DEPOLOX® POOL E 700 P POOL MANAGEMENT SYSTEM

WALLACE & TIERNAN® ANALYZERS/CONTROLLERS

The DEPOLOX® Pool E 700 P system has been designed for measurement and control functions as well as process control in pool water treatment applications. Based on individual pool water treatment requirements, the instrument can be configured to measure and monitor all pertinent parameters.

The DEPOLOX Pool E 700 P unit is a complete pool water management system that incorporates many of the existing differentiated pool water treatment features such as DIN contact, shock chlorination menu, economic mode operation as well as the CEDOX control algorithm. The controller supports all chemical feed applications commonly found in pool water treatment such as dosing pumps or relay control feeders, chlorine gas feed control, on-site electrochlorination system operation as well as a control signal to UV systems, flocculation and/or activated carbon slurry feed systems.

The DEPOLOX Pool E 700 P unit can measure and control the critical disinfection parameters of free chlorine, pH and ORP. The instrument can also measure combined and total chlorine as well as conductivity and provides a control output for these measurements. Considering all of the functionalities incorporated into the one controller that is operated via an intuitive touch screen, the complete system is easily recognized as a user-friendly pool water management system.

DESIGN AND FUNCTION

The Pool Management System consists of the flow cell module DEPOLOX Pool E and the electronic module 700 P. Each component is configured based on the customer's requirements. The intelligent measurement module is housed in a non corrosive enclosure. The sensors are easily observed through the clear flow cell that can be illuminated as an option. The flow cell is available in a pressure less and a pressurized version and can be fitted with up to five sensors. The measurement module not only houses the sensors but it also processes all pertinent sensor data and sends this data via a single cable to the 700 P electronics. The digital CAN bus cable is the only connection between the measurement module and the electronics. Connecting sensors is therefore even easier than before. As an available option, the working status of the sensors is additionally visible from a distance away. Red, yellow and white LED's alert the operator of the sensor status.

Benefits

- Measurement of the circulation amount via mA signal input possible
- Innovative, future proof design, flexible in operation & expansion
- 7" colour touch panel ensures intuitive operation
- Trend diagrams available on for all measured parameters
- Remote access via Smartphone or PC when connected to the internet
- Electronic water colour indication that serves as a sensor status check
- Time efficient updates and expansions

As with the current DEPOLOX® Pool measurement module the DEPOLOX Pool E measurement module ensures stable measurements via:

- pH compensated free chlorine measurement with rugged 3-electrode chlorine sensor
- Temperature compensation
- Constant sample water flow controlled by a flow valve
- Quartz grit hydromechanical cleaning of the chlorine sensor's measuring electrodes
- Optimized sample water flow to each sensor

The integrated multi-sensor provides accurate sample water temperature measurement, sample flow switch and large earth ground for the flow cell.

Sensor inputs

1 x free chlorine, 1 x pH, 1 x ORP (oxidation reduction potential), 1 x temperature Pt 1000, 1 x flow switch
1 x total chlorine/combined chlorine
1 x conductivity

The electronic module incorporates several communication interfaces including RS 485, USB as well as Ethernet. These interfaces ensure connection to additional processes as well as plant logical controls.

The control output for chemical feed devices such as Wallace & Tiernan® chlorinators, dose or pulse pumps as well as relays is easily configured in the start-up menus that are intuitively accessed via touch screen operation. Milli-amp outputs are also available for control or monitoring of process variables.

The 8 alarm/relay outputs (expandable to 12) are freely configurable. This also allows for the configuration of a system alarm that is triggered by different configured alarm conditions such as all min and max measurement values and low sample flow alarm as an example.

INTEGRAL SAFETY FUNCTIONS:

- Safety shutdown in the case of circulating pump failure and/or supply-tank-empty-alarm (external stop), sample water failure and undercut of lowest circulation amount (mA input circulation)
- Feed time monitoring, feed time delay
- Controller stop at sensor failor

DIN CONTACT

When the water parameters given by DIN 19643 "Treatment of swimming pool water" are met, this information is transmitted via the DIN contact to the swimming pool's control desk. The volume flow can now be reduced, if considered useful. This "Economic mode" is mainly intended for night-time operation or for periods of low bathing load.

ECONOMIC MODE

The circulation volume can be measured via mA signal input.Multiple configuration of Economic mode is possible: Internal clock/flow limit value/digital input. The control parameters will be adjusted automatically to ensure optimal control quality.

CEDOX CONTROL SENSOR

The CEDOX (chlorine-redox) sensor, optimized chlorine residual control, allows as little chlorine as possible but as much as necessary. This ensures the most economical use of chlorine or chlorine products. Chlorine addition can of course also be conventionally controlled.

ADDITIONAL INTEGRATED POOL CONTROLS

The DEPOLOX Pool E 700 P system operates according to specially developed algorithms for the control of metering equipment. For systems to reduce combined chlorine there's a limit contact as remote release provided. If combined chlorine exceeds the adjusted limit systems like Barrier® UV systems or powdered activated carbon systems are enabled. An automatic adaptation routine ensures a simple and quick adjustment of the controller parameters. So the optimized control performance is provided without time-consuming manual adjustment.

The controller can be programmed for automatic, manual and off mode as required are available for all control loops.

Additional controls are also integrated:

- Start-stop control of UV or activated carbon slurry feed systems
- Controlling the salt concentration in a salt water pool when the controller is fitted with an optional conductivity sensor

The "adaption" mode is utilized during the initial commissioning of the controller and ensures that the chemical feed is optimized for the pool hydraulics and the chemical feed system employed.

PEAK CHLORINATION

By means of peak chlorination that can be freely adjusted at different time intervals, water quality can be optimized by operating personnel with little effort.

FLOCCULATION CONTROL

The integrated flocculation control is easy to operate. It regulates the flocculant dosing pump and automatically adjusts it to the ECO operating mode. When the circulation amount is recorded via the mA input the dosing of floculant is proportional to the circulation amount.

CHEMICAL FEED RATE INDICATION

Real time chemical feed rates are noted and can be graphically displayed – if desired the chemical feed can be stopped if maximum thresholds are surpassed.

CONNECTIVITY

SD card slot: The SD card allows for storage of all pertinent process and archived data.

INTERFACES

USB interface: The external USB connection located on the bottom of enclosure allows for upload of new firmwares. Upload/download of adjusting parameters via USB stick possible.

Ethernet interface: for communication with

- Remote access (VNC Server)
- Modbus® TCP protocol

RS 485: two wire bus connectivity to compatible Evoqua Water Technologies equipment like OPC-Server or Process Monitoring System.

Fieldbus connectivity

An optional field bus converter is available for Profibus® DP communication.

CAN Bus interface:
Universal digital machine communication (CAN bus) interface for sensors and measuring modules

DISPLAY

The 7" colour touch screen allows for intuitive operation of the Pool Management System. All disinfection control parameters and their respective control and alarm set points can be displayed via a trend graph.

Access to the controller can be limited via password set up for different access levels.

MAIN DISPLAY ON SMARTPHONE

DISPLAY WITH TREND VIEW

TECHNICAL DATA

FLOW CELL MODULE

Flow control valve:

- Controlled sample water flow: 33 l/h
- Control range 0.2 – 3.0 bar at valve inlet (3 – 43 psig)
- Maximum back pressure: From pressureless up to 1.5 bar at valve outlet (0 to 22 psig)
- Maximum sample water temperature: 50 °C
- LED alert (white, yellow and red)

Multi-sensor:

- Monitoring of correct sample water flow switching point: 18 l/h ± 3 l/h hysteresis: 2 l/h
- Measurement of sample water temperature by Pt 1000 sensor
- Protection against external electrical noise by a stainless steel sleeve (earthing of sample water)

Additional features:

- Sample water valve
- Isolating valves at sample water inlet and outlet of the flow block module in pressurized design
- Ball check valve at sample water inlet
- Simple cell drain assembly
- Integrated fitting to hold sensor during calibration

Sample water connections:
PVC hose 6 x 3 mm or PE hose 6 x 1 mm
Hose connectors on 1/2 " union

Weight (incl. packing): approx. 2.5 kg (5.5 lbs)
Dimensions (W x H x D):
253 x 375 x 163 mm (8.5 x 15 x 6 inches)

Voltage supply:

24 V DC from the electronic module via CAN connection

SENSORS

Free chlorine:

Rugged 3-electrode DEPOLOX® Pool chlorine sensor with sealed electrolyte KCl supply. Potentiostatic 3-electrode amperometric design; Measuring range 0 to max 20 mg/l, scale freely selectable; Resolution up to 10 mg/l: 0.01 mg/l; up to 20 mg/l: 0.1 mg/l; Temperature compensation 0 – 50 °C; Sensor plug connection IP 67

Total chlorine:

Potentiostatic 3-electrode amperometric membrane design, sample flow only
Measuring range 0 to max 20 mg/l, scale freely selectable; Resolution up to 10 mg/l: 0.01 mg/l; up to 20 mg/l: 0.1 mg/l; Temperature compensation 0 – 45 °C; Sensor plug connection IP 67
Applicable for salt water pools with up to 4 % salt concentration

Combined chlorine:

The measured value of combined chlorine (chloramine) is calculated and displayed as the difference between total chlorine and free chlorine. Range displayed 0 to max 20 mg/l, scale freely selectable; Resolution up to 10 mg/l: 0.01 mg/l; up to 20 mg/l: 0.1 mg/l

pH value:

Measuring range 0 to 14 pH, begin 0 to 5, end 9 to 14 pH, scale freely selectable in 1 pH steps; Resolution 0.01 pH; Temperature compensation 0 – 50 °C
Sensor plug connection IP 67

ORP:

Measuring range 0 to 400 mV or 500 to 1000 mV,
Scale freely selectable in 100 mV steps; Resolution 1 mV;
Sensor plug connection IP 67

Conductivity:

Measuring range 500, 2500 µS/cm, 10, 20, 50, 100, 200, 300 mS/cm; Resolution 0.1 mS/cm; Can be switched over to NaCl display in mg/l and %; Temp. compensation 0 – 50 °C

Temperature:

With the integral Pt 1000 sensor the temperature of the sample water is measured and used for the compensation of the chlorine and pH value measurement. Measuring range 0 to 50 °C, Resolution 0.1 °C

ELECTRONIC MODULE

Touchpanel:

7 inch graphic display with backlight
Resistive touch screen
Resolution 800 x 480 Pixel

Supported sensors:

CAN-Sensor interface for flow module with all sensors; digital sensors (total/combined chlorine, conductivity)

Analog inputs:

1 x feed rate display (feedback signal of positioner gas feed system)
2 x free selectable as recording the circulation

Digital inputs:

3 x freely selectable, e.g. controller stop, mode change-over, second set point of parameter (ECO mode)

Output contacts (max. 12):

max. 8 freely selectable alarm contacts/general alarm signal as well as controller outputs for free chlorine, combined chlorine, pH value and conductivity

Extendable on demand with internal contact module

Relay status is depicted on the display
max. 6 A/250 V AC, 0.2 A/220 V DC

Analog outputs (optional):

4 x 0/4 – 20 mA, freely configurable
Load protected ≤ 500 Ohm, Accuracy < 0.5 % FS
Galvanically isolated up to 50 V relative to earth

Power supply:

100 – 240 V ± 10% 50/60 Hz, 48 W
24 V DC, 30 W

Ambient temperature: 0 – 50 °C (32 – 122 °F)

Enclosure. IP 66

Certifications: CE, CSA

Dimensions (W x H x D): 320 x 311 x 153 mm
12.5" x 12" x 12.9"

Weight with packaging:

approx. 4.5 kg (10 lbs)

EVOQUA WATER TECHNOLOGIES

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