DULCOTEST® Sensor for Free Chlorine, CLB2, CLB3 and CLB 3-Au/Pt

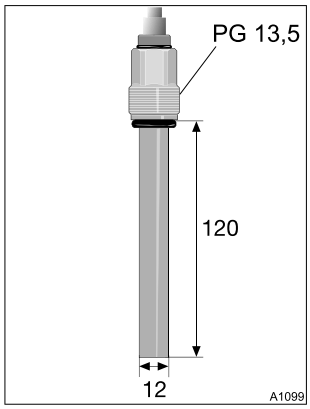

Fig. 1: All dimensions in mm

Description

Functional requirement:

– *regular cleaning and calibration.*

Also observe all the safety information in the operating instructions for the DULCOMETER®, Compact Controller Chlorine. These instructions are binding for the sensor.

Operating requirements:

– *Constant pH value of 5.0 ... 9.0.*
– *Provision and monitoring of a constant sample water flow.*
– *Maximum back pressure at the outlet of the bypass valve 3 bar.*
– *Only operate on the DULCOMETER®, Compact Controller Chlorine.*
– *After power failures or in the absence of chlorine (> 24 h), allow the sensor to run in and calibrate it.*
– *CLB 3 and CLB 3-Au/Pt: constant sample water temperature needed (tolerance <± 5°C).*

The DULCOTEST® sensors CLB 2, CLB 3 and CLB 3-Au/Pt measure free chlorine (HOCl/ OCl^-) in aqueous solution. The sensors are suitable for disinfection processes where the free chlorine originates from inorganic chlorine compounds, such as hypochlorite, chlorine gas or through electrolysis. The sensors must be used in clear and chemically uncontaminated water, such as swimming pool water and potable water. The CLB 2 type measures correctly even when the sample water temperature varies, thanks to its integrated temperature element, while the CLB 3 and CLB 3-Au/Pt types require a constant sample water temperature due to the lack of temperature compensation (tolerance <± 2.5 °C). Types CLB2 and CLB 3 can be used in fresh water up to a conductivity of 5 mS/cm. Type CLB 3-Au/Pt can also be used in salt water up to a conductivity of 50 mS/cm. The measuring method of the sensors is based on amperometric chlorine determination using an open (diaphragm-free) 3-electrode system.

Installing the sensor:

- The sensor is fitted into the bypass fitting of type DGMA (module PG 13.5) by screwing it into the corresponding PG 13.5 thread and tightening it manually. In the event of a leak, carefully tighten further in stages.

Tab. 1: Technical data

Order numbers: CLB 2-µA-5 ppm / 1038902; CLB 3-µA-5 ppm / 1041696; CLB 3-Au/Pt-µA-5 ppm / 1104626	
Measured variable:	Free chlorine (hypochlorous acid HOCl, OCl^-).
Measuring range:	0.05 ... 5.0 mg/l: may be used for transient shock chlorination at up to about 10 mg/l.
Reference method:	DPD1.
pH-range:	5.0 … 9.0.
Temperature:	5 … 45 °C.
Maximum pressure:	3.0 bar.
Flow:	60 … 80 l/h (in the DGMA), constant flow required, as the signal is flow-dependent.
Electrolytic conductivity:	CLB 2, CLB 3: 0.05 ... 5 mS/cm. CLB 3-Au/Pt: 0.05 ... 50 mS/cm.
Run-in period:	30 ... 60 minutes.
Output signal:	Unamplified primary flow signal, not temperature-compensated, uncalibrated, not galvanically isolated.

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Operating instructions

Sensor CLB2, CLB3 and CLB 3-Au/Pt, 5 ppm

Typical application:	Potable water and swimming pool water, also in conjunction with electrolysis processes that use swimming pool water directly without the addition of salt (so-called: in-line electrolysis systems). Type CLB 3-Au/Pt can also be used in salt water.
Temperature compensation:	Type CLB 2: Pt 1000 integrated, calculation in the Compact controller, suitable for temperature change of < 1.5°C/min.
	Types CLB 3 and CLB 3-Au/Pt: no integrated temperature compensation. With external temperature element Pt 100 / Pt 1000 suitable for a temperature change of < 5°C/min.
Controller:	DULCOMETER®, Compact Controller Chlorine.
Sensor cable:	Fixed cable, 1 metre.
Bypass fitting:	DGMA.
Measuring principle:	Amperometric, 3 electrodes, no diaphragm.
Storage and transport:	Storage temperature: 0 ... 50°C / Air humidity: < 95% relative humidity, non-condensing.

Electrical connection

Do not extend or shorten the fixed cable on the sensor. Refer to the controller's terminal diagram when connecting the sensor to the controller.

Calibration

Requirements for calibration in conjunction with the Compact controller:

- Only calibration method DPD1 is permissible for all CLB types.
- The sensor is fitted, flushed with sample water and electrically connected to the controller.
- For process reasons, there needs to be a constant concentration of free chlorine of > 0.2 ppm and a constant temperature of the sample water.
- Constant pH value in the permitted sensor range.
- Constant flow in the range of 60 ... 80 l/h in the bypass fitting.
- Wait with the run-in period for the sensor until the measured value has stabilised.
- **Calibration:**
  - Remove the sample water directly at the measuring point and use the reference method DPD1 to determine the chlorine content in *[ppm]*. Enter this value into the controller.

Maintenance

Clean the sensor when it is no longer possible to calibrate the sensor at the controller. The frequency is dependent on the respective application, contamination of the sample water with troublesome substances, temperature and duration of usage. Use commercial hydrochloric acid < 10% for cleaning providing you observe the safety information given in the material safety data sheet. To do this, place the sensor in the hydrochloric acid for approximately 10 minutes and then install it in the bypass fitting through which the water flows. The 465 mV ORP buffer solution can be used in a similar way in place of the hydrochloric acid, e.g. a 250 ml bottle, order number 791439. Then calibrate the controller.

Disposal

Information: Regulations governing the disposal of used parts. Note the national regulations and legal standards that currently apply in your country

The manufacturer will take back decontaminated used devices providing they are covered by adequate postage.

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