Conex® DIA-2Q

Instrument amplifier and controller

Installation and operating instructions

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GRUNDFOS

English (GB) Installation and operating instructions

Original installation and operating instructions

CONTENTS

Warning

Prior to installation, read these installation and operating instructions. Installation and operation must comply with local regulations and accepted codes of good practice.

Note

These complete installation and operating instructions are also available on www.Grundfos.com.

1. Symbols used in this document

Warning

If these safety instructions are not observed, it may result in personal injury.

Caution

If these safety instructions are not observed, it may result in malfunction or damage to the equipment.

Note

Notes or instructions that make the job easier and ensure safe operation.

2. A few words in advance

The **Conex® DIA-2Q** is a multipurpose device designed to carry out high-precision measurements and controls of the following:

- a value from parameter group 1:
  - chlorine, chlorine dioxide, ozone, hydrogen peroxide or peracetic acid
- a value from parameter group 2:
  - pH value, redox potential.

The integrated controller, the high-resolution graphics display and the multilingual plain-text user interface make complicated measuring and control tasks in water chemistry much easier.

Just a few button inputs lead you to your goal. The potentiostat helps save even more time, being automatically matched to the various input variables.

The safety standard of the dosing process is raised by the automatic open-circuit monitoring of the current outputs.

Properties of the **Conex® DIA-2Q** measuring amplifier and controller include the following:

- all control functions including PID and continuous-action controls
- proportional control
- setpoint control
- combined setpoint control with external disturbance variable feedforward
- manual or automatic temperature compensation
- logbook function: chronological recording of calibration values with date and time
- user coding function as a means of protection against access by unauthorised persons and for system administration
- error message function for indication of non-functioning sensors.

3. Instrument settings

Parameter 1			
Setup		**Controller**	**Alarm**
Parameter	**Controller**	**Proportional Xp** %	**Alarm** On:_ Off:_
Chlorine:_ Chlorine dioxide:_ Ozone:_ Peroxide:_ Peracetic acid:_	**Proport. contrl.** Current input Proport. variable Off:_ 0-20 mA:_ 4- 20 mA:_ Others:_ _____	**Reset time TN** (PI/PID control) sec.	**Alarm value 1** Switching point
Temp. meas. Yes:_ No:_	Interpulse ctrl.:_ Pulse freq. ctrl:_ Cont. controller:_	**Deriv. action Tv** (PID control) sec.	**Alarm value 1** Switching direction Upward violation:_ Downward viol.:_
Temp. comp. Yes:_ No:_	**Setpoint contrl.** **Combined contrl.** Off:_ Limit:_ Interpulse ctrl.:_ Pulse freq. ctrl:_ Cont. controller:_	**Int.pulse period** (interpulse ctrl.) sec.	**Alarm value 2** Switching point
pH compensation Yes:_ No:_	**Limit contact** Downward viol.:_ Upward violation:_	**Min. ON time** (interpulse ctrl.) sec.	**Alarm value 2** Switching direction Upward violation:_ Downward viol.:_
Measuring ranges mg/l (ppm)	**Ctrl. direction** Downward control:_ Upward control:_	**Max. frequency** (pulse freq. ctrl.) n/min	**Hysteresis**
Current output 1 mA	**Type of control** P:_ PI:_ PID:_	**Setpoint** (limit contact)	**Alarm delay** sec.
Measuring cell	**Current input** Disturbance variable Off:_ 0-20 mA:_ 4- 20 mA:_ Others:_ _____	**Constant load** %	**Dos. time monit.** On:_ Off:_
Measuring cell type		**Max. dosing flow** %	**Dos. time monit.** Max. dosing time min
Cleaning motor Monitoring on:_ Monitoring off:_		**Limit** (limit contact)	
Water sensor On:_ Off:_		**Hysteresis** (limit monitor)	

Parameter 2			
Setup		**Controller**	**Alarm**
Parameter	**Controller**	**Proportional Xp** %	**Alarm** On:_ Off:_
pH:_ Redox:_	**Proport. contrl.** Current input Proport. variable Off:_ 0-20 mA:_ 4- 20 mA:_ Others:_ _____	**Reset time TN** (PI/PID control) sec.	**Alarm value 1** Switching point
Temp. meas. Yes:_ No:_	Interpulse ctrl.:_ Pulse freq. ctrl:_ Cont. controller:_	**Deriv. action TV** (PID control) sec.	**Alarm value 1** Switching direction Upward violation:_ Downward viol.:_
Temp. comp. Yes:_ No:_	**Setpoint contrl.** **Combined contrl.** Off:_ Limit:_ Interpulse ctrl.:_ Pulse freq. ctrl:_ Cont. controller:_	**Int.pulse period** (interpulse ctrl) sec.	**Alarm value 2** Switching point
pH compensation Yes:_ No:_	**Limit contact** Downward viol.:_ Upward violation:_	**Min. ON time** (interpulse ctrl) sec.	**Alarm value 2** Switching direction Upward violation:_ Downward viol.:_
Measuring ranges mg/l (ppm)	**Ctrl. direction** Downward control:_ Upward control:_	**Max. frequency** (pulse freq. ctrl) n/min	**Hysteresis**
Current output 1 mA	**Type of control** P:_ PI:_ PID:_	**Setpoint** (limit contact)	**Alarm delay** sec.
	Current input Disturbance variable Off:_ 0-20 mA:_ 4- 20 mA:_ Others:_ _____	**Constant load** %	**Dos. time monit.** On:_ Off:_
		Max. dosing flow %	**Dos. time monit.** Max. dosing time min
		Limit (limit contact)	
		Hysteresis (limit contact)	

4. General information

These installation and operating instructions contain all information important for users of the **Conex® DIA-2Q:**

• technical data
• instructions on commissioning, use and maintenance
• safety information.

Should you require further information or should you encounter problems that are not handled in sufficient depth in this manual, please contact Grundfos. We shall be pleased to support you with our comprehensive know-how in the fields of measuring and control technology as well as water treatment.

We always welcome suggestions on how to optimise our installation and operating instructions to satisfy our customers.

5. Applications

The **Conex® DIA-2Q** instrument amplifier and controller is suitable for measuring chlorine (Cl_2), chlorine dioxide (ClO_2), ozone (O_3), hydrogen peroxide (H_2O_2), peracetic acid, pH or redox potential and for controlling these variables using appropriate actuators within the applications described in this manual.

⚠ Warning
Other applications are not approved and not permitted. Grundfos cannot be held liable for any damage resulting from incorrect use.

6. Safety

6.1 Obligations of the owner/operations manager

The owner/operations manager must ensure that persons working with the **Conex® DIA-2Q** instrument amplifier and controller fulfil these requirements:

• They are acquainted with the regulations concerning working safety and accident prevention.
• They have been trained in use of the device.
• They have read and understood the warning information and handling symbols.

The owner/operations manager is also responsible for ensuring that this manual is kept in the immediate vicinity of the device and is always available for the operating personnel.

6.2 Avoidance of danger

⚠ Warning
Installation and connection of the device and the associated supplementary components must only be carried out by authorised personnel!
The local safety regulations must be observed!

⚠ Warning
Switch off the power supply before connecting the power supply cable and relay contacts!
Do not dismantle the device!
Maintenance and repair must only be carried out by authorised personnel!

Caution
The mounting location must be selected so that the housing is not subjected to mechanical loading.
Check that all settings are correct before starting up the device!
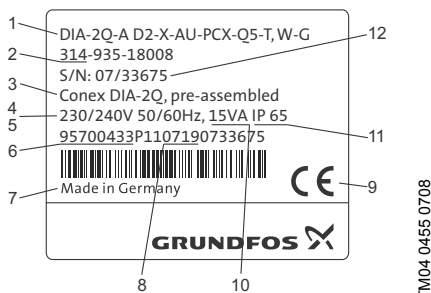
7. Identification

7.1 Nameplate

Fig. 1   Nameplate, Conex® DIA-2Q

Pos.	Description
1	Type designation
2	Model
3	Product name
4	Voltage [V]
5	Frequency [Hz]
6	Product number
7	Country of origin
8	Year and week of production
9	Marks of approval, CE mark, etc.
10	Power consumption [VA]
11	Enclosure class
12	Serial number

7.2 Type key, Conex® DIA-2Q controllers

Type key example: DIA-2Q, 1-D/HP/PA 2-P/R/F, Q-W-G

Example:		DIA	-2Q	1-D/HP/PA	2-P/R/F	Q	-W	-G
Measuring amplifier and controller								
DIA-2Q	Dosing Instrumentation Advanced with 2 inputs + flow measurement							
Input parameter 1								
D	Chlorine (Cl_2), chlorine dioxide (ClO_2) or ozone (O_3)							
HP	Hydrogen peroxide (H_2O_2)							
PA	Peracetic acid (PAA)							
Input parameter 2								
P	pH							
R	Redox (ORP)							
Variant								
Q	Flow compensation							
Mounting								
W	Wall-mounted							
P	Panel-mounted							
Voltage								
G	1 x 230 V, 50/60 Hz							
H	1 x 120 V, 50/60 Hz							
I	24 VDC							

7.3 Type key, Conex® DIA-2Q preassembled systems

Type key example: DIA-2Q-A, D2-X-AU-PCX-QS-T, W-G

Example:		DIA	-2Q	-A	D2	-X	-AU	-PCX	-QS	-T	W	-G
Units for measurement and control												
DIA-2Q	Dosing Instrumentation Advanced, with 2 inputs, with flow measurement											
Assembly												
A	Preassembled											
Cell type												
D1	Pressure-proof, with cleaning motor											
D11	Pressure-proof, with cleaning motor											
D2	Pressure-proof, with hydro-mechanical cleaning											
D12	Pressure-proof, with hydro-mechanical cleaning											
D3	Pressureless, with hydro-mechanical cleaning											
D13	Pressureless, with hydro-mechanical cleaning											
D4	For total chlorine measurement											
D5	For free chlorine measurement with buffer dosing											
P/R	pH or redox (ORP) only											
P	With pressure retention valve											
X	Without pressure retention valve											

Example:					DIA	-2Q	-A	D2	-X	-AU	-PCX	-QS	-T	W	-G

Disinfection electrodes

AU	Gold
PT	Platinum
X	No disinfection measuring

Other electrodes

PCB	pH, ceramic diaphragm, incl. buffer solution
PTB	pH, PTFE diaphragm, incl. buffer solution
PKB	pH, KCl filling, incl. buffer solution
PGB	pH, gel filling incl. buffer solution
PCX	pH, ceramic diaphragm, excl. buffer solution
PTX	pH, PTFE diaphragm, excl. buffer solution
PKX	pH, KCL filling, excl. buffer solution
PGX	pH, gel filling, excl. buffer solution
RCB	Redox (ORP), ceramic diaphragm, incl. buffer solution
RTB	Redox (ORP), PTFE diaphragm, incl. buffer solution
RCX	Redox (ORP), ceramic diaphragm, excl. buffer solution
RTX	Redox (ORP), PTFE diaphragm, excl. buffer solution
PA	Peracetic acid
HP	Hydrogen peroxide
X	No electrode

Flow sensor

QS	Flow sensor integrated
X	No flow sensor

Temperature sensor

T	With Pt100
X	No temperature sensor

Mounting of controller

W	Wall-mounted
P	Panel-mounted

Voltage

G	1 x 230 V, 50/60 Hz
H	1 x 120 V, 50/60 Hz
I	24 VDC

8. Technical data

8.1 Design/enclosure class

Wall-mounted enclosure (distance from sensors up to three metres)	IP65
Control panel enclosure including separate potentiostat	IP54 (front)/ IP65 (sensor interface) (distance from sensor interface up to 100 metres, distance from sensor interface to sensors up to three metres)

8.2 General data

Input power	Approximately 15 VA
Permissible ambient temperature	0 °C to +45 °C
Permissible storage temperature	-20 °C to +65 °C
Maximum relative humidity	90 % (non-condensing)
Weight	1.5 kg
Enclosure	Plastic (control panel enclosure: noryl, wall-mounted enclosure: ABS)
Power supply versions	• 230/240 V (50/60 Hz) (standard model) • 115/120 V (50/60 Hz) • 24 VDC

8.3 Electronic data and functions

8.3.1 Electronics

Electronics	16-bit microprocessor
Display	High-resolution graphics LCD with background light
Potential-free relay outputs	1 alarm relay, 2 controller relays (250 V/6 A, maximum 550 VA)
Signal inputs	Controller stop; proportional value, disturbance variable 0/4 to 20 mA; water sensor
Signal outputs	4 analog outputs 0/4 to 20 mA, freely adjustable, maximum load 500 Ω
Freely adjustable analog outputs for measured values	• Parameter group 1: chlorine, chlorine dioxide, ozone, peroxide, peracetic acid • Parameter group 2: pH, redox • For temperature or continuous control (0/4 to 20 mA) of the parameters from group 2 (pH, redox) • For continuous control (0/4 to 20 mA) of the parameters from group 1 (chlorine, chlorine dioxide, ozone, peroxide, peracetic acid)

8.3.2 Functions of the instrument amplifier

Display mode	Measured-value display: measured value with its unit, temperature display: in °C or °F
Temperature compensation	Manual or automatic with Pt100
Calibration	Manual calibration, or with automatic recognition of buffer solution

8.3.3 Proportional controller functions

Proportional value input	0-20 mA/4-20 mA or other value (freely adjustable between 0 mA and 20 mA)
Controller output	Proportional or inversely proportional
Controller output	Interpulse output, pulse frequency output, continuous controller output
Interpulse period	1 to 100 seconds (only with interpulse controller)
Minimum ON time T_{min}	0.1 to 10.0 seconds (only with interpulse controller)
Maximum frequency	1-180 pulses per minute (only with pulse frequency controller)
Basic load	0 to 100 % of dosing rate
Maximum dosing rate	0 to 100 % of dosing rate (value for maximum dosing rate < basic load is possible!)
Dosing factor D.F.	0.1 to 10 (weighting of proportional value)
Controller stop	Adjustable to NC or NO

8.3.4 Setpoint controller functions

Controller output	Limit monitor, interpulse controller (P, PI, PID), pulse frequency controller (P, PI, PID), continuous controller (P, PI, PID)
Limit	0 to 100 % of measuring range, adjustable in the unit of the measured value (only with limit monitor)
Hysteresis	0 to 50 % of full-scale value, adjustable in the unit of the measured value (only with limit monitor)
Setpoint input	0 to 100 % of measuring range, adjustable in the unit of the measured value
Proportional band X_p	0.1 to 3000.0 %
Reset time T_n	1 to 3000 seconds, resolution 1 second (only with PI, PID controllers)
Derivative action time T_v	0 to 1000 seconds, resolution 1 second (only with PID controller)
Interpulse period	1 to 100 seconds (only with interpulse controller)
Minimum ON time T_{min}	0.1 to 10.0 seconds (only with interpulse controller)
Maximum frequency	1 to 180 pulses per minute (only with pulse frequency controller)
Basic load	0 to 50 % of dosing rate
Maximum dosing rate	Value (basic load + 1) to 100 % of dosing rate
Control direction	Adjustable to upward or downward control
Controller stop	Adjustable to NC or NO

8.3.5 Combined controller functions

|	
Minimum ON time T_{min}	0.1 to 10.0 seconds (only with interpulse controller)
Maximum frequency	1 to 180 pulses per minute (only with pulse frequency controller)
Basic load	0 to 50 %
Maximum dosing rate	Value (basic load + 1) to 100 % of dosing rate
Control direction	Adjustable to upward or downward control
Controller stop	Adjustable to NC or NO
Disturbance variable input	0 to 20 mA/4 to 20 mA or other (freely adjustable between 0 and 20 mA)
Dosing factor D.F.	0.1 to 10.0 (weighting of disturbance variable)

8.4 Measuring ranges

Cl$_2$	ClO$_2$	O$_3$	H$_2$O$_2$	Peracetic acid	pH	Redox (ORP)	Pt100
mg/l	mg/l	mg/l	mg/l	mg/l	pH	mV	°C
0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0-100	0-100	0.00 - 14.00	- 1500 to + 1500	-5 to +120
0.00 - 1.00	0.00 - 1.00	0.00 - 1.00	0-500	0-500	2.00 - 12.00	0-1000	
0.00 - 2.00	0.00 - 2.00	0.00 - 2.00	0-1000	0-1000	5.00 - 9.00		
0.00 - 5.00	0.00 - 5.00	0.00 - 5.00	0-2000	0-2000			
0.00 - 10.00	0.00 - 10.0						
0.00-20.00							

Note	The measuring ranges are also freely adjustable (within the above-mentioned range limits).

8.5 Dimensions
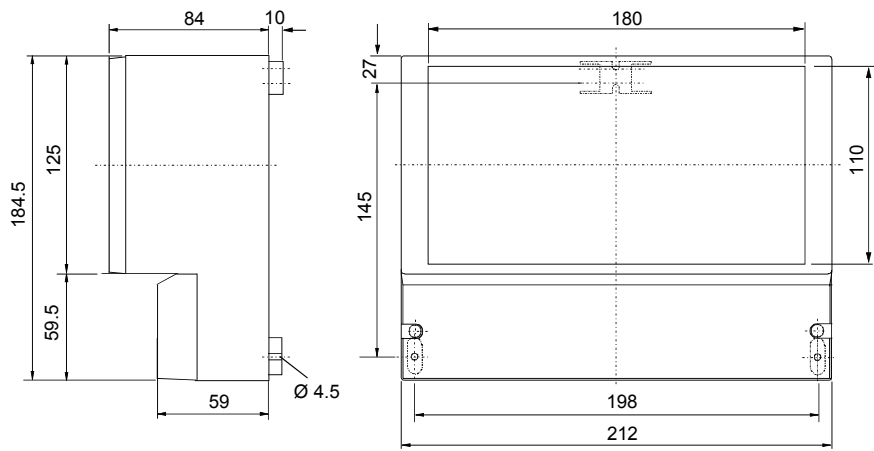
Fig. 2   Wall-mounted enclosure Conex® DIA-2Q
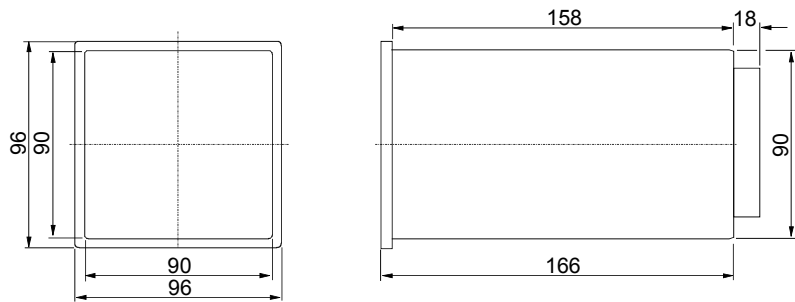
TM03 6687 4506

Fig. 3   Control panel enclosure Conex® DIA-2Q

TM03 6688 4506

9. Installation

9.1 Transport and storage

- Transport the device carefully, do not drop!
- Store at dry and cool location.

9.2 Unpacking

- Check the device for damage.
  Install as soon as possible after unpacking.
- Do not install or connect damaged devices!

Note	Retain the packing material or dispose of it according to local regulations.

9.3 Installation requirements

- Dry room
- Room temperature: 0 °C to 45 °C
- Vibration-free location.

Caution	If you do not observe the installation requirements, the device may be damaged! The measurements may not be correct!

9.4 Installation in control panel
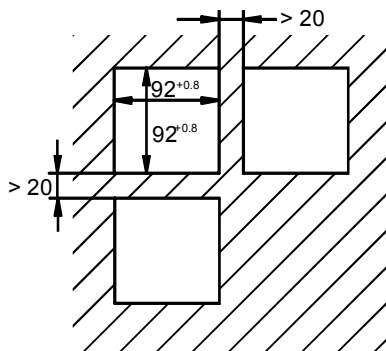
Fig. 4 Control panel enclosure Conex® DIA-2Q

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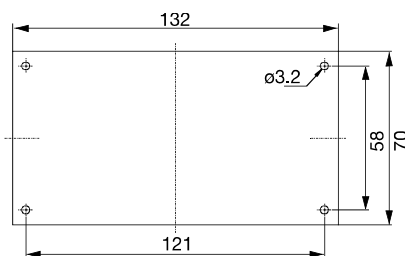
Fig. 5 Sensor interface

TM03 6690 4506

1. Make an opening of 92 + 0.8 mm x 92 + 0.8 mm in the control panel.
2. Slip on the supplied gasket.
3. Insert the **Conex® DIA-2Q** into the opening from the front.

Caution	Do not damage the gasket! The gasket must be fitted exactly!

1. Hook the clamps into the tightening cones on the sides at the top and bottom.
2. Secure the device from the rear using a screwdriver.
3. Install a separate sensor interface near the sensors (maximum distance of three metres).

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9.5 Installation of wall-mounted enclosure

Warning

Switch off the power supply before installing!

Enclosure class IP65 is only guaranteed if the terminal cover is correctly sealed, if the front panel of the terminal enclosure is closed and the appropriate cable glands or dummy caps fitted.

Caution

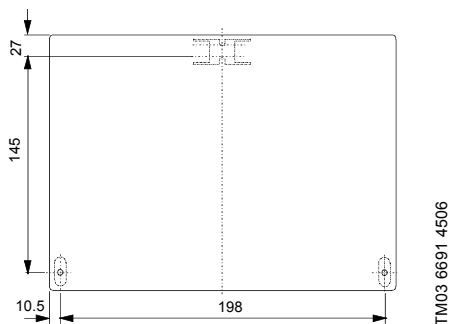Do not damage the terminal cover gasket! The terminal cover gasket must fit exactly!

Fig. 6 Wall-mounted enclosure Conex® DIA-2Q

1. Drill three holes (∅8) as shown in the diagram, and insert the supplied dowels.
2. Screw the screw (A) into the top centre dowel until it projects by approximately 1 cm. See fig. 7.
3. Loosen the fastening screws of the front panel, and remove the front panel.
4. Hang the instrument onto the screw (A).
5. Tighten the instrument with the two screws (B).
6. Mount the front panel of the enclosure.
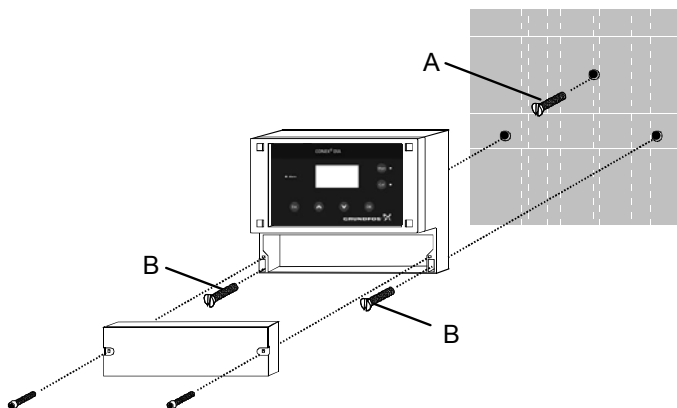
Fig. 7 Mounting drawing

10. Commissioning/electrical connections

Warning

Switch off the power supply before installing!

Enclosure class IP65 is only guaranteed with the front panel of the terminals enclosure closed and with appropriate cable glands or dummy caps.

Warning

Switch off the power supply before connecting the power supply cable and the relay contacts! For safety reasons, the protective conductor must be connected correctly!

Observe the local safety regulations!

Protect the cable connections and plugs against corrosion and humidity.

Before connecting the power supply cable, check that the supply voltage specified on the nameplate corresponds to the local conditions!

An incorrect supply voltage may destroy the device!

`Caution`

To guarantee electromagnetic compatibility (EMC), the input and current output cables must be screened.

Connect the screening to the screen ground on one side.

Refer to the wiring diagram! Route the input, current output and power supply cables in separate cable channels.

Enclosure class IP65 is only guaranteed if the terminal cover is correctly sealed! Do not damage the gasket on the terminal cover!

`Caution`

The gasket on the terminal cover must be positioned precisely!

Do not damage the gasket!

`Note` Unused terminals must remain open.

1. Remove the terminal cover on the front of the device.
2. Use the appropriate cable feedthroughs and tighten the screws carefully.
3. Connect the cables used to the terminals according to the **Conex® DIA-2Q** terminal assignment.
4. Close the terminal cover again with correctly positioned gasket.

10.1 Terminals
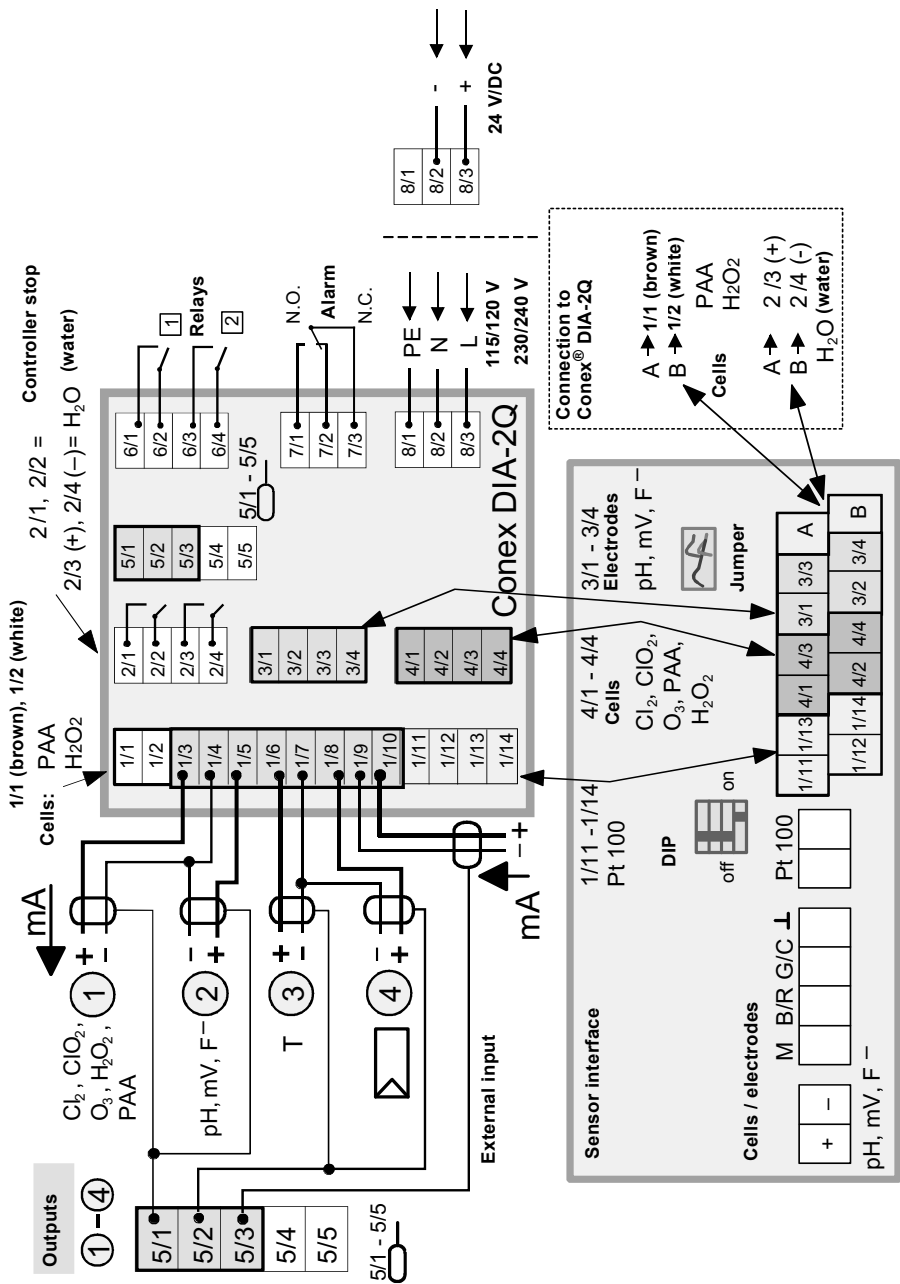
10.1.1 Wall-mounted enclosure Conex® DIA-2Q

Fig. 8 Terminals of wall-mounted enclosure

TM03 6693 4506

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10.1.2 Control panel enclosure Conex® DIA-2Q
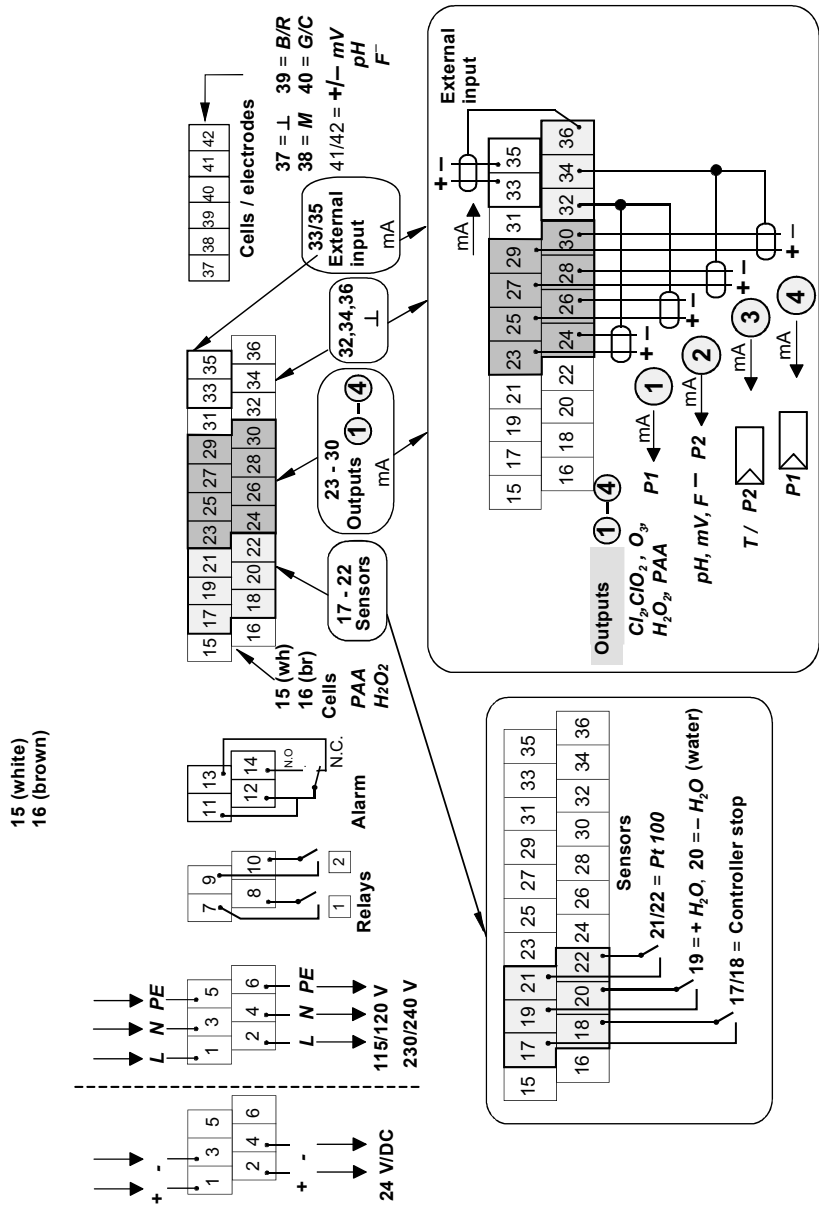
Fig. 9 Terminals of control panel enclosure

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Legend of terminals

Pos.	Description
Relays	Relay 1 + 2
Alarm	Alarm relay – **N.O.**: normally open – **N.C.**: normally closed
Pt100	Temperature sensor
H_2O	Water sensor
Stop	Controller stop (NO or NC selectable)
Outputs	**Current outputs [mA]**
1	Cl_2 (chlorine), ClO_2 (chlorine dioxide), O_3 (ozone), H_2O_2 (hydrogen peroxide) or PAA (peracetic acid)
2	pH, mV (redox)
3	T/P2: temperature/continuous controller parameter 2
4	P1: output of continuous controller parameter 1
Inputs	**External inputs [mA]**
Electrodes	**Measuring cells, electrodes and single-rod measuring chains**
M	Measuring electrode
B/R	Reference electrode
G/C	Counter electrode
Earth	
mV	Redox electrode
screen	

Control panel enclosure Conex® DIA-2Q

- **Conex® DIA-2Q**: for installation in the control panel.
- Sensor interface: for installation near the sensors.

Use the following cable to connect the sensor interface to the **Conex® DIA-2Q**: shielded cable, 4 x 0.5 mm².

10.2 Power supply connection

1. Control panel enclosure: Plug the plug strip into the corresponding terminal strip at the rear side of the device. Ensure correct orientation.
2. Connect the protective earth conductor (PE) to terminal 5 (wall-mounted enclosure) or terminal 8/1 (control panel enclosure).
3. Connect the neutral conductor (N) (or the – conductor with 24 V version) to terminal 3 (wall-mounted enclosure) or terminal 8/2 (control panel enclosure).
4. Connect phase (L1) (or the + conductor with 24 V version) to terminal 1 (wall-mounted enclosure) or 8/3 (control panel enclosure).

Switch the device on and off by switching the power supply on and off accordingly. The device itself is not equipped with a separate on/off switch.

10.3 Relay outputs

Note	The connection of the relay outputs depends on the application and the final control elements used. Therefore the connections described below should only be considered as guidelines.

With inductive loads (also relays and contactors), interference suppression is necessary. If this is not possible, protect the relay contacts using a suppressor circuit as described below.

- With AC voltage:

Current up to	Capacitor C	Resistor R
60 mA	10 nF, 275 V	390 Ω, 2 W
70 mA	47 nF, 275 V	22 Ω, 2 W
150 mA	100 nF, 275 V	47 Ω, 2 W
1.0 A	220 nF, 275 V	47 Ω, 2 W

- With DC voltage: Connect the free-wheeling diode in parallel to relay or contactor.

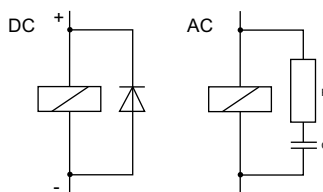| Caution	Provide the relay outputs with a corresponding backup fuse!

Fig. 10 Suppressor circuit, DC/AC

TM03 7209 2813

10.4 Current output

Caution	Make sure that the polarity of the current output is correct!

Maximum load: 500 Ω.

The current output can be set to one of the two standard ranges "0-20 mA" or "4-20 mA", or it can be freely adjusted.

• Connect the screen to earth (PE) at one end.

Output 1: chlorine, chlorine dioxide, ozone, hydrogen peroxide or peracetic acid (parameter 1)

This current output shows the displayed measured value as an analog current signal.

Use of current signal for measured values:

• as input signal for another indicator
• as input signal for an external controller.

1. Connect the + conductor to terminal 23 (wall-mounted enclosure) or terminal 1/3 (control panel enclosure).
2. Connect the - conductor to terminal 24 (wall-mounted enclosure) or terminal 1/4 (control panel enclosure).

Output 2: pH, redox (parameter 2)

This current output shows the displayed measured value as an analog current signal.

Use of current signal for measured values:

• as input signal for another indicator
• as input signal for an external controller.

1. Connect the + conductor to terminal 25 (wall-mounted enclosure) or terminal 1/5 (control panel enclosure).
2. Connect the - conductor to terminal 26 (wall-mounted enclosure) or terminal 1/4 (control panel enclosure).

Output 3: continuous controller parameter 2 (or temperature)

Shows the calculated actuating variable signal of the controller as an analog current signal.

Use of actuating variable signal:

• as input signal for a final control element with current input or temperature output:

Shows the temperature measured by the optional temperature sensor as an analog current signal.

Use of temperature current signal:

• as input signal for another indicator.

1. Connect the + conductor to terminal 27 (wall-mounted enclosure) or terminal 1/6 (control panel enclosure).
2. Connect the - conductor to terminal 28 (wall-mounted enclosure) to terminal 1/7 (control panel enclosure).

Output 4: continuous control parameter 1

This current output shows the calculated actuating variable signal as an analog current signal.

Use of actuating variable signal:

• as input signal for a continuous final control element.

1. Connect the + conductor to terminal 29 (wall-mounted enclosure) or terminal 1/8 (control panel enclosure).
2. Connect the - conductor to terminal 30 (wall-mounted enclosure) or terminal 1/7 (control panel enclosure).

10.5 Connections of controller stop, sample-water sensor and temperature sensor

Connecting the controller stop

1. Connect the + conductor to terminal 17 (wall-mounted enclosure) or terminal 2/1 (control panel enclosure).
2. Connect the - conductor to terminal 18 (wall-mounted enclosure) or terminal 2/2 (control panel enclosure).

Connecting the sample-water sensor

Cable colours and marking: See connections of measuring-cell types AQC-D1/-D11/AQC-D2/-D12/AQC-D3/-D13.

1. Connect the + conductor to terminal 19 (wall-mounted enclosure) or terminal 2/3 (control panel enclosure).
2. Connect the - conductor to terminal 20 (wall-mounted enclosure) or terminal 2/4 (control panel enclosure).

Note	When using measuring cell AQC-D2/-D12, the water sensor must always be connected and activated!

Connecting the Pt100 temperature sensor

1. Connect the + conductor to terminal 21 (wall-mounted enclosure) or terminal 1/11 (control panel enclosure).
2. Connect the - conductor to terminal 22 (wall-mounted enclosure) or terminal 1/12 (control panel enclosure).

10.6 Connection of measuring cells

Jumper setting
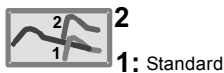
- All cell types: position 1 (standard).

2

1: Standard

Fig. 11 Jumper setting

TM03 6696 4506

10.6.1 Connection of wall-mounted enclosure Conex® DIA-2Q
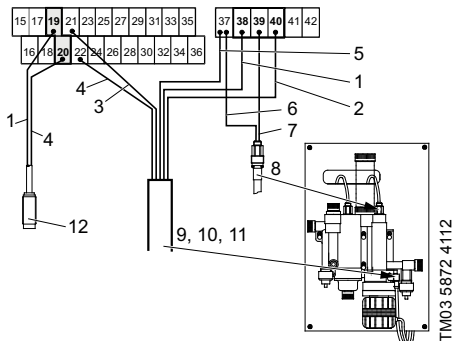
Fig. 12 Connection to measuring cells AQC-D1/AQC-D2/AQC-D3

TM03 5872 4112

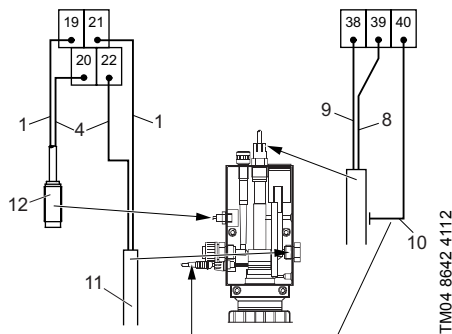**Fig. 13** Connection to measuring cell AQC-D11

TM04 8642 4112
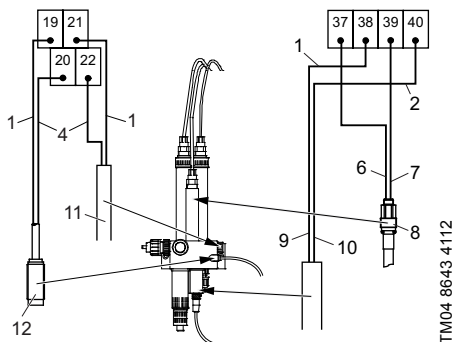
Fig. 14 Connection to measuring cell AQC-D12

TM04 8643 4112
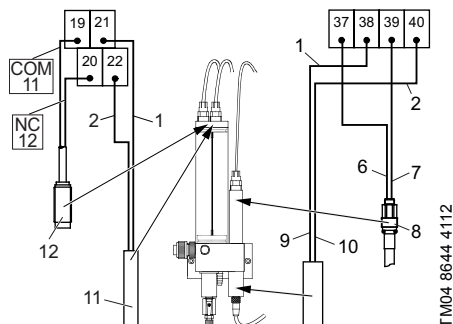
Fig. 15 Connection to measuring cell AQC-D13
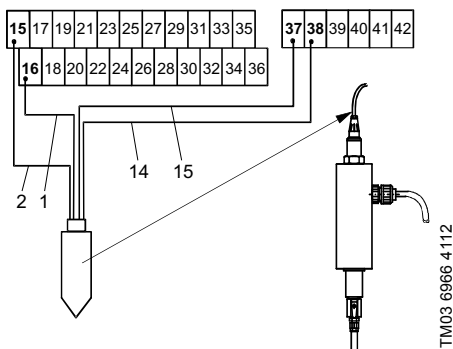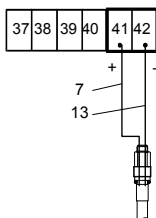
TM04 8644 4112

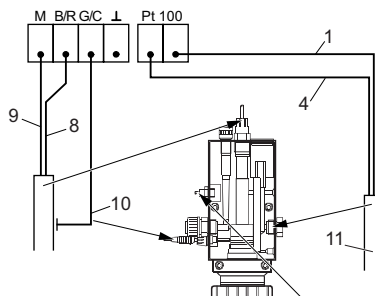**Fig. 16** Connection to measuring cells PAA (peracetic acid)/HP (peroxide)

TM03 6966 4112

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Fig. 17 Connection to single-rod measuring chains for pH, redox

Pos.	Description
1	Brown
2	White
3	Black
4	Blue
5	Screen
6	Outer conductor (screen)
7	Inner conductor
8	Reference electrode
9	Measuring electrode
10	Counter electrode
11	Pt100 temperature sensor
12	Water sensor
13	Outer conductor
14	Yellow
15	Green

10.6.2 Connection of control panel enclosure Conex® DIA-2Q
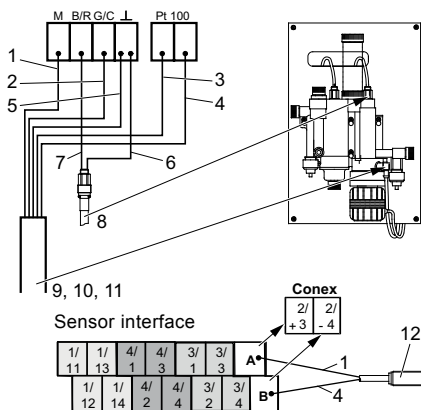
Fig. 18 Connection to measuring cells AQC-D1/AQC-D2/AQC-D3

Fig. 19 Connection to measuring cell AQC-D11

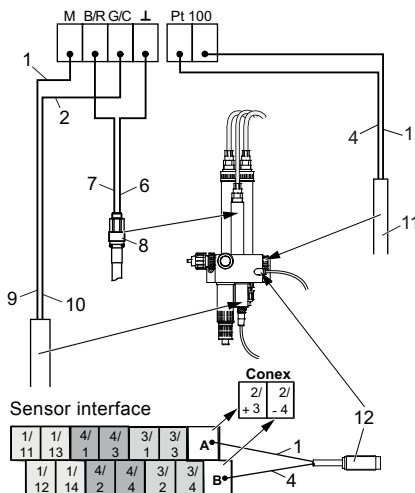**Fig. 20** Connection to measuring cell AQC-D12

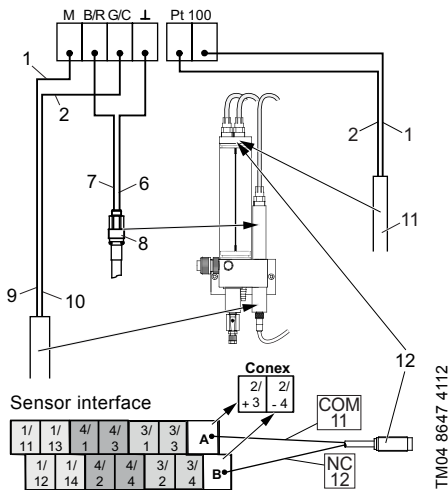**Fig. 21** Connection to measuring cell AQC-D13

Pos.	Description
1	Brown
2	White
3	Black
4	Blue
5	Screen
6	Outer conductor (screen)
7	Inner conductor
8	Reference electrode
9	Measuring electrode
10	Counter electrode
11	Pt100 temperature sensor
12	Water sensor
13	Outer conductor
14	Yellow
15	Green

Peculiarities for the connection at the control panel enclosure of Conex® DIA-2Q

1. First connect the measuring cells, the single-rod measuring chains and the water sensor (if present) to the separate sensor interface.

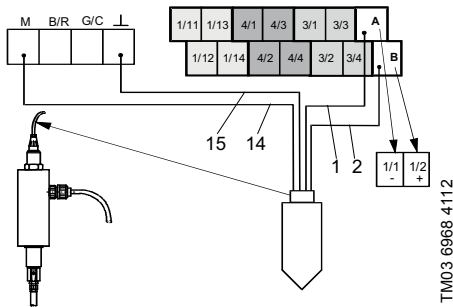2. Secondly, connect the sensor interface to the **Conex® DIA-2Q** control panel enclosure.

Fig. 22 Connection to measuring cells PAA (peracetic acid)/HP (peroxide)

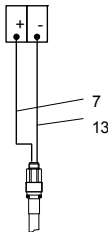**Fig. 23** Connection to single-rod measuring chains for pH, redox

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**Connecting the sensor interface to the Conex®
DIA-2Q (see back side of device)**

- **Measuring cells
  AQC-D1/-D11/AQC-D2/-D12/AQC-D3/-D13, PAA
  (peracetic acid)/HP (peroxide)**
  Connect terminals 4/1 to 4/14 of the sensor
  interface to the corresponding terminals of the
  Conex® DIA-2Q.

- **Measuring cells HP (peroxide)/ PAA (peracetic
  acid)**
  In addition, connect terminal A to terminal 1/1
  and terminal B to terminal 1/2 of the **Conex®
  DIA-2Q**.

- **Single-rod measuring chains (pH, redox)**
  Connect terminals 3/1 to 3/4 of the sensor
  interface to the corresponding terminals of the
  Conex® DIA-2Q.

- **Sample-water deficiency sensor**
  Connect terminal A to terminal 2/3 and terminal B
  to terminal 2/4 of the **Conex® DIA-2Q**.

Note	When using measuring cell AQC-D2/-D12, the water sensor must always be connected and activated!

DIP switch

- If necessary, set the DIP switch for the desired
  measured value to "On" (move the switch to the
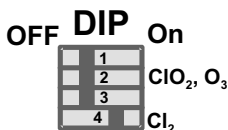 right, top switch 1 is not used).

OFF DIP On

1
2 ClO_2, O_3
3
4 Cl_2

TM03 6699 4506

Fig. 24   DIP switch

11. Operation

11.1 Control and display elements
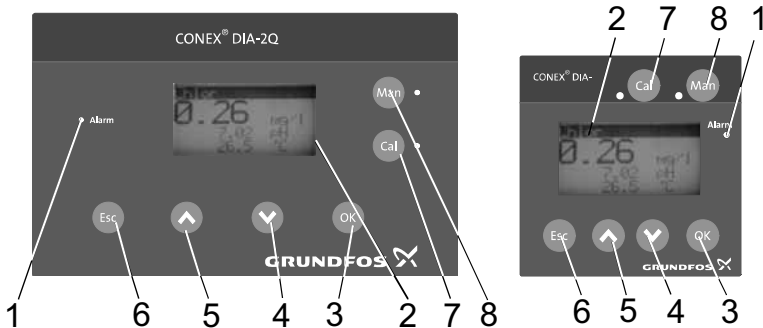
Fig. 25 Wall-mounted enclosure and control panel enclosure

TM03 6970 4506

Pos.	Description
Control elements	
1	Red alarm LED • Flashes in case of faults or incorrect entries.
2	Display
Operating buttons	
3	[OK] button • Enters the selected menu. • Confirms the selected line or value.
4	[Down] button • Moves one line downward (the selected line is displayed inversely). • Decreases values.
5	[Up] button • Moves one line upward (the selected line is displayed inversely). • Increases values.
6	[Esc] button • Returns to the previous menu. – The data which were entered last are not changed.
Function buttons with yellow LED	
7	[Cal] button • Switches between calibration mode and measuring mode. – In calibration mode, the corresponding LED illuminates.
8	[Man] button • Switches between automatic and manual modes. – In manual mode, the corresponding LED illuminates.

11.2 Display elements during initial commissioning

When connected to the power supply on the device's initial commissioning and following the start-up indication, the display shows the "Sprache/language" menu.

Language/Langue...
Deutsch
English
Français
Nederlands

• The word "language" in the header is displayed in all available languages successively at intervals of approximately one second.

Start the **Conex® DIA-2Q** by selecting the desired operating language:

1. Select the desired language using the [Up] and [Down] buttons.
   – The selected language is displayed inversely (white letters on black background).
2. Press [OK] to confirm.

Note

The selected language is stored and will remain the operating language when the device is rebooted. If necessary, the operating language can be changed in the "language" submenu in the "setup" menu.

See section *11.5 Setup*.

The translations for the words "**setup**" and "**language**" into the currently available languages are:

Deutsch		
Hauptmenü	Grundeinstellung	Sprache
English		
main menu	setup	language
Français		
Menu principal	Paramétrage	Langue
Nederlands		
hoofdmenu	basisinstelling	taal
Español		
Menu principal	Ajuste básico	Idioma
Italiano		
Menu principale	programm. fond.	lingua
Português		
Menu principal	Posição inicial	Língua
Русский		
главное меню	станд. настройка	язык
Polski		
manu główne	ustawienia	język

chlorine

0.43 mg/l
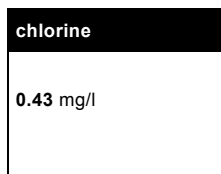
- After selecting and confirming the operating language by pressing [OK] during initial commissioning, the display shows "chlorine" as the value to be measured.
  – On subsequent start-ups, the display will show the measured value selected the previous time.

chlorine

0.43 mg/l

5.20 pH   c
22 °C   c

TM03 6704 4506
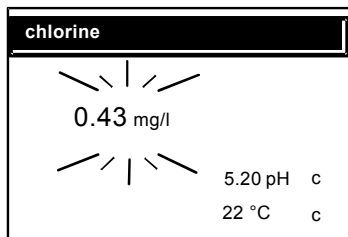
- On upward or downward violation of the selected measuring range, the display will show the upper or lower limit and flash.
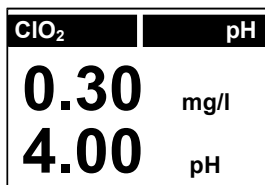
See sections *8.4 Measuring ranges* and *11.5.4 Setting the measuring ranges for chlorine, chlorine dioxide, ozone, peroxide, peracetic acid, pH, redox*.

11.2.1 Display modes

Switching between display modes 1 and 2:

1. Use the [Up] and [Down] buttons to switch between the two display modes:

Display mode 1 with two parameters

ClO_2 pH

0.30 mg/l
4.00 pH

TM03 6971 4506

The large display shows the measured values for the two parameters (for example ClO_2 and pH). The inverted font in the header displays the two parameters left-justified and right-justified.

The measured value for the left-justified parameter 1 is displayed in the first line, and the measured value for the right-justified parameter 2 is displayed in the second line underneath the header. The measured value for a possibly active temperature measurement is not output in this display mode.

Display mode 2 with two parameters

ClO_2 pH

0.30 mg/l
4.00   pH   c
100.0   °C   c

TM03 6972 4506
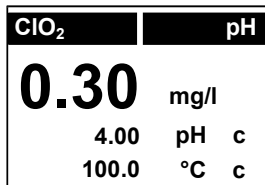
The large display shows the measured values for parameter 1, and the small display shows the measured values for parameter 2 and the possibly active temperature measurement. "c" is displayed if the compensation functions are active.

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Display with one parameter

ClO$_2$

0.30 mg/l

100.0 °C c

TM03 6973 4506

The large display shows the measured values, and the selected parameter is displayed in the header. The measured value for a possibly active temperature measurement is output in the second line. "c" is displayed if the compensation functions are active.

Alarm signals

A parameter-based alarm refers to the flashing parameter in the header. Parameter-independent alarms are displayed in the bottom line, but the display does not flash for this alarm.

If several alarms are present, they can be scrolled using the [Up] and [Down] buttons. They are displayed in chronological order. The selected alarm signal is displayed with inverted font. Subsequently, the display is switched to the last display mode set.

Display mode with active alarms and two parameters

ClO$_2$ | pH

0.30 4.00

alarm line 1
alarm line 2

TM03 6974 4506

The parameters are displayed left-justified and right-justified in the header, and the measured values of the parameters are displayed directly underneath. The measured value for a possibly active temperature measurement and the display "c", if the compensation functions are active, are suppressed.

Display mode with active alarms and one parameter

ClO$_2$

0.30 mg/l
alarm line 1
alarm line 2

TM03 6975 4506

The large display shows the measured values, and the selected parameter is displayed in the header. The measured value for a possibly active temperature measurement and the display "c", if the compensation functions are active, are suppressed.

11.3 Software overview

Note

Provided that the code numbers for access right have been set, some menus (and submenus) as well as the functions Cal and Man are protected against unauthorised access. The protected menus are marked with "C" (calibration rights) or "F" (full rights).

Main menus

- Controller 1/2, see section *Controller 1/2*.
- Alarm 1/2, see section *Alarm 1/2*.
- Service, see section *Service*.
- Setup, see section *Setup*.

Function buttons

- Cal, see section *Calibration function*.
- Man, see section *Manual operation*.

Controller 1/2

"F" (full rights)

Setting the parameters

- Relay 1/2
  – setpoint
  – controller parameters.
- Continuous controller
  – setpoint
  – controller parameters.

Alarm 1/2

"F" (full rights)

- Alarm settings
  – alarm 1/2 values (switching points)
  – effective direction
  – hysteresis
  – alarm delay.
- Dosing time monitoring
  – maximum dosing time (at constant dosing flow level of 100 %).

Service

- Calibration logbook 1/2
  – the last 10 calibrations.
- Calling up the controller 1/2 settings
- Test of functioning of current outputs
- Test of functioning of relays
- Test of functioning of display.

Setup

"F" (full rights)

- Selecting language
- Parameter 1/2: selecting measured values
- Selecting measuring cell
- Selecting measuring range
- Configuration of controller 1/2
- Switching on/off water sensor
- Time setting
- Code function
- Display contrast
- Calling up factory settings
- Current output: assignment of current outputs to measuring ranges
- Calling up program version.

Calibration function

"C" (calibration rights)

- Calibration of selected parameters
  – chlorine, chlorine dioxide, ozone, peroxide, peracetic acid, pH.

Manual operation

"C" (calibration rights)

- Running the configured controllers manually.

11.4 Main menu

1. Switch to "main menu" by pressing [OK] or, if necessary, by pressing [Esc] several times.

Options in "main menu"

main menu
controller
alarm
service
setup

- **"controller"**
  In this submenu, a controller can be parameterised. This option will only be displayed if a type of controller has been selected in the "setup" menu.
- "**alarm**"
  In this submenu, the measured value is compared with the permitted value, and an alarm is triggered, if necessary.
- "**service**"
  Diagnosis submenu. The measured values and the last 10 alterations of calibration data can be viewed. In this mode, values cannot be altered. If measuring cell AQC-D2/-D12 is selected, the data of the water sensor can be viewed.
- "**setup**"
  In this submenu, the settings for language, parameters, measuring ranges, controllers, etc. can be adjusted.

Selecting the functions "calibration" and "manual operation"

See the buttons [Cal] and [Man] to the right of the display.

- **Calibration:** Press [Cal] to switch to the calibration menu (the yellow LED illuminates).
- **Manual operation:** Press [Man] to switch to manual operation (the yellow LED illuminates).

Note

Switching to manual operation is only possible if a controller type has been selected in the "setup" menu. The functions "Cal" and "Man" can only be accessed by persons with calibration rights or full rights.

11.5 Setup

All standard settings of the device can be defined in the "setup" menu. During initial commissioning, basic functions are configured which after that should only be altered rarely or even not at all.

The "setup" menu can only be accessed by persons having full rights.

See section *11.5.8 Code function*.

Enter the code number.

11.5.1 Selection of measured values for chlorine, chlorine dioxide, ozone, peroxide, peracetic acid, pH, redox

TM03 6733 4506
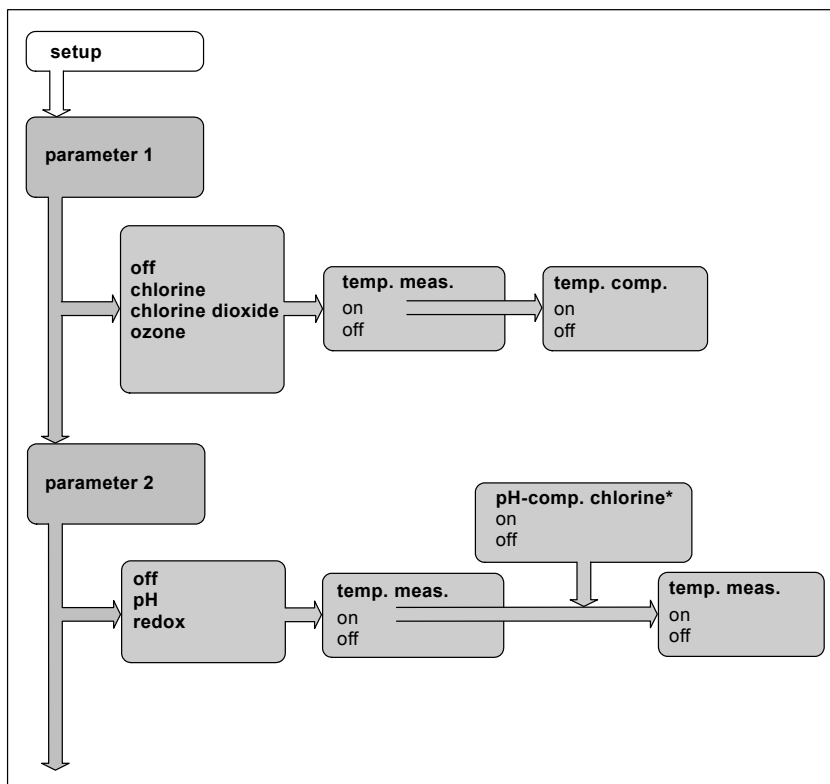
Fig. 26   Selection of measured value in menus "parameter 1" and "parameter 2"

* pH-comp. chlorine is only available if chlorine and pH have been selected as parameters.

1. Select the line "parameter 1"/"parameter 2" using the [Up] and [Down] buttons, and press [OK] to switch to the corresponding menu.
2. Use the [Up] and [Down] buttons to select the measured variable (parameter). Press [OK] to confirm.
3. Use the [Up] and [Down] buttons to select further settings. Press [OK] to confirm.

11.5.2 pH and temperature compensation

pH compensation with chlorine measurement

The dissociation of hypochlorous acid (HOCl) into the hypochlorit-anion (OCl⁻) leads to a loss of slope (loss of sensitivity) of the sensor for chlorine measuring.

Using a mathematical compensation function, this loss of sensitivity can be eliminated.

Temperature compensation

Using a compensation function, the influence of temperature on the measurement can be eliminated mathematically.

Control field for pH value, pH compensation, temperature and temperature compensation in the display of measured value

TM03 6703 4506
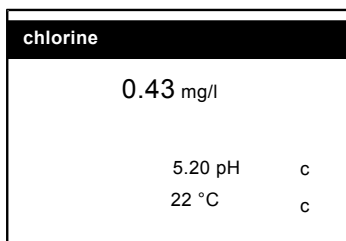
Fig. 27 Chlorine measurement with pH and temperature compensation

• Press [Esc] once or twice to change to the display with the measured value.

See sections *11.2 Display elements during initial commissioning* and *11.6.3 Controller control fields on the display*.

In addition to the current measured value, the current pH value and the temperature of the sample water are indicated as well.

With activated pH compensation or temperature compensation, the letter "c" for "compensation" is displayed at the end of the line.

With deactivated temperature measurement, the water temperature for compensation should be entered manually after calibration. See section *11.9.2 Calibrating the pH value*.

11.5.3 Selection of measuring cell

Note	The "measuring cell" submenu is shown only if the measured values chlorine, chlorine dioxide or ozone were selected during the parameterisation.

Names of the measuring cells contained in the software

• AQC-D1/-D11
• AQC-D2/-D12
• AQC-D3/-D13

The measuring cell that corresponds to the selected measured value can be selected:

• AQC-D1/-D11/AQC-D2/-D12/AQC-D3/-D13 with chlorine, chlorine dioxide or ozone

The measuring cell PAA/HP is selected automatically if "peracetic acid/peroxide" is selected as the measured value.

Monitoring the cleaning motor (measuring cells AQC-D1/-D11)

Having selected measuring cell type AQC-D1/-D11, press [OK] to get to the "cleaning motor" submenu.

1. Switch the monitoring of the cleaning motor on/off.

Measuring cell AQC-D2/-D12/-D3/-D13 selected

TM03 6708 4506

Fig. 28 Chlorine measurement with AQC-D2/-D12/-D3/-D13

A black bar on the display indicates the actual data of the water sensor.

See installation and operating instructions for the potentiostatic measuring cell AQC-D2/-D12/-D3/-D13.

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11.5.4 Setting the measuring ranges for chlorine, chlorine dioxide, ozone, peroxide, peracetic acid, pH, redox

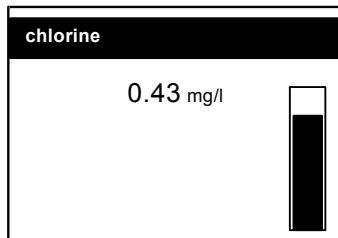In the "measuring ranges" menu, the corresponding measuring ranges are assigned to the measured values which have been selected in the "parameters" menu.

- In the "measuring ranges" menu, the following options are available:
  – standard measuring ranges
  – "others."

See section *8.4 Measuring ranges*.

- The measuring ranges for temperature can be defined in °C (Celsius) or in °F (Fahrenheit).

Note	The "temperature" submenu is only shown if the temperature measurement has been switched on in the "parameter" menu, or if parameter pH has been selected.

11.5.5 Controller parameters 1/2

See section *11.6 Selection, configuration and parameterisation of the controller* in order to adjust the controllers.

11.5.6 Water sensor

In the "wat. def. sensor" menu, the water sensor can be switched on/off.

In the event of sample-water deficiency, the following will occur:

- The malfunction-indicating relay is activated, and the alarm message "fault water sensor" is triggered.
- With devices with control functions, the actuators are switched to passive or closed.

Caution	The water sensor must be switched on for the measuring cell AQC-D2/-D12!

11.5.7 Setting the current time (date/time/summer time)

1. Switch from the "setup" menu to the "date/time" menu.

TM03 6709 4506
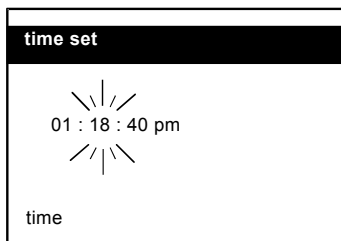
Fig. 29 Time setting

2. Set the device to the current time in the "time set" menu in the format hh.mm.ss.
   – Press [OK] to switch to the next number field. The number field which is currently activated flashes.
   – Alter the settings by pressing the [Up] and [Down] buttons.
   – Pressing the buttons continuously makes the adjustment dynamically faster.

3. Set the device to the current date in the "date" menu in the format mm.dd.yyyy with English as operating language or the format dd.mm.yyyy for all other languages similarly to the adjustment of time. The corresponding day of the week (Mo...Su) is displayed automatically.

4. If necessary, enter the beginning and end date of the summer time, the kind of time shift and the number of hours of the time shift.

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11.5.8 Code function

The code function is designed to protect the device from unauthorised access.

Entering the four-digit code number and changing it

1. Select the line "code function" in the "setup" menu using the [Up] and [Down] buttons, and press [OK] to switch to the corresponding menu.

There are two types of access rights:

Calibration rights: The owner of calibration rights has access to the calibration menu and to manual operation.

The owner of calibration rights may do the following:

- alter calibration data
- operate control relays manually.

Full rights: The owner of full rights has full access to all settings including calibration data.

The owner of full rights may do the following:

- alter calibration data
- alter setup
- parameterise the controller
- alter alarm settings
- run the device manually.

cal right	
code	0000
old code	

2. Select the desired type of access rights, and press [OK] to get to the corresponding menu.
3. If an old code exists, confirm the old code number first (on first use, confirm code 0000).
4. Select "change".
5. Enter the old code in the submenu (see comment line at the bottom of the display) using the [Up] and [Down] buttons, and press [OK] to confirm and switch to the query "new code" (see the comment line at the bottom of the display).
6. Enter a new four-digit code number using the [Up] and [Down] buttons. Press [OK] to confirm.
7. Repeat to confirm: Set a new four-digit code number using the [Up] and [Down] buttons, and press [OK] to confirm.
8. Access rights can be cancelled by deleting the corresponding code number in the "delete" submenu.
- Entering a valid four-digit code number gives the operator access to the corresponding functions for a limited time of 60 minutes.

- If no code was entered previously, the desired menu can be accessed without restrictions. The code number 0000 will not be displayed/the operator will not be asked to enter it.

Note	If a wrong code is entered, access to the corresponding menus is denied. An error message is triggered (duration: five seconds), and the device will return to "main menu".

Reset function

- Entering the code number "1998" deletes all previously entered code numbers.
- All prior access codes are deleted and reset to "0000".

11.5.9 Adjusting display contrast

In the "display" menu, the contrast of the display can be adjusted.

1. Switch from the "setup" menu to the "display" menu using the [Up] and [Down] buttons, and press [OK] to confirm.

Note	If the contrast setting is too high, it may not be possible to read the display. Hold down the [Down] button until the contrast setting is low enough to be read again.

11.5.10 Saving/accessing user settings

In the "factory setting" submenu, the current device setting can be saved so that it can be reactivated later, or a saved setting can be activated.

- Setup
  - Save setup: Saves all current device settings from the menus (not just the "setup" settings).
  - Activate setup: Resets the device to the last saved setup.

Note	In this menu, save your device settings once you have set all the values in the "setup", "controller" and "alarm" menus. You can then activate them again at any time (even after a factory reset)!

11.5.11 Factory setting reset

In the "factory setting" submenu, the **Conex®
DIA-2Q** can also be reset to the factory setting using
code 6742.

| Caution | Only use this function in an emergency. All device settings are lost and must be re-entered!
Do not disconnect the device from the power supply during the reset! |

**Resetting the Conex® DIA-2Q to the factory
setting**

• Reset
  – Code 0000 is displayed.
  – Set code 6742 using the [Up] and [Down]
    buttons, and press [OK] to confirm.

The device is now returned to the original factory
setting.

| Caution | Before subsequent start-up:
Check all parameters and set the device again according to your application! |

General factory settings

• Language**: The **Conex® DIA-2Q** is waiting for
  language input. The languages "Deutsch/English
  Français...." are indicated alternately.
• Summer time: off.
• Code numbers: 0000 calibration rights, 0000 full
  rights.
• Current outputs 1-4: 0-20 mA.
• Dosing monitoring: off.
• Parameter 1: chlorine.
• Parameter 2: off.

** For the first calibration, the default value = last
  setting.

Default values for parameter group 1

	Cl_2	ClO_2/O_3	PAA	H_2O_2
Measuring range [mg/l]	0.00 - 2.00	0.00 - 1.00	0-100	0-100
Measuring cell	AQC-D1/-D11	AQC-D1/-D11	PAA (peracetic acid)	AQC-D1/-D11
Temperature measurement	off	off	off	off
Water sensor	off	off	off	off

Default values for parameter group 2

	pH	Redox
Measuring range	0.00 - 14.00	0-1000
Temperature measurement	off	off
Water sensor	off	off

11.5.12 Current outputs

In the "current output" menu, the operator can assign the selected values to the current outputs and then assign the current outputs to the selected measuring ranges.

In the "current output" menu, the selected parameters are listed in the following order:

current output
chlorine
pH
temperature

- Output 1, parameter group 1: chlorine, chlorine dioxide, ozone, hydrogen, peroxide and peracetic acid
- Output 2, parameter group 2: pH, redox
- Output 3: temperature or continuous controller for parameters from group 2
- Output 4: continuous controller for parameters from group 1.

Assignment of the current outputs to the measuring range (example: chlorine measurement)

There are two standard ranges, "0-20 mA" and "4-20 mA" which can be assigned to the current outputs. They are assigned to the measuring range linearly.

The start-of-scale and full-scale values can be freely defined within 0 to 20 mA in an optional setting for the current outputs 1 and 2 as well as for current output 3 with temperature measurements.

chlorine
0-20 mA
4-20 mA
others

- In the corresponding submenu (for example chlorine), select the line "others" using the [Up] and [Down] buttons. Press [OK] to confirm.
- In the subsequent display "0.00 mg/l", enter the start-of-scale value of the range using the [Up] button. Press [OK] to confirm.
  – In the same line, "= 0 mA" is displayed.

chlorine
0.20 mg/l = 0 mA

- Enter the associated start-of-scale current value using the [Up] button. Press [OK] to confirm.
  – An additional line is displayed with the scan for the full-scale value of the range "20.00 mg/l".
- Enter the full-scale value of the range using the [Down] button. Press [OK] to confirm.
  – In the same line, "= 20 mA" is displayed.

chlorine
0.20 mg/l = 0 mA
15.00 mg/l = 20 mA

- Enter the associated full-scale current value using the [Down] button. Press [OK] to confirm and return to the "current output" menu.

11.5.13 Program version

program version
Conex DIA-2Q
v0.20.1   20030304

In case problems make it necessary to contact our service department, the "program version" menu enables the operator to easily identify the software components of the actual device.

- Version, for example **v0.20.1**.
- Last update: yyyymmdd.

11.6 Selection, configuration and parameterisation of the controller

It takes two steps to set up the controller:

• First: selection and configuration of the controller type in the "setup" menu, "controller" submenu.

• Second: parameterisation of the selected controller type in "main menu", "controller" submenu.

11.6.1 Selection and configuration of the controller

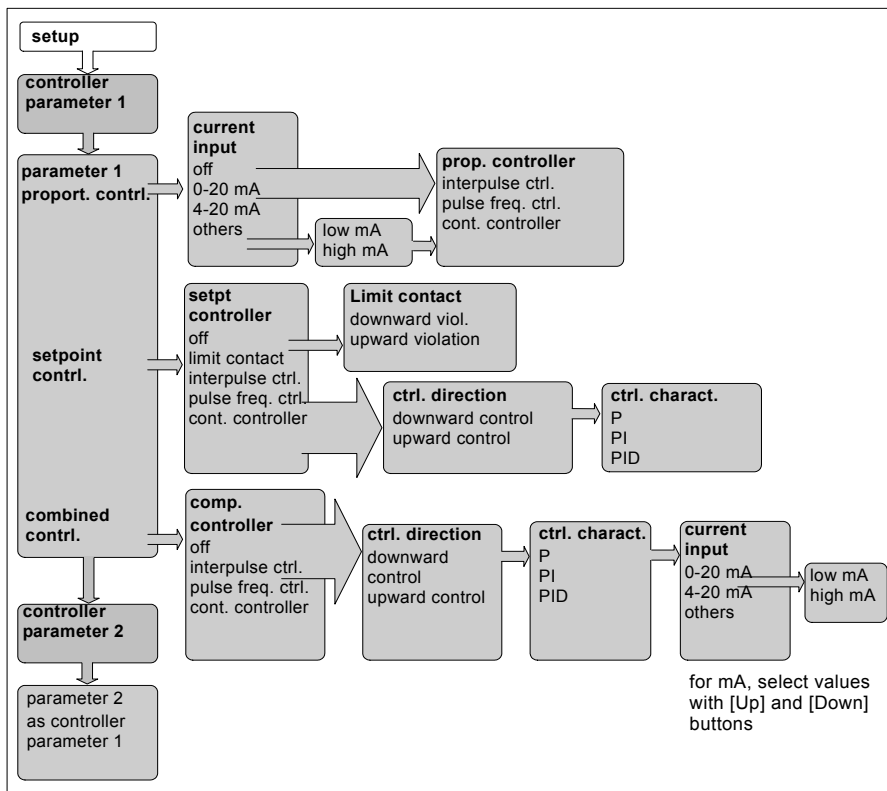**Fig. 30**   Selection and configuration of the controller

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• In the "setup" menu, select the line "controller parameter 1" or "controller parameter 2" using the [Up] and [Down] buttons, and select the menu with the same name using [OK].

Selection and configuration of the proportional controller

1. Mark the "proport. contrl" line using the [Up] and [Down] buttons, and select using [OK].
2. Select the current input of the ratio value using the [Up] and [Down] buttons as one of the following:
   – off
   – 0-20 mA
   – 4-20 mA
   – others

and confirm using [OK].

If "others" is selected:

- Adjust the current range freely between 0 and 20 mA by doing the following:
   – setting the start-of-scale value in the "Low mA =" line using the [Up] and [Down] buttons
   – setting the full-scale value in the "High mA =" line using the [Up] and [Down] buttons.
3. Use the [Up] and [Down] buttons to select one of the following:
   – interpulse controller (two-position controller)
   – pulse frequency controller (two-position controller)
   – continuous controller

and confirm using [OK].

Selection and configuration of the setpoint controller

1. Mark the "setpoint contrl" line using the [Up] and [Down] buttons, and select using [OK].
2. Select the controller using the [Up] and [Down] buttons as one of the following:
   – off
   – limit contact
   – interpulse controller (two-position controller)
   – pulse frequency controller (two-position controller)
   – continuous controller

and confirm using [OK].

If "limit contact" is selected:

3. Use the [Up] and [Down] buttons to select the switching direction as one of the following:
   – downward violation
   – upward violation

and confirm using [OK].

If "interpulse ctrl.", "pulse freq. ctrl" or "cont. controller" is selected, the following applies:

4. Use the [Up] and [Down] buttons to select the control direction as one of the following:
   – downward control (switches with upward violation of setpoint)
   – upward control (switches with downward violation of setpoint)

and confirm using [OK].

5. Use the [Up] and [Down] buttons to select the control response as one of the following:
   – P (proportional controller),
   – PI (proportional-plus-integral controller)
   – PID (proportional-plus-integral-plus-derivative controller)

and confirm using [OK].

Selection and configuration of the combined controller

1. Mark the line "combined controller" using the [Up] and [Down] buttons, and select using [OK].
2. Use the [Up] and [Down] buttons to select the controller output as one of the following:
   – off
   – interpulse controller (two-position controller)
   – pulse frequency controller (two-position controller)
   – continuous controller

and confirm using [OK].

3. Use the [Up] and [Down] buttons to select the control direction as one of the following:
   – downward control (switches with upward violation of setpoint)
   – upward control (switches with downward violation of setpoint).

and confirm using [OK].

4. Use the [Up] and [Down] buttons to select the control response as one of the following:
   – P (proportional controller)
   – PI (proportional-plus-integral controller)
   – PID (proportional-plus-integral-plus-derivative controller) and confirm using [OK].
5. Use the [Up] and [Down] buttons to select the current input (disturbance variable) as one of the following:
   – 0-20 mA
   – 4-20 mA
   – other

and confirm using [OK].

If "others" is selected:

- Adjust the current range freely between 0 and 20 mA by doing the following:
   – setting the start-of-scale value in the line "Low mA =" using the [Up] and [Down] buttons
   – setting the full-scale value in the line "High mA =" using the [Up] and [Down] buttons.

11.6.2 Setting the controller parameters

1. Select a controller in the "setup" menu and configure it.

See section *11.5.5 Controller parameters 1/2*.

2. Select the line "controller" in "main menu" using the [Up] and [Down] buttons, and press [OK] to switch to the "controller" menu.

See section *11.4 Main menu*.

| Note | The "controller" option in "main menu" is only available if a controller has been selected in the "setup" menu! |

The options available in the "controller" submenu (main menu) correspond to the configuration made in the "setup" menu.

1. Use the [Up] and [Down] buttons to change internal setpoints within the selected measuring range.

See section *8.4 Measuring ranges*.

2. Select the displayed controller parameters using the [Up] and [Down] buttons, press [OK] to switch to the desired submenu, and use the [Up] and [Down] buttons to adjust the setpoints as needed within the permitted ranges.
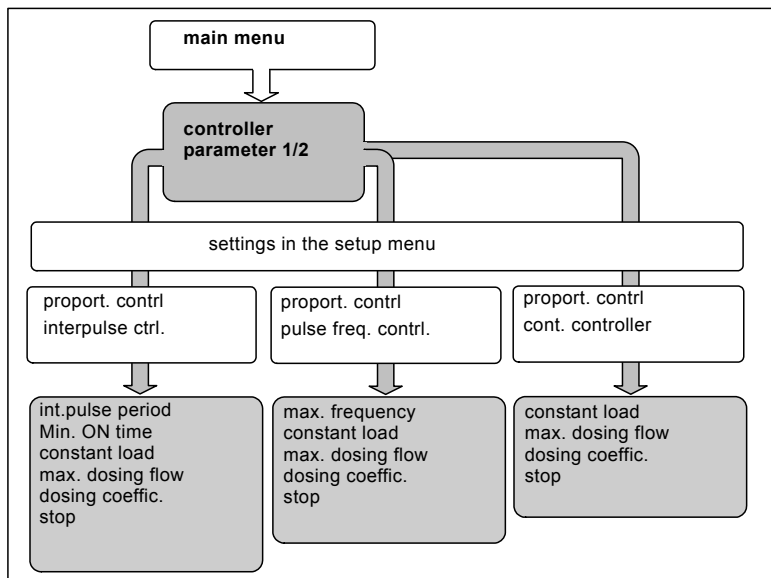
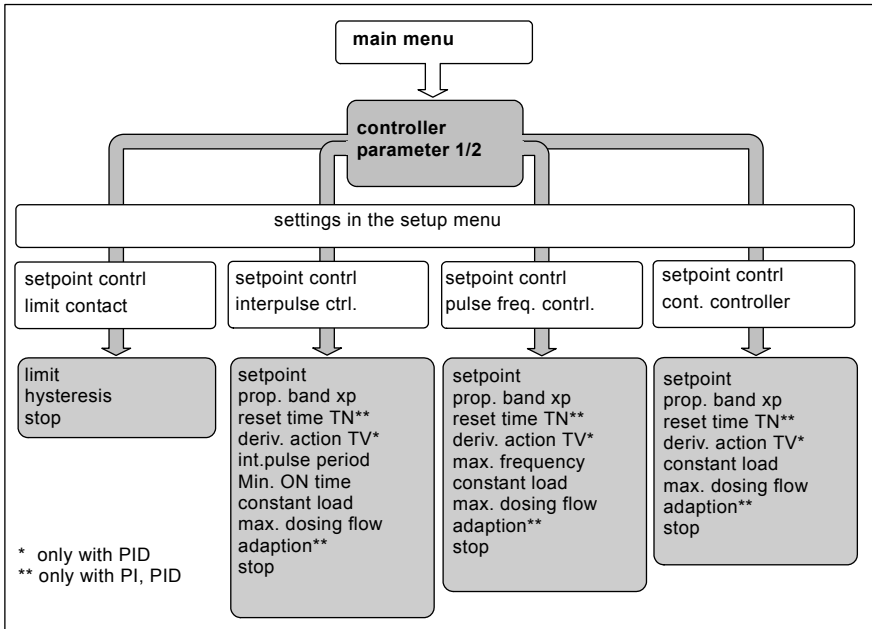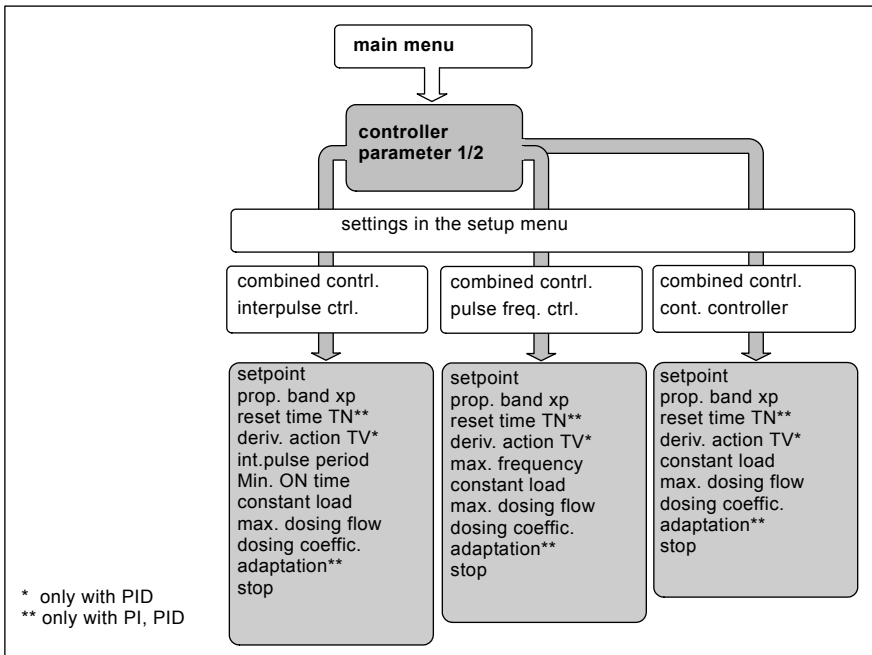See section *8.3 Electronic data and functions*.

Fig. 31   Settings for proportional controllers

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Fig. 32 Settings for setpoint controllers

TM03 6735 4506

Fig. 33 Settings for combined controllers

TM03 6742 4506

11.6.3 Controller control fields on the display

1. Press [Esc] once or twice to switch to the display "measured value".

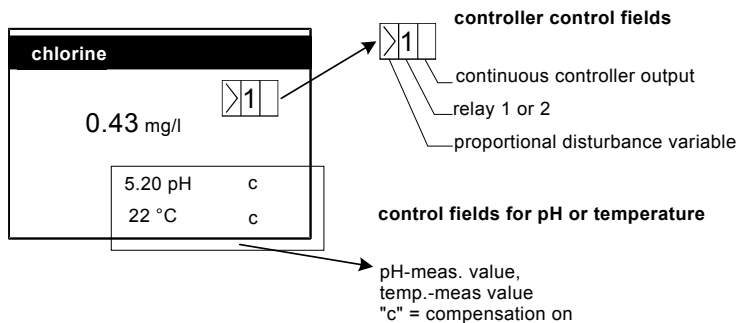See sections *8.2 General data* and *11.2.1 Display modes*.

Fig. 34 Chlorine measurement with pH and temperature compensation

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- The display with the measured value always refers to the measuring range 0-20 mA. Depending on the current input (proportional or disturbance variable), it is displayed unfilled or partially to completely filled (inverted font in latter case).

  Unfilled (at 0 mA):

  Partially filled (at 0 < x < 20 mA):

  Completely filled (at 20 mA):

- The control fields for relays 1 and 2 appear as follows for configured limit monitors/two-position controllers:

  Unfilled field for relay off:

  Filled field (displayed inversely) for relay on:

- The control field for the continuous controller is empty, partially filled or completely filled depending on the set dosing rate - and when configured accordingly - and the filling of the bar always refers to 100 % of dosing rate.
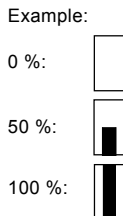
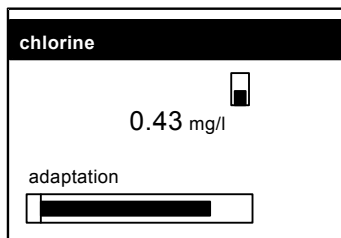 Example:

  0 %:

  50 %:

  100 %:

11.6.4 Adaptation

An adaptation can be started to simplify the setting of the controller parameters.

The adaptation is only available for PI and PID controllers.

1. Start adaptation in the "controller" menu (main menu) under "adaptation" by pressing "start".

Fig. 35   Chlorine measurement with adaptation of continuous controller

2. Return to the display "measured value" automatically. A black bar on the display indicates the adaptation process. The LED next to [Man]/[AUTO] flashes during the whole adaptation. A progress bar shows the advancement of the adaptation.

•   The configured controllers can only be adapted separately.

•   On upward control, the measuring value has to be more than 20 % below the setpoint

•   On downward control, the measuring value has to be more than 20 % above the setpoint.

In case of a fault, the message "Start conditions false" is shown directly after the start.

3. The message "adaptation successful" is shown after ending the adaptation.

4. Press [OK] or [Esc] to quit. The determined controller settings are automatically adapted by the parameterisation of the controller. They are displayed in the adaptation menu under "adapt. result".

5. If the adaptation was not successful, the message "adaption abortive" is shown. Press [OK] or [Esc] to quit.

The adaptation may be aborted in the following cases:

•   If an error message was shown during the adaptation.

•   If the controller is set to manual operation.

•   If the standstill time was more than one hour.

•   If the total measuring time was more than two hours.

| Note | With selected temperature/pH/redox measurement, the temperature value, pH/redox value and their compensations will not be displayed during the adaptation. |

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11.7 "Alarm" menu

With the help of the alarm function, the measured value can be monitored and compared with the permitted range.

If the measured value exceeds the limits of the measuring range, an alarm is triggered.

- The alarm relay is deactivated after the selected alarm delay time.
- When the cause of the alarm has been removed, the relay is deactivated immediately (without delay).
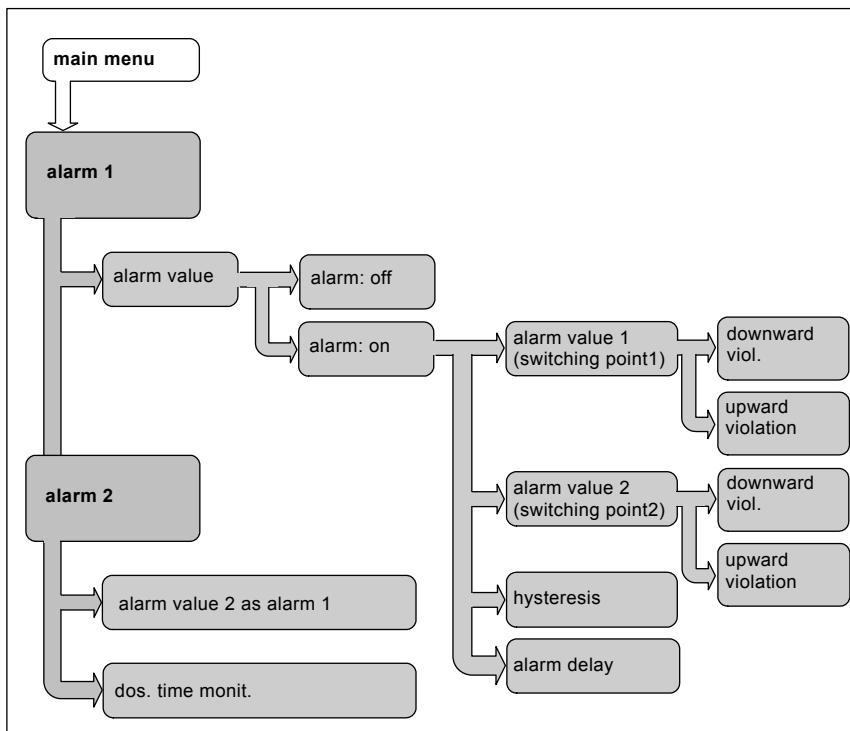

Fig. 36 "Alarm" menu in "main menu"

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1. Select the line "alarm" in "main menu" using the [Up] and [Down] buttons.
2. Press [OK] to switch to the "alarm" menu.

Two functions are available there:

alarm
alarm values
dos. time monit.

- **alarm values**: If the measured value exceeds the permitted range, the alarm relay is activated and an alarm message is triggered. The red alarm LED starts flashing.
- **dos. time monit.:** If the dosing flow constantly remains at 100 % during a selected maximum dosing time, the alarm relay is activated and an alarm message is triggered. The red alarm LED starts flashing.

11.7.1 Setting the alarm values

1. Select the line "alarm values" using the [Up] and [Down] buttons. Press [OK] to switch to the "alarm on/alarm off" submenu.
2. Confirm the line "alarm on" using [OK], and select the "alarm values" selection menu.

11.7.2 Setting the upper and lower switching point (limits)

1. Select the line "alarm value 1" or "alarm value 2". Press [OK] to confirm and switch to the desired menu.

```
alarm value 1

0.00 mg/l

switching point1
```

2. Set switching points between 0 and the upper limit of the measuring range defined earlier using the [Up] and [Down] buttons (in the unit of the measured value, the resolution depends on the selected measuring value and measuring range).

See section *8.4 Measuring ranges*.

3. Press [OK] to switch to the "eff. direction" menu.

Options: alarm message in the event of upward/downward violation of the selected switching point.

4. Select the desired line using the [Up] and [Down] buttons.

5. Press [OK] to return to the "alarm values" menu automatically.

6. Select the line "hysteresis" in the "alarm values" menu, and press [OK] to switch to the corresponding submenu.

```
alarm values

0.00 mg/l

hysteresis
```

7. Set the hysteresis to a value between 0 and half of the measuring range using the [Up] and [Down] buttons.

The hysteresis ensures that the relays switch less frequently in the event of upward or downward violation of the limits.

8. Press [OK] to return to the "alarm values" menu.

9. Select the line "alarm delay" in the "alarm values" menu, and press [OK] in the corresponding submenu.

```
alarm values

0 sec

alarm delay
```

10. Set the alarm delay to a value between 0 and 300 seconds using the [Up] and [Down] buttons.

11.7.3 Dosing time monitoring

This function can be used to monitor the dosing process. If the dosing flow remains at a constant level of 100 % during a selected period, an alarm message is triggered.

```
dos. time monit.

10 min

max. dosing time
```

1. Select the line "dos. time monit." in the "alarm" menu, and press [OK] to switch to the corresponding submenu.

In the "dos. time monit." menu, the monitoring function can be switched on or off.

• If "off" has been selected, the device returns to the "alarm" menu.

• If "on" has been selected, the "dos. time monit." submenu is displayed.

2. Set the maximum dosing time to a value between 0 and 600 minutes using the [Up] and [Down] buttons.

11.8 Checking the settings in the "service" menu

In the "service" menu, the operator can check all important settings and test the functions of the device in the event of problems that make service necessary.

| Note | In the "service" menu, calibration data and controller settings cannot be altered. Therefore the menu can be accessed without an access code. |

Select the line "service" in "main menu", and press [OK] to switch to the corresponding menu.
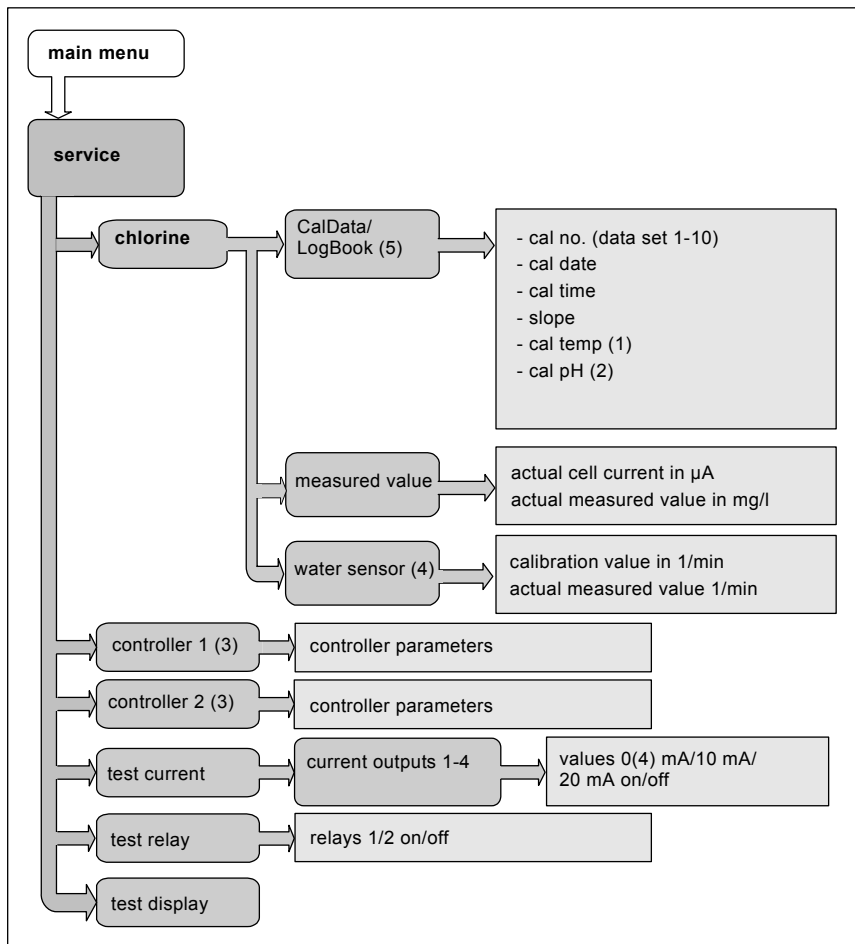

Fig. 37 Example: chlorine measurement

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Notes to figures in fig. 37:

(1)	"cal temp." will only be displayed if temperature measurement or temperature compensation has been switched on in the "setup" menu.
(2)	"cal pH" will only be displayed if pH measurement or pH compensation has been switched on in the "setup" menu.
(3)	"controller" will only be displayed if a controller has been selected and configured in the "setup" menu and in the "main menu".
(4)	"water sensor" will only be displayed if measuring cell AQC-D2/-D12 has been selected in the "setup" menu.
(5)	"CalData/LogBook" will only be displayed if a calibration has already been made.

```
service


chlorine
test current
test relay
```

In the "service" menu, the following items are listed:
- "parameter": displaying data of the previous 10 calibrations
- "controller": checking controller settings
- "test current": testing the functioning of the current outputs
- "test relay": testing the functioning of the relays
- "test display": testing the functioning of the display.

"parameter": logbook registration of calibration data

The calibration data of all activated measuring values are registered in chronological order by a logbook function (exception: redox measurement!).

Example: With pH measurement, the logbook lists the following data:
- calibration number with date/time
- slope (sensitivity of the electrode)
- asymmetric potential of the electrode
- temperature of the buffer solution used.

Under "measured value", the following data are displayed:
- current measured value
- current cell voltage or cell current.

Under water sensor, the following data are displayed:
- speed of the water sensor during the last calibration
- actual speed of the water sensor.

"controller" (checking controller settings)

1. Select the [Up] or [Down] button depending on the controller, and select the corresponding menu using [OK].
   – In the first line, the configured type of controller is displayed, and in the subsequent lines the current controller settings are listed. (Select the value y_{out} using [OK]).

"test current" (testing the functioning of the current outputs)

1. Select the current output to be tested using the [Up] and [Down] buttons, and press [OK] to switch to the corresponding menu.

Depending on the configuration of the current outputs, the current outputs can be switched on with the following current values, and the current value can be output to the system:
- test currents of 0, 10, 20 mA with selected standard range 0-20 mA
- test currents of 4, 12, 20 mA with selected standard range 4-20 mA or with freely adjusted current outputs.

2. Select the current values using the [Up] and [Down] buttons.
   – When a line is selected, the state of the current output with the corresponding value is automatically set to on.
   – As soon as another line is selected, the previous current value is automatically switched off, and the new current value is set to on.

"test relay" (testing the functioning of the relays)

1. Select the relay to be tested using the [Up] and [Down] buttons, and press [OK] to switch it on or off.

If either of the lines "relay 1", "relay 2" or "alarm" has been selected, the relay that was the last one activated before entering the test menu is switched off. Considering the current alarm values and controller values, the relay is switched on again when the test menu is left.

"test display" (testing the functioning of the display)

- If the display turns completely dark: The display functions OK.
- If the display stays partly bright: The display is faulty.
- Press [OK] to leave the test menu.

11.9 Calibration

1. Press [Cal] to switch to the calibration menu.
   – The LED next to [Cal] illuminates.
2. Depending on the set access rights, it may be necessary to enter the four-digit code number using the [Up] and [Down] buttons. Confirm using [OK].
3. Select a parameter for the calibration.

In order to avoid an overdosing, the controllers are switched off, and the final control elements are closed.

11.9.1 Peculiarities for the calibration of chlorine with pH compensation

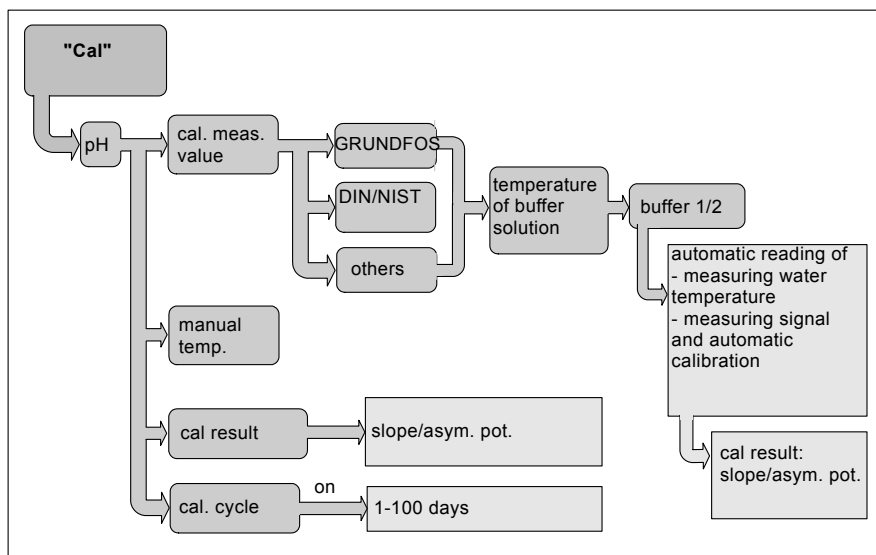|	
Caution	pH calibration is of prime importance, since during the calibration of the chlorine value, the device uses the already calibrated measured pH value as a reference value.
	Therefore the pH value must be calibrated first!
	Only then calibrate the chlorine value!

11.9.2 Calibrating the pH value

Fig. 38   Calibrating the pH value

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The pH calibration is carried out as a two-point calibration.

```
pH

cal. meas. value
cal result
cal. cycle
```

1. Press [Cal] to switch to the calibration function. Select the line "pH", and press [OK] to switch to the "pH" calibration menu.
2. Select "cal. meas. value", and press [OK] to switch to the corresponding menu.

Selecting buffer types and buffer values, reading in buffer values and calibrating

Three optional buffer types are available:
- GRUNDFOS: buffer values pH 4.01, 7.00, 9.18.
- DIN/NIST: buffer values pH 4.01, 6.86, 9.18.
- "others": Lower and upper buffer values can be freely adjusted (difference at least 1 pH) within the configured pH value measuring range ("setup" menu).

```
buffer

GRUNDFOS
DIN/NIST
others
```

1. Select a buffer type using the [Up] and [Down] buttons.
2. Press [OK] to jump to the "temperature" menu automatically.
3. Enter the temperature of the buffer solution used.
4. Press [OK] to jump to the "buffer value 1" menu automatically.

```
buffer value 1

4.01 pH
7.00 pH
9.18 pH
```

5. Select one of the three optional buffer values offered for the buffer solutions GRUNDFOS or DIN/NIST.
6. Fill buffer 1 from the storage bottle into a clean calibration cup.
7. Dip the electrode into the buffer solution.

8. Press [OK] to start the automatic reading function (reading in of measured signal) and the calibration.
   – The display shows the message "please wait" during the calibration.
   – The automatic reading function during pH calibration has the effect that the correct electrode signal for the buffer value is read only when the measuring signal remains stable during a defined interval.
9. Dispose of the first buffer solution (i.e. do not return it to the storage bottle!), and rinse the electrode with water.
10. Press [OK] to jump to the "buffer value 2" menu automatically.

```
buffer value 2

7.00 pH
9.18 pH
```

It is only possible to choose between the two remaining buffer values.

1. Fill buffer solution 2 from the respective storage bottle into a clean calibration cup.
2. Dip the electrode into the second buffer solution.
3. Press [OK] to start the automatic reading function and the calibration.
4. After that, dispose of the buffer solution and rinse the electrode with water.

```
CALDATA pH
slope
- 60.17 mV/pH
asym. pot.
19 mV
```

Immediately after the calibration, its result is displayed automatically:
- sensor slope in mV/pH
- asymmetry potential of the electrode in mV.

Error messages during the reading in of the voltage signal of the pH electrode

The calibration may be aborted in the following cases:

- If the electrode is faulty or a wrong buffer has been used.
  - The message "fault of electrode/buffer" is displayed.
- If the electrode does not reach a stable measuring signal in 120 seconds.
  - The message "calibration time exceeded" is displayed.
- If the result of the plausibility testing of the pH calibration data is upward/downward violation of the slope range of - 50 to - 62 mV/pH.
  - The message "slope error" is displayed.
- Downward/upward violation of the precision/exactness range from - 60 to + 60 mV.
  - The message "error asym. pot." is indicated.

The calibration process will be aborted in all four cases.

- Press [OK] to return to the "calibration" menu automatically.

If the process is aborted, the old calibration date will not be overwritten!

Manual temperature compensation

With deactivated temperature measurement, the water temperature for compensation should be entered manually after calibration. The default value is 25 °C.

1. Determine the water temperature with a thermometer.
2. Press [Cal] to switch to the calibration function. Select the line "pH", and press [OK] to switch to the "pH" calibration menu.
3. Select "manual temp.", and press [OK] to switch to the corresponding menu.

manual temp.
25 °C

4. Enter the water temperature.
   - The water temperature is shown in °C (Celsius) or in °F (Fahrenheit), as selected in the "setup" menu "measuring ranges".
5. Press [OK] to return to the "calibration" menu automatically.

Cal. cycle

- Following selection of "cal. cycle" in the "measured value" menu, a countdown function is started which triggers the alarm signal "calibrate sensor" following expiry of a defined time interval of 1-100 days.

Cal result

- The result of the current (last) calibration can be displayed at any time using the "cal result" menu item.

11.9.3 Calibration of the parameters chlorine, chlorine dioxide, peroxide, ozone and peracetic acid
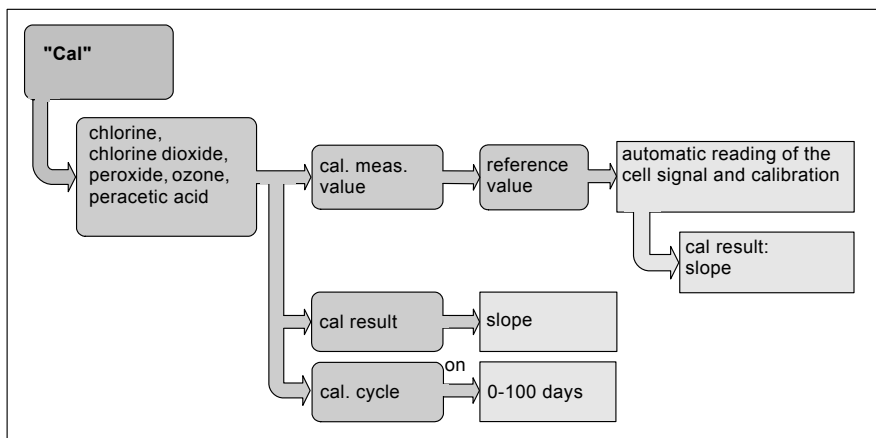
Fig. 39 Calibration of the parameters chlorine, chlorine dioxide, peroxide, ozone and peracetic acid

Having switched to the calibration function by pressing [Cal], the display is in the mode "measured value" and indicates the current measured value.

1. Press [OK] to switch to the calibration menu (the first line reads "chlorine", for instance").

chlorine
cal. meas. value
cal result
cal. cycle

2. Select the line "cal. meas. value", and press [OK] to switch to the corresponding menu.

- In the bottom line, the entry field (value in mg/l) for the reference value (determined photometrically or analytically) and the present cell current or electrode current (in µA) are displayed.

cal. meas. value
0.45 mg/l
I-cell 10.4 µA

3. Enter a reference value (for example determined photometrically with the Grundfos DIT photometer).

4. Press [OK] to start calibration.
   - An automatic reading function reads in the sensor data, and the calibration is carried out.
   - The slope (sensitivity) of the sensor is calculated.

- Immediately after calibration, the result of the calibration is indicated automatically (first line: "cal. meas. value"):
   - The slope of the sensor in µA/ppm is displayed.

CALDATA chlorine
slope
34.67 µA/ppm

11.9.4 Redox measurement

- Calibration is not necessary in connection with redox measurement.

- If redox is selected, the [Cal] button is out of function.

- To check a single-rod measuring chain for redox, use a special redox buffer (for example Grundfos redox buffer 220 mV, product number: 96609166).

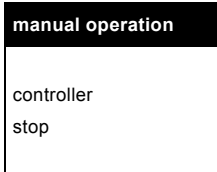TM03 6719 4506

11.10 Manual operation

The manual operation mode is used to switch off the automatic control and run the control relays manually.

| Note	Manual operation is only possible after a controller has been configured.
	Manual operation can only be accessed with calibration rights or full rights.

1. Press [Man].

```
manual operation


controller

stop

```

2. Depending on the set access rights, it may be necessary to enter the four-digit code number using the [Up] and [Down] buttons.
   – The LED next to [Man] illuminates.
3. The display reads "controller stop": All configured controllers are switched off.
   – With configured two-position and continuous controllers, the actuating variable is set to 0.
   – With configured-limit contacts, the corresponding relay is switched off.

```
manual operation


controller

active

```
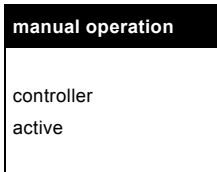
4. Press [Man] to return to automatic operation.
   – The LED next to the button goes out.
   – The message "controller active" is shown on the display for five seconds.
   – After that, the device automatically returns to the menu from which the manual operation was started.

Note	Every time the manual-operation mode is entered, every single controller type must be activated again.

11.10.1 Manual operation with configured two-position and continuous controllers
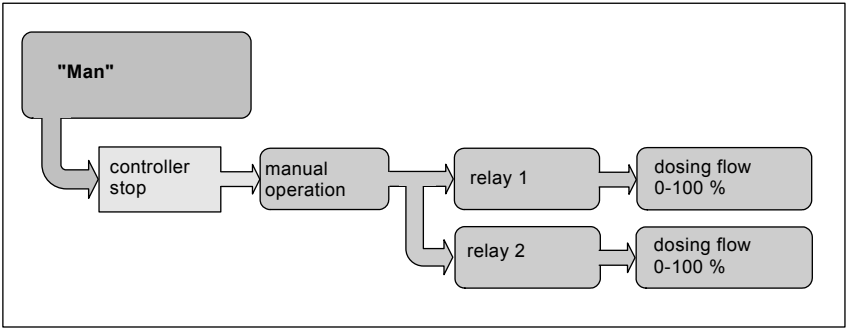
Fig. 40   Manual operation with configured two-position and continuous controllers

With configured two-position controllers, the relay outputs 1 and 2 as well as the output "cont. controller" can be separately run manually.

By selecting the desired relay output, the dosing flow of the pump/pumps can be changed.

```
manual operation


controller
stop

```

1. Having switched to manual operation, the message "controller stop" is displayed for five seconds.
   – All controllers are switched off.
   – The final control elements are closed (set to 0).

```
manual operation

0.01 mg/l          1

            5.20 pH   c
            22 °C     c
```

2. After that, the device automatically switches to the mode "display measured value" (first line: "manual operation").
   – The controller control display is shown on the right side of the display window. Either control field 1 is present for relay 1, or there is a field for the continuous controller.
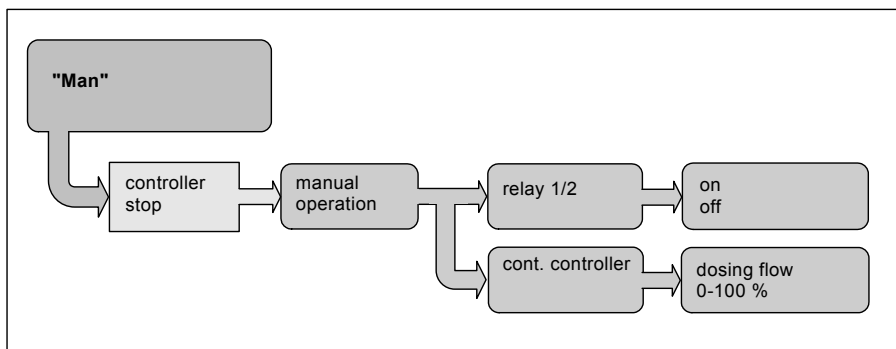
See section *11.6.3 Controller control fields on the display*.

   – Since switching to manual operation will cause all controllers to be switched off, none of the control fields are filled (there are no areas displayed inversely).

3. Press [OK] to switch to the subsequent menu. Three options are available:
   - relay output 1
   - relay output 2
   - continuous controller.

```
manual operation


relay output 1
relay output 2
cont. controller
```

4. Select relay output 1 using the [Up] and [Down] buttons. Press [OK] to switch to the corresponding menu.
5. Set the desired dosing rate of the pump using the [Up] and [Down] buttons.

```
relay 1


0 %


dosing flow
```

6. For relay output 2 and the output continuous controller, proceed similarly to relay output 1.
7. Press [OK] to start the controller at the selected dosing flow.
   – The display shows the controller control display which depends on the selected dosing flows.

See section *11.6.3 Controller control fields on the display*.

11.10.2 Manual operation with configured limit contact and continuous controller

TM03 6721 4506

Fig. 41 Manual operation with configured limit contact and continuous controller

Manual operation with configured limit contacts is largely similar to manual operation with two-position controllers and continuous controllers.

The difference: When the desired relay output is selected, the relay can be switched on or off.

Press [OK] to start the controller.

– The display shows the controller control display in its dependence of the switching state of the relay or in dependence of the selected dosing flow with continuous control.

See section *11.6.3 Controller control fields on the display*.

12. Fault finding

| Note | Faults during the measurement, see installation and operating instructions of the electrode or measuring cell. |

Fault		Cause	Remedy
1. No display following start-up.	a)	No power supply.	Connect the power supply.
2. With pH measurement: Display permanently indicates pH approximately 7. – With measurement of oxidisers: Display permanently indicates zero. – With redox measurement: Display permanently indicates approximately 0 mV.	a)	Short-circuit in cable between measuring cell and instrument amplifier, moisture in connectors.	Check the connection cable and eliminate short-circuit and moisture.
3. Display permanently at full-scale value.	a)	Open circuit in cable between measuring cell and instrument amplifier.	Check the connection cable and reestablish connection.
4. Display with measured value unsteady.	a)	Interferences on cable from electrode/measuring cell.	Check that the display is properly connected.
	b)	pH and redox measurement: air in sample-water flow.	Check the sample-water supply system (pipes, etc.) and make changes, if necessary.
	c)	pH and redox measurement: sample-water flow interrupted.	Check the sample-water supply system (pipes, etc.) and make changes, if necessary.
	d)	Cable between electrode/measuring cell and instrument amplifier broken.	Check the connection cable and reestablish connection.
	e)	Sensor/electrode faulty.	Replace the sensor/electrode.
5. With measurement of oxidisers: insufficient sensitivity of measuring cell.	a)	Measuring cell contaminated or passivated by deposits.	Disassemble the measuring cell, and clean the electrode surface.
6. With pH and redox measurement: Display with measured value reacts extremely slowly.	a)	Electrode aged.	Replace the electrode.
	b)	Electrode dirty.	Clean the electrode.
7. With pH and redox measurement: error message during calibration.	a)	Wrong buffer solution used.	Use the correct buffer solution.
	b)	Electrode aged.	Replace the electrode.
	c)	Electrode dirty.	Clean the electrode.
8. Device cannot be set.	a)	Incorrect code set (device protected against adjustment).	See section *11.5.8 Code function*.
9. Faulty control.	a)	Device is incorrectly parameterised.	Check the settings and match them to the local conditions. If necessary, reset the device to the factory settings.

13. Maintenance

The device is maintenance-free.

Repairs can only be carried out in the factory by authorised personnel.

14. Disposal

This product or parts of it must be disposed of in an environmentally sound way. Use appropriate waste collection services. If this is not possible, contact the nearest Grundfos company or service workshop.

Declaration of conformity

GB: EU declaration of conformity

We, Grundfos, declare under our sole responsibility that the products Conex® DIA-1, DIA-2, DIA-2Q, to which the declaration below relates, are in conformity with the Council Directives listed below on the approximation of the laws of the EU member states.

BG: Декларация за съответствие на ЕО

Ние, фирма Grundfos, заявяваме с пълна отговорност, че продуктите Conex® DIA-1, DIA-2, DIA-2Q, за които се отнася настоящата декларация, отговарят на следните директиви на Съвета за уеднаквяване на правните разпоредби на държавите-членки на ЕО.

DE: EU-Konformitätserklärung

Wir, Grundfos, erklären in alleiniger Verantwortung, dass die Produkte Conex® DIA-1, DIA-2, DIA-2Q, auf die sich diese Erklärung beziehen, mit den folgenden Richtlinien des Rates zur Angleichung der Rechtsvorschriften der EU-Mitgliedsstaaten übereinstimmen.

ES: Declaración de conformidad de la UE

Grundfos declara, bajo su exclusiva responsabilidad, que los productos Conex® DIA-1, DIA-2, DIA-2Q a los que hace referencia la siguiente declaración cumplen lo establecido por las siguientes Directivas del Consejo sobre la aproximación de las legislaciones de los Estados miembros de la UE.

FR: Déclaration de conformité UE

Nous, Grundfos, déclarons sous notre seule responsabilité, que les produits Conex® DIA-1, DIA-2, DIA-2Q, auxquels se réfère cette déclaration, sont conformes aux Directives du Conseil concernant le rapprochement des législations des États membres UE relatives aux normes énoncées ci-dessous.

IT: Dichiarazione di conformità UE

Grundfos dichiara sotto la sua esclusiva responsabilità che i prodotti Conex® DIA-1, DIA-2, DIA-2Q, ai quale si riferisce questa dichiarazione, sono conformi alle seguenti direttive del Consiglio riguardanti il riavvicinamento delle legislazioni degli Stati membri UE.

NL: EU-conformiteitsverklaring

Wij, Grundfos, verklaren geheel onder eigen verantwoordelijkheid dat de producten Conex® DIA-1, DIA-2, DIA-2Q, waarop de onderstaande verklaring betrekking heeft, in overeenstemming zijn met de onderstaande Richtlijnen van de Raad inzake de onderlinge aanpassing van de wetgeving van de EU-lidstaten.

PL: Deklaracja zgodności UE

My, Grundfos, oświadczamy z pełną odpowiedzialnością, że nasze produkty Conex® DIA-1, DIA-2, DIA-2Q, których deklaracja niniejsza dotyczy, są zgodne z następującymi dyrektywami Rady w sprawie zbliżenia przepisów prawnych państw członkowskich.

PT: Declaração de conformidade UE

A Grundfos declara sob sua única responsabilidade que os produtos Conex® DIA-1, DIA-2, DIA-2Q, aos quais diz respeito a declaração abaixo, estão em conformidade com as Directivas do Conselho sobre a aproximação das legislações dos Estados Membros da UE.

RO: Declaraţia de conformitate UE

Noi Grundfos declarăm pe propria răspundere că produsele Conex® DIA-1, DIA-2, DIA-2Q, la care se referă această declaraţie, sunt în conformitate cu Directivele de Consiliu specificate mai jos privind armonizarea legilor statelor membre UE.

RS: Deklaracija o usklađenosti EU

Mi, kompanija Grundfos, izjavljujemo pod punom vlastitom odgovornošću da je proizvod Conex® DIA-1, DIA-2, DIA-2Q, na koji se odnosi deklaracija ispod, u skladu sa dole prikazanim direktivama Saveta za usklađivanje zakona država članica EU.

RU: Декларация о соответствии нормам ЕС

Мы, компания Grundfos, со всей ответственностью заявляем, что изделия Conex® DIA-1, DIA-2, DIA-2Q, к которым относится нижеприведённая декларация, соответствуют нижеприведённым Директивам Совета Евросоюза о тождественности законов стран-членов ЕС.

SI: Izjava o skladnosti EU

V Grundfosu s polno odgovornostjo izjavljamo, da je izdelek Conex® DIA-1, DIA-2, DIA-2Q, na katerega se spodnja izjava nanaša, v skladu s spodnjimi direktivami Sveta o približevanju zakonodaje za izenačevanje pravnih predpisov držav članic EU.
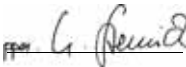
TR: AB uygunluk bildirgesi

Grundfos olarak, aşağıdaki bildirim konusu olan Conex® DIA-1, DIA-2, DIA-2Q ürünlerinin, AB Üye ülkelerinin direktiflerinin yakınlaştırılmasıyla ilgili durumun aşağıdaki Konsey Direktifleriyle uyumlu olduğunu ve bununla ilgili olarak tüm sorumluluğun bize ait olduğunu beyan ederiz.

– Low Voltage Directive (2014/35/EU)*.
  Standard used:
  EN 61010-1:2011-07.
– EMC Directive (2014/30/EU).
  Standards used:
  EN 61326-1:2013,
  EN 61000-3-2:2015,
  EN 61000-3-3:2014.
– RoHS Directives (2011/65/EU and 2015/863/EU).
  Standard used: EN 50581:2012

* Only for products with operating voltage > 50 VAC or > 75 VDC.

This EU declaration of conformity is only valid when published as part of the Grundfos installation and operating instructions (publication numbers 91834770, 95708321, 96681475, 96681473, 95708322, 96681468, 95708712).

Pfinztal, 1st March 2018

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Person authorised to compile technical file and empowered to sign the EU declaration of conformity.

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