

Operating Instructions VEGADIS 175



Document ID:
24386

Indication
and adjustment



Contents

1	About this document	
1.1	Function	4
1.2	Target group	4
1.3	Symbolism used	4
2	For your safety	
2.1	Authorised personnel	5
2.2	Appropriate use	5
2.3	Warning about misuse	5
2.4	General safety instructions	5
2.5	Safety label on the instrument	5
2.6	CE conformity	5
2.7	Safety instructions for Ex areas	6
2.8	Environmental instructions	6
3	Product description	
3.1	Configuration	7
3.2	Principle of operation	7
3.3	Operation	7
3.4	Packaging, transport and storage	7
4	Mounting	
4.1	General instructions	9
4.2	Mounting preparations	9
4.3	Mounting steps	9
5	Connect to the signal circuit	
5.1	Preparing the connection	10
5.2	Wiring plan	10
6	Setup	
6.1	Indication and adjustment	12
6.2	Indication scaling	14
6.3	Operation	15
7	Maintenance and fault rectification	
7.1	Maintenance	16
7.2	Rectify malfunctions	16
7.3	Instrument repair	17
8	Dismounting	
8.1	Dismounting steps	19
8.2	Disposal	19
9	Supplement	
9.1	Technical data	20
9.2	Dimensions	22

1 About this document

1.1 Function

This operating instructions manual provides all the information you need for mounting, connection and setup as well as important instructions for maintenance and fault rectification. 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 operating instructions manual is directed to trained qualified personnel. The contents of this manual should be made available to these personnel and put into practice by them.

1.3 Symbolism used



Information, tip, note

This symbol indicates helpful additional information.



Caution: If this warning is ignored, faults or malfunctions can result.

Warning: If this warning is ignored, injury to persons and/or serious damage to the instrument can result.

Danger: If this warning is ignored, serious injury to persons and/or destruction of the instrument can result.



Ex applications

This symbol indicates special instructions for Ex applications.



List

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



Action

This arrow indicates a single action.



Sequence

Numbers set in front indicate successive steps in a procedure.

2 For your safety

2.1 Authorised personnel

All operations described in this operating instructions manual must be carried out only by trained specialist personnel authorised by the plant operator.

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

2.2 Appropriate use

VEGADIS 175 is a digital indicating instrument for 4 ... 20 mA circuits.

2.3 Warning about misuse

Inappropriate or incorrect use of the instrument can give rise to application-specific hazards, e.g. vessel overfill or damage to system components through incorrect mounting or adjustment.

2.4 General safety instructions

This is a high-tech instrument requiring the strict observance of standard regulations and guidelines. The user must take note of the safety instructions in this operating instructions manual, the country-specific installation standards as well as all prevailing safety regulations and accident prevention rules.

The instrument must only be operated in a technically flawless and reliable condition. The operator is responsible for trouble-free operation of the instrument.

During the entire duration of use, the user is obliged to determine the compliance of the necessary occupational safety measures with the current valid rules and regulations and also take note of new regulations.

2.5 Safety label on the instrument

The safety approval markings and safety tips on the device must be observed.

2.6 CE conformity

VEGADIS 175 is in CE conformity with EMC (89/336/EWG).

Conformity has been judged according to the following standards:

- EMC:
 - Emission EN 55011 group 1, class A

2.7 Safety instructions for Ex areas

Please note the Ex-specific safety information for installation and operation in Ex areas. These safety instructions are part of the operating instructions manual and come with the Ex-approved instruments.

2.8 Environmental instructions

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.

Please help us fulfil this obligation by observing the environmental instructions in this manual:

- Chapter "*Packaging, transport and storage*"
- Chapter "*Disposal*"

3 Product description

3.1 Configuration

Scope of delivery

The scope of delivery encompasses:

- Digital indicating instrument VEGADIS 175
- Documentation
 - this operating instructions manual
 - Ex specific safety instructions (with Ex versions), if necessary further certificates

3.2 Principle of operation

Application area

VEGADIS 175 is a digital indicating instrument for measured value indication in 4 ... 20 mA circuits. The measured value is displayed via the LC display, the digital indication can be scaled. The instrument is suitable for front panel mounting.

Voltage supply

VEGADIS 175 is looped directly into the 4 ... 20 mA circuits and requires no separate external energy. Connection is carried out via screw terminals in the housing.

3.3 Operation

Adjustment is carried out via keys in the front plate of the instrument.

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 according to DIN EN 24180.

The packaging of standard instruments 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 under 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 "*Supplement - Technical data - Ambient conditions*"
- Relative humidity 20 ... 85 %

4 Mounting

4.1 General instructions

Mounting location Make sure that there are no vibrations in the mounting place.

Heat effect Protect your instrument against heat, e.g. by other instruments mounted too close

4.2 Mounting preparations

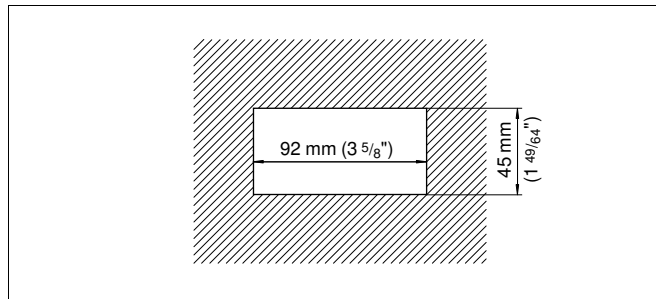
Necessary tools:

- Screwdriver for recessed head screws size 2

4.3 Mounting steps

Proceed as follows:

- 1 Prepare the front panel cut-out according to DIN 43700 and the illustration



- 2 Insert the instrument with seal from the front into the cut opening
- 3 Press the fixing cramps into the respective gaps, hold the instrument horizontally
- 4 Tighten the screws of the fixing clasps evenly with a screwdriver

5 Connect to the signal circuit

5.1 Preparing the connection

Note safety instructions

Always keep in mind the following safety instructions:

- Connect only in the complete absence of line voltage

Take note of safety instructions for Ex applications



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

5.2 Wiring plan

Terminal assignment

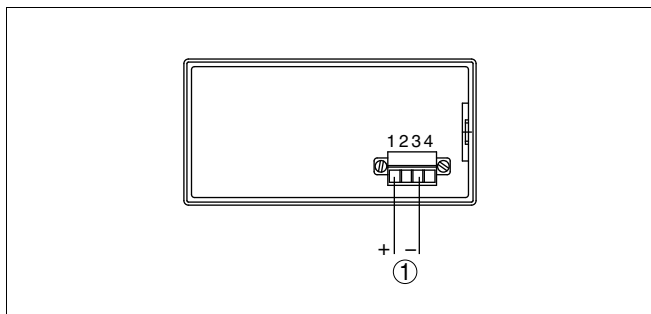


Fig. 2: Terminal assignment VEGADIS 175

1 Connection terminals

Terminal number	Polarity	Function
1	+	Input measuring signal 4 ... 20 mA
2	Internally bridged with terminal 4	Connection terminal for further instrumentation
3	-	Input measuring signal 4 ... 20 mA
4	Internally bridged with terminal 2	Connection terminal for further instrumentation

Connection to active sensors

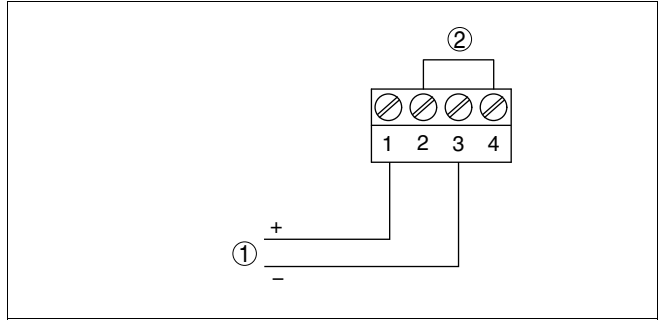


Fig. 3: Wiring plan VEGADIS 175 to active sensors

- 1 To the sensor
- 2 Internal bridge

Connection to passive sensors

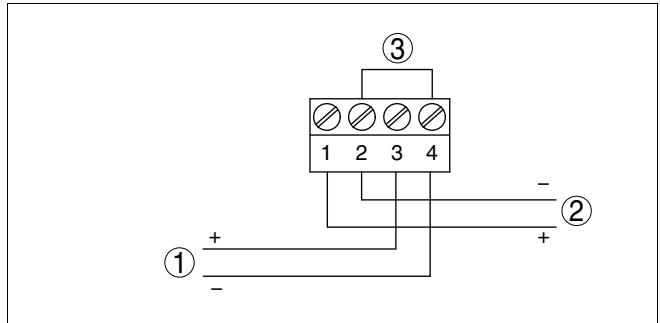


Fig. 4: Wiring plan VEGADIS 175 to passive sensors

- 1 To the sensor
- 2 To power supply or the processing system
- 3 Internal bridge

6 Setup

6.1 Indication and adjustment

Indicating and adjustment elements

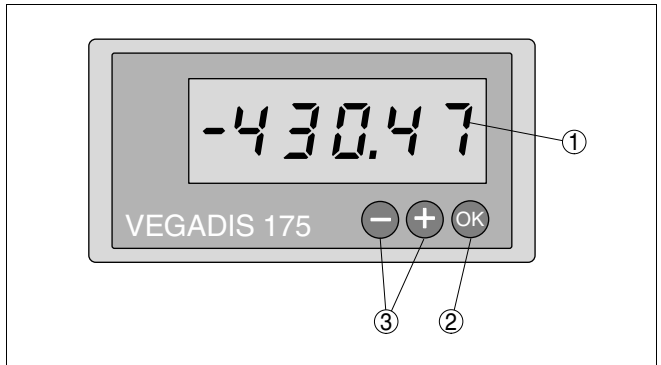


Fig. 5: Adjustment elements of VEGADIS 175

- 1 LC display
- 2 Adjustment key
- 3 Selection keys

LC display

- Actual measured value (during operation)
- Adjustment values (in the parameter adjustment)
- Dialogue text (in the parameter adjustment)

Adjustment key

- Access to the programming menu
- Selection of adjustment functions within the function group
- Saving of entered data

Selection keys

- Selection of function groups within the menu
- Adjustment of parameters and numerical values (by keeping the keys permanently pushed, the figures on the display change with increasing speed)
- When pushing the "+/-" key during indicating, the actual loop current is displayed

Adjustment system

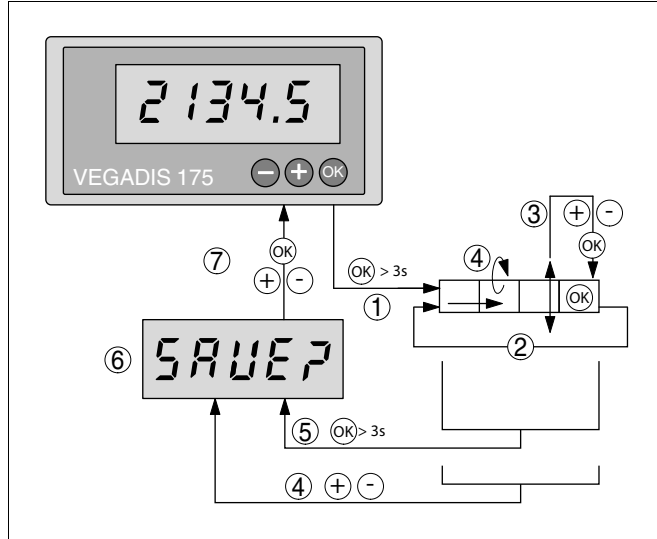


Fig. 6: Adjustment system of VEGADIS 175

- 1 Access to the adjustment menu
- 2 Selection of adjustment functions
- 3 Adjustment of parameters in the editing mode (enter/select data with "+" or "-" and accept with "OK")
- 4 Return from the editing mode or the adjustment function in a function group. When pushing the "+" or "-" keys simultaneously several times, you reach home position (indication mode). Before you are asked if the data entered till then should be saved.
- 5 Direct return to the home position (indication mode). Before you are asked if the data entered till then should be saved.
- 6 Enquiry of the data memory
- 7 Select "Yes/No" with the "+" or "-" key and confirm with "OK"

Adjustment parameter

The followings chart shows the adjustment parameters:

Parameter	Meaning	Adjustment options	Factory setting
<i>dl dP</i>	Decimal point: Positions after the comma of the numerical indication	Selection range: 0 up to 4 positions after the decimal point	9999.9
<i>dl Lo</i>	Indicating value 0 % to the loop current 4 mA	Value range -19999 up to 99999	0.0
<i>dl HI</i>	Indication value 100 % of loop current 20 mA	Value range -19999 up to 99999	100.0

Parameter	Meaning	Adjustment options	Factory setting
<i>oFFSt</i>	Offset: Signal offset for adaptation of the measured value indication	Value range -19999 up to 32567	0.0
<i>CodE</i>	User code: adjustment code individually adjustable by the user. An already assigned user code can be only modified if the previous code for instrument release is released. The the new code can be adjusted.	Value range 0 to 9999. Note: No user code is active with 0.	0

6.2 Indication scaling

Decimal point

- 1 Push the **"OK"** key longer than three seconds to get to the adjustment menu. The display shows: *"dl dP"*
- 2 Move the decimal point to the requested position by using the **"+/-"** keys
- 3 Accept the value by pushing the **"OK"** key longer than 3 seconds, accept the modified value: the display shows *"SA UE ?"*
- 4 Select **"yes"** or **"no"** with the **"+/-"** keys
- 5 Terminate with the **"OK"** key. When **"yes"** is selected the modified value is saved, when **"no"** is selected the value is discarded.

Indicating value 0 %

- 1 Push the **"OK"** key longer than three seconds to get to the adjustment menu. The display shows again: *"dl dP"*
- 2 Push the **"OK"** key briefly once to reach the menu item *"dl Lo"*
- 3 Adjust the requested indicating value for 4 mA with the **"+/-"** keys
- 4 Accept the modified value by pushing the **"OK"** key longer than 3 seconds: the display shows again *"SA UE ?"*
- 5 Select **"yes"** or **"no"** with the **"+/-"** keys
- 6 Terminate with the **"OK"** key. When **"yes"** is selected the modified value is saved, when **"no"** is selected the value is discarded.

The parameter adjustment of the indicating value 0 % is terminated. The actual measured value is displayed.

Indicating value 100 %

- 1 Push the **"OK"** key longer than three seconds to get to the adjustment menu. The display shows again: *"dl dP"*
- 2 Push the **"OK"** key briefly twice to reach the menu item *"dl Hi"*
- 3 Set the requested indication value for 20 mA with the **"+/-"** keys
- 4 Accept or disapprove as for indicating value 0 %

The adjustment of the indication value 100 % is finished. The actual measured value is then displayed.

Offset

- 1 Push the **"OK"** key longer than three seconds to get to the adjustment menu. The display shows again: *"dl dP"*

- 2 Push the "**OK**" key briefly three times to reach the menu item "*oFFST*"
- 3 Adjust the requested offset value with the "+/-" keys
- 4 Accept or disapprove as for indicating value 0 %

The parameter adjustment of the offset is terminated. The actual measured value is displayed.



Tip:

The previously described menu items can be also completed one after the other and completely saved. For this purpose, briefly push the "**OK**" key after parameter adjustment of a menu item. By doing this, you reach the next menu item for which you can carry out the parameter adjustment as described above.

6.3 Operation

Adjustment or process errors are immediately signalled in the display. Messages to be acknowledged are immediately deleted after key pressing.

System messages

Indication	Cause	Removal
"ΠΠΠΠ"	Measuring range underrun. There is an input signal ≤ 3.6 mA on the analogue input.	Check input signal
"UUUU"	Measuring range exceeded. There is an input signal ≥ 21 mA on the analogue input.	Check input signal
"SA UE ?"	Adjustment parameters were modified. The instrument asks for release to save.	Release or unrelease with the "+/-" keys and save with the " OK " key or discard.
"SA UE ?" flashing	After a change of the adjustment parameters, the instrument saves them in the EEPROM.	After saving, the instrument displays the measured value.

7 Maintenance and fault rectification

7.1 Maintenance

When used as directed in normal operation, VEGADIS 175 is completely maintenance free.

7.2 Rectify malfunctions

Causes of malfunction

VEGADIS 175 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 measure is to check the sensor output signal according to the operating instructions manual of the respective sensor. In many cases the reasons can be determined this way and faults rectified. System errors of VEGADIS 175 are displayed via the system error message of the following chart:

Checking the 4 ... 20 mA signal

Connect a handheld multimeter in the suitable measuring range according to the wiring plan.

? 4 ... 20 mA signal missing

- Wrong connection to power supply
 - Check and correct, if necessary, according to chapter "*Wiring plan*"
- No power supply
 - Check cables for breaks; repair if necessary
- Operating voltage too low or load resistance too high
 - Check, adapt if necessary



In Ex applications, the regulations for the wiring of intrinsically safe circuits must be observed.

System error message

Errors occurring during the self-test or operation are immediately shown on the display. Messages to be acknowledged are immediately deleted after key pressing.

Error code	Cause	Removal
E090	Loop current too small. To save the adjustment data, there must be at least 3.6 mA on the input.	Check measurement loop
E101	The EEPROM for saving the adjustment parameters is defective.	Repair instrument
E102	Checksum of the adjustment parameters is not valid or the software version in the EEPROM does not correspond with the adjustment data in the EEPROM. Possible cause is a failure of the operating voltage during parameter storage.	By acknowledging with the "OK" key, a reset is carried out automatically, i.e. all parameters are reset to default.
E103	Checksum in the EEPROM on the calibration values of the analogue input is wrong. Possible reason is a failure of the supply voltage during calibration, a non-adjusted instrument or a defective EEPROM.	Repair instrument
E106	Warning: Due to a programming error, an incorrect setting of the indicating range/scaling was carried out (lower and upper value are unequal).	Correct adjustment values
E111	Checksum in the EEPROM on the adjustment values of the analogue input is wrong. Possible reason is a failure of the supply voltage while parameters were being saved.	Repair instrument

24 hour service hotline

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

The hotline is available to you 7 days a week round-the-clock. Since we offer this service world-wide, the support is only available in the English language. The service is free of charge, only the standard telephone costs will be charged.

Reaction after fault rectification

Depending on the failure reason and measures taken, the steps described in chapter "Set up" must be carried out again, if necessary.

7.3 Instrument repair

If a repair is necessary, please proceed as follows:

You can download a return form (23 KB) from our Internet homepage www.vega.com under: "*Downloads - Forms and certificates - Repair form*".

By doing this you help us carry out the repair quickly and without having to call back for needed information.

- Print and fill out one form per instrument
- Clean the instrument and pack it damage-proof
- Attach the completed form and, if need be, also a safety data sheet outside on the packaging
- Please ask the agency serving you for the address of your return shipment. You can find the respective agency on our website www.vega.com under: "*Company - VEGA worldwide*"

8 Dismounting

8.1 Dismounting steps

Take note of chapters "*Mounting*" and "*Connecting to power supply*" and carry out the listed steps in reverse order.

8.2 Disposal

The indicating and adjustment module consists of materials which can be recycled by specialised recycling companies. We have purposely designed the components to be easily separable.

WEEE directive 2002/96/EG

This indicating and adjustment module is not subject to the WEEE directive 2002/96/EG and the respective national laws (in Germany, e. g. ElektroG). Pass the indicating and adjustment module directly on to a specialised recycling company and do not use the municipal collecting points. These may only be used for privately used products according to the WEEE directive.

Correct disposal avoids negative effects to persons and environment and ensures recycling of useful raw materials.

Materials: see chapter "*Technical data*"

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

9 Supplement

9.1 Technical data

General data

Materials

– Housing front	Aluminium die-casting
– Housing	Sheet steel galvanized
– Rear of the housing	plastic ABS
– Inspection window of the indication	

Weight approx. 0.3 kg (0.661 lbs)

Ambient conditions

Ambient temperature	-10 ... +60 °C (14 ... +140 °F)
Storage and transport temperature	-25 ... +70 °C (-13 ... +158 °F)
Climatic class	Class 2 B according to EN 60 654-1

Electromechanical data

Screw terminals for cable cross-section up to

– massive	1.5 mm ² (AWG 15)
– Cord with cable end sleeve	1.0 mm ² (AWG 18)

Indicating and adjustment elements

Indication	LC display, 5-digit
Adjustment elements	3 keys

Circuit

Range	4 ... 20 mA
Input circuit max.	150 mA
HART signal	is transmitted

Voltage supply

Operating voltage via 4 ... 20 mA current loop	12 ... 36 V DC
Voltage loss	2 V
Load	see diagram in the operating instructions manual of the respective sensor

Deviation

Current measurement error, referring to the final value	< 0.1 %
Temperature drift	< 0.1 %/10 K

Electrical protective measures

Protection rating	
– between front frame and front panel	IP 65
– Terminals	IP 20
ESD according to IEC 61000-4-2	6 kV/8 kV
Electromagnetic fields according to IEC 61000-4-3	10 V/m
Burst (supply) according to IEC 61000-4-4	2 kV
Surge according to IEC 61000-4-5	1 kV
Conducted high frequency according to EN 61000-4-6	10 V

Approvals¹⁾

ATEX ia	ATEX II 1G EEx ia IIC T6
---------	--------------------------

¹⁾ Deviating data in Ex applications: see separate safety instructions.

9.2 Dimensions

VEGADIS 175

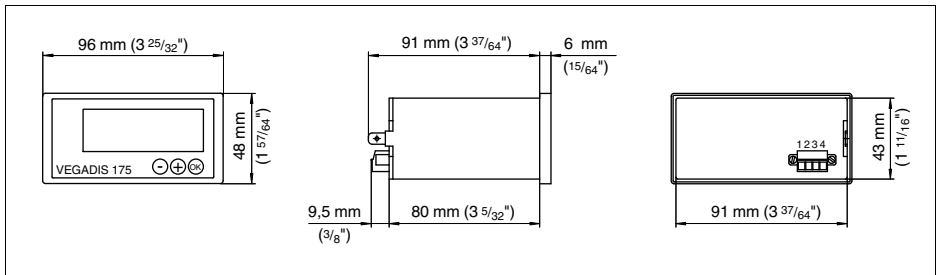


Fig. 7: VEGADIS 175

9.3 Industrial property rights

VEGA product lines are global protected by industrial property rights. Further information see <http://www.vega.com>.
Only in U.S.A.: Further information see patent label at the sensor housing.

VEGA Produktfamilien sind weltweit geschützt durch gewerbliche Schutzrechte.
Nähere Informationen unter <http://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 <http://www.vega.com>.

VEGA líneas de productos están protegidas por los derechos en el campo de la propiedad industrial.
Para mayor información revise la pagina web <http://www.vega.com>.

Линии продукции фирмы ВЕГА защищаются по всему миру правами на интеллектуальную собственность.
Дальнейшую информацию смотрите на сайте <http://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<<http://www.vega.com>>。

9.4 Trademark

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



Printing date:

VEGA Grieshaber KG
Am Hohenstein 113
77761 Schiltach
Germany
Phone +49 7836 50-0
Fax +49 7836 50-201
E-mail: info@de.vega.com
www.vega.com



All statements concerning scope of delivery, application, practical use and operating conditions of the sensors and processing systems correspond to the information available at the time of printing.

© VEGA Grieshaber KG, Schiltach/Germany 2010