Technical Information

**Liquiline M CM42**

Memosens: pH/ORP, oxygen, conductivity
Analog sensors: pH/ORP, conductivity, concentration, resistance

Two-wire transmitter for Ex and non-Ex areas

**Application**

Liquiline M CM42 is a modular two-wire transmitter for all areas of process engineering. Depending on the version ordered, Liquiline has one or two analog current outputs. In addition, it can be connected to fieldbuses in accordance with the FOUNDATION Fieldbus, PROFIBUS PA and HART protocol.
The transmitter is suitable for pollution degree 3.
The highly robust plastic version and the hygienic stainless steel version are tailored to the following applications:
- Chemical processes
- Pharmaceuticals industry
- Foodstuff technology
- Applications in hazardous areas

**Your benefits**

- Cost-saving:
  - Simple commissioning with Quick Setup and Navigator
  - Memosens: Plug & play laboratory-calibrated sensors
  - Predictive maintenance system detects when a sensor needs to be cleaned, calibrated or replaced.
  - Less storage thanks to modular design
  - Effective asset management thanks to Fieldcare and W@M
- Safe:
  - Memosens: Active display of cable interruption
  - User-guided commissioning, graphic display and plain text guidance for maximum operating safety
  - Approvals: ATEX, FM, CSA, NEPSI, TIIS
  - User administration: Code-protected commissioning
  - pH glass with Memosens: SIL2 measuring point with TÜV approval
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**Liquiline M CM42**

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Function and system design

Measuring system
A complete measuring system consists of:
- Liquiline M CM42 transmitter with mounting plate (e.g. for wall mounting)
- sensor and suitable sensor cable
- assembly suitable for the sensor (optional)
- post retainer (optional)
- weather protection cover (optional)

Examples of a measuring system

pH / ORP (analog)
- CM42-P...
- Measuring cable CPK9
- Cleanfit CPA471 assembly
- Orbisint CPS11 sensor

Conductivity, inductive measurement (analog)
- CM42-I...
- Dipfit CLA111 assembly
- Indumax CLS50 sensor

Conductivity, conductive measurement (analog)
- CM42-C...
- Measuring cable CPK9
- Condumax CLS16 sensor

Memosens (digital)
- CM42-K/L/M/N/O...
- Measuring cable CYK10
- (Unifit CPA442 assembly)
- Sensor 1)

1) e.g. CPS11D (pH glass), CPS471D (pH ISFET), CPS341D (enamel pH), CPS16D (pH/ORP combined), CLS15D/CLS16D/CLS21D (LFc), CLS50D/CLS54D (LFi), COS22D/COS51D (DO)

You can combine your measuring point with a range of assemblies and sensors. For more information, see the "Accessories" section or the specified documentation.

NOTE
Effect of climatic conditions: rain, snow, direct sun
Impaired operation to complete transmitter failure
- When installing outside, always use the weather protection cover (see accessories).
### Equipment architecture

#### Software

You can choose from the following software packages:

- **Standard:**
  - Standard application for the most common measuring points

- **Advanced:**
  - Many additional functions that increase safety and quality

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<td>- Clock</td>
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<td>as for analog with the addition of:</td>
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<td></td>
<td>- Sensor information</td>
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<td></td>
<td>- Sensor check</td>
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| **Advanced**   |                                                                           |
| "Standard" software package with the addition of: | |
| Analog sensors | - Calibration with separate installation factor (inductive measurement only) |
|                | - Polarization detection                                                  |
|                | - Temperature compensation via user table                                 |
|                | - Two-point temperature adjustment: offset and slope                      |
|                | - USP alarm and prealarm                                                   |
| Memosens sensors | as for analog with the addition of:                                       |
|                | - Operational hours counter                                               |
|                | - Sterilization cnt.                                                      |

All devices, regardless of measurement parameter

- Logbooks
- Data logbook
- Free assignment of measured values to current outputs (optional)
- Switching on and off of diagnostic function
- Extended user administration
- Current output tables

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Liquiline M CM42
DAT memory modules

There are 3 different types of DAT module

- **SystemDAT**
  - For changing the sensor type, software updates (more recent software version)
  - and changing the language package
  - Part of the scope of delivery of the version ordered and available as an accessory
  - Optional accessory

- **FunctionDAT**
  - For software upgrades (additional functionality)
  - Extended functional range (2nd current output)
  - Optional accessory

- **CopyDAT**
  - Memory for own configuration settings
  - Optional accessory

A FunctionDAT is never available for a SIL device since the device already has all the possible functions and its functions can therefore not be extended.

A SystemDAT is also not available for the SIL device since it would not be possible to ensure the "functional safety" otherwise.

Suitable sensors

**pH/ORP**

- Analog and Memosens glass electrodes
- Analog and Memosens ISFET sensors
- Analog and Memosens ORP sensors
- Memosens pH/ORP combined sensors
- Analog and Memosens enamel pH electrodes
- Analog single electrodes (glass or antimony)

**Conductivity**

- Analog and Memosens, conductive sensors
  - Two-electrode sensors
  - Four-electrode sensors
- Analog and Memosens, inductive sensors

**Oxygen**

Amperometric sensors:

- with Memosens technology
- 12 and 40 mm design

Dependability

Reliability

Memosens makes your measuring point safer:

- No-contact, digital signal transmission allows optimum galvanic isolation
- No contact corrosion
- Completely watertight
- Sensors can be calibrated in a lab, which increases the availability of measured values
- Predictive maintenance thanks to recording of sensor data, e.g.:
  - Total hours of operation
  - Hours of operation with very high or very low measured values
  - Operating hours at high temperatures
  - Number of steam sterilizations
  - Sensor status

Quick Setup

**To the first measured value within 1 minute**

Once you have set up the few parameters in the Quick Setup menu, the measuring point is ready to measure. The first measured value is reliably displayed.
Process Check System (PCS): Life check

This function is used to check the measuring signal for stagnation. An alarm is triggered if the measuring signal does not change over a certain period (several measured values). The reason for such behavior can be contamination, clogging or similar.

Sensor Condition Check (SCC, pH only)

This function monitors the electrode status and the degree of electrode aging. The status is displayed with the messages "SCC electrode condition bad" or "SCC electrode condition sufficient". The status of the electrode is updated after every calibration.

Sensor Check System (SCS, pH only)

The Sensor Check System monitors the pH glass resistance or reference resistance (for analog sensors only), thus indicating possible incorrect measurements that may occur as a result of damage to or clogging of the pH electrode.

In addition, the SCS detects glass breakage in the case of classic glass electrodes as well as leaks in the case of ISFET sensors.

Polarization monitoring (conductivity only, conductively measured)

Polarization effects in the boundary layer between the sensor and the measuring solution limit the measuring range of conductive conductivity sensors.

The transmitter can detect and report polarization effects using an intelligent signal evaluation process.

United States Pharmacopeia (USP) and European Pharmacopeia (EP) (conductivity only)

The requirements for ultrapure water in the pharmaceutical industry are determined primarily by the American USP and European EP.

The transmitter complies with USP/EP requirements for conductivity measuring systems:
- Exact temperature measurement at the place of conductivity measurement
- Simultaneous display of uncompensated conductivity values and temperature is possible
- Display resolution 0.01 µS/cm
- Exact factory calibration of the transmitter with traceable precision resistance (optional)
- Exact adjustment of sensors in the factory as per ASTM D 1125–91 or ASTM D 5391–99 (optional)
- Temperature-dependent measured value monitoring as per USP and EP.

The limit functions for pharmaceutical water are implemented in the "Advanced" software package in accordance with USP and EP: For conductivity measurements, the limit functions for pharmaceutical water are implemented in the software in accordance with USP and EP:
- Water for Injection (WFI) as per USP <645> and EP
- Highly purified water (HPW) as per EP
- Purified water (PW) as per EP

The uncompensated conductivity value and the temperature are measured for the USP/EP limit functions. The measured values are compared with the tables set down in the standards. An alarm is triggered if the limit value is exceeded. In addition, a prealarm can be set that flags undesirable operating statuses before they occur.
Application-optimized calibration models (oxygen only)

In separate functions, the transmitter allows process-adjusted zero point sensor calibration or sensor calibration via the slope.

There are different calibration models for this, ranging from simple slope calibration in air that is saturated with water vapor to slope calibration with input of the absolute air pressure and relative humidity at the measuring location.

The latter model allows in-process calibration during operation as well as during sterilization and cleaning.

The number of calibrations and sterilizations are tracked separately for the sensor and membrane cap.

The relevant counter can be reset if the membrane cap is replaced.

Maintainability

Modular design

Sensor monitor

You will find the sensor monitor in the DIAG menu. Important sensor data incl. warning and alarm limits are displayed either graphically or numerically.
Safety

User administration
The device has a user administration function in order to avoid unscheduled changes to the measuring point.
You need to log on as an Expert to switch on the user administration function. The first time you log onto the device, you will therefore be asked to enter a password (the "Admin" user name is already entered).
The user administration function makes two different modes available in the Advanced version:

Roles
- There are 3 fixed user roles (Expert, Maintenance, Operator).
- "Experts" always have all the rights. "Operator" is the role with the least amount of rights.
- Each role has its own individual password. This password can be changed.
- No other user roles can be created.

User accounts
- You can create and manage a maximum of 15 user accounts.
- You need to be logged on as an "Expert" to be able to manage accounts.
- In each user account you specify the user name and the password and assign the new user one of 3 user roles (Operator, Maintenance and Expert).
- Multiple user accounts with the "Expert" role are possible.

SIL
A TÜV-approved SIL2 version of the Liquiline M CM42 is also available (CM42-M* only).

Safety functions
- Safe output of the digitized value at the current output
- Monitoring of the measured value for leaving a defined interval
- Safe calibration and adjustment

Additional information and Safety Manuals can be found at: www.endress.com/SIL

Reordering validated software
You can order new devices with older, validated software so you do not have to constantly validate new software versions of new devices. This is possible as long as allowed by the hardware version.
### Input

#### Measured variables
--> Documentation of the connected sensor

#### Measuring ranges
--> Documentation of the connected sensor

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<td>Fixed cable with Memosens</td>
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#### Ex specification

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<th>Ex ia IIC&lt;sup&gt;3&lt;/sup&gt;, T1IS Ex ib IIC</th>
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<td>Ex ic IIC&lt;sup&gt;2&lt;/sup&gt;</td>
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<tr>
<td>Intrinsic safety sensor circuit with protection type:</td>
<td>Ex ia Ga IIC&lt;sup&gt;3&lt;/sup&gt;</td>
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<th>Max. output voltage $U_o$:</th>
<th>5.04 V</th>
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<td>Max. output current $I_o$:</td>
<td>80 mA</td>
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<td>Max. output $P_o$:</td>
<td>112 mW</td>
</tr>
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For connecting the measuring cable CYK10<sup>4</sup>
For connecting fixed cable of sensor CLS50D<sup>5</sup>

1) CM42-*G*********, CM42-*X*********, CM42-*Z*********
2) CM42-*V**********
3) CM42-*I**********
4) CM42-*K**********, CM42-*M**********, CM42-*N**********
5) CM42-*L**********
Analog input: pH / ORP

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<td>With SCS</td>
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Applicable temperature sensors
- Pt100
- Pt1000
- NTC 30K

Ex specification

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<td></td>
<td>Intrinsically safe sensor circuit with protection type: Ex ia Ga IIC$^{(3)}$</td>
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<td>4.1 mA</td>
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<td>Max. output $P_o$</td>
<td>10.2 mW</td>
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<td>1 mH</td>
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<td>Max. external capacitance $C_o$</td>
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<td>Max. output $P_o$</td>
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<td></td>
<td>Max. external inductance $L_o$</td>
<td>1 mH</td>
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<tr>
<td></td>
<td>Max. external capacitance $C_o$</td>
<td>250 nF</td>
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<td>Connection class as per NE116$^{(4)}$</td>
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</tbody>
</table>

1) CM42-*G*********, CM42-*X*********, CM42-*Z*********
2) CM42-*V*********
3) CM42-*I**********
4) CM42-*G**********

When pH/ORP glass electrodes are connected to terminals 317, 318, 320, 111, 112 and 113, the device corresponds to connection class 1 as per NAMUR Recommendation NE116 (SensISCO). Terminals 315 and 316 may not be connected for this categorization. The device is labeled SensISCO1X.

Input impedance

$> 1 \times 10^{12}$ Ω (under nominal operating conditions)

Input leakage current

$< 1 \times 10^{-13}$ A (under nominal operating conditions)
## Analog input: Conductivity

### Cable specification

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<td>0.1 μS/k to 20 mS/k / 20 MΩ/k to 50 Ω/k</td>
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<tr>
<td>Conductivity, measured conductively</td>
<td>Max. cable length 100 m (330 ft)</td>
<td>Max. cable length 15 m (50 ft)</td>
<td>Max. cable length 55 m (180 ft)</td>
</tr>
<tr>
<td>Four-electrode sensor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 μS/k to 1.5 S/k</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.1 μS/k to 20 mS/k</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1) with cable CYK71, CPK9 or fixed cable

### Applicable temperature sensors

- Pt100
- Pt1000

#### Ex specification, conductive sensors

’ex’ Intrinsically safe sensor circuit with protection type: Ex ia IIC<sup>1)</sup>

Intrinsically safe sensor circuit with protection type: Ex ic IIC<sup>2)</sup>

Intrinsically safe sensor circuit with protection type: Ex ia Ga IIC<sup>3)</sup>

<table>
<thead>
<tr>
<th>Max. output voltage U&lt;sub&gt;o&lt;/sub&gt;</th>
<th>10.08 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. output current I&lt;sub&gt;o&lt;/sub&gt;</td>
<td>23 mA</td>
</tr>
<tr>
<td>Max. output P&lt;sub&gt;o&lt;/sub&gt;</td>
<td>57 mW</td>
</tr>
<tr>
<td>Max. external inductance L&lt;sub&gt;e&lt;/sub&gt;</td>
<td>300 μH</td>
</tr>
<tr>
<td>Max. external capacitance C&lt;sub&gt;e&lt;/sub&gt;</td>
<td>50 nF</td>
</tr>
</tbody>
</table>

1) CM42-*G*********, CM42-*X*********, CM42-*Z*********

2) CM42-*V*********

3) CM42-*I*********

#### Ex specification, inductive sensors

‘ex’ Intrinsically safe sensor circuit with protection type: Ex ia IIC<sup>1)</sup>

Intrinsically safe sensor circuit with protection type: Ex ic IIC<sup>2)</sup>

Intrinsically safe sensor circuit with protection type: Ex ia Ga IIC<sup>3)</sup>

<table>
<thead>
<tr>
<th>Max. output voltage U&lt;sub&gt;o&lt;/sub&gt;</th>
<th>10.08 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. output current I&lt;sub&gt;o&lt;/sub&gt;</td>
<td>64 mA</td>
</tr>
<tr>
<td>Max. output P&lt;sub&gt;o&lt;/sub&gt;</td>
<td>128 mW</td>
</tr>
</tbody>
</table>

For connecting the inductive sensors CLS50, CLS54

1) CM42-*G*********, CM42-*X*********, CM42-*Z*********

2) CM42-*V*********

3) CM42-*I*********
Output

**Output signal**
- 1x 4 to 20 mA, passive, potentially isolated against sensor circuit\(^1\)[2]\(^3\)
- 2x 4 to 20 mA, passive, potentially isolated against sensor circuit and against each other \(^1\)[2][3]
- PROFIBUS PA, potentially isolated against sensor circuit\(^1\)[2][4]
- FOUNDATION Fieldbus, potentially isolated against sensor circuit\(^1\)[2][5]

**Signal on alarm**
- 3.6 to 22.0 mA (3.6 mA fixed value when using HART communication) digitally via fieldbus\(^6\)

**Load**
- Max. load with supply voltage of 24 V: 500 Ω
- Max. load with supply voltage of 30 V: 750 Ω

**Output signal range**
- 3.6 to 22.0 mA

**Ex specification current output**

<table>
<thead>
<tr>
<th>Intrinsically safe supply and signal circuits, passive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. input voltage (U_i)</td>
</tr>
<tr>
<td>Max. input current (I_i)</td>
</tr>
<tr>
<td>Max. input (P_i)</td>
</tr>
<tr>
<td>Max. internal inductance (L_i)</td>
</tr>
<tr>
<td>Max. internal capacitance (C_i)</td>
</tr>
</tbody>
</table>

**Ex specification PROFIBUS and FOUNDATION Fieldbus**

<table>
<thead>
<tr>
<th>Suitable for use as a field device in a FISCO system as per EN/IEC 60079-27</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. input voltage (U_i)</td>
</tr>
<tr>
<td>Max. input current (I_i)</td>
</tr>
<tr>
<td>Max. input (P_i)</td>
</tr>
<tr>
<td>Max. internal inductance (L_i)</td>
</tr>
<tr>
<td>Max. internal capacitance (C_i)</td>
</tr>
</tbody>
</table>

Current output, passive

**Span**
- 3.6 to 22.0 mA

**Signal characteristics**
- Linear

**Cable specification**
- Cable type: shielded wire, Ø 2.5 mm (14 AWG)

---

1) Potential isolation for Memosens in sensor plug
2) For inductive sensors with Memosens protocol CLS50D and CLS54D not potentially isolated against sensor circuit!
3) Current output 1 and current output 2 (optional)
4) For version with PROFIBUS PA
5) For version with FOUNDATION Fieldbus
6) For version with PROFIBUS PA or FOUNDATION Fieldbus
Power supply

Grounding the housing

**Plastic housing**

**WARNING**
Electric voltage at ungrounded cable mounting rail
No shock protection
- Connect the cable mounting rail to the foundation ground using a separate ≥2.5 mm² (14 AWG) functional ground.

![Diagram of plastic housing](image1)

1. **Cable mounting rail**
2. ≥2.5 mm² (14 AWG) functional ground

**Stainless steel housing**

**WARNING**
Electric voltage at ungrounded housing
No shock protection
- Connect the external ground connection of the housing to the foundation ground using a separate wire (GN/YE) (≥2.5 mm², corresponds to 14 AWG).

![Diagram of stainless steel housing](image2)

1. **Outer ground connection**
2. ≥2.5 mm² (14 AWG) wire (GN/YE)
Supply and signal voltage

**WARNING**
In sensor CLS50D, the internal sensor circuits are connected to the shielded wire of the supply cable and are therefore also connected to ground via the shielded connection of the CM42 → 18.
The overheating of electronic components constitutes a fire and explosion hazard and may result in serious injury and death.
- Never connect the supply circuit to the ground.
- Use an active barrier (e.g. RN221) to ensure safe galvanic isolation during operation in explosive atmospheres (see Accessories).

**NOTICE**
The internal sensor circuits of CLS50D and CLS54D are also connected to ground via the shielded wire of the supply cable and via the shielded connection of the CM42 → 18.
Incorrect connection of the supply circuit results in the overheating of components which in turn results in the transmitter being destroyed.
- Never connect the supply circuit to the ground.

For sensor CLS50, the following applies:
The internal sensor circuits in the sensor are connected to the shielded wire of the supply cable. This results in the sensor circuits also being connected to the ground. The transmitter CM42 features safe galvanic isolation between the supply and sensor circuit.

**4 to 20 mA**
- Connect the transmitter with a shielded two-wire cable.
  - How the shield is connected depends on the interference influence expected. To suppress electrical fields, it suffices to ground the shield at one end. If you also want to suppress interference from a magnetic alternating field, you must ground the shield at both ends.

In the case of a SIL device, you must ground both current outputs at both ends.

The second current output can be ordered as an option (see "Ordering information").
4 to 20 mA / HART

For safe communication via the HART protocol and for compliance with NAMUR NE 21, you must use a two-wire cable that is grounded at both ends.

- Connect the transmitter to a two-wire cable that is grounded at both ends.

PROFIBUS PA and FOUNDATION Fieldbus

Use a fieldbus cable grounded at both ends (device and PCS).

There are various ways of connecting the unit:

1. Two-wire cable grounded at both ends, "hard grounding" (generally to be given priority over "capacitive connection to ground")
2. If there is a risk of large potential equalization currents.
   Shielded two-wire cabling, "capacitive connection to ground" (shield grounded on device side via capacitor, "C-module" accessory required)
   **Do not use in the hazardous area!**
3. Use the fieldbus connection socket (accessories)

"Hard grounding"

1. Connect the cable shield to the cable mounting rail.
2. Connect the cable cores as per the assignment (→ ).
"Capacitive ground connection"

1. Pull back the braided shield, put the stranded extension wire of the C-module (item 1) onto the exposed shield and tighten the clip:

2. Connect the extension wire to the cable mounting rail.

3. Connect the cable cores as per the assignment (→ Diagram).

"Fieldbus connection socket"

1. Screw the fieldbus connection socket into the housing bushing.

2. Trim the connection cores of the socket to approx. 15 cm.

3. Connect the cable cores as per the assignment. In doing so, you must place the cable shield (GN/YE) on the cable mounting rail (→ Diagram).
Cable specification
max. cable cross-section: 2.5 mm² (≈14 AWG), GND 4 mm² (≈12 AWG)

Supply voltage

![Supply voltage graph]

Minimum supply voltage at the transmitter depending on the output current

- **A** with HART communication
- **B** without HART communication

Profibus PA / FOUNDATION Fieldbus:
- 9 to 32 V DC (non-Ex)
- 9 to 17.5 V DC (Ex)

Bus current consumption: 22 mA

Sensor connection

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>pH signal</td>
</tr>
<tr>
<td>Ref</td>
<td>Signal from reference electrode</td>
</tr>
<tr>
<td>Src</td>
<td>Source</td>
</tr>
<tr>
<td>Drn</td>
<td>Drain</td>
</tr>
<tr>
<td>PM</td>
<td>Potential matching</td>
</tr>
<tr>
<td>U+</td>
<td>Power supply of the digital sensor</td>
</tr>
<tr>
<td>U-</td>
<td></td>
</tr>
<tr>
<td>Com A</td>
<td>Communication signals of the digital sensor</td>
</tr>
<tr>
<td>Com B</td>
<td></td>
</tr>
<tr>
<td>d.n.c.</td>
<td>Do not connect!</td>
</tr>
</tbody>
</table>

**NOTICE**

No shielding against electrical and magnetic interference

Interference can give erroneous measurement results:
- You must connect shielded connections or terminals with functional earth (⊕) (there is no protective earth in the case of the plastic housing (⊕)).
- Keep magnetic interference fields away from the sensor since inductive conductivity sensors use magnetic fields.
Sensor connection:
Memosens sensors

pH/ORP incl. combined sensors, oxygen, conductively measured conductivity

Inductively measured conductivity

View in device (sensor module)
Wiring diagram

View in device (sensor module)
Wiring diagram CLS50D, CLS54D
Sensor connection:
- analog pH/ORP sensors

Glass electrodes, with PAL (symmetrical)

Glass electrodes, without PAL (asymmetrical)
ISFET sensors, with PAL (symmetrical)

View in device (sensor module)

Wiring diagram

ISFET sensors, without PAL (asymmetrical)

View in device (sensor module)

Wiring diagram
Pfaudler electrodes

With PML (symmetrical)
Pfaudler electrode, absolute
Type 03/type 04

With PML (symmetrical)
Pfaudler electrode, relative
Type 18/type 40

With PML (symmetrical)
pH Reiner

Without PML (asymmetrical)
Pfaudler electrode, absolute
Type 03/type 04
Individual electrodes (e.g. CPS64 glass or antimony), without PAL (asymmetrical)

Glass electrode and ORP sensor for rH measurement

For rH measurement, connect a pH combination electrode (e.g. CPS11 with sensor cable CPK9) and an ORP sensor (e.g. CPS12 with sensor cable CPK1).
Sensor connection:
 analog conductivity sensors

Conductive sensors, two-electrode sensors

Conductive sensors, four-electrode sensors

View in device (sensor module)  Wiring diagram

View in device (sensor module)  Wiring diagram
Inductive sensors

View in device (sensor module)  Wiring diagram CLS52, CLS54  Wiring diagram CLS550
Performance characteristics

Reference temperature
Standard 25 °C (77 °F)
configurable from –5 to 100 °C (23 to 212 °F)\(^7\)

Current output response time
\(t_{90} = \text{max. 500 ms for an increase from 4 to 20 mA}\)

Maximum measured error
Memosens

Thanks to digital data transmission, the measured value supplied by the sensor at the sensor input is passed on accurately. Measurement accuracy depends solely on the connected sensor and the quality of its adjustment.

Tolerance of current outputs
25 μA, additionally

Repeatability
--> Documentation of the connected sensor

Temperature compensation conductivity

<table>
<thead>
<tr>
<th>Types of compensation</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>(\alpha = 0.00\text{ to }20.00%\text{ K}^{-1})</td>
</tr>
<tr>
<td>Linear</td>
<td>0 to 100 °C (32 to 212 °F)</td>
</tr>
<tr>
<td>NaCl to IEC 746-3</td>
<td>0 to 35 °C (32 to 95 °F)</td>
</tr>
<tr>
<td>Natural waters to IEC 7888</td>
<td>0 to 100 °C (32 to 212 °F)</td>
</tr>
<tr>
<td>Ultrapure water NaCl</td>
<td>0 to 60 °C (32 to 140 °F)</td>
</tr>
<tr>
<td>Ultrapure water HCl (also for NH₃)</td>
<td>4 user-definable tables (^1)</td>
</tr>
</tbody>
</table>

\(^1\) with "Advanced" software package

Temperature adjustment

| Temperature offset     | –5 to +5 °C (23 to 41 °F) |
| Temperature increase   | 0.9 ... 1.1 \(^1\) |

\(^1\) with "Advanced" software package

Installation

Wall securing plate

Mounting plate

\(^7\) with "Advanced" software package
**Notice**

Effect of climatic conditions (rain, snow, direct sun etc.)

- Impaired operation to complete transmitter failure
- When installing outside, always use the weather protection cover (accessory).

Weather protection cover for plastic housing

Weather protection cover for stainless steel housing

*To mount the weather protection cover on pipes or round posts, you additionally require a round post mount, --> "Accessories". (or "Installation options")*
Installation options

<table>
<thead>
<tr>
<th>Wall mounting</th>
<th>Pipe mounting</th>
<th>Panel mounting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plastic housing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>without weather protection cover</td>
<td>Mounting plate: Standard</td>
<td>Mounting kit: 51518263</td>
</tr>
<tr>
<td>with weather protection cover</td>
<td>Protection cover: 51517382</td>
<td>Mounting kit: 51518263</td>
</tr>
<tr>
<td>Stainless steel housing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>without weather protection cover</td>
<td>Mounting plate: Standard</td>
<td>Mounting kit: 51518286</td>
</tr>
<tr>
<td>with weather protection cover</td>
<td>Protection cover: CYY101-A</td>
<td>Protection cover: CYY101-A</td>
</tr>
</tbody>
</table>

Installation in Ex area CM42-*G

1. Sensor in Ex version
2. Intrinsically safe sensor circuit Ex (a)
3. Transmitter
4. Supply and signal circuit Ex (b) (4 to 20 mA)
5. Active barrier, e.g. Preline RN221
6. Signal line HART/PROFIBUS/FF
7. Fieldcare via PROFIBUS/FF
8. HART handheld terminal
CM42-*V

1 Sensor in Ex version
2 Intrinsically safe sensor circuit Ex ic
3 Transmitter
4 Supply and signal circuit Ex nA (4 to 20 mA)

Installation in Ex area

5 Active barrier, e.g. Preline RN221
6 Signal line HART/PROFIBUS/FF
7 Fieldcare via PROFIBUS/FF
8 HART handheld terminal

CM42-*P/S

1 Sensor in Ex version
2 Intrinsically safe sensor circuit
3 Transmitter
4 Supply and signal circuit (4 to 20 mA)

Installation in Ex area

5 Active barrier, e.g. Preline RN221
6 Signal line HART/PROFIBUS/FF
7 Fieldcare via PROFIBUS/FF
8 HART handheld terminal
**Environmental Specifications**

**Ambient temperature range**
- **Non-Ex version**: 
  -30 to 70 °C (–20 to 160 °F)
- **Ex version: ATEX II (1)2G**
  -20 to 50 °C (T6)
  -20 to 55 °C (T4)
- **Ex version: ATEX II 3G**
  -10 to 50 °C (T6)
- **Ex version: FM**
  -20 to 50 °C (0 to 120 °F) (T6)
- **Ex version: CSA**
  -20 to 50 °C (0 to 120 °F) (T6)
  -20 to 55 °C (0 to 130 °F) (T4)

**Ambient temperature limits**
-30 to 80 °C (–20 to 175 °F)

**Storage temperature**
-40 to 80 °C (–40 to 175 °F)
-25 to 85 °C (–13 to 185 °F)

**Electromagnetic compatibility**
Interference emission and interference immunity to EN 61326-1: 2004, Category B (residential environments)

**Degree of protection**
IP66 / IP67 / NEMA 4X

**Relative humidity**
10 ... 95%, not condensing

**Pollution degree**
The product is suitable for pollution degree 3.
Mechanical construction

**Dimensions**

**Plastic housing**

![Plastic housing diagram]

**mm (inch)**

**Stainless steel housing**

![Stainless steel housing diagram]

**mm (inch)**
Weight

<table>
<thead>
<tr>
<th>Material</th>
<th>Plastic housing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.5 kg (3.3 lbs)</td>
</tr>
</tbody>
</table>

**Stainless steel housing**

2.1 kg (4.6 lbs)

Material

<table>
<thead>
<tr>
<th>Material</th>
<th>Plastic housing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing</td>
<td>PC?FR (polycarbonate, flame-retardant)</td>
</tr>
<tr>
<td>Housing seals</td>
<td>Foamed silicone, EPDM</td>
</tr>
</tbody>
</table>

**Stainless steel housing**

| Housing                         | Stainless steel 1.4301 (AISI 304)                                               |
|                                 | EPDM                                                                             |

**Plastic and stainless steel housing**

| Module housing                  | PC (polycarbonate)                                                              |
|                                 | TPE                                                                              |
| Soft keys                       | Stainless steel 1.4301 (AISI 304)                                               |
| Cable mounting rail             | PC-FR (polycarbonate, flame-retardant)                                          |
| Display panel                   |                                                                                  |

Operability

**Operation concept**

The unique operating concept sets new standards:
- Fewer user errors thanks to very easy operation
- Rapid configuration using the Navigator.
- Intuitive configuration and diagnosis due to plain text display

**Display characteristics**

LCD display: FSTN technology (FSTN = Foil Super Twisted Nematic)
Size: 94 x 76 mm (3.7 x 3.0"
Resolution: 240 x 160 dots
Operating elements

Operation overview
1  Alarm LED
2  Display, current display: pH measuring mode
3  Navigator
4-7  Softkeys
8  Display of softkey function (menu-dependent)

Ordering information

Product page
You can create a valid and complete order code on the Internet using the Configurator tool. Enter the following address in the browser to launch the product page:
www.products.endress.com/cm42

Product configurator
1. On the right-hand side of the product page, you will find the following selection options:

<table>
<thead>
<tr>
<th>Product page function</th>
</tr>
</thead>
<tbody>
<tr>
<td>:: Add to product list</td>
</tr>
<tr>
<td>:: Price &amp; order information</td>
</tr>
<tr>
<td>:: Compare this product</td>
</tr>
<tr>
<td>:: Configure this product</td>
</tr>
</tbody>
</table>

2. Click "Configure this product".
3. The Configurator opens in a new window. You can now configure your device, and you will receive the valid and complete order code for it.
4. Now export the order code as a PDF or Excel file. To do so, click the specific button at the top of the page.
**Product structure**

Product structures always reflect the status at time of going to press. You can create an up-to-date and complete order code on the internet using the Configurator.

<table>
<thead>
<tr>
<th>Sensor input</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>No module</td>
</tr>
<tr>
<td>C</td>
<td>Conductivity, conductive measurement, analog sensor</td>
</tr>
<tr>
<td>I</td>
<td>Conductivity, inductive measurement, analog sensor</td>
</tr>
<tr>
<td>K</td>
<td>Digital sensor: conductivity, conductive measurement</td>
</tr>
<tr>
<td>L</td>
<td>Digital sensor: conductivity, inductive measurement</td>
</tr>
<tr>
<td>M</td>
<td>Digital sensor: pH/ORP measurement, glass sensor</td>
</tr>
<tr>
<td>N</td>
<td>Digital sensor: pH measurement, ISFET sensor</td>
</tr>
<tr>
<td>O</td>
<td>Digital sensor: amperometric oxygen measurement</td>
</tr>
<tr>
<td>P</td>
<td>pH (glass/ISFET) or ORP, analog sensor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Approval</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Non-hazardous area, CSA GP</td>
</tr>
<tr>
<td>G</td>
<td>ATEX II (1)2G Ex ib ia Ga IIC T6 Gb / II 3 D tA22 IP67 T85°C</td>
</tr>
<tr>
<td>P</td>
<td>FM IS NI Cl. I, Div. 1&amp;2, Groups A-D</td>
</tr>
<tr>
<td>S</td>
<td>CSA IS NI Cl. I, II, III, Div. 1&amp;2, Groups A-G</td>
</tr>
<tr>
<td>T</td>
<td>TIIIS Ex ib IIC T4</td>
</tr>
<tr>
<td>V</td>
<td>ATEX/NEPSI II 3G Ex nA[a] IIC T6 / II 3 D tA22 IP67 T85°C</td>
</tr>
<tr>
<td>X</td>
<td>ATEX II (2)3G Ex nA[a] IIC T6 / II 3 D tA22 IP67 T85°C</td>
</tr>
<tr>
<td>Z</td>
<td>NEPSI Ex nA[a] IIC T6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Certificate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Not selected</td>
</tr>
<tr>
<td>B</td>
<td>Test certificate to EN 10204, 3.1</td>
</tr>
<tr>
<td>C</td>
<td>Test certificate to EN 10204, 3.1, factory calibration certificate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1 current output 4 to 20 mA, HART®</td>
</tr>
<tr>
<td>1</td>
<td>2 current outputs 4 to 20 mA, 1x HART®</td>
</tr>
<tr>
<td>2</td>
<td>PROFIBUS PA</td>
</tr>
<tr>
<td>3</td>
<td>FOUNDATION Fieldbus</td>
</tr>
<tr>
<td>4</td>
<td>2 current outputs 4 to 20 mA, SIL</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Housing</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Plastic housing</td>
</tr>
<tr>
<td>1</td>
<td>Housing made of stainless steel 1.4301 (AISI 316L)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cable entry</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>M20 x 1.5</td>
</tr>
<tr>
<td>1</td>
<td>NPT ½&quot;</td>
</tr>
<tr>
<td>2</td>
<td>G½</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Software</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EA</td>
<td>Standard version</td>
</tr>
<tr>
<td>EB</td>
<td>Advanced version</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Device language</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Cs/En (Docs, Czech)</td>
</tr>
<tr>
<td>D</td>
<td>De/En (Docs, German)</td>
</tr>
<tr>
<td>E</td>
<td>En/De (Docs, English)</td>
</tr>
<tr>
<td>F</td>
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<tr>
<th>Documentation</th>
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<tr>
<th>Additional fittings</th>
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CM42– Complete order code
Optional
Measuring point identification (Tag), stainless steel 1.4404
Add a 1 to the end of the order code.

Scope of delivery
Depending on the version, the scope of delivery comprises::
- 1 transmitter in the version ordered
- 1 mounting plate incl. 4 flat head screws
- 1 sheet of adhesive labels (nameplate, terminal connection diagrams)
- 1 test certificate to EN 10204-3.1
- 1 factory calibration certificate
- Operating Instructions Part 1 and 2, BA00381C 'Commissioning' and BA00382C 'Operation' in the language ordered
- 1 CD-ROM with additional documentation
- 1 manufacturer's certificate
- Safety Manual
- Maintenance Documentation SIL 2

Certificates and approvals

Declaration of conformity
The product meets the requirements of the harmonized European standards. It therefore complies with the statutory requirements of the EC directives. The manufacturer confirms successful testing of the product by affixing the symbol.

Ex approval
Depending on the version ordered:
- ATEX II (1)2G Ex ib [ia Ga] IIC T6 Gb / II 3 D tD A22 IP67 T85°C
- ATEX II 3G Ex nA[ic] IIC T6 / II 3 D tD A22 IP67 T85°C (applied for)
- ATEX II (2)3G Ex na[ia] IIC T6 / II 3 D tD A22 IP67 T85°C (applied for)
- NEPSI Ex na[ia] IIC T6
- NEPSI Ex na[ic] IIC T6
- CSA IS NI Cl.I, II, III, Div. 1&2, Grps. A-G
- FM IS NI Cl.I, Div. 1&2, Grps. A-D
- TIIIS Ex ib IIC T4
Accessories

The following is a list of the most important accessories available at the time this documentation was issued. For accessories not listed here, please contact your local service or sales center.

Mounting kits

- Post retainer for plastic housing
  - 1 Mounting plate
  - 2 Threaded rods M5x75 mm A2
  - 2 Hexagonal nuts M5 A2, DIN 934
  - 2 spring washers A2 DIN127, form B5 (M5)
  - 2 Washers A 5.3, DIN125 A2
  - Order No. 51518263

- Post retainer for stainless steel housing
  - 1 Mounting plate
  - 2 Threaded rods M5x75 mm A2
  - 2 Hexagonal nuts M5 A2, DIN 934
  - 2 spring washers A2 DIN127, form B5 (M5)
  - 2 Washers A 5.3, DIN125 A2
  - Order No. 51518286

- Panel installation kit for plastic housing for panel cutout 138x138 mm (5.43x5.43 inch)
  - 1 Panel installation seal
  - 2 Tensioning screws M6x150 mm
  - 4 Hexagonal nuts M6, DIN934 A2
  - 4 spring washers, A2 DIN127, form B6
  - 4 Washers A6.4, DIN125 A2
  - Order No. 51518173

- Panel installation kit for stainless steel housing for panel cutout 138x138 mm (5.43x5.43 inch)
  - 1 Panel installation seal
  - 2 Tensioning screws M6x150 mm
  - 4 Hexagonal nuts M6, DIN934 A2
  - 4 spring washers, A2 DIN127, form B6
  - 4 Washers A6.4, DIN125 A2
  - Order No. 51518284

Weather protection cover

- Weather protection cover for plastic housing
  - Order No. 51517382

- Weather protection cover for stainless steel housing
  - Order No. CYY101-A

Active barrier

- Active barrier RN22.1N
  - With power supply for safe isolation of 4 to 20 mA standard signal circuits
  - Technical Information TI073R/09/EN
Fieldbus accessories

HART handheld terminal DXR375
- For communicating with a HART-compatible device via a 4 to 20 mA line
- Order No. DXR375

Commubox FXA291
- Interface module between CDI and USB PC interface
- Technical Information TI405C/07
- Order No. 51516983

Fieldbus connection socket
- FOUNDATION Fieldbus M20 7/8" connection
- Order No. 51517974

M12 connector
- Four-pole metal connector for mounting on transmitter
- For connecting to connection box or cable jack. Cable length 150 mm (5.91”).
- Order No. 51502184

C-module accessories bag
- 1 capacitor for connecting the cable shielding to ground potential
- Kit documentation SD108C/07/A3
- Order No. 71003097

Measuring cable

Memosens data cable CYK10
- For digital sensors with Memosens technology
  pH, ORP, oxygen (amperometric), chlorine, conductivity (conductive)
- Order as per product structure (--> Online Configurator, www.products.endress.com/cyk10)
- Technical Information TI00118C/07/EN

Memosens data cable CYK11
- Extension cable for digital sensors with Memosens protocol
- Order as per product structure (--> Online Configurator, www.products.endress.com/cyk11)

Measuring cable CPK9
- For sensors with ESA plug-in head, for high-temperature and high-pressure applications, IP 68
- Order as per order structure
- Technical Information TI00501C/07/EN

Special measuring cable CPK12
- For ISFET sensors and pH/ORP glass electrodes with TOP68 plug-in head
- Order as per order structure
- Technical Information TI00118C/07/EN

Measuring cable CYK71
- non-terminated cable for connecting sensors and for extending sensor cables
- sold by the meter, order numbers:
  - non-Ex version, black: 50085333
  - Ex version, blue: 50085673

Measuring cable CLK6
- Extension cable for extending CLS50/52/54 and transmitter via VBM junction box, sold by the meter
- Order No. 71183688
### Sensors

#### pH/ORP glass sensors

- **Orbisint CPS11/CPS11D**
  - pH electrode for process engineering
  - Optional SIL version for connecting to SIL transmitter
  - With dirt-repellent PTFE diaphragm
  - Technical Information TI00028C/07/EN

- **Orbisint CPS12/CPS12D**
  - ORP electrode for process engineering
  - With dirt-repellent PTFE diaphragm
  - Technical Information TI00079C/07/EN

- **Ceraliquid CPS41/CPS41D**
  - pH electrode with ceramic diaphragm and KCl liquid electrolyte;
  - Order as per product structure (--> Online Configurator, www.products.endress.com/cps41 or www.products.endress.com/cps41d)
  - Technical Information TI00079C/07/EN

- **Ceraliquid CPS42/CPS42D**
  - Redox electrode with ceramic diaphragm and KCl liquid electrolyte;
  - Order as per product structure (--> Online Configurator, www.products.endress.com/cps42 or www.products.endress.com/cps42d)
  - Technical Information TI00079C/07/EN

- **Ceragel CPS71/CPS71D**
  - pH electrode with double-chamber reference system and integrated bridge electrolyte;
  - Order as per product structure (--> Online Configurator, www.products.endress.com/cps71 or www.products.endress.com/cps71d)
  - Technical Information TI00028C/07/EN

- **Ceragel CPS72/CPS72D**
  - ORP electrode with double-chamber reference system and integrated bridge electrolyte;
  - Order as per product structure (--> Online Configurator, www.products.endress.com/cps72 or www.products.endress.com/cps72d)
  - Technical Information TI00028C/07/EN

- **Orbipore CPS91/CPS91D**
  - pH electrode with open aperture diaphragm for media with high contamination potential;
  - Order as per product structure (--> Online Configurator, www.products.endress.com/cps91 or www.products.endress.com/cps91d)
  - Technical Information TI00028C/07/EN

- **Orbipore CPS92/CPS92D**
  - ORP electrode with open aperture diaphragm for media with high contamination potential;
  - Order as per product structure (--> Online Configurator, www.products.endress.com/cps92 or www.products.endress.com/cps92d)
  - Technical Information TI00028C/07/EN

#### pH/ORP combined sensors

- **Memosens CPS16D**
  - pH ORP combined sensor for process engineering, with dirt-repellent PTFE diaphragm
  - With Memosens technology
  - Order as per product structure (--> Online Configurator, www.products.endress.com/cps16d)
  - Technical Information TI000503C/07/EN

- **Memosens CPS76D**
  - pH ORP combined sensor for process engineering, hygiene and sterile applications
  - With Memosens technology
  - Order as per product structure (--> Online Configurator, www.products.endress.com/cps76d)
  - Technical Information TI000506C/07/EN
Memosens CPS96D
- pH and ORP combined sensor for chemical processes
- With poison-resistant reference with ion trap
- With Memosens technology
- Order as per product structure (→ Online Configurator, www.products.endress.com/cps96d)
- Technical Information TI00507C/07/EN

pH?ISFET sensors
Tophit CPS471/CPS471D
- Sterilizable and autoclavable ISFET sensor for food and pharmaceuticals, process engineering, water treatment and biotechnology;
- Order as per product structure (→ Online Configurator, www.products.endress.com/cps471 or www.products.endress.com/cps471d)
- Technical Information TI00283C/07/EN

Tophit CPS441/CPS441D
- Sterilizable ISFET sensor for media with low conductivity, with liquid KCl electrolyte;
- Order as per product structure (→ Online Configurator, www.products.endress.com/cps441 or www.products.endress.com/cps441d)
- Technical Information TI00352C/07/EN

Tophit CPS491/CPS491D
- ISFET sensor with open aperture diaphragm for media with high contamination potential;
- Order as per product structure (→ Online Configurator, www.products.endress.com/cps491 or www.products.endress.com/cps491d)
- Technical Information TI00377C/07/EN

Enamel pH electrode
Ceramax CPS341D
- pH electrode with pH-sensitive enamel
- For the toughest requirements in terms of measurement accuracy, pressure, temperature, sterility and operating life
- Order as per product structure (→ Online Configurator, www.products.endress.com/cps341d)
- Technical Information TI00468C/07/EN

Inductive conductivity sensors
Indumax P CLS50/CLS50D
- Highly-resistant inductive conductivity sensor for standard, Ex and high-temperature applications
- With or without Memosens technology
- Order as per product structure (→ Online Configurator, www.products.endress.com/cls50d or .../cls50)
- Technical Information TI00182C/07/EN

Indumax H CLS52
- Inductive conductivity sensor with fast-acting temperature sensor for applications in the food industry
- Order as product structure (→ Online Configurator, www.products.endress.com/cls52)
- Technical Information TI00167C/07/EN

Indumax H CLS54D
- Inductive conductivity sensor with certified, hygienic design for foodstuffs, beverages, pharmaceuticals and biotechnology
- Order as per product structure (→ Online Configurator, www.products.endress.com/cls54d)
- Technical Information TI00508C/07/EN

Indumax H CLS54
- Inductive conductivity sensor with certified, hygienic design for foodstuffs, beverages, pharmaceuticals and biotechnology
- Order as product structure (→ Online Configurator, www.products.endress.com/cls54)
- Technical Information TI00400C/07/EN
Conductive conductivity sensors

Condumax W CLS12
- For process temperatures up to 160 °C (320 °F) and process pressures up to 40 bar (580 psi)
- Order as product structure (→ Online Configurator, www.products.endress.com/cls12)
- Technical Information TI00082C/07/EN

Condumax W CLS13
- For process temperatures up to 250 °C (480 °F) and process pressures up to 40 bar (580 psi)
- Order as product structure (→ Online Configurator, www.products.endress.com/cls13)
- Technical Information TI00083C/07/EN

Condumax CLS15/CLS15D
- Conductive conductivity sensor for pure and ultrapure water and Ex applications
- With Memosens protocol (CLS15D) or analog (CLS15)
- Order as per product structure (→ Online Configurator, www.products.endress.com/cls15d)
- Technical Information TI00227C/07/EN

Condumax CLS16/CLS16D
- Hygienic, conductive conductivity sensor for pure, ultrapure water and Ex applications
- With EHEDG and 3A approval
- Optionally available with Memosens (CLS16D)
- Order as per product structure (→ Online Configurator, www.products.endress.com/cls16d)
- Technical Information TI00110C/07/EN

Condumax W CLS19
- Inexpensive, conductive conductivity sensor for pure and ultrapure water applications;
- Order as per product structure (→ Online Configurator, www.products.endress.com/cls19)
- Technical Information TI001110C/07/EN

Condumax W CLS21/CLS21D
- Two-electrode sensor in version with plug-in head and fixed cable
- Optionally available with Memosens (CLS21D)
- Order as per product structure (→ Online Configurator, www.products.endress.com/cls21d)
- Technical Information TI00085C/07/EN

Amperometric oxygen sensors

Oxymax COS22D
- Sterilizable sensor for dissolved oxygen
- Order as per product structure (→ Online Configurator, www.products.endress.com/cos22d)
- Technical Information TI00466C/07/EN

Oxymax COS51D
- Amperometric sensor for dissolved oxygen, with Memosens technology
- Order as per product structure (→ Online Configurator, www.products.endress.com/cos51d)
- Technical Information TI00413C/07/EN

Software update and upgrade

CY42 DAT module
- Function upgrade, update and memory module
- Ordering as per order structure

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<td>FunctionDAT for extending the function to 2 current outputs</td>
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<tr>
<td>F2</td>
<td>FunctionDAT for extending the function to advanced software</td>
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<td>CopyDAT, for saving the configuration and transferring it to other devices</td>
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