Operating Instructions

Capacitive level switch

VEGAPOINT 31

Three-wire: IO-Link, transistor

Document ID: 62325

Contents

1 About this document

1.1 Function

This instruction provides all the information you need for mounting, connection and setup as well as important instructions for mainte-nance, fault rectification, safety and the exchange of parts. Please read this information before putting the instrument into operation and keep this manual accessible in the immediate vicinity of the device.

1.2 Target group

This instruction manual is directed to trained personnel. The contents of this manual must be made available to the qualified personnel and implemented.

1.3 Symbols used

Document ID
This symbol on the front page of this instruction refers to the Docu-ment ID. By entering the Document ID on www.vega.com you will reach the document download.

Information, note, tip: This symbol indicates helpful additional infor-mation and tips for successful work.

Note: This symbol indicates notes to prevent failures, malfunctions, damage to devices or plants.

Caution: Non-observance of the information marked with this symbol may result in personal injury.

Warning: Non-observance of the information marked with this symbol may result in serious or fatal personal injury.

Danger: Non-observance of the information marked with this symbol results in serious or fatal personal injury.

Ex applications
This symbol indicates special instructions for Ex applications.

• **List**
The dot set in front indicates a list with no implied sequence.

1 **Sequence of actions**
Numbers set in front indicate successive steps in a procedure.

Disposal
This symbol indicates special instructions for disposal.

2 For your safety

2.1 Authorised personnel

All operations described in this documentation must be carried out only by trained and authorized personnel.

During work on and with the device, the required personal protective equipment must always be worn.

2.2 Appropriate use

The VEGAPOINT 31 is a sensor for point level detection.

You can find detailed information about the area of application in chapter "*Product description*".

Operational reliability is ensured only if the instrument is properly used according to the specifications in the operating instructions manual as well as possible supplementary instructions.

2.3 Warning about incorrect use

Inappropriate or incorrect use of this product can give rise to application-specific hazards, e.g. vessel overfill through incorrect mounting or adjustment. Damage to property and persons or environmental contamination can result. Also, the protective characteristics of the instrument can be impaired.

2.4 General safety instructions

This is a state-of-the-art instrument complying with all prevailing regulations and directives. The instrument must only be operated in a technically flawless and reliable condition. The operating company is responsible for the trouble-free operation of the instrument. When measuring aggressive or corrosive media that can cause a dangerous situation if the instrument malfunctions, the operating company has to implement suitable measures to make sure the instrument is functioning properly.

The safety instructions in this operating instructions manual, the national installation standards as well as the valid safety regulations and accident prevention rules must be observed.

For safety and warranty reasons, any invasive work on the device beyond that described in the operating instructions manual may be carried out only by personnel authorised by us. Arbitrary conversions or modifications are explicitly forbidden. For safety reasons, only the accessory specified by us must be used.

To avoid any danger, the safety approval markings and safety tips on the device must also be observed.

2.5 Installation and operation in the USA and Canada

This information is only valid for USA and Canada. Hence the following text is only available in the English language.

Installations in the US shall comply with the relevant requirements of the National Electrical Code (NEC - NFPA 70) (USA).

Installations in Canada shall comply with the relevant requirements of the Canadian Electrical Code (CEC Part I) (Canada).

A Class 2 power supply unit has to be used for the installation in the USA and Canada.

2.6 Safety instructions for Ex areas

For applications in hazardous areas (Ex), only devices with corresponding Ex approval may be used. Observe the Ex-specific safety instructions. These are an integral part of the device documentation and are enclosed with every device with Ex approval.

3   Product description

3.1   Configuration

Scope of delivery

The scope of delivery encompasses:

● VEGAPOINT 31 point level switch

● Information sheet "*Documents and software*" with:
  – Instrument serial number
  – QR code with link for direct scanning

● Information sheet "*PINs and Codes*" (with Bluetooth versions) with:
  – Bluetooth access code

ℹ Information:
Optional instrument features are also described in this instructions. The respective scope of delivery results from the order specification.

Constituent parts

The VEGAPOINT 31 consists of the components:

● Housing with integrated electronics
● Process fitting
● Plug (optional)
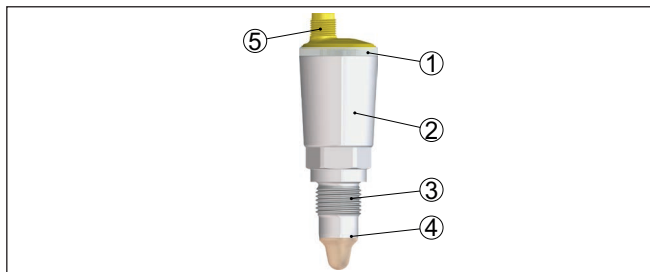
Fig. 1: VEGAPOINT 31

1   LED illuminated ring
2   Instrument housing
3   Process fitting
4   Sensor
5   Plug connection

Type label

The type label contains the most important data for identification and use of the instrument:

● Instrument type
● Information about approvals
● Configuration information
● Technical data
● Serial number of the instrument
● QR code for device identification
● Numerical code for Bluetooth access (optional)
● Manufacturer information

VEGA

Documents and software	To find order data, documents or software related to your device, you have the following options: ● Move to "www.vega.com" and enter in the search field the serial number of your instrument. ● Scan the QR code on the type label. ● Open the VEGA Tools app and enter the serial number under "***Documentation***".

3.2 Principle of operation

Application area	The VEGAPOINT 31 is a capacitive point level sensor for point level detection It is designed for industrial use in all areas of process technology and can be used in light-weight, fine bulk solids. Typical applications are overfill and dry run protection. Due to its simple and robust measuring system, the VEGAPOINT 31 can be used in almost all powdery bulk solids. **Function monitoring** The electronics module of VEGAPOINT 31 continuously monitors the following criteria via frequency generation: ● Failure of the signal generation ● Line break to the sensor element If a malfunction is detected or in case of voltage supply, the electronics takes on a defined switching status, i.e. the output is open (safe state).
Functional principle	An alternating electric field is generated at the tip of the measuring electrode. If the sensor is covered with medium, the resonance frequency changes. This change is detected by the electronics and converted into a switching command. Buildup is ignored to a certain degree and therefore has no influence on the measurement.

3.3 Adjustment

Local adjustment	The switching status of VEGAPOINT 31 can be checked from outside (LED illuminated ring).

> **Note:**
> The LED illuminated ring is not available for device versions with full metal housing.

Wireless adjustment	The optionally integrated Bluetooth module enables in addition a wireless adjustment of VEGAPOINT 31.[1] This is done via standard operating devices: ● Smartphone/tablet (iOS or Android operating system)

---

[1] Reduced effective range with M12 x 1 plug stainless steel (closed full metal housing), see chapter "Technical Data"

VEGAPOINT 31 • Three-wire: IO-Link, transistor

- PC/notebook with Bluetooth LE or Bluetooth USB adapter (Windows operating system)
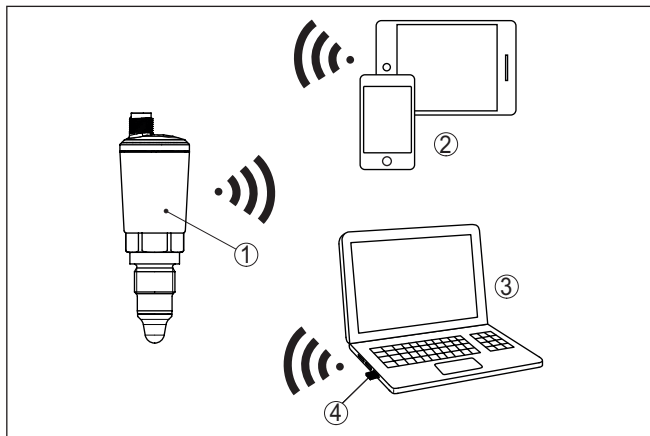
Fig. 2: Wireless connection to standard adjustment devices with integrated Bluetooth LE or alternatively Bluetooth USB adapter.

1   Sensor
2   Smartphone/Tablet
3   PC/Notebook
4   Bluetooth USB adapter

3.4   Packaging, transport and storage

Packaging

Your instrument was protected by packaging during transport. Its capacity to handle normal loads during transport is assured by a test based on ISO 4180.

The packaging consists of environment-friendly, recyclable cardboard. For special versions, PE foam or PE foil is also used. Dispose of the packaging material via specialised recycling companies.

Transport

Transport must be carried out in due consideration of the notes on the transport packaging. Nonobservance of these instructions can cause damage to the device.

Transport inspection

The delivery must be checked for completeness and possible transit damage immediately at receipt. Ascertained transit damage or concealed defects must be appropriately dealt with.

Storage

Up to the time of installation, the packages must be left closed and stored according to the orientation and storage markings on the outside.

Unless otherwise indicated, the packages must be stored only under the following conditions:

- Not in the open
- Dry and dust free
- Not exposed to corrosive media

- Protected against solar radiation
- Avoiding mechanical shock and vibration

Storage and transport temperature

- Storage and transport temperature see chapter "*Technical data - Ambient conditions*"
- Relative moisture 20 … 85 %

3.5 Accessories

The instructions for the listed accessories can be found in the download area on our homepage.

Threaded and hygienic socket

Various threaded and hygienic sockets are available for devices with threaded version.

You can find further information in chapter "*Technical Data*".

Protective cover

For devices with dust Ex approval, the housing must be protected against external damage.

Use the optional protective cover for this purpose.

4 Mounting

4.1 General instructions

Ambient conditions

The instrument is suitable for standard and extended ambient conditions acc. to DIN/EN/BS EN/IEC/ANSI/ISA/UL/CSA 61010-1. It can be used indoors as well as outdoors.

Process conditions

⚠️

Note:
For safety reasons, the instrument must only be operated within the permissible process conditions. You can find detailed information on the process conditions in chapter "*Technical data*" of the operating instructions or on the type label.

Hence make sure before mounting that all parts of the instrument exposed to the process are suitable for the existing process conditions.

These are mainly:

● Active measuring component
● Process fitting
● Process seal

Process conditions in particular are:

● Process pressure
● Process temperature
● Chemical properties of the medium
● Abrasion and mechanical influences

Switching point

The VEGAPOINT 31 can be mounted in any position. The instrument must be mounted in such a way that the sensor is at the height of the requested switching point.
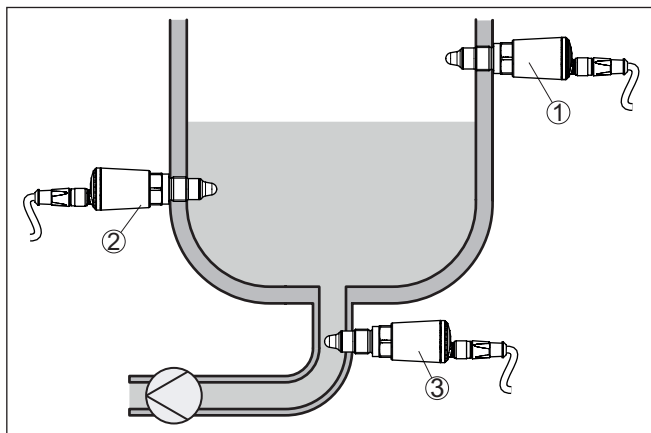

Fig. 3: Installation examples

1   Upper level detection (max.) as overflow protection
2   Lower level detection (min.) as dry run protection
3   Dry run protection (min.) for a pump

Note that the switching point varies depending on the type of medium and the mounting position of the sensor.

Protection against mois-
ture

Protect your instrument against moisture ingress through the following measures:

● Use a suitable connection cable (see chapter "*Connecting to power supply*")
● Tighten the cable gland or plug connector
● Lead the connection cable downward in front of the cable entry or plug connector

This applies mainly to outdoor installations, in areas where high humidity is expected (e.g. through cleaning processes) and on cooled or heated vessels.

Handling

The level switch is a measuring device for stationary screw mounting and must be treated accordingly. Damage to the measuring tip will destroy the instrument.

Use the hexagon above the thread for screwing in.

After mounting, make sure that the process fitting is screwed in correctly and thus securely seals even at maximum process pressure.

4.2 Mounting instructions

Inflowing medium

If VEGAPOINT 31 is mounted in the filling stream, unwanted false measurement signals can be generated. For this reason, mount VEGAPOINT 31 at a position in the vessel where no disturbances, e.g. from filling openings, agitators, etc., can occur.

Vessel installations

Metal vessel installation or struts can affect the switching sensitivity of the device.

This applies in particular to media with a low DK value.

For this reason, keep a minimum distance of 5 cm (2 in) to metal vessel installations.

Protective cover

For devices with dust Ex approval, the housing must be protected against external damage.

Use the optional protective cover for this purpose.

Screw the connection cable with the plug onto the device and lead the cable laterally or upwards through the protective cover.

Place the protective cover around the device housing as shown in the following illustration and fasten the two halves with the screws provided (1 Nm/0.74 lb ft).
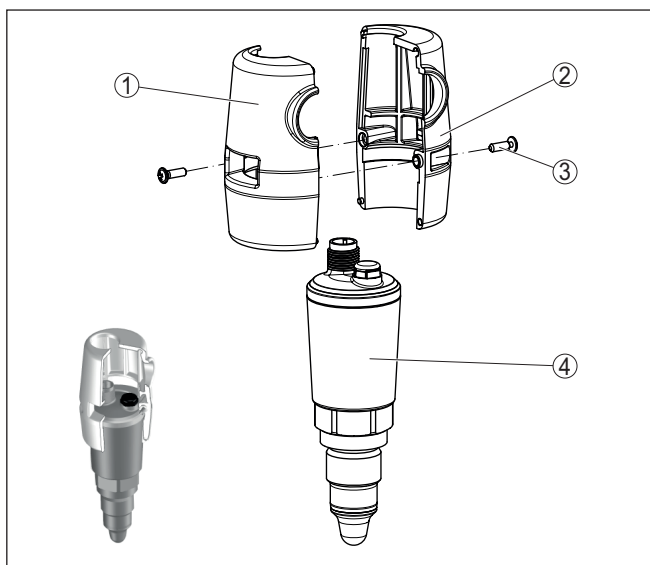
Fig. 4: Mounting of the protective cover

1   Protective cover - 1. half
2   Protective cover - 2. half
3   Fixing screws (2 pieces)
4   VEGAPOINT 31

VEGA

5 Connecting to power supply

5.1 Preparing the connection

Safety instructions

Always keep in mind the following safety instructions:

● Carry out electrical connection by trained, qualified personnel authorised by the plant operator
● If overvoltage surges are expected, overvoltage arresters should be installed

⚠ **Warning:**
Only connect or disconnect in de-energized state.

Voltage supply

The data for power supply are specified in chapter "*Technical data*".

⚠ **Note:**
Power the instrument via an energy-limited circuit (power max. 100 W) acc. to IEC 61010-1, e.g.

● Class 2 power supply unit (acc. to UL1310)
● SELV power supply unit (safety extra-low voltage) with suitable internal or external limitation of the output current

Keep in mind the following additional factors that influence the operating voltage:

● Lower output voltage of the power supply unit under nominal load
● Influence of additional instruments in the circuit (see load values in chapter "*Technical data*")

Connection cable

The instrument is connected with four-wire cable. If electromagnetic interference is expected which is above the test values of EN 61326-1 for industrial areas, shielded cable should be used.

5.2 Connecting

Instrument versions
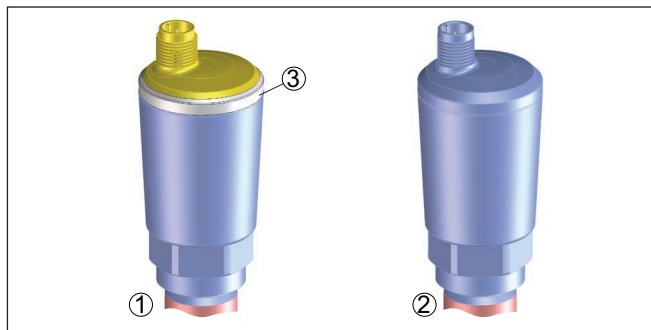
Fig. 5: Instrument versions

1 Device version with housing 316L and plastic
2 Device version with full metal housing 316L
3 360° status indication

M12 x 1 plug connection This plug connection requires a prefabricated cable with plug. Depending on the version, protection IP66/IP67 or IP68 (0.2 bar) or IP69.

5.3 Wiring plan

For connection to binary inputs of a PLC.

M12 x 1 plug
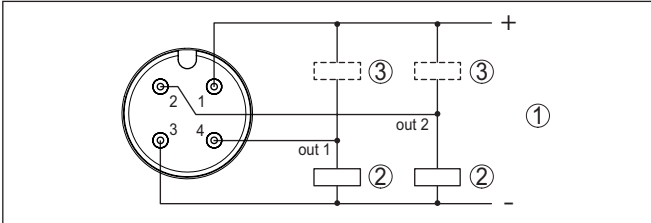
Fig. 6: Wiring plan M12 x 1 plug - Transistor output, three-wire

1   Voltage supply
2   PNP switching
3   NPN switching

Contact, plug connector	Function/Polarity
1	Voltage supply/+
2	Transistor output 2
3	Voltage supply/-
4	Transistor output 1/IO-Link

5.4 Switch-on phase

After switching on, the device first carries out a self-test in which the function of the electronics is checked.

The current measured value is then output on the signal cable.

6 Access protection

6.1 Bluetooth radio interface

Devices with a Bluetooth radio interface are protected against unwanted access from outside. This means that only authorized persons can receive measured and status values and change device settings via this interface.

Bluetooth access code

A Bluetooth access code is required to establish Bluetooth communication via the adjustment tool (smartphone/tablet/notebook). This code must be entered once when Bluetooth communication is established for the first time in the adjustment tool. It is then stored in the adjustment tool and does not have to be entered again.

The Bluetooth access code is individual for each device. It is printed on the device housing with Bluetooth. In addition, it is supplied with the device in the information sheet "*PINs and Codes*" In addition, the Bluetooth access code can be read out via the display and adjustment unit, depending on the device version.

The Bluetooth access code can be changed by the user after the first connection is established. If the Bluetooth access code is entered incorrectly, the new entry is only possible after a waiting period has elapsed. The waiting time increases with each further incorrect entry.

Emergency Bluetooth unlock code

The emergency Bluetooth access code enables Bluetooth communication to be established in the event that the Bluetooth access code is no longer known. It can't be changed. The emergency Bluetooth access code can be found in information sheet "*Access protection*". If this document is lost, the emergency Bluetooth access code can be retrieved from your personal contact person after legitimation. The storage and transmission of Bluetooth access codes is always encrypted (SHA 256 algorithm).

6.2 Protection of the parameterization

The settings (parameters) of the device can be protected against unwanted changes. The parameter protection is deactivated on delivery, all settings can be made.

Device code

To protect the parameterization, the device can be locked by the user with the aid of a freely selectable device code. The settings (parameters) can then only be read out, but not changed. The device code is also stored in the adjustment tool. However, unlike the Bluetooth access code, it must be re-entered for each unlock. When using the adjustment app or DTM, the stored device code is then suggested to the user for unlocking.

Emergency device code

The emergency device code allows unlocking the device in case the device code is no longer known. It can't be changed. The emergency device code can also be found on the supplied information sheet "*Access protection*". If this document is lost, the emergency device code can be retrieved from your personal contact person after legitimation.

The storage and transmission of the device codes is always encrypted (SHA 256 algorithm).

6.3 Storing the codes in myVEGA

If the user has a "*myVEGA*" account, then the Bluetooth access code as well as the device code are additionally stored in his account under "*PINs and Codes*". This greatly simplifies the use of additional adjustment tools, as all Bluetooth access and device codes are automatically synchronized when connected to the "*myVEGA*" account

7 Setup

7.1 Indication of the switching status

The switching status of the electronics can be checked via the 360° status indication (LEDs) integrated in the upper part of the housing.

The LED illuminated ring is not available for device versions with full metal housing.

The colours of the 360° status indication have the following meaning:[2]

● Green lights up - power supply connected, sensor output high-impedance
● Green flashing - Maintenance required
● Yellow lights up - power supply connected, sensor output low impedance
● Red lights - shortcircuit or overload in the load circuit (sensor output high-impedance)
● Red flashing - Error at sensor or electronics (sensor output high impedance) or device is in simulation

7.2 Function table

The following table provides an overview of the switching conditions depending on the set mode and the level.

The switching states correspond to the default setting.

The colours of the signal lamp correspond to the signalling according to NAMUR NE 107.

Coverage	MAX Switching status Output 1	MIN Switching status Output 2	360° status indication[3]
Covered	open	closed	Green
Uncovered	closed	open	Yellow
Fault (Covered/Uncovered)	open	open	Red

[2] Default setting
[3] Switching status of output 1

7.3   Menu overview

Adjustment possibilities

There are several ways to operate the device.

The Bluetooth version (optional) of the instrument enables a wireless connection to standard adjustment units. This can be smartphones/tablets with iOS or Android operating system or PCs with PACTware and Bluetooth USB adapter.

The following functional descriptions apply to all adjustment devices (smartphone, tablet, laptop …).

For technical reasons, individual functions are not available on all devices. You can find information on this in the function description.

General information

The adjustment menu is divided into three sections:

Main menu: Measurement loop name, application, display etc.

Extended functions: Output, switching output, reset etc.

Diagnosis: Status, peak indicator, simulation, sensor information etc.

> **Note:**
> Please note that individual menu items are only optionally available or depend on the settings in other menu items.

Main menu

Menu item	Function	Default value
Measurement loop name	Free naming of the device	Sensor
Application	Selection of the application	Standard
360° status indication	Brightness	100 %
	Signalling	NAMUR NE 107
	Schaltausgang	Gelb
	Operating status	Grün
	Fault	Rot
Adjustment with medium[4]	Media adjustment	Accept current device status

Extended functions

Menu item	Function	Default value
Output	Transistor function (P-N)	PNP
	Function output (OU1)	Opener (HNC)
	Function output 2 (OU2)	Closing contact (HNO)
Switching output	Switching point (SP1)	85 %
	Switching delay (DS1)	0.5 s
	Reset point (RP1)	83 %
	Reset delay (DR1)	0.5 s

[4] Only for "User-defined" application

Menu item	Function	Default value
Switching output 2	Switching point (SP2)	85 %
	Switching delay (DS2)	0.5 s
	Reset point (RP2)	83 %
	Reset delay (DR2)	0.5 s
Indication	Brightness LED illuminated ring	100 %
	Signalling	NAMUR NE 107
	Fault	Red
	Switching output	Yellow
	Operating status	Green
Access protection	Bluetooth access code	See supplementary sheet "PINs and Codes".
	Protection of the parameterization	Deactivated
Reset	-	-
Units	Temperature unit	°C

Diagnostics

Menu item	Function	Default value
Status	Device status	OK
	Status outputs	OK
	Parameter modification counter	Quantity
Peak indicator	Peak indicator, electronic temperature	-
	Peak indicator measuring cell temperature	-
	Peak indicator resonance frequency	-
Measured values	Indication of the measured values and outputs	-
Simulation	Start of the simulation	-
Customer service	Service information	-
Impedance curve	Indication of impedance curve	-
Sensor information	Display of sensor information	-
Sensor characteristics[5]	Indication of sensor characteristics	-

7.4 Parameter adjustment

7.4.1 Main menu

Measurement loop name (TAG)

Here you can assign a suitable measurement loop name.

This name is stored in the sensor and is used to identify the device.

You can enter names with max. 19 characters. The character set comprises:

● Upper and lower case letters from A … Z

[5] Only DTM adjustment

- Numbers from 0 … 9
- Special characters and blanks

Application   In this menu item you can select the application. You can choose from
                         the following applications:

- Standard
- User-defined

Note:
The selection of the application has a considerable influence on all
other menu items. Keep in mind that as you continue with the param-
eter adjustment, individual menu items are only optionally available.

Standard (level detection)
If "*Standard*" is selected, an automatic adjustment is carried out. A
manual adjustment is only necessary in special media.

User-defined
If you have selected the application *User-defined* you can adjust the
switching states with the original medium or with the actual covering
state.

Depending on the selected application, you can produce the cor-
responding occultation states and transfer them directly.

See function "*Adjustment with medium*".

360° status indication   With this menu item you can set the function of the 360° status indica-
                             tion.

- Brightness of the 360° status indication
- Signalling

Brightness of the 360° status indication
Brightness selection in 10 percent increments (0 %, 10 %, 20 %
30 %, 40 % … 100 %)

Signalling
Acc. to NAMUR NE 107

In this menu item you can select the standardized signalling accord-
ing to NAMUR NE 107 or an individual signalling.

If you have selected signalling according to NAMUR NE 107, the
signalling is set as follows:

- Failure/malfunction - Red
- Operating status/output 1 closed - Yellow
- Operating status/output 1 open - Green

In addition there are the following status indications:

- Simulation - red flashing
- Maintenance required - green flashing

Individual signalling
If you have selected "Individual signaling", you can select the respec-
tive LED colour separately for the following switching states.

- Fault
- Switching output
- Operating status

The following colours are available:

Red, yellow, green, blue, white, orange, no signalling. You can also set all colours individually in addition.

You can also have every status displayed flashing additionally.

Adjustment with medium

If you have selected "*Application*" in the menu item, the function *User-defined*, you can adjust the switching states with the original medium or with the actual covering state.

Depending on the selected application, you can produce the corresponding occultation states and transfer them directly.

You can enter the determined values for both outputs "*Together*" or "*Separate*". If you select the adjustment "*Separate*", you can set a different switching threshold for the second output.

Adjust outputs - Together
- Uncovered
- Covered

Adjust outputs - Separate
- Uncovered
- Covered
- Uncovered output 2
- Covered output 2

After completing the adjustment process, you must accept the adjustment values. Only then are the entered values active.

7.4.2 Extended functions

Output

In this menu item you can select the general settings for the output.

Transistor function
For devices with transistor output, you can set the function of the output.

- Functional principle PNP
- Functional principle NPN

With the outputs

Function output (OU1)
In this menu item you can set the function of the two outputs independently of each other.

Closing contact = HNO (Hysterese Normally Open) - MIN (dry run protection)

Opener = HNC (Hysterese Normally Closed) - MAX (overfill protection)

Closing contact = FNO (Window Normally Open)

Opener = FNC (Window Normally Closed)

Function output 2 (OU2)
In this menu item you can set the function of the two outputs independently of each other.

The selection options are the same as in output 1.

Hysteresis function (HNO/HNC)
The hysteresis has the task of keeping the switching state of the output stable.

When the switching point (SP) is reached, the output switches and remains in this switching state. Only when the reset point (RP) is reached does the output switch back.

If the measured variable moves between switching and reset point, the state of the output does not change.
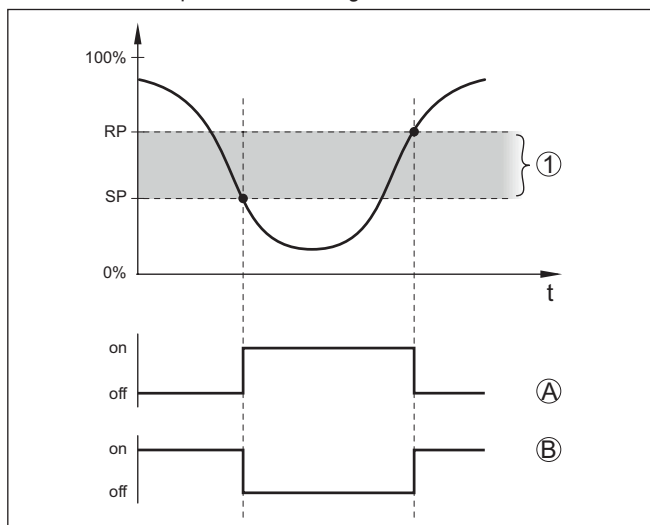
Fig. 7: Hysteresis function

SP Switching point
RP Reset point
A   HNO (Hysterese Normally Open) = Closing contact (MIN)
B   HNC (Hysterese Normally Closed) = Opener (MAX)
t   Timeline
1   Hysteresis

Window function (FNO/FNC)
With the window function (FNO and FNC) a nominal range, a so-called window, can be defined.

The output changes its state when the measured variable enters the window between the values Window High (FH) and Window Low (FL). If the measured variable leaves the window, the output returns to its previous state. If the measured variable moves within the window, the state of the output does not change.
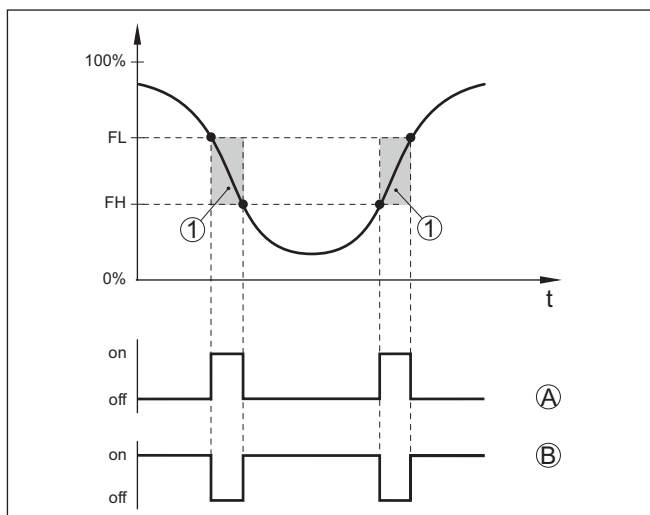
Fig. 8: Window function

FH Window high - upper value
FL Window low - lower value
A   FNO (Window Normally Open) = Closing contact
B   FNC (Window Normally Closed) = Opener
t   Timeline
1   Window area

Switching output

In this menu item, you can select the settings for the switching output. This is only possible if *User-defined* was selected in the application.

In the function "*Impedance curve*" you can see the changes and the position of the hysteresis.

● Switching point (SP1)
● Reset point (RP1)
● Switching delay (DS1)
● Reset delay (DR1)

Switching point (SP1)
The switching point (SP1) indicates the switching threshold of the sensor related to the immersion depth or the degree of coverage.

The percentage defines the lower range limit of the hysteresis.

The setting is a degree for the sensitivity of the sensor tip.

Reset point (RP1)
The reset point (RP) controls the sensitivity of the sensor when the sensor tip becomes free.

The percentage defines the upper range limit of the hysteresis.

The setting is a degree for the sensitivity of the sensor tip.

VEGAPOINT 31 • Three-wire: IO-Link, transistor

Switching delay (DS1)
The switching delay (DS) extends the reaction time until the sensor is switched over when the sensor tip is covered.

You can enter a delay time from 0 to 60 seconds.

Reset delay (DR1)
The reset delay (DR) extends the reaction time until the sensor switches over when the sensor tip becomes free.

You can enter a delay time from 0 to 60 seconds.

Switching output 2

For devices with M12 x 1 plug , you can set an additional switching output separately.

In this menu item you define which function the switching output 2 outputs.

The procedure corresponds to the above settings of the switching output. See "*Switching output*".

- Switching point (SP2)
- Reset point (RP2)
- Switching delay (DS2)
- Reset delay (DR2)

ℹ️ **Note:**
If switching output 1 of the sensor is in I/O mode, switching output 2 is not active.

Access protection

You can use the "*Access protection*" function to block or release access via the Bluetooth interface.

Bluetooth access code
With the function "*Bluetooth access code*" you can release the Bluetooth data connection.

To activate the function, you must enter the six-digit access code.

You can find the Bluetooth access code in the "*PINs and Codes*" sheet of the shipping documentation.

See also chapter "*Access protection*".

Protection of the parameterization
In this menu item you can also protect the parameter adjustment of the sensor.

For this function you need the six-digit device code.

The device code can also be found in the "*PINs and Codes*" sheet of the shipping documentation.

See also chapter "*Access protection*".

Reset

After a reset, parameter adjustments made by the user are reset.

The following reset functions are available:

Restore basic settings: Resetting the parameter settings incl. special parameters to the default values of the respective device.

Restore delivery status: Restores the parameter settings at the time of shipment from the factory, incl. order-specific settings. This menu item is only available if order-specific settings have been made ex factory.

ℹ Note:
The default values set at the factory can be found in the table of the menu plan at the beginning of this chapter.

Units

In this menu item you can define the temperature unit of the device (UNI).

● °C
● °F

7.4.3 Diagnostics

Status

In this menu item you can retrieve the status of the device.

● Device status
● Status outputs
● Parameter modification counter

The display "*Device status*" provides an overview of the current status of the device.

If fault messages or other information are available, a corresponding message is displayed here.

The display "*Status outputs*" gives an overview of the current status of the device outputs.

The menu item "*Parameter change counter*" gives a quick overview if the parameter adjustment of the device was changed.

The value is increased by one each time the parameters of the device are changed. The value is retained in the event of a reset.

Peak indicator

In this menu item you can retrieve the peak indicator of the device.

For each peak indicator there is a max. and a min. value.

In addition, the current value is displayed.

● Peak indicator, electronic temperature
● Peak indicator measuring cell temperature
● Peak indicator resonance frequency

In this window you can also reset each of the three peak indicator individually.

Measured values

In this menu item you can retrieve the current measured values of the device.

Measured values
Here you can view the current coverage status of the device (covered/uncovered).

Additional measured values
Here you can find additional measured values of the device.

● Electronic temperature (°C/°F)

● Measuring cell temperature (°C/°F)
● Resonance frequency (%)

Outputs
Here you can retrieve the current switching states of the outputs separately (closed/open).

● Output
● Output 2

Function test

In this menu item you can start an annual function test according to WHG.

The function test serves as proof of the recurring test in accordance with the approval for overfill protections.

The function test is only active if the device has WHG approval.

In order to output the complete documentation, the function test is only possible in PACTware.

Further information can be found in the approval documentation according to WHG.

⚠ **Note:**
Note that the measuring function of the sensor is disabled for the duration of the function test and that downstream devices are activated during the function test.

Start the function test by clicking the button "*Start proof test*".

Check the correct reaction of the output and the downstream devices. During the function test, the 360° status display flashes red.

After the function test has been completed, you can save a PDF file containing all device data and adjustment parameters at the time of the function test.

Simulation

In this menu item you can simulate the function of the two switching outputs separately.

⚠ **Note:**
Make sure the connected downstream devices are activated during the simulation.

First select the desired switching output and start the simulation.

Then select the desired switching state.

● Open
● Closed

Click on the button "Accept simulation value".

The sensor now switches to the desired simulation switching status.

During simulation, the LED display flashes in the colour of the selected switching status.

A simulation of the fault status is not possible.

To cancel the simulation, click on "Terminate simulation".

Note:
Without manual deactivation, the sensor terminates the simulation automatically after 60 minutes.

Customer service

In this menu item you can find all service numbers and your respective contact person.

● Service phone
● 24 h hotline
● Message to the customer service
● Contact person

With the function *Message to the customer service* you can send an e-mail to the service department.

Your contact persons are only visible if you are logged in.

Impedance curve

In this menu item you can see the impedance curve of the device.

The impedance curve gives information about the switching behaviour of the sensor.

At the lowest point of the black curve is the current switching point (resonance point).

Sensor information

In this menu item you can retrieve the sensor information of the device.

● Device name
● Serial number
● Hardware version
● Software version
● Factory calibration date
● Device Revision
● Sensor acc. to WHG

Sensor characteristics

In this menu item you can retrieve the sensor features of the device.

This menu item can only be selected via PACTware with DTM.

● Order texts
● Instrument version
● Electronics
● etc.

8 Setup with smartphone/tablet (Bluetooth)

8.1 Preparations

System requirements

Make sure that your smartphone/tablet meets the following system requirements:

- Operating system: iOS 13 or newer
- Operating system: Android 5.1 or newer
- Bluetooth 4.0 LE or newer

Download the VEGA Tools app from the "*Apple App Store*", "*Google Play Store*" or "*Baidu Store*" to your smartphone or tablet.

8.2 Connecting

Connecting

Start the adjustment app and select the function "*Setup*". The smartphone/tablet searches automatically for Bluetooth-capable instruments in the area.

The message "*Connecting …*" is displayed.

The devices found are listed and the search is automatically continued.

Select the requested instrument in the device list.

As soon as the Bluetooth connection to a device is established, the LED display of the device in question flashes blue 4 times.

Authenticate

When establishing the connection for the first time, the operating tool and the sensor must authenticate each other. After the first correct authentication, each subsequent connection is made without a new authentication query.

Enter Bluetooth access code

For authentication, enter the 6-digit Bluetooth access code in the next menu window. You can find the code on the outside of the device housing and on the information sheet "*Pins and Codes*" in the device packaging.

For the very first connection, the adjustment unit and the sensor must authenticate each other.

| Bluetooth access code | | OK |

Enter the 6 digit Bluetooth access code of your Bluetooth instrument.
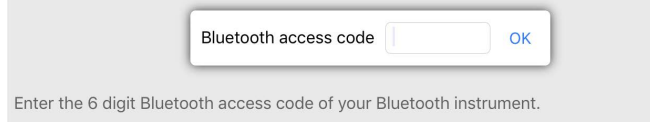
Fig. 9: Enter Bluetooth access code

ℹ Note:
If an incorrect code is entered, the code can only be entered again after a delay time. This time gets longer after each incorrect entry.

The message "*Waiting for authentication*" is displayed on the smartphone/tablet.

Connected

After connection, the sensor adjustment menu is displayed on the respective adjustment tool.

If the Bluetooth connection is interrupted, e.g. due to a too large distance between the two devices, this is displayed on the adjustment tool. The message disappears when the connection is restored.

Change device code

Parameter adjustment of the device is only possible if the parameter protection is deactivated. When delivered, parameter protection is deactivated by default and can be activated at any time.

It is recommended to enter a personal 6-digit device code. To do this, go to menu "*Extended functions*", "*Access protection*", menu item "*Protection of the parameter adjustment*".

8.3 Sensor parameter adjustment

Enter parameters

The sensor adjustment menu is divided into two halves:

On the left you'll find the navigation section with the menus "*Setup*", "*Diagnosis*" and others.

The selected menu item, recognisable by the colour change, is displayed in the right half.
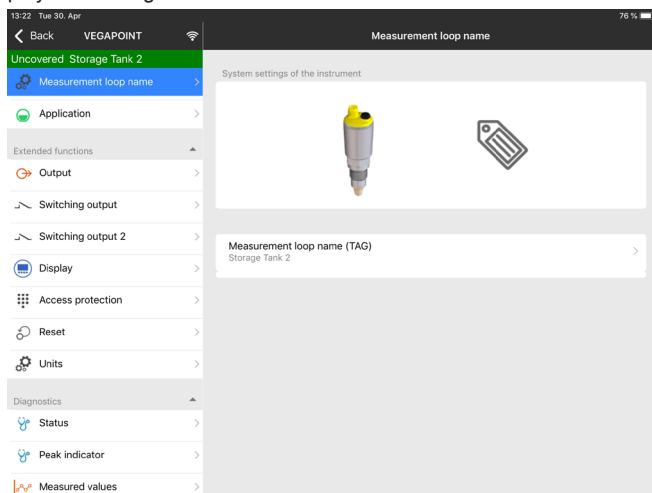
Fig. 10: Example of an app view - Setup

9 Setup with PC/notebook (Bluetooth)

9.1 Preparations

System requirements

Make sure that your PC/notebook meets the following system requirements:

- Operating system Windows 10 or newer
- DTM Collection 10/2020 or newer
- Bluetooth 4.0 LE or newer

Activate Bluetooth connection

Activate the Bluetooth connection via the project assistant.

> **i** **Note:**
> Older systems do not always have an integrated Bluetooth LE. In these cases, a Bluetooth USB adapter is required. Activate the Bluetooth USB adapter using the Project Wizard.

After activating the integrated Bluetooth or the Bluetooth USB adapter, devices with Bluetooth are found and created in the project tree.

9.2 Connecting

Connecting

Select the requested device for the online parameter adjustment in the project tree.

As soon as the Bluetooth connection to a device is established, the LED display of the device in question flashes blue 4 times.

Authenticate

When establishing the connection for the first time, the operating tool and the device must authenticate each other. After the first correct authentication, each subsequent connection is made without a new authentication query.

Enter Bluetooth access code

For authentication, enter in the next menu window the 6-digit Bluetooth access code:

Fig. 11: Enter Bluetooth access code

You can find the code on the outside of the device housing and on the information sheet "*PINs and Codes*" in the device packaging.

Note:

ℹ If an incorrect code is entered, the code can only be entered again after a delay time. This time gets longer after each incorrect entry.

The message "*Waiting for authentication*" is displayed on the PC/notebook.

Connected

After connection, the device DTM appears.

If the connection is interrupted, e.g. due to a too large distance between device and adjustment tool, this is displayed on the adjustment tool. The message disappears when the connection is restored.

Change device code

Parameter adjustment of the device is only possible if the parameter protection is deactivated. When delivered, parameter protection is deactivated by default and can be activated at any time.

It is recommended to enter a personal 6-digit device code. To do this, go to menu "*Extended functions*", "*Access protection*", menu item "*Protection of the parameter adjustment*".

9.3 Sensor parameter adjustment

Enter parameters

The sensor adjustment menu is divided into two halves:

On the left you'll find the navigation section with the menus "*Setup*", "*Display*", "*Diagnosis*" and others.

The selected menu item, recognisable by the colour change, is displayed in the right half.
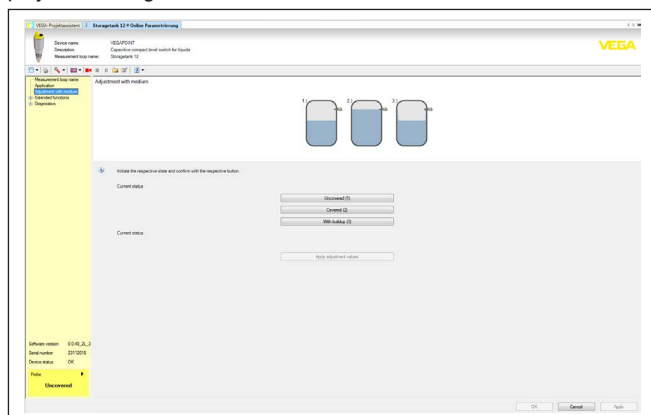
Fig. 12: Example of a DTM view - Setup

10 Diagnostics and servicing

10.1 Maintenance

Maintenance

If the device is used properly, no special maintenance is required in normal operation.

Cleaning

The cleaning helps that the type label and markings on the instrument are visible.

Take note of the following:

- Use only cleaning agents which do not corrode the housings, type label and seals
- Use only cleaning methods corresponding to the housing protection rating

10.2 Rectify faults

Reaction when malfunction occurs

The operator of the system is responsible for taking suitable measures to rectify faults.

Causes of malfunction

The device offers maximum reliability. Nevertheless, faults can occur during operation. These may be caused by the following, e.g.:

- Sensor
- Process
- Voltage supply
- Signal processing

Fault rectification

The first measures are:

- Evaluation of fault messages
- Checking the output signal
- Treatment of measurement errors

A smartphone/tablet with the adjustment app or a PC/notebook with the software PACTware and the suitable DTM offer you further comprehensive diagnostic possibilities. In many cases, the causes can be determined in this way and the faults eliminated.

Reaction after fault rectification

Depending on the reason for the fault and the measures taken, the steps described in chapter "*Setup*" must be carried out again or must be checked for plausibility and completeness.

24 hour service hotline

Should these measures not be successful, please call in urgent cases the VEGA service hotline under the phone no. **+49 1805 858550**.

The hotline is also available outside normal working hours, seven days a week around the clock.

Since we offer this service worldwide, the support is provided in English. The service itself is free of charge, the only costs involved are the normal call charges.

VEGA

10.3 Diagnosis, fault messages

Checking the switching signal

The 360° status indication on the device indicates the operating status of the device (display according to NE 107). At the same time it indicates the switching state of the output. This enables simple on-site diagnosis without the need for tools.

Error	Cause	Rectification
Green signal lamp off	Voltage supply interrupted.	Check voltage supply and cable connection
	Electronics defective	Exchange the instrument or send it in for repair
Green signal lamp flashes	Maintenance required	Carry out maintenance
Red signal lamp lights (switching output high-impedance)	Error with the electrical connection	Connect device according to wiring plan
	Shortcircuit or overload	Check electrical connection
	Measuring tip damaged	Check whether the measuring tip is damaged
Red signal lamp flashes (switching output high-impedance)	Sensor outside the specification	Check sensor adjustment Switching points may be interchanged
	Sensor is in simulation mode	Terminate simulation mode

Error messages

ℹ Information:
You can find the current device status and possibly an error code in the operating app under Diagnosis - Status - Device Status.

Failure/Error		
Red control lamp lights up		
Error	Cause	Rectification
F013	no measured value available	Error in the electronics Restart instrument If the error occurs again, replace the device
F036	no operable sensor software	Software update aborted or faulty Repeat software update
F080	General software error	Restart instrument
F105	Measured value is determined	Device is still in the switch-on phase Wait until the device is ready for operation
F111	Switching points interchanged	Repeat sensor adjustment The switching point (SP) must be smaller than the reset point (RP)
F260	Error in the calibration	Repeat device adjustment
F261	Error in the instrument settings	Carry out device reset Reset device to delivery status

VEGAPOINT 31 • Three-wire: IO-Link, transistor

Out of specification

Red signal lamp flashes

Error	Cause	Rectification
S600	Electronics temperature too high	Error in the electronics
		Allow device to cool down and restart
		If the error occurs again, check the ambient temperature
S604	Overload on output	Switching output overloaded
		Check electrical connection
		Reduce switching load

Maintenance required

Green signal lamp flashes

Error	Cause	Rectification
M511	Inconsistent software	Software faulty
		Carry out software update

Function check

Red signal lamp flashes

Error	Cause	Rectification
C700	Simulation active	Terminate simulation mode

10.4 Status messages according to NE 107

The instrument features self-monitoring and diagnostics according to NE 107 and VDI/VDE 2650. In addition to the status messages in the following tables there are more detailed error messages available under the menu item "*Diagnostics*" via DTM or app.

Status messages

The status messages are divided into the following categories:

- Failure
- Function check
- Out of specification
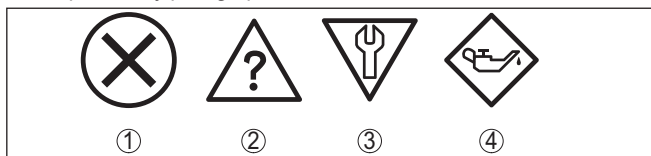- Maintenance required

and explained by pictographs:

Fig. 13: Pictographs of the status messages

1   Failure - red
2   Out of specification - yellow
3   Function check - orange
4   Maintenance required - blue

Malfunction (Failure):

Due to a malfunction in the instrument, a fault signal is output.

This status message is always active. It cannot be deactivated by the user.

Function check:

The instrument is being worked on, the measured value is temporarily invalid (for example during simulation).

This status message is inactive by default.

Out of specification:

The measured value is unreliable because an instrument specification was exceeded (e.g. electronics temperature).

This status message is inactive by default.

Maintenance required:

Due to external influences, the instrument function is limited. The measurement is affected, but the measured value is still valid. Plan in maintenance for the instrument because a failure is expected in the near future (e.g. due to buildup).

This status message is inactive by default.

Failure

| Code | Cause | Rectification |
Text message		
F013 no measured value available	Error in capacitive measurement	Send instrument for repair
F036 No operable software	Wrong software type Software update not successful or aborted	Repeat software update
F080 General software error	Software error	Restart instrument
F105 Measured value is determined	Device is still in the switch-on phase	Wait for the end of the switch-on phase
F260 Error in the calibration	Error in the calibration carried out in the factory Error in the EEPROM	Send instrument for repair
F261 Error in the instrument settings	Checksum error in the configuration values	Carry out a reset

Function check

| Code | Cause | Rectification |
Text message		
C700 Simulation active	A simulation is active	Finish simulation Wait for the automatic end after 60 mins.

VEGAPOINT 31 • Three-wire: IO-Link, transistor

Out of specification

Code Text message	Cause	Rectification
S600 Impermissible electronics temperature	Temperature of the electronics in the non-specified range	Check ambient temperature Insulate electronics
S604 Switching output overloaded	Overload or short circuit on the switch-ing output	Check electrical connection

Maintenance

Code Text message	Cause	Rectification
M511 Inconsistent software con-figuration	Software faulty or outdated	Carry out software update

10.5 Software update

The device software is updated via Bluetooth.

The following components are required:

● Instrument
● Voltage supply
● PC/notebook with PACTware/DTM and Bluetooth USB adapter
● Current instrument software as file

You can find the current instrument software as well as detailed information on the procedure in the download area of our homepage: www.vega.com.

⚠ **Caution:**
Instruments with approvals can be bound to certain software versions. Therefore make sure that the approval is still effective after a software update is carried out.

You can find detailed information in the download area at www.vega.com.

10.6 How to proceed if a repair is necessary

On our homepage you will find detailed information on how to pro-ceed in the event of a repair.

So that we can carry out the repair quickly and without queries, gen-erate a instrument return form there with the data of your device.

The following is required:

● The serial number of the instrument
● A short description of the fault
● Details of the medium, if applicable

Print the generated instrument return form.

Clean the instrument and pack it damage-proof.

Send the printed instrument return form and possibly a safety data sheet together with the device.

You will find the address for the return on the generated instrument return form.

11 Dismount

11.1 Dismounting steps

To remove the device, carry out the steps in chapters "*Mounting*" and "*Connecting to power suplly*" in reverse.

⚠️ **Warning:**
When dismounting, pay attention to the process conditions in vessels or pipelines. There is a risk of injury, e.g. due to high pressures or temperatures as well as aggressive or toxic media. Avoid this by taking appropriate protective measures.

11.2 Disposal

Pass the instrument on to a specialised recycling company and do not use the municipal collecting points.

Remove any batteries in advance, if they can be removed from the device, and dispose of them separately.

If personal data is stored on the old device to be disposed of, delete it before disposal.

If you have no way to dispose of the old instrument properly, please contact us concerning return and disposal.

12 Certificates and approvals

12.1 Radio licenses

Bluetooth
The Bluetooth radio module in the device has been tested and approved according to the current edition of the applicable country-specific norms or standards.

The confirmations as well as regulations for use can be found in the document "*Radio licenses*" supplied or on our homepage.

12.2 Food and pharmaceutical certificates

Versions for use in the food and pharmaceutical industries are available or in preparation for the device or the device series.

The corresponding certificates can be found on our homepage.

12.3 Conformity

The device complies with the legal requirements of the applicable country-specific directives or technical regulations. We confirm conformity with the corresponding labelling.

The corresponding conformity declarations can be found on our homepage.

Electromagnetic compatibility
The instruments are designed for use in an industrial environment. Nevertheless, electromagnetic interference from electrical conductors and radiated emissions must be taken into account, as is usual with a class A instrument according to EN 61326-1.

When the device is mounted in metal containers or tubes, the interference resistance requirements of IEC/EN 61326 for "Industrial environment" and the NAMUR recommendation EMC (NE 21) are met.

If the device is to be used in other environments, the electromagnetic compatibility to other devices must be ensured by suitable measures.

When using communication via IO-Link, the requirements of IEC/EN 61131-9 are fulfilled.

12.4 Environment management system

Protection of the environment is one of our most important duties. That is why we have introduced an environment management system with the goal of continuously improving company environmental protection. The environment management system is certified according to DIN EN ISO 14001.

Help us to meet these requirements and observe the environmental instructions in the chapters "*Packaging, transport and storage*", "*Disposal*" of this instructions manual.

13 Supplement

13.1 Technical data

Note for approved instruments

The technical data in the respective safety instructions which are included in delivery are valid for approved instruments (e.g. with Ex approval). These data can differ from the data listed herein, for example regarding the process conditions or the voltage supply.

All approval documents can be downloaded from our homepage.

Materials and weights

Material 316L corresponds to 1.4404

Materials, wetted parts

− Sensor tip	PEEK, polished
− Device seal - Standard version	FKM
− Device seal - Hygienic version	EPDM
− Process seal	Klingersil C-4400
− Process fittings	316L

Materials, non-wetted parts

− Standard version	316L and plastic (Valox and polycarbonate)
− Full metal version	316L
− Device seal - hygiene version AC and AM (not in contact with the medium)	EPDM
− Protective cover (optional)	Polycarbonate
Weight	approx. 250 g (0.55 lbs)

General data

Process fittings

− Pipe thread, cylindrical (DIN 3852-A) or ISO 228-1	G½, G¾, G1
− Pipe thread, conical (ASME B1.20.1)	½ NPT, ¾ NPT, 1 NPT
− Metric fine thread, cylindrical	M24 x 1.5
− Clamp	1", 1½", 2"
− Collar socket DIN 11851, PN 40	DN 25, DN 32, DN 40
− Hygienic fitting	RD 52 PN 25 with union nut
− Varivent	N50-40 PN 25, F25 PN 25

Threaded and hygienic adapter

− Standard hygienic adapter	G½, G1
	Other connections via hygiene adapters possible

Max. torque - process fitting

− Thread G½, ½ NPT	50 Nm (37 lbf ft)
− Thread G¾, ¾ NPT	75 Nm (55 lbf ft)
− Thread G1, 1 NPT	100 Nm (73 lbf ft)

– Hygienic adapter	20 Nm (15 lbf ft)
Surface quality	R_a < 0.76 µm (3.00^{-5} in)

Measurement accuracy

Hysteresis	approx. 1 mm (0.04 in)
Switching delay	approx. 500 ms (on/off)
	Adjustable: 0.5 … 60 s
Repetitive accuracy	± 1 mm (± 0.04 in)

Ambient conditions

Ambient temperature on the housing	-40 … +70 °C (-40 … +158 °F)
Storage and transport temperature	-40 … +80 °C (-40 … +176 °F)

Mechanical environmental conditions

Sinusoidal oscillations according to EN 60068-2-6 (vibration at resonance)	4M8 (5 g) at 4 … 200 Hz
Impacts	50 g, 2.3 ms according to EN 60068-2-27 (mechanical shock)
Impact resistance	
– Standard version	IK06 acc. to IEC 62262
– Full metal version	IK08 acc. to IEC 62262 (tested up to 7 Joule acc. to IEC 60079)
– With protective cover	IK07 acc. to IEC 62262

Process conditions

Process pressure	
– Standard version	-1 … 25 bar/-100 … 2500 kPa (-14.5 … 363 psig)
– Full metal version (stainless steel)	-1 … 64 bar/-100 … 6400 kPa (-14.5 … 928 psig)
Process temperature	-40 … +115 °C (-40 … +239 °F)

SIP process temperature (SIP = Sterilization in place)

Vapour stratification up to 1 h	+135 °C (+275 °F)
Dielectric constant	≥ 1.5

Indication (NE 107)

360° status indication (LED)	
– Green	Power supply on - Output 1 open
– Yellow	Power supply on - Output 1 closed
– Red	Voltage supply on - failure/simulation

Adjustment

Adjustment possibilities	App (Android/OS), PACTware with DTM, I/O-Link via DTM, IODD or I/O-Link master

Output variable - Transistor output/IO-Link

Output signal	Transistor output NPN/PNP
Output signal	IO-Link acc. to IEC 61131-9
Connection technology	Three-wire
Load current	max. 250 mA
Overload resistance	yes
Short-circuit resistance	Permanently
Switching voltage	< 34 V DC
Voltage loss	< 3 V
Inverse current PNP	< 10 µA
Inverse current NPN	< 25 µA
Switching time	< 10 ms
Max. cable length to the IO-Link master	20 m (66 ft)

Voltage supply

Operating voltage	12 … 35 V DC
Max. power consumption	1 W
Reverse voltage protection	Integrated
Max. power consumption	1 W

Bluetooth interface

Bluetooth standard	Bluetooth 5.0
Frequency	2.402 … 2.480 GHz
Max. emitted power	+2.2 dBm
Max. number of participants	1
Effective range typ.[6]	25 m (82 ft)

Measuring cell temperature

Range	-40 … +115 °C (-40 … +239 °F)
Resolution	< 0.2 K
Deviation	±3 K
Output of the temperature values via[7]	Bluetooth, IO-Link

Electromechanical data

M12 x 1 plug connector

− Cable	Fixed connected to the plug

[6] Depending on the local conditions; with M12 x 1 plug stainless steel (closed full metal housing) effective range up to approx. 5 m (16.40 ft)
[7] Depending on the instrument version

Electrical protective measures

Potential separation   Electronics potential free up to 500 V AC

Protection rating

Connection technology	Protection according to EN 60529/IEC 529	Protection according to UL 50
M12 x 1 plug	IP66/IP68 (0.2 bar)/IP69	NEMA 6P

Altitude above sea level   up to 5000 m (16404 ft)

Protection class   III

Pollution degree   4

13.2   Device communication IO-Link

In the following, the necessary device-specific details are shown. You can find further information of IO-Link on www.io-link.com.

Physical layer

IO-Link specification: Revision 1.1

SIO mode: Yes

Speed: COM2 38.4 kBaud

Min. cycle time 4.0 ms

Length process data word: 32 Bit

IO-Link Data Storage: Yes

Block parameter adjustment: Yes

Direct parameter

Byte	Parameter	HexCode	Note, value
0	-	-	-
1	MasterCycleTime	-	-
2	MinCycleTime	0x28	4 ms
3	M-SequenceCapability	0x2B	Frametypes, SIO-Mode, ISDU
4	Revision ID	0x11	IO-Link Revision 1.1
5	Input process data length	0xC3	4 bytes length (SIO mode available)
6	Output process data length	0x00	Not available
7, 8	VendorID	0x00, 0x62	98
9, 10, 11	DeviceID	0x00, 0x02, 0x00	512

Process data word

Configuration

Bit	31 (MSB)	…	16	15	…	2	1	0 (LSB)
Sensor	X-value 0.1 % (frequency)			Temperature in °C, resolution 0.1 K			Out2	Out1

VEGAPOINT 31 • Three-wire: IO-Link, transistor

Formats

	Value	Type
Out1	1 Bit	Boolean
Out2	1 Bit	Boolean
Temperature	14 Bit	Integer
X-value	16 Bit	Integer

Events

	HexCode	Type
6202	0x183A	FunctionCheck
6203	0x183B	Maintenance
6204	0x183C	OutOfSpec
6205	0x183D	Failure

Information

Detailed information about error messages can be found under Diagnosis, Error Messages.

Under "*Device Status*" (ISDU 36) you can read out the status of the device.

Device data ISDU

Device data can be parameters, identification data and diagnostic information. They are exchanged acyclically and on request of the IO-Link master. Device data can be written to the sensor (write) or read from the device (read). The ISDU (Indexed Service Data Unit) determines, among other things, whether the data is read or written.

IO-Link specific device data

Designation	ISDU (dez)	ISDU (hex)	Size (Byte)	Data type	Access	Value
Device Access	12	0x000C	-	-	RW	-
Profile Identification	13	0x000D	2	unsigned8[2]	RO	0x40, 0x00
PD-Descriptor	14	0x000E	12	unsigned8[12]	RO	0x01, 0x01, 0x00, 0x01, 0x01, 0x01, 0x03, 0x0E, 0x02, 0x03, 0x0E, 0x10
Vendor Name	16	0x0010	31	String	RO	VEGA Grieshaber KG
Vendor Text	17	0x0011	31	String	RO	www.vega.com
Product Name	18	0x0012	31	String	RO	VEGAPOINT
Product ID	19	0x0013	31	String	RO	VEGAPOINT 31
Product Text	20	0x0014	31	String	RO	LevelSwitch

VEGA

Designation	ISDU (dez)	ISDU (hex)	Size (Byte)	Data type	Access	Value
Serial Number	21	0x0015	16	String	RO	-
Hardware Revision	22	0x0016	20	String	RO	-
Software Revision	23	0x0017	20	String	RO	-
Application Specific Tag	24	0x0018	Max. 31	String	RW	Sensor
FunctionTag	25	0x0019	Max. 31	String	RW	-
LocationTag	26	0x001A	Max. 31	String	RW	-
Device Status[8]	36	0x0024	1	unsigned8[2]	RO	-
Detailed Device Status	37	0x0025	12	unsigned8[12]	RO	-
PDin	40	0x0028	4	-	RO	see process word

VEGA-specific device data

Designation	ISDU (dez)	ISDU (hex)	Size (Byte)	Data type	Access	Value range
Measurement loop name (TAG)	256	0x0100	20	String	RW	-
Application	257	0x0101	1	unsigned8	RW	0 = User defined 1 = Standard
Switching point (SP1)	258	0x0102	4	Float	RW	-
Reset point (RP1)	259	0x0103	4	Float	RW	-
Switching delay (DS1)	260	0x0104	4	Float	RO	-
Reset delay (DR1)	261	0x0105	4	Float	RO	-
Switching point (FH1)	262	0x0106	4	Float	RW	-
Reset point (FL1)	263	0x0107	4	Float	RW	-
Switching delay (DS1)	264	0x0108	4	Float	RW	-
Reset delay (DR1)	265	0x0109	4	Float	RW	-
Switching point (SP2)	266	0x010A	4	Float	RW	-
Reset point (RP2)	267	0x010B	4	Float	RW	-
Switching delay (DS2)	268	0x010C	4	Float	RO	-
Reset delay (DR2)	269	0x010D	4	Float	RO	-
Switching point (FH2)	270	0x010E	4	Float	RW	-
Reset point (FL2)	271	0x010F	4	Float	RW	-
Switching delay (DS2)	272	0x0110	4	Float	RW	-

[8] Detailed error information can be found Under Diagnosis, Error Messages

VEGAPOINT 31 • Three-wire: IO-Link, transistor

Designation	ISDU (dez)	ISDU (hex)	Size (Byte)	Data type	Access	Value range
Reset delay (DR2)	273	0x0111	4	Float	RW	-
Transistor function (P-N)	274	0x0112	1	unsigned8	RW	0 = pnp, 1 = npn
Function output (OU1)	275	0x0113	1	unsigned8	RW	0 = HNO, 1=HNC 2 = FNO, 3=FNC
Function output 2 (OU2)	276	0x0114	1	unsigned8	RW	0 = HNO, 1=HNC 2 = FNO, 3=FNC
Brightness illuminated ring (LED)	277	0x0115	1	Unsigned8	RW	0 … 100% in 10 % steps
Signalling	278	0x0116	1	Unsigned8	RW	0 = Individual signalling 1 = acc. to NAMUR NE 107
Failure	279	0x0117	1	Unsigned8	RW	0 = Individual Colour
Switching output	280	0x0118	1	Unsigned8	RW	1 = Red
Operating status	281	0x0119	1	Unsigned8	RW	2 = Orange 3 = White 4 = Green 5 = Blue 6 = Yellow 7 = No Signalling
Red	282	0x011A	2	0 … 255	RW	Individual Signalling - operating state
Green	283	0x011B	2	0 … 255	RW	Individual Signalling - operating state
Blue	284	0x011C	2	0 … 255	RW	Individual Signalling - operating state
Red	285	0x011D	2	0 … 255	RW	Individual Signalling - failure
Green	286	0x011E	2	0 … 255	RW	Individual Signalling - failure
Blue	287	0x011F	2	0 … 255	RW	Individual Signalling - failure
Red	288	0x0120	2	0 … 255	RW	Individual Signalling - switching output
Green	289	0x0121	2	0 … 255	RW	Individual Signalling - switching output
Blue	290	0x0122	2	0 … 255	RW	Individual Signalling - switching output

Designation	ISDU (dez)	ISDU (hex)	Size (Byte)	Data type	Access	Value range
Temperature unit (TMP)	291	0x0123	4	Float	RW	1001 = °C 1002 = °F
Bluetooth access code (BT)	292	0x0124	6	String	RW	-
Protection of parameter adjustment	293	0x0125	1	Unsigned8	RO	0 = deactivated 1= activated
Device status acc. to NE107	294	0x0126	1	Unsigned8	RO	0 = Good 1 = Function Check 2 = Maintenance required 3 = Out of Specification 4 = Failure
Device status[9]	295	0x0127	19	Unsigned16	RO	-
Counter for change of parameters (PCO)	296	0x0128	4	Unsigned32	RO	-
Actual electronics temperature	297	0x0129	4	Float	RO	-
Min. electronics temperature	299	0x012B	4	Float	RO	-
Max. electronics temperature	300	0x012C	4	Float	RO	-
Actual measuring cell temperature	301	0x011C	4	Float	RO	-
Min. measuring cell temperature	302	0x011D	4	Float	RO	-
Max. measuring cell temperature	303	0x011E	4	Float	RO	-
Actual resonance frequency	304	0x0130	4	Float	RO	-
Min. resonance frequency	305	0x0131	4	Float	RO	-
Max. resonance frequency	306	0x0132	4	Float	RO	-
Probe	307	0x0133	2	Unsigned16	RO	0 = Not Covered 256 = Covered 512 = Covered inside Window 768 = Covered outside Window
Output	308	0x0134	2	Unsigned16	RO	0 = Open 1 = Closed

[9] Detailed error information can be found Under Diagnosis, Error Messages

VEGAPOINT 31 • Three-wire: IO-Link, transistor

Designation	ISDU (dez)	ISDU (hex)	Size (Byte)	Data type	Access	Value range
Output 2	309	0x0135	2	Unsigned16	RO	0 = Open 1 = Closed
Device name	310	0x0136	19	String	RO	-
Serial number	311	0x0137	16	String	RO	-
Hardware version	312	0x0138	19	String	RO	-
Software version	313	0x0139	19	String	RO	-
Device revision	314	0x013A	2	Unsigned16	RO	-
Simulation switching output	315	0x013B	1	Unsigned8	RW	0 = Off 1= On
Simulation value output	316	0x013C	2	Unsigned16	RW	0 = Open 1= Closed
Simulation switching output 2	317	0x013D	1	Unsigned8	RW	0 = Off 1= On
Simulation value output	318	0x013E	2	Unsigned16	RW	0 = Open 1= Closed
Device status detailed status	319	0x013F	4	Unsigned32	RO	0 = Open 1= Closed

System commands

| Designation	ISDU (dez)	ISDU (hex)	Access
Factory Reset	130	0x082	WO
Reset Pointer - Resonance Frequency	161	0x0A1	WO
Reset Pointer - Measuring Cell Temperature	163	0x0A3	WO
Reset Pointer - Electronic Temperature	164	0x0A4	WO
Uncovered	165	0x0A5	WO
Covered	166	0x0A6	WO
Accepting and activating taught-in settings	172	0x0AC	WO

VEGA

13.3 Dimensions

VEGAPOINT 31, standard version - thread
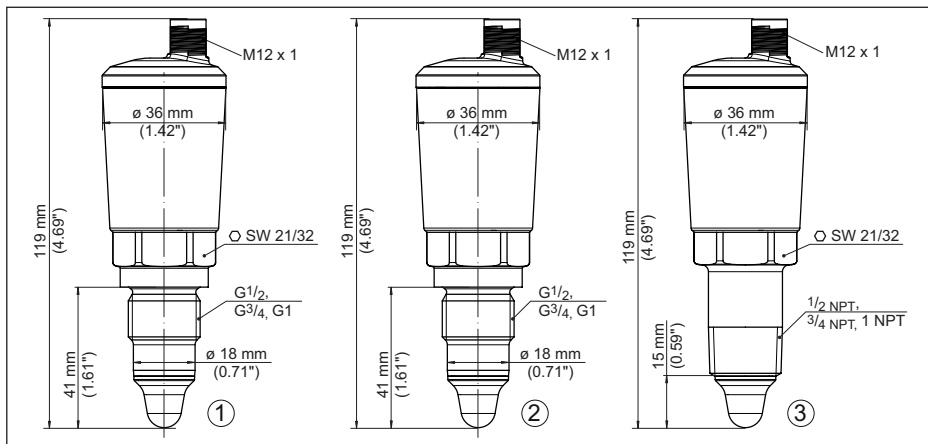
Fig. 14: VEGAPOINT 31, standard version - thread with M12 x 1 plug

1 Thread G½, G¾, G1 (DIN ISO 228/1) with M12 x 1 plug connection
2 Thread G½, G¾, G1 (DIN ISO 228/1) with M12 x 1 plug connection - full metal version
3 Thread ½ NPT, ¾ NPT, 1 NPT with M12 x 1 plug connection
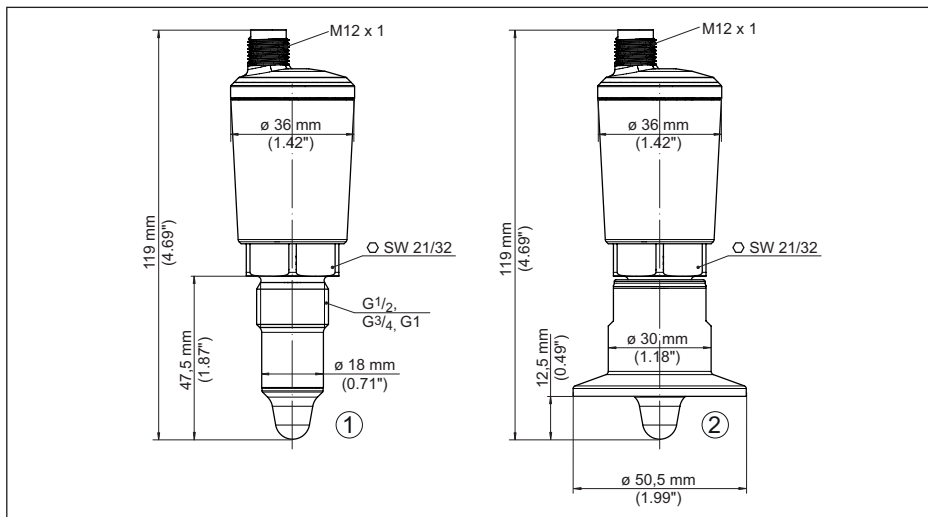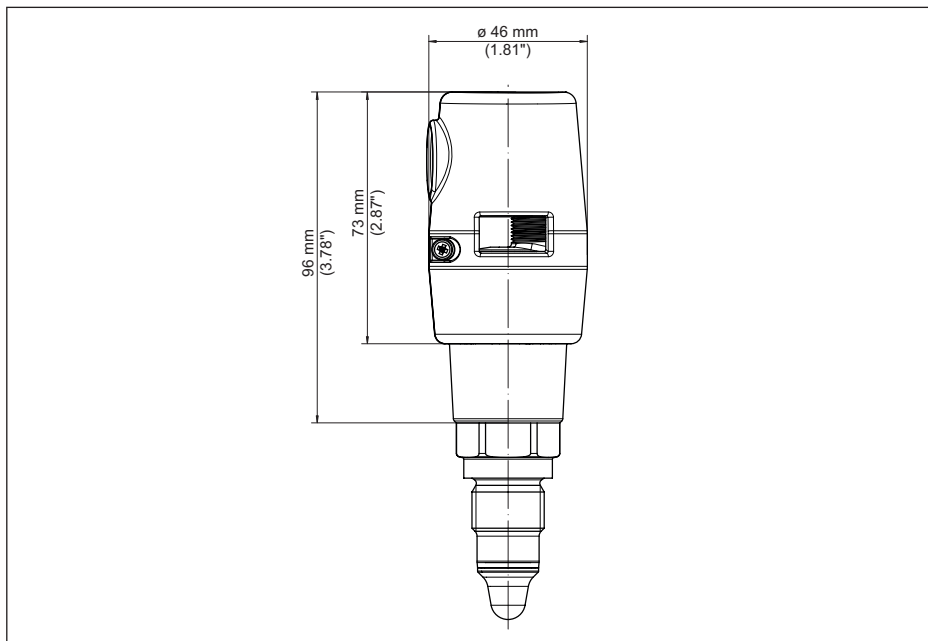
VEGAPOINT 31, hygienic version - Thread

Fig. 15: VEGAPOINT 31, hygienic version - thread, with M12 x 1 plug

1 Thread G½ for hygienic threaded adapter (DIN ISO 228/1) with M12 x 1 plug connection
2 VEGAPOINT 31, hygienic version in threaded adapter, Clamp

VEGAPOINT 31 • Three-wire: IO-Link, transistor

VEGAPOINT 31, protective cover

Fig. 16: VEGAPOINT 31, protective cover

13.4   Industrial property rights

VEGA product lines are global protected by industrial property rights. Further information see www.vega.com.

VEGA Produktfamilien sind weltweit geschützt durch gewerbliche Schutzrechte.

Nähere Informationen unter www.vega.com.

Les lignes de produits VEGA sont globalement protégées par des droits de propriété intellectuelle. Pour plus d'informations, on pourra se référer au site www.vega.com.

VEGA lineas de productos están protegidas por los derechos en el campo de la propiedad industrial. Para mayor información revise la pagina web www.vega.com.

Линии продукции фирмы ВЕГА защищаются по всему миру правами на интеллектуальную собственность. Дальнейшую информацию смотрите на сайте www.vega.com.

VEGA系列产品在全球享有知识产权保护。

进一步信息请参见网站<www.vega.com。

13.5   Licensing information for open source software

Open source software components are also used in this device. A documentation of these components with the respective license type, the associated license texts, copyright notes and disclaimers can be found on our homepage.

13.6   Trademark

All the brands as well as trade and company names used are property of their lawful proprietor/originator.

VEGA

62325-EN-240725

62325-EN-240725

Printing date:

VEGA

VEGA Grieshaber KG
Am Hohenstein 113
77761 Schiltach
Germany

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