Product information

Analysis Conductivity
Characteristics

System
- 2- and 4- electrode measurement,
- calibration acc. to USP<645>

Interpretation
- Conductivity from 50 μS up to 2000 mS/cm

Process connection
- G ½ A, G ⅜ A, G 1A Clamp
- VARIVENT®
- Milk pipe

MediA
- Ultra pure water up to seawater/sewage

Process pressure
- 10 bar up to 60 bar

Medium temperature
- -10 °C up to +200°C

Advantages
- Various standardized process connections
- Measuring cells for the most varying applications
- Measuring cells with integrated transmitter and digital interface
- FDA compatible measuring cells
- Ultra-pure water measurement
- High level of precision and long-term stability measurement achieved by 4-electrodes
- Temperature-compensated measurement by PT1000 sensor
- CIP-/SIP capable

Applications

- Ultra pure water
- Food - and Pharmaceutical industry
- Chemical industry
- Drinking water preparation
- Desalination of sea water
- Sewage treatment

Functions
The conductive measurement of the conductivity of liquids for monitoring and controlling in the ongoing process is a varied measurement process in industry.

By the increasing strict conditions and purity requirements of authorities ever increasing standards have been created for the food and beverage industry for the purity and hygiene in production. For this reason process engineering demands that plants and measurement must comply with a specified cleaning and sterilization procedure (CIP, SIP). In the pharmaceutical industry a high degree of hygiene and cleaning of the plants is necessary. This process is fulfilled by ultra-pure water.

As a standard for the purity of the water a standard of the United States Pharmacopeia <USP> recognized worldwide applies. Our measurement devices have the corresponding parameters to monitor pharmaceutical water and rinsing water.
## Device Overview

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Errors and technical modifications reserved.
Conductivity Meter LF9648

Characteristics
The Conductivity Meter LF9648 has been designed for the measurement of conductivity, as a degree of the purity or concentration of a liquid. In connection with 4-electrode-conductivity cells a high accuracy and insensitivity of contamination can be achieved. A further advantage is a broad range of application with only one cell. Only for measurement in ultra-pure water a special 2-electrode conductivity cell must be used.

Technical data

Power supply
Supply voltage : 230 V AC ±10 %; 115 V AC ±10 %;
24 V AC ±10 % or 24 V DC ±15 %
Power consumption : max. 3.5 VA, 5 VA with analog output
Operating temp. : -10..+55 °C
CE-conformity : EN 61326-1:2013
EN 60664-1:2007

Inputs
MR conductivity : 0..2.000(0) μS/cm up to
0..2000 / 200(0) mS/cm (at 25 °C)
-Cell constant : 0.080..9.999
-Accuracy : 0.5 % of the measuring value, ±2 Digit
-Temperature comp. : non linear for ultra pure water and natural
water or linear programmable from
0.000..9.999 %/K
MR temperature : -50.0..+200.0 °C; Sensor Pt100 or Pt1000
-Accuracy: ±0.2 °C
Display : LED red, 14.4 mm
Indicating range : 2000(0) Digit with leading zero suppression
Parameter display : LED 2-digit red, 7 mm
(parameter - and output indicator)

Outputs
Relay : SPDT < 250 V AC < 250 VA < 2 A,
< 300 V DC < 50 W < 2 A
Transistor : transistor, <35 V AC/DC, max.100 mA,
short circuit protected
Analog output
Active : 0/4..20 mA, ext.
burden = RA[Ω] (supply - 5 V) + 0.02 A;
supply voltage 5..30 V DC,
Accuracy : 0.1 %; TK 0.01 %/K
Case : panel mounting DIN 96x48 mm,
material PA6-GF; UL94V-0
Dimensions : front 96x48 mm, mounting depth 100 mm,
Weight : max. 390 g
Connection : clamp terminals, 0.08..1.5 mm²,
AWG28 ..AWG14

Ordering code
LF9648 - - - - - - -
1. Terminal strip A
1 input for 2- or 4-electrode-cells,
temperature compensation via Pt100
3 as 1, but temperature compensation via Pt1000
2. Terminal strip B
00 not installed
2R 2 relay outputs
2T 2 electronic outputs
3. Terminal strip C
00 not installed
2R 2 relay outputs
2T 2 electronic outputs
AO analog output 0/4..20 mA, 0/2..10 V DC
2A 2 analog outputs 4..20 mA passive
4. Terminal strip D Supply voltage
0 230 V AC ±10 % 50-60Hz
1 115 V AC ±10 % 50-60Hz
4 24 V AC ±10 % 50-60Hz
5 24 V DC ±15 %
5. Options
00 without option
01 min- and max-peak hold
14 measuring/monitoring acc. to USP<645>
6. Unit appears on the unit field
7. Additional text above the display (3x90 mm HxW)

Connection diagram for terminal strip B-D see page Fehler: Referenz nicht gefunden

Dimensions

Connection diagram

Terminal strip A
1. 2. 3. 4. 5. 6. 7.
1. Terminal strip A
1 input for 2- or 4-electrode-cells,
temperature compensation via Pt100
3 as 1, but temperature compensation via Pt1000
2. Terminal strip B
00 not installed
2R 2 relay outputs
2T 2 electronic outputs
3. Terminal strip C
00 not installed
2R 2 relay outputs
2T 2 electronic outputs
AO analog output 0/4..20 mA, 0/2..10 V DC
2A 2 analog outputs 4..20 mA passive
4. Terminal strip D Supply voltage
0 230 V AC ±10 % 50-60Hz
1 115 V AC ±10 % 50-60Hz
4 24 V AC ±10 % 50-60Hz
5 24 V DC ±15 %
5. Options
00 without option
01 min- and max-peak hold
14 measuring/monitoring acc. to USP<645>
6. Unit appears on the unit field
7. Additional text above the display (3x90 mm HxW)
Connection Diagrams X9648, Terminals B-D

Terminal strips B, C, D

Terminal strip A belongs to each article.

**Terminal strip B** (varies with versions)
2 alarm outputs

**Terminal strip C** (varies with versions)
2 alarm outputs

**Terminal strip D supply voltage** (varies with version)
Conductivity Meter
LF1010

Characteristics
The Conductivity-Meter LF1010 has been designed for the measurement of conductivity, as a degree of the purity or concentration of a liquid. In connection with 4-electrode-conductivity cells a high accuracy and insensitivity of contamination can be achieved. A further advantage is a broad range of application with only one cell. Only for measurement in ultra-pure water a special 2-electrode conductivity cell must be used.

Technical data

Power supply
Supply voltage: 230 V AC ±10 %; 115 V AC ±10 %
24 V AC ±10 % or 24 V DC ±15 %
Power consumption: max. 3.5 VA
Operating temp.: -20..+55 °C
CE-conformity: EN 61326-1:2013
EN 60664-1:2007

Inputs
MR conductivity: 0..2.000(0) μS/cm up to 0..2000 / 200(0) mS/cm (at 25 °C)
-Cell constant: 0.080..9.999
-Accuracy: 0.5 % of the measuring value, ±2 Digit
-Temperature comp.: non linear for ultra pure water and natural water or linear programmable from 0.000..9.999 %/K
-MR temperature: -50.0..200.0 °C; Sensor Pt100 or Pt1000
-Accuracy: ±0.2 °C
Display:
-LED red, 14.2 mm
-Indicating range: 2000(0) Digit with leading zero suppression
-Parameter display: LED 2-digit red, 7 mm
(Parameters - and output indicator)

Outputs
Relay: SPDT < 250 V AC < 250 VA < 2 A,
< 300 V DC < 50 W < 2 A
Field case:
-Material PA6-GF15/15, keypad polyester
Dimensions: 100x100x60 mm
Weight: max. 450 g
Connection:
-crimp terminals
-flexi wire
Terminals 1-4
-0.75 mm², AWG18
-0.5 mm², AWG 20
Terminals 5-15
-2.5 mm², AWG13
-1.5 mm², AWG 15
Protection class:
-IP65, terminals IP20 acc. to BGV A3

Ordering code

1. Input
1 input for 2- or 4-electrode-cells, temperature compensation via Pt100
3 as 1, but temperature compensation via Pt1000

2. Alarm output
00 not installed
2R 2 relay

3. Supply voltage
0 230 V AC ±10 % 50-60Hz
1 115 V AC ±10 % 50-60Hz
4 24 V AC ±10 % 50-60Hz
5 24 V DC ±15 %

4. Options
00 without option
01 min- and max-peak hold
09 1xM20x1.5 Multi (2xØ6 mm), 1xM20x1.5
14 measuring and monitoring of ultra-pure water acc. to USP<645>

5. Unit appears on the unit field

6. Additional text above the display (3x70 mm HxW)
Characteristics
The Conductivity Converter UNICON-LF has been designed for the measurement of conductivity, as a degree of the purity or concentration of a liquid. In connection with 4-electrode-conductivity cells a high accuracy and insensitivity of contamination can be achieved. A further advantage is a broad range of application with only one cell. Only for measurement in ultra-pure water a special 2-electrode conductivity cell must be used.

Technical data
Power supply
Loop voltage : \( U_b = 14..30 \, \text{V DC}, \ 2\text{-wire connection} \)
Operating temperature : \( 0..50 \, ^\circ\text{C} \)
CE- conformity : EN 61326-1:2013
Conductivity output
Current : \( 4..20 \, \text{mA} \)
Unit : programmable \( \mu\text{S/cm; mS/cm; k\Omega/cm; M\Omega/cm} \)
Decimals : \( 0..3 \) digit (unit depending)
Indicating range : \( 500..9999 \) Digit (unit and decimals depending)
min./max. MR : \( 0..5.00 \, \mu\text{S/cm} \) bis \( 0.500 \, \text{mS/cm} \)
with ultra-pure cell
Temperature comp. : non linear for ultra pure water and natural water or linear programmable from \( 0.000..8.000 \, \%/^\circ\text{C} \)
-Cell constant : \( 0.080..9.999 \)
-Accuracy : \( \pm0.5 \% \) of the measuring value, \( \pm2 \) Digit
Temperature output
Current : \( 4..20 \, \text{mA} \)
Burden : \( RA \leq (UB-14 \, \text{V}) \div 0.02 \, \text{A} \)
Temperature sensor : RTD Pt100 or Pt1000 acc. to DIN IEC 751
Unit : \( ^\circ\text{C, } ^\circ\text{F} \) programmable
Measuring range : \( -40.0..+160.0 \, ^\circ\text{C} \)
Alarm outputs
Transistor : \( 4..30 \, \text{V DC}, \ 60 \, \text{mA} \)
Voltage drop : \( < 2 \, \text{V} \)
MR switch over
R : \( >10 \, \text{k}\Omega \)
MB1 active : \( U = 0.\,3 \, \text{V DC} \)
MB2 active : \( U = 12..30 \, \text{V DC} \)
Display : LCD-dot matrix, 3.8mm characters
Range : 2 lines 16 characters each
Case : head case / field case
Material : case polyamide with fiber glass, PA6-GF/GK 15/15, front foil polyester
Dimensions : \( 100 \times 100 \times 60 \, \text{mm (WxHxD)} \)

Dimensions
Weight : max. 360 g
Connection : screw terminal with pressure plate, 2.5 mm² flexible wire, 4 mm² single wire and plug-in cable for sensor
Protection class : IP65, terminals IP20 acc. to BGV A3

Connection diagram

Ordering code
UNICON-LF
1. Model
1 output 4..20 mA for conductivity
2 electronic alarm outputs
2 as 1, but 2nd measuring range for conductivity, output 4..20 mA for temperature

2. Mounting
01 head mounting, on the cell
02 field mounting, separate connection cable page Fehler: Referenz nicht gefunden
03 as 02, but plug stainless steel

3. Measuring principle
4 4-electrode measurement (2-electrode cell connectable)

4. Temperature compensation
1 RTD Pt100
3 RTD Pt1000

5. Options
00 without option
14 measurement/monitoring acc. to USP<645>

Accessories see page Fehler: Referenz nicht gefunden
Connection diagrams see page Fehler: Referenz nicht gefunden
Connection Diagrams Conductivity Measurement

Connection at UNICON-LF field case

Connection at LF1010 and LF9648

A

B

C

Connection at UNICON-LF field case

Connection at LF1010 and LF9648
Compact Conductivity Measuring Transducer
GLMU

- Local display of conductivity and temperature
- Freely scalable output scales
- Variable temperature-compensation type
- With local display and galvanic isolation
- 4 to 20 mA version with 2 wires: Power supply via current loop (optionally with 0-10V 3-wire)

Features
The GLMU is used for drinking water and surface water monitoring, fish husbandry, aquariums and measurement in contaminated solutions and waste water or monitoring of neutralisation.

The 4-pole measuring cell of the GLMU-400-MP is especially well-suited for use for higher salt concentrations based on the insensitivity to dirt.

The GLMU has a local display of conductivity and temperature. The output signal is freely scalable and the measuring range and temperature compensation type can be selected by the customer.

Versions

<table>
<thead>
<tr>
<th>GLMU-200-MP</th>
<th>GLMU-400-MP</th>
<th>GLMU-400-MP-UNI</th>
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<tbody>
<tr>
<td>Incl. 2-pole conductivity measuring cell, compact, single measuring cell</td>
<td>Incl. 4-pole conductivity measuring cell, high-quality, dirt-resistant measuring cell</td>
<td>Universally configurable measuring transducer without measuring cell, for connection of arbitrary measuring cells</td>
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Technical data

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<tr>
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<th>GLMU-400-MP</th>
<th>GLMU-200-MP-RW</th>
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<tr>
<td>TDS In mg/l: 0.0..200.0 0.0..20.00 0.00..20.00</td>
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<tr>
<td>Salinity 0.0..70.0 (PSU)</td>
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<tr>
<td>Temperature -25..+50 °C (device) 0.0..80.0 °C (measuring cell)</td>
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<td>Spec. resistance In kOhm<em>cm: 5.0..100.0 0.50..10.00 In Ohm</em>cm: 50..1000 5.0..100.0</td>
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<td>TDS In mg/l: 0.0..200.0 0.0..20.00 0.00..20.00</td>
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<tr>
<td>Temperature -25..+50 °C (device) 0.0..80.0 °C (measuring cell)</td>
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</tbody>
</table>

Measuring cell: Conductivity measuring cell with 2/4-pole for various applications
Accuracy Conductivity: ±0.5 % of measured value ± 0.3 % FS
Temperature: ±0.2 °C ± 1 digit
Measuring cell connection: 7-pole diode socket
Cell constant: K = 0.30..1.20 freely selectable
Temperature compensation:
off: No compensation
Lin: Linear compensation (of 0.3..3.0 %/K)
nLF: non-linear compensation for natural water according to EN27888 (DIN 38404)
Output signal: 4..20 mA, (2-wire)
0.1 V or 0..10 V (3-wire)
Auxiliary energy: 12..30 V DC at 4..20 mA
18..30 V DC at 0..10 V
Permissible resistance: R [Ω] = (UV [V] - 12V) / 0.02 A
Permissible load: R > 3000 Ω
Display: 10 mm height, 4-digit display
Electrical connection: Angle connector according to EN 175301-803/A
Housing: ABS
Ingress protection: IP65 (excluding 7-pole measuring cell connection socket)

Dimension
# Product information Analysis Conductivity

## Measuring cells

![2-pin measuring cell](image1)

![4-pin measuring cell](image2)

### Ordering code

<table>
<thead>
<tr>
<th>GLMU</th>
<th>MP</th>
<th>UNI</th>
<th>L01</th>
<th>L02</th>
<th>L03</th>
<th>L04</th>
<th>L05</th>
<th>L05L</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>200</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>2.</td>
<td>400</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Accessories / Spare parts

- **LFE 202 art. no. 604344**
  - 2-pole spare measuring cell (for GLMU-200-MP-TR)

- **LFE 202-PG art. no. 603594**
  - 2-pole spare measuring cell (for GLMU-200-MP-TR-PG)

- **LFE 210 art. no. 606911**
  - 2-pole spare measuring cell (for GLMU-200-MP-LTG)

- **LFE 220 art. no. 607829**
  - 2-pole spare measuring cell (for GLMU-200-MP-RW-RWP)

- **LFE 230 art. no. 607825**
  - 2-pole spare measuring cell (for GLMU-200-MP-RWP)

- **LFE 240 art. no. 607828**
  - 2-pole spare measuring cell (for GLMU-200-MP-RW)

- **LFE 400 art. no. 604635**
  - 4-pole spare measuring cell (for GLMU-400-MP-TR)

- **LFE 400-PG art. no. 603565**
  - 4-pole spare measuring cell (for GLMU-400-MP-SW-PG)

- **LFE 430-PG art. no. 607827**
  - 4-pole spare measuring cell (for GLMU-400-MP-SWP)

- **PG 13.5 art. no. 603205**
  - Plug-in thread adapter for pressureless insert, for electrode Ø12 mm for connection without adapter

- **GWA1Z art. no. 602914**
  - Thread adapter PG 13.5 to G1". plastic

- **GKL 100 art. no. 601396**
  - Conductivity control solution (100 ml bottle with 1413 µS / cm, in accordance with DIN EN 27888)
  - Surface water / drinking water applications, among others

- **GKL 101 art. no. 601398**
  - Conductivity control solution (250 ml bottle with 84 µS / cm)
  - Purest water, osmosis system applications, among others

- **GKL 102 art. no. 601400**
  - Conductivity control solution (100 ml bottle with 50 mS / cm)
  - Salt water aquarium applications, among others

## Measuring cells

### Version

- 200: Incl. 2-pole measuring cell
- 400: Incl. 4-pole measuring cell

### Measuring cell

- TR: Drinking/fresh water
- TRP: Drinking/fresh water, screw-in measuring cell
- LTG: Organic substances
- RW: Purest water
- RWP: Purest water, screw-in measuring cell
- SW: Dirty/salt water
- SWP: Dirty/salt water, screw measuring cell

### Output signal

- A1: 4..20 mA
- AV01: 0..1 V
- AV010: 0..10 V

### Cable length

- L01: 1m
- L02: 2m
- L03: 3m
- L04: 4m
- L05: 5m
- L05L: 5m cable for -SWP, - RWP and -TRP

### Options

- 00: No options
- PG: Measuring cell with fixed PG13.5 thread for pressure applications (up to max. 6 bar)

## Measuring cells

### Measuring cell

- GLMU: Measuring transducer without measuring cell

### Output signal

- A1: 4..20 mA, 2 wire
- AV01: 0..10 V, 3 wire
- AV010: 0..1 V, 3 wire

### Electrical connection

- EM16: Angle plug connector, short, DIN-43650-A special M16, cable socket with metric screw connection

### Connection sensor

- M16: M16 socket, 7- pole, standard
- M12: M12 socket, 8 pole, e. g. for connection cable A SK8M
Digital Conductivity Converter CONDIX4213

- Digital, conductive 4-electrode flow-converter for outer pipe diameter from 20 mm up to 63 mm
- 6 types of temperature compensation selectable
- Status LED
- RS485 Interface with MODBUS RTU-protocol
- Installation with PVC-U standard fittings
- Flow fitting DFA32 as option accessories
- Suitable for conductivities in a range of 0..20 µS/cm up to 0..500 mS/cm
- Resistant against pollution
- Not influenced by polarisation effect or wire resistive

Characteristics

The digital conductivity converter CONDIX4213 is used for the conductivity measurement of liquids. The integrated digital transmitter submits values and parameters to a master (e.g. PLC, SCADA). Device parameters and input configuration are adjustable via the interface or GHMware configuration software.

Application dependent six different types of temperature compensation are available.

The 4-electrode measurement principle with a cell constant of C0.5 1/cm is suitable for a range of applications up to 500 mS/cm. Applications can be found in the water treatment of landfill seeping water, seawater or black water treatment on ships.

Technical Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>Supply voltage: 4.7..28 V DC, max. 60 mA</td>
</tr>
<tr>
<td></td>
<td>CE-conformity: EN 61326-1:2013</td>
</tr>
<tr>
<td></td>
<td>EN 61326-2-3:2013</td>
</tr>
<tr>
<td>Inputs</td>
<td>Cell constant: C = 0.5 1/cm (exact cell constant labelled on the type plate)</td>
</tr>
<tr>
<td>Measuring range</td>
<td>Conductivity: 0..20 µS/cm up to 0..500 mS/cm</td>
</tr>
<tr>
<td></td>
<td>Temperature: -50..+200°C</td>
</tr>
<tr>
<td>Basic accuracy</td>
<td>1% of the measuring value</td>
</tr>
<tr>
<td>Temperature</td>
<td>0.2 K</td>
</tr>
<tr>
<td>Linearization errors</td>
<td>Temperature: 0.1%</td>
</tr>
<tr>
<td></td>
<td>Operating temperature: 0..+80 °C</td>
</tr>
<tr>
<td></td>
<td>Ambient temperature: -10..60 °C</td>
</tr>
<tr>
<td></td>
<td>Storage temperature: -10..60°C</td>
</tr>
<tr>
<td></td>
<td>Condensation: not allowed</td>
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<tr>
<td></td>
<td>Climate classification: EN 60068-2-38:2010-6</td>
</tr>
<tr>
<td></td>
<td>EN 60068-2-6, GL test 2</td>
</tr>
<tr>
<td>Process connection</td>
<td>PVC fitting with cap nut</td>
</tr>
<tr>
<td>Process pressure</td>
<td>max. -1..16 bar</td>
</tr>
<tr>
<td>Materials</td>
<td>Process material: PVC-U, casting resin, graphite (electrodes)</td>
</tr>
<tr>
<td></td>
<td>Viewing window: Acrylic glass (PMMA)</td>
</tr>
<tr>
<td>Electrical connection</td>
<td>Design: 8 pole round connector plug</td>
</tr>
<tr>
<td></td>
<td>Materials: brass nickel plated</td>
</tr>
<tr>
<td></td>
<td>Interface: RS485, Half-Duplex</td>
</tr>
<tr>
<td></td>
<td>Protokoll: MODBUS RTU</td>
</tr>
<tr>
<td></td>
<td>Baud rates: 1200, 2400, 4800, 9600, 19200</td>
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<tr>
<td></td>
<td>Total weight: ca. 160 g</td>
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<tr>
<td></td>
<td>Protection class: IP67</td>
</tr>
<tr>
<td></td>
<td>Temperature comp. Selectable:</td>
</tr>
<tr>
<td></td>
<td>- without temperature compensation</td>
</tr>
<tr>
<td></td>
<td>- linear temperature coefficient</td>
</tr>
<tr>
<td></td>
<td>- compensation of natural waters</td>
</tr>
<tr>
<td></td>
<td>- ASTM-D1125 ultra-pure water</td>
</tr>
<tr>
<td></td>
<td>- NaCl diluted solution</td>
</tr>
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<td></td>
<td>- ASTM-D5391 acidic pure water</td>
</tr>
<tr>
<td></td>
<td>- ASTM-D5391 alkaline pure water</td>
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</tbody>
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Members of GHM GROUP: GREISINGER | HONSBERG | Martens | IMTRON | Delta-GHM | VAL.CCO
### Dimensions

<table>
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<tr>
<th>d</th>
<th>H</th>
<th>A</th>
<th>E</th>
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</table>

### Connection diagram

MB-type with RS485, MODBUS RTU interface

### Optical signaling

Top view CONDIX4213: Optical signalling for supply voltage, bus communication and addressing.

### Ordering code

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>4213</td>
<td>C0.5</td>
<td>MB</td>
<td>00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RS 485, MODBUS RTU</td>
<td></td>
</tr>
</tbody>
</table>

### Accessories

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>475291</td>
<td>EYY220</td>
<td>Programming adapter</td>
</tr>
<tr>
<td>476332</td>
<td>ACI113-00</td>
<td>Field attachable 8-pole female connector, Belden RKC8/9, Brass nickel plated</td>
</tr>
<tr>
<td>476331</td>
<td>ACI113-VA</td>
<td>Field attachable 8-pole female connector, Binder 713, stainless steel</td>
</tr>
<tr>
<td>476533</td>
<td>ACI113-002-1-00</td>
<td>8-pole female connector M12 (Brass nickel plated) with shielded cable and wire-end ferrules: 2 m</td>
</tr>
<tr>
<td>476116</td>
<td>ACI113-005-1-00</td>
<td>8-pole female connector M12 (Brass nickel plated) with shielded cable and wire-end ferrules: 5 m</td>
</tr>
<tr>
<td>476117</td>
<td>ACI113-010-1-00</td>
<td>8-pole female connector M12 (Brass nickel plated) with shielded cable and wire-end ferrules: 10 m</td>
</tr>
<tr>
<td>476118</td>
<td>ACI113-025-1-00</td>
<td>8-pole female connector M12 (Brass nickel plated) with shielded cable and wire-end ferrules: 25 m</td>
</tr>
</tbody>
</table>

The addressing of the CONDIX can be realized with a field attachable female connector (see accessories) or in a junction box.
Digital Conductivity-Converter CONDIX4613

- Digital, conductive 4-electrode flow-converter
- Compact design
- 6 types of temperature compensation selectable
- Status LED
- RS485 Interface with MODBUS RTU-protocol
- Installation with pipe thread DIN ISO 228 (DIN 259; BSP)
- Suitable for conductivities in a range of 0..20 µS/cm up to 0..200 mS/cm
- Resistant against pollution
- Not influenced by polarisation effect or wire resistive

Characteristics

The digital conductivity converter CONDIX4613 is used for the conductivity measurement of liquids. The integrated digital transmitter submits values and parameters to a master (e.g. PLC, SCADA). Device parameters and input configuration are adjustable via the interface or GHMware configuration software.

Application dependent six different types of temperature compensation are available.

The 4-electrode measurement principle with a cell constant of C0.4 1/cm is suitable for a range of applications up to 200 mS/cm. Applications can be found in the water treatment of landfill seeping water, seawater or black water treatment on ships.

Technical data

<table>
<thead>
<tr>
<th>Power supply</th>
<th>Supply voltage : 4.7..28 V DC, max. 60 mA</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE-conformity</td>
<td>EN 61326-1:2013</td>
</tr>
<tr>
<td></td>
<td>EN 61326-2-3:2013</td>
</tr>
<tr>
<td>Inputs</td>
<td>Cell constant : C = 0.4 1/cm (exact cell constant labelled on the type plate)</td>
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<td>Measuring range</td>
<td>Conductivity : 0..20 µS/cm up to 0..200 mS/cm</td>
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<tr>
<td></td>
<td>Temperature : -50..+200°C</td>
</tr>
<tr>
<td>Basic accuracy</td>
<td>Conductivity : 1% of the measuring value</td>
</tr>
<tr>
<td></td>
<td>Temperature : 0.2 K</td>
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<td>Linearization errors</td>
<td>Temperature : 0.1%</td>
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<td>Operating temperature : 0..+80 °C</td>
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<td>Ambient temperature : -10..60 °C</td>
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<td>Condensation : not allowed</td>
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<td></td>
<td>Climate classification : EN 60068-2-38:2010-6</td>
</tr>
<tr>
<td></td>
<td>Vibrations : EN 60068-2-6, GL test 2</td>
</tr>
<tr>
<td></td>
<td>Process connection : pipe thread DIN ISO 228 (DIN 259; BSP)</td>
</tr>
<tr>
<td></td>
<td>Process pressure : max. -1..16 bar</td>
</tr>
<tr>
<td>Materials</td>
<td>Process material : PVC-U, casting resin, graphite (electrodes)</td>
</tr>
<tr>
<td></td>
<td>Viewing window : Acrylic glass (PMMA)</td>
</tr>
<tr>
<td>Electrical connection</td>
<td>Design : 8 pole round connector plug, M12x1, IP67</td>
</tr>
<tr>
<td></td>
<td>Materials : brass nickel plated</td>
</tr>
<tr>
<td></td>
<td>Interface : RS485, Half-Duplex</td>
</tr>
<tr>
<td></td>
<td>Protokoll : MODBUS RTU</td>
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<td>Baud rates : 1200, 2400, 4800, 9600, 19200</td>
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<td></td>
<td>- ASTM-D1125 ultra-pure water</td>
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<td>- NaCl diluted solution</td>
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<td>- ASTM-D5391 acidic pure water</td>
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<tr>
<td></td>
<td>- ASTM-D5391 alkaline pure water</td>
</tr>
</tbody>
</table>
Product information Analysis Conductivity

Dimensions

Connection diagram

MB-type with RS485, MODBUS RTU interface

Optical signaling

Top view CONDIX4613: Optical signalling for supply voltage, bus communication and addressing.

Ordering code

CONDIX [ ] - [ ] - [ ] - [ ] - [ ]

- 1. Model
- 2. Cell constant
- 3. Process connection
- 4. Interface
- 5. Options

<table>
<thead>
<tr>
<th>PIN</th>
<th>Signal</th>
<th>Cable color ACI113</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Supply voltage</td>
<td>White</td>
</tr>
<tr>
<td>2</td>
<td>Programming PIN (normally not connected)</td>
<td>Brown</td>
</tr>
<tr>
<td>3</td>
<td>Supply voltage, Ground (C / C')</td>
<td>Green</td>
</tr>
<tr>
<td>4</td>
<td>B / B’ Bus</td>
<td>Yellow</td>
</tr>
<tr>
<td>5</td>
<td>A / A' Bus</td>
<td>Grey</td>
</tr>
<tr>
<td>6</td>
<td>Adr. 0</td>
<td>Pink</td>
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<td>Blue</td>
</tr>
<tr>
<td>8</td>
<td>Adr. 2</td>
<td>Red (shield)</td>
</tr>
</tbody>
</table>

The addressing of the CONDIX can be realized with a field attachable female connector (see accessories) or in a junction box

Accessories

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>GHMware</td>
<td>Download: <a href="http://www.ghm-group.de/en/info-desk/">www.ghm-group.de/en/info-desk/</a></td>
</tr>
<tr>
<td>475291</td>
<td>EYY220</td>
<td>Programming adapter</td>
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<tr>
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<td>Field attachable 8-pole female connector, Binder 713, stainless steel</td>
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<tr>
<td>476533</td>
<td>ACI113-002-1-00</td>
<td>8-pole female connector M12 (Brass nickel plated) with shielded cable and wire-end ferrules: 2 m</td>
</tr>
<tr>
<td>476116</td>
<td>ACI113-005-1-00</td>
<td>8-pole female connector M12 (Brass nickel plated) with shielded cable and wire-end ferrules: 5 m</td>
</tr>
<tr>
<td>476117</td>
<td>ACI113-010-1-00</td>
<td>8-pole female connector M12 (Brass nickel plated) with shielded cable and wire-end ferrules: 10 m</td>
</tr>
<tr>
<td>476118</td>
<td>ACI113-025-1-00</td>
<td>8-pole female connector M12 (Brass nickel plated) with shielded cable and wire-end ferrules: 25 m</td>
</tr>
</tbody>
</table>
Digital Conductivity-Converter CONDI×4623

- Digital, conductive 4-electrode flow-converter
- 6 types of temperature compensation selectable
- Status LED
- RS485 Interface with MODBUS RTU-protocol
- Installation with pipe thread DIN ISO 228 (DIN 259; BSP)
- Suitable for conductivities in a range of 0..20 µS/cm up to 0..500 mS/cm
- Resistant against pollution
- Not influenced by polarisation effect or wire resistive

Characteristics
The digital conductivity converter CONDI×4623 is used for the conductivity measurement of liquids. The integrated digital transmitter submits values and parameters to a master (e.g. PLC, SCADA). Device parameters and input configuration are adjustable via the interface or GHMware configuration software. Application dependent six different types of temperature compensation are available. The 4-electrode measurement principle with a cell constant of C0.5 1/cm is suitable for a range of applications up to 500 mS/cm. Applications can be found in the water treatment of landfill seeping water, seawater or black water treatment on ships.

Technical data

| Power supply | Supply voltage : 4,7..28 V DC, max. 60 mA |
| CE-conformity | EN 61326-1:2013 EN 61326-2-3:2013 |
| Inputs | Cell constant : C = 0,5 1/cm (exact cell constant labelled on the type plate) |
| Measuring range | Conductivity : 0..20 µS/cm up to 0..500 mS/cm |
| Temperature | : -50..+200°C |
| Basic accuracy | Conductivity : 1% of the measuring value |
| Temperature | : 0,2 K |

Linearization errors
- Temperature : 0,1%
- Operating temperature : 0..+60 °C
- Ambient temperature : -10..60 °C
- Storage temperature : -10..60°C
- Condensation : not allowed
- Climate classification : EN 60068-2-38:2010-6
- Vibrations : EN 60068-2-6, GL test 2
- Process connection : pipe thread DIN ISO 228 (DIN 259; BSP)
- Process pressure : max. -1..16 bar

Material
- Process material : PVDF, casting resin, graphite (electrodes)
- Viewing window : Acrylic glass (PMMA)

Electrical connection
- Design : 8 pole round connector plug M12x1, IP67
- Material : brass nickel plated
- Interface : RS485, Half-Duplex
- Protocol : MODBUS RTU
- Baud rates : 1200, 2400, 4800, 9600, 19200
- Total weight : ca. 160 g
- Protection class : IP67
- Temperature comp. selectable
- - without temperature compensation
- - linear temperature coefficient
- - compensation of natural waters
- - ASTM-D1125 ultra-pure water
- - NaCl diluted solution
- - ASTM-D5391 acidic pure water
- - ASTM-D5391 alkaline pure water
Product information Analysis Conductivity

Dimensions

Connection diagram

MB-type with RS485, MODBUS RTU interface

Optical signalling

Top view CONDIX4623: Optical signalling for supply voltage, bus communication and addressing.

Ordering code

CONDIX 1. 2. 3. 4. 5.

1. Model
4623
2. Cell constant
C0.5
3. Process connection
G ¾ A G ¾ A
G 1 A G 1 A
4. Interface
MB RS 485, MODBUS RTU
5. Options
00 Without option

Accessories

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Type</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
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<td>ACI113-002-1-00</td>
<td>8-pole female connector M12 (Brass nickel plated) with shielded cable and wire-end ferrules: 2 m</td>
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<td>ACI113-005-1-00</td>
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<td>ACI113-010-1-00</td>
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<td>ACI113-025-1-00</td>
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</tr>
</tbody>
</table>

The addressing of the CONDIX can be realized with a field attachable female connector (see accessories) or in a junction box.

PIN  Signal  Cable color ACI13
1 + Supply voltage  White
2 Programming PIN (normally not connected)  Brown
3 - Supply voltage, Ground (C / C')  Green
4 B / B' Bus  Yellow
5 A / A' Bus  Grey
6 Adr. 0  Pink
7 Adr. 1  Blue
8 Adr. 2  Red (shield)
Product information Analysis Conductivity

Conductivity Cell LF2203

Characteristics

- 2-electrode conductive flow cell for pipe diameter 25-63 mm
- Measuring range 0..100 µS/cm up to 2 mS/cm

Technical data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cell constant</td>
<td>$C = 1.0 \pm 3.5%$</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>0..60 °C</td>
</tr>
<tr>
<td>Process pressure</td>
<td>max. 16 bar at 22 °C</td>
</tr>
<tr>
<td>Process material</td>
<td>graphite (electrodes), PVC-U acc. to DIN8061/8062</td>
</tr>
<tr>
<td>Electrical connection</td>
<td>8 pole round connector plug, M12x1, IP67</td>
</tr>
<tr>
<td>-Material</td>
<td>brass nickel plated</td>
</tr>
<tr>
<td>Temperature measurement</td>
<td>integrated Pt1000 Sensor DIN IEC751, class A</td>
</tr>
</tbody>
</table>

Dimensions

<table>
<thead>
<tr>
<th>d</th>
<th>H</th>
<th>A</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
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<td>66</td>
<td>19</td>
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<td>63</td>
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<td>38</td>
</tr>
</tbody>
</table>

Ordering code

LF2203 - C1.0

1. Options

<table>
<thead>
<tr>
<th>Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>without option</td>
</tr>
<tr>
<td>03</td>
<td>8 pole round plug SS-type</td>
</tr>
</tbody>
</table>

Accessories

Flow fitting DFA 25

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFA25-25-1-1</td>
<td>d = 25 mm</td>
</tr>
<tr>
<td>DFA25-32-1-1</td>
<td>d = 32 mm</td>
</tr>
<tr>
<td>DFA25-40-1-1</td>
<td>d = 40 mm</td>
</tr>
<tr>
<td>DFA25-50-1-1</td>
<td>d = 50 mm</td>
</tr>
<tr>
<td>DFA25-63-1-1</td>
<td>d = 63 mm</td>
</tr>
</tbody>
</table>

Connection diagram see page Fehler: Referenz nicht gefunden

Additional accessories see page Fehler: Referenz nicht gefunden
Conductivity Cell LF2603

Characteristics

- 2-electrode conductive flow cell for pipe ultra pure water
- Measuring range 0.20 µS/cm up to 0.100 µS/cm

Technical data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cell constant</td>
<td>C = 0.5 ± 3.5%</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>0..60 °C</td>
</tr>
<tr>
<td>Process pressure</td>
<td>max. 16 bar at 22°C</td>
</tr>
<tr>
<td>Process material</td>
<td>stainless steel (electrodes), PVC-U acc. to DIN8061/8062</td>
</tr>
<tr>
<td>Electrical connection</td>
<td>4 pole angle plug acc. to EN 175301-803/A, IP65 or 8 pole round connector plug M12x1, IP67</td>
</tr>
<tr>
<td>Material</td>
<td>brass nickel plated</td>
</tr>
<tr>
<td>Temperature measurement</td>
<td>integrated Pt1000 Sensor DIN IEC751, class A</td>
</tr>
</tbody>
</table>

Ordering code

<table>
<thead>
<tr>
<th>Code</th>
<th>Process connection (A)</th>
<th>Electrical connection</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>G ½ A cylindrical thread</td>
<td>R ¾ conical thread</td>
<td>00</td>
</tr>
<tr>
<td></td>
<td>G ¾ A cylindrical thread</td>
<td>R ½ conical thread</td>
<td>03</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>00</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>8 pole round connector</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>4 pole angle entry plug</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td>00</td>
</tr>
</tbody>
</table>

Connection diagram see page Fehler: Referenz nicht gefunden
Additional accessories see page Fehler: Referenz nicht gefunden
Conductivity Cell LF2613

Characteristics
- 2-electrode conductive flow cell for drinking water
- Measuring range 0..100 µS/cm up to 0..2 mS/cm

Technical data
- Cell constant: $C = 0.9 \pm 3.5 \%$
- Operating temperature: $0..60 ^\circ C$
- Process pressure: max. 16 bar at $22 ^\circ C$
- Process material: Graphite electrodes, PVC-U acc. to DIN8061/8062
- Electrical connection: 4 pole angle entry plug EN 175301-803/A, IP65 or 8 pole round connector plug M12x1, IP67
- Material: brass nickel plated
- Temperature measurement: integrated Pt1000 Sensor DIN IEC751, class A

Dimensions

Ordering code
LF2613 - C0.9 - 1. 2. 3.

1. Process connection (A)
   - G ½ A cylindrical thread
   - R ½ conical thread
   - G ¾ A cylindrical thread
   - R ¾ conical thread

2. Electrical connection
   - 1 8 pole round connector
   - 2 4 pole angle entry plug

3. Options
   - 00 without option
   - 03 8 pole round connector plug SS-type

Connection diagram see page Fehler: Referenz nicht gefunden
Additional accessories see page Fehler: Referenz nicht gefunden
Conductivity Cell
LF2653HT

Characteristics

- 2-electrode conductive high temperature cell for pure- and ultra-pure water with pipe thread acc. to DIN ISO 228
- Measuring range 0..0.5 µS/cm up to 0..50 µS/cm

Technical data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cell constant</td>
<td>C = 0.1 exact cell constant labeled on the type plate</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>0..200 °C</td>
</tr>
<tr>
<td>Process pressure</td>
<td>max. 20 bar</td>
</tr>
<tr>
<td>Process material</td>
<td>stainless steel 1.4404 (316L), ceramic, Kalrez</td>
</tr>
<tr>
<td>Electrical connection</td>
<td>8 pole round connector plug M12x1, IP67</td>
</tr>
<tr>
<td>Field mounting</td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td>brass nickel plated</td>
</tr>
<tr>
<td>Temperature measurement</td>
<td>integrated Pt1000 sensor DIN IEC751, Class A</td>
</tr>
</tbody>
</table>

Ordering code

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Model</td>
</tr>
<tr>
<td>2653HT</td>
<td>field mounting</td>
</tr>
<tr>
<td>2.</td>
<td>Process connection</td>
</tr>
<tr>
<td>G ¾ A</td>
<td></td>
</tr>
<tr>
<td>G 1 A</td>
<td></td>
</tr>
<tr>
<td>G 1 ¼ A</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Options</td>
</tr>
<tr>
<td>00</td>
<td>without option</td>
</tr>
<tr>
<td>03</td>
<td>8 pole round connector plug SS-type</td>
</tr>
</tbody>
</table>

Dimensions

Field mounting diagram.

Connection diagram see page Fehler: Verweis nicht gefunden
Additional accessories see page Fehler: Verweis nicht gefunden
Conductivity Cell
LF1453 / LF2453

Characteristics

- 2-electrode ultra-pure water cell with Clamp connection acc. to DIN 32676 or Südmo Aseptic connection
- FDA compliant
- Application field: food industry
- Measuring range 0..0.5 µS/cm up to 0..50 µS/cm

Technical data

- Cell constant: $C = 0.1$ exact cell constant labeled on the type plate
- Process temperature: -10...+120 °C
  - CIP-/SIP-capable 140 °C < 1 h
- Process pressure: max. 16 bar
- Process material: stainless steel 1.4404 (316L), electropolished; PVDF; seal EPDM, FDA-certified, PEEK
- Electrical connection: LF1453: flat cable connector, only head mounting UNICON-LF
  - LF2453: 8 pole round connector plug M12x1, IP67
- Material: brass nickel plated
- Temperature measurement: integrated Pt1000 sensor DIN IEC751, class A

Ordering code

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1453</td>
<td>head mounting UNICON-LF</td>
</tr>
<tr>
<td>2453</td>
<td>field mounting</td>
</tr>
<tr>
<td>00</td>
<td>without option</td>
</tr>
<tr>
<td>03</td>
<td>8 pole round plug SS-type</td>
</tr>
<tr>
<td>11</td>
<td>Process connection Südmo Aseptic, DIN 11850</td>
</tr>
</tbody>
</table>

Dimensions

Head mounting LF1453
Field mounting LF2453

Connection diagram see page Fehler: Verweis nicht gefunden

Accessories see page Fehler: Verweis nicht gefunden
Conductivity Cell
LF1553 / LF2553

Characteristics

- 2-electrode ultra pure water cell for VARIVENT® Inline-case
- FDA compliant
- Application field food industry
- Measuring range 0..0.5 µS/cm up to 0..50 µS/cm

Technical data

- **Cell constant**: $C = 0.1$ exact cell constant labeled on the type plate
- **Process temperature**: -10..+120 °C
  - CIP-/SIP-capable 140 °C < 1 h
- **Process pressure**: max. 16 bar
- **Process material**: stainless steel 1.4404; PEEK;
  - seal EPDM, FDA compliant
- **Electrical connection**
  - LF1553: flat cable connector,
    - only head mounting UNICON-LF
  - LF2553: 8 pole round connector plug M12x1, IP67
- **Material**: brass nickel plated
- **Temperature measurement**: integrated Pt1000 sensor DIN IEC751,
  - class A

Dimensions

- **Head mounting LF1553**
- **Field mounting LF2553**

Ordering code

1. Model
   - LF1553 head mounting UNICON-LF
   - LF2553 field mounting

2. Process connection
   - DN25 VARIVENT® DN25
   - DN40 VARIVENT® DN40..DN125

3. Options
   - 00 without option
   - 03 8 pole round plug SS-type

Connection diagram see page Fehler: Referenz nicht gefunden

Accessories see page Fehler: Referenz nicht gefunden

Note:
Conductivity cells LF1553 / LF2553 should not be mounted together with other cells in one VARIVENT® case.
## Conductivity Cell
### LF1653 / LF2653

### Characteristics
- 2-electrode ultra-pure water cell with pipe thread acc. to DIN ISO228
- Measuring range from 0..0.5 µS/cm up to 0..50 µS/cm

### Technical data
- **Cell constant**: C = 0.1 exact cell constant labeled on the type plate
- **Process temperature**: -10..+120 °C, CIP-/SIP-capable 140 °C < 1 h
- **Process pressure**: max. 16 bar
- **Process material**: stainless steel 1.4404 (316L), electropolished; PVDF; seal EPDM, PEEK
- **Electrical connection**:
  - LF1653: flat cable connector, only head mounting UNICON-LF
  - LF2653: 8 pole round connector plug M12x1, IP67
- **Material**: brass nickel plated
- **Temperature measurement**: integrated Pt1000 sensor DIN IEC751, class A

### Dimensions

**Head mounting LF1653**

**Field mounting LF2653**

### Ordering code

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1653</td>
<td>G ¾ A</td>
<td>00 without option</td>
</tr>
<tr>
<td>2653</td>
<td>G 1 A</td>
<td>03 8 pole round plug SS-type</td>
</tr>
</tbody>
</table>

Connection diagram see page Fehler: Verweis nicht gefunden

Accessories see page Fehler: Verweis nicht gefunden
Conductivity Cell LF4003

Characteristics

- 4-electrode immersion cell for wells and open systems up to 100 m depth of water
- Measuring range 0..20 µS/cm up to 0..500 mS/cm
-Insensitive against soiling
- No influence from polarization effects and line resistance

Technical data

- Cell constant: \( C = 0.5 \) exact cell constant labeled on the type plate
- Operating temperature: 0..60 °C
- Process pressure: max. 10 bar
- Process material: PVC-U acc. to DIN 8061/8062, stainless steel 1.4305, graphite (electrodes), PUR cable
- Electrical connection: 8 pole round connector plug M12x1, IP67
- Material: brass nickel plated
- Temperature measurement: integrated Pt1000 sensor DIN IEC751, Class A

Dimensions

Connection type

Ordering code

LF4003 - C0.5 - - -

1. Connection type
   - 1 cable with 6 pole pigtail, PU-cable
   - 2 8 pole cable plug for connection at UNICON-LF, field case, plug SS-type

2. Cable length [m] please state in clear text

3. Options
   - 00 without option

Accessories

- G200-M8 additional weight 200g with thread bolt, SS-type 1.4401
- ASK-6 anchor clamp, range 5.5..9.5 mm (steel zinc plated)

Connection diagram see page Fehler: Referenz nicht gefunden

Additional accessories see page Fehler: Referenz nicht gefunden
Conductivity Cell
LF3043 / LF4043

Characteristics

- 4-electrode immersion cell for wells and open systems
- Measuring range 0..20 µS/cm up to 0..500 mS/cm
- Insensitive against soiling
- No influence from polarization effects and line resistance

Technical data

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cell constant</td>
<td>C = 0.5 exact cell constant labeled on the type plate</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-20..60 °C</td>
</tr>
<tr>
<td>Process material (electrodes)</td>
<td>PA polyamide, casting resin, graphite</td>
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<tr>
<td>Electrical connection LF3043</td>
<td>flat cable connector, only head mounting UNICON-LF</td>
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<tr>
<td>Temperature measurement</td>
<td>integrated Pt1000 sensor DIN IEC751, class A</td>
</tr>
<tr>
<td>LF4043</td>
<td>8 pole round connector plug M12x1, IP67</td>
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<tr>
<td>-Material</td>
<td>brass nickel plated</td>
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<tr>
<td>*Custom length</td>
<td>custom length on request</td>
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</tbody>
</table>

Ordering code

1. Model
   - 3043 head mounting UNICON-LF
   - 4043 field mounting

2. Process length (L) [mm]*
   - 300
   - 500
   - 600
   - 800
   - 1000

3. Options
   - 00 without option
   - 03 8 pole round plug SS-type

* custom length on request

Connection diagram see page Fehler: Referenz nicht gefunden
Additional accessories see page Fehler: Referenz nicht gefunden
Conductivity Cell
LF3213 / LF4213

Characteristics
- 4-electrode flow cell for outer pipe diameter from 20 mm up to 63 mm
- Mounting with PVC-U standard fittings
- Measuring range from 0..20 µS/cm up to 0..500 mS/cm
- Insensitive against soiling
- No influence from polarization effects and line resistance
- Accessory flow fitting DFA32

Technical data
- Cell constant: C = 0.5 exact cell constant labeled on the type plate
- Operating temperature: 0..60 °C
- Process pressure: max. 16 bar at 22°C
- Process connection: PVC fitting with cap nut
- Process material: PVC-U, casting resin, graphite (electrodes)
- Electrical connection:
  - LF3213: flat cable connector, only head mounting UNICON-LF
  - LF4213: 8 pole round connector plug M12x1, IP67
- Material: brass nickel plated
- Temperature measurement: integrated Pt1000 sensor DIN IEC751, class A

Dimensions

<table>
<thead>
<tr>
<th>d</th>
<th>H</th>
<th>A</th>
<th>E</th>
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</thead>
<tbody>
<tr>
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<td>142</td>
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<td>32</td>
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</tr>
<tr>
<td>63</td>
<td>179</td>
<td>144</td>
<td>38</td>
</tr>
</tbody>
</table>

Ordering code

1. Model (including cap nut)
   - LF3213 head mounting UNICON-LF
   - LF4213 field mounting

2. Options
   - 00 without option
   - 03 8 pole cable plug SS-type for connection at UNICON-LF, field case

Accessory flow fitting DFA 32, PVC-U
- DFA32-20-1-1 d = 20 mm
- DFA32-25-1-1 d = 25 mm
- DFA32-32-1-1 d = 32 mm
- DFA32-40-1-1 d = 40 mm
- DFA32-50-1-1 d = 50 mm
- DFA32-63-1-1 d = 63 mm

Connection diagram see page Fehler: Referenz nicht gefunden

Additional accessories see page Fehler: Referenz nicht gefunden
Conductivity Cell
LF3433 / LF4433

**Characteristics**

- 4-electrode conductive flow cell for pipe systems with Clamp-connection acc. to DIN 32676
- Measuring range 0..20 µS/cm up to 0..500 mS/cm
-Insensitive against soiling
- No influence from polarization effects and line resistance

**Technical data**

- **Cell constant**: C = 0.4 exact cell constant labeled on the type plate
- **Operating temperature**: -10..+120 °C
  - CIP-/SIP-capable 140°C < 1h
- **Process pressure**: max. 16 bar
- **Process connection**: Clamp acc. to DIN 32676
- **Process material**: PEEK, PVDF, stainless steel 1.4404, Graphite (electrodes), Seal EPDM
- **Electrical connection**
  - LF3433: flat cable connector, only head mounting UNICON-LF
  - LF4433: 8 pole round connector plug M12x1, IP67
- **Material**: brass nickel plated
- **Temperature measurement**: integrated Pt1000 sensor DIN IEC751, class A

**Dimensions**

<table>
<thead>
<tr>
<th></th>
<th>Head mounting</th>
<th>Field mounting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mounting distance</strong>:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Ordering code**

1. **Model**
   - 3433 head mounting UNICON-LF
   - 4433 field mounting

2. **Options**
   - 00 without option
   - 03 8 pole round plug SS-type

Note:
Cell constant must be checked again, if the free space is less than illustrated.

Connection diagram see page Fehler: Referenz nicht gefunden
Accessories see page Fehler: Referenz nicht gefunden
Conductivity Cell
LF3533 / LF4533

Characteristics

- 4-electrode hygienic flow-cell for VARIVENT®-Inline cases
- Application fields food- and chemical industry
- Measuring range from 0..20 µS/cm up to 0..500 mS/cm
- Insensitive against soiling
- No influence from polarization effects and line resistance

Technical data

- Cell constant: \( C = 0.4 \) exact cell constant labeled on the type plate
- Process temperature: \(-10..+120 \, ^\circ\text{C}\)
  - CIP-/SIP-capable 140°C < 1h
- Process pressure: max. 16 bar
- Process material: PEEK, stainless steel 1.4404, graphite (electrodes)
  - seal EPDM
- Electrical connection
  - LF3533: flat cable connector, only head mounting UNICON-LF
  - LF4533: 8 pole round connector plug M12x1, IP67
- Material: brass nickel plated
- Temperature measurement: integrated Pt1000 sensor DIN IEC751, class A

Dimensions

Head mounting
- LF3533

Field mounting
- LF4533

Ordering code

LF - C0.4 - -
1. Model
   - 3533: head mounting UNICON-LF
   - 4533: field mounting
2. Process connection
   - DN25: VARIVENT connection DN25
   - DN40: VARIVENT connection DN40..DN125
3. Options
   - 00: without option
   - 03: 8 pole round plug SS-type

Connection diagram see page Fehler: Referenz nicht gefunden

Accessories see page Fehler: Referenz nicht gefunden

Note:
Conductivity cells LF1553 / LF2553 should not be mounted together with other cells in one VARIVENT® case.
Conductivity Cell
LF3623 / LF4623

Characteristics
- 4-electrode screw-in cell; pipe thread acc. to DIN ISO 228
- Measuring range 0..20 µS/cm up to 0..500 mS/cm
-Insensitive against soiling
- No influence from polarization effects and line resistance

Technical data
- Cell constant: $C = 0.5$ exact cell constant labeled on the type plate
- Process temperature: $-10..+120 \degree C$
- Process pressure: max. 16 bar
- Process connection: pipe thread acc. to DIN ISO 228
- Process material: PVDF, casting resin, graphite
- Electrical connection:
  - LF3623: flat cable connector, only head mounting UNICON-LF
  - LF4623: 8 pole round connector plug M12x1, IP67
- Material: brass nickel plated
- Temperature measurement: integrated Pt1000 sensor DIN IEC751, class A

Dimensions

Process connection

<table>
<thead>
<tr>
<th>A</th>
<th>BØ [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>G ¾A</td>
<td>23,5</td>
</tr>
<tr>
<td>G 1A</td>
<td>25</td>
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</tbody>
</table>

Ordering code

<table>
<thead>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
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<td>00 without option</td>
</tr>
<tr>
<td>4623</td>
<td>field mounting</td>
<td>03 8 pole round plug SS-type</td>
</tr>
</tbody>
</table>
Conductivity Cell
LF3733 / LF4733

Characteristics

- 4-electrode hygienic cell for milk pipe connection acc. to DIN 11887
- Application fields: food- and chemical industry
- Measuring range from 0..20 µS/cm up to 0..500 mS/cm
- Insensitive against soiling
- No influence from polarization effects and line resistance

Technical data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>LF3733</th>
<th>LF4733</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cell constant</td>
<td>C = 0.4 exact cell constant labeled on the type plate</td>
<td></td>
</tr>
<tr>
<td>Process temperature</td>
<td>-10..+120 °C</td>
<td>CIP-/SIP-capable 140°C &lt; 1h</td>
</tr>
<tr>
<td>Process pressure</td>
<td>max. 16 bar</td>
<td></td>
</tr>
<tr>
<td>Process connection</td>
<td>milk pipe acc. to DIN 11887</td>
<td></td>
</tr>
<tr>
<td>Process material</td>
<td>PEEK, PVDF, stainless steel 1.4404, graphite (electrodes), seal EPDM</td>
<td></td>
</tr>
</tbody>
</table>

Electrical connection

<table>
<thead>
<tr>
<th>LF3733</th>
<th>LF4733</th>
</tr>
</thead>
<tbody>
<tr>
<td>flat cable connector, only head mounting UNICON-LF</td>
<td></td>
</tr>
<tr>
<td>8 pole round connector plug M12x1, IP67</td>
<td></td>
</tr>
</tbody>
</table>

-Material Temperature measurement

| Material | \( \text{Pt}1000 \) sensor DIN IEC751, class A |

Dimensions

Head mounting LF3733

Field mounting LF4733

Note:
Cell constant must be checked again, if the free space is less than illustrated.

Ordering code

1. Model
2. Process connection (incl. Slot nut 1.4301)
3. Options

- 3733 head mounting UNICON-LF
- 4733 field mounting
- DN25
- DN40
- DN50
- DN65
- 00 without option
- 03 8 pole round plug SS-type

Connection diagram see page Fehler: Referenz nicht gefunden

Accessories see page Fehler: Referenz nicht gefunden
Accessories for Conductivity Measurement

Connection cable A
for 2- and 4-electrode cells at UNICON-LF field case with 8 pole cable socket and 8 pole cable plug, brass plated, PU-cable

<table>
<thead>
<tr>
<th>Ordering No.</th>
<th>length [m]</th>
<th>protection class</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKM8-02</td>
<td>2</td>
<td>IP67</td>
</tr>
<tr>
<td>SKM8-05</td>
<td>5</td>
<td>IP67</td>
</tr>
<tr>
<td>as before, but plug SS-type, PVC cable</td>
<td>SKM8-02-VA</td>
<td>2</td>
</tr>
<tr>
<td>SKM8-05-VA</td>
<td>5</td>
<td>IP67</td>
</tr>
</tbody>
</table>

Connection cable B
for 2-electrode-cells at UNICON-LF field case with 4 pole angle entry socket acc. to DIN EN 175301-803/A and 8 pole cable plug brass plated, PU-cable

<table>
<thead>
<tr>
<th>Ordering No.</th>
<th>length [m]</th>
<th>protection class</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKMB-02</td>
<td>2</td>
<td>IP65</td>
</tr>
<tr>
<td>SKMB-05</td>
<td>5</td>
<td>IP65</td>
</tr>
<tr>
<td>as before, but plug SS-type, PVC cable</td>
<td>SKMB-02-VA</td>
<td>2</td>
</tr>
<tr>
<td>SKMB-05-VA</td>
<td>5</td>
<td>IP65</td>
</tr>
</tbody>
</table>

Connection cable C
for 2- and 4-electrode-cells at LF1010/LF9648 with 8 pole cable socket brass plated and 6 pole pigtail, PU-cable

<table>
<thead>
<tr>
<th>Ordering No.</th>
<th>length [m]</th>
<th>protection class</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKME-02</td>
<td>2</td>
<td>IP67</td>
</tr>
<tr>
<td>SKME-05</td>
<td>5</td>
<td>IP67</td>
</tr>
<tr>
<td>as before, but plug SS-type, PVC cable</td>
<td>SKME-02-VA</td>
<td>2</td>
</tr>
<tr>
<td>SKME-05-VA</td>
<td>5</td>
<td>IP67</td>
</tr>
</tbody>
</table>

Connection cable D
for 2-electrode-cells at LF1010/LF9648 with 4 pole angle entry socket DIN EN 175301-803/A and 6 pole pigtail, PU-cable

<table>
<thead>
<tr>
<th>Ordering No.</th>
<th>length [m]</th>
<th>protection class</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKME-02</td>
<td>2</td>
<td>IP65</td>
</tr>
<tr>
<td>SKME-05</td>
<td>5</td>
<td>IP65</td>
</tr>
<tr>
<td>SKME-10</td>
<td>10</td>
<td>IP67</td>
</tr>
<tr>
<td>SKME-25</td>
<td>25</td>
<td>IP67</td>
</tr>
<tr>
<td>as before, but plug SS-type, PVC cable</td>
<td>SKME-02-VA</td>
<td>2</td>
</tr>
<tr>
<td>SKME-05-VA</td>
<td>5</td>
<td>IP67</td>
</tr>
<tr>
<td>SKME-10-VA</td>
<td>10</td>
<td>IP67</td>
</tr>
<tr>
<td>SKME-25-VA</td>
<td>25</td>
<td>IP67</td>
</tr>
</tbody>
</table>

Calibration accessories
Reference solution for calibration (250 ml)

<table>
<thead>
<tr>
<th>Ordering No.</th>
<th>Conductivity [mS/cm] at 25°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>REF-LF-0001</td>
<td>0.147</td>
</tr>
<tr>
<td>REF-LF-0010</td>
<td>1.413</td>
</tr>
<tr>
<td>REF-LF-0100</td>
<td>12.88</td>
</tr>
<tr>
<td>REF-LF-1000</td>
<td>111.8</td>
</tr>
</tbody>
</table>

Reference solution for calibration acc. to USP<645>, (1000 ml)

<table>
<thead>
<tr>
<th>Ordering No.</th>
<th>Conductivity [µS/cm] at 25°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC15</td>
<td>15.0</td>
</tr>
</tbody>
</table>

Precision-thermometer

<table>
<thead>
<tr>
<th>Ordering No.</th>
<th>Measuring range °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>N63802</td>
<td>17.0..35.0</td>
</tr>
<tr>
<td>scale solution 0.05 °C</td>
<td>accuracy ±0.1 °C</td>
</tr>
</tbody>
</table>
Programming Adapter
EYY220

- Universal adapter
- Suitable for all digital sensors with MODBUS/RS485 interface
- USB 2.0 (3.x compatible)

Characteristics
The Programming adapter fulfills all conditions for the configuration of digital sensors with MODBUS-interface. In conjunction with a PC or programming device and GHMware, parameters (e.g. cell constant, temperature compensation, measuring unit, etc.) can be adjusted and readings can be recorded.

The GHMware Programming Software could be downloaded free of charge at our homepage: https://www.ghm-group.de/en/info-desk/

Technical Data
Power supply
Supply voltage : USB-Host
Power consumption : 85mW (free running) – 400mW (with sensor connected)
Operat. temperature : -10..+55 °C
Storage temperature : -10..+60 °C
Relative humidity : < 95 %
Bedewing : not permissible
CE-conformity : EN 55022:2011-12
EN 55024:2011-09
Electrical connection : USB 2.0 (3.x compatible)
Sensor connection : 8-pol. M12 round plug
Connection cable : PVC cable 1,5 m
Case : ABS, grey

Optical signalling
<table>
<thead>
<tr>
<th>LED</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green (dimly lit), permanently</td>
<td>Adapter supplied via USB</td>
</tr>
<tr>
<td>Green (bright lit) flashing</td>
<td>Device sends data</td>
</tr>
<tr>
<td>Red flashing</td>
<td>Device receives data</td>
</tr>
<tr>
<td>Red &amp; green (bright lit) flashing</td>
<td>EYY220 communicates with the MODBUS device</td>
</tr>
<tr>
<td>Green (dimly lit) flashing</td>
<td>Power supply unstable / too weak. Test other port, dispence on USB hub</td>
</tr>
</tbody>
</table>

Operation example
PC / Laptop EYY220 CONDI4213

Ordering code
<table>
<thead>
<tr>
<th>EYY</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>220</td>
<td>Input USB 2.0</td>
</tr>
</tbody>
</table>