Operating Instructions
Electronics module
OPTISOUND 3010C - 3050C
# Contents

## 1 About this document
1.1 Function ........................................ 3  
1.2 Target group ................................... 3  
1.3 Symbolism used ............................... 3

## 2 For your safety
2.1 Authorised personnel ......................... 4  
2.2 Appropriate use .................................. 4  
2.3 Safety instructions for Ex areas ............. 4  
2.4 Environmental instructions ................. 4

## 3 Product description
3.1 Configuration .................................. 5  
3.2 Principle of operation ......................... 5  
3.3 Storage and transport ......................... 5

## 4 Mounting
4.1 General instructions .......................... 6  
4.2 Mounting preparations OPTISOUND 3010C-3030C .................................................. 6  
4.3 Mounting preparations OPTISOUND 3040C and 3050C ........................................... 7  
4.4 Mounting procedure, two-wire instruments .................................................... 8  
4.5 Mounting procedure, four-wire instruments .................................................... 9

## 5 Setup
5.1 Setup procedure, two-wire electronics ....... 12  
5.2 Setup procedure, four-wire electronics 4 ... 20 mA .................................................. 12

## 6 Maintenance
6.1 Instrument repair ............................... 14

## 7 Dismounting
7.1 Dismounting procedure ....................... 15  
7.2 Disposal ......................................... 15

## 8 Supplement
8.1 Technical data ................................. 16
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 component. 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:

- Oscillator OPTISOUND 3010C - 3050C
- Documentation
  - this operating instructions manual

3.2 Principle of operation

Area of application

OPTISOUND 3010C-3050C is suitable for exchange in OPTISOUND 3010C-3050C ultrasonic 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 Mounting

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, it can be ordered from the responsible Krohne agency.

Sensor serial number

The new oscillator must be loaded with the order and manufacturing data of the sensor. For this, the serial number of the sensor is necessary. The serial number is stated on the type label of the instrument, inside the housing or on the delivery note of the instrument.

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.

4.2 Mounting preparations OPTISOUND 3010C-3030C

4 ... 20 mA/HART

Oscillator SN-E.61H. is suitable for OPTISOUND 3010C - 3030C - 4 ... 20mA/HART:

- SN-E.61HX (X = without approvals)
- SN-E.61HD (D = approvals XM, CM, UX, UF according to Krohne product list)
- SN-E.61HG (G = approvals CX according to Krohne product list)
4 ... 20 mA/HART four-wire

Oscillator SN-E.61V is suitable for OPTISOUND 3010C - 3030C - 4 ... 20mA/HART four-wire:

- SN-E.61VX (X = without approvals)
- SN-E.61VM (M = with approval XM according to Krohne product list)

**Profibus PA**

Oscillator SN-E.61P is suitable for OPTISOUND 3010C - 3030C - Profibus PA:

- SN-E.61PX (X = without approvals)
- SN-E.61PD (D = approvals XM, CM, UX, UF according to Krohne product list)
- SN-E.61PG (G = approvals CX according to Krohne product list)

**Foundation Fieldbus**

Oscillator SN-E.61F is suitable for OPTISOUND 3010C - 3030C - Foundation Fieldbus:

- SN-E.61FX (X = without approvals)
- SN-E.61FD (D = approvals XM, CM, UX, UF according to Krohne product list)
- SN-E.61FG (G = approvals CX according to Krohne product list)

### 4.3 Mounting preparations OPTISOUND 3040C and 3050C

4 ... 20 mA/HART four-wire

Oscillator SN-E.64V is suitable for OPTISOUND 3040C und 3050C - 4 ... 20mA/HART four-wire:

- SN-E.64VX (X = without approvals)
- SN-E.64VGX (GX = with approval GX according to Krohne product list)

**Profibus PA**

Oscillator SN-E.64P is suitable for OPTISOUND 3040C and 3050C - Profibus PA:

- SN-E.64PX (X = without approvals)
- SN-E.64PGX (GX = approval GX according to Krohne product list).

**Foundation Fieldbus**

Electronics module SN-E.64F suitable for OPTISOUND 3040C und 3050C - Foundation Fieldbus:

- SN-E.64FX (X = without approvals)
- SN-E.64FGX (GX = approval GX according to Krohne product list).
4.4 Mounting procedure, two-wire instruments

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 compartment

**Fig. 2: Double chamber housing**

1 Position of the electronics compartment

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 screws with a screw driver (Torx size T10 or slot 4)
Loosen the screws

1 Electronics module
2 Screws (2 pcs.)

5 Pull the previous electronics out by holding the opening levers.

Note:
Make sure that the housing is not rotated during the electronics exchange. Otherwise the plug may be in a different position later.

6 Insert the new oscillator carefully. Make sure that the plug is in the correct position.

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.

4.5 Mounting procedure, four-wire instruments

The electronics module is located in the electronics compartment. The connection to the connection compartment is provided via internal connection cables. The illustration shows the position of the electronics compartment in the double-chamber housing.
Proceed as follows:

1. Switch off power supply
2. Unscrew housing cover of the electronics compartment
3. Disconnect internal connection cables, on OPTISOUND 3040C and 3050C also loosen the plug connector
4. Loosen the two screws with a screw driver (Torx size T10 or slot 4)

**Note:**
Make sure that the housing is not rotated during the electronics exchange. The connection plug in the housing for the electronics can then be in another position.

5. Pull the previous electronics out by holding the opening levers.

6. Insert the new oscillator carefully. Make sure that the plug is in the correct position.

7. Insert the two hold screws and tighten them
8 Connect the internal connection cables as follows: red to terminal 1, black to terminal 2, on OPTISOUND 3040C and 3050C connect also the plug connector.

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 procedure, two-wire electronics

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 copying function of the indicating and adjustment module.

5.2 Setup procedure, four-wire electronics 4 … 20 mA

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 power supply and delivers an output current of 4 … 20 mA. After an exchange, the oscillator must be adapted to the power supply electronics.

Proceed as follows:

1  Connecting the sensor to voltage supply.
2  Connect PC with PACTware via CONNECT 3 to the sensor.
3  Connect ammeter with measuring range 20 mA as well as resolution and accuracy $\leq 1 \mu A$ 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 process and simulates two current values. These are influenced by the power supply electronics and displayed on the ammeter. Typical values are, e.g. 6819 and 18597 $\mu A$.

5  Enter the measured current values for the first and second calibration point into the corresponding 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 copying function of the indicating and adjustment module.
6 Maintenance

6.1 Instrument repair

If a repair is necessary, please proceed as follows:

You can download a return form from our website  http://www.krohne-mar.com/fileadmin/media-lounge/PDF-Download/Specimen_e.pdf.

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 possibly also a safety data sheet to the instrument
7 Dismounting

7.1 Dismounting procedure

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 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 "Technical data"

If you cannot dispose of the replacement module 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.