

Operating instructions for Trop pH-Processor



Article No. 2/VII

Trop – Processors are designed to control certain values in waters for example pH, Redox or conductance. This can be easily achieved by mixing water of different sources using solenoid valves, dosing pumps, ozoniser and other equipment. The sensors attached to the processors measure the actual values. According to comparison with the setpoints the outputs will be activated. The digital display in the front panel shows the most recent actual value. The probes, which transform the physical values into electrical, should not be installed in the main water stream. The best place is a more calm area where they should be submerged half into the water using our universal probe holders.

1. Elements in the front panel

- Display showing the actual value (used for programming too)
- LEDs showing the state of the switching output at the rear
- LEDs indicating the difference between actual and setpoint values
- Push – buttons for controlling the device

2. Measuring mode

After power-on the processors enter directly the measuring mode. The value supplied by the probe is converted, presented in the display and compared to the setpoint values. The result is shown by the LEDs to the left side. When the actual value is below the programmed lower setpoint value the lower 2 LEDs will be on, which means up – control has to be done. With the actual value above the upper setpoint value the upper 2 LEDs will on, indicating down – control has to be applied. The outputs at the rear will be switched on after a certain time delay (10 – 45 secs) to avoid unnecessary load - switching due to choppy water or other disturbances. In case the actual value is between the programmed limits no LEDs nor any output will be activated. Overrange is shown as “----“ in the display. This means the value coming from the probe is too high or too low to be processed.

3. Setpoint programming

Pressing the “Mode” – button once sets the device to programming mode. The LED “Sollwert” (setpoint) goes on. The display shows “P__1” (lower setpoint). By tipping to the up – or down button the setpoint value may be modified. Holding the up – or down button for a longer time causes the value to increase (decrease) fast. The setpoint value is confirmed by pressing the mode button again, advancing to programming the higher setpoint programming. The display changes to “P__2” (higher setpoint). Now the higher setpoint has to be adjusted in the same manner. After doing so, programming is terminated by pressing the “Mode” – button once more. Improper setpoint settings, like lower value equals higher value, or lower value higher than the upper value are not accepted and indicated by blinking LEDs at the left. Simply press the “Mode” – button to repeat the process. The programming mode is automatically aborted after 10 secs of idle time. If no button is pressed for more than 10 secs the device returns to the measuring mode using the previous setpoint values.

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Article No. 2/VII

4. Calibration

The system should be calibrated from time to time due to the fact that measuring probes are aging. Depending on the desired accuracy the following process should be performed in regular intervals (1, 3 or 6 months). Calibration should be solely performed using the supplied calibration fluids which guarantee accurate and long term stable results over the complete measuring range.

For best results the calibration solutions should have the same temperature as the measuring object. First the probes tip has to be submerged into a flask with pH7 – solution.

The calibration mode is now engaged by pressing the “Mode” – button twice. First actuation shows “P__1” in the display. Now hold the “Mode” – button for 10 secs while the display reads “P__2”. After expiration the display converts to “PH7”. The calibration mode is active. LED pH7 is ON. After approx. 10 secs the display changes its value to a voltage value according to the probes input. This is a raw value in mV (Millivolt) and **NOT** a pH – value. After the value in the display has settled press the “Mode” – button and the processors display changes to “PH4” and the LED pH4 to ON. Now put the probe into pH4 – solution and wait for the display to change. After approx. 10 secs another raw voltage value is shown. Wait for the reading to become stable and press the “Mode” – button.

The display switches to “L”(latch) indicating the device wants confirmation. Using the up – and down – button “1” or “2” may be selected. “1” stands for cancel. Pressing the “Mode” – button in this state, the new calibration values are discarded. The processor reverts to the previous calibration values and resumes operation. Pressing the “Mode” – button while “2” is in the display confirms the measured values, starts calculation of a new calibration curve, stores the calculation set and resumes the normal measuring and control mode.

5. Applications

Lets assume a pond to be controlled tends to falling pH – values. Attaching a dosing pump controlling a liquid with carbonate-bicarbonate to the up – outlet (“Auf”) at the rear will bring the water back to the desired pH – value.

Lowering the pH – value may be achieved by introducing carbon dioxid (CO₂) into the water using the down – outlet (“AB”) at the rear panel and appropriate equipment for dosing.

A combination of up – and down – control is also possible by using both outlets simultaneously.