evoqua
WATER TECHNOLOGIES

WALLACE & TIERNAN® MEASUREMENT AND CONTROL SYSTEM
OPTI POOL

INSTRUCTION MANUAL

Please note

Original manual!

Contents

1. Introduction

1.1 Documentation

1.1.1 Target groups

This instruction manual provides information for installation, operating and maintenance personnel. It is required to operate and maintain the unit.

This instruction manual is intended for the operating personnel. It contains important information which will enable the operator to run the system in a safe, reliable, trouble-free, and economical way. Carefully observing these instructions will help to avoid dangers, reduce repair costs and down times, improve the system's reliability, and prolong its service life.

The chapters on installation and maintenance are solely provided for trained service personnel. These sections contain important information on assembling, configuring, and commissioning the system and on maintenance and repair work.

All persons working with the system must have read and understood the instruction manual, in particular the safety instructions it contains.

Please consult the table of contents and the index to quickly find the information you require.

1.2 Conventions

Please note

The different weighting assigned to the various notes in this manual is indicated by means of pictogram symbols.

Pictogram	Note	Meaning
	*Danger!*	Immediate danger to life and limb! If the situation is not handled properly, death or serious injury may be the result.
	*Warning!*	Danger to life and limb! If the situation is not handled properly, death or serious injury may be the result.
	*Caution!*	If this warning is not observed, medium or slight injury or damage to the equipment may the result.
	*Warning!*	Electrical hazard.
	*Please note*	These notes facilitate work with the unit.

2. Safety

2.1 Intended use

Opti Pool continuously measures the concentration of disinfectants using pH and ORP measurements. The unit also controls the disinfectant and the pH value in the water in conjunction with hose pumps.

The operational safety of the system can only be guaranteed so long as it is used strictly as intended. The unit may only be used in accordance with its intended application as defined in the order and under the operational conditions stated in the technical specifications.

Compliance with the intended use also includes reading this instruction manual and observing all the instructions it contains. Furthermore, all inspection and maintenance work must be performed at the prescribed intervals.

The operator bears full and sole responsibility if this unit is put to any use which does not comply strictly and exclusively with this intended use.

2.2 General safety instructions

Evoqua Water Technologies GmbH places great emphasis on safety when working on or with the units. Safety is our guiding principle right from the design phase; the system is therefore equipped with safety features.

Safety instructions

The safety instructions in this documentation must be observed unconditionally at all times. Additional industry-wide or in-house safety regulations also continue to apply.

Safety instructions on the units

All safety instructions attached to the units must be observed. These instructions must always be clearly legible and complete.

State-of-the-art technology

The units have been constructed in accordance with state-of-the-art technology and the accepted safety regulations. However, if the units are used by persons who have not been adequately instructed, risks to life and limb of such persons or third parties and damage to the units themselves or to other property may exist. Work not specifically described in this instruction manual may only be performed by authorised personnel.

Personnel

The operator of the overall system must ensure that only authorised and qualified specialised personnel are permitted to work with and on the units within their defined scope of authority. „Authorised specialist personnel“ refers to trained technicians employed by the operator, by Evoqua, or, if applicable, the service partner. All work on electrical components must be performed by qualified electricians only.

Spare parts / components

Trouble-free operation of the units is only guaranteed if original spare parts and components are used in precisely the combination described in this instruction manual. Failure to observe this instruction may incur the risk of malfunction or damage to the units.

Extensions and conversions

Never attempt to perform any modifications, extensions or conversions on the units that could have an adverse affect on safety without written approval from the manufacturer.

Electrical power

During normal operation, the housing must remain closed.

Prior to installation, inspection, maintenance and repair work, always switch the unit off with the main switch on the outside of the unit and secure against reactivation.
Even when the unit is switched off, external voltage may still be applied.
Connect cables in accordance with the terminal diagram.

Disposal

Ensure that auxiliary materials and replaced parts are disposed of in a manner that is safe and environmentally benign.

2.3 Safety instructions specific to the unit

- The system must not be used with flammable liquids or dangerous or toxic gases.
- Never use corrosive cleaning agents!
  Use only a damp cloth to clean the unit.

3. Description

3.1 Technical data

3.1.1 Flow cell module with electrodes

Admission pressure	max.1.5 bar (Ü) min. 0.2 bar (Ü)
Back-pressure	max. 1.3 bar (Ü)
Pressure difference	min. 0.2 bar
Housing protection category	IP 54
Ambient temperature	0 – +50 °C
Connection	PVC hose ø 6x3 mm
pH measuring range	4.00 – 9.00 pH
Redox measuring range	0 – 1000 mV
Sample water temperature	0 – 40 °C
Min. sample water conduc-tivity	300 µS/cm
Switching point Sample water monitoring	> 18 l/h (± 3 l/h)
Contact Sample water monitoring	closed at correct flow rate

3.1.2 Electronic module

Power supply	230 V ± 10 %, 50 – 60 Hz, 27 VA Device fuse T160 mA, 5 x 20 mm
Relay outputs	Max. switching voltage: 250 V AC 220 V DC Max. switching capacity. 1250 VA 150 W According to TÜV (German Technical Monitoring Association): 5 A 250 V~ (cos phi = 1.0) 3 A 250 V~ (cos phi = 0.4) 5 A 30 V - (0 ms) Interference suppression via suppressor diodes
Measuring cell inputs	pH value and redox combined electrodes
pH measuring range	4 – 9 pH
Redox measuring range	0 – 1000 mV
Digital inputs	DI - sample water STOP (voltage-free contact) DII *ext. STOP (voltage-free contact)
Display	Two-line, backlit LCD
Ambient temperature	0 – 50 °C
Storage temperature	-20 – 70 °C

3.2 Scope of supply

Please note

You will find order numbers in Chapter 7.4 “Recommended spare parts” auf Seite 50.

3.2.1 Standard

Depending on the individual order, the scope of supply includes the following:

- Flow cell module
- Electronic module

3.3 Description

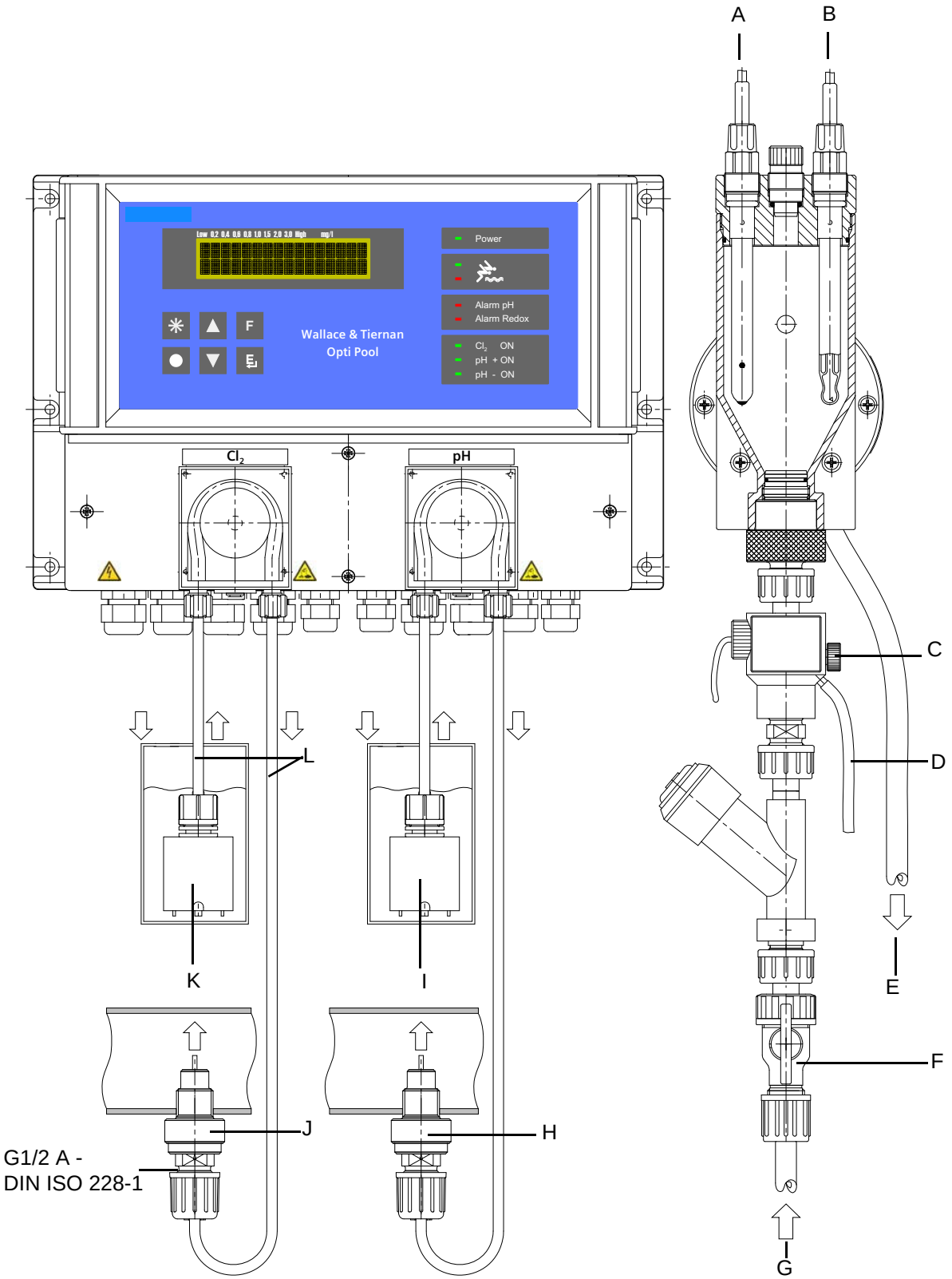
3.3.1 Versions

There are two versions of the electronic module:

Part no,	Description
W3T162597	230 V, pH electrode, mV electrode, 4 relays and 2 pumps
W3T158769	230 V, pH electrode, mV electrode, 4 relays

3.4 Design

General overview



Legend:

A Redox electrode
B pH electrode
C Knurled thumb screw to open the sampling taps
D Sampling taps
E PVC hose outlet, internal diameter 6x3 mm
F Stop valve (part no. W3T159874)
G PVC hose sample water inlet, internal diameter 6x3 mm
H Supply piece (part no. W3T162406)
I Floor suction valve (part no. W3T160606)
J Supply piece (part no. W3T162406)
K Floor suction valve (part no. W3T160606)
L PVC hose, internal diameter 4x1 mm

3.4.1 Flow cell module

The flow cell module consists of:

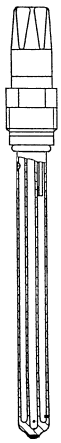
- A flow-through assembly with pH and redox electrodes
- A sample water monitoring unit
- Sample water filter
- Stop valve

pH/redoxelectrodes

The electrolyte is a saturated (3.5 mol) KCl gel.

Please note

The electrodes are delivered with a protective cap over the platinum electrodes and the diaphragm. The protection cap must be removed before the unit is used. It contains KCl solution so that the electrode is ready to operate at all times.



The electrodes have a threaded plug-in head with an O-ring seal.

The standard electrode is supplied with a 1.5 m-long coaxial cable (measuring cable). One end of the cable has a special connector. This connector is screwed onto the electrode's threaded plug-in head. The other end of this shielded cable is connected directly to the prescribed terminal connection.

Please note

If the electrode is not used for some time, fill the protection cap with water (not distilled) and replace it over the electrode.

Impedance converter (optional)

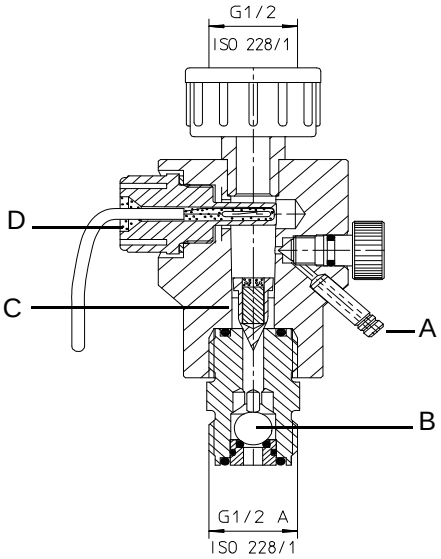
If the 1.5 m electrode cable is not long enough, use an extension up to a max. 50 m. In this case, an impedance converter (part no. W3T165563) must be screwed onto the pH and the redox electrode. This converts the very high-resistance electrode signal into a low-resistance signal.

The impedance converter is supplied by an installed battery. The battery life is approx. 5 years. Thereafter, the impedance converter must be sent to Evoqua Water Technologies GmbH Günzburg for battery replacement.

Sample water monitoring unit

If the flow of sample water is too low (switching point 18 l/h (±3 l/h)), a flow rate monitor sends an alarm. After the delay time has expired, the flow rate monitor ensures that the dosing pump switches off.

Flow rate monitor:



A Sample water extraction
B Non-return valve
C Float
D Reed switch

4. Function

4.1 Application

4.1.1 Disinfection of water

Swimming pool water is frequently disinfected by adding chlorine, sodium hypochlorite or inorganic chlorine compounds. Accurate dosing of these additives is extremely important. On the one hand, the degree of disinfection may be insufficient if the concentration is too low. On the other hand, if their concentration is too high, there may be a noticeable change in the odour. Moreover, the piping may be damaged by corrosion.

Opti Pool continuously measures the concentration of disinfectants using pH and redox measurements. The unit also controls the disinfectant and the pH value in the water in conjunction with hose pumps.

4.1.2 Chlorine values

Overview of a quick and complete disinfection of the swimming pool water:

Fresh water	pH 6.5 – 7.3	U_G > 750 mV
Fresh water	pH 7.3 – 7.6	U_G > 770 mV
Seawater	pH 6.5 – 7.3	U_G > 700 mV
Seawater	pH 7.3 – 7.8	U_G > 720 mV

4.2 Electronic module

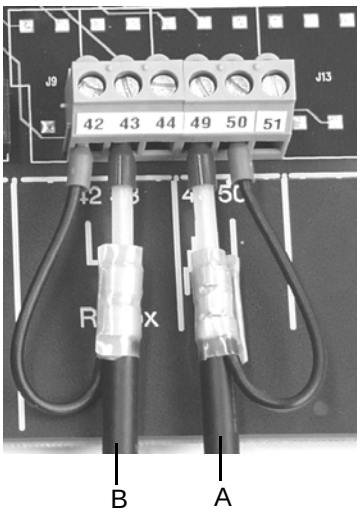
4.2.1 General description

The electronic module measures and controls the disinfectant and the pH value. The controller can directly control hose pumps. Operational safety is ensured by the safety shutdown if the sample water or the circulation fails.

4.2.2 Inputs

Measuring signal inputs

The cell inputs are designed for electrodes to measure pH and redox. A measuring cable is used to establish the electrical connection (see 8. “Wiring Diagram” auf Seite 55).



A pH cable
B redox cable

Connect the measuring cable as illustrated.

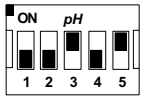
The measuring signal settings are factory settings and may not be changed.

The DIL switches must remain in the indicated position:

Redox

(Right side in terminal compartment – on previous system only!)

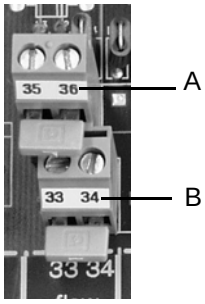
pH



(On the pH input card in the unit.)

Digital inputs

The floating contact of the flow rate monitor on the flow-through assembly allows the electronic module controller to be stopped.



A ext. STOP
B Samp.wat. al (flow rate monitor)

The hose pumps for chlorine dosing and pH correction remain off as long as the sample water flow rate is too low.

After failure of the sample water, the controller outputs remain unchanged in the range between 0 – 10 minutes as a result of the sample water delay parameter. The dosing pumps stop afterwards. Refer to “Menu path 7: Setup” auf Seite 39.

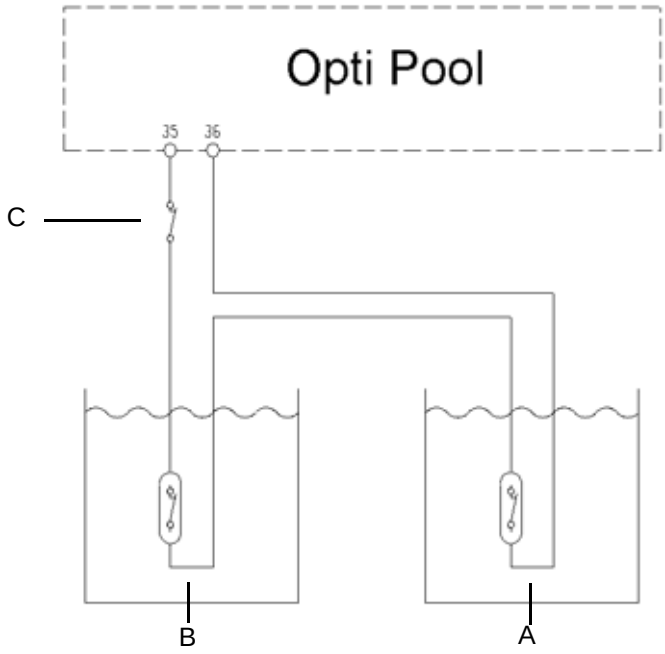
Dosing can be switched on and off via the "ext. STOP" contact (e.g., circulation lock).

Dosing delay is enabled if switched on via Samp.wat.al and ext.STOP.

This function is only operative in the automatic mode. Remove the associated bridges before connecting.

Please note

If intake valves are used with the empty-container contact (N.C. contact optional), they must be connected in series to the digital input „ext.STOP“ to terminals 35 and 36. If the chemical containers are empty, the unit switches both hose pumps off via the ext.STOP function.



A EMPTY PROBE pH CORRECTION
B EMPTY PROBE DISINFECTION
C MONITOR „CIRCULATION RUNNING“

Controller outputs

The controller outputs for chlorine dosing and pH control are designed to actuate the installed hose pumps (optional) or for external dosing and hose pumps.

Disinfection control:	P-controller, parameter prop.factor (1 – 10 %)
pH control:	P-controller, parameter prop.factor (1 – 10 %)

Limit switches

The electronic module contains two alarm relays (change-over contacts), which can be assigned as follows:

Alarm relay 1 - pH	pH max. pH min. Samp.wat. al ext. STOP
Alarm relay 2 - mV	ORP max. ORP min. Samp.wat. al ext. STOP

The following functions can be selected for both relays:

- N.O. unlachted
  normal open, closed in the event of an alarm, unlatched
- N.O.latched
  normal open, closed in the event of an alarm, latched
- N.C.unlatched
  normal closed, open in the event of an alarm, unlatched
- N.C.latched
  normal closed, open in the event of an alarm, latched

5. Installation

5.1 Transport and storage

Transport

The unit is supplied in standard packaging. During transport the packaged unit must be handled carefully and should not be exposed to wet weather or moisture.

Check that the transport packaging is undamaged.

In the event of damage, please inform the transport company immediately, as your rights to compensation will otherwise be lost.

If the unit is damaged, please contact the respective contractual partner immediately.

Keep the packaging until the unit has been correctly installed and taken into operation.

Storage

Store the unit in a dry place which is not exposed to the weather. Note the appropriate storage temperatures.

5.2 Installing Opti Pool

Caution!

All electrical work on the unit may only be performed by qualified electricians.
Modifications to the unit which go beyond those described in this manual are not permissible.
Carry out the work in the described sequence!

Warning!

Incorrectly connected devices can be damaged, possibly irreparably, or cause faults in other equipment when switched on or in operation.

Ensure that the measuring and control cables are not mixed up or are able to make contact with one another.

Never connect or disconnect any cables to which voltage is applied!

Ambient conditions

The unit must be protected against rain, frost and direct sunlight and may therefore not be installed outdoors.

Mount the unit horizontally on a flat wall in a frost-free room with an ambient temperature of 0 to 50 °C.

Install the sample water extraction point in the pool return line or as a drilled hole in the pool.
However, the sample water extraction point must be installed upstream of the flocculant dosing station and the overpressure applied directly to the measuring cell must be at least 0.2 bar (g).

The air in the room should be non-condensing.

Unpacking

Pay attention to small parts during unpacking!

Checking the mains voltage

Disconnect the unit from the power supply according to VDE regulations.

The Opti Pool mains voltage factory setting is 230 V.

Please note

Check mains voltage after unpacking.
The mains voltage is indicated on the name plate (left side of the unit).
Refer ro 5.2.2 “Setting mains voltage” auf Seite 22.

5.2.1 Electrical installation

Refer to 8. “Wiring Diagram” auf Seite 55.

Warning!

Only authorised and qualified electricians are permitted to install the device and open the housing. The unit may only be taken into operation when the housing is closed, and must be connected to protection earth. Modifications to the device which go beyond those described in this manual are not permissible.

Warning!

The device is not equipped with a mains switch and is in operation as soon as the supply voltage is applied. An external switch or circuit breaker is therefore necessary.
When connecting system components (e.g. devices, motors, pumps) as well as when entering operating data, the system components must be switched off in order to prevent uncontrolled activation or any incorrect function.

Caution!

To ensure safe and correct commissioning, knowledge of the operation, connected electrical load, measurement signals, cable assignment and fuse protection of the connected devices and machines and the relevant safety regulations is required.
Therefore, the device may only be commissioned by qualified and authorised electricians.
Incorrectly connected devices can be damaged, possibly irreparably, or cause faults in other equipment when they are switched on or in operation. Ensure that the measuring and control cables are not confused or make contact with one another. Never connect or disconnect any cables to which voltage is applied!

Please note

Opti Pool does not include a power cord and must be connected properly to 230 V, 50 Hz with protective earth. Fuse max. 2 A.
Recommendation: Provide an on/off facility for the unit at the installation site.

Please note

If the sample water does not stop automatically when the circulating pump is switched off, an enable contact (ext. STOP) must be connected from the circulating pump to terminals 35 and 36.
The factory-installed bridges must then be removed! Refer to 8. “Wiring Diagram” auf Seite 55.

5.2.2 Setting mains voltage

Warning!

Risk involving electric current!

Disconnect the power supply before opening the housing.
Only trained electricians are permitted to open the housing.
More complicated repairs must be carried out by the service technicians!

Warning!

Power error

Do not run the device with incorrect voltage!

Unit fuse can blow.
Other damages or malfunctions may occur.

The set mains voltage must be checked before installation and before connecting the connection cables.

The switch to set the mains voltage and the fuse is inside the unit housing on the left side of the PCB.

Procedure:

1 Use a lever to loosen the two side hinges and carefully lift the cover to prevent damage to internal cable connections.

2 Remove both ribbon cables to the front membrane (J17, J19).

Please note

Make sure not to stress these cables.

3 If the ribbon cables to the display are unplugged, they must be plugged back in during reassembly.

Please note

Do not twist the cable.

4 Set the mains voltage on the slide switch (left side of the mains transformer).

5 The mains voltage was changed.
Note the mains voltage set on the name plate (e.g., with water-resistant pen).

Example:
Mains voltage adjusted to 230 V!
Date – Name – Company – Department

6 Replace mains fuse:

		Part no.
at 230 V	T 160 mA	W2T506387
at 115 V	T 315 mA	W2T506388

Caution!

Only „W3T158768“ units without pumps can be adjusted to 115 V.

„W3T162596“ units with hose pumps always require 230 V, because the pumps may not be adjusted!

5.2.3 Connecting the Sample Water

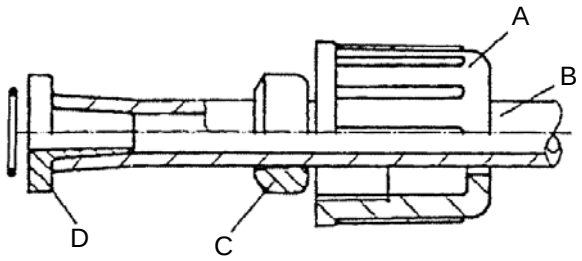
With hose connection:

Please note

The water-tightness of the hose screw connection is only guaranteed if the following installation instructions are followed!

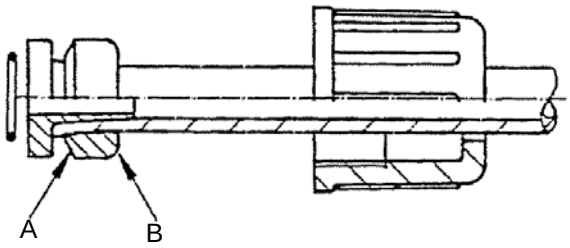
1 Release the union nut (A) on the hose screw connection.

2 Insert the hose (B) until it hits the hose bushing (D).



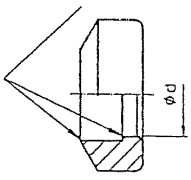
A Union nut
B Hose
C Locking ring
D Hose bushing

3 Push the locking ring out until the union nut engages the connecting threads.



A 30° pitch on this side
B Rounding on this side

Locking ring for PVC hose with 2 clamping points



5.2.4 Sample water extraction

The sample water extraction line should be a PVC hose Ø 6x3 or PVC pipe DN 6 and as short as possible.

The assembly instructions for hoses must be followed (see 5.2.3 “Connecting the Sample Water” auf Seite 24)!
The sample water supply line is connected to the check valve (connection G 1/2 A, ISO 228/1).

Please note

Under no circumstances may the sample water supply line to the flow-through assembly or the piping carrying water be made of copper (because it influences the measuring currents).

Select the sample water extraction point that guarantees a proper mixture of disinfectant and a constant, bubble-free sample water flow.

5.2.5 Sample water outlet

The outflowing sample water is diverted unpressurised into an outlet. If a ball stop valve is optionally installed, the sample water can be returned in a pressurised line with max. 1,3 bar (g) overpressure. The sample water admission pressure must always be at least 0.2 bar higher than the back-pressure on the cell outlet. However, pressure losses in the return line must also be taken into consideration.

5.2.6 Hose pump return lines

Return lines involve open outlets which may not be closed under any circumstances. The return line should lead either to an associated chemical container or two separate collecting basins. To prevent possible chemical reactions, mandatory drains should not drain together under any circumstances.

5.3 Commissioning

Warning!

Opti Pool is not equipped with a mains switch. Opti Pool is in operation as soon as the supply voltage is applied.
To prevent uncontrolled activation or malfunctions, connected pumps, etc., must be switched off ("Manual" mode) while entering the operating data. They may be activated only after the operating data has been entered and checked.

Requirements

- Proper installation of the sample water line and dosing pumps
- Leak test
- Proper electrical connection of the system and dosing pumps

Procedure:

1 Screw in and connect electrodes.

2 Open sample water supply line and drainage line.

3 switch on power supply.
First, the program version is displayed (e.g.,
EAE1054
FRG 49
V:1.00)

4 Set the parameters for the connected pumps in the "Parameters" menu path.

5 Set the alarms and functions in the "Alarms" menu path.

6 Enter sample water temperature in the "CALIBRATION" menu path.

7 Calibrate the measuring signals after approx. 1 hour running-in time (see 6.3 “Calibration” auf Seite 41).

Please note

Repeat the calibration after 24 hours running time.

8 Check the measured values by a manual measurement.

9 Switch over to the automatic mode and check the function of the dosing and control systems.

10 Note the feed delay – it can be prematurely ended by pressing the star key.

11 The unit is ready for operation.

5.4 Default factory settings

Display	Factory setting	Commissioning
setpoint ORP	750 mV	
setpoint pH	7,30 pH	
mode	manual	
offset pH	0,00 pH	
man.comp.temp.	+30 °C	
prop.factor ORP	10 %	
prop.factor pH	10 %	
pH - control direc	pH-	
Cl_2 max	1,5 mg/l	
Cl_2 min	0,2 mg/l	
pH max	7,8 pH	
pH min	6,5 pH	
ORP max	900 mV	
ORP min	600 mV	
Alarm Relay pH Relay allocation	pH max pH min	
Relay function	N.O. unlatched	
Alarm delay	0,0 h	
Alarm Relay mV Relay allocation	ORP max ORP min	
Relay function	N.O. unlatched	
Alarm delay	0,0 h	
overfeed delay	0,0 h	
overfeed delay	0,0 h	
feed delay	3,0 min	
samp.water delay	0 min	
Language	German	
code definition	000	
Contrast	30%	

5.5 Shutdown

5.5.1 Switching dosing off

Select the "manual " mode in the display menu.

5.5.2 Switching system off

temporarily

Switch off the external main switch; if necessary, shut off the sample water supply line and return line

or longer periods for repair, etc.

Procedure:

1 Rinse the dosing pumps with water for several minutes.
Hang a suction hose into a container with water.
Switch to "MANUAL" mode in the actuator Cl_2 or actuator pH menu to „ON“.

2 Switch off the external main switch.

3 Close stop valve on the inlet and return line.

4 Unscrew the flow rate monitor from the flow-through adapter, the water will flow out of the flow-through adapter.

5 Remove the cable from the redox and pH electrodes and unscrew the electrodes.

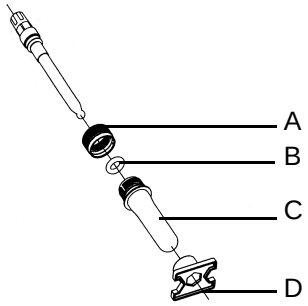
6 Unscrew the flow-through assembly cover.

7 Rinse out the flow-through adapter; the threads must be free of contamination.

8 Reassemble the parts.

9 Store electrodes separately with protective caps (with KCl gel) or use the winterising kit (part no. W3T164482), comprising a KCl container with 5 ml 3-mol, KCl solution and stand. .

10 Refer to 5.3 “Commissioning” auf Seite 26 to restart.



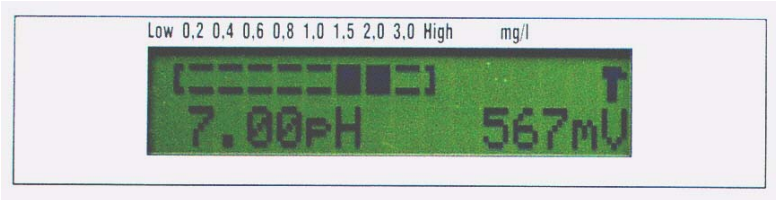
A Additional lock
B O-ring
C Container
D Stand

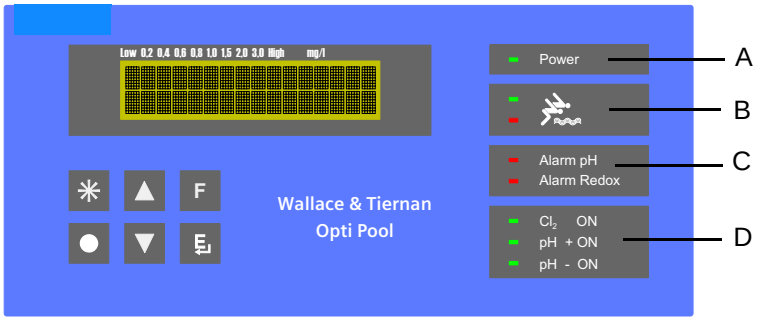
Please note

The electrodes must not dry out (see instructions for the individual electrodes).

6. Operation

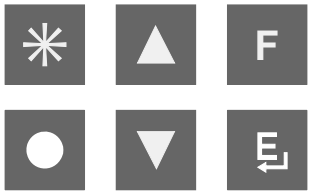
6.1 Display and operator controls





A Power indicator green
B Water quality
C Alarm pH and Alarm Redox
D Controller activity Cl_2 and controller activity pH

Key functions



Operating panel

Star
Delete alarm message, reset alarm relays, prematurely end feed delay.

Escape
Cancel the entry without saving the new value.
Return to main menu; press again to return to the basic display.

Up
Move up one level, increase value or display previous option.

Down
Move down one level, decrease value or display next option.

Function
Display next menu (move from main menu to main menu).

Enter
Change to edit mode (“>“ displayed before the value), - save new setting.

6.2 Notes on operation

During operation observe the following points:

- Check your entries and changes before you leave the menu.
- Only press the keys with your fingers.
  Do not use hard or pointed objects. This could damage the sealed keypad (e. g., pencil).
- Protect menus with an access code.

Access code

Please note

An access code can be entered to protect against unauthorised access or inadvertent incorrect operation.

Default „code definition = 0“. This means that an access code is not defined.

Defining an access code

Procedure:

1 In the SETUP menu under „code definition“, enter the new access code (number between 1 and 999).

2 Select the ✓ key to confirm.

Please note

The access code is automatically blocked if a key has not been pressed for one hour.

Block with access code

To block the unit immediately with an access code, the access code must be set and saved in the main menu (not „code definition“).

Set values may still be displayed but not edited if you do not have the access code.
„"Code ???"“ appears in the menu if an unauthorized access is attempted. The previous settings are then displayed again.

You may only change values in the protected menus after you enter the correct access code in the main menu.

Removing an access code

1 Set and save the valid code in the main menu.

2 In the SETUP menu under **„code definition“,** enter and save the number **„000“** .

Please note

The access code query is not displayed in the main menu.
The access code query is not displayed in the main menu.

Forget your access code?

Opti Pool must be reset to factory settings.

Please note

Attention:
All personal settings will be deleted.
Sensor calibrations will be deleted.

We recommend viewing all settings and making a note of them in a settings overview!

Resetting factory settings

Procedure:

1 Select „RESET“ in the „DIAGNOSIS“ menu path and press ENTER-key.

2 Press ✳ until „***INIT***“ is displayed.

3 Unit executes a RESET.

4 The unit sets the access code to „0“.

5 The factory setting is re-established and personal settings and calibrations are deleted.

6 All settings and sensor calibrations must be made.

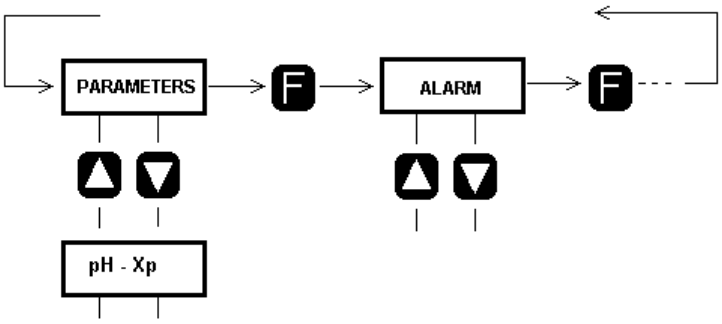
*No „***INIT***“ display*

If „***INIT***“ does not appear, only a normal RESET was executed.

Follow the „Resetting factor settings“ procedure once again.

Menu navigation

- Starting from the basic display, access the other menus using the F key.
- Sub-menus are then accessed with the ▲ and ▼ keys. From any sub-menu, press the ○ key once or twice to exit to the main menu and press it again to exit to the basic display.

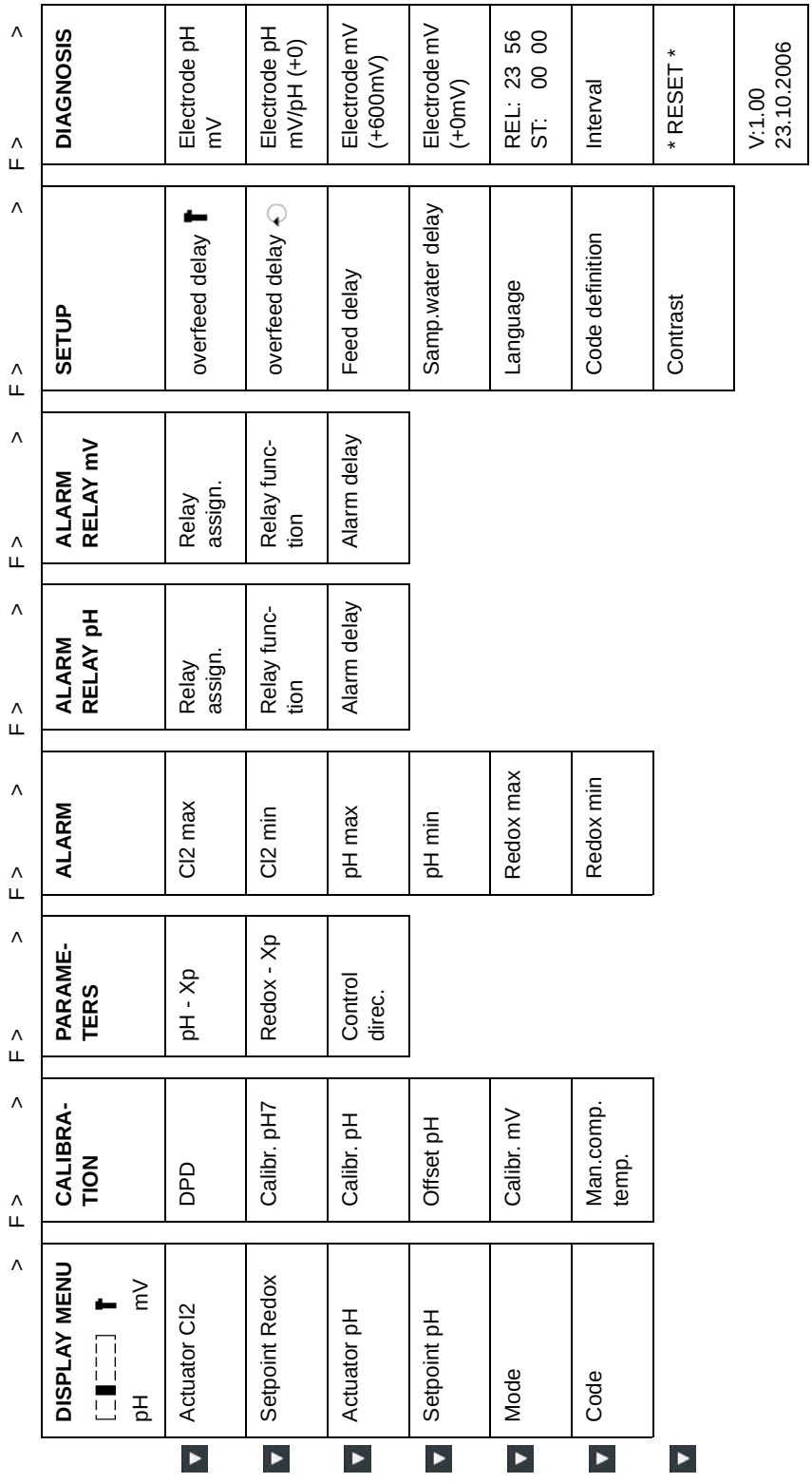


- Select the menu item to be changed.
- Press the E key, an arrow appears in front of the value to be set.
- Use the arrow keys to increase or decrease the value, or change the setting/selection.
- Store the correct value by pressing the E key.
- Skip to the next option using the ▲ and ▼ keys.

If you have changed a value with ▲ and ▼ but have not yet stored it with the E key, you can restore the original setting by pressing the ○ key. Use the arrow keys to select the next sub-menu.

6.2.1 Menu structure

Menu Summary This menu summary includes all menus. Depending on the settings, some menus are not required and therefore not shown.



Menu path 1: Display menu

Display	Value range (defaults in bold)	Description
[_▮___] **7.00 pH** **800 mV**		**Measured values, unit of measurement, operating mode**
actuator Cl_2	**OFF** ON	**Manual adjustment of dosing pump Cl_2** (not in "auto") Adjust with the ▲ and ▼ keys.
setpoint ORP	0 - 1000 mV **750 mV**	**setpoint redox potential (ORP)**
actuator pH	**OFF** ON	**Manual adjustment of acid, alkaline dosing pumps** (not for „auto“)
setpoint pH	4.00 - 9.00 pH **7.30 pH**	**setpoint pH**
Mode	auto **manual**	**Mode** The selected operating mode is also shown using the "auto" or "manual" symbols.
Code	**000-** 999	**Code** Entry of code number The settings can only be altered if the number entered here agrees with the number entered in the code-def. menu. Otherwise, the error message "code ???" appears. The menu does not appear if the number "000" has been entered in the Code.def. menu. In this case, all settings can be altered.

Measuring ranges

Chlorine: 0.2 – 3 mg/l (calculated from the redox potential)
pH: pH 4.00 – pH 9.00
Redox: 0 – 1000 mV

Symbols

[_▮___] Bar graph for Cl2 value

Manual mode

Auto mode

DI Sample water STOP

DII ex. STOP

Menu path 2: Calibration

Display	Value range (defaults in bold)	Description
CALIBRATION		**Calibration menu** This menu path is used for all calibration settings. The controller output remains unchanged during calibration.
[_▮___] **DPD ...mV**	**0.2 - 3.0 mg/l**	**Chlorine DPD calibration** The displayed mV value reflects the measured potential of the redox electrode. Use ← ▼ or ▲ →on the bar to set the value measured with the DPD. Press the E key to calibrate the display to this DPD value.
calibr.at pH7	6.85 - 7.15 pH **7.00 pH**	**pH calibration to pH7.00** Press the E key to calibrate the display to pH7.00 (adjustable by ±0.15 pH with ▼ or ▲). It cannot be calibrated outside the limiting range.
calibration pH	0.00 - 14.00 pH	**pH calibration** This menu is used to set the span of the pH curve. Set the value of the buffer solution with ▼ or ▲. Press the E key to calibrate the display to this value. To achieve sufficient accuracy, the value of the buffer solution must be greater than pH 8 or smaller than pH 6. The default pH buffer solution is pH 4.65.
offset pH	-0.50 - +0.50 pH **0.00 pH**	**pH offset calibration** This is used to compensate a slight difference between the displayed value and one measured manually.
calibration mV	478 mV	**Redox calibration** The value of the buffer solution is set with ▼ and ▲. The default pH buffer solution is pH +478 mV.
man.comp.temp.	-10 - + 50 °C **30°C**	**Sample water temperature** Set the manually measured temperature with ▼ or ▲ (the value is used for pH compensation).

Menu path 3: Parameters

Display	Value range (defaults in bold)	Description
PARAMETERS		**Controller menu** This menu path is used for all controller settings.
prop.factor pH	**1 - 10%**	**Proportional factor of the controller prop.factor - acid/alkali dosing**
prop.factor ORP	**1 - 10%**	**Proportional factor of the controller Xp - chlorine dosing**
Control direc.	pH+ **pH-**	**Control direction of the acid or alkali dosing** pH+: The pump only doses alkali. pH+: The alkaline causes an increase in pH value. pH-: The pump only doses acid. pH-: The acid causes an decrease in pH value.

Menu path 4: Alarm

Display	Value range (defaults in bold)	Description
ALARM		**Alarms menu**
Cl2 max	0 – 3.0 mg/l **1.5 mg/l**	**Max. chlorine alarm**
Cl2 min	0 - 3.0 mg/l **0.2 mg/l**	**Min. chlorine alarm**
pH max	4.00 - 9.00 pH **7.80 pH**	**Max. limit values pH**
pH min	4.00 - 9.00 pH **6.50 pH**	**Min. limit values pH**
ORP max	0 - 1000 mV **900 mV**	**Max. limit values redox**
ORP min	0 - 1000 mV **600 mV**	**Min. limit values redox**

Please note

This menu is only used to define the switching threshold values. Whether or not the fault signalling relay is activated is specified in the menu paths 5 and 6„ under "Alarm relay pH and mV“.

Menu path 5: Alarm Relay pH

Display	Value range (defaults in bold)	Description
ALARM RELAY pH		**Alarm Relay pH (1)** This menu path is used to specify alarms and external signals that activate the switching of relay 1. It also sets the mode of operation of the relay and the switching delay time of the relay.
relay assign.	**pH max** **pH min** Sample water STOP ext. STOP	**Alarm relay pH (1) assignment** (see below) ext. STOP: Usually circulation stop (DII)
relay function	**N.O.unlatched** N.O.latched N.C.unlatched N.C.latched	**Function of alarm relay pH (1)** N.O.: normal open, closed in the event of an alarm. N.C.: normal closed, open in the event of an alarm. not latched: unlatched latched: latched If "latched" is selected, the alarm must be acknowledged with the ✳ key.
alarm delay	**0.0** – 10.0 h	**Delay until the relay switches** The indicator illuminates immediately after the alarm has been sent; however, the relay switches at the end of the delay time.

Menu path 6: Alarm Relay mV Analogous to Alarm Relay pH.

Setting the relay assignment

Display	Value range (defaults in bold)	Description
Relay assign. **☐ pH max**	Press E key.	Open menu.
Relay assign. **> ☐ pH max**	▲ and ▼	Select the desired switching function.
Relay assign. **> ☑ pH max**	Press E key.	Confirm selection. If necessary, press E again to delete.
Relay assign. **> ☐ pH min**	▲ and ▼	If necessary, select additional switching functions.
☐ ext. STOP **> * save E**	▼	To store the selected switching function, place the arrow > in the bottom row using ▼ and press E to confirm.

Menu path 7: Setup

Display	Value range (defaults in bold)	Description
SETUP		**SETUP menu** (general settings)
overfeed delay	**0.0** – 24.0 h	**Dosing time monitoring** Indicates the max. time the system can dose when operating 100 % in manual mode. If exceeded, the control relay switches off. A setting of 0.0 h deactivates this function.
overfeed delay	**0.0** – 24.0 h	**Dosing time monitoring** Indicates the max. time the system can dose when operating 100 % in manual mode. If exceeded, the control relay switches off. A setting of 0.0 h deactivates this function.
feed delay	0 - 10 min **3.0 min**	**Feed delay** - When switching from manual to auto mode - After switching on in auto mode - After actions at digital inputs DI or DII (Sample water STOP or ext. STOP) The countdown is indicated on the display in seconds. Press the ✳ key to prematurely end the feed delay.
samp.water delay	**0** – 10 min	**Delay time of sample water monitoring (DI)** After failure of the sample water, the control outputs remain unchanged for this time. DI blinks on the display. After the delay time has expired, the corresponding error message appears on the display. The dosing pumps stop.
language	**German,** English, French, Italian, Spanish, Polish, Czech, Hungarian	**Menu language**
code definition	**000** - 999	**Specification of the user code number** If set to "000", all settings can be altered. With any other setting, the user can only make changes if this setting has also been entered in the "Code" menu in the display menu. After one hour of operation without pressing a key, the value in the "Code" menu reverts to "000" and access is denied once again. After a total RESET, the value in the „code definition“menu is reset to„000“.
Contrast	0 - 100% **(30%)**	**Setting the display contrast.** The display lighting can be adjusted from 0% to 100%. .

Menu path 8: Diagnosis

Display	Value range (defaults in bold)	Description
DIAGNOSIS		**Diagnosis Menu** This menu displays internal measurements and operating states.
pH electrode – mV		**Current pH electrode potential** Typical value: pH7.00 equals: 0 mV
pH electrode ... mV/pH (...mV)		**Current pH electrode potential** Display of mV/pH increment (slope) Display in brackets: Isothermal intersection point offset Typical value: +56 mV/pH (0 mV)
mV electrode +...mV		**Current redox electrode potential**
mV electrode (...mV)		**offset redox** This value results from calibrating the current redox potential to the electrode's nominal value.
REL: 2 3 5 6 **St: 0 0 0 0**		Relay status When the relay has picked up, "1" is displayed. Assignment of the relays (see the wiring diagrams): 2 RelayK2 chlorine dosing 3: Relay K3 pH dosing 5: Relay K5 Alarm pH (1) 6: Relay K6 Alarm Redox (2)
interval ... h		**Calibration interval** Displays the number of operating hours since the last DPD, pH or redox calibration. The counter continues after an interruption in operation. Highest value: 2000 hours, approx. 84 days
***** Reset *****		**Restart the unit (RESET)** Press the E key to restart the unit. Set parameters are not changed.
V:1.00 **23.10.2006**		Displays the software version and date.

6.3 Calibration

Please note

To prevent the output of non-permissible control signals, the controller outputs remain constant during calibration.

Caution!

For units with pressurised sample water return lines, shut off the inlet and outlet before calibrating the pH and redox electrodes! The remaining pressure is released when the sample water extraction on the flow rate monitor is opened.
After calibration has been completed and the electrode has been refitted, open the inlet and outlet lines.

Caution!

Do not use buffer solutions after their expiry date!

Opened buffer solutions have a limited service life!
Pay attention to the information printed on the bottle!
Use the buffer solution only once!

Please note

The sample water and buffer solution should have the same temperature. If the sample water temperature deviates from 30 °C (reference temperature), you must calibrate using the corresponding value in the temperature table (see buffer solution label).

6.3.1 Chlorine display

Adjusting the measured value

Please note

Before the DPD calibration, a redox calibration must be carried out! See 6.3.3 “Redox calibration” auf Seite 44.

After zero point calibration wait at least 60 minutes.

1 Wait approx. 2 minutes after opening the stop valve.

2 Then remove the water sample.
Procedure:
Loosen the knurled thumb screw on the flow rate monitor's sampling tap approx. 1 turn.
Determine the free chlorine content of the specimen for example with a photometer P15 *plus*.

3 Press the F key to select the „CALIBRATION“ menu.

4 Press the ▼ key until the "DPD" menu appears.
The displayed mV value reflects the measured potential of the redox electrode.

5 Press the E key to open the menu.

6 Press ▼ or ▲ until the displayed value on the bar graph agrees with the determined value.

7 Press E to store this value. The chlorine measured value is now set.

8 Press the ○ key twice to return to the basic display or continue to the pH calibration menu.

6.3.2 pH calibration

pH7 compensation (isotherm intersection)

Please note

Before the pH can be calibrated, the sample water temperature must be set in the „man.comp.temp.“ menu!

1 In menu path "CALIBRATION", press the ▼ key until the menu "calibr.at pH7" appears.

2 Unscrew the pH electrode.
Open bag with pH 7 buffer solution.
Wash electrode with distilled water.
Dip the electrode into the buffer solution and move gently until the indicated pH value remains constant.

3 Press the E key twice to set the display to "7.00".
Press the E key once again to change the pH 7.00 value by a max. ±0.15 pH. This can compensate for fluctuations in the buffer solution caused by temperature.

Slope alignment

4 Rinse the electrode with distilled water (to clean off the buffer solution).

5 Press the ▼ key until the "calibration pH" menu appears.

6 Open bag with pH 4.65 buffer solution.
Dip the electrode into the buffer solution and move gently until the indicated pH value remains constant.
If a buffer solution other than those stated is used, the pH value of the buffer solution must be lower than pH 6 or higher than pH 8.

7 Press the E key to open the "calibration pH" menu.

8 Press ▲ or ▼ until the displayed value agrees with the value of the buffer solution. Press E to store this value. The measuring cell is now calibrated.

9 Refit the electrode.

10 Discard the buffer solutions and rinse with plenty of water.

11 Press the ○ key twice to return to the basic display or continue to the pH calibration menu.

Offset compensation

If external influences result in a constant difference between the displayed pH value and a pH value measured manually, this difference can be compensated.

1 In the "CALIBRATION" menu path, select the menu "offset pH".

2 Move the electrode around in the reference liquid.

3 Use the ▲ or ▼ key to set the pH value of the reference measurement and acknowledge with E (limits of the offset compensation ±0.5 pH).

4 Re-open the inlet and outlet lines.

6.3.3 Redox calibration

1 In menu path "CALIBRATION", press the ▼ key until the menu "calibration mV" appears.

2 Unscrew the mV electrode.
Open bag with buffer solution.
Wash electrode with distilled water.
Dip the electrode into the buffer solution and move gently until the indicated value remains constant.

3 Press E key to open the "calibration mV" menu.
Press ▲ or ▼ until 478 mV is displayed, i.e. the value measured with the mV buffer solution. Press E to store this value. The measuring cell is now calibrated.

4 Refit the electrode.
Re-open the inlet and outlet lines, if necessary.

5 Discard the buffer solution and rinse with plenty of water.

6 Return to the basic display by pressing the ○ key twice.

Please note

Redox combination electrodes have long running-in times. Therefore, after a buffer calibration, it may take several hours until the measured value has stabilised.
Deactivate the Cl_2dosing, otherwise a Cl_2overdosing may occur!

6.4 Setting the control parameters during commissioning

Swimming pool approx. 20 m^3
Cl_2 value: approx. 750 mV ORP potential = 0.6 mg/l Cl_2
pH value: 7.30 pH

	Cl2 control	pH control
Setpoint	750 mV	7.30 pH
Xp	10 %	10 %
Control direc.	-	Acid

6.5 Errors and Remedies

Please note

When using the swimming pool, note that the "water quality" display lights up green.

Error messages

Remedying errors requires knowledge of the system. When "Electrician" is indicated, only electrical technicians may troubleshoot and remedy errors; note the information provided in notices and especially warnings!

The following table shows and explains all possible error messages which can be displayed. If several errors occur at the same time, the corresponding messages appear alternately in succession. When the error has been remedied, the error message is automatically deleted.

If you are unable to remedy the error yourself, please contact your contractual partner.

Error message	Cause	Remedy
"Water quality" indicator lights up red	Cl_2, pH, redox value not within the range (see alarms menu).	Check calibration. Check dosing units. Check sensors. Check containers.
"Alarm pH" indicator lights up red	pH value not within target range or sample water STOP or ext. STOP depending on alarm assignment setting	
"Alarm pH" indicator lights up red	pH value not within target range or sample water STOP or ext. STOP depending on alarm assignment setting	
No indicator	No power supply	ext. Main switch on (electrician)
		ext. Main circuit breaker on (electrician)
	Device fuse defective.	Check the power supply (Electrician) and replace fuse.
Indicator flashes	Measured value outside the measuring range.	Check calibration. (see “Menu path 8: Diagnosis” auf Seite 40). Check electrodes. Check cables.
Measured value can not be calibrated	Sensor signal not within target range. Sensor defective.	
calibration pH ?	Dirty Electrode worn out Membrane glass damaged.	Checks electrode. Check cables. Check buffer solution.
calibr. mV ?	Dirty Electrode worn out.	
Samp.wat. STOP“	Sample water flow rate too low. Hose defective. Pressure drop	Check sample water inlet and outlet lines. Replace hose.
ext. STOP“	Circulation switched off. Cable break	Checks circulation. Check cables.
Displayed/output value incorrect	Changes in the measuring cell or sample water.	Run calibration.
Desired setpoint not reached	Problems with the hose pumps. Dosing hoses blocked, defective, pinched. Container empty.	Check hose pumps. Check hoses, replace if necessary. Check containers, replace if necessary.
Air bubbles	O-rings leaking.	Replace O-rings.
	Defective screwed connections.	Check, retighten or replace, as appropriate.

7. Maintenance

7.1 Routine maintenance

Please note

The following maintenance schedules are recommendations only. Adhere to the appropriate standards, regulations and locally applicable guidelines.

Activity	Period/Interval
Check for leakages	daily
Pump hose	Every 6 months
pH electrode	approx. 1-2 years
mV electrode	approx. 2-3 years

7.2 Check for leakages

Check the entire measuring device including all screw connections for leakage. Repair any leakage points immediately!

Please note

Air bubbles in the sample water influence the measuring accuracy. The cause must be determined and remedied.

7.3 Replacing hose

Please note

Use only original replacement pump hoses!

Never grease hoses!

The pump hose is a wear part and must be replaced after a reasonable service life (approx. 1000 h continuous operation), but no later than every 6 months (e.g., during a service visit) according to the following instructions:

Procedure:

Caution!

First empty the pump hose and rinse the supply lines and/or pumps with water!

Corrosive residues can cause eye and skin injuries when the pump hose is removed.

If necessary, wear protective eyewear and gloves, and use a cloth to protect the surroundings from escaping residues.

Protect fingers from entrapment!

1. First ensure that the dosing pump remains disconnected from the power supply while replacing the hose.
   Switch off the system's main switch!
2. After removing the pump housing cover (milky transparent) and the blow rotor cover, remove the rotor, then take out the hose clamp with the pump hose.
3. Remove the old pump hose from the hose clamp.
   Use the alternative dosing rate kit.
4. If the pump housing is soiled by pumping medium that has escaped, the inside of the pump housing must be carefully cleaned and dried.
5. Put the new pump hose in until it hits the hose nipple, without twisting it in the process. The coloured hose mark must be visible from the front. (Not including in the dosing rate kit.)
6. Secure the pump hose on both sides with overleaf closing hose clamps. (Not including in the dosing rate kit.)

7 Fit the hose clamp into the pump housing.

8 Insert rotor, thereby inserting the hose loop back as far as possible by turning the rotor clockwise once.

9 Attach the rotor cover and pump hosing cover.

10 Check the hose pump function in manual mode. The pump is self-priming (max. suction height 2 m).

7.4 Recommended spare parts

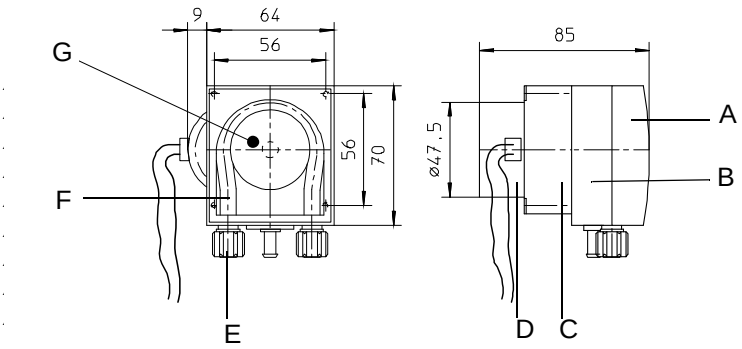
Warning!

For reasons of safety, only use original spare parts.

Please contact our customer service department if you need any spare parts.

Part no.	Description
W3T171377	Seal set
W3T169297	pH combined electrode
W3T172356	redox combined electrode
W3T173161	pH or mV cable
W3T161181	Standard buffer solution pH 7.00, ready for use
W3T161189	Standard buffer solution pH 4.65, ready for use
W3T161182	Standard redox buffer solution +478 mV (saturated against Ag/AgCl KCl), ready for use
W3T169826	Flow rate monitor
W2T506387	Fuses at 230 V, T160mA
W2T506388	Fuses at 115 V, T160mA
W3T171326	PE spray bottle with 500 ml distilled water
W3T172849	PP measuring cup, 100 ml graduated with spout
W3T164482	Electrode winterising kit
W3T170364	Spare part circuit board

Hose pumps



A Cover
B Pump housing
C Gearbox
D Motor
E Hose connection for 4 x 1 internal diameter
F Transport hose
G Cover disk

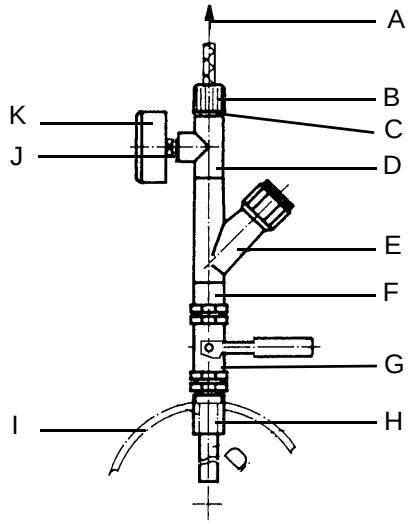
Dosing hose pump part no. W3T160605

Description	Description	
Discharge rate	0.6 l/h at 1.5 bar back pressure	
Pump hosing cover	Material	PP
	Colour	natural
Pump housing	Material	PP-GFK
	Colour	blue
Bearing block	Material	PP-GFK
	Rotor colour	blue
	Cover disk colour	blue
	Axes/compression ring	Titanium/Hastelloy
Gearbox	Gear ratio	1:103
Motor	Voltage	230 V, 50 Hz
	Power output	3.5 W
	ED in %	100
	Motor rpm	600 rpm
	Starting torque	8 Nm
Transport hose	Material	Pharmed
	Size	Internal Ø 4.8 x 1.6 wall thickness
Hose connection	Size	Internal Ø 4 x 1 wall thickness

Part no.	Description	consisting of
W3T171979	Motor gearbox unit	Motor gearbox unit with 4 screws and washers
W3T171980	Pump housing	Pump housing with locating bearings, including O-ring 1x internal Ø 50 x 2.5 NBR (for housing) and 4x internal Ø 2.5 x 1.5 NBR (for screws)
W3T171981	Bearing block, complete	Rotor with blocks, springs, axes and cover disk
W3T171982	Pump housing cover	--
W3T171983	Transport hose	Transport hose with 2 cable ties(PA)
W3T164497	Capacity kit 4000	Hose clamp with two hose nipples (PVDF), two tightening nuts and locking ring, pump hose, internal Ø 4.8 mm

Sample water take-off (Example)

Sample water extraction part no. W3T167656 0.1 – 1 bar (Ü)
Sample water extraction part no. W3T167628 0.15 – 4 bar (Ü)



A Hose internal diameter x wall thickness ø 6x3 part no. W2T505525
B Hose connection Item 6
C Reduction Item 10, Threaded part Item 17
D T junction DN15 Item 7
E Strainer DN15 Item 3
F Male/female union Item 9
G Ball valve R 1/2“ Item 4
H Sample pipe Item 2
I Sleeve R 1/2 to be provided locally
J Flat gasket Item 13, Reduction nipple Item 14
K Pressure gauge 0 – 4 bar Item 5, Pressure gauge 0 – 1 bar Item 11

Item	Quantity	Part no.	Description
2	1	W3T167416	Sample pipe
3	1	W3T171391	Strainer DN15
4	1	W3T161902	Ball valve R 1/2“
5	1	W3T173160	Pressure gauge 0 – 4 bar
6	1	W3T167518	Hose connection
7	1	W2T507524	T junction DN15
9	1	W2T505339	Male/female union
10	1	W2T506780	Reduction
11	1	W3T173138	Pressure gauge 0 – 1 bar
13	1	W3T161254	Flat gasket
14	1	W3T163500	Reduction nipple
17	1	W3T172948	Threaded part

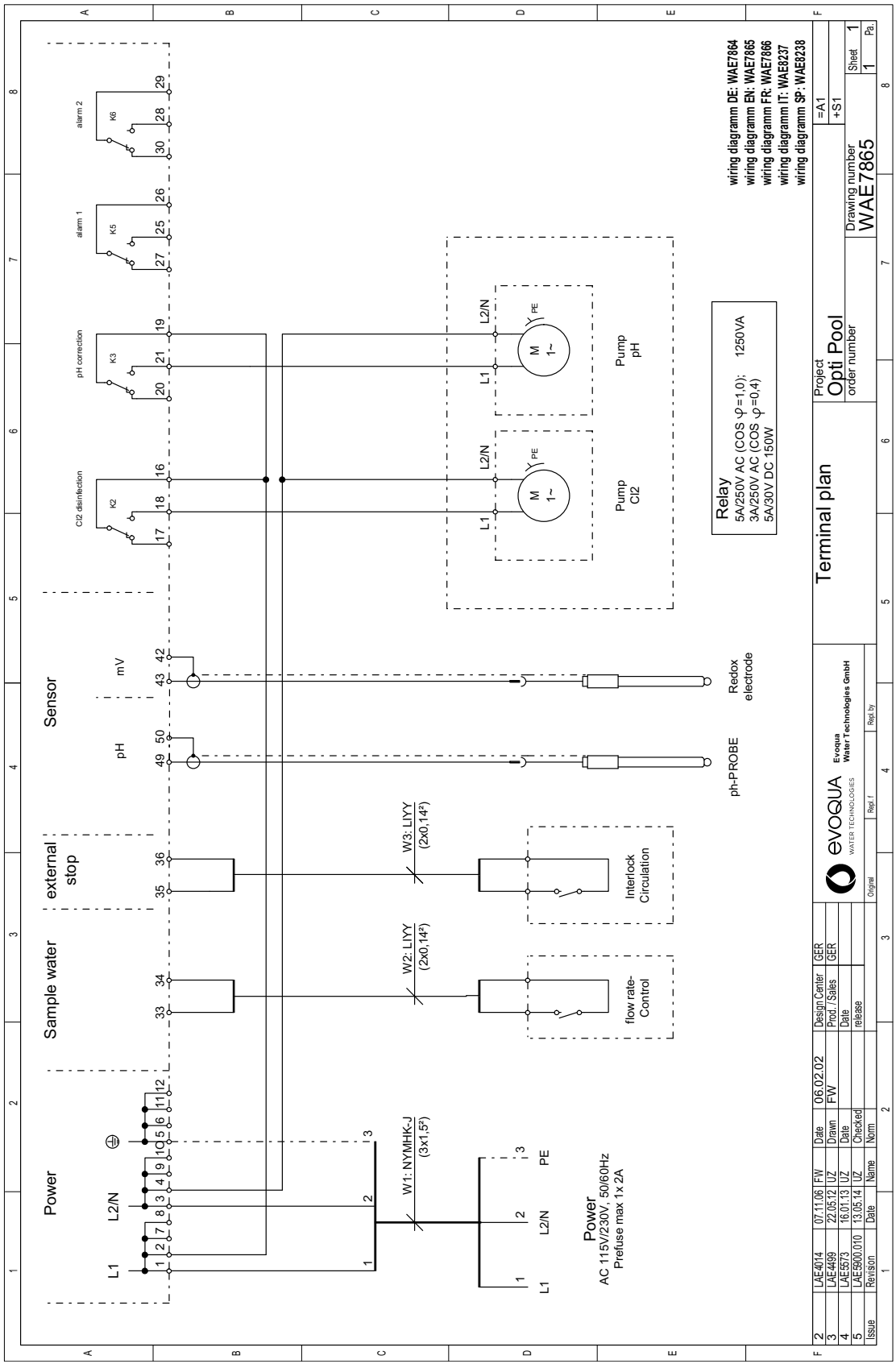
Electronic module

Part no.	Description
W3T162596	Electronic module 230 V with pumps
W3T158768	Electronic module 230 V without pumps

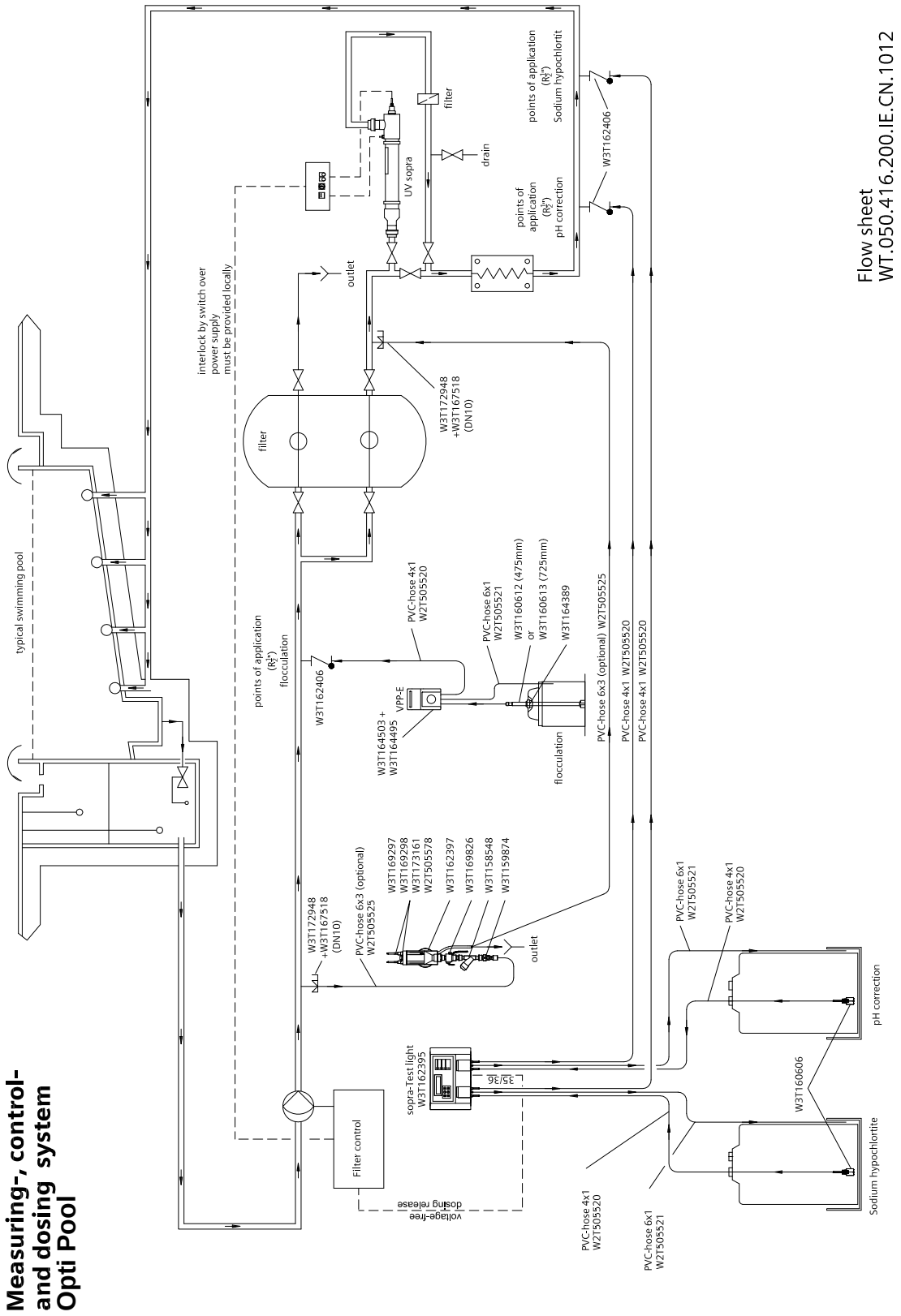
Hoses

Hose		Hose connection parts				
Internal ø x		Locking ring		Union nut	Hose bush-ing	Hose connection parts made of PVC incl. O-ring
Wall thick-ness	Part no.	ød	Part no.	Part no. *)	Part no. *)	Part no.
PVC hose, reinforced						
ø4 x 3	W2T505524	10	W3T163417	W3T161502	W3T172945	W3T167626
ø6 x 3	W2T505525	11,8	W3T161436	W3T161502	W3T161501	W3T167518
ø10 x 3	W2T505334	15,5	W3T159622	W3T167297	W3T167293	W3T167590
PE Hose						
ø4 x 1	W2T507155	6	W3T172891	W3T161502	W3T172945	W3T163752
ø6 x 1	W2T505784	8	W3T169815	W3T161502	W3T161501	W3T171453
ø6 x 2	W2T505676	10	W3T163436	W3T161502	W3T161501	W3T163796
ø10 x 2	W2T505734	14	W3T163437	W3T167297	W3T167293	W3T163825

8. Wiring Diagram



9. Functional Diagram



10.Declaration of conformity

EVOQUA WATER TECHNOLOGIES

EG-Konformitätserklärung
EC Declaration of Conformity
Déclaration CE de conformité

No. MAE1500

Ausgabe/*issue*/**édition** 02

Hersteller/*Manufacturer*/**Constructeur:**	Evoqua Water Technologies GmbH
Anschrift/*Address*/**Adresse:**	Auf der Weide 10, D-89312 Günzburg
Produktbezeichnung: *Product description:* **Description du produit:**	Opti Pool *Opti Pool* **Opti Pool**

Das bezeichnete Produkt stimmt in der von uns in Verkehr gebrachten Ausführung mit den Vorschriften folgender europäischer Richtlinien überein:
The product described above in the form as delivered is in conformity with the provisions of the following European Directives:
Le produit désigné est conforme, dans la version que nous avons mise en circulation, avec les prescriptions des directives européennes suivantes :

2004/108/EG Richtlinie des Europäischen Parlaments und des Rates vom 15. Dezember 2004 zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit.
Directive of the European Parliament and of the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility.
Directive du Parlement européen et du Conseil du 15 décembre 2004 relative au rapprochement des législations des Etats membres concernant la compatibilité électromagnétique.

2006/95/EG Richtlinie des Europäischen Parlaments und des Rates vom 12. Dezember 2006 zur Angleichung der Rechtsvorschriften der Mitgliedstaaten betreffend elektrische Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen.
Directive of the European Parliament and of the Council of 12 December 2006 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits.
Directive du Parlement européen et du Conseil du 12 décembre 2006 concernant le rapprochement des législations des Etats membres relatives au matériel électrique destiné à être employé dans certaines limites de tension.
CE-Kennzeichnung / *CE marking* / **Marquage CE**: 2014

Ersteller : SR
Ausgabe : 13.05.2014
Dokument: VD130-1_CE_Konformitätserklärung.doc

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Die Konformität mit den Richtlinien wird nachgewiesen durch die Einhaltung der in der Nachweisdokumentation aufgelisteten Normen.
Evidence of conformity to the Directives is assured through the application of the standards listed in the relevant documentation.
La conformité avec les directives est assurée par le respect des normes listés dans la documentation téchnique correspondante.

Benannte Person für technische Unterlagen:
Authorized person for the technical file:
Personne désignée pour la documentation technique:

Name / *name* / **nom:** Evoqua Water Technologies GmbH

Adresse / *address* / **adresse:** Auf der Weide 10, D-89312 Günzburg

Günzburg, den / *the* 2014-09-17

Evoqua Water Technologies GmbH

i.V. Klaus Andre

Klaus Andre
Technischer Leiter / *Director Engineering*

Unterschrift
signature / **signature**

i.V. Helmut Fischer

Helmut Fischer
Leiter QM / *Quality Manager*

Unterschrift
signature / **signature**

Diese Erklärung bescheinigt die Übereinstimmung mit den genannten Richtlinien, ist jedoch keine Beschaffenheits- oder Haltbarkeitsgarantie nach §443 BGB. Die Sicherheitshinweise der mitgelieferten Produktdokumentation sind zu beachten.
This declaration certifies the conformity to the specified directives but does not imply any warranty for properties. The safety documentation accompanying the product shall be considered in detail..
La présente déclaration atteste de la concordance avec les directives citées, elle n'offre cependant pas de garantie quant à la nature ou la durabilité selon l'article 443 du code civil allemand. Les consignes de sécurité de la documentation du produit fournie sont à respecter.

Dokument: VD130-1_CE_Konformitätserklärung.doc

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EVOQUA WATER TECHNOLOGIES

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