

Auto-Control System for Commercial Pools

CPR-Compact 3000



Auto-Control System for free Chlorine, pH-value and ORP/Redox-tension, temperature

Errors and technical modifications subject to change

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1 Advises to this instruction

1.1 Range of validity

This manual describes the installation, commissioning and operation of the unit. This manual is guilty for the den *CPR-Compact 3000* from version -> see the foot print.

1.2 Target group

Only instructed persons shall operate this unit. Works on electric or water side should only be executed by skilled persons.

1.3 Keeping of the manual

All manuals must be kept near to the unit and must be accessible anytime to any operating persons.

1.4 Further information

Further information as selection needs for the operation parameters you get from your dealer.

1.5 Used symbols

This document the following symbols are used.



DANGER!

„Danger“ indicates a safety advice, that **will** lead to **death** or severe **injury** if ignored.



WARNING!

„WARNING“ indicates a safety advice, that **may** lead to **death** or severe **injury** if ignored.



CAUTION!

„CAUTION“ indicates a safety advice, that may lead to **injury** if ignored.



NOTICE!

„NOTICE“ indicates a safety advice, that may lead **to material damage** if ignored.



Information

Information provides tips that are valuable for effective installation and operation of the product.

2 Safety

2.1 Intended use

The controller *CPR-Compact 3000* is intended for auto-control of the water quality of commercial swimming pools.

2.2 Safety advises

The operation instruction is to be read before mounting, commissioning and maintenance. After commissioning it is to be handed to the owner/operator and to be discussed with him.



WARNING!

Danger of chemical burn and poisoning

Please pay attention at the handling of the chemicals! Read the safety advises on the container label.

- Never mix chemicals
- Use only chemicals that are allowed for your swimming pool water and care
- For maintenance use protective clothes.

Further information to the handling of the chemicals you get from your supplier

2.3 Regular control of the water quality

In conformity to the **national pool standards** the water quality has to be checked regularly. So you can recognize early any change in the function of the controller system. Regular calibration will guarantee always good water properties.

3 Delivery scope – Description

The CPR-Compact 3000 is a microprocessor controlled 4-channel auto-controller. The controller is operated through four push buttons. To display of the measured values, control parameters or events we have a 4-line illuminated display. Five LED indicate active outputs. Measuring values and events can be stored on a SD-card and be visualized by the software **DataViewer**.

3.1 Delivery scope

The *CPR-Compact 3000* is delivered with following accessories:

- buffer solution pH7, pH4, ORP/Redox-solution 468 mV
- electrode cleaner solution, distilled water ½ l
- glass beads for cleaning the platinum electrode, electrolyte, spare seals
- 2 x ball valve ½" with immersion tube
- 10 m tube 6x1mm PE for measuring water

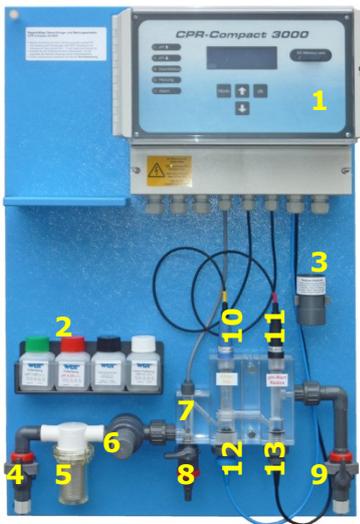
3.2 Transport damage

Please check the device and accessories direct after getting it on completeness and intactness. If anything is not ok please contact us as soon as possible.

3.3 Identification of the device

For spare parts orders or any after sales service it is helpful to know the series no. Of the device and the software version. You can find the type label right side at the controller housing. The programmed version you can find by selecting the menu **configuration → software**.

3.4 Device description



1. controller *CPR-Compact 3000*
2. buffer solutions
3. prove cylinder to check the ORP/redox-tension
4. measuring water supply
5. filter
6. measuring water flow control valve
7. measuring water flow control
8. probe water discharge
9. measuring water discharge to pool
10. reference/counter electrode (blue)
11. pH-probe(black)
12. chlorine electrode
13. ORP/redox- electrode

The *CPR-Compact 3000* is delivered pre-mounted as seen on the picture. So a quick, simple and safe mounting on site is possible. To protect the glass probes at the transport they are packed in their cartons.

To avoid an interchange of the probes they are indicated by different colors.

Outputs:

3 x 230V respectively non volt for the control of pulse length controlled pumps or chlorine gas valves

3 x output for frequency controlled pumps

1 Relay output for non volt control linked to „combined chlorine“ (only together with measuring cell for total chlorine)

1 Relay output non volt for alarm

1 Relay output non volt for heating (Function only with temperature sensor)

1 Relay output non volt for filter pump (weekly time switch can be used for other purposes too)

2 analogical outputs 0/4 ... 20 mA free relating to the measuring values

1 interface RS485 for remote access **optional**

4 Installation

4.1 Place of Installation

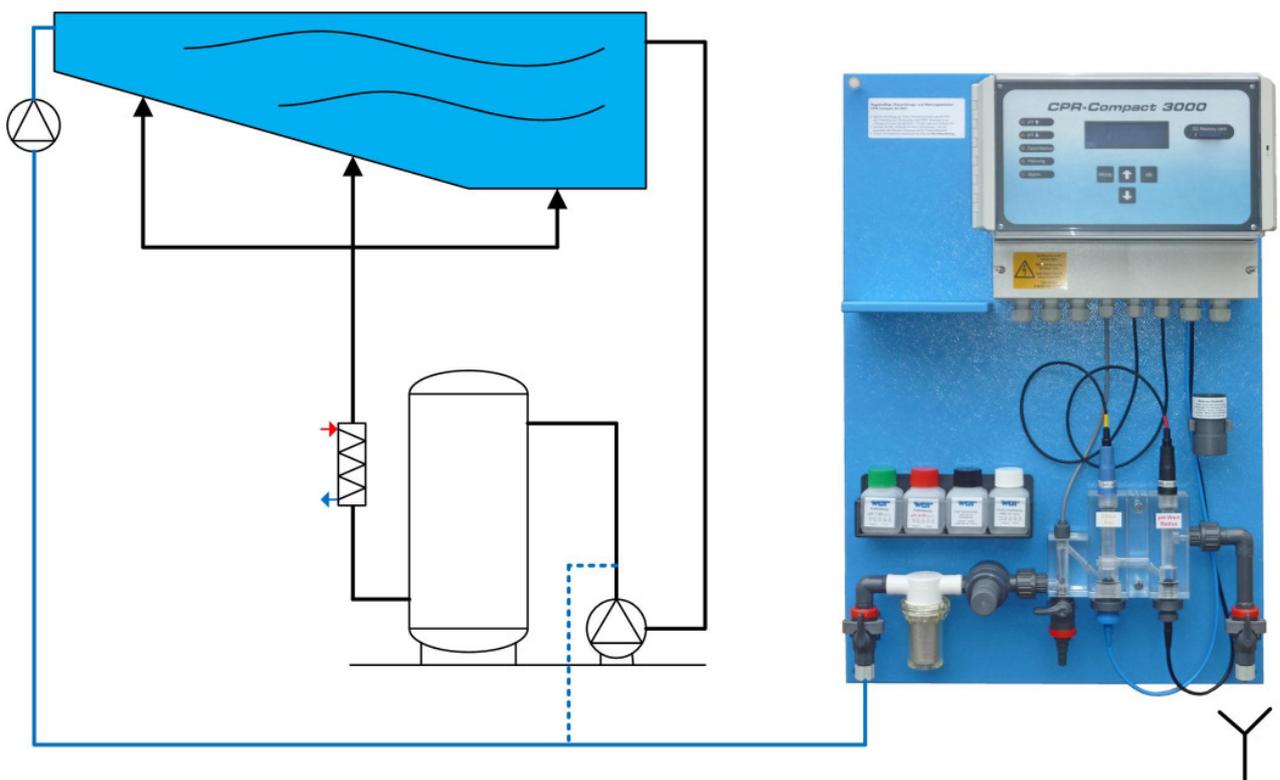
For ease operation and maintenance the installation place should be easy assessable, not exposed to frost and direct sun shine, temperature higher 40°C should be avoided.

4.2 The tapping points

The measuring water must come as quick as possible from the pool to the measuring cell that the controller can react with the chemical dosing in time to balance changes in the water quality cause of changing situations in the pool. Normally the measuring water is taken from before the filter - never from behind the filter!! If a balance tank is installed we get several changes in the water quality from the pool to the filter: the overflow from the pool to the channel diminish free chlorine and increases the pH, we have a retention time in the balance tank, the fresh water normally filled to the balance tank changes the water quality in the time of filling extremely. These influences have to be considered at evaluating the control effect of the auto-control system. The effect never can be optimal.

Therefore it is strongly recommended to take the water directly from the pool to the measuring cell by a separate pump.

In addition it is recommended to link the controller to the function of the circulation pump that in the event that the circulation is stopped, the chemical dosing is stopped too.



The measuring water flow is about 50 liters per hour.

5 Commissioning

5.1 Control Parameters

The controller is factory-provided pre-programmed with some general parameters. As the situation at each pool is different you have to conform the parameters to the special pool situation. See main menu.

5.2 Glass-probes

Take the glass probes from their packing carton and pull off the rubber protection caps, screw off the union nuts at the probe cables from the probe by a small left turn and screw in the probes into the measuring cell from top: the reference/counter electrode (blue) for the chlorine cell left side, the pH-probe (black) right side. Now push the probe connectors on the probes (pay attention to the colors) and fix them by the union nuts.

Please avoid drilling of the cables.



After about 1 hour for acclimatization the pH-probe is to be checked: Take out the probe from the cell, put it into the buffer solution pH 7.00. If a bigger difference as +/- 0.1 is indicated, you have to do a calibration – see menu – calibration.

5.3 Cleaning beads

The blue glass beads are for the cleaning and activation of the gold (free chlorine) and platinum (ORP/redox) electrodes being screwed into the measuring cell from bottom. Pull off the cables of the electrodes and put on the surface of the electrodes so many beads that the surface is covered.

At screwing back the electrodes in to the cell pay attention that no beads come between the thread.



Notice!

Check all hose connections at the measuring water supply and discharge and all unions at the controller to be tight. Do not overstretch the connections, plastic connection are only be tightened by hand!

5.4 Measuring water flow

Now open the water supply and discharge ball valves. At the flow control valve you adjust now the flow through the cell: the switch bobbin of the flow control switch must be pushed upwards to release the dosing. Furthermore the glass beads must rotate on the surface of the electrodes but shall not lift up. These two functions must be balanced.

5.5 Connection of the dosing devices

Corresponding to the control needs of the dosing devices connect them at the terminals. Then you have to define the parameters in the main menu.

5.6 First Calibration

After some time, when in the pool water is some chlorine the chlorine measuring cell is to be calibrated. You measure the chlorine content with the DPD-method. Go to the menu "calibration chlorine" and calibrate as described.



Best calibration results you get if the DPD-value is near the set-point. A calibration with only very few chlorine (< 0.3 ppm) in the water is not effective. When the DPD-value is further away (>0.3 ppm) from the set value, the calibration must be repeated after some hours, when the value got nearer to the set-point.

5.7 Password

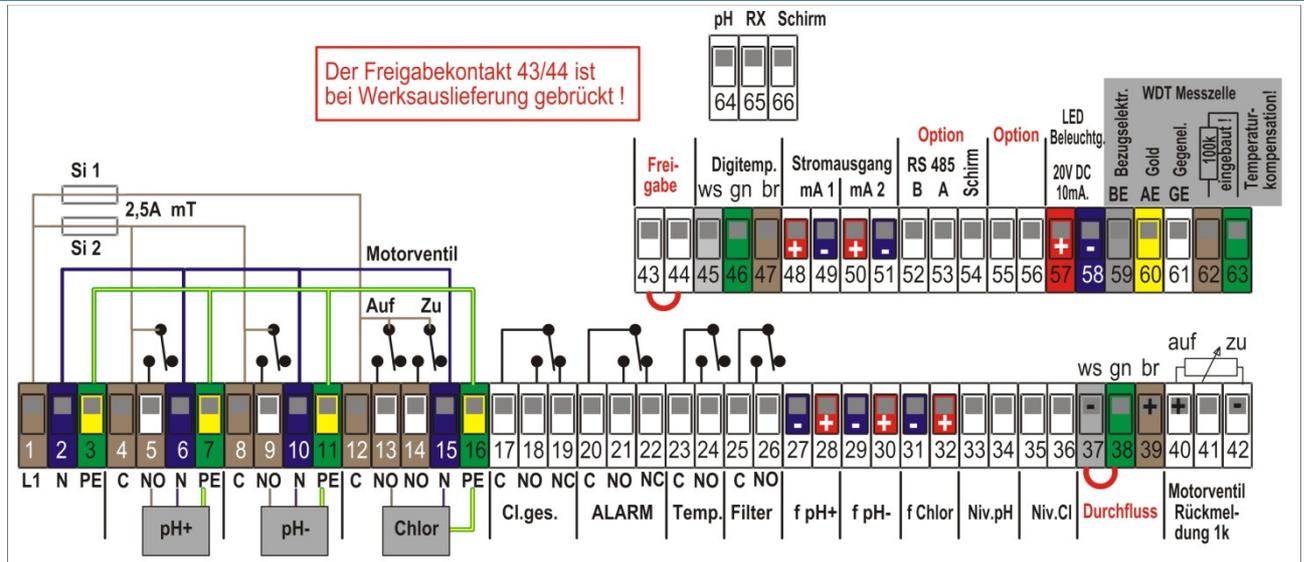
After finishing the parameterization please install a service-password. This is to avoid any unwanted change in the programming and subsequently wrong results in your auto-control of the water quality

6 Wiring



Attention!

All works at the electrical parts may only be executed by approved craftsmen.



The maximum electrical load on the relay contacts (conn. 4 to 26) may not exceed 2 Amp on each output.



Notice!

The power supply must be connected in the right polarity! The phase L1 must be connected on terminal 1!

Fuses



Notice!

The 2 fuses Si 1 & Si 2 are not stuck for use of dosing equipment with non volt control. If the dosing equipment needs a 230 volt power supply you have to stick the fuses on the sockets. The fuses you find in a bag inside the connecting box.

fuse	nom. current	fuse type	function
F1 (Si1)	2,5 A	5 x 20mm	output chlorine
F2 (Si2)	2,5 A	5 x 20mm	output pH

Relay outputs non volt to be executed without the fuses Si1-Si2

Relay outputs 230 volt to be executed with stuck fuses Si1-Si2

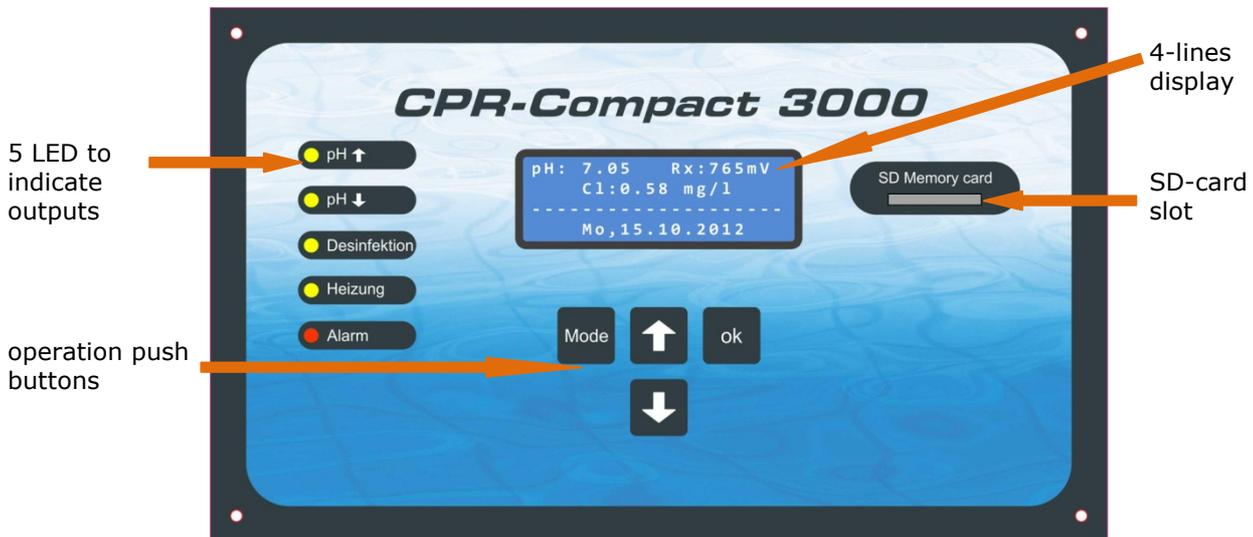
Pumps with frequency control to be connected on terminals 27 & 28, 29 & 30 or 31 & 32 .

Temperature control:

It is only the temperature input "Digitemp." terminal 45 to 47 to be used. The input for a Pt100 at the terminals 55 & 56 is not active.

7 Operation of the Controller

The operation of the controller is executed by 4 push buttons. The 4-lines display indicates measured values, alarm and all control parameters. 5 LEDs indicate active outputs. The measured values and the events can be stored on a SD-Card and be visualized by the Software **DataViewer**.

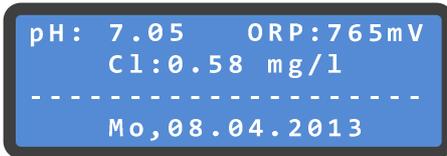


The push buttons

-  opens the menu and also serves as Esc (back) function
-  changes to the afore active line, or increases a number
-  changes to the next menu line, or reduces a number
-  confirms the action

7.2 Operation Program

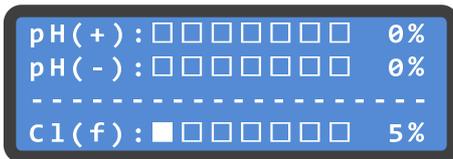
7.2.1 Normal Operation



Measured values are indicated. Controller works as programmed
(third line -----) : no irritation.

The lower line changes from date to time.

7.2.2 Actual dosing rate



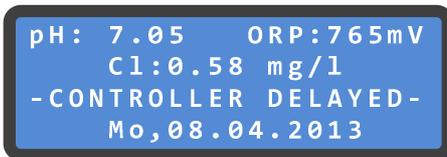
Pushing  the display indicates the actual dosing rate in %. So you can judge the difference between the set value and the actual value.

7.2.3 Memory



Pushing twice  the display indicates the actual data of the memory of the inserted SD-Card.

7.2.4 Controller delay



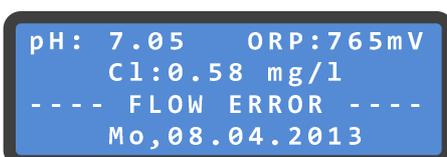
When the controller is started from new, a „dosing delay“ runs on:

For the set delay time no dosing, no alarm. The dosing delay time shall be set so high that after start it is sure that actual pool water is flowing through the measuring cell.

For setting see menu point „configuration“

With  the dosing delay can be interrupted and the controller is working as set.

7.2.5 Alarm indication



Irritations and alarms are indicated in the 3. line. If several alarms are active they will be shown cyclically.

In addition the red alarm-LED burns and the alarm relay is activated.

Irritations and alarms partially can be delayed under CONFIGURATION



The alarms for dosing time excess are to be quit manually! All other alarms are deleted automatically when the reason for the alarm is solved. E.g. when the empty chemical container is changed against a full one or when measuring water flows again through the cell.

7.3 Main menu

```

REMOVE MEMORY CARD
=>CALIBRATIONS
COTROLLER STOP
PH-DOSING
CHLORINE-DOSING
TEMPERATURE-CONTR.
CONFIGURATION

```

- For a safe removal of the SD-Card
- Menu calibration
- Manual switch of the controller: dosing and alarm
- Menu control parameters pH
- Menu control parameters chlorine
- Menu control parameters temperature
- Menu for general settings (date, time, ...)

7.3.1 Main menu → CALIBRATION

```

=>pH adjust
pH probe
Clorine probe
ORP test
Chlorine valve
Cl-zeropoint
Temp.correction
Hardware-test
Chlorine bounded

```

- Adjusting the value to a *phenol red* measuring
- 2-point calibration of the pH-probe
- Calibration free chlorine with *DPD1*
- to check the ORP/Redox-probe
- Calibration for the feed back of a chlorine gas valve
- Zero-point for open Cl- cells (not for diaphragm cell)
- Adjusting the temperature indication

For the calibrations the important steps are given as short text. With **OK** the done steps are to be quit. A new value is taken automatically when the measured value is stable for at least 10 seconds.

7.3.1.1 Main menu → CALIBRATION → pH probe

```

pH adjust
=>pH probe
Clorine probe
ORP test

```

Please proceed as indicated.

For the zero-point calibration only pH 7.00 buffer can be used. Only pH 7.00 should be set!

```

Please enter the
Buffer-value you
Have used: pH 7.00
Then press <ok>

```

we recommend to start with the buffer solution pH 7.00

After a successful calibration the probe data are indicated:

```

Probedata
-----
m = 59.000 mV/pH
pH7 = 01.000 mV

```

m = slope

The optimum slope is at 25°C at 59 mV/pH.

pH7 = zero-point voltage

The optimum zero-point voltage is 0 mV (+/-30 mV).

possible irritations → calibration faults:

If there are anomalies within the calibration at the end of the procedure this is indicated:

„Slope“

at a slope < **40mV/pH**, e.g. 38.9mV the calibration is refused

„zero-point“

zero-point voltage > **+/-60mV** e.g. -62.7mV the calibration is refused

„same buffer“

For the calibration 2 different buffer solutions must be used.

„no pH7 buffer“

For the zero-point calibration a buffer solution pH 7.00 is to be used.



When the calibration is finished with an irritation at the calibration procedure the controller will work on with the last guilty calibration results.

The indicated reason for the faulty calibration is to be corrected!

7.3.1.2 Main menu → CALIBRATION → Chlorine probe

```
pH adjust
pH probe
=>Clorine probe
ORP test
```

Please proceed as indicated.

After a „faulty“ calibration the fault is indicated.

```
Calibration process
Is still running.
Time remain.: 7 sec
U= 32 mV
```

When you push the  - button during the time remained the actual electrode signal is indicated.

The standard signal is 100 mV per mg/l free chlorine.

possible fault indication → „calibration fault – please check the measuring cell“ at a signal < 40mV pro mg/l the calibration is refused!

7.3.1.3 Main menu → CALIBRATION → ORP Test

```
pH adjust
pH probe
Clorine probe
=>ORP test
```

Please proceed as indicated.

at a difference > **+/- 50 mV** fault is indicated

Please pay attention to the temperature dependency of the ORP/redox solution.



Important:

The operation guidance for the ORP/Redox-test corresponds to a standard ORP/redox-probe with glass shaft.

At the *CPR-Compact 3000* however we use a special WDT ORP/Redox measuring system. The self cleaning platinum electrode works together with the reference electrode of the pH-probe; please proceed as described as follows:



1. Screw out the ½" platinum electrode from the bottom of the measuring cell, depose the blue beads on absorbent paper.
2. Screw in the ORP/redox-electrode into the ORP/redox test cylinder.
3. Dismount the pH-probe from the measuring cell and put it carefully into the test cylinder
4. both cables are connected at the probes
5. Now pour some ORP/redox-test solution into the test cylinder that the diaphragm of the pH-probe is below the fluid level.

Evaluation:

At a difference > **+/-50 mV** the test will be ended with a fault indication.

If so, you have to look for the reason for the fault and to find the solution to get a good measuring result again.

7.3.2 Main menu → CONTROLLER STOP

With *CONTROLLER STOP* the function of the controller is deactivated manually. During this *** STOP *** phase no inputs, outputs and alarms are active.

7.3.3 Main menu → PH-DOSING

The menu *PH-DOSIERUNG* is organized almost identically to the following menu *CHLORINE-DOSING*.

7.3.4 Main menu → CHLORINE-DOSING

```
=>Setpoint      0.40
  Min.alarm     0.20
  Max.alarm     0.80
  P-band        0.10
  I-Time Tn      0
  D-Time Tv      0
  Cl dosing start at
  Output        - - -
  Cl probe typ  Open
  ORP min.alarm 200
  ORP max.alarm 800
```

- Set-point → this value the controller has to reach
- Min. alarm → lower alarm value
- Max. alarm → upper alarm value
- P-band = proportional range
- I-time = Integral time
- D-time = Differential time
- chlorine dosing blocked depending on pH
- Output → depending on the linked dosing device
- Cl-probe type → open = with WDT ¾" gold electrode
- ORP min. alarm → lower alarm value for redox tension
- ORP max. alarm → upper alarm value for redox tension

7.3.4.1 Main menu → CHLORINE-DOSING → output

```
Output
-----
  None
  Frequency
  Pulswidth
  On/Off
  Motorvalve
```

- No dosing device is controlled
- Diaphragm pump with frequency input
- Granudos, peristaltic pump
- Electrolysis, solenoid valve (also for pulse width)
- Chlorine gas motor valve



At reaching ORP Max. alarm the dosing of chlorine is stopped. So severe overdosing is avoided in case of a fault in the chlorine measuring or control.

7.3.5 Main menu → TEMPERATURE CONTROL

To be activated under the menu CONFIGURATION.

```
=>Setpoint      25.0
  Hysteresis     2.0
  Min.alarm     18.0
  Max.alarm     30.0
```

- Set-point → this value the controller has to reach
- Hysteresis → switch band (Set-point - hysteresis)
- Min. alarm → lower alarm value
- Max. alarm → upper alarm value

7.3.6 Main menu → CONFIGURATION

```
=>Startup delay      2
Alarmdelay          5
Level control       5
Flow control        5
Filter timer...
Current outputs...
Temperature sensor
Time                12:05
Date                Mo,08.04.13
Networkaddress     43
Password...
Firmware update
Factory reset
Software            v1.16
Serial number...
Language           English
```

- dosing delay after start *2 minutes*
- delay for activation of the alarm output *5 seconds*
- delay for activation of the empty alarm *5 seconds*
- delay for activation of the meas. water *5 seconds*
- timer program for the filter control
- Analogical current outputs 0/4 - 20 mA
- to activate the temperature sensor
- time
- date
- Bus-address for linking IT
- Alphanumerical password
- Firmware – to start an update
- Reset of control parameters to works parameters
- Version of the implemented software
- Internal programmed series no. of the controller
- language (Deutsch, English, Svenska)

7.3.6.1 Main menu → CONFIGURATION → current outputs...

```
Current output Nr:
-----
                1
```

The controller has two analogical current outputs 0/4...20 mA that can be programmed to any of the measuring values.

selection of output **1** or **2**

```
Measurand:
-----
      pH-Value
      ORP
Chlorine(free)
Temperature
```

selection of the measuring value

```
Output type:
-----
      4 ..20 mA
```

selection of type **0 ... 20** or **4 ... 20**

```
Range:
-----
 4mA=>pH 2.0
20mA  pH12.0
```

fixing of the min and max value to the min and max current output

	<p>ADVICE! The max. apparent ohmic resistance of the connected devices may not exceed 500 Ohm.</p>
---	---

7.3.6.2 Main menu → CONFIGURATION → Password (for technical support)

by use of a password the following parameters are protected

- parameterization of outputs for pH and chlorine
- selection of the chlorine cell
- parameterization of current outputs
- activation of the total chlorine measuring system
- hardware test

Please see hereto the yellow marked points under menu 7.1

The controller is delivered ex works without a password. The alphanumeric password can be established by one to eight numbers between 0 - 9 and A - F.

If a wrong password is given, no fault is indicated. You can't get into the according menu.



- We advise to establish a password for the technical supporter to avoid any wrong programming.
- Please store the password carefully. A lost password can only be reset by the works customer service.

7.4 Alarms and other Indications

Alarms and other indications can be due to soft ware (e.g. min.- max. alarm) as to hard ware (sensor inputs: chemical empty). They are indicated in the 3. line in the display. If several alarms or interruption are active, they are indicated cyclically.

7.4.1 Alarms	
The alarm relay (terminal 20 – 22) and the alarm-LED are activated.	
Alarm	possible reasons and actions
pH-value too low	dosing rate too high, acid capacity too low, manual dosing executed?
pH-value too high	fresh water, acid dosing rate too low , fault on dosing device
ORP too low	fresh water, chlorine dosing rate too low , pH high, fault on dosing device
ORP too high	fresh water, chlorine dosing rate too high , pH low, fault on dosing device
Chl. value too low	fresh water, chlorine dosing rate too low, calibration, fault on dosing device
Chl. value too high	chlorine dosing rate too high, calibration, fault on dosing device
Temperature too low	fresh water, heating faulty
Temperature too high	temperature sensor, check heating system
Cl (b)-value too high	check filtration and flocculation, back wash, add fresh water
pH(+) DosTime-Limit	pH-value is not reached in time, caustic dosing rate too low, fault on dosing device
pH(-) DosTime-Limit	pH-value is not reached in time, acid dosing rate too low, fault on dosing device
Chlor. DosTime-Limit	chlorine-value is not reached in time, chlorine dosing rate too low, fault on dosing device, blocked injection valve
Cl. dosing stopped	Rx max. alarm value is exceeded <i>Chlorine dosing is stopped to avoid severe overdosing.</i>

7.4.2 Irritations	
The alarm relay (terminal 20 – 22) and the alarm-LED are activated.	
FLOW ERROR	water flow through the measuring cell too low: circulation off, measuring water pump faulty, filter in the measuring water tubing blocked
pH tank empty	exchange the acid or caustic container against a full one, empty switch faulty
Chlorine tank empty	exchange the chlorine container against a full one, empty switch faulty

7.4.3 indication	
An indication is only shown in the 3. line.	
EXTERN LOCKED	no activation by the filter circulation control system <i>at this indication no alarms or irritations are valued!</i>
CONTROLLER DELAYED	Dosing delay after start <i>at this indication no alarms or irritations are valued!</i>
Error Temp. probe	no digital temperature sensor connected or failure in the cable
SD-card full	exchange the SD-card or delete the memory

7.5 Definition of controlling expressions

7.5.1 Actuating Variable

The actuating variable is generated by the controller to get a wanted set-point. This results in variable on/off times for dosing pumps or valves, variable frequency for diaphragm pumps or variable opening angles of motor valves.

7.5.2 P-band (Proportional Controller)

The proportional controller calculates the difference between the set value and the actual value. The actuating variable will be proportional to the difference: e.g. a difference of 30% in the measuring value range from the set value means 30% of the max set dosing performance. Cause of the chemical dosing the difference gets less and the dosing rate is reduced respectively.

Normally the proportional control is sufficient for a pool control.

7.5.3 I-Time T_n (Integral controller)

The integral controller induces an actuating variable that is proportional to the sum of the got differences. The actuating variable increases therefore slowly at a divergence to the set value and reduces slowly only after exceeding the set value.

The reset time T_n (I-Time T_n) is that time that the integral controller needs to get the same actuating variable that the proportional controller sets at once. The larger the reset time, the smaller is the part of the integral controller at the control effect.

7.5.4 D-Time T_v (Differential Controller)

The differential-controller induces an actuating variable that depends on the speed of change of the measured value. The rate time T_v is the time that a proportional controller at a constant speed of change needs to get the same actuating variable that the d-controller gets at once.

7.5.5 Dosing Time Limitation

The dosing time limit is that time in which the set-point should be reached. If this does not happen in that time, anything with the system should run wrong: faulty dosing device, too small dosing performance.

Alarm is activated, dosing is stopped.

The dosing time limit is set for the pH- as for the free chlorine control separately under menu point „outputs“.

7.5.6 External Clearance

With the input „external clearance“ (terminal 43 - 44) the controller can be linked to a central filter control. So dosing can be stopped at filter back wash or any irritation in the filter system. Ex works this input is bridged. Contact 43 - 44 open = the controller is stopped.

7.5.7 Alarm Delay

The activation of an alarm happens delayed to avoid false alarm at only short existing events. The alarm retention time is programmable; ex works a time of 5 seconds is set.

8 Plotting the measured values

For the logging of the data at the controller a SD-card must be inserted. To plot the data you can use the software **DataViewer**.

8.1 SD-Card

➤ SD-Card type

Please do only use the by-packed SD-card (24 x 32 mm) with max. 2GB formatted in FAT16 (not FAT32)! The memory capacity of the 2GB SD-Card is sufficient for 15 months data logging.

➤ SD-Card insert

Insert the SD-Card into its place in the front plate. The display indicates **SD-card found**, the initialization is done automatically.

➤ SD-Card take out

At inserted SD-card you find in the main menu on top you select this program and confirm it. The data are now secured on the card. Now at the display the advice comes **Please take out the card!**

➤ SD-Card data delete

If the SD-Card is full the advice **SD-card full** comes on. Now you have to use a new SD-card or you have to discharge the card. Before discharging you should save the data on your PC. Eventually on the card there are further data that you want to use later on.



Advice:

- We recommend to save the data once every month. So you prevent any bigger loss of data.
- The internal data memory is only for about 1 minute store time. To minimize data losses insert the card as soon as possible after use.
- An SD-card with higher capacity leads to higher processor charge!
- If a wrong formatted SD-Card is used this is indicated!

8.2 Visualization software DataViewer

Systems requirements:

- PC with service system Windows (2000, XP, Vista, 7)

8.2.1 DataViewer installation

- *DataViewer.exe* double click.
- If needed confirm any indications with **OK**.
- Select the data file name where you want to store the Software and click **next**.
- Select a *Desktop-Symbol* and activate it.
- Click on **next**.
- Check the installation in the survey.
- Click on **Install**. The Software is now installed on the Computer
- Click on **make ready**. The Installation program ends and the Software starts.

8.2.2 To open or close the DataViewer

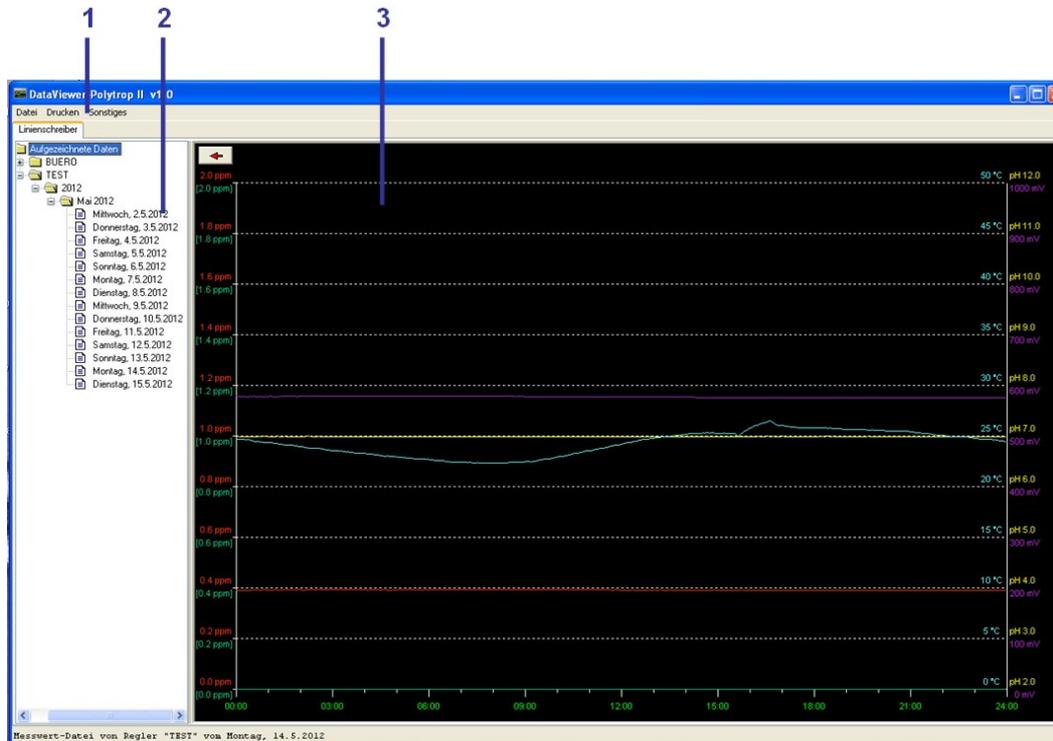
- To open the software: *Start > Program > DataViewer > DataViewer*.
- To close the software menu *file > end*

8.2.3 To import the data from the SD-Card

- Take out the SD-card from the controller and insert it to the computer (see 8.1)
- Open **DataViewer**.
- Menu *file > importation from memory card*. The Import-assistant opens.
- Click on **next**.
- Select SD-Card and click on **next**
- At the first data import from a SD-card: install a name for the SD-card and click on **next**. For the name max 8 characters.
- Choose the inventory, in which the data should be stored. Click on **change**.
- Click on **finish**.
The Import-assistant imports the data from the SD-card into the chosen file. The indication „xx data are copied successful“ displays.
- Close the import assistant with **OK**.

8.2.4 Display of the Measuring data

- In the range *overview data files* open the wanted file.- *double click*
- The range *overview data files* vanishes. The range *Visualization measuring data* shows the data.
- A „*right side click*“ in the display switches between 1 hour and 24 hours display.
- Any events: *alarms* and *irritations* are symbolized by a red bar at the bottom time axe.
- By pushing the left mouse button and running over the display field in the upper picture range the measuring data are indicated. Irritations and alarms are indicated in a text field.



- 1 = Menu band
 2 = overview of the files
 3 = Visualization of the measuring values

Menu Files

Menu inscription	Designation
New place for the data	changes the Place where the measuring data are stored on the hard disc
Data import	Imports data from the hard disc of the computer
import from SD-card	Imports data from the SD-card
export data from the marked range	Exports marked data as CSV-file for further processing in Microsoft Excel
end	finishes the program

Menu Configuration

Menu inscription	Designation
Colours for line writer	changes the colours for line writer

8.3 Events and Calibration

Besides the measuring data the system stores additional information on the SD-card. You find **Pxx**, **LOG_xx** und **CAL_xx** files. The Pxx files are used with the **DataViewer**. The two files LOG_xx and CAL_xx files can be seen by a simple text program as the Microsoft Editor and printed if needed.

➤ **P - files**

The files for measuring values are generated daily under the date, e.g. P0121030 (2012_10_30)

➤ **LOG - files**

Events as alarms are stored monthly, e.g. LOG_1210 (2012_10).

➤ **CAL - files**

Calibrations are stored monthly, e.g. CAL_1210.

9 Maintenance

All maintenance job shall be done by qualified personal. Need spare parts are to be supplied by the dealer. Please pay attention to the safety indications at the chemical containers and wear adequate protective clothes.

Maintenance jobs to do:

- clean the filter if scaled
- calibrate the pH-probe at a difference >0,2pH against the measuring with Phenol-red
- change the seals of the chlorine and ORP/redox-electrode every season
- change the inserts of the flow controller all 2 years
- check and clean the sieves in the chlorine and ORP/redox cell

9.1 Filter

The filter is to be cleaned if visually scaled. Especially in spring or autumn time it can be necessary more often.



Advice

A scaled filter leads to a higher consumption of chlorine; the chlorine reacts with the organic material depressing the ORP/redox tension and free chlorine of the measuring water. Subsequently the chlorine concentration in the pool water will rise.

9.2 Electrodes



Notice!

At doing any job with a glass-electrode pay attention that no humidity comes into contact with the connectors! Even smallest humidity will lead to a faulty electrode. The contacts must shine golden and may not look corroded.

All sensors suffer under wear. The live time in swimming pool water should be at least one season, could be 2 years. With the time the performance of the electrode will change cause of scaling of the diaphragm and ageing of the sensor glass. This leads to deviations in the measuring value and a cleaning and calibration in needed.

For cleaning the electrode only dunk it into the cleaning agent. Never use tiles or paper to clean the sensor glass and diaphragm.



Advice!

After each cleaning or change of the electrode you must calibrate it again.

9.3 Chlorine resp. ORP/Redox-electrode Insert

- change the seals of the ORP/redox-electrode every season

10 Taking out of operation – hibernation - storage

When the controller is taken out of service for a longer time you do the following.

- The diaphragm of a glass electrode should never get dry. To avoid this, do some electrolyte into the protection cap and push it on the glass electrode. The pH-electrode is frost prove till -15°C.
- Don't disconnect the mains supply; do not switch off the controller.
- If you get frost in your technical room, you have to empty all water leading parts of the system thoroughly. An alternative could be to dismount the POOLKLAR from the wall and place it at a frost safe room.

11 Technical data

Measures:		Electrical data:		Measuring range:	
width:	430 mm	voltage:	230 V – 50 Hz	pH	pH 0 ... 14
high:	650 mm	current:	max. 5 A	ORP	0 ... 1000 mV
depth:	150 mm	power:	5 W stand by	Cl	0 ... 5 mg/l
weight:	ca. 8 kg	0/4...20 mA output	max. 500 Ω	temperature	0 ... 50 °C

12 Commissioning-Protocol



Doing „Reset“ in the main menu all parameters are set back to the works settings. To be able to set the old, well proved parameters it is recommended to fill the list below with your special found parameters!

After a „reset“ the electrodes are to be calibrated again!

Menu Settings	works settings	setting ranges	steps	at commissioning	optimized
PH-DOSING					
Set-point (+)	6.90	0.10... - 0.10 to Set pH-	0.01		
Set-point (-)	7.20	Set pH+ +0.10 ... 12.00	0.01		
Min. alarm	6.00	0.10... - 0.10 To Set pH-	0.01		
Max. alarm	8.00	Set pH+ +0.10 ... 12.00	0.01		
P-band (+)	0.20	0.01 ... 5.00	0.01		
I-time Tn (+)	0	0 ... 3600	1		
D-time Tv (+)	0	0 ... 3600	1		
P-band (-)	0.20	0.01 ... 5.00	0.01		
I-time Tn (-)	0	0 ... 3600	1		
D-time Tv (-)	0	0 ... 3600	1		
Output (+)	---				
Output (-)	---				
CHLORINE DOSING					
Set-point	0.40	0.01 ... 5.00	0.01		
Min. alarm	0.20	0.10... - 0.10 to max. Alarm	0.01		
Max. alarm	0.80	+ 0.10 ... 5.00	0.01		
P-band	0.10	0.01 ... 5.00	0.01		
I-time Tn	0	0 ... 3600	1		
D-time Tv	0	0 ... 3600	1		
CL-dosing start at	Set-point pH- +2.0	0.00 ... 2.00	0.01		
Output	---				
Cl probe typ	open	open - membrane			
ORP Min. alarm	200	1 ... - 5 mV to max. Alarm	1		
ORP Max. alarm	800	Min Alarm +5 mV ... 2000	1		
TEMPERATURE					
Set-point	25.0	0.1 ... 80.0	0.1		
Hysteresis	2.0	0.1 ... - 0.5 to set-point	0.1		
Min. alarm	18	0.1 ... -0.5 to Max. Alarm	0.1		
Max. alarm	30	+ 0.5 ... 80.0	0.1		
CONFIGURATION					
Startup delay	2	0 ... 240	1		
Alarm delay	5	0 ... 90	1		
Level control	5	0 ... 90	1		
Flow control	5	0 ... 90	1		
Filter control					
Monday	00:00 -> 23:59				
Tuesday	00:00 -> 23:59				
Wednesday	00:00 -> 23:59				
Thursday	00:00 -> 23:59				
Friday	00:00 -> 23:59				
Saturday	00:00 -> 23:59				
Sunday	00:00 -> 23:59				

Current outputs...					
1	pH-value	4 ... 20 mA			
		4 mA => 2.0			
		20 mA => 12.0			
2	free chlorine	4 ... 20 mA			
		4 mA => 0.00			
		20 mA => 1.00			
Temperature sensor	not existing				
Network address	43	0 ... 255	1		
Password	00.00.00.00				
Software					
Serial number...					
language					

Notes:

Date

Place

Installation craft

Operator

13 Spare parts list

Spare parts for the CPR-Compact 3000 you get from your dealer. To avoid misunderstandings please state for each demand the exact product designation and the series no. of the CPR-Compact 3000. These information you find on the label right side the controller housing.

type: _____ item code no: _____

Series number: _____ year of production: _____

The **blue** marked articles suffer under normal wear and have no 2 years guarantee time.

Water flow part	Code number	
	12023	ball valve PVC ¼" – 6x1mm
	11977	Probe water valve ¼"
	10480	filter cup for filter 300µ
	10481	seal for filter cup 300µ
	10482	filter element 300µ
	18522	maintenance kit flow controller
	11978	switch bobbin magnetic d11
	12011	flow switch d8 C3G
		measuring cell CPR-Compact 3000
	11976	sieves set for measuring cell
Electrodes	Code number	
	18432	ref.- and counter electrode blue
		chlorine- electrode cable with screw push conn. blue
	11980	chlorine- electrode gold ¾" complete
	11982	joint set for chlorine- electrode
	17957	chlorine- electrode insert d 19
		chlorine- electrode cable 4mm MC-conn. 90cm blue
	10933	pH-probe PG13,5 60mm
	12006	pH-probe cable with screw push conn. black
	11984	ORP/redox-electrode ½" complete
	11985	joint set for ORP/redox-electrode
	11986	ORP/redox-electrode insert d14
	12009	ORP/redox-electrode cable 4mm MC-conn. 90cm black
	11964	cleaning beads 5ml
	10383	buffer solution pH4 50ml
	10384	buffer solution pH7 50ml
	10385	ORP/redox solution +468 mV 50ml
	11962	electrode cleaner – diaphragm cleaner 50ml
	11963	distilled water 500ml
	15945	electrolyte solution 30ml for hibernation
control boards	Code number	
		I/O- Board CPR-Compact 3000
		operation part CPR-Compact 3000
OPTIONS	Code number	
	13454	remote control mg/l, pH, mV, °C – red LED 7-character ind.
	23041	temperature sensor DigiTemp CPR-Compact 3000
		sensor take PVC ½" x 60mm
		measuring system total chlorine complete
		interface module RS485
		remote control – Visualization software RemoteWare

