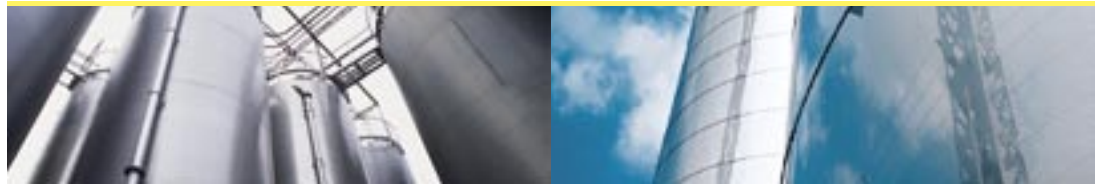


OHMART **VEGA**

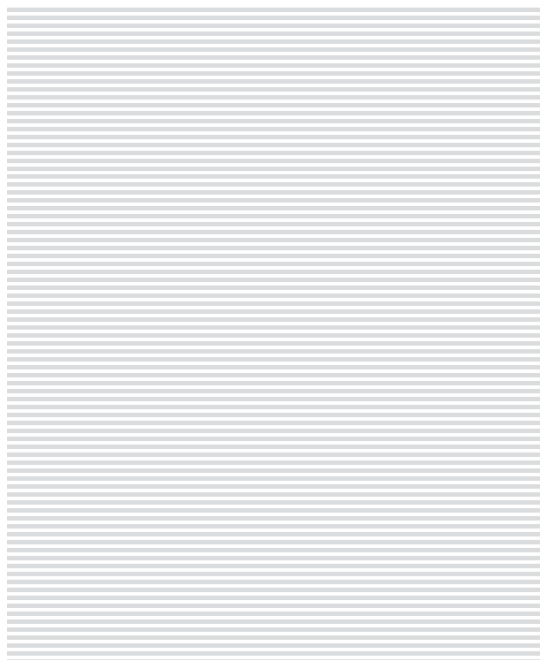
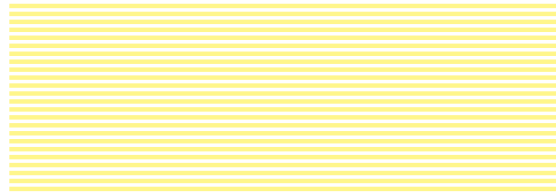


■ VEGAPULS

PULSE RADAR FOR LEVEL MEASUREMENT



VEGAPULS 60 SERIES





OHMART **VEGA**

■ VEGAPULS Level Sensors

Leadership In Radar

In 1997, Ohmart/VEGA changed the way process measurements were made by introducing the world's first 2-wire, loop-powered Radar gauge. Already an industry leader in nuclear based level measurement, Ohmart/VEGA became the world leader in Radar based process measurement with the invention of the VEGAPULS loop-powered Radar gauge. Today, with the introduction of plics®, Ohmart/VEGA is proud to continue its tradition of industry leadership, product development, and application expertise.

Driven to Perfection

Since the invention of its first Radar device to the present, Ohmart/VEGA has been driven to improve technology, reduce size, and increase performance. The advances made in microwave technology, and in housing and electronics packaging allow Ohmart/VEGA to lead the industry in Radar solutions for process management.

Installation Experience

From process reactors to bulk storage vessels, from open air applications to specialty measurements, Ohmart/VEGA leads the way in Radar technology. With over 75,000 worldwide installations that range from aircraft carriers to open channel flow, Ohmart/VEGA has the Radar system, and the application experience to meet your needs!

VEGAPULS 64
1991



VEGAPULS 50
1997



VEGAPULS 60
2003





■ Why Use **RADAR?**

Are you tired of re-calibrating the 0-point on pressure transmitters or dp cells?

Operating by using electromagnetic microwave pulses, the VEGAPULS Radar gauges will provide accuracy up to 3mm! In addition, once initially configured the gauges will never need to be recalibrated, and will never experience 0 point drift or fluctuations due to specific gravity, temperature, or pressure. This translates into less time spent on set-up, maintenance, and troubleshooting, as well as a worry free installation that will perform beyond expectation.

Benefits & Features

- **2-Wire/Loop Powered.**
- **Top Mounted:** No contact with process material.
- **FCC Approved** for Part 15 use .
- **Flexible mounting options** from NPT to ANSI Flanges to Sanitary connections.
- **Easy Set-up:** Typical system set up in less than 5 minutes! Easy to use programming module or computer software makes set-up easy, and fast.
- **No Re-calibration required.**
- **Low Maintenance:** With no moving parts, and no contact with the process material, the VEGAPULS Radar gauge will significantly reduce maintenance time and cost.
- **Accuracy:** 3mm and 5mm accuracy, repeatable to 1mm.

Industries

Radar systems can be applied in virtually any industry. The VEGAPULS excels at measurement in industries such as:

- Chemical
- Petrochemical
- Water and Wastewater
- Pulp and Paper
- Plastics
- Power
- Food and Beverage
- Cement
- Asphalt
- Marine
- Steel
- Mining
- And many more!



Microwave pulse signal transmitted to product surface.



Reflected pulse signal returned from product surface to sensor antenna.

Principle of OPERATION

PULSE: The sensor transmits energy in the form of microwave pulses. These pulses are directed toward a specific target that reflects the energy back to an antenna.

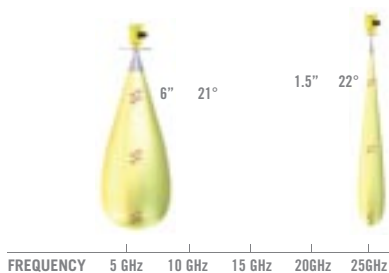
TARGET: The amount of energy that returns to the antenna depends on the reflective properties of the material being measured. Reflectivity can be determined by examining two characteristics: conductivity and dielectric constant (DK).

RETURN TO THE ANTENNA: The transit time of the microwave pulse that returns to the antenna is measured and used to calculate the distance to the target.

PROCESS CONDITIONS: Radar is a versatile technology designed to measure in the most challenging process conditions. Measurement success comes from selecting the right Radar gauge for the process conditions in the vessel. Ohmart/VEGA Radar is successful in measuring applications with agitation, foam, low dielectric constant, internal tank obstacles, and difficult mounting.

The Effect of Frequency

Ohmart/VEGA Radar instruments operate in one of two frequency bands: C-Band, or K-Band. C-Band operates in a range of approximately 6 GHz. This low frequency range allows for a very powerful measurement when extreme process conditions are present. K-Band gauges operate in a frequency range of approximately 26 GHz. This higher frequency range allows the gauge to have a more focused beam angle, and smaller process connection sizes. It is perfect for applications and vessels with moderate process conditions. The ability to choose between these frequencies allows Ohmart/VEGA to customize a Radar gauge system to each individual application.





■ Level Measurement **MADE EASY.**

Imagine: What If?

What if all instruments had the same housings? What if all instruments could be programmed with the same software, or module? What if all instruments had easy-to-replace modular electronics? What if all instruments were the leading technology on the market? That is plics®! One Instrument Platform, Many Instrument Possibilities.

The Idea

plics® is a revolutionary concept in measurement technology. The idea behind plics® is that “easier is better.” The advances made by the plics® concept will allow our customers to specify, and program all of our instruments with ease. All plics® level measurement technologies from Ohmart/VEGA have been designed with common features including:

- The ability to view information in the instrument head or on a remote display.
- The same housing options for all gauges: Plastic, Stainless Steel, Single Chamber Aluminum, and Dual Chamber Aluminum.
- Interchangeable programming methods for all devices: plicscom adjustment module, PACTware and a PC, or HART®.
- Plug-in electronic modules that are the same size, and easy to install, wire, and maintain.

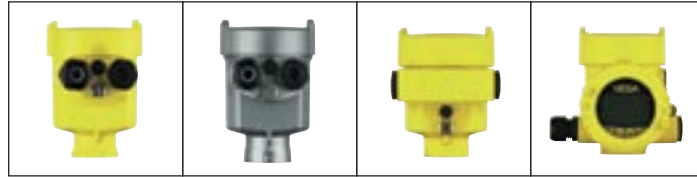


INDICATING & ADJUSTMENT MODULE



PLICSCOM

HOUSINGS



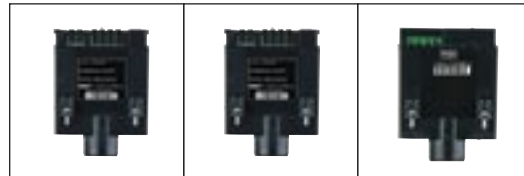
PLASTIC

StSt

SIGNAL CHAMBER
ALUMINUM

DUAL CHAMBER
ALUMINUM

ELECTRONICS



4-20mA HART®

PROFIBUS PA

FOUNDATION FIELDBUS

PROCESS FITTINGS



THREAD

FLANGE

SANITARY/TRI-CLAMP

SENSOR TYPES



LEVEL: RADAR

ULTRASONIC

GUIDED MICROWAVE



SWITCHING: VIBRATION

VIBRATION

CAPACITIVE



PRESSURE: PROCESS PRESSURE HYDROSTATIC

■ APPLICATIONS

Virtually Unlimited.

Compare VEGAPULS vs other technologies: Radar has many benefits over traditional level measurement technologies. With no moving parts, a non-contact method of measurement, and a top mounting configuration, Radar can eliminate many of the measurement and maintenance issues associated with DP Cells and Mechanical float systems. With no influence from temperature or pressure shifts, and no errors caused by a shift in specific gravity, Radar can eliminate many of the measurement errors associated with capacitance or ultrasonic based transmitters.





ALL SHAPES OF VESSELS:

Radar is a technology that can be used on vessels of many different sizes and shapes. Top-down mounting ensures ease of installation, and the non-contact technology allows for use even with vessel obstructions.



LIQUID GAS MEASUREMENT:

The low dielectric constant of liquid gases often means that a high frequency Radar, or a stilling well is needed to make the measurement. A stilling well focuses the Radar signal, allowing it to see a good reflection from a low DK material. Isolation ball valves are also possible with stilling wells or through-air Radar.



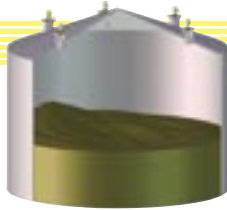
SMALL SIZE VESSELS:

The small antenna of the PULS 60 series and the absence of a near zone make Radar the ideal choice for small vessels. The antenna will not intrude into the vessel, which leaves more room for the process material.



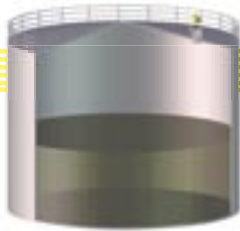
MEASUREMENT THROUGH PLASTIC VESSELS:

The low dielectric constant of non-conductive materials such as plastic and fiberglass allows the Radar to measure level from outside the vessel. This allows vessels with corrosive products such as hydrofluoric acid to be measured non-invasively.



BULK SOLIDS:

Solids silos can be measured with one or several Radar gauges. One gauge controls level, while several can provide a profile of the product. This can assist in measuring when angles are created from the fill and empty process.



BULK STORAGE TANKS:

The large, still surface of a storage vessel provides a simple measurement for Radar. With no moving parts, the Radar gauge is very low maintenance, and provides high accuracy. With the small size of plics® compatible instruments, multiple gauges can fit on one process connection for ease of installation.

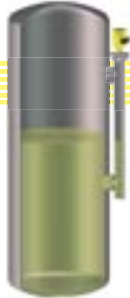


SMALL PROCESS CONNECTIONS:

The PULS 61 is ideally suited for existing vessels with small process connections. Available in 1 1/2" NPT, the 60 series uses a high frequency to provide a focused microwave beam.

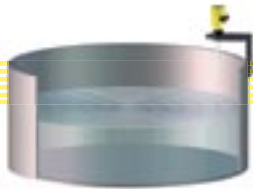
■ APPLICATIONS

Continued



DISTILLATION COLUMNS:

Radar mounts easily on external chambers or bridle pipes, and provides an ideal replacement for displacers or floats. A variety of connection concepts allows for the use of existing wiring.



OPEN CONTAINER MEASUREMENT:

The lightweight design of the PULS 60 series makes simple bracket mounting possible for measurement of open container level.



AGGRESSIVE PRODUCTS:

Ideally suited to aggressive products such as acids and caustics, the PULS 60 can be provided with all wetted parts made of Teflon. This chemical resistance, and the gauge's ability not to be affected by vapors or fumes, make Radar measurement ideal.



WFI WATER:

WFI is an important measurement in the pharmaceutical industry. The VEGAPULS 63, with its available flat face or tri-clamp sanitary connection antenna is ideal. All wetted parts are TFM 1600, an FDA approved material.

■ MODELS & VERSIONS

VEGAPULS 60 SERIES: **K-Band**

K-Band Radar is a high frequency Radar. K-Band Radar is used for applications with moderate process conditions, storage, long distance applications with smooth surfaces, and measuring of lower Dielectric products. It is also ideal for small vessel applications where a narrow signal beam is desired.

INDUSTRY APPROVALS: K-Band instruments are available with standard industry approval options including FM, CSA, 3A Sanitary, FCC, and SIL. Housing options to meet NEMA 4X, NEMA 4/7, NEMA 6P are available.



VEGAPULS 61

Measuring Range: 0 to 33'
Accuracy: +/- .2" or 5mm
Process Connections: 1.5" NPT, ANSI Flanges
Antenna: PVDF Rod
Temperature Range: -40 to 266° F



VEGAPULS 62

Measuring Range: 0 to 99'
Accuracy: +/- .12" or 3mm
Process Connections: 3/4" NPT, ANSI Flanges
Antenna: Horn, Integral Stilling Well
Temperature Range: -40 to 266° F
-40 to 392° F with Adapter



VEGAPULS 63

Measuring Range: 0 to 66'
Accuracy: +/- .12" or 3mm
Process Connections: ANSI Flange, Sanitary Tri-clamp
Antenna: TFM 1600 PTFE wetted
Temperature Range: -40 to 302° F



VEGAPULS 68

Measuring Range: 0 to 230'
Accuracy: +/- .39" or 10mm
Process Connections: ANSI Flange, ANSI Swivel Flange, parabolic
Antenna: Horn
Temperature Range: -40 to 302° F



■ MODELS & VERSIONS

VEGAPULS 60 SERIES: **C-Band**

C-Band Radar is a low frequency Radar. C-Band Radar is ideal for measurements in harsh process conditions such as severe agitation, heavy steam, or mixing. It is also used for storage applications and vessels where foam may be present, and a strong signal return is needed.

INDUSTRY APPROVALS: C-Band instruments are available with standard industry approval options including FM, CSA, 3A Sanitary, FCC, and SIL. Housing options to meet NEMA 4X, NEMA 4/7, NEMA 6P are available.



VEGAPULS 65

Measuring Range: 0 to 99'

Accuracy: +/- .4" or 10mm

Process Connections: 1.5" NPT, ANSI Flanges

Antenna: PVDF/PTFE Rod

Temperature Range: -40 to 266° F PVDF
-40 to 302° F PTFE



VEGAPULS 66

Measuring Range: 0 to 99'

Accuracy: +/- .4" or 10mm

Process Connections: ANSI Flanges

Antenna: Horn, Integral Stilling Well

Temperature Range: -40 to 302° F
-60 to 482° F with Adapter
-60 to 752° F with Isolation Adapter



■ Programming & CONFIGURATION



PLICSCOM

The plicscom is a removable programming device for all plics® instruments. Push button programming with a large screen display allows easy access to the gauge. The plicscom is able to copy and paste sensor data to make setting up multiple sensors easy. Manufacturing data, diagnostic data, and all set up parameters can be viewed and accessed via the plicscom. The same plicscom is able to configure any instrument that is plics compatible.

PLICSCOM FEATURES

- Splash proof even with cover open
- Mounting in 90° steps
- Trend curve displayed
- Data memory capable
- For use in gauge head, or remote display
- 4-key easy adjustment
- Suitable for all instrument series
- Echo curve displayed



HART™ HANDHELD TERMINAL

The VEGAPULS 60 series models are available with HART™ outputs and are fully compatible with AMS and multidrop capability. Programming is achieved through a handheld terminal and general device parameters. No special device description (DD) required. Programming functions are limited to generic HART™ commands.



PACTware FDT COMPUTER CONFIGURATION SOFTWARE

SOFTWARE REVOLUTION: PACTware is a field device tool, commonly referred to as an “FDT,” which is based on field device tool standard 1.2. An FDT is a software program that provides a frame environment for use on a computer or a laptop. This frame environment is used to open and run configuration programs for field instrumentation. These configuration programs are called Device Type Managers (DTMs), and are offered by various instrumentation manufacturers.



DTM COLLECTION: All Ohmart/VEGA plics® instruments have a device type manager (DTM) program that runs within PACTware. The DTM provides many benefits including:

- Easy to use windows program with graphic explanations.
- Visualization of echo curves, trends, & vessel configuration parameters.
- The ability to store, review, save and e-mail data on instrument configuration.



VEGADIS 61 REMOTE DISPLAY

The VEGADIS 61 remote display provides visualization up to 82' from a gauge. It is plics® ready and provides an access port for PACTware programming, or plicscom use.

Electronics & Signal Conditioning

Ohmart/VEGA Radar gauge electronics are available in multiple configurations including:

- 2-Wire loop powered
- 4-wire power
- General purpose, intrinsically safe, or explosion proof ratings
- Profibus, Foundation Fieldbus, and HART™ AMS compatible

Need Wireless?

All Ohmart/VEGA Radar gauges are compatible with the wireless products of Industrial Insight. Industrial Insight systems offer wireless transmitters, receivers, and other products designed to meet your wireless needs.

For more information please visit www.industrialinsight.com.



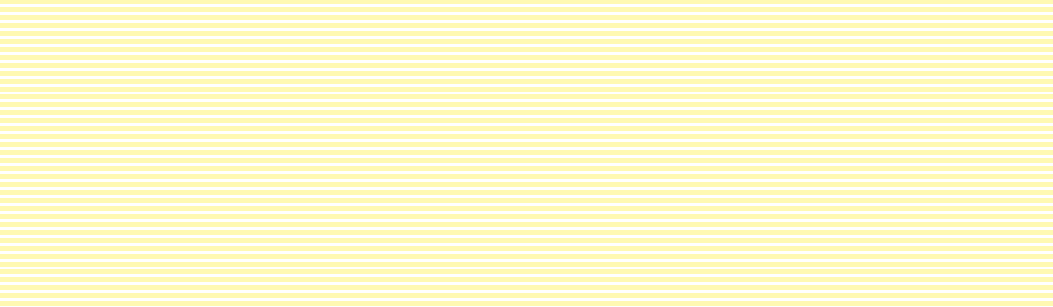
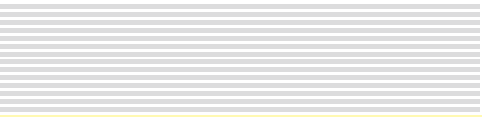
■ VEGAPULS 60

At a Glance



VEGAPULS	61	62	63	65	66	68
replacement for VEGAPULS:	41	42, 44, 45	43	51, 52, 53	54, 56	n/a
frequency band	K	K	K	C	C	K
frequency	26 GHz	26 GHz	26 GHz	6.3 GHz	6.3 GHz	26 GHz
rod antenna	Yes	No	No	Yes	No	No
available horn antenna	No	Yes	No	No	Yes	Yes
available all plastic antenna	Yes	No	Yes	Yes	No	No
available sanitary antenna	No	No	Yes	Yes	No	No
available integral stilling well	No	Yes	No	No	Yes	No
temp. range	-40 to 266° F	-40 to 392° F	-40 to 302° F	-40 to 302° F	-40 to 752° F	-20 to 392° F
plics® compatible	Yes	Yes	Yes	Yes	Yes	Yes
measuring range	0-33'	0-99'	0-66'	0-99'	0-99'	0-230'
available two wire	Yes	Yes	Yes	Yes	Yes	Yes
accuracy	+/- .2" or 5mm	+/- .12" or 3mm	+/- .12" or 3mm	+/- .4" or 10mm	+/- .4" or 10mm	+/- .4" or 10mm
sensitivity to foam	Medium	High	Medium	Low	Low	Medium
sensitivity to agitation	Medium	Medium	Medium	Low	Low	Medium
solids measurement	No	No	No	No	Yes	Yes







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