 … +50 °C, -40 … +80 °C (lithium) Battery pack: -20 … +50 °C
Voltage supply	9.6 … 32 V DC	Battery: 4x 1.5 V 4x 3.6 V (lithium) Battery pack: 4x 1.2 V
Approvals	–	–
Benefit	✓ Economical solution for multiple measuring points	✓ Long-life battery/accumulator operation without mains power supply

Wireless communication

	Wireless router	SignalFire Ranger	PLICSMOBILE S81
			
Application	For connecting to the Internet, for controllers with Ethernet interface	Remote data retrieval for 4 … 20 mA and digital sensors	Solar panel for charging the PLICSMOBILE B81
Input	Controllers with Ethernet interface	1x analogue: 4 … 20 mA or 1 … 5 V DC 2x digital: 2 kHz max.	–
Output	VEGA Inventory System, e-mail	1x relay: 2 A @ 30 V DC; 0,3 A @ 110 V AC; 0.5 A @ 125 V AC Sensor: 13/18 V; 60 mA max.	17.2 V … 21.5 V DC max. 1.16 A/20 W
Display	6x LED status indicators	–	–
Technology	2G/3G/4G wireless	LTE CAT M1/NB-IoT	–
Mounting	Wall mounting, carrier rail 35 x 7.5 mm according to EN 50022	Tube mounting ½" NPT	Mast holder with adjusting screws for inclination angle
Temperature range	-40 ... +75 °C	-40 … +85 °C	-40 … +85 °C
Power supply	9 ... 36 V DC	4x 3.6 V DC Lithium Thionyl Chloride batteries	–
Approvals	–	cETLus	–
Benefit	✓ Economical solution for connecting multiple controllers via LAN	✓ Autonomous solution for remote data retrieval from analogue or digital sensors	✓ Simple installation options through the use of commercially available solar modules

Separating and protective instruments



Separating instruments

Separators separate intrinsically safe from non-intrinsically safe circuits. Distinguishing features are the type of power supply and the size of Ex-specific characteristics.

These devices are used in all applications where explosion protection regulations must be complied with. In addition to powering the sensors in the field, they provide galvanic isolation from the connected PLC or process control system.

The advantages

- ✓ Reliable separation of intrinsically safe and non-intrinsically safe circuits
- ✓ Simple installation because no additional power supply is required
- ✓ Simple mounting with carrier rails

	VEGATRENN 141/142	VEGATRENN 151/152
		
Application	Separator for 4 … 20 mA/HART sensors	Separator for 4 … 20 mA/HART sensors
Sensors	4 … 20 mA	4 … 20 mA
Input and sensor power supply	1/2x 4 ... 20 mA/HART sensor input	1/2x 4 ... 20 mA/HART sensor input
Output	1/2x 4 ... 20 mA	1/2x 4 ... 20 mA
Operating voltage	VEGATRENN 141: 24 … 65 V DC 24 … 230 V AC, 50/60 Hz VEGATRENN 142: 24 … 31 V DC	Via 4 … 20 mA current loop
Mounting	Carrier rail 35 x 7.5 mm acc. to EN 50022	Carrier rail 35 x 7.5 mm acc. to EN 50022
Voltage loss	–	4 mA < 3 V 20 mA < 5 V
Approvals	ATEX, UKEX, IECEx, cULus, EAC (GOST), UKR Sepro, NEPSI, Ship, SIL2	ATEX, UKEX, IECEx, cULus, EAC (GOST), UKR Sepro, NEPSI, Ship, SIL2
Benefit	✓ Secure power supply and reliable separation of intrinsically safe and non-intrinsically safe measuring circuits ✓ Complete HART permeability allows unrestricted access to sensor settings	✓ Reliable separation of intrinsically safe and non-intrinsically safe measuring circuits ✓ Simple installation, as no additional power supply is required

Separating and protective instruments

	B53-19/B61-300/B61-300 FI	B62-36G/B62-30W
		
Application	B53-19: Overvoltage arresters for conductive probes B61-300: Overvoltage arresters of supply and control cables B61-300FI: Overvoltage arresters of supply and control cables with FI protective circuits	B62-36G: Overvoltage arresters for two-wire circuits B62-30W: Overvoltage arresters for Profibus PA and Foundation Fieldbus circuits
Mounting	Carrier rail 35 x 7.5 mm acc. to EN 50022 or on carrier rail 32 mm acc. to EN 50035	Carrier rail 35 x 7.5 mm acc. to EN 50022 or on carrier rail 32 mm acc. to EN 50035
Operating voltage	B53-19: max. 19 V AC, 27 V DC B61-300/B61-300 FI: 100 … 300 V AC/DC, max. 16 A	B62-36G: 9.6 … 36 V DC, max. 450 mA B62-30W: 9 … 32 V DC, max. 450 mA
Nominal leak current	< 10 kA	< 10 kA
Protection	IP20	IP20
Temperature range	-40 … +60 °C	-40 … +60 °C
Approvals	–	ATEX, UKEX
Benefit	✓ High operational reliability even with impermissible voltage surges ✓ Simple mounting with carrier rails	

B63-48/B63-32	B81-35
	
B63-48: Overvoltage arresters for two-wire circuits B63-32: Overvoltage arresters for Profibus PA and Foundation Fieldbus circuits	Pluggable overvoltage arresters for supply and signal cables
Direct mounting in the cable entry of the field device	Pluggable to the plics® mains electronics of VEGAPULS series 60, VEGAFLEX series 80, VEGABAR series 80 and VEGADIS 82
B63-48: 9 ... 48 V DC B63-32: max. 32 V DC	max. 35 V DC
< 10 kA	< 10 kA
IP66	–
-40 … +85 °C	-40 … +85 °C
ATEX, UKEX	ATEX, UKEX, IECEx, EAC
✓ High operational reliability even with impermissible voltage surges ✓ Simple installation in the cable gland of the field device ✓ No additional, separate on-site assembly	✓ High operational reliability of the measuring point through surge protection ✓ Simple installation in the terminal compartment of the field device through compact design ✓ Easy retrofitting in already installed sensors

VEGA Grieshaber KG
Am Hohenstein 113
77761 Schiltach
Germany
Phone +49 7836 50-0
E-mail info.de@vega.com
www.vega.com

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