Communication for Process Automation
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The world of communication

Information from field instruments

Industrial production processes today are highly automated. In order for this to work, measuring instruments have to continuously deliver up-to-date, objective information about the process to the control technology. There are different solutions for smooth communication between measuring instruments and process control: readings can be transmitted via cables or by means of radio technology.

Fieldbus systems

Profibus PA and Foundation Fieldbus are fully developed, efficient fieldbus systems. They fulfill the demand for a standardized, international fieldbus for process engineering. Where previously thick cables and complex parallel wirings between field instruments and the control center were necessary, one single cable now suffices in fieldbus systems. Data and energy are transmitted simultaneously over this generally two-wire cable, even in a hazardous area. This simplifies not only installation and commissioning, but also later extensions or alterations.

Analogue data transmission

The analogue, 4 … 20 mA standard signal was a breakthrough for field instrument engineering: for the first time, instruments from different manufacturers were exchangeable and combinable. The point-to-point connections make maintenance and diagnosis possible with simple means.

Digital communication

The rapid development of microelectronics has also revolutionised data transmission from field instruments: microprocessors make digital communication as well as the exchange of large amounts of data between field instrument and control system possible.

The result: information exchange, for example with HART, is not limited to setup and maintenance, but is now an integral part of trend-setting automation concepts.

Wireless data exchange

When cable connections are too costly or information from mobile plant components needs to be transmitted, then the solution is: wireless data exchange via radio network.
Consistency through to the field device

Digital communication offers the possibility of integrating field instruments into the automation system. Information from the field instrument can be retrieved and settings on the field instrument carried out from the control level.

Fieldbus systems enable universal communication with field instruments and thus also their setup and maintenance as well as access to instrument-specific and diagnostic information. Modern remote I/O systems also fulfill these requirements for 4 … 20 mA/HART field instruments.
Standard interfaces to DCS, PLC and SCADA are integrated, as well as web servers, modem controls and notification functions via e-mail and SMS.

**VEGA creates connections**

Ethernet based communication systems in process automation combine automation engineering with information technology. Signal conditioning instruments from VEGA link sensors directly, without any detours, to this infrastructure.
The classic connection of field instruments

Remote I/O systems
Modular remote I/O systems serve for transmitting process data from safe or hazardous areas. They connect a variety of binary and analogue sensors and actuators with the control system via the bus interface (for example Profibus DP). Some types of remote I/Os can also communicate with HART-capable field instruments. This has the advantage that parameter data and diagnosis requests can be generated in the control system and converted into HART commands for the field instrument via the remote I/O.

- Simple sensor wiring
- Simple fault diagnosis in the field
- Only one communication cable to the remote I/O (for example Profibus DP)
- Remote I/O implementable in the field
- Sensor operation from the control room via signal line possible

HART multiplexer
HART multiplexers enable digital access to the configuration and diagnosis data of HART field instruments in case existing remote I/O systems do not allow HART communication. Coupling to the existing process control system is carried out via standardised bus interfaces (for example Profibus DP or Ethernet). HART multiplexers are therefore ideally suited for expansion and modernisation of plants with process automation.

- Existing instrumentation and wiring can be used
- Independent service level
- Integration into diagnosis and asset management systems possible
Access to status and parameter data via HART multiplexer systems
**Communication via fieldbus systems**

**Fieldbuses for process automation**

Thanks to their integrated microprocessors, measuring instruments with fieldbus technology provide additional information about the quality of the measured value and the status of the field instrument. With 4 … 20 mA connections, such functions are not available at the control level.

Since the signals are processed digitally, it seems reasonable to avoid the digital-to-analogue conversion in the sensor and the analogue-to-digital conversion at the interface level and transmit the digital measurement signal directly. Fieldbus does exactly that. Another advantage: multiple field instruments can be connected via a single two-wire connection, which reduces wiring costs considerably.

**Profibus PA**

The basis for the intrinsically safe Profibus is the physical layer specification according to IEC 61158-2 and the Profibus DP protocol. Profibus PA uses the transmission technology called MBP (Manchester Coded, Bus Powered): data and power are transmitted over the same wires, also in the Ex zone. The Profibus PA segments are connected via segment couplers or DP/PA links to the Profibus DP.

**Foundation Fieldbus**

The IEC 61158-2 transmission technology is also the basis for the Ex capable Foundation Fieldbus (FF). It differs, however, from Profibus PA when it comes to bus access method and data protocol. Compared with the master slave principle of Profibus, the FF bus access method offers a number of advantages: data can be exchanged
directly between field instruments, which permits the construction of servo loops. This use of distributed intelligence makes decentralized automation systems possible. A direct transfer to the fast Ethernet is carried out via a linking device.

**Fieldbus systems Profibus PA and Foundation Fieldbus**

- Simple and reliable two-wire connection technology
- Intrinsically safe supply for field instruments
- Low wiring costs
- Up to 32 field instruments on one segment (10 field instruments with Ex applications)
- Bus length up to 1,900 m
- Simple verification of intrinsic safety through the FISCO or Entity model

**HART**

HART holds a special position among the various fieldbus protocols. HART technology works primarily with the hybrid transmission method: the measured value or the process variable is usually transmitted as a 4 ... 20 mA current signal via a point-to-point connection. To communicate with the field instrument, a digital signal is modulated onto this analogue signal with the FSK procedure (Frequency Shift Keying). In the so-called multidrop mode, multiple field instruments can transmit their measured values digitally.

- Intrinsically safe supply for field instruments via the connection cable
- Up to 15 field instruments on one two-wire cable in multidrop mode
- Robust transmission technology
- Connection lengths up to 3,000 m

Fieldbus communication with Foundation Fieldbus
**VEGA interfaces between field and system level**

**HART and HART multidrop**

4 ... 20 mA/HART sensors also allow digital retrieval of measured values. To do this, an appropriate request telegram is sent to the sensor. VEGA signal conditioning instruments use this functionality and thus avoid digital-to-analogue and analogue-to-digital conversions. The signal conditioning instrument can query all sensor features and adapt the functional range automatically. This provides a high degree of user-friendliness when standard sensors are implemented. The control level has access to all relevant field instrument information through the signal conditioning instrument.

Thanks to its functions flow and flow volume measurement as well as intelligent pump management, VEGAMET 391 is especially suitable for applications in water and sewage systems. A SIL version is available for safety-oriented applications.

VEGAMET 625 lends itself well for applications in which the measured values of two sensors are factored in together (differential measurement, level in pressurized containers). All settings can be conveniently carried out with PACTware and a PC via the existing interfaces.

**VEGAMET 391/624/625**

The signal conditioning instruments VEGAMET carry out the functions: measured value processing, sensor power supply, separating barrier and gateway to Ethernet or modem. The sensor values are transmitted digitally by means of HART protocol. At the same time, the integrated display module visualizes the measuring results. The evaluation functions as well as the relay and current outputs allow the realisation of simple control tasks.

**VEGASCAN 693**

VEGASCAN 693 is designed for connection of up to 15 independent HART sensors (5 in Ex applications). The sensors operate in the HART multidrop mode and use a constant 4 mA supply current. Due to the simultaneous transmission of energy and communication data on only one two-wire cable, even in explosion-prone areas, the wiring costs are reduced considerably.
Remote data transmission with signal conditioning instruments

A special feature of VEGA signal conditioning instruments is the option of remote data transmission. The instruments are equipped with a special interface for this purpose.

**RS232 interface:** The RS232 interface is particularly suitable for long-distance transmission of measured values via simple modem connection. External analogue, ISDN and GSM/GPRS modems are used here.

**Ethernet interface:** By means of the Ethernet interface, the instruments can be connected directly to an existing PC network or the Ethernet infrastructure of the control system.

The following functions are available:

- Remote data transmission/data exchange to WEB-VV
- Simple visualization with a standard browser via integrated web server
- Time and event-driven dispatch of e-mails and SMSs
- Direct communication with a controller or the control system via Modbus/TCP protocol
- Simple signal processing with PC via ASCII protocol

VEGAMET and VEGASCAN provide various data evaluation options before data dispatch.

- Measured value storage with extensive trigger options and block-wise transmission
- Complete setup and commissioning with PC and PACTware also via the interfaces
- Remote parameter adjustment/remote diagnosis (for example PACTware) right down to the individual sensor
Future-oriented wireless technologies

Wireless communication
Wireless signal transmission makes the deployment of measuring instruments flexible as never before: the instruments can be mounted in inaccessible locations or on mobile system components with a minimum of installation effort. With a new plant, this means shorter servicing and shutdown periods from the very beginning. With existing plants, extensions can be quickly and unproblematically connected to existing infrastructure. Modern wireless transmission systems work extremely reliably and fulfill all industry requirements.

PLICSRADIO (short distance)
With PLICSRADIO, sensors in the field can wirelessly transmit the signals over distances of up to 1,000 m. Remote parameter adjustment or remote diagnosis can also be carried out without direct wire connection. PLICSRADIO is a simple and reliable radio link for overcoming obstacles, for expanding existing plants or for integrating mobile plant components.

- Integrated sensor power supply
- Additional display module in the field possible
- Connection of multiple sensors
- Very low wiring costs
- Protected data transmission
- Up to 7 radio frequencies in parallel operation possible
Wireless HART

The HART Communication Foundation (HCF) standardises future wireless communication solutions on the basis of the HART protocol. Wireless HART sensors communicate with each other and can therefore transmit information serially over several hundred metres. This system is preferably used for parameter adjustment of sensors in the field as well as for diagnosis and for asset management solutions.

- Standardised wireless communication
- Networked communication
- Completely compatible to HART standard

PLICSMOBILE (long distance)

The PLICSMOBILE with standard SIM card can send data via a GSM/GPRS service provider. The integrated energy management system has an autonomous standby mode and sends the information in freely programmable time intervals. A low operating voltage allows the device to be supplied by an integrated rechargeable battery. Parameter adjustment is carried out via a USB interface. PLICSMOBILE is suitable for use with VEGA sensors with HART, Profibus PA or Foundation Fieldbus interface.

- Remote transmission of measured values
- Remote diagnosis and remote maintenance
- Data dispatch via public mobile phone network
- Quadband technology
- GSM/GPRS technology
- Power supply of the sensor
**Data communication via Ethernet and Internet**

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**Modern data communication with VEGA signal conditioning instruments**

Ethernet based communication systems today combine automation engineering with information technology. Beside their function as interface, devices at the interface level also assume the task of providing the field instruments with power and functioning as a barrier for explosion protection. VEGA signal conditioning instruments take over this gateway function between 4 … 20 mA/HART field instruments and the control system. This technology provides all the possibilities that fieldbus systems also offer.

**Integrated web server**

The available measured values can be displayed with a standard browser (for example Internet Explorer) via the web server integrated in the signal conditioning instrument. Within a company network the query is carried out via Ethernet. For remote querying, a signal conditioning instrument with RS232 interface and connected modem is implemented.

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**Measured value transmission via e-mail**

Via the e-mail server integrated in the signal conditioning instrument, current measured values can be sent at freely definable times or intervals. A report can be sent via e-mail when a level exceeds or falls below a certain value. The instrument can also send status-driven e-mails, for example when a fault occurs.

**Calling up measured value and status files**

Any http-capable software can be used to call up and view measured value files. With Excel, for example, the measured values can be read out automatically and stored as a table at user-defined intervals. The measured value and status files are available in different formats.
Simple inventory monitoring with WEB VV

User-friendly visualisation, long-term data storage, extensive notification functions and interfaces to the most common inventory management systems – that’s WEB-VV. This modern, web technology-based VEGA software makes simple and reliable inventory control of all tank data possible both within the local network and worldwide over the Internet. The possibilities reach from visualization of levels for simple manual stock management, to completely automatic recording and further processing of stock data in inventory management systems.

The basis is perfect interaction with the on-site VEGA measurement technology. Communication-capable signal conditioning instruments like VEGAMET and VEGASCAN are needed for this. If the data transmission is carried out via telephone or mobile phone network, a fixed network or radio modem is also required. When it comes to wireless data exchange, PLICSRADIO and PLICSMOBILE are perfect additions to the on-site equipment systems.
**Fieldbus and network-independent communication options**

**PLICSCOM – the multifunction talent**

The indicating and adjustment module PLICSCOM is used for measured value indication, adjustment and diagnosis. It can be mounted on any plics® instrument in four positions 90° apart. Adjustment is carried out via foil keys. The structure of the menu is clearly arranged and allows simple setup and commissioning. Status messages are displayed in clear, easy-to-read text. All instrument data, such as measuring range, process fitting and seal material, can also be called up. When an instrument is exchanged, PLICSCOM ensures that the measurement loop is quickly up and running again: all sensor data is saved in PLICSCOM and with a simple keypress it can be copied into a replacement sensor.

**External indicating and adjustment unit VEGADIS**

External indication and adjustment are carried out via VEGADIS with integrated PLICSCOM. VEGADIS is connected to the sensor through a standard cable up to 50 metres long.

**VEGACONNECT**

VEGACONNECT is an interface converter used to connect communication capable VEGA instruments to the USB interface of a PC. It can also be used as a universal HART modem for sensors made by other manufacturers. An adjustment software, like PACTware with appropriate DTM, is required to set the parameters of these instruments. All available electronics versions (HART, Profinet PA, Foundation Fieldbus) are supported.

**HART handheld terminals**

HART handheld terminals enable on-site parameter adjustment of sensors. To be able to access the HART parameters of the sensors, the terminals must be connected to the sensor cable via a minimum loop resistance of 220 Ohm.
Different field instruments, one software

PACTware is a manufacturer and fieldbus independent adjustment software for field instruments. Until now, several manufacturer-specific programs often had to be run in parallel to make use of the full range of functions of the different field instruments. PACTware makes it possible to operate any and all field instruments with only one software. In doing so, PACTware implements a uniform interface between itself, the frame program, and the individual software modules for instrument operation. This interface is called FDT (Field Device Tool); the software modules for instrument operation are called DTMs (Device Type Manager). This structure makes modern, user-friendly adjustment strategies possible because the adjustment interface is optimally tuned to each individual instrument. VEGA DTMs are developed according to the DTM Style Guide, which ensures that all field instruments are operated via a standardised adjustment interface.

What is more, PACTware can communicate via HART as well as all other current fieldbus systems. Different communication DTMs are available for this purpose. These instrument and communication DTMs can be combined in any way in PACTware to meet specific requirements.
**Parameter adjustment of VEGA sensors with DTM and EDD technology**

**Technical comparison of DTM and EDD**

DTMs and EDDs are device descriptions that are needed for integrating fieldbus instruments into automation systems. They follow different approaches to realize that task. EDD (Enhanced Device Description) is a textual description language that is interpreted by an application software. It is a further development of the description language previously known as DD. Different types of devices can be operated and parameterised with it. A DTM (Device Type Manager), on the other hand, is a stand-alone software with a standardised interface (FDT). The system environment ultimately determines which of the two technologies is used.

**FDT Group and PACTware Consortium: advocates of FDT technology**

The FDT Group and the PACTware Consortium strive to establish FDT technology as a standard. In the case of the FDT Group, the focus is on the maintenance and further development of FDT technology. The PACTware Consortium, on the other hand, concentrates mainly on the FDT framework application.
EDDL Cooperation Team: advocate of EDD technology

HART Communication Foundation, Profibus und Foundation Fieldbus have brought together and extended their respective DDL description languages. The result is a standardised description language called Electronic Device Description Language (EDDL).

The harmonisation and further development of the language is advanced by the common interest group EDDL Cooperation Team. To this group belong Fieldbus Foundation, Profibus User Organisation, HART Communication Foundation, OPC Foundation and the FDT Group.

Parameter adjustment of VEGA sensors with EDD technology
Quality in development and service

VEGA pursues the objective of fulfilling all the requirements of a simple and stable Life Cycle Management (LCM) as well as ensuring compatibility in device integration. That's why, when it comes to software and hardware development, VEGA orients itself with recommendation NE 105, “Specifications for Integrating Fieldbus Devices in Engineering Tools for Field Devices”, formulated by the NAMUR task force. VEGA also supports the “Life Cycle Policy” guideline drawn up by the FDT Group.

To ensure clear and comprehensible version relationships, the instruments as well as the software of all VEGA components are clearly labelled and provided with version numbers.

Compatibility

When it develops new products or enhances existing ones, VEGA guarantees complete downward compatibility. Even new VEGA DTMs are globally downward compatible: they work with both current instrument software and with all previous software versions. Since an instrument software version is not bound to defined DTM versions, only one DTM version must be available for use on the PC.

- **Software update**: A newly introduced instrument software version with extended functionalities also covers the older instrument generations

- **FDT/DTM**: The current DTMs completely supersede older DTM versions
Download

VEGA software can be downloaded from the download area of the VEGA website. This area is updated daily and offers free of charge, at one central location, all software packages required for VEGA instruments.

www.vega.com > Downloads > Software

Certificates

VEGA is an active member of the following research groups and associations:
- Profibus User Organisation
- Foundation Fieldbus
- HART Communication Foundation
- FDT Group
- PACTware Consortium e.V.

All of our instruments are tested and certified by neutral institutions:
- HART Communication Foundation (HART instruments)
- Profibus User Organisation (Profibus instruments)
- Foundation Fieldbus (FF instruments)

DTMs and DDs are also checked and certified by testing centres. Integration tests are regularly carried out with manufacturers of control systems.

Interoperability test (HIST)

The Host Interoperability System Test (HIST) is a test established by Foundation Fieldbus to assure that host systems will interoperate correctly with registered field instruments via the FF interface. VEGA sensors are listed with all established FF control system suppliers within the context of the HIST test conditions. The current list of performed HISTs can be found in the VEGA download area.
### Instrument overview

#### VEGAMET 391

Signal conditioning instrument for continuous measurement with integrated level switches

- Extensive adjustment functions, such as e.g. scaling and linearisation
- Integrated web server, time-controlled dispatch of levels via e-mail or SMS
- Optionally available as SIL instrument according to IEC 61508

<table>
<thead>
<tr>
<th>Sensor input</th>
<th>1 x 4 … 20 mA/HART</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current output</td>
<td>1 x 0/4 … 20 mA</td>
</tr>
<tr>
<td>Relay output</td>
<td>6 x spdt or 5 x spdt, 1 x fault indication</td>
</tr>
</tbody>
</table>

#### VEGAMET 624

Signal conditioning instrument for continuous measurement with integrated level switches

- Extensive adjustment functions, such as e.g. scaling and linearisation
- Integrated web server, time-controlled dispatch of levels via e-mail or SMS

<table>
<thead>
<tr>
<th>Sensor input</th>
<th>1 x 4 … 20 mA/HART</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current output</td>
<td>3 x 0/4 … 20 mA</td>
</tr>
<tr>
<td>Relay output</td>
<td>3 x spdt, 1 x fault indication</td>
</tr>
</tbody>
</table>

#### VEGAMET 625

Signal conditioning instrument for up to 2 HART sensors with integrated level switches

- Extensive adjustment functions, such as e.g. scaling and linearisation
- Integrated web server, time-controlled dispatch of levels via e-mail or SMS
- Suitable for differential generation of two measuring points

<table>
<thead>
<tr>
<th>Sensor input</th>
<th>2 x HART (Multidrop mode)</th>
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<tbody>
<tr>
<td>Current output</td>
<td>3 x 0/4 … 20 mA</td>
</tr>
<tr>
<td>Relay output</td>
<td>3 x spdt, 1 x fault indication</td>
</tr>
</tbody>
</table>

#### VEGASCAN 693

Signal conditioning instrument for up to 15 HART sensors

- General level measurement and inventory recording with calibration function
- Integrated web server, time-controlled dispatch of levels via e-mail or SMS

<table>
<thead>
<tr>
<th>Sensor input</th>
<th>15 x HART or 5 x HART with Ex applications (Multidrop mode)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relay output</td>
<td>1 x fault indication</td>
</tr>
<tr>
<td>Interfaces</td>
<td>RS232 or Ethernet</td>
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</tbody>
</table>

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**VEGADIS 61**

External indicating and adjustment unit including PLICSCOM

- Suitable for external measured value indication and operation of plics® sensors
- Digital and quasi-analogue indication of measured values
- Can be mounted separate from sensor and connected with up to 50 m long cable

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**PLICSCOM**

Pluggable indicating and adjustment unit for plics® sensors

- DOT matrix display with 4-key operation
- Clear text display with graphics support
- Display of echo curves
- Mountable in 90° increments

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**VEGACONNECT 4**

Interface adapter between PC and communication-capable VEGA instruments

- For use on PCs with USB interface
- Operated by means of DTM and adjustment program PACTware
- Particularly suitable for connecting to plics® sensors
- Includes connection box with various connection cables and adapters

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**PLICSMOBILE T61**

External radio unit for plics® sensors

- GSM/GPRS radio module with quadband technology
- Integrated energy management with battery supply
- Suitable for data exchange with WEB-VV
- Operation via integrated USB interface
## Instrument overview

### PLICSRADIO T61/T62

Transmitting unit for wireless communication
- Wireless communication for short distances up to 1,000 m
- 2.4 GHz system (license and registration free)
- Particularly suitable for connection of plics® HART sensors
- Suitable for supplying Ex sensors in the field

<table>
<thead>
<tr>
<th>Version</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLICSRADIO T61</td>
<td>Version for one HART sensor</td>
</tr>
<tr>
<td>PLICSRADIO T62</td>
<td>Version for up to 3 HART sensors, 2 digital inputs</td>
</tr>
</tbody>
</table>

### PLICSRADIO R61/R62

Receiving unit for wireless communication
- Wireless communication for short distances up to 1,000 m
- 2.4 GHz system (license and registration free)
- Indication of reception strength in PLICSCOM and DTM

<table>
<thead>
<tr>
<th>Version</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLICSRADIO R61</td>
<td>Version with one 4 … 20 mA current output</td>
</tr>
<tr>
<td>PLICSRADIO R62</td>
<td>Version for use with PLICSRADIO C62</td>
</tr>
</tbody>
</table>

### PLICSRADIO D61

Indicating unit for wireless communication
- On-site indicating unit, PLICSCOM included
- Can be used for distances up to 1,000 m
- Operation via PLICSCOM

### PLICSRADIO C62

Signal conditioning instrument for the wireless communication system PLICSRADIO
- Standard signal conditioning instrument for 6 measuring points
- Suitable for connection of PLICSRADIO R62
- Remote query interfaces, web server, e-mail dispatch

<table>
<thead>
<tr>
<th>Output</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current output:</td>
<td>3 x 0/4 … 20 mA</td>
</tr>
<tr>
<td>Relay output:</td>
<td>3 x spdt, 1 x fault indication</td>
</tr>
</tbody>
</table>
MoRoS

Modem-router-switch for carrier rail mounting

- Router functionality including 4-port switch
- Suitable for connection of the signal conditioning instruments VEGAMET 391/624/625, VEGASCAN 693 and PLICSRADIO C62
- Connection via analogue, ISDN or GSM/GPRS modem

GSM/GPRS modem

GSM/GPRS modem for carrier rail mounting

- Radio unit with quadband technology
- Suitable for connection of the signal conditioning instruments VEGAMET 391/624/625, VEGASCAN 693 and PLICSRADIO C62
- Remote access via mobile phone network
- Serial RS232 interface

Accessories

Accessories for communication

- Profibus DP/PA segment couplers
- Profibus T-distributor
- Profibus PC cards
- Ethernet switch

Switching cabinet VCCS11/VCCS14

Assembled, ready-to-operate switching cabinet

- **VCCS11**: Suitable for one VEGAMET 391/624/625, VEGASCAN 693 or PLICSRADIO C62
- **VCCS14**: Suitable for up to four VEGAMET 391/624/625, VEGASCAN 693 or PLICSRADIO C62
- Simple integration of VEGA sensors into WEB-VV
- Free choice of communication interface
Easy is better

plics® makes measurement technology simpler than ever before: from selecting and ordering, setup and commissioning, right through to maintenance and service. VEGA has thought through this “easy is better” principle consistently right down to the last detail. As a result, plics® is able to solve the most demanding measurement problems dealing with level, switching and pressure.

The plics® modular concept

The idea behind plics® is simple: after an order is received, the measuring instrument is assembled from prefabricated individual components. In this way, VEGA customers get the optimal instrument for their particular application requirements – custom-made and fast. The modular principle also brings its cost advantage to bear, because these instruments are simply more cost-effective – throughout their entire life cycle.

The modules

Every plics® instrument is assembled from several modules: the sensor is joined via a process fitting to a housing of plastic, aluminium or stainless steel. Then comes the electronics module, which is installed in the housing. The indicating and adjustment module PLICSCOM is located on top of the electronics, making it directly accessible after the lid is unscrewed. Anyone who has once operated a plics® instrument can operate all other plics® instruments.
**Housings**

- Plastic
- Stainless steel
- Aluminium
- Plastic double chamber
- Stainless steel double chamber
- Aluminium double chamber

**Process fittings**

- Thread
- Flange
- Hygienic fitting
- Custom-designed

**Sensor types**

- Radar
- Ultrasonic
- Guided microwave
- Capacitive
- Vibration
- Microwave barrier
- Process pressure
- Hydrostatic
- Differential pressure

**Electronics**

- 4...20 mA/HART
- Profield PA
- Foundation Fieldbus
- Level switch

**Indicating and adjustment module**

- PLICSCOM
- VEGACONNECT

**Safety standards**

- SIL

**Hygienic standards**

- Explosion protection

**Ship approvals**

- Hygienic standards