Technical
Information
TI 058C/07/en
Nr. 50028816

Sensors for Free Chlorine
CCS 140 und CCS 141

Membrane covered, amperometric sensors for installation in flow assembly CCA 250

Drinking, industrial and swimming pool water must be disinfected with suitable oxidising agents such as chlorine or chlorine compounds.
The dosing of the appropriate oxidising agents must be carefully controlled to suit the application.
Too low a concentration make the degree of disinfection questionable.
Too high a concentration can result in corrosion effects, impairment of taste or skin irritation.

The chlorine sensor CCS 140 is suitable for applications with a measuring range of 0.05 ... 20 mg Cl_2/l.
The chlorine sensor CCS 141 is especially suitable for disinfection of drinking water conditioning or for the detection of chlorine traces (measuring range 0.01 ... 5 mg Cl_2/l).
The concentration of free active chlorine can be measured when using the following chlorinating agents: NaOCl, $Ca(OCl)_2$, Cl_2 and electrolytically generated chlorine.

Areas of application
- Drinking water conditioning
- Pool water conditioning
- Service water conditioning

Benefits at a glance
- Minimum flow rate for installation in flow assembly CCA 250: 30 l/h
- Measurement almost independent of flow rate in the range above 30 l/h
- No zero point calibration necessary so that the complicated installation of an active carbon filter, as in open chlorine sensors, is unnecessary.
- Measured values are not affected by conductivity fluctuation
- The sensor CCS 140 is ready for measurement after a polarisation time of approx. 30 – 60 min. The sensor CCS 141 requires 45 – 90 min.
- Ready-made membrane head allows simple membrane change
- Recalibration intervals approx. 1 – 4 months under constant operating conditions
- Outlet up to 1 bar back pressure

Quality made by
Endress+Hauser

ISO 9001

Endress+Hauser

Nothing beats know-how

Measuring system

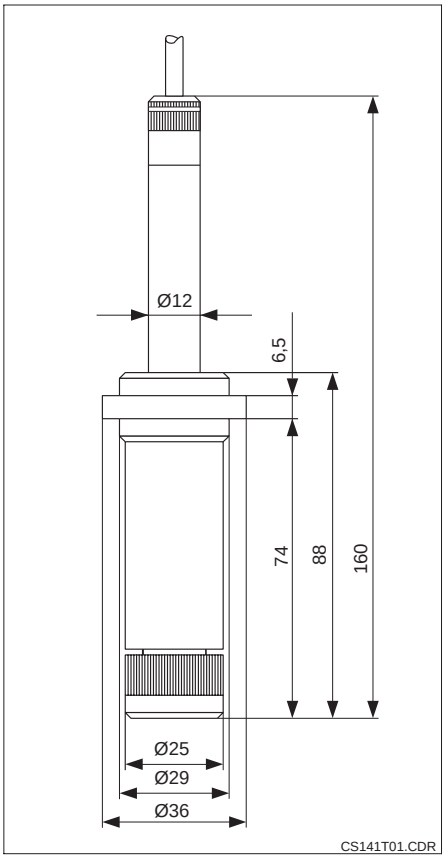
The membrane covered amperometric sensors CCS 140 or CCS 141 are designed for mounting in flow assembly CCA 250. For use with either the combination instrument PoolPAC CCM 360 or the Mycom CCM 121 / 151 transmitter. These can be supplied as a panel mounted system CCE 1 or CCE 3.

Operating principle

The membrane-covered sensor consists of a cathode serving as the working electrode and an anode acting as the counter electrode. These electrodes are immersed in an electrolyte. Electrodes and electrolyte are separated from the medium to be measured by a membrane. This membrane prevents the loss of electrolyte and penetration of contaminants which can cause “poisoning”. A fixed polarisation voltage is applied beween the anode and the cathode.

When the sensor is immersed in chlorinated water, chlorine diffuses through the membrane. The chlorine molecules impinging on the cathode (electron surplus) are reduced to chloride ions. At the anode, silver is oxidized to silver chloride. The resulting maximum diffusion current is a direct measure of the concentration of free chlorine (chlorine surplus).

Dimensions



Dimensions
CCS 140/141

Technical data

General data

Manufacturer	Endress+Hauser
Product designation	Chlorine sensor CCS 140 / CCS 141

Material

Shaft material	PVC
Membrane material	PTFE
Membrane cap	PBT (GF 30), PVDF

Electrical connection

Cable connection	3 m 4-core, double-screened cable, low noise
Depolarisation current CCS 140	approx. 25 nA per mg Cl_2/l (25 °C, pH 7.2)
Depolarisation current CCS 141	approx. 80 nA per mg Cl_2/l (25 °C, pH 7.2)

Conductivity measurement

Measuring system	passively operated sensor with gold cathode and silver/silver chloride anode
Temperature sensor	NTC, 10 kΩ bei 25 °C
Measuring range of CCS 140	0.05...20 mg Cl_2/l (25 °C, pH 7.2)
Measuring range of CCS 141	0.01...5 mg Cl_2/l
Polarisation time CCS 140	first polarisation 30 min repolarisation 10 min
Polarisation time CCS 141	first polarisation 90 min repolarisation 45 min
Response time	measurement jump upwards 90 % < 2 min, 99 % < 5 min measurement jump downwards 90 % < 0.5 min, 99 % < 3 min

Subject to modifications.

Accessories

Order no.

- ❏ CCY 14-WP
  2 replacement cartridges ready-made for CCS 140/141/240/241 sensors — 50005255
- ❏ CCY 14-F
  50 ml filling electrolyte ready-made CCS 140/141 sensors — 50005256

Supplementary documentation

Technical information

- ❏ Flow assembly for free chlorine and chlorine dioxid CCA 250 — 50057220
- ❏ Compact chlorine measuring station CCE 1 / CCE 3 — 50050696
- ❏ Combination measuring instrument PoolPAC CCM 360 — 50028589
- ❏ Chlorine transmitter Mycom CCM 121 / 151 — 50058720
- ❏ Microprocessor photometer for chlorine and chlorine dioxide detection CCM 181 — 50068528

Product structure

Chlorine sensor CCS 140

Version

A Without temperature sensor
N With NTC temperature sensor

CCS 140- [ ] **complecte order lcode**

Chlorine trace sensor CCS 141

Ausführung

N With NTC temperature sensor

CCS 140- [ ] **complete order code**

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