

Conex[®] DIA-1, -2, -2Q

Measuring amplifiers and controllers, preassembled systems

One or two parameters (Cl₂, ClO₂, O₃, H₂O₂, PAA, pH, ORP)



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1. Product introduction

Conex DIA measuring amplifiers and controllers

The Conex DIA measuring amplifiers and controllers come in three versions:

- Conex DIA-1
- Conex DIA-2
- Conex DIA-2Q

Straight talk for everyone

The Conex DIA (Dosing Instrumentation Advanced) series is designed to be easy to use for non-experts. A simple plain-text menu allows you to complete your tasks quickly and easily without wasting any time on learning and deciphering codes. The units speak no less than nine languages, allowing virtually anyone to navigate the self-explanatory menus.

Conex units monitor themselves, ensuring high water quality at all time. During calibration, they carry out a plausibility check to prevent mishaps. The logbook function records sensor data and calibration values complete with date and time. The units also keep an eye on the temperature and make adjustments as necessary.

Conex DIA-1

Universal measuring amplifier and controller

The Conex DIA-1 is a sophisticated unit, ideal for use in many disinfection applications.

The easy-to-navigate user interface speaks nine languages. You also get access to features such as:

- automatic self-adaption calibration
- manual or automatic temperature compensation
- logbook function: chronological recording of calibration values with date and time.

The Conex DIA-1 can be incorporated in compact, wall-mounted, preassembled systems with the measuring cells that suit you.

Display languages: German, English, French, Italian, Spanish, Portuguese, Dutch, Polish, Russian.

Parameters

- Chlorine
- Chlorine dioxide
- Ozone
- Hydrogen peroxide
- Peracetic acid
- pH
- Redox potential (ORP)



Fig. 1 Conex DIA-1

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Conex DIA-2

Dual measuring amplifier and controller

Conex DIA-2 functions like two Conex DIA-1 controllers combined in a single unit. This allows you to measure and control two parameters at the same time. Both parameters are shown in the display.

This two-in-one approach minimises space requirements and installation time - and gives you all the Conex benefits.

Display languages: German, English, French, Italian, Spanish, Portuguese, Dutch, Polish, Russian.

Parameter group 1

- Chlorine
- Chlorine dioxide
- Ozone
- Hydrogen peroxide

Parameter group 2

- pH



Fig. 2 Conex DIA-2

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Conex DIA-2Q

Dual measuring amplifier and multi-functional controller

Conex DIA-2Q is a special version of Conex DIA-2, particularly suitable for variable flow rates (Q = flow). It has all the features of Conex DIA-2, plus an additional 4-20 mA input to compensate variable flow rates.

Display languages: German, English, French, Italian, Spanish, Portuguese, Dutch, Polish, Russian.

Parameter group 1

- Chlorine
- Chlorine dioxide
- Ozone
- Hydrogen peroxide
- Peracetic acid

Parameter group 2

- pH
- Redox potential (ORP)



Fig. 3 Conex DIA-2Q

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In the following chapters, the Conex DIA measuring amplifiers and controllers are simply referred to as "controllers".

Conex DIA preassembled systems

Our preassembled systems take our tried-and-tested electrodes and Conex DIA controllers, combine them to suit specific applications, and mount them on a plate ready for quick installation.

Each combination is available with a choice of measuring cells and cleaning methods.



Fig. 4 Conex DIA with AQC-D11

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Fig. 5 Conex DIA with AQC-D12

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Fig. 6 Conex DIA with AQC-D13

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Conex DIA preassembled system for chlorine, chlorine dioxide, ozone, pH or redox potential (ORP)

The system is equipped with one of these controllers:

- Conex DIA-1: for chlorine or chlorine dioxide or ozone
- Conex DIA-2: for pH and chlorine (or chlorine dioxide or ozone)
- Conex DIA-2Q: for pH (or ORP) and chlorine (or chlorine dioxide or ozone)

The system is equipped with one of these measuring cells:

- AQC-D11, pressure-proof, with electric cleaning motor
- AQC-D12, pressure-proof, with hydro-mechanical cleaning
- AQC-D13, pressureless, with hydro-mechanical cleaning

Features

- Mounted on a base plate and wired ready for connection
- With prepared cable sets
- With chlorine electrode
- With optional pH electrode
- With temperature compensation

Conex DIA preassembled system for hydrogen peroxide and peracetic acid (PAA)

The system is equipped with a Conex DIA-1 controller.

Features

- With Conex DIA-1 and diaphragm-covered measuring cell
- Mounted on a base plate and wired ready for connection
- With a measuring range of 0 to 2000 mg/l for hydrogen peroxide or peracetic acid

Conex DIA preassembled system for pH or redox potential (ORP)

The system is equipped with a Conex DIA-1 controller:

Features

- With sensors for pH or redox potential (ORP)
- Mounted on a base plate and wired ready for connection
- With prepared cable sets
- With temperature compensation

This preassembled system incorporates:

- temperature sensor with 1-metre cable
- pH single-rod measuring chain with 1-metre cable and ceramic or PTFE diaphragm

Note: For details on AQC-D11, AQC-D12, AQC-D13 and other measuring cells, please see the separate data booklet "Measurement and control accessories".

2. Identification

Type key, Conex DIA controllers

| Example: | DIA | -2Q | 1-D/HP/PA | 2-P/R | Q | -W | -G |
|---|--|-----|-----------|-------|---|----|----|
| Measuring amplifier and controller | | | | | | | |
| DIA-1 | Dosing Instrumentation Advanced 1 input | | | | | | |
| DIA-2 | Dosing Instrumentation Advanced 2 inputs | | | | | | |
| DIA-2Q | Dosing Instrumentation Advanced 2 inputs and flow measurement | | | | | | |
| Parameter group 1 | | | | | | | |
| P | pH | | | | | | |
| R | Redox potential (ORP) | | | | | | |
| D | Chlorine, chlorine dioxide or ozone | | | | | | |
| HP | Hydrogen peroxide | | | | | | |
| PA | Peracetic acid (PAA) | | | | | | |
| Parameter group 2 | | | | | | | |
| P | pH | | | | | | |
| R | Redox potential (ORP) | | | | | | |
| Variant | | | | | | | |
| Q | Flow compensation | | | | | | |
| Mounting | | | | | | | |
| W | Wall-mounting | | | | | | |
| P | Panel-mounting | | | | | | |
| Voltage | | | | | | | |
| G | 230/240 V, 50/60 Hz | | | | | | |
| H | 115/120 V, 50/60 Hz | | | | | | |
| I | 24 V DC | | | | | | |

Type key, Conex DIA preassembled systems

| Example: | DIA | -1 | -A | D11 | -P | -PT | -PCB | -QS | -T | W | -G |
|---|---|----|----|-----|----|-----|------|-----|----|---|----|
| Measuring amplifier and controller | | | | | | | | | | | |
| DIA-1 | Dosing Instrumentation Advanced 1 input | | | | | | | | | | |
| DIA-2 | Dosing Instrumentation Advanced 2 inputs | | | | | | | | | | |
| DIA-2Q | Dosing Instrumentation Advanced 2 inputs and flow measurement | | | | | | | | | | |
| Assembly | | | | | | | | | | | |
| A | Preassembled | | | | | | | | | | |
| Cell type AQC- | | | | | | | | | | | |
| D11 | Pressure-proof, with cleaning motor | | | | | | | | | | |
| D12 | Pressure-proof, with hydro-mechanical cleaning | | | | | | | | | | |
| D13 | Pressureless, with hydro-mechanical cleaning | | | | | | | | | | |
| P/R | pH or redox potential (ORP) | | | | | | | | | | |
| PA/HP | Peracetic acid or hydrogen peroxide | | | | | | | | | | |
| Pressure-retention valve | | | | | | | | | | | |
| P | With pressure-retention valve | | | | | | | | | | |
| X | Without pressure-retention valve | | | | | | | | | | |
| Electrodes for disinfection parameters | | | | | | | | | | | |
| AU | Gold (for cell types D11, D12 and D13) | | | | | | | | | | |
| PT | Platinum (for cell types D11, D12 and D13) | | | | | | | | | | |
| X | Without electrode | | | | | | | | | | |
| Other electrodes | | | | | | | | | | | |
| PCB | pH, ceramic diaphragm, with buffer solution | | | | | | | | | | |
| PTB | pH, PTFE diaphragm, with buffer solution | | | | | | | | | | |
| PKB | pH, KCl filling, with buffer solution | | | | | | | | | | |
| PGB | pH, gel filling, with buffer solution | | | | | | | | | | |
| PCX | pH, ceramic diaphragm, without buffer solution | | | | | | | | | | |
| PTX | pH, PTFE diaphragm, without buffer solution | | | | | | | | | | |
| PKX | pH, KCl filling, without buffer solution | | | | | | | | | | |
| PGX | pH, gel filling, without buffer solution | | | | | | | | | | |
| RCB | Redox potential (ORP), ceramic diaphragm, with buffer solution | | | | | | | | | | |
| RTB | Redox potential (ORP), PTFE diaphragm, with buffer solution | | | | | | | | | | |
| RCX | Redox potential (ORP), ceramic diaphragm, without buffer solution | | | | | | | | | | |
| RTX | Redox potential (ORP), PTFE diaphragm, without buffer solution | | | | | | | | | | |
| PA | Peracetic acid | | | | | | | | | | |
| HP | Hydrogen peroxide | | | | | | | | | | |
| X | Without electrode | | | | | | | | | | |
| Water sensor | | | | | | | | | | | |
| QS | With water sensor | | | | | | | | | | |
| X | Without water sensor | | | | | | | | | | |
| Temperature sensor | | | | | | | | | | | |
| T | With Pt100 temperature sensor | | | | | | | | | | |
| X | Without temperature sensor | | | | | | | | | | |
| Mounting | | | | | | | | | | | |
| W | Wall-mounting | | | | | | | | | | |
| Voltage | | | | | | | | | | | |
| G | 230/240 V, 50/60 Hz | | | | | | | | | | |
| H | 115/120 V, 50/60 Hz | | | | | | | | | | |
| I | 24 V DC | | | | | | | | | | |

3. Functions

Conex DIA controllers

| Features | Conex DIA-1 | Conex DIA-2 | Conex DIA-2Q |
|--|-------------|-------------|--------------|
| Input parameter group 1 | | | |
| pH | • | | |
| Redox potential (ORP) | • | | |
| Chlorine | • | • | • |
| Chlorine dioxide | • | • | • |
| Ozone | • | • | • |
| Hydrogen peroxide | • | • | • |
| Peracetic acid (PAA) | • | | • |
| Input parameter group 2 | | | |
| pH | | • | • |
| Redox potential (ORP) | | | • |
| Input, miscellaneous | | | |
| Water sensor | • | • | • |
| Flow compensation; compound-loop control | | | • |
| Controller stop (potential-free contact) | • | • | • |
| Mounting options | | | |
| Wall-mounting | • | • | • |
| Panel-mounting | • | • | • |
| Voltage | | | |
| 230/240 V, 50/60 Hz | • | • | • |
| 115/120 V, 50/60 Hz | • | • | • |
| 24 V DC | • | • | • |

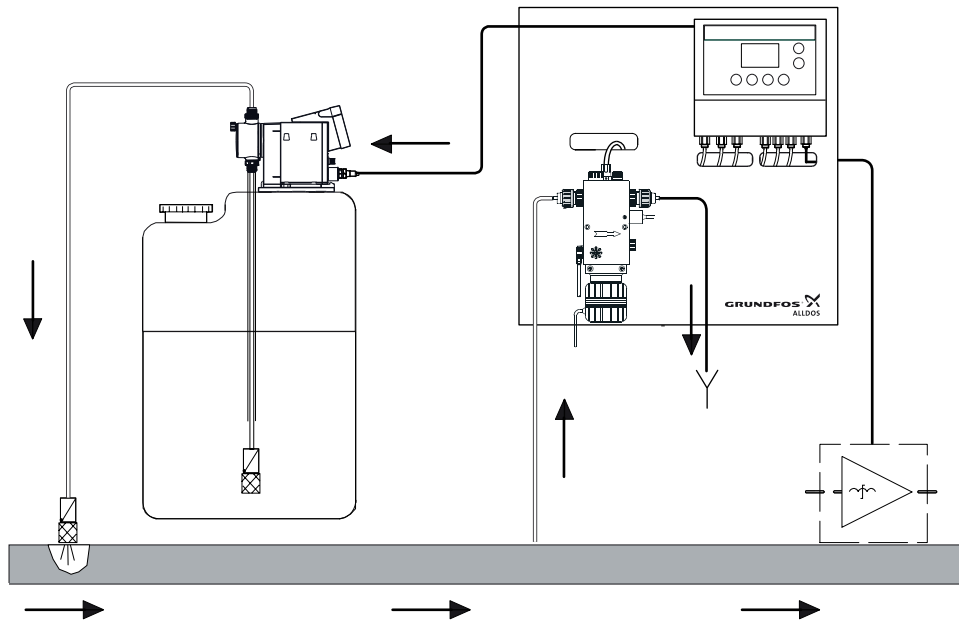


Fig. 7 Compound-loop control for Conex DIA-2Q (combined controller)

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Conex DIA preassembled systems

| Features | Conex DIA-1-A | Conex DIA-2-A | Conex DIA-2Q-A |
|--|---------------|---------------|----------------|
| Cell type | | | |
| AQC-D11, pressure-proof, with cleaning motor | • | • | • |
| AQC-D12, pressure-proof, hydro-mechanical cleaning | • | • | • |
| AQC-D13, pressureless, hydro-mechanical cleaning | • | • | • |
| Input parameter group 1 | | | |
| pH | • | | |
| Redox potential (ORP) | • | | |
| Chlorine | • | • | • |
| Chlorine dioxide | • | • | • |
| Ozone | • | • | • |
| Hydrogen peroxide | • | • | • |
| Peracetic acid (PAA) | • | | • |
| Input parameter group 2 | | | |
| pH | | • | • |
| Redox potential (ORP) | | | • |
| Input, miscellaneous | | | |
| Water sensor | • | • | • |
| Flow compensation; compound-loop control | | | • |
| Controller stop (potential-free contact) | • | • | • |
| Temperature sensor | | | |
| Pt100* | • | • | • |
| Voltage | | | |
| 230/240 V, 50/60 Hz | • | • | • |
| 115/120 V, 50/60 Hz | • | • | • |
| 24 V DC | • | • | • |

* No temperature measurement with peracetic acid, hydrogen peroxide

4. Technical data

General data

| Electronics | 16-bit microprocessor system | | | | | |
|---|---|-------------|-------------|----|--------------|----|
| Display | High resolution, plain-text LCD | | | | | |
| Indication mode | Measured value as a physical variable | | | | | |
| Enclosure class | | | | | | |
| Wall-mounting: | IP65 | | | | | |
| Panel mounting: | IP54 | | | | | |
| Max. cable length | | | | | | |
| Wall-mounting: | 3 metres | | | | | |
| Panel mounting: | 100 metres between panel and sensor interface 3 metres between sensor and sensor interface | | | | | |
| Relay outputs | 1 alarm relay 2 controller relays (250 V/6 A, max. 550 VA) | | | | | |
| | | Conex DIA-1 | Conex DIA-2 | | Conex DIA-2Q | |
| | Parameter group | - | 1 | 2 | 1 | 2 |
| 4 analog signal outputs (0-20 mA or 4-20 mA) Galvanically isolated from the inputs; max. load: 500 Ohm | Measured value/control value | 1 | 1 | 1 | 1 | 1 |
| | pH | 1 | | | | |
| | Temperature | 1 | 1* | 1* | 1* | 1* |
| | Output from PI(D) controller | 1 | 1 | 1* | 1 | 1* |
| Temperature compensation | Manually or automatically by Pt100 sensor (-5 to +120 °C, measured in °C or °F) | | | | | |
| pH compensation | Chlorine measurement: automatically by pH measurement | | | | | |
| Calibration | With plausibility check and buffer recognition | | | | | |
| Permissible temperature | Operation: 0 to +45 °C Storage: -20 to +65 °C | | | | | |
| Permissible relative air humidity | Max. 90 % (non-condensing) | | | | | |
| Power consumption | Approx. 15 VA | | | | | |
| Mains voltage | 230/240 V, 50/60 Hz or 115/120 V, 50/60 Hz or 24 V DC | | | | | |
| Weight | Approx. 1.5 kg | | | | | |

- * Signal output applicable for temperature or continuous controller (parameter group 2).
Note: For a more precise chlorine measurement, DIA-1 has an additional input for a pH single-rod measuring chain.

Measuring parameters and ranges

| Parameter group | Parameter | Possible measuring range* | Available with controller | | |
|-----------------------------|-------------------------|---------------------------|---------------------------|-------------|--------------|
| | | | Conex DIA-1 | Conex DIA-2 | Conex DIA-2Q |
| 1 | Chlorine [mg/l] | 0.00 - 0.50 | • | • | • |
| | | 0.00 - 1.00 | | | |
| | | 0.00 - 2.00 | | | |
| | | 0.00 - 5.00 | | | |
| | | 0.0 - 10.0 | | | |
| | 0.0 - 20.0 | | | | |
| | Chlorine dioxide [mg/l] | 0.00 - 0.50 | • | • | • |
| 0.00 - 1.00 | | | | | |
| 0.00 - 5.00 | | | | | |
| Ozone [mg/l] | 0.00 - 0.50 | • | • | • | |
| | 0.00 - 1.00 | | | | |
| | 0.00 - 5.00 | | | | |
| Hydrogen peroxide [mg/l] | 0 - 100 | • | • | • | |
| | 0 - 500 | | | | |
| | 0 - 2000 | | | | |
| Peracetic acid (PAA) [mg/l] | 0 - 100 | • | | • | |
| | 0 - 500 | | | | |
| | 0 - 2000 | | | | |
| pH | 0.00 - 14.00 | • | | | |
| | 2.00 - 12.00 | | | | |
| | 5.00 - 9.00 | | | | |
| Redox potential (ORP) [mV] | -1500 to +1500 | • | | | |
| | 0 - 1000 | | | | |
| 2 | pH | 0.00 - 14.00 | | • | • |
| | | 2.00 - 12.00 | | | |
| 5.00 - 9.00 | | | | | |
| Redox potential (ORP) [mV] | -1500 to +1500 | | | • | |
| | 0 - 1000 | | | | |

* For preassembled systems, the lower limit of the measuring range can be different, depending on the type of measuring cell.

Control data

| Description | Value |
|---|--|
| Limit values | Adjustable as physical variable within the measuring range |
| Hysteresis | 0 to 50 % of the upper limit of the measuring range |
| Setpoint selection | 0 to 100 % of the measuring range |
| Proportional band, X _p | 0.1 to 3000 % |
| Reset time, T _N | 1 to 3000 s, resolution 1 s |
| Derivative action time, T _v | 1 to 1000 s, resolution 1 s |
| Constant load | 0 to 50 % |
| Limitation of the maximum dosing capacity | From the adjusted constant load up to 100 % |
| Control direction | Adjustable: Upward or downward control |

Adjustable control functions

| Adjustable control functions | Measuring amplifier and controller | | | | | |
|--|------------------------------------|-----------------|----|--------------|-----------------|---|
| | Conex DIA-1 | Conex DIA-2 | | Conex DIA-2Q | | |
| | | Parameter group | 1 | 2 | Parameter group | 1 |
| Number of measured values and control parameters | 1 | 1 | 1 | 1 | 1 | 1 |
| Number of potential-free control relays (adjustable as) | 2 | 1 | 1 | 1 | 1 | 1 |
| Limit switch | • | • | • | • | • | • |
| 2-position controller (P/PI/PID) | • | • | • | • | • | • |
| • pulse-pause | • | • | • | • | • | • |
| • pulse frequency | • | • | • | • | • | • |
| 3-position controller | • | | | | | |
| Setpoint controller | • | • | • | • | • | • |
| Proportional controller | | | | • | • | • |
| Combined controller (for compound-loop control) | | | | • | • | • |
| | and | | or | | or | |
| Number of analog inputs (continuous controller (0-20 mA or 4-20 mA)) | 1 | 1 | 1 | 1 | 1 | 1 |

Dimensions

Conex DIA controllers

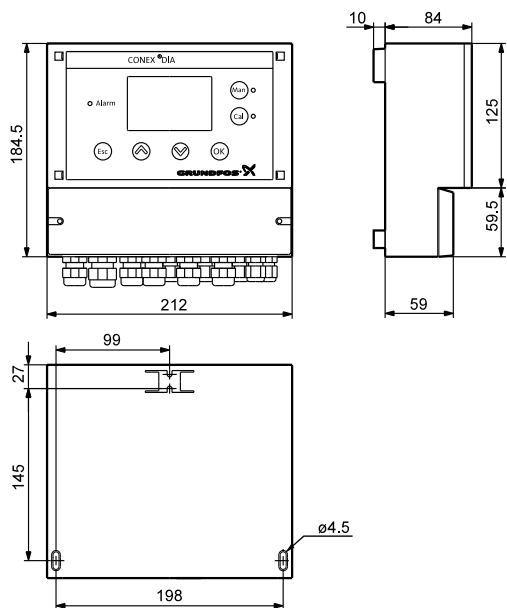


Fig. 8 Conex DIA for wall-mounting

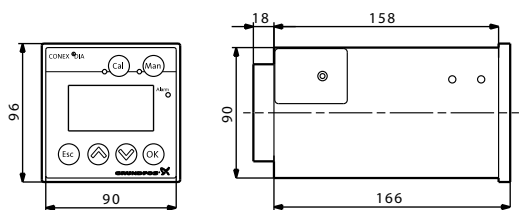
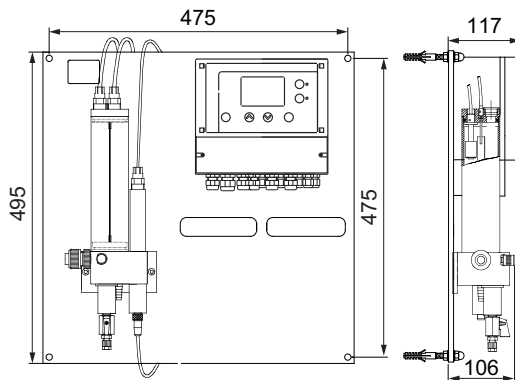


Fig. 9 Conex DIA for control panel mounting

Conex DIA preassembled systems

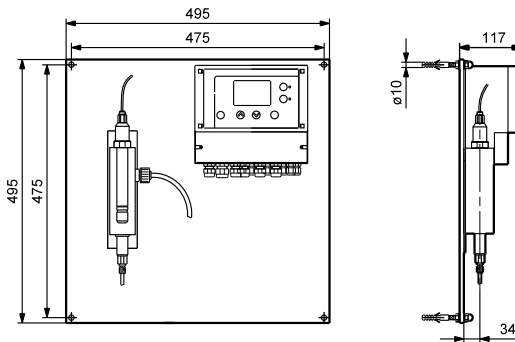
Measurement of chlorine, chlorine dioxide, ozone, pH or redox potential (ORP)



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Fig. 10 Conex DIA-1-A, D11 (D12/D13),
Conex DIA-2-A, D11 (D12/D13),
Conex DIA-2Q-A, D11 (D12/D13)

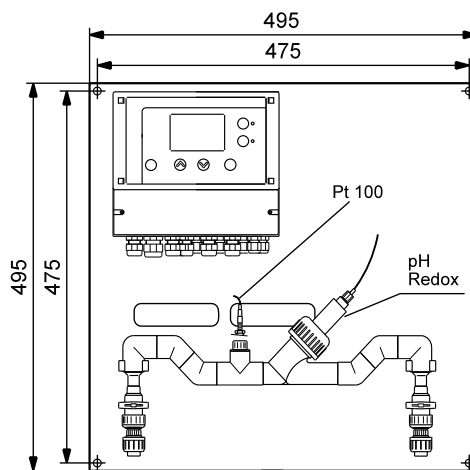
Measurement of hydrogen peroxide or peracetic acid



TM03 4041 1406

Fig. 11 Conex DIA-1 -A, PA/HP

Measurement of pH or redox potential (ORP)



TM03 4045 1406

Fig. 12 Conex DIA-1 (2/2Q)-A, P/R

5. Product selection

Conex DIA controllers

| Controller | Voltage | Controller mounting | Enclosure material | Enclosure class | Input parameter | | Flow compensation | Type designation | Product number |
|------------|-----------|---------------------|--------------------|-----------------|-------------------------------------|-----------------------|-------------------|-----------------------------------|----------------|
| | | | | | 1 | 2 | | | |
| Conex | 24 V DC | Panel-mounting | Polystyrene | IP65 | Chlorine, chlorine dioxide or ozone | | | | |
| | 115/120 V | Wall-mounting | Noryl | IP54 | pH | Redox potential (ORP) | | | |
| | 230/240 V | | | | Hydrogen peroxide | Peracetic acid | | | |
| | | | | | pH | Redox potential (ORP) | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| DIA-1 | • | • | • | • | • | • | • | DIA-1, 1-P/R/D/HP/PA/F, P-I | 96622365 |
| | • | • | • | • | • | • | • | DIA-1, 1-P/R/D/HP/PA/F, W-I | 96622361 |
| | • | • | • | • | • | • | • | DIA-1, 1-P/R/D/HP/PA/F, P-H | 96622364 |
| | • | • | • | • | • | • | • | DIA-1, 1-P/R/D/HP/PA/F, W-H | 96622360 |
| | • | • | • | • | • | • | • | DIA-1, 1-P/R/D/HP/PA/F, P-G | 96622363 |
| | • | • | • | • | • | • | • | DIA-1, 1-P/R/D/HP/PA/F, W-G | 96622359 |
| DIA-2 | • | • | • | • | • | • | • | DIA-2, 1-D/HP, 2-P, P-I | 96622374 |
| | • | • | • | • | • | • | • | DIA-2, 1-D/HP, 2-P, W-I | 96622370 |
| | • | • | • | • | • | • | • | DIA-2, 1-D/HP, 2-P, P-H | 96622373 |
| | • | • | • | • | • | • | • | DIA-2, 1-D/HP, 2-P, W-H | 96622369 |
| | • | • | • | • | • | • | • | DIA-2, 1-D/HP, 2-P, P-G | 96622371 |
| | • | • | • | • | • | • | • | DIA-2, 1-D/HP, 2-P, W-G | 96622366 |
| DIA-2Q | • | • | • | • | • | • | • | DIA-2Q, 1-D/HP/PA, 2-P/R/F, Q-P-I | 96622391 |
| | • | • | • | • | • | • | • | DIA-2Q, 1-D/HP/PA, 2-P/R/F, Q-W-I | 96622388 |
| | • | • | • | • | • | • | • | DIA-2Q, 1-D/HP/PA, 2-P/R/F, Q-P-H | 96622390 |
| | • | • | • | • | • | • | • | DIA-2Q, 1-D/HP/PA, 2-P/R/F, Q-W-H | 96609141 |
| | • | • | • | • | • | • | • | DIA-2Q, 1-D/HP/PA, 2-P/R/F, Q-P-G | 96622389 |
| | • | • | • | • | • | • | • | DIA-2Q, 1-D/HP/PA, 2-P/R/F, Q-W-G | 96609140 |

Note: Conex DIA-1 can measure chlorine and pH simultaneously, but control only the chlorine level.

Conex DIA preassembled systems

Disinfection parameters, standard range

- Measurable disinfection parameters: free chlorine, chlorine dioxide or ozone
- Additional measurement of pH or ORP as an option
- Preassembled systems with Conex DIA generally include a temperature sensor
- Preassembled systems with AQC D11 or D12 include a pressure retention valve

230/240 V

| Controller | Cell type | | | Electrode | | Water sensor | Type designation* | Product number | | |
|------------|-------------------------------------|--|--|-----------------------|------------------------|--|---|---|------------------------------|----------|
| | D11, pressure-proof, cleaning motor | D12, pressure-proof, hydro-mechanical cleaning | D13, pressureless, hydro-mechanical cleaning | pH, ceramic diaphragm | ORP, ceramic diaphragm | | | Electrode code AU (gold) | Electrode code PT (platinum) | |
| DIA-1-A | • | | | • | | • | DIA-1-A, D11-P- AU -PCB-QS-T, W-G | 95737911 | 95737912 | |
| | • | | | | | | DIA-1-A, D11-P- AU -PCB-X-T, W-G | 95737913 | 95737914 | |
| | • | | | | | • | DIA-1-A, D11-P- AU -X-QS-T, W-G | 95737915 | 95737916 | |
| | • | | | | | | DIA-1-A, D11-P- AU -X-X-T, W-G | 95737917 | 95737918 | |
| | | • | | • | | • | DIA-1-A, D12-P- AU -PCB-QS-T, W-G | 95737921 | 95737922 | |
| | | • | | | | • | DIA-1-A, D12-P- AU -X-QS-T, W-G | 95737919 | 95737920 | |
| | | | • | • | | • | DIA-1-A, D13-X- AU -PCB-QS-T, W-G | 95737923 | 95737924 | |
| | | | • | • | | | DIA-1-A, D13-X- AU -PCB-X-T, W-G | 95737925 | 95737926 | |
| | | | • | | | • | DIA-1-A, D13-X- AU -X-QS-T, W-G | 95737781 | 95737930 | |
| | | | • | | | | DIA-1-A, D13-X- AU -X-X-T, W-G | 95737775 | 95737931 | |
| | DIA-2Q-A | • | | | • | | • | DIA-2Q-A, D11-P- AU -PCB-QS-T, W-G | 95737932 | 95737933 |
| | | • | | | • | | | DIA-2Q-A, D11-P- AU -PCB-X-T, W-G | 95737934 | 95737935 |
| | | • | | | | • | • | DIA-2Q-A, D11-P- AU -RCB-QS-T, W-G | 95737936 | 95737937 |
| | | • | | | | • | | DIA-2Q-A, D11-P- AU -RCB-X-T, W-G | 95737938 | 95737939 |
| • | | | | | | • | DIA-2Q-A, D11-P- AU -X-QS-T, W-G | 95737940 | 95737941 | |
| • | | | | | | | DIA-2Q-A, D11-P- AU -X-X-T, W-G | 95737942 | 95737943 | |
| | | • | | • | | • | DIA-2Q-A, D12-P- AU -PCB-QS-T, W-G | 95737945 | 95737944 | |
| | | • | | | • | • | DIA-2Q-A, D12-P- AU -RCB-QS-T, W-G | 95737946 | 95737947 | |
| | | • | | | | • | DIA-2Q-A, D12-P- AU -X-QS-T, W-G | 95737949 | 95737948 | |
| | | | • | • | | • | DIA-2Q-A, D13-X- AU -PCB-QS-T, W-G | 95737950 | 95737951 | |
| | | | • | • | | | DIA-2Q-A, D13-X- AU -PCB-X-T, W-G | 95737952 | 95737953 | |
| | | | • | | • | • | DIA-2Q-A, D13-X- AU -RCB-QS-T, W-G | 95737954 | 95737955 | |
| | | | • | | • | | DIA-2Q-A, D13-X- AU -RCB-X-T, W-G | 95737956 | 95737957 | |
| | | | • | | | • | DIA-2Q-A, D13-X- AU -X-QS-T, W-G | 95737958 | 95737959 | |
| | | • | | | | DIA-2Q-A, D13-X- AU -X-X-T, W-G | 95737960 | 95737961 | | |

* Also available with platinum electrode **PT**

115/120 V

| Controller | Cell type | | | Electrode | | Water sensor | Type designation* | Product number | |
|------------|-------------------------------------|--|--|-----------------------|------------------------|--|---|--------------------------|------------------------------|
| | D11, pressure-proof, cleaning motor | D12, pressure-proof, hydro-mechanical cleaning | D13, pressureless, hydro-mechanical cleaning | pH, ceramic diaphragm | ORP, ceramic diaphragm | | | Electrode code AU (gold) | Electrode code PT (platinum) |
| DIA-1-A | • | | | • | | • | DIA-1-A, D11-P- AU -PCB-QS-T, W-H | 95737962 | 95737963 |
| | • | | | • | | | DIA-1-A, D11-P- AU -PCB-X-T, W-H | 95737964 | 95737965 |
| | • | | | | | • | DIA-1-A, D11-P- AU -X-QS-T, W-H | 95737967 | 95737966 |
| | • | | | | | | DIA-1-A, D11-P- AU -X-X-T, W-H | 95737968 | 95737969 |
| | | • | | • | | • | DIA-1-A, D12-P- AU -PCB-QS-T, W-H | 95737971 | 95737970 |
| | | • | | | | • | DIA-1-A, D12-P- AU -X-QS-T, W-H | 95737972 | 95737973 |
| | | | • | • | | • | DIA-1-A, D13-X- AU -PCB-QS-T, W-H | 95737975 | 95737974 |
| | | | • | • | | | DIA-1-A, D13-X- AU -PCB-X-T, W-H | 95737976 | 95737977 |
| | | | • | | | • | DIA-1-A, D13-X- AU -X-QS-T, W-H | 95737979 | 95737978 |
| | | | • | | | | DIA-1-A, D13-X- AU -X-X-T, W-H | 95737980 | 95737981 |
| DIA-2Q-A | • | | | • | | • | DIA-2Q-A, D11-P- AU -PCB-QS-T, W-H | 95737982 | 95737983 |
| | • | | | • | | | DIA-2Q-A, D11-P- AU -PCB-X-T, W-H | 95737984 | 95737985 |
| | • | | | | • | • | DIA-2Q-A, D11-P- AU -RCB-QS-T, W-H | 95737987 | 95737986 |
| | • | | | | • | | DIA-2Q-A, D11-P- AU -RCB-X-T, W-H | 95737988 | 95737989 |
| | • | | | | | • | DIA-2Q-A, D11-P- AU -X-QS-T, W-H | 95737990 | 95737991 |
| | • | | | | | | DIA-2Q-A, D11-P- AU -X-X-T, W-H | 95737992 | 95737993 |
| | | • | | • | | • | DIA-2Q-A, D12-P- AU -PCB-QS-T, W-H | 95738006 | 95738007 |
| | | • | | | • | • | DIA-2Q-A, D12-P- AU -RCB-QS-T, W-H | 95738009 | 95738008 |
| | | • | | | | • | DIA-2Q-A, D12-P- AU -X-QS-T, W-H | 95738010 | 95738011 |
| | | | • | • | | • | DIA-2Q-A, D13-X- AU -PCB-QS-T, W-H | 95738012 | 95738013 |
| | | | • | • | | | DIA-2Q-A, D13-X- AU -PCB-X-T, W-H | 95738014 | 95738015 |
| | | | • | | • | • | DIA-2Q-A, D13-X- AU -RCB-QS-T, W-H | 95738016 | 95738017 |
| | | | • | | • | | DIA-2Q-A, D13-X- AU -RCB-X-T, W-H | 95738018 | 95738019 |
| | | | • | | | • | DIA-2Q-A, D13-X- AU -X-QS-T, W-H | 95738021 | 95738021 |
| | | • | | | | DIA-2Q-A, D13-X- AU -X-X-T, W-H | 95738023 | 95738024 | |

* Also available with platinum electrode PT

Disinfection parameters, non-standard range

| Controller | Assembly | Cell type | Pressure-retention valve | Electrodes for disinfection | Electrodes for pH or ORP | Water sensor | Temperature sensor | Mounting | Voltage |
|--------------------------|------------------|--|---|--|---|--|---|------------------|--|
| DIA-1 DIA-2 DIA-2Q | A: Pre-assembled | D11: pressure-proof, with cleaning motor D12: pressure-proof, hydro-mechanical cleaning D13: pressureless, hydro-mechanical cleaning P/R: pH or ORP PA/HP: peracetic acid or hydrogen peroxide | P: with pressure-retention valve X: without pressure-retention valve | AU: gold PT: platinum X: without electrode | PCB: pH, ceramic diaphragm, with buffer solution PTB: pH, PTFE diaphragm, with buffer solution PKB: pH, KCl filling, with buffer solution PGB: pH, gel filling, with buffer solution PCX: pH, ceramic diaphragm, without buffer solution PTX: pH, PTFE diaphragm, without buffer solution PKX: pH, KCl filling, without buffer solution PGX: pH, gel filling, without buffer solution RCB: ORP, ceramic diaphragm, with buffer solution RTB: ORP, PTFE diaphragm, with buffer solution RCX: ORP, ceramic diaphragm, without buffer solution RTX: ORP, PTFE diaphragm, without buffer solution PA: peracetic acid HP: hydrogen peroxide X: without electrode | QS: with water sensor X: without water sensor | T: with Pt100 temperature sensor X: without temperature sensor | W: wall-mounting | G: 230/240 V, 50/60 Hz H: 115/120 V, 50/60 Hz I: 24 V DC |

Conex DIA-1 controller

| Controller | Assembly | Cell type | Pressure-retention valve | Electrodes for disinfection | Electrodes for pH or ORP | Water sensor | Temperature sensor | Mounting | Voltage |
|------------|----------|--------------------------|--------------------------|-----------------------------|---|--------------|--------------------|----------|-------------|
| DIA-1 | A | D11 D12 D13 P/R | P X | AU PT X | PCB PTB PKB PGB PCX PTX PKX PGX RCB RTB RCX RTX X | QS X | T X | W | G H I |

Conex DIA-2 controller

| Controller | Assembly | Cell type | Pressure-retention valve | Electrodes for disinfection | Electrodes for pH or ORP | Water sensor | Temperature sensor | Mounting | Voltage |
|------------|----------|--------------------------|--------------------------|-----------------------------|---|--------------|--------------------|----------|-------------|
| DIA-2 | A | D11 D12 D13 P/R | P X | AU PT X | PCB PTB PKB PGB PCX PTX PKX PGX RCB RTB RCX RTX X | QS X | T X | W | G H I |

Conex DIA-2Q controller

| Controller | Assembly | Cell type | Pressure-retention valve | Electrodes for disinfection | Electrodes for pH or ORP | Water sensor | Temperature sensor | Mounting | Voltage |
|------------|----------|--------------------------|--------------------------|-----------------------------|---|--------------|--------------------|----------|-------------|
| DIA-2Q | A | D11 D12 D13 P/R | P X | AU PT X | PCB PTB PKB PGB PCX PTX PKX PGX RCB RTB RCX RTX X | QS X | T X | W | G H I |

pH or ORP, standard range

230/240 V

| Controller | Electrode type | | | Type designation | Product number |
|------------|-----------------------|------------------------|--------------------|------------------------------|----------------|
| | pH, ceramic diaphragm | ORP, ceramic diaphragm | Temperature sensor | | |
| DIA-1-A | • | | • | DIA-1-A, P/R-X-PCB-X-T, W-G | 96622765 |
| | • | | | DIA-1-A, P/R-X-PCB-X-X, W-G | 96622769 |
| DIA-1-A | | • | • | DIA-1-A, P/R-X-RCB-X-T, W-G | 96622774 |
| | | • | | DIA-1-A, P/R-X-RCB-X-X, W-G | 96622778 |
| DIA-2Q-A | • | | • | DIA-2Q-A, P/R-X-PCB-X-T, W-G | 96622797 |
| | • | | | DIA-2Q-A, P/R-X-PCB-X-X, W-G | 96622800 |
| DIA-2Q-A | | • | • | DIA-2Q-A, P/R-X-RCB-X-T, W-G | 96622804 |
| | | • | | DIA-2Q-A, P/R-X-RCB-X-X, W-G | 96622807 |

115/120 V

| Controller | Electrode type | | | Type designation | Product number |
|------------|-----------------------|------------------------|--------------------|------------------------------|----------------|
| | pH, ceramic diaphragm | ORP, ceramic diaphragm | Temperature sensor | | |
| DIA-1-A | • | | • | DIA-1-A, P/R-X-PCB-X-T, W-H | 96622766 |
| | • | | | DIA-1-A, P/R-X-PCB-X-X, W-H | 96622772 |
| DIA-1-A | | • | • | DIA-1-A, P/R-X-RCB-X-T, W-H | 96622775 |
| | | • | | DIA-1-A, P/R-X-RCB-X-X, W-H | 96622779 |
| DIA-2Q-A | • | | • | DIA-2Q-A, P/R-X-PCB-X-T, W-H | 96622798 |
| | • | | | DIA-2Q-A, P/R-X-PCB-X-X, W-H | 96622801 |
| DIA-2Q-A | | • | • | DIA-2Q-A, P/R-X-RCB-X-T, W-H | 96622805 |
| | | • | | DIA-2Q-A, P/R-X-RCB-X-X, W-H | 96622808 |

pH or ORP, non-standard range

| Controller | Assembly | Cell type | Pressure-retention valve | Electrodes for disinfection | Electrodes for pH or ORP | Water sensor | Temperature sensor | Mounting | Voltage |
|--------------------------|------------------|--|---|--|---|--|---|------------------|--|
| DIA-1 DIA-2 DIA-2Q | A: Pre-assembled | D11: pressure-proof, with cleaning motor D12: pressure-proof, hydro-mechanical cleaning D13: pressureless, hydro-mechanical cleaning P/R: pH or ORP PA/HP: peracetic acid or hydrogen peroxide | P: with pressure-retention valve X: without pressure-retention valve | AU: gold PT: platinum X: without electrode | PCB: pH, ceramic diaphragm, with buffer solution PTB: pH, PTFE diaphragm, with buffer solution PKB: pH, KCl filling, with buffer solution PGB: pH, gel filling, with buffer solution PCX: pH, ceramic diaphragm, without buffer solution PTX: pH, PTFE diaphragm, without buffer solution PKX: pH, KCl filling, without buffer solution PGX: pH, gel filling, without buffer solution RCB: ORP, ceramic diaphragm, with buffer solution RTB: ORP, PTFE diaphragm, with buffer solution RCX: ORP, ceramic diaphragm, without buffer solution RTX: ORP, PTFE diaphragm, without buffer solution PA: peracetic acid HP: hydrogen peroxide X: without electrode | QS: with water sensor X: without water sensor | T: with Pt100 temperature sensor X: without temperature sensor | W: wall-mounting | G: 230/240 V, 50/60 Hz H: 115/120 V, 50/60 Hz I: 24 V DC |

Conex DIA-1 controller

| Controller | Assembly | Cell type | Pressure-retention valve | Electrodes for disinfection | Electrodes for pH or ORP | Water sensor | Temperature sensor | Mounting | Voltage |
|------------|----------|-----------|--------------------------|-----------------------------|---|--------------|--------------------|----------|-------------|
| DIA-1 | A | P/R | P X | X | PCB PTB PKB PGB PCX PTX PKX PGX RCB RTB RCX RTX X | QS X | T X | W | G H I |

Conex DIA-2 controller

| Controller | Assembly | Cell type | Pressure-retention valve | Electrodes for disinfection | Electrodes for pH or ORP | Water sensor | Temperature sensor | Mounting | Voltage |
|------------|----------|-----------|--------------------------|-----------------------------|---|--------------|--------------------|----------|-------------|
| DIA-2 | A | P/R | P X | X | PCB PTB PKB PGB PCX PTX PKX PGX RCB RTB RCX RTX X | QS X | T X | W | G H I |

Conex DIA-2Q controller

| Controller | Assembly | Cell type | Pressure-retention valve | Electrodes for disinfection | Electrodes for pH or ORP | Water sensor | Temperature sensor | Mounting | Voltage |
|------------|----------|-----------|--------------------------|-----------------------------|---|--------------|--------------------|----------|-------------|
| DIA-2Q | A | P/R | P X | X | PCB PTB PKB PGB PCX PTX PKX PGX RCB RTB RCX RTX X | QS X | T X | W | G H I |

Peracetic acid or hydrogen peroxide

| Controller | Voltage | | | Peracetic acid | Hydrogen peroxide | Type designation | Product number |
|------------|---------|-----------|-----------|----------------|-------------------|------------------------------|----------------|
| | 24 V DC | 115/120 V | 230/240 V | | | | |
| Conex | | | | | | | |
| DIA-1-A | • | | | • | | DIA-1-A, PA/HP-X-PA-X-X, W-I | 96622760 |
| | • | | | | • | DIA-1-A, PA/HP-X-HP-X-X, W-I | 96622764 |
| | | • | | | • | DIA-1-A, PA/HP-X-HP-X-X, W-H | 96622762 |
| | | • | | • | | DIA-1-A, PA/HP-X-PA-X-X, W-H | 96622749 |
| | | | • | | • | DIA-1-A, PA/HP-X-HP-X-X, W-G | 96622761 |
| | | | • | • | | DIA-1-A, PA/HP-X-PA-X-X, W-G | 96622748 |

6. Accessories

Cables

| Description | Length [m] | Conex DIA- | | | Product number |
|--|---------------|------------|---|----|-------------------|
| | | 1 | 2 | 2Q | |
| Cable for PAA/hydrogen peroxide electrode | 2 | • | • | • | 91835331 |
| Special cable (coaxial), single screening, N screw plug for pH, redox potential (ORP) or reference electrode | 1 | • | • | • | 96609182 |
| | 3 | • | • | • | 96609183 |
| | 10 | • | • | • | 96701441 |
| | 25 | • | • | • | 95703576 |

Note: If the length of the cable between controller and electrode exceeds 3 metres, an impedance converter is necessary.

Buffer solutions

pH and redox potential (ORP)

| Description | pH | ORP | Product number |
|--|----|-----|-------------------|
| Buffer solutions for calibrating the pH single-rod measuring chain • 1 set per 100 ml for pH 4.01, 7.00 or 9.18 | • | | 96609165 |
| Buffer solutions for checking the ORP single-rod measuring chain or electrodes • 100 ml (+220 mV) | | • | 96609166 |

Impedance converter

pH and redox potential (ORP)

- An impedance converter is necessary, if the length of the cable between controller and electrode exceeds 3 metres.
- Connection: N cap.
- The plug connector suits the Grundfos electrode caps with cable socket N and most of the usual electrode caps.
- Installed between the electrode and the cable.
- Internal power supply by a lithium battery (can be replaced), CR-1/3N-P (or equivalent). Service life: at least 5 years (at 25 °C). The service life can be affected by external factors, such as fluctuating temperatures during operation and storage.

| Description | pH | ORP | Product number |
|--|----|-----|-------------------|
| Impedance converter for pH/redox potential (ORP) measurement • Permissible ambient temperature: -10 to +60 °C • Permissible storage temperature: -10 to +60 °C | • | • | 95704730 |

Dimensions

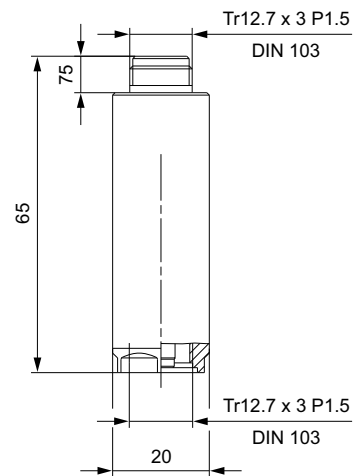


Fig. 13 Impedance converter

For more accessories, please see the separate data booklet "Measurement and control accessories".

TM04 1839 1108



Sizing

This section is based on different fields of application and installation examples and gives easy step-by-step instructions in how to size a product:

- Select the most suitable and efficient pump for your installation.
- Carry out advanced calculations based on energy, consumption, payback periods, load profiles, life cycle costs, etc.
- Analyse your selected pump via the built-in life cycle cost tool.
- Determine the flow velocity in wastewater applications, etc.

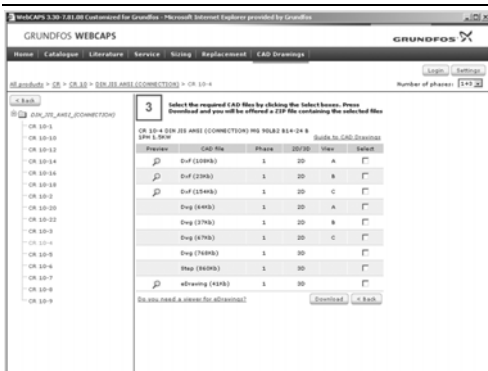


Replacement

In this section you find a guide to selecting and comparing replacement data of an installed pump in order to replace the pump with a more efficient grundfos pump.

The section contains replacement data of a wide range of pumps produced by other manufacturers than grundfos.

Based on an easy step-by-step guide, you can compare grundfos pumps with the one you have installed on your site. When you have specified the installed pump, the guide will suggest a number of grundfos pumps which can improve both comfort and efficiency.



CAD drawings

In this section, it is possible to download 2-dimensional (2D) and 3-dimensional (3D) CAD drawings of most grundfos pumps.

These formats are available in WebCAPS:

2-dimensional drawings:

- .dxf, wireframe drawings
- .dwg, wireframe drawings.

3-dimensional drawings:

- .dwg, wireframe drawings (without surfaces)
- .stp, solid drawings (with surfaces)
- .eprt, E-drawings.

WinCAPS



Fig. 14 WinCAPS DVD

WinCAPS is a **Windows-based Computer Aided Product Selection** program containing detailed information on more than 220,000 grundfos products in more than 30 languages.

The program contains the same features and functions as WebCAPS, but is an ideal solution if no internet connection is available.

WinCAPS is available on DVD and updated once a year.

GO CAPS

Mobile solution for professionals on the GO!



CAPS functionality on the mobile workplace.



Subject to alterations.

| |
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| 96812329 0313 |
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| ECM: 1109946 |
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