Product information

Controllers and communication

Controllers for continuous measurement

VEGAMET 381
VEGAMET 391
VEGAMET 624
VEGAMET 625
VEGASCAN 693

Document ID: 29251

Contents

Take note of safety instructions for Ex applications

Please note the Ex specific safety information which you can find on our homepage www.vega.com/downloads under " *Approvals*" and which comes with every instrument. In hazardous areas you should take note of the corresponding regulations, conformity and type approval certificates of the sensors and power supply units. The sensors must only be operated on intrinsically safe circuits. The permissible electrical values are stated in the certificate.

29251-EN-210616

1 Product description

Functional principle

In continuous measurement, the level in a vessel is detected by a sensor and then transferred to the controller for further processing. By means of an adjustment in the controller, the measured value can be adapted to the individual circumstances. The requested measurement parameter is indicated in the display via a scaling/linearisation. The measured value can be transmitted to an external display or a connected control system via the current output.

On instruments with one of the optionally available interfaces (RS232/ Ethernet), the measured values can be retrieved via modem or network and displayed through a web browser or VEGA Inventory System. A measured value and message transmission is also possible via e-mail/ SMS.

Several operating relays are additionally integrated in each VEGAMET for level detection. These can be used to control pumps or other actuators.

Application

In conjunction with the appropriate sensors, the controllers can be used in a variety of applications:

- Level measurement
- Gauge measurement
- Differential measurement/Differential pressure measurement
- Process pressure measurement
- Distance measurement
- Interface measurement
- Temperature measurement
- VMI (Vendor Managed Inventory)

Each instrument also serves as (Ex) power supply unit for the connected sensors. Power is supplied via the same two-wire cable. As an option, an input without sensor power supply (passive input) is available, enabling the connection of transmitters with their own voltage supply (sensors in four-wire version). Depending on the instrument type, up to 15 independent sensors can be connected and their measured values processed.

Safety

The integrated fault monitoring detects faults in the controller as well as in the connected sensors. If such a fault is detected, the integrated fail safe relay de-energises and a fault signal is displayed via the LEDs on the front panel. In addition, the current output of each VEGAMET jumps to an adjustable fault current.

The instrument has the following approvals:

- Ex approval as auxiliary, intrinsically safe instrument
- WHG as part of an overfill protection system
- Ship classification according to GL for use in the ship and marine sector

Adjustment

With all instruments, adjustment can be carried out via the integrated display and adjustment unit. Except with VEGAMET 381, adjustment is also possible via a Windows PC with appropriate software. For connection, either the VEGACONNECT interface converter, a USB interface or one of the optionally available RS232/Ethernet interfaces is used, depending on the instrument type.

29251-EN-210616

2 Type overview

	VEGAMET 381	VEGAMET 391
		
Use	simple regulatory and control tasks	general regulatory and control tasks
Application	● Level ● Gauge ● Process pressure	● Level ● Gauge ● Process pressure
Measurement loops	1 Measurement loop	1 Measurement loop
Functions	● Adjustment ● Scaling of the indication	● Adjustment ● Scaling for indication and digital output values ● Linearization of individual vessel geometries ● Pump control
Sensor input	1 x 4 … 20 mA with sensor power supply	1 x 4 … 20 mA/HART with sensor power supply
Outputs	● 1 x scalable current output ● 2 x relays for level detection	● 1 x scalable current output ● 6 x relays for level detection ● RS232/Ethernet (optional)
Display on the instrument	Large digital and quasianalogue display	Graphics-capable clear text display with background lighting
Functions via RS232/Ethernet	-	● Remote enquiry/VMI ● Visualisation via the integrated web server ● Messages/Measured values via e-mail/SMS
Ambient temperature	-20 … +60 °C (-4 … +140 °F)	-20 … +60 °C (-4 … +140 °F)
Approvals	● ATEX ● IEC	● ATEX ● IEC

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	VEGAMET 624	VEGAMET 625	VEGASCAN 693
			
Use	general regulatory and control tasks	Complex regulatory and control tasks	general regulatory and control tasks
Application	• Level • Gauge • Process pressure	• Level • Gauge • Process pressure • Differential pressure • Interface	• Level • Gauge • Process pressure
Measurement loops	1 Measurement loop	3 measurement loops (2 inputs + calculation of the difference)	15 measurement loops (5 with Ex)
Functions	• Adjustment • Scaling for indication and digital output values • Linearization of individual vessel geometries • Pump control	• Adjustment • Scaling for indication and digital output values • Linearization of individual vessel geometries • Pump control	• Adjustment • Scaling for indication and digital output values • Linearization of individual vessel geometries
Sensor input	1 x 4 … 20 mA/HART with sensor power supply	2 x HART with sensor power supply	15 x HART with sensor power supply (5 with Ex)
Outputs	• 3 x scalable current output • 3 x relays for level detection • RS232/Ethernet (optional)	• 3 x scalable current output • 3 x relays for level detection • RS232/Ethernet (optional)	• RS232/Ethernet (optional)
Display on the instrument	Graphics-capable clear text display with background lighting	Graphics-capable clear text display with background lighting	Graphics-capable clear text display with background lighting
Functions via RS232/Ethernet	• Remote enquiry/VMI • Visualisation via the integrated web server • Messages/Measured values via e-mail/SMS	• Remote enquiry/VMI • Visualisation via the integrated web server • Messages/Measured values via e-mail/SMS	• Remote enquiry/VMI • Visualisation via the integrated web server • Messages/Measured values via e-mail/SMS
Ambient temperature	-20 … +60 °C (-4 … +140 °F)	-20 … +60 °C (-4 … +140 °F)	-20 … +60 °C (-4 … +140 °F)
Approvals	• ATEX • IEC • Shipbuilding	• ATEX • IEC • Shipbuilding	• ATEX • IEC • Shipbuilding

29251-EN-210616

3 Instrument selection

VEGAMET 381

The VEGAMET 381 is a universal signal conditioning and indicating instrument for simple control tasks in all industries. It is designed for connection of an individual 4 … 20 mA sensor and optionally takes over the function of a power supply unit.

Via an adjustment, the measured value can be scaled individually and indicated on the integrated display. The measured value can be also transferred via the current output to an external indication or a higher-ranking control system. For control tasks, two operating relays are available as level signallers for the control of pumps or other actors. The instrument is suitable for rail, front panel and surface mounting.

VEGAMET 391

The VEGAMET 391 is a universal controller for a number of control tasks such as level, gauge and process pressure measurement. Inventory management, VMI (Vendor Managed Inventory) and remote enquiry are additional application possibilities. It is designed for connection of any 4 … 20 mA sensor and can optionally function as a power supply unit.

Comprehensive adjustment functions allow an individual adaptation to the respective application. The measured value can be scaled/linearized individually and indicated on the integrated display. In addition, the measured value can be transferred via the current output to an external indication or higher-ranking control system. For control tasks, six operating relays are available as level signallers for control of pumps or other actuators. When the fail safe relay is used, the number of level relays is reduced to five. The instrument is suitable for carrier rail, front panel and surface mounting.

On instruments with one of the optionally available interfaces (RS232/ Ethernet), the measured values can be retrieved via modem or network and displayed through a web browser or VEGA Inventory System. A measured value and message transmission is also possible via e-mail/ SMS.

VEGAMET 624

The VEGAMET 624 is a universal controller for a number of control tasks such as level, gauge and process pressure measurement. Inventory management, VMI (Vendor Managed Inventory) and remote enquiry are additional application possibilities. It is designed for connection of any 4 … 20 mA sensor and can optionally function as a power supply unit.

Comprehensive adjustment functions allow an individual adaptation to the respective application. The measured value can be scaled/linearized individually and indicated on the integrated display. In addition, the measured value can be transferred via the current output to an external indication or higher-ranking control system. For control tasks, three operating relays are available as level signallers for control of pumps or other actuators. The instrument is suitable for carrier rail, front panel and surface mounting.

On instruments with one of the optionally available interfaces (RS232/ Ethernet), the measured values can be retrieved via modem or network and displayed through a web browser or VEGA Inventory System. A measured value and message transmission is also possible via e-mail/ SMS.

VEGAMET 625

The VEGAMET 625 is a universal controller for a number of control tasks such as level, gauge, interface, differential and process pressure measurement. Inventory management, VMI (Vendor Managed Inventory) and remote enquiry are further application possibilities. It is designed for connection of two independent HART sensors and optionally takes over the function of a power supply unit. Two independent measurements can be carried out at the same time, a third measurement loop calculates on request the difference of the two input values.

Comprehensive adjustment functions allow an individual adaptation to the respective application. The measured values can be scaled/linearized individually and indicated on the integrated display. In addition, the measured values can be transferred via the current outputs to an external indication or higher-ranking control system. For control tasks, three operating relays are available as level signallers for control of pumps or other actuators. The instrument is suitable for carrier rail, front panel and surface mounting.

On instruments with one of the optionally available interfaces (RS232/ Ethernet), the measured values can be retrieved via modem or network and displayed through a web browser or VEGA Inventory System. A measured value and message transmission is also possible via e-mail/ SMS.

VEGASCAN 693

VEGASCAN 693 is a universal controller for many different regulatory and control tasks such as level, gauge, interface, differential and process pressure measurement. Inventory management, VMI (Vendor Managed Inventory) and remote enquiry are the main applications. It is designed for connection of 15 independent VEGA HART sensors (5 with Ex applications) and can optionally function as a power supply unit. Up to 15 (5 with Ex) separate measurements can be carried out at the same time.

Comprehensive adjustment functions allow an individual adaptation to the respective application. The measured values can be scaled/linearized individually and shown on the integrated display. The instrument is suitable for carrier rail and surface mounting.

On instruments with one of the optionally available interfaces (RS232/ Ethernet), the measured values can be retrieved via modem or network and displayed through a web browser or VEGA Inventory System. A measured value and message transmission is also possible via e-mail/ SMS.

Measured value enquiry/Visualisation/VMI

For visualisation or remote enquiry, the controllers VEGAMET 391/624/625 and VEGASCAN 693 can be optionally equipped with an RS232 or Ethernet interface. These interfaces are integrated in the instrument and cannot be retro-installed.

RS232 interface

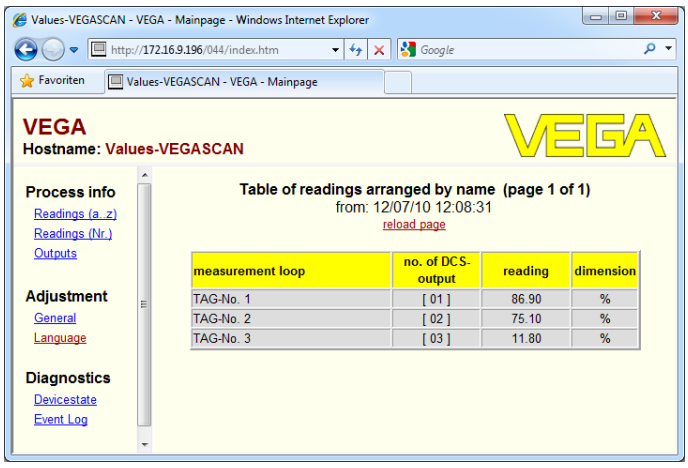
The RS232 interface is suitable for simple modem connection to PACTware. External analogue, ISDN and GSM modems can be used for this purpose.

Ethernet interface

With the Ethernet interface, the controllers can be connected directly to an existing PC network. Each instrument gets its own IP address under which it can be reached from everywhere in the network. As an alternative, addressing via DHCP and network name is also possible.

Web browser

The integrated web server can make the measured values available to any individual user in the company network. The data is presented as an HTML table in a standard browser (e.g. Internet Explorer).



E-mail transmission

When equipped with an Ethernet interface, the controllers can send e-mails via an existing, company-internal or external mail server. With the RS232 interface with connected modem, the e-mail transmission is carried out via dial-up connection network through an external e-mail and

Internet provider.

The e-mail transmission can be event or time controlled. The transmission of fault messages is also possible.

VMI

VMI stands for Vendor Managed Inventory (supplier-controlled inventory). The supplier is responsible for the inventory of his products at the customer's location. He takes over inventory monitoring via remote enquiry and autonomously controls the delivery of replenishments.

VEGA Inventory System

The VEGA Inventory System is a web-based system for simple remote enquiry, convenient visualisation and data archiving. Due to its interfaces to standard inventory control systems (ERP systems) as well as comprehensive messaging functions, the system is ideal for monitoring any silo or tank.

The VEGA Inventory System is based on modern Web technologies, visualisation is carried out via any standard browser such as e.g. the Internet Explorer. This is possible locally via a local network as well as world-wide via the Internet. A local installation of application software or plug-ins for measured value indication on the Client PCs is not necessary. The transmission of measured values is carried out either via network, Internet or mobile network. The protected area for measured value indication is only accessible with an individual password, the connection is established via the secure https protocol.

The measured values are provided by on-site sensors and collected and further processed by appropriate controllers. These controllers transmit (time-controlled) the measured values to the defined server. The display of measured values can be in the form of a bar graph or a table. Apart from the current measured values, history data are also available. The current measured values can also be sent cyclically at any time via e-mail or SMS. Event-controlled notification can also be configured.

VEGA Inventory System is available in two versions, centrally hosted at VEGA or locally installed at the customer's location.

Hosting at VEGA

VEGA provides the server for adminstration of the inventory data at its own computer centre. Through interruption-free power supply, redundant hardware and automatic backups, very high availablility is guaranteed 365 days a year. Software installation, administration and future software updates are included in the price.

Hosting locally

With this version, VEGA provides the instrument technology and software. Installation, setup and administration are carried out by the customer. Operation as well as maintenance, backup and software update also lie within the customer's responsibility. The precondition is that the customer must have his own IT infrastructure with appropriately qualified personnel.

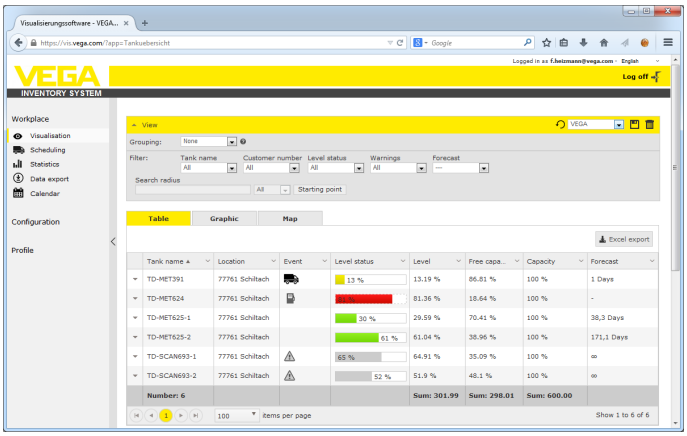


Fig. 1: Measured value view

Application examples

Level measurement in a horizontal cylindrical tank with overfill protection/dry run protection

Functional principle

The level is detected by a sensor and transmitted to the controller by means of a 4 … 20 mA signal. Here, an adjustment is carried out, converting the input value delivered by the sensor into a percentage value.

Due to the geometrical form of the horizontal cylindrical tank, the vessel volume does not increase linearly with the level. This can be compensated by selecting the linearisation curve integrated in the instrument. This curve states the relationship between percentage level and vessel volume. If the level is to be displayed in litres, a scaling must also be carried out. For this purpose, the linearised percentage value is converted into a volume, for example with the unit litre.

The filling and emptying procedure is controlled via relay 1 (filling) and relay 2 (emptying) integrated in the controller. During filling, relay mode " *Overfill protection*" is set. The relay is thus switched off (safe currentless condition) when the max. level is exceeded, when the min. level is underrun it is switched on again (switch on point < switch off point). During emptying, mode " *Dry run protection*" is used. This relay is thus switched off when the min. level is underrun (safe currentless condition), when the min. level is exceeded it is switched on again (switch on point > switch off point).

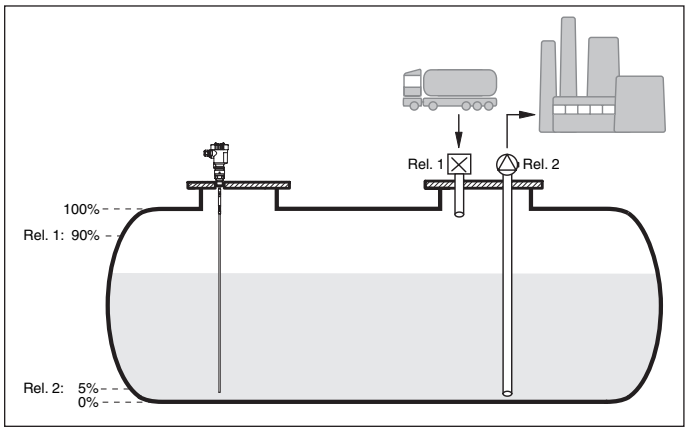


Fig. 2: Example of level measurement, horizontal cylindrical tank

Interface measurement with VEGAMET 625 and VEGAFLEX 67

In an interface measurement, there are two different media which do not mix, e. g. water and oil or solvents. To detect the volume of both products, it is necessary to detect the height of the upper liquid (level) and the interface between the two products. A VEGAFLEX 67 is necessary as a transmitter which delivers the distance to the upper medium as well as the distance to the interface. Via the adjustment in VEGAMET the level, interface and layer thickness of the upper medium can be calculated and displayed.

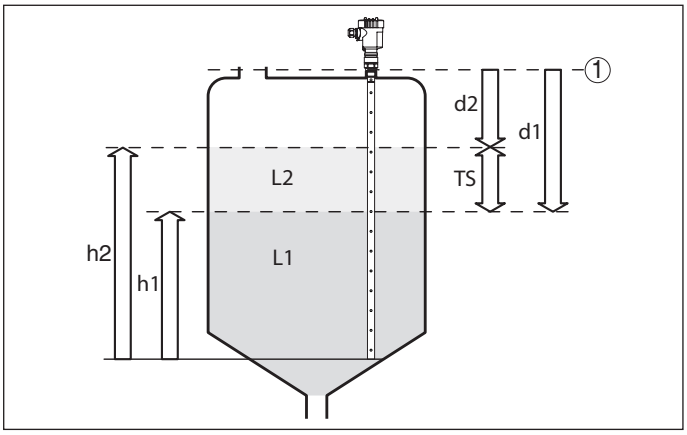


Fig. 3: Interface measurement

1 Reference plane
d1 Distance to the interface, meas. loop 1
d2 Distance to the level, meas. loop 2
TS Thickness of the upper medium (d1-d2), meas. loop 3 (displayed value)
h1 Height - Interface (displayed value)
h2 Height - Level (displayed value)
L1 Lower medium
L2 Upper medium

Stock management of a tank farm via network

Requirement
The stock of a tank farm should be measured and monitored continuously. The measured values should be available to the scheduler and the sales department. In addition, a message should be triggered automatically if a level drops below a certain value.

Solution
One or several controllers with Ethernet interface enquire the connected HART sensors cyclically. The measured values are processed in the controller and transferred in the requested form and unit to the integrated web server. The measured values can now be displayed on the computer of every user in the company network. The required minimum quantity is also entered for each vessel. An e-mail is sent to the appropriate person via the company-internal mail system if a level falls below a certain value.

Setup
- Connection of the sensors and controller
- Assignment of sensor HART addresses
- Input of IP address, Host name, date/time on the controller
- Installation of PACTware and DTMs on individual network PC
- Parameter adjustment of the sensors (e.g. false signal suppression) via PACTware
- Parameter adjustment of the controller (adjustment, scaling, linearization) via PACTware
- Setup of the web and mail server (see DTM online help)
- Indication of measured values through web browser by entering the IP address of the controller

Stock management of several tank farms via modem

Requirement
A supplier would like to keep track of the tank stock levels of his customers and replenish them on his own whenever necessary. Via a display that is updated several times daily, he has access to the level data of the previous days or weeks. The supplier can thus assess the requirements/consumption of his customers and plan his deliveries accordingly. This allows him to do anticipatory purchasing and also better utilize the capacity of his truck fleet. In addition, a message should be sent if the level in any tank falls below a certain predefined minimum value. Using this method, the supplier can always guarantee his customers a sufficient supply of raw materials for production without their having to bother with purchasing and ordering. And he has the added benefit of long-term customer retention and continuous orders.

Solution
A VEGAMET with Ethernet interface and mobile phone router is installed at each customer location. The visualisation software VEGA Inventory System hosted at VEGA receives at certain, defined times the actual measured values from each controller. The measured value display contains the actual levels of each customer in a line graph, such as for example the values of the last 30 days. Via network and web browser as many (authorised) persons as required can access the levels. A certain measured value threshold can be defined for each measurement loop. When a threshold is underrun, a corresponding message can be outputted, for example, via e-mail.

4 Selection criteria

		381	391	624	625	693
Application	Level measurement	●	●	●	●	●
	Process pressure measurement	●	●	●	●	●
	Differential measurement	–	–	–	●	–
	Interface measurement	–	–	–	●	–
	Pressurized vessel	–	–	–	●	–
	Flow measurement	–	●	●	●	●
	Tendency recognition	–	●	●	●	●
	Pump control	–	●	●	●	–
Panel mounting		●	●	–	–	–
Carrier rail/wall mounting		●	●	●	●	●
Number of measurement loops		1	1	1	3	15
Number of sensor inputs (Ex version)		1(1)	1(1)	1(1)	2(2)	15(5)
Scaling/Linearization		●/–	●/●	●/●	●/●	●/●
Device trend		–	●	●	●	●
Totalizer		–	●	–	–	–
Number of current outputs		1	1	3	3	–
Number of relay outputs (limit level)		2	6 [1)]	3	3	–
Number of fail safe relays		1	1	1	1	1
USB interface		–	●	–	–	–
I²C interface		–	–	●	●	●
RS232 interface (optional)		–	●	●	●	●
Ethernet interface (optional)		–	●	●	●	●
E-mail/SMS/WEB server/Inventory System		–/–/–/–	●/●/●/●	●/●/●/●	●/●/●/●	●/●/●/●

[1)] 5 When used as a fail safe relay

5 Mounting

Controllers in Ex version are corresponding, intrinsically safe pieces of equipment and must not be installed in hazardous areas. The respective regulations, conformity and type approval certificates must be observed.

5.2 VEGAMET 381

The instrument is designed for recessed installation in a front panel, housing front plate or a switching cabinet door. The required cut-out is 92 x 92 mm according to EN 60529. When installed correctly, protection rating IP40 is guaranteed. As an alternative, the instrument can be mounted in a switching cabinet or housing by means of four screws (fixed with screws on rear of housing). Mounting on carrier rail is also possible.

Front panel mounting

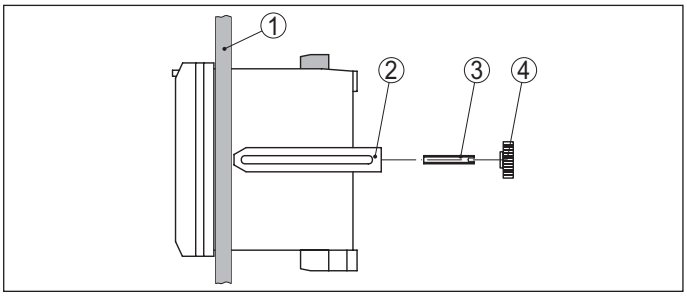


Fig. 4: Front panel mounting

1 Front panel
2 Clamping bracket
3 Threaded pin
4 Knurled nut

Screw mounting

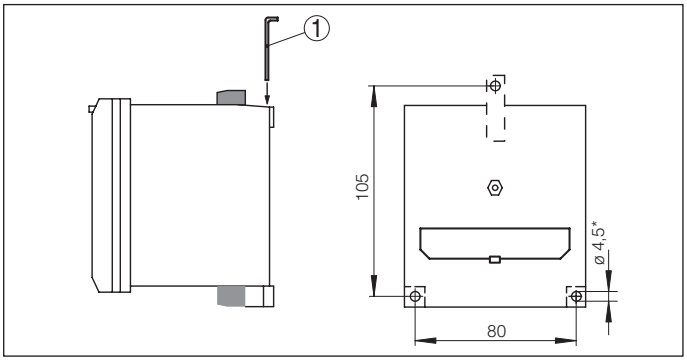


Fig. 5: Screw mounting

1 Metal strap

Carrier rail mounting

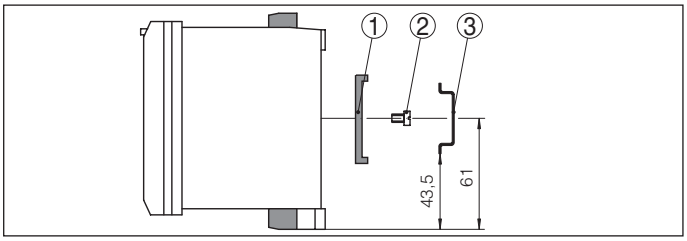


Fig. 6: Carrier rail mounting

1 Adapter plate
2 Screw M4 x 6
3 Carrier rail

5.3 VEGAMET 391

The instrument is designed for recessed installation in a front panel, housing front plate or a switching cabinet door. The required cut-out is 92 x 92 mm according to EN 60529. When installed correctly, protection rating IP65 is guaranteed. As an alternative, the instrument can be mounted into a switching cabinet or housing by means of four screws (fixed with screws on rear of housing). A mounting adapter for carrier rail mounting is optionally available.

Front panel mounting

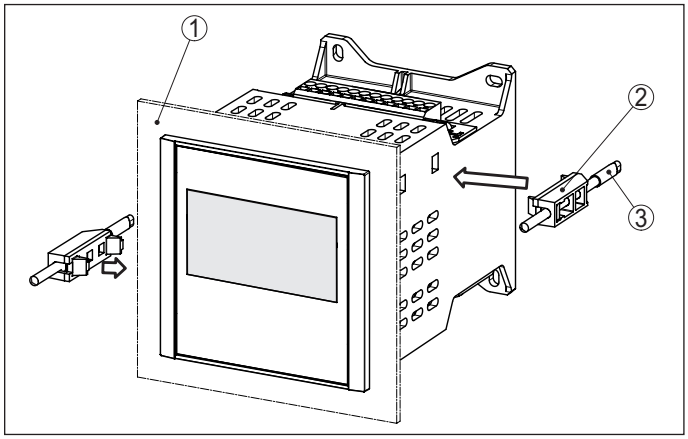


Fig. 7: Front panel mounting

1 Front panel, front plate or switching cabinet door
2 Clamping elements
3 Slotted screw

Screw mounting

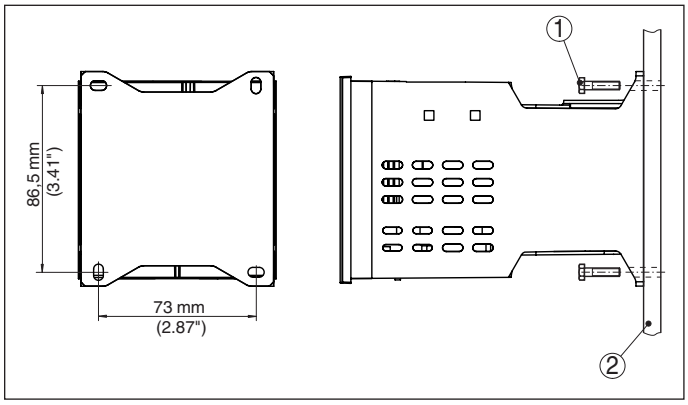


Fig. 8: Screw mounting

1 Fixing screw
2 Rear of the housing or mounting plate

Carrier rail mounting

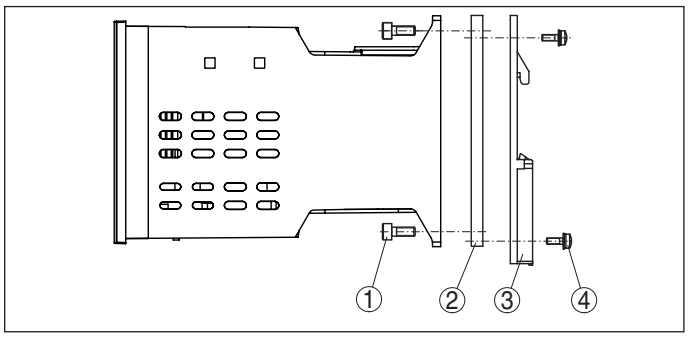


Fig. 9: Carrier rail mounting

1 Hexagon socket screws
2 Mounting plate
3 Carrier rail adapter
4 Phillips head screws

5.4 VEGAMET 624/625, VEGASCAN 693

Each series 600 instrument consists of the actual controller as well as a plug-in socket for carrier rail mounting. The instruments are designed for mounting in switching cabinets, the protection rating is IP30 or IP20.

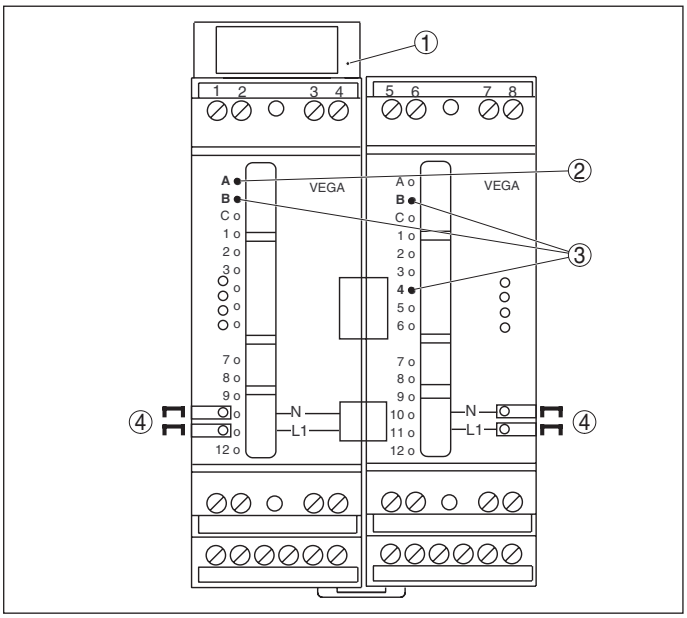


Fig. 10: Plug-in socket VEGAMET

1 Ex separating chamber
2 Ex coded pin with Ex versions
3 Type coded pin
4 Bridges for looping the operating voltage

6 Electrical connection

6.1 Preparing the connection

Note safety instructions

Always keep in mind the following safety instructions:

- Connect only in the complete absence of line voltage
- If overvoltage surges are expected, overvoltage arresters should be installed

Take note of safety instructions for Ex applications

In hazardous areas you must take note of the respective regulations, conformity and type approval certificates of the sensors and power supply units.

Select connection cable

The operating voltage of VEGAMET is connected with standard cable according to the national installation standards.

Standard two-wire cable without shielding can be used to connect sensors. If electromagnetic interference is expected, shielded cable must be used.

Cable screening and grounding

Connect the cable screen on both ends to ground potential. In the sensor, the screen must be connected directly to the internal ground terminal. The ground terminal outside on the housing must be connected to the potential equalisation.

If potential equalisation currents are expected, the screen connection on VEGAMET must be made via a ceramic capacitor (e. g. 1 nF, 1500 V). The low frequency potential equalisation currents are thus suppressed, but the protective effect against high frequency interference signals remains.

Select connection cable for Ex applications

Take note of the corresponding installation regulations for Ex applications. In particular, make sure that no potential equalisation currents flow over the cable screen. In case of grounding on both sides this can be achieved by the use of a capacitor or a separate potential equalisation.

Active/passive input

For the sensor input you can select between active and passive operation. The selection is made depending on the instrument type, by switching over or by connecting the respective terminals. With instruments in Ex version, the passive mode is not available for approval-technical reasons.

- In active mode, the controller provides the power for the connected sensors. Power supply and measurement data are transmitted over the same two-wire cable. This mode is provided for connection of measuring transducers without separate operating voltage (sensors in two-wire version).
- In passive mode the sensors are not powered, only the measured value is transmitted. This input is for connection of transmitters with their own, separate operating voltage (sensors in four-wire version). The controller can also be connected to the existing circuit like a normal current meter.

6.2 Connection VEGAMET 381

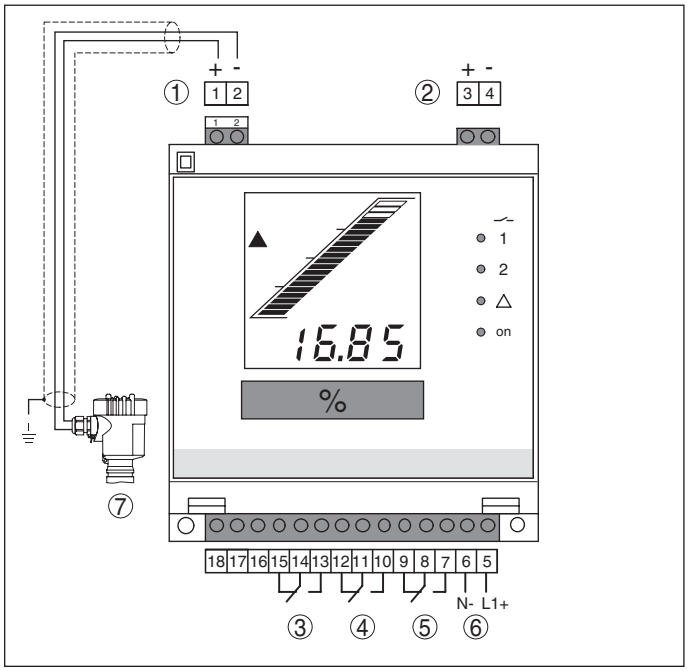


Fig. 11: Wiring plan with two-wire sensor

1 *Measurement data input, optionally available with sensor power supply*
2 *Current output*
3 *Fail safe relay*
4 *Relay 2*
5 *Relay 1*
6 *Voltage supply*
7 *4 … 20 mA/HART sensor (two-wire version)*

6.3 Connection VEGAMET 381 Ex

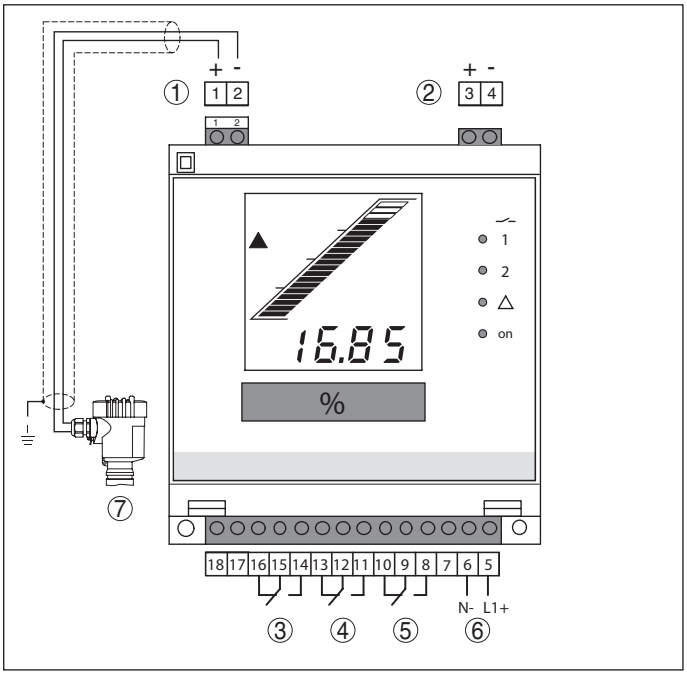


Fig. 12: Wiring plan with two-wire sensor

1 *Measurement data input, optionally available with sensor power supply*
2 *Current output*
3 *Fail safe relay*
4 *Relay 2*
5 *Relay 1*
6 *Voltage supply*
7 *4 … 20 mA/HART sensor (two-wire version)*

6.4 Connection VEGAMET 391

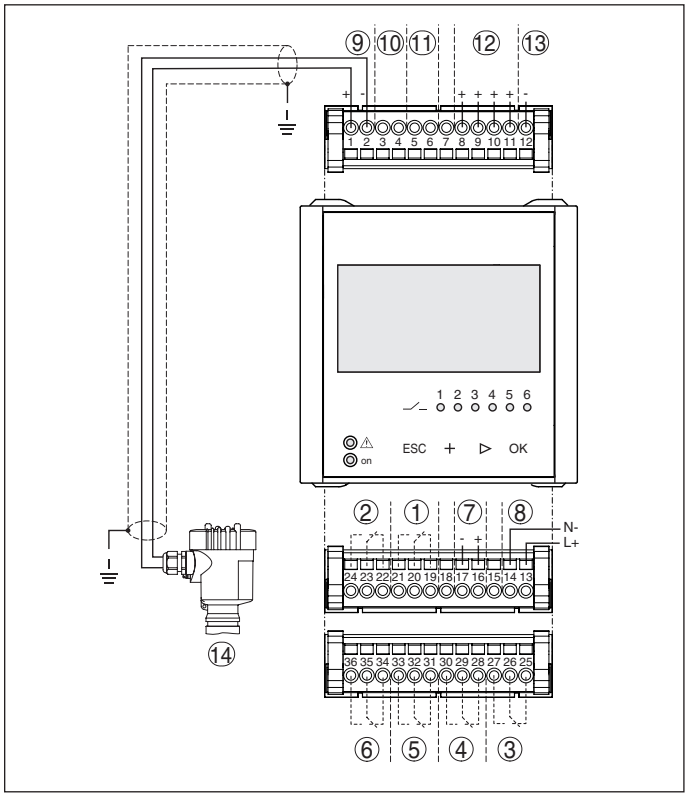


Fig. 13: Wiring plan with two-wire sensor

1 *Relay 1*
2 *Relay 2*
3 *Relay 3*
4 *Relay 4*
5 *Relay 5*
6 *Relay 6 (fail safe relay)*
7 *Current output*
8 *Voltage supply*
9 *Measurement data input with sensor supply (active input)*
10 *Connection for HART modem for sensor parameter adjustment*
11 *Measurement data input (passive input), not with Ex-ia version*
12 *Digital input 1 … 4*
13 *Common ground for digital input 1 … 4*
14 *4 … 20 mA/HART sensor (two-wire version)*

6.5 Connection VEGAMET 624

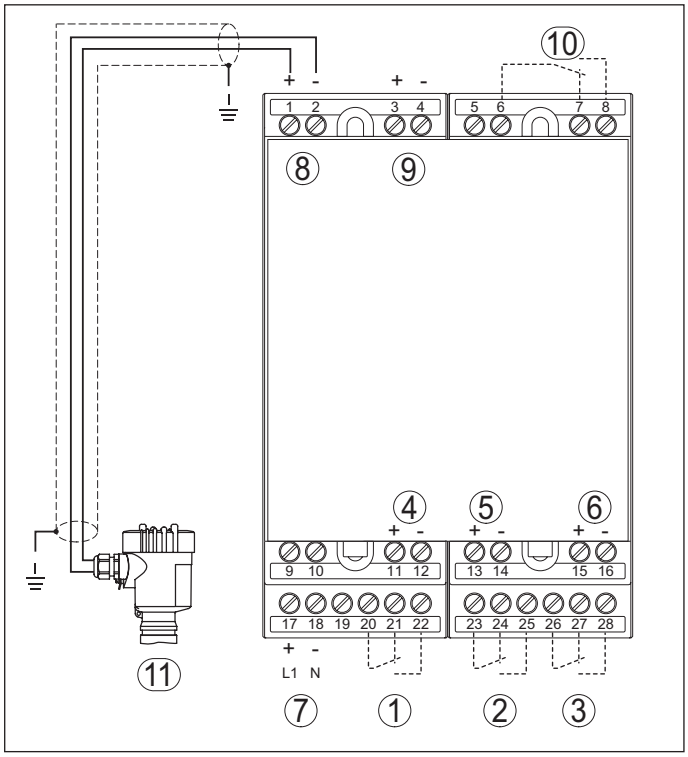


Fig. 14: Wiring plan with two-wire sensor

1 *Relay 1*
2 *Relay 2*
3 *Relay 3*
4 *Current output 1*
5 *Current output 2*
6 *Current output 3*
7 *Voltage supply*
8 *Measurement data input with sensor supply (active input)*
9 *Measurement data input (passive input), not with Ex-ia version*
10 *Fail safe relay*
11 *4 … 20 mA/HART sensor (two-wire version)*

6.6 Connection VEGAMET 625

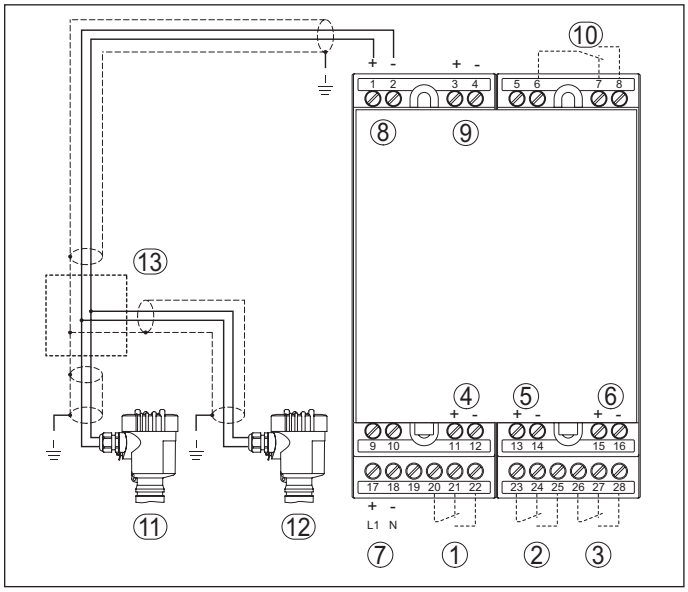


Fig. 15: Wiring plan with two-wire sensors

1 *Relay 1*
2 *Relay 2*
3 *Relay 3*
4 *Current output 1*
5 *Current output 2*
6 *Current output 3*
7 *Voltage supply*
8 *Measurement data input with sensor supply (active input)*
9 *Measurement data input (passive input), not with Ex-ia version*
10 *Fail safe relay*
11 *HART two-wire sensor with Multidrop address 1*
12 *HART two-wire sensor with Multidrop address 2*
13 *Distributor*

The VEGAMET 625 is designed for connection of two HART sensors). Because they are accessed via different addresses in the HART multidrop mode, both sensors must be connected to the same sensor input. These are either terminals 1/2 (active input) or terminals 3/4 (passive input). Mixed operation of active and passive input is not possible. Since this is a digital bus system, only one two-wire cable should lead to the two sensors. A distributor can then be connected directly forward of the sensors. As an alternative, the connection cable can be looped through the second cable entry on the sensor housing. The address assignment of the sensors should be carried out before connection.

6.7 Connection VEGASCAN 693

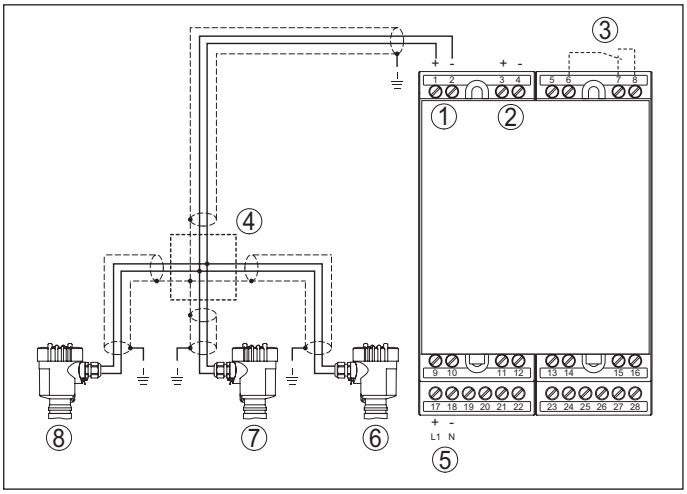


Fig. 16: Wiring plan with two-wire sensors

1 Measurement data input with sensor supply (active input)
2 Measurement data input (passive input), not in Ex ia
3 Fail safe relay
4 Distributor
5 Voltage supply
6 HART two-wire sensor with Multidrop address 1
7 HART two-wire sensor with Multidrop address 2
8 HART two-wire sensor with Multidrop address 3

The VEGASCAN 693 is designed for connection of up to 15 HART sensors (5 with Ex). Because they are accessed via different addresses in the HART multidrop mode, all sensors must be connected to the same sensor input. These are either terminals 1/2 (active input) or terminals 3/4 (passive input). Mixed operation of active and passive input is not possible. Since this is a digital bus system, only one two-wire cable should lead to the sensors. A distributor can then be connected directly forward of the sensors. As an alternative, the connection cable can be looped through the second cable entry on the sensor housing. The address assignment of the sensors should be carried out before connection.

7 Adjustment

7.1 Adjustment on the evaluation instrument

VEGAMET 381

The integrated display and adjustment unit is for measured value display, adjustment and diagnosis of the controller. Indication and adjustment is carried out in the front via a clear LC-display and a function switch as well as two keys.

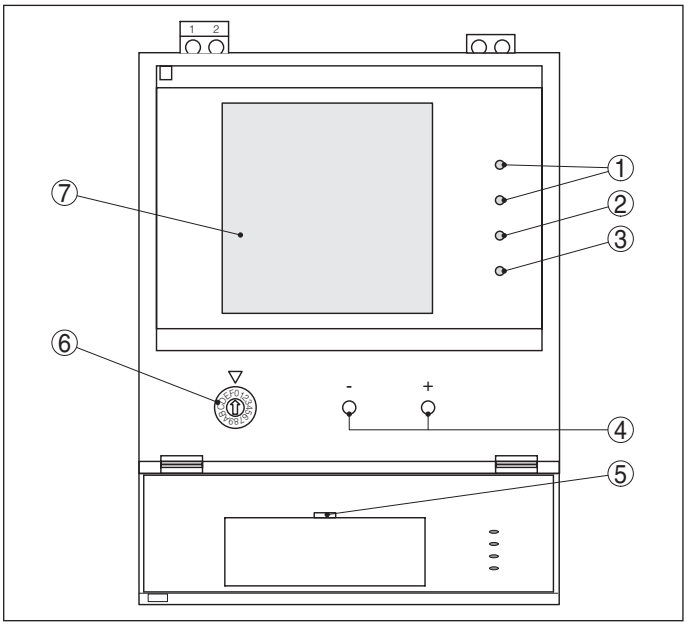


Fig. 17: Display and adjustment elements

1 *Status indication operating relay 1 and 2*
2 *Status indication fault signal*
3 *Status indication operation*
4 *Adjustment keys +/-*
5 *Insertable tag for identification of the measurement loop*
6 *Function switch*
7 *LC display*

VEGAMET 391

The integrated display and adjustment unit is used for measured value display, adjustment and diagnosis of the controller as well as the connected sensors. The indication and adjustment is carried out via the clear, graphic-capable display with background lighting as well as four keys in the front. The adjustment menu with selectable language is clearly structured and enables easy setup.

Certain adjustment options are not available or only partially available with the integrated display and adjustment unit. These are, for example, webserver and e-mail functions (only with instruments with optional Ethernet interface). For such applications, the use of PACTware with appropriate DTMs is recommended.

The entered parameters are generally saved in VEGAMET, optionally also in PACTware on the PC.

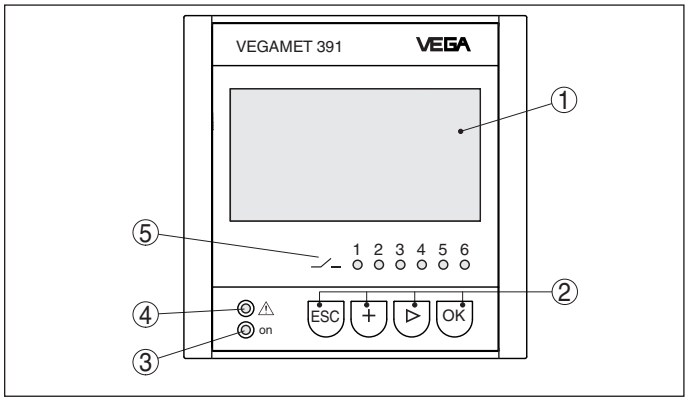


Fig. 18: Display and adjustment elements

1 *LC display*
2 *Adjustment keys*
3 *Status indication operation*
4 *Status indication fault signal*
5 *Status indication, operating relay 1 … 6*

VEGAMET 624/625, VEGASCAN 693

The integrated display and adjustment unit is used for measured value display, adjustment and diagnosis of the controller as well as the connected sensors. The indication and adjustment is carried out via the clear, graphic-capable display with background lighting as well as four keys in the front. The adjustment menu with selectable language is clearly structured and enables easy setup.

Certain adjustment options are not available or only partially available with the integrated display and adjustment unit. These are, for example, webserver and e-mail functions (only with instruments with optional Ethernet interface). For such applications, the use of PACTware with appropriate DTMs is recommended.

The entered parameters are generally saved in VEGAMET, optionally also in PACTware on the PC.

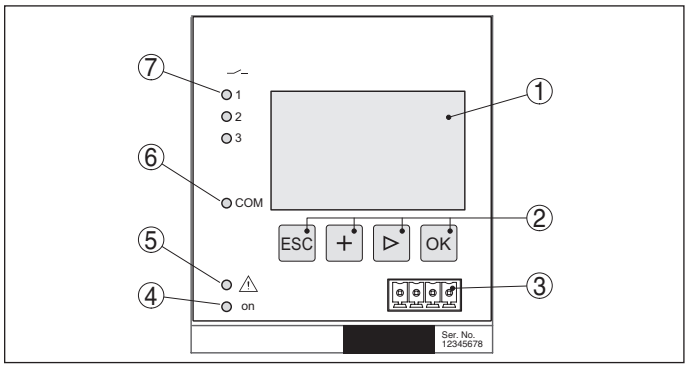


Fig. 19: Display and adjustment elements

1 *LC display*
2 *Adjustment keys*
3 *Communication interface for VEGACONNECT*
4 *Status indication operation*
5 *Status indication fault signal*
6 *Status indication interface activity*
7 *Status indication operating relay 1 - 3*

7.2 Adjustment with PACTware

PACTware/DTM

As an alternative to the display and adjustment module, the VEGAMET 391/624/625 and VEGASCAN 693 controllers can also be configured via a Windows PC. For this purpose, the configuration software PACTware and a suitable instrument driver (DTM) according to the FDT standard are required. The actual PACTware version as well as all available DTMs are compiled in a DTM Collection. Furthermore the DTMs can be integrated in other frame applications according to the FDT standard.

Depending on the instrument type, either the interface converter VEGACONNECT, a USB interface or the RS232/Ethernet interface with respective cable are required for connection.

All device DTMs are available as a free-of-charge standard version and as a full version that must be purchased. In the standard version, all functions for complete setup are already included. An assistant for simple project configuration simplifies the adjustment considerably. Saving/printing the project as well as import/export functions are also part of the standard version.

In the full version there is also an extended print function for complete project documentation as well as a save function for measured value and echo curves. In addition, there is a tank calculation program as well as a multiviewer for display and analysis of the saved measured value and echo curves.

Connection of the PC via USB (VEGAMET 391)

For a brief connection to the PC, for example for parameter adjustment, you should use the USB interface. The required connection socket is on the lower side of all instrument versions. Keep in mind that correct functioning of the USB interface is only guaranteed in the (limited) temperature range of 0 … 60 °C.

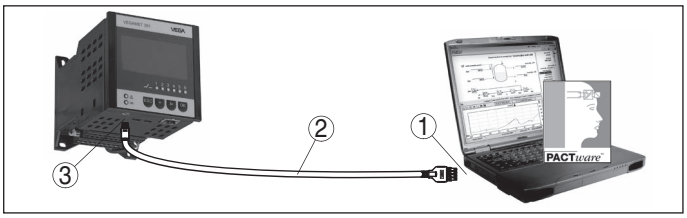


Fig. 20: Connection of the PC via USB

1 *USB interface of the PC*
2 *Mini-USB connection cable (in the scope of delivery)*
3 *USB interface of VEGAMET*

Connection of the PC via VEGACONNECT (VEGAMET 624/625, VEGASCAN 693)

For a brief connection of the PC, e.g. for parameter adjustment, connection can be carried out via the VEGACONNECT 4 interface converter. The necessary I^2C interface on the front is available on all instrument versions. On the computer side, connection is carried out via the USB interface.

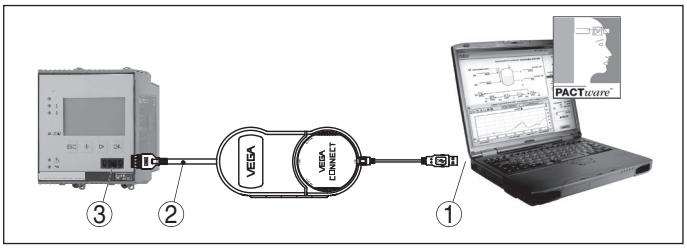


Fig. 21: Connection via VEGACONNECT

1 *USB interface of the PC*
2 *I^2C connection cable of VEGACONNECT 4*
3 *I^2C interface*

Connection of the PC via Ethernet (VEGAMET 391/624/625, VEGASCAN 693)

With the Ethernet interface, the instrument can be connected directly to an existing PC network. Any standard patch cable can be used. A cross-over cable must be used when connecting the instrument directly to the PC. To reduce EMC interferences, the supplied split ferrite should be connected to the Ethernet cable. Each instrument then gets its own IP address under which it can be accessed from anywhere in the network. The parameter adjustment of the instrument via PACTware and DTM can be carried out from any PC. The measured values can be made available to individual users within the company network as HTML chart. As an alternative, the independent, time or event-controlled transmission of measured values via e-mail is also possible. The measured values can also be called up via a visualisation software.

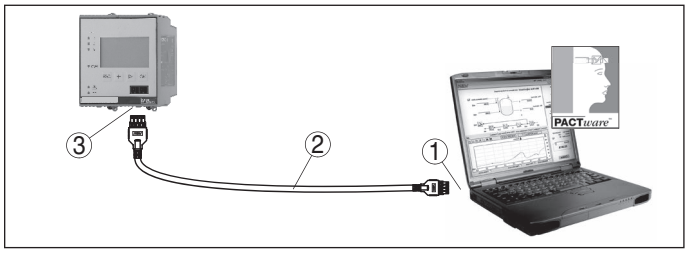


Fig. 22: Connection of the PC via Ethernet

1 *Ethernet interface of the PC*
2 *Ethernet connection cable (Cross-Over cable)*
3 *Ethernet interface*

Connection of the PC via RS232 (VEGAMET 391/624/625, VEGASCAN 693)

Via the RS232 interface, direct parameter adjustment and measured value retrieval from the instrument can be carried out with PACTware. Use the RS232 modem connection cable supplied with the instrument and an additionally connected null modem cable (e.g. article no. LOG571.17347). To reduce EMC interference, you should mount the supplied ferrite bead on the RS232 modem connection cable.

If there is no RS232 interface available on the PC or if it is already occupied, you can also use a USB-RS232 adapter (e.g. article no. 2.26900).

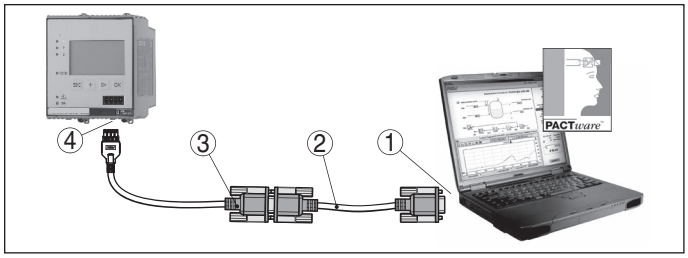


Fig. 23: Connection of the PC via RS232

1 *RS232 interface of the PC*
2 *RS232 interlink cable (article no. LOG571.17347)*
3 *RS232 modem connection cable (in the scope of delivery)*
4 *RS232 interface*

Connection of the modem via RS232 (VEGAMET 391/624/625, VEGASCAN 693)

The RS232 interface is particularly suitable for simple modem connection. External analog, ISDN and GSM modems with standard interface can be used. The necessary RS232 modem connection cable is included with the delivery. To reduce EMC interference, you should mount the supplied ferrite bead on the RS232 modem connection cable. Via a visualisation software, measured values can be retrieved remotely and further processed. Alternatively, autonomous time or event controlled transmission of measured values via e-mail is also possible. Remote parameter adjustment of the instrument and the connected sensors is also possible with PACTware.

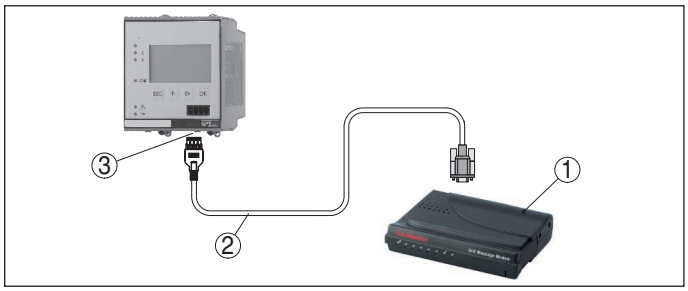
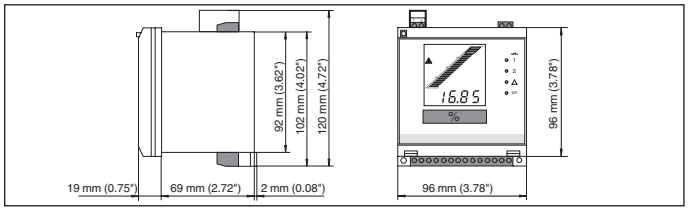


Fig. 24: Connection of the modem via RS232

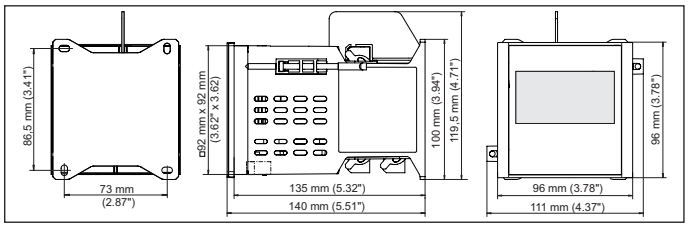
1 *Analogue, ISDN or GSM modem with RS232 interface*
2 *RS232 modem connection cable (in the scope of delivery)*
3 *RS232 interface*

8 Dimensions

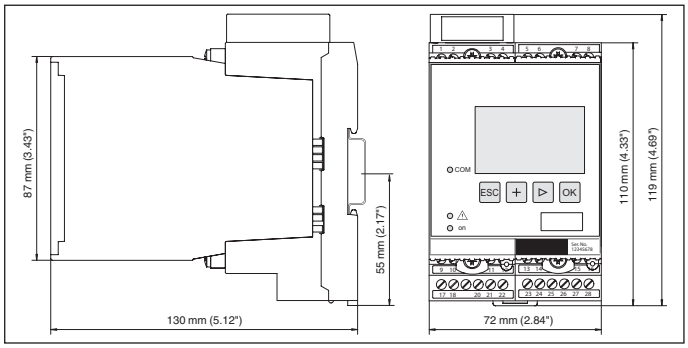
VEGAMET 381



VEGAMET 391



VEGAMET 624/625, VEGASCAN 693



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VEGA Grieshaber KG
Am Hohenstein 113
77761 Schiltach
Germany

Phone +49 7836 50-0
E-mail: info.de@vega.com
www.vega.com

29251-EN-210616