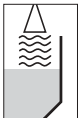


Operating Instructions

Electronics module
VEGAPULS series 60



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1 About this document

1.1 Function

This operating instructions manual has all the information you need for quick mounting and setup of a replacement module. Please read this manual before you start setup.

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 operator. For safety and warranty reasons, any internal work on the instruments must be carried out only by personnel authorised by the manufacturer.

2.2 Appropriate use

Oscillator, emitting electronics, housing or process components are replacement components for existing sensors.

2.3 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.

2.4 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 "*Storage and transport*"
- Chapter "*Disposal*"

3 Product description

3.1 Configuration

Scope of delivery

The scope of delivery encompasses:

- Electronics module VEGAPULS series 60
- Documentation
 - this operating instructions manual

3.2 Principle of operation

Area of application

The VEGAPULS series 60 electronics module is suitable for exchange with VEGAPULS series 60 radar sensors. It is available in different versions (see chapter "*Mounting preparations*").

3.3 Storage and transport

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.

Storage and transport temperature

- Storage and transport temperature see "*Supplement - Technical data - Ambient conditions*"
- Relative humidity 20 ... 85 %

4 Mount

4.1 General instructions

If the electronics module is defective, it can be replaced by the user.



In Ex applications, only an instrument and an electronics module with appropriate Ex approval may be used.

If there is no electronics module available on site, one can be ordered from the VEGA agency serving you.

Sensor serial number

The new electronics module must be loaded with the order and factory data of the sensor. These are the options:

- at the factory by VEGA
- or on site by the user



Information:

When loading on site, first of all the order data must be downloaded from the Internet (see "*Setup*").

In both cases, the sensor serial number is necessary. The serial numbers are stated on the type label of the instrument, inside the housing or on the delivery note.



Caution:

The order data and company data contain important presettings for the sensor. A reliable operation and a correction of the measurement is not possible without these data.

Assignment

Electronics modules are adapted to the respective sensor. They differ, e.g. in the signal output, the power supply or approval.

First of all check by means of the overview in section Mounting preparations, if you are using the suitable electronics module. Compare the new electronics module with the existing one. The specifications on the type label must correspond. This applies mainly to instruments with approvals.



Warning:

Switch off voltage supply before starting the mounting procedure. The replacement electronics must only be mounted in **idle condition**. Non-observance will damage the electronics!

4.2 Mounting preparations VEGAPULS 61, 62, 63

4 ... 20 mA/HART

Oscillator PS-E.60KH is suitable for **K** band VEGAPULS 61, 62, 63 - 4 ... 20 mA/HART. The following versions are available which differ in the approvals:

- PS-E.60KH**X** (X = without approvals)
- PS-E.60KH**A** (A = approvals CA, DA, EA according to VEGA product list)
- PS-E.60KH**D** (D = approvals KX, KF according to VEGA product list)
- PS-E.60KH**E** (E = approvals CX, DX, CK, CI, DM, XM, CM, DI, EX, GI, GX, UX, UF according to VEGA product list)

4 ... 20 mA/HART four-wire

Oscillator PS-E.60KV is suitable for **K** band VEGAPULS 61, 62, 63 - 4 ... 20 mA/HART four-wire. The following versions are available which differ in the approvals:

- PS-E.60KV**X** (X = without approvals)
- PS-E.60KV**A** (A = approvals CA, DA, EA according to VEGA product list)
- PS-E.60KV**D** (D = approvals KX, KF according to VEGA product list)
- PS-E.60KV**E** (E = approvals DX, DK, GX, GI, UX, UF according to VEGA product list)

Profibus PA

Oscillator PS-E.60KP is suitable for **K** band VEGAPULS 61, 62, 63 - Profibus PA. The following versions, which differ in their approvals, are available:

- PS-E.60KP**X** (X = without approvals)
- PS-E.60KP**A** (A = approval CA, DA, EA according to product list)
- PS-E.60KP**D** (D = approvals KX, KF according to product list)
- PS-E.60KP**E** (E = approval CX, DX, CK, DK, GX, GI, XM, CM, UX, UF according to product list)

Foundation Fieldbus

Oscillator PS-E.60KF is suitable for **K** band VEGAPULS 61, 62, 63 - Foundation Fieldbus. The following versions are available which differ in the approvals:

- PS-E.60KF**X** (X = without approvals)
- PS-E.60KF**A** (A = approvals CA, DA, EA according to VEGA product list)
- PS-E.60KF**D** (D = approvals KX, KF according to VEGA product list)

- PS-E.60KFE (E = approvals CX, DX, CK, DI, EX, GI, UX, UF according to VEGA product list)

4.3 Mounting preparations VEGAPULS 61, 62, 63 with increased sensitivity

4 ... 20 mA/HART with increased sensitivity

Oscillator PS-E.60KD is suitable for **K** band VEGAPULS 61, 62, 63 - 4 ... 20 mA/HART with increased sensitivity. The following versions are available differing in the approvals:

- PS-E.60KDX (X = without approvals)
- PS-E.60KDA (A = approvals CA, DA, EA according to VEGA product list)
- PS-E.60KDD (D = approvals KX, KF according to VEGA product list)
- PS-E.60KDE (E = approvals CX, DX, CK, CI, DM, XM, CM, DI, EX, GI, GX, UX, UF according to VEGA product list)

4 ... 20 mA/HART four-wire with increased sensitivity

Oscillator PS-E.60KE is suitable for **K** band VEGAPULS 61, 62, 63 - 4 ... 20 mA/HART four-wire. The following versions are available which differ in the approvals:

- PS-E.60KEX (X = without approvals)
- PS-E.60KEA (A = approvals CA, DA, EA according to VEGA product list)
- PS-E.60KED (D = approvals KX, KF according to VEGA product list)
- PS-E.60KEE (E = approvals DX, DK, GX, GI, UX, UF according to VEGA product list)

Profibus PA with increased sensitivity

Oscillator PS-E.60KK suitable for **K** band VEGAPULS 61, 62, 63 - Profibus PA. The following versions, which differ in their approvals, are available:

- PS-E.60KKX (X = without approvals)
- PS-E.60KKA (A = approvals CA, DA, EA according to VEGA product list)
- PS-E.60KKD (D = approvals KX, KF according to VEGA product list)
- PS-E.60KKE (E = approvals CX, DX, CK, DK, GX, GI, XM, CM, UX, UF according to VEGA product list)

Foundation Fieldbus with increased sensitivity

Oscillator PS-E.60KL suitable for **K** band VEGAPULS 61, 62, 63 - Foundation Fieldbus. The following versions, which differ in their approvals, are available:

- PS-E.60KLX (X = without approvals)
- PS-E.60KLA (A = approvals CA, DA, EA according to VEGA product list)

- PS-E.60KLD (D = approvals KX, KF according to VEGA product list)
- PS-E.60KLE (E = approvals CX, DX, CK, DI, EX, GI, UX, UF according to VEGA product list)

4.4 Mounting preparations VEGAPULS 65, 66

4 ... 20 mA/HART

Oscillator PS-E.60CH is suitable for **C** band VEGAPULS 65 and 66 - 4 ... 20 mA/HART:

- PS-E.60CHX (X = without approvals)
- PS-E.60CHA (A = approvals CA, DA, EA according to VEGA product list)
- PS-E.60CHD (D = approvals KX, KF according to VEGA product list)
- PS-E.60CHE (E = approvals CX, DX, CK, CI, DM, XM, CM, DI, EX, GI, GX, UX, UF according to VEGA product list)

4 ... 20 mA/HART four-wire

Oscillator PS-E.60CV is suitable for **C**-band VEGAPULS 65 and 66 - 4 ... 20 mA/HART four-wire:

- PS-E.60CVX (X = without approvals)
- PS-E.60CVA (A = approvals CA, DA, EA according to VEGA product list)
- PS-E.60CVD (D = approvals KX, KF according to VEGA product list)
- PS-E.60CVE (E = approvals CX, DX, GX, GI, UX, UF according to VEGA product list)

Profibus PA

Electronics module PS-E.60CP is suitable for **C**-band VEGA-PULS 65, 66 - Profibus PA:

- PS-E.60CPX (X = without approvals)
- PS-E.60CPA (A = approvals CA, DA, EA according to product list)
- PS-E.60CPD (D = approvals KX, KF according to product list)
- PS-E.60CPE (E = approvals CX, DX, CK, DK, GX, GI, XM, CM, UX, UF according to product list)

Foundation Fieldbus

Electronics module PS-E.60CF is suitable for **C**-band VEGA-PULS 65, 66 - Foundation Fieldbus:

- PS-E.60CFX (X = without approvals)
- PS-E.60CFA (A = approvals CA, DA, EA according to VEGA product list)
- PS-E.60CFD (D = approvals KX, KF according to VEGA product list)

- PS-E.60CFE (E = approvals CX, DX, CK, DI, EX, GI, UX, UF according to VEGA product list)

4.5 Mounting preparations VEGAPULS 67, 68

4 ... 20 mA/HART

Oscillator PS-E.60SH is suitable for VEGAPULS 67 and 68 - 4 ... 20 mA/HART:

- PS-E.60SHX (X = without approvals)
- PS-E.60SHD (D = approvals KX, KF according to VEGA product list)
- PS-E.60SHE (E = approvals CX, DX, CK, CI, DM, XM, CM, DI, EX, GI, GX, UX, UF according to VEGA product list)

4 ... 20 mA/HART four-wire

Electronics module PS-E.60SV suitable for VEGAPULS 67 and 68 - 4 ... 20 mA/HART four-wire:

- PS-E.60SVX (X = without approvals)
- PS-E.60SVD (D = approvals KX, KF according to VEGA product list)
- PS-E.60SVE (E = approvals DX, DK, GX, GI, UX, UF according to VEGA product list)

Profibus PA

Oscillator PS-E.60SP is suitable for VEGAPULS 67 and 68 - Profibus PA:

- PS-E.60SPX (X = without approvals)
- PS-E.60SPD (D = approvals KX, KF according to VEGA product list)
- PS-E.60SPE (E = approvals CX, DX, CK, DK, GX, GI, XM, CM, UX, UF according to VEGA product list)

Foundation Fieldbus

Electronics module PS-E.60SF suitable for VEGAPULS 67 and 68 - Foundation Fieldbus:

- PS-E.60SFX (X = without approvals)
- PS-E.60SFD (D = approvals KX, KF according to VEGA product list)
- PS-E.60SFG (CG = approvals CX, DX, CK, DI, EX, GI, UX, UF according to VEGA product list)

4.6 Mounting steps

Mounting steps

The electronics module is located in the electronics compartment. The below illustrations show the respective position of the electronics compartment in a single or double chamber housing.

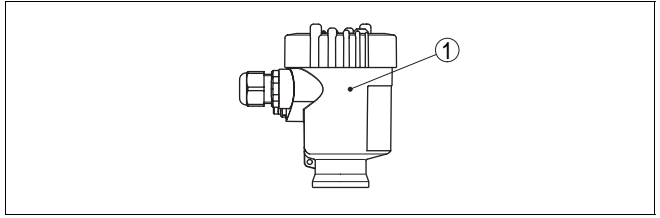


Fig. 1: Single chamber housing
1 Position of the electronics module

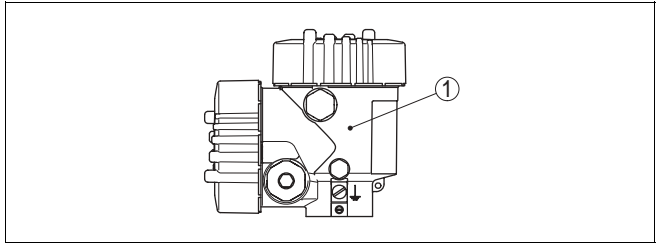


Fig. 2: Double chamber housing
1 Position of the electronics module

Proceed as follows:

- 1 Switch off power supply
- 2 Unscrew housing cover of the electronics compartment
- 3 Disconnect the connection cables according to the operating instructions manual of the respective sensor
- 4 Loosen the two holding screws with a screwdriver (Torx size T 10 or slot size 4)

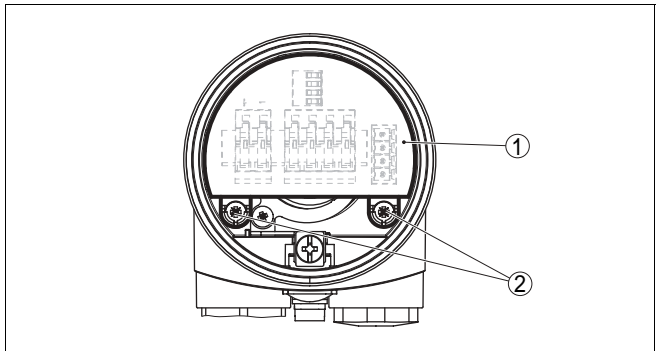


Fig. 3: Loosen the screws
1 Electronics module
2 Screws (2 pcs.)

- 5 Pull the previous electronics out by holding the opening levers.
- 6 Insert the new oscillator carefully.
- 7 Insert the two hold screws and tighten them
- 8 Connect the connection cables according to the operating instructions manual of the respective sensor
- 9 Screw the housing cover back on

The electronics exchange is now finished.



As a rule, the exchange of the electronics must be documented internally when used in Ex applications.

5 Setup

5.1 Setup preparations

With sensor serial number

If you have ordered the electronics module **by stating the sensor serial number**, it is ready for the setup procedure after installation and connection to power supply.

Without sensor serial number

If you have ordered the electronics module **without stating the sensor serial number** or you are using a suitable electronics module from stock, you first have to load the sensor data after installation.

Move via www.vega.com to the item "*serial number search*". The order data of the sensor will be displayed after entering the serial number.

Document	Language	File type	File size
Operating instruction	DE	PDF	1018 KB
sensor data for service DTM		XML	79 KB

Right-click on the image
Choose "Save target as..." to download the file to your hard drive

Fig. 4: Example for the order data of a sensor.

Below the order data you will find "*Sensor data for Service-DTM*" as XML file. This file includes all sensor-specific parameters as well as the data of the factory setting.

Load this file with "Save target as" on your PC. Start PACTware™ and mode in the Service-DTM to the menu item "Electronics exchange". Transfer the XML file into the sensor.

5.2 Setup procedure, two-wire electronics

Adjustment

As a rule, all settings already carried out on site with the previous electronics module such as min./max. adjustment, false echo fade-out etc., must be repeated.



Tip:

For this purpose, use the copy function of the indicating and adjustment module or the adjustment software PACTware™.

5.3 Setup steps four-wire electronics 4 ... 20 mA/HART

Current calibration

With four-wire instruments 4 ... 20 mA/HART there is a power supply electronics in the connection compartment. This electronics is used for connection to the voltage supply and delivers the 4 ... 20 mA output current. The electronics module must be adapted to the power supply electronics after an exchange.

Proceed as follows:

- 1 Connecting the sensor to voltage supply
- 2 Connect the PC with PACTware™ via VEGACONNECT 3 to the sensor
- 3 Connect ammeter with measuring range 20 mA as well as resolution and accuracy $\leq 1 \mu\text{A}$ to the current output
- 4 Select in the Service-DTM the menu item "Current calibration" and start the calibration



Information:

The electronics module starts a calibration procedure and simulates two current values. These values are influenced by the power supply electronics and displayed on the ammeter. Typical values are e.g. 6819 and 18597 μA .

- 5 Enter the measured current values for the first and second calibration point into the respective menu items.

The Service-DTM confirms the successful input of the current values and indicates the actual current value. This value corresponds to the actual measured value taking the calibration into account.

Adjustment

As a rule, all settings already carried out on site with the previous electronics module such as min./max. adjustment, false echo fade-out etc., must be repeated.

**Tip:**

For this purpose, use the copy function of the indicating and adjustment module or the adjustment software PACTware™.

6 Maintain

6.1 Instrument repair

If a repair is necessary, please proceed as follows:

You can download a return form (23 KB) in the Internet from our 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 for needed information.

- Print and fill out one form per instrument
- Clean the instrument and pack it damage-proof
- Attach the filled in form and if necessary, a safety data sheet to the instrument
- Please ask the agency serving you for the address of your return shipment. You find the respective agency on our website www.vega.com under: "*Company - VEGA world-wide*"

7 Dismounting

7.1 Dismounting steps

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

7.2 Disposal

The replacement module consists of materials which can be recycled by specialised recycling companies. We have purposely designed the electronic modules to be easily separable.

WEEE directive 2002/96/EG

This replacement module is not subject to the WEEE directive 2002/96/EG and the respective national laws (in Germany, e.g. ElektroG). Pass the replacement module directly on to a specialised recycling company and do not use the municipal collecting points. They 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 cannot dispose of the replacement component properly, please contact us about disposal methods or return.

8 Supplement

8.1 Technical data

Technical data

are stated in the operating instructions manual of the appropriate sensor.



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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.

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