OPERATING MANUAL

CONDIX | 4213 | 4613 | 4623

Conductivity converter

(FW-V1.1.1)

umn_fam_condix4_vs.1.02_en
11/2025

senseca

Table of contents

1 About this documentation

1.1 Foreword

Read this document carefully and familiarize yourself with the operation of the product before you use it. Keep this document ready to hand and in the immediate vicinity of the product so that it is always available to the personnel/user for reference in case of doubt.

The product was developed according to the state of the art and fulfils the requirements of the applicable European and national Directives. All corresponding documents are available from the manufacturer.

Only technically qualified people are permitted to carry out installation, commissioning, operation and decommissioning. The qualified personnel must have carefully read and understood the operating manual before beginning any work.

In this document it is assumed you or the personnel/users of the product are familiar with the operation of your PC and the operating system installed on it! The manufacturer assumes no liability for incorrect installation of the product. The product is only approved for use on Microsoft Windows operating systems (Windows 7 or later). Support is offered free of charge exclusively for operating systems currently covered by Microsoft Mainstream Support.

1.2 Purpose of the document

- This document describes the assembly or installation, operation and maintenance of the product.
- This document describes the operation and maintenance of the product.
- Provides important information for working safely and efficiently with the product.
- In addition to the quick reference guide with all relevant legal and safety content in hard copy, this document is a detailed reference option for the product.

1.3 Legal notices

The liability and warranty of the manufacturer for damages and consequential dam- ages are voided with misuse, disregarding this document, disregarding safety notices, assignment of inadequately qualified technical personnel and arbitrary modifications of the product.

Only carry out the maintenance and service tasks on this product that are described in this documentation. In the process, adhere to the specified steps. For your own safety, only use the original spare parts and accessories of the manufacturer. We assume no li- ability for the use of other products and resulting damage.

This document is entrusted to the recipient for personal use only. Any impermissible transfer, duplication, translation into other languages or excerpts from this operating manual are prohibited.

The manufacturer assumes no liability for print errors.

1.4 Correctness of content

The contents of this document were checked for corrected and are subject to a continuous correction and updating process. This does not rule out potential errors. In the event that errors are discovered or in case of suggestions for improvement, please in- form us immediately via the indicated contact information in order to help us make this document even more user-friendly.

1.5 Further information

Software version of the product:

- Modbus interface description
- SENSware operating manual
- MODBUS application protocol specification http://www.modbus.org
- MODBUS over serial line specification and implementation guide
  http://www.mod- bus.org
  https://senseca.com

2 Safety

2.1 Explanation of safety symbols

- **Danger!**

Symbol warnt vor unmittelbar drohender Gefahr, Tod, schweren Körperverletzungen bzw. schweren Sachschäden bei Nichtbeachtung.

- **Caution!**

This symbol warns of potential dangers or harmful situations which can cause damage to the device or to the environment in case of non-observance.

Caution!

This symbol warns of electrical voltage.

Note

Blue underlining indicates processes which can have a direct influence on operation or can trigger an unforeseen reaction in case of non-observance.

2.2 Foreseeable misuse

The proper functioning and operational safety of the product can only be guaranteed if the generally applicable safety precautions and the device-specific safety instructions in this document are observed during use.

Failure to observe any of these instructions may result in personal injury or death as well as material damage.

- **Danger!** Incorrect area of application!

In order to prevent erratic behavior of the product, personal injury or property damage, the product must be used exclusively as described in the chapter Description in the operating manual.

- ▶ Do not use in safety / Emergency Stop devices!
- ▶ The product is not suitable for use in explosion-prone areas!
- ▶ The product must not be used for diagnostic or other medical purposes on pa- tients!
- ▶ Not suitable for use with requirements on functional safetyt!

2.3 Safety instructions

This product has been designed and tested according to the safety requirements for electronic measuring devices. The product must be used according to the technical data. Technical data.

- **Caution!** Impaired function

Errors during installation, assembly or configuration of Senseca products can result in im- paired function or damage in the downstream process. Severe danger, however, does not emanate directly from our products.

- ▶ Ensure proper and correct installation, assembly and programming and configura- tion of the product!
- ▶ Provide independent safety devices!
- ▶ Settings must be made by qualified personnel only!

- **Caution!** Erratic behaviour!

> On suspicion that the product can no longer be operated without danger, it must be decommissioned and prevented from recommissioning with appropriate labelling. The safety of the user can be impaired by the device if, for example, if it shows visible damage, it no longer works as specified or if it was stored for an extended period of time under unsuitable conditions.
>
> ▶ Visual inspection!
>
> ▶ In case of doubt, send the product to the manufacturer for repair or maintenance.

2.4 Intended use

Refer to the chapter Product description for detailed specifications for the area of application. Intervention beyond the actions described in the operating manual may only be carried out by personnel authorised by the manufacturer for safety and warranty reasons.

Conversions or modifications made on one's own authority are expressly prohibited.

Application-specific dangers can emanate from this product when used improperly or not as intended.

2.5 Qualified personnel

This document contains the necessary information for the intended use of the product described herein. It is intended for technically qualified personnel who are specially trained or possess relevant knowledge in the field of automation technology or measuring, control and regulation technology. The knowledge and technically correct implementation of the safety notices and warnings in this manual are requirements for safe assembly, installation and commissioning, as well as safety during operation of the de- scribed device.

Only qualified personnel have the necessary technical knowledge to correctly interpret and apply the safety notices and warnings in this manual in the specific cases.

3 Description

3.1 Scope of delivery

Please check to ensure the completeness of the product after opening the package. You should find the following components:

- Operating manual
- Conductivity converter
- Union nut for flow fitting DFA32 or standard screw-in part d32 made of PVC-U (only CONDIX4213).

3.2 Product description

The CONDIX digital conductivity converter measures the specific conductivity of liquid media. The temperature influence on the media conductivity is compensated with the separately measured media temperature relative to the reference temperature of 25 °C. The conductivity and temperature measurements and the system status are provided via MODBUS RTU interface. The parameterization can be carried out in the application or with the EYY220 program adapter and SENSware PC software. Sensors and electronics are accommodated in space-saving housing.

CONDIX uses a conductive measuring cell for measurement of specific conductivity. These are available in 2-pin or 4-pin versions.

CONDIX with a 4-pole measuring cell is described in this manual. It is distinguished by the special resistance to dirt and polarization effects in media with high conductivity.

CONDIX4213, CONDIX4613 And CONDIX4623 differ in their execution with respect to the process material and the cell constant.

3.3 Functional description

An AC voltage having a specific sequence is connected to electrodes for the measurement, wherein the measured current is a measurement for the specific conductivity.

With a 4-pin sensor, the voltage drop occurring in the medium is also evaluated.

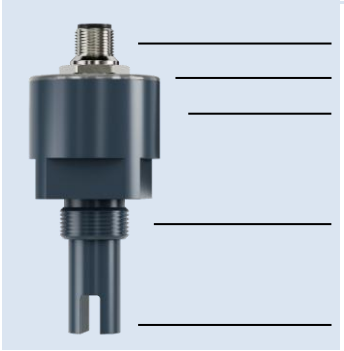
The area of application of a CONDIX depends on the electrode material and the number of pins of the sensor. 2-pin sensors are suitable for measurement of small conductivities. By contrast, 4-pin sensors are characterized by their large measuring range up to a high conductivity.

The integrated electronics determine the specific conductivity of the medium and outputs this in the unit µS/cm and/or mS/cm. The conductivity is compensated to the reference temperature of 25°C by means of an integrated temperature measurement.

Various compensation functions are available for this purpose.

Measurements, parameters and system information are stored in internal registers and are organized according to the MODBUS RTU protocol.

4 The product at a glance



(1) Electrical connection M12x1, 8-pin
(2) Clear view lid for reading the status LEDs
(3) Type plate
(4) Process connection
(5) Electrode body with electrodes

Figure 1 CONDIX4613

4.1 Block diagram

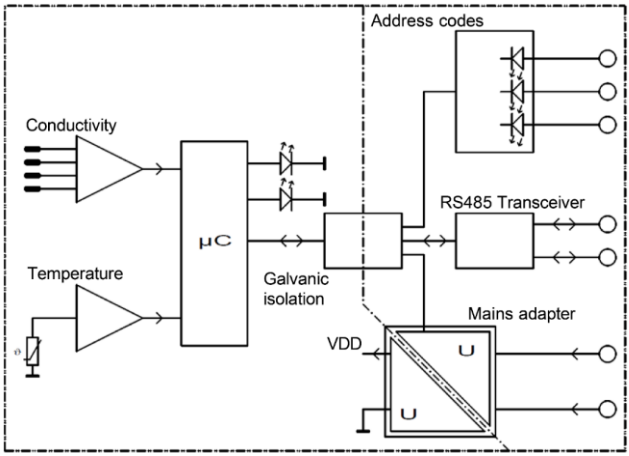
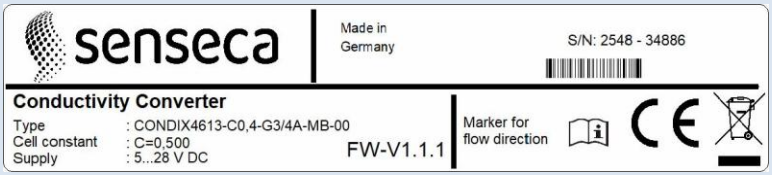


Figure 2 Block diagram

4.2 Type plate



Product Product type Cell constant Supply voltage	Flow direction Firmware version	Serial no, Refer to manual CE marking Disposal note	Manufacturer

Figure 3 Type plate

4.3 Optical signals

The operating status, address offset, and bus communication of the product are signaled by 5 LEDs.

If the power supply and communication light up green, the device is ready for operation and is exchanging data.

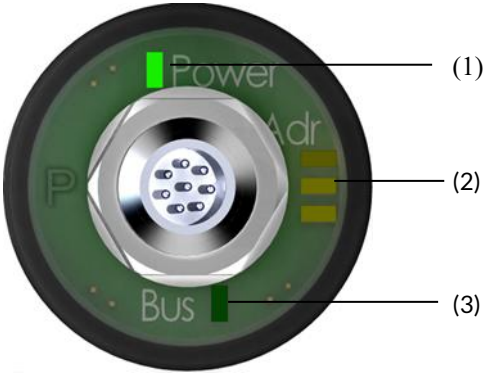


Figure 4 Operating status LED

LED	Description	Meaning
(1) Green	Supply voltage	Off: No or insufficient supply voltage Illuminated: Ready for Operation Alternating: Return for maintenance
(2) Yellow	Adress line 0,1,2	Off: not activated Dauerhaft: Adress offset active
(3) off/red/green	Communication	Off: bus communication not active Red: Error in communication Green: Successful bus communication

Table 1 LED description

5 Assembly

5.1 Mechanical design and dimensions

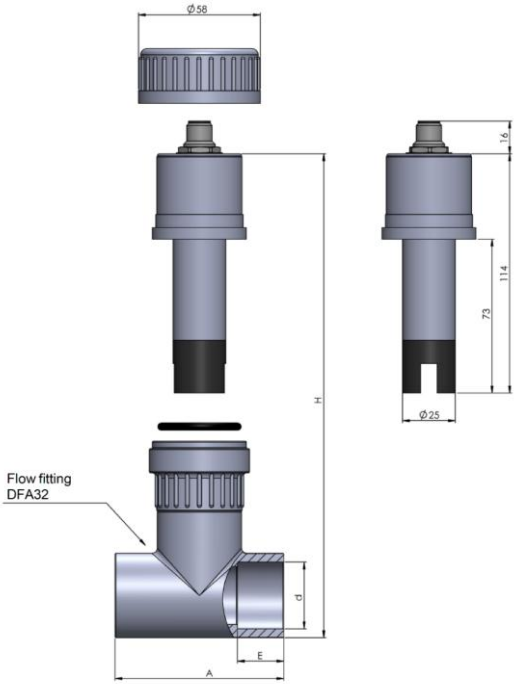


Figure 5 CONDIX4213 dimensional drawing

D	H	A	E
20	135	78	16
25	135	78	19
32	135	78	22
40	140	98	26
50	155	118	31
65	169	144	39

Table 2 CONDIX4213 dimensions

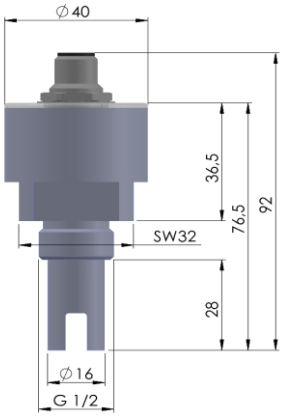


Figure 6 CONDIX4613 dimensional drawing

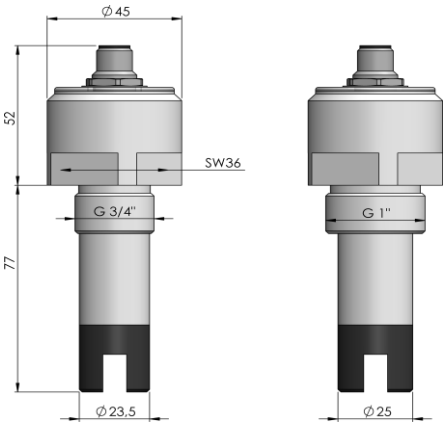


Figure 7 CONDIX4613 dimensional drawing

5.2 Mechanical assembly

The following must be observed for assembly.

- The measuring tube must always be filled in measuring mode. There must be no air bubbles in the sensor area.
- The mark of the flow direction on the sensor should match flow direction of the pipeline.
- The converter must not be exposed to direct sunlight.
- The converter must be suitable for the application conditions with respect to temperature, pressure and chemical resistance.
- Deposits, also called sediment formation, on the electrodes of the sensor must be avoided.

5.3 Application limits

5.3.1 Fittings made of PVC-U

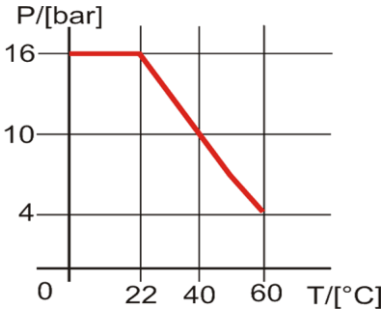


Figure 8 PVC-U pressure-temperature diagram

5.3.2 Fittings made of PVDF

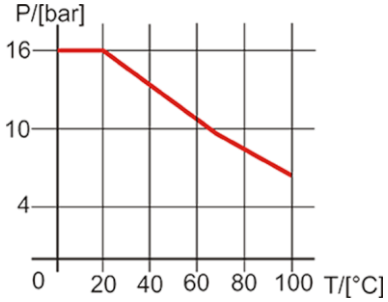


Figure 9 PVDF pressure-temperature diagram

5.4 Electrical installation

The products have an 8-pin round plug connector with the following pin assignment:

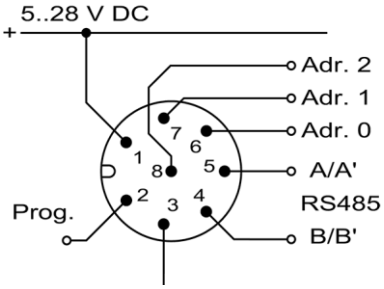


Figure 10 RS485 connection

PIN	Signal	Cable color
1	**+ Supply voltage**	**White**
2	Prog. Connection	Brown
3	- Supply voltage, C/C dimension	Green
4	Bus line B/B'	Yellow
5	Bus line A/A'	Grey
6	Adr. 0 (Offset value 4)	Pink
7	Adr. 1 (Offset value 2)	Blue
8	Adr. 2 (Offset value 1)	Red

Table 3 ACH113 Cable color / pin assignment

5.5 Modbus integration

Correct wiring, parameterization of the interface and addressing are required for successful communication.

The settings are made on the sensor using SENSware and the EYY220 adapter cable.

See also the supplementary interface description “Digital sensors”

The device settings individual address, baud rate and parity can be set in the device.

When operating several sensors in one system, convenient address assignment can also be carried out using wiring.

Depending on the wiring of PIN 6-8 to the supply voltage, an offset to the base address set in the device (default 80) is carried out.

This can be done both in the device plug and on a terminal strip in the switch cabinet or a branch.

Active address lines are indicated by a yellow LED.

This means that up to 8 sensors can be operated with one basic address without separate parameterization of the address. This enables sensors to be exchanged directly.

To integrate additional sensors, the basic address range must be changed accordingly. Maximum possible number of participants 247, according to the Modbus specification.

Adr. 0	Adr. 1	Adr. 2	Device adress
Low	Low	Low	80+0 = 80
Low	Low	**High**	80+1 = 81
Low	**High**	Low	80+2 = 82
Low	**High**	**High**	80+3 = 83
High	Low	Low	80+4 = 84
High	Low	**High**	80+5 = 85
High	**High**	Low	80+6 = 86
High	**High**	**High**	80+7 = 87

Table 4 Address generation with base address 80

- Low: Connection to ground or not connected
- High: Connection to supply voltage

6 Operation and parameterization

6.1 Operation

CONDIX has no local operating elements. Parameterization, calibration and the exchange of measured values are only possible via a Modbus master.

The following application options are available:

- MULTICON-H Multi-Channel Controller
- PC-based configuration tool SENSware with programming adapter EYY220
- PLC or SCADA with Modbus application

For further information on operation, please refer to the operating instructions for the respective product.

6.2 Parameterization

6.2.1 Parameterization using the SENSware configuration software

The product is intended for parameterization via SENSware or the MULTICON-H and can alternatively be parameterized via the RS485 interface.

Further information on the software and programming adapter can be found on our homepage.

- Programming adapter EYY220
- SENSware

Procedure for configuration using SENSware

- Connect the EYY220 programming adapter to your PC using the USB TYPE A plug. If the LED on the programming adapter lights up green continuously, it is ready for operation.

- Connect the M12 plug to the socket on the converter.
- Start SENSware.
- Start communication with the CONDIX by executing the functions Data to device, Data from device or Read measured values.

6.2.2 Parameterization using MODBUS RTU

Reading measured values and parameters or adjusting them requires active MODBUS communication. This is established if the master and slave have matching communication parameters such as address, baud rate and parity, the registers in the sensor are correctly addressed (register address or function code) and the wiring is correct.

If the register address is not defined, the values are outside the value range or there is an incorrect function code, an error message is returned in the response and the bus LED flashes red.

Further details can be found in the MODBUS interface description.

Saving the parameters

Writing the parameters loads them into the RAM of the product. Changes that do not affect the bus take effect immediately. Changes that affect the bus only take effect after the next reset. This prevents communication from being interrupted.

If the changes are to be saved permanently, a command must be sent.

This function allows adjustments, e.g. to the cell constant, to be tried out during calibration. This avoids unnecessary saving operations. After triggering a save operation, no communication with the product should take place for 100 msec.

Display of floating point numbers, float

For correct processing of floating point numbers, the word order must be set for the master. The product uses the MODBUS-compliant display format for float numbers, first the high word, then the low word. This format is often referred to as CDAB.

6.2.3 Parameterization using MULTICON-H

MULTICON-H offers two options for parameterizing connected sensors

- Local HMI
- USB-C connection and SENSware

For further information, please refer to the MULTICON-H operating instructions.

7 Functions

CONDIX has a number of measured values and parameters, which are grouped into the following topics: Identification, Sensor and Modbus.

The device also outputs information about its status in the status register.

The functions of the device are described below.

> **Note**
>
> A summary of the data, value ranges and addresses as well as status registers can be found at 13.4 Status register

7.1 Identification

To identify the device, CONDIX has identification parameters for the purpose of replacement and remote diagnosis.

The information is predefined ex works:

- Manufacturer and manufacturer text
- Product name, product ID, product text, serial number, hardware and firmware version

The following data can be customized using SENSware:

- Application ID, Function ID, Location ID

7.2 Process value

The process value is the main measured value of the device. This is output either in S/m, mS/cm or µS/cm (conductivity unit parameter). The measured value is output depending on the set time constant.

7.3 Temperature

The temperature in the device is available as a secondary measured value. This is continuously recorded with an integrated Pt1000 measuring element. The “Temperature unit” parameter can be used to display the value in °C or °F.

7.4 Internal electronics temperature

The temperature inside the evaluation electronics. Due to the self-heating of the electronic circuit, this value is on average 5...10 °C higher than the ambient temperature. Serves as an indicator for the level of the ambient temperature or whether the electronics have an error. The value depends on the “Temperature unit” parameter.

7.5 Internal supply voltage

The evaluation electronics measure your internal supply voltage. This is usually stable at 3.4V. Fluctuating values are an indication that the supply voltage of the device is not within the specified range. Measurement errors cannot then be ruled out.

7.6 Temperature compensation

The conductivity of aqueous solutions depends on temperature and is generally not linear.

The temperature coefficient depends on the medium, its concentration and the temperature. This compensation must be applied around an operating point.

For automated compensation, the device has various functions with which this can be done depending on the application.

Compensation type	Description
No compensation	The conductivity is not compensated to the reference temperature.
Linear Temperature coefficient	Compensates the conductivity at a working point according to a linear line. This function is suitable for salt solutions and solutions with a high ionic content, for example.
Natural water Temperature range 0...36°C	Compensation according to the non-linear function of natural waters in accordance with EN27888. This compensation is suitable for natural surface and ground water.
NaCl dilute solution Temperature range 0...140°C	Compensates the temperature dependence of a diluted NaCl solution according to IEC746 Part 3. This function corresponds to the compensation for natural water in the range 0 ... 36 °C with little error with the compensation for natural water.
ASTM D1125 Ultra pure water Temperature range 0…100°C	Compensates for the temperature dependence of ultrapure water close to the intrinsic conductivity of water.

ASTM D5391 Acid contamination Temperature range 0…100°C	Compensates for the temperature dependence of pure water with acidic impurities, hydrochloric acid.
ASTM D5391 Alkaline contamination Temperature range 0…100°C	Compensates the temperature dependence of pure water with alkaline impurities, morpholine.

Table 5 Overview temperature compensations

Note

If the temperature range of the temperature compensation is left, the characteristic curve is extended by a tangent.

The error will be low in the first 5 °C outside the compensation range.

Leaving the compensation range is signaled in the **status register**.

7.6.1 Determining the linear temperature coefficient

To determine the linear temperature coefficient, proceed as follows.

- Take a sample of the medium to be measured
- Switch the temperature compensation to “none”
- Temper the sample to 25°C
- Read the measured value from the CONDIX and make a note of it.
- Bring the medium to working temperature
- Set the temperature compensation to “linear temperature coefficient” and change the coefficient until the previously noted measured value is displayed.

7.7 Calibration

The measurement parameter for conductivity is the cell constant. It results from the electrode area and the electrode spacing and is given in 1/cm. This can change over time due to changes in the electrodes (corrosion, erosion, etc.).

To recalibrate them, you need SENSware incl. EYY220 and a reference solution close to your operating point.

Clean the electrodes beforehand with a soft brush, for example (avoid sharp objects or cleaning agents)

Proceed as follows to calibrate:

- Set the temperature compensation to “none”
- Immerse the electrode completely in the reference solution
- Read the current temperature via the SENSware
- Determine the target conductivity at the current temperature of your reference.
- Adjust the cell constant until the measured value matches the target conductivity value.
- Set the temperature compensation to the previous value.

7.8 Commands

In addition to measured values and parameters, the CONDIX has commands that can be used to trigger internal functions.

These are only required for operation and parameterization via the Modbus interface and are already implemented in SENSware and MULTICON-H.

Register	Command	Data type	Access	Value range
35001	Store to EEPROM	UINT16	w	5001

Table 6 Modbus commands

8 Maintenance

8.1 Operating and maintenance notices

Note

When cleaning, ensure that the housing surface and the seals are not attacked by the cleaning agent. Furthermore, cleaning agent deposits on the thread must be avoided.

Note

Clean the sensor and the auxiliary tool carefully and with suitable tools and agents after removing and before reinstalling the device in order to maintain tightness.

Note

Depending on the application, soiling can form on the electrodes and affect the result. If the medium tends to become heavily soiled, regular cleaning is recommended. Attention must be paid to material resistance.

8.2 Repairs

This product cannot be repaired on site.

9 Errors and system messages

9.1 Optical signals

LED	Meaning	Possible causes / remedy
Bus-LED -off-	No bus communication	**Channel A and B swapped** →Check wiring **Address parameters are incorrect** →Compare MODBUS parameters (address, baud rate, parity) with master
Bus-LED -red alternating-	Errors have occurred in the communication	**Write-protected parameter** **Value range violation** **Parameter not available** →Check Modbus instruction (register address, function code) Unsupported function code →Evaluate error code. →refer to document MODBUS interface description
Power-LED -green alternating -	Fatal Error	**Internal error** → Send in product for maintenance

Table 7 Optical signals

9.2 Status messages

CONDIX provides additional measured values and status messages for monitoring the measuring point.

Recording the internal temperature and supply voltage can also be used to diagnose the operating status.

Measurement and parameterization errors, system status are output as status messages.

Status message	Possible causes / remedy
Process value too small / large	Conductivity value outside the measuring range.
Temperature too low / high	< -55°C /> +205°C
Internal temperature too low / high	< -20°C ; > +85°C Check the ambient temperature and establish the intended range.
Internal voltage too low / high	< +3,3V ; > +3,6V Check the supply voltage and establish the intended range.
Exit compensation area	Process or manual set Temperature exceeds limits < 0°C or > 1000°C
Fatal error	Internal error -->Send in product for maintenance

Table 8 Status messages

Note

Register address and bit assignment see chapter 13.4 Status register.

10 Disposal

When disposing of the product, ensure that the product components and packaging are separated and recycled. The legal regulations and guidelines valid at this time must be observed.

Note

The product must not be disposed of in the residual waste garbage can. If the product is to be disposed of, take it to a municipal collection point where it will be transported safely to the disposal company in accordance with the requirements of hazardous goods legislation. Otherwise, send it back to us with sufficient postage. We will then dispose of it properly, professionally and in an environmentally friendly manner

11 Technical data

Attribute	Value
Auxiliary voltage	4,7...28 V DC,. 60 mA max
Electrical connection	8pole M12 plug nickel-plated brass
Conformity	CE
Ambient/storage temperature	-10...+60 °C
Condensation	Not permitted
Conductivity measuring range	0...500mS/cm (CONDIX4213, 4623) 0...200mS/cm (CONDIX4613) 0…20µS/cm up to 0…500mS/cm (0….200mS/cm@ C0,4)
Basic accuracy	1 % of measure (>2% of measure for <20µS/cm)
Temperature measuring range	-50...+200°C
Basic accuracy	0,2 K
Linearization error temperature	0,1 %
Process connection	G1/2A; G3/4A, G1A (CONDIX4613;4623) PVC-Standard fittings (CONDIX4213)
Tightening torque	3 Nm, max.
Process temperature	0...+60 °C
Process pressure	-1...16 bar (see also pressure-temperature diagram)
Interface	RS485, 2-wire, Half-Duplex
Protocol	Modbus RTU
Baud rates	1200, 2400, 4800, 9600, 19200
Status LED	5 LED
Materials (wetted parts)	PVC-U (PVDF for CONDIX4623), cast resin, graphite (electrodes)
Viewing window	Acrylic glass (PMMA)
Total weight	ca. 160 g
Protection class	IP67

Table 9 Technical data

12 Ordering code

CONDIX4613	1.-	2.-	3.-	4.-	5.	
1. Cell constant	**C0,4**					
2. Process connection		**G1/2A**				
3. Interface			**MB**			RS485, MODBUS RTU
4. Options				**00**		Without options
5. Manual					**00**	without
					DE	German
					EN	English

CONDIX4623	1.-	2.-	3.-	4.-	5.	
1. Cell constant	**C0,5**					
2. Process connection		**G3/4A**				
		G1A				
3. Interface			**MB**			RS485, MODBUS RTU
4. Options				**00**		Without options
5. Manual					**00**	without
					DE	German
					EN	English

CONDIX4213	1.-	2.-	3.-	4.	
1. Cell constant	**C0,5**				
2. Interface		**MB**			RS485, MODBUS RTU
3. Options			**00**		Without options
4. Manual				**00**	without
				DE	German
				EN	English

Table 10 Ordering code CONDIX4613, 4623, 4213

12.1 Spare parts and accessories

A selection of spare parts and accessories for this product is listed below.

Article	Name	Description
-	SENSware	Download on Senseca Homepage
475291	EYY220	Programming adapter M12/USB
Various	DFA32	Flow fitting for CONDIX4213
476332	ACI113-00	Self-built 8-pin sensor plug connector, Belden RKC8/9, nickel-plated brass
476331	ACI113-VA	Self-built 8-pin sensor plug connector, Binder 713, stainless steel
476116	ACI113-005-0-00	8-pin M12 connection socket with unshielded cable and wire end ferrule in 5 m.
476117	ACI113-010-0-00	8-pin M12 connection socket with unshielded cable and wire end ferrule in 10 m.
476118	ACI113-025-0-00	8-pin M12 connection socket with unshielded cable and wire end ferrule in 25 m.

Table 11 Spare parts, accessories

13 Modbus registers and data types

[r/w] Read / Write access [r] Read only [w] Write, only

13.1 Measures

Measure	Register	Range	r/w	Type
Status	30001	0…65535	r	uint16
Conductivity	30002	0…5000000	r	float
Temperature	30004	-50...+200°C	r	float
Internal temperature	30006	-50...+200 °C	r	float
Internal voltage	30008	-100..+100V	r	float

Table 12 Measures

13.2Identification

Parameter	Register	r/w	Default	Type
Device				
Vendor Name	40081	r	Senseca Germany GmbH	string
Vendor Text	40097	r	www.senseca.com	string
Product Name	40113	r	CONDIX MOD	string
Product ID	40129	r	12345	string
Product Text	40145	r	Conductivity Converter	string
Serial Number	40161	r	SN00000	string
Hardware Version	40177	r	HW-V0.00	string
Firmware Version	40193	r	FW-V0.00	string
Application Specific Tag	40209	r/w	***	string
Function Tag	40225	r/w	***	string
Location Tag	40241	r/w	***	string

Table 13 Identification data

13.3 Parameter

Parameter	Register	Range	r/w	Default	Type
Sensor					
Unit Conductivity	40001	1299- S/m 1302- **mS/cm** 1552- µS/cm	r/w	1302 (mS/cm)	uint16
Time constant	40002	0,10…10,00s	r/w	1,00(s)	float
Cell constant	40004	0,001 ... 20,000 1/cm	r/w	1,00 (1/cm)	float
Unit temperature	40006	1001- **°C** 1002- °F	r/w	1001 (°C))	uint16
Temperature offset	40007	-5.0…+5.0°C	r/w	0.0 °C	float
Temperature compensation	40009	**0- No compensation** 1- linear coefficient 2- natural water 3- D1125 Ultra-pure water 4- NaCl diluted solutions 5- D5391 acid 6- D5391 alkaline	r/w	0 (no compensation)	uint16
Temperature coefficient	40010	0,000 .. 10,000 %/K	r/w	2,160 %/K	float

Table 14 Sensor-Parameter

Parameter	Register	Range	r/w	Default	Type
Sensor Interface					
Adress	40050	1…247	r/w	80	int16
Baud rate	40051	2- 1200 3- 2400 4- 4800 5- 9600 **6- 19200**	r/w	6	uint16
Parity	40052	0- None 1- Odd **2- Even**	r/w	2 (Even)	uint16

Table 15 Modbus-Parameter

13.4 Status register

Measure	Register	Range	r/w	Type
Status	30001	0…65535	r	uint16

Table 16 Status-Measure

	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	Hex
No error	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0000
Underflow Process value																1	0001
Overflow Process value															1		0002
Underflow Temperature														1			0004
Overflow Temperature													1				0008
Electronics temperature												1					0010
Internal supply voltage											1						0020
Compensation range										1							0040
Fatal Error	1																8000

Table 17 Status register

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