

Data Logger with Measurement of Conductivity

Low-maintenance / autonomous / ø 22 mm

DCX-22AA-CTD

DCX-22(SG/VG)-CTD

The CTD versions of the DCX-22 range are autonomous battery-operated data collectors made of stainless steel. Requiring little maintenance, they record the water level (pressure), temperature and conductivity over long periods. CTD stands for Conductivity, Temperature and Depth.

This data sheet specifies the additional conductivity measurement function which distinguishes the CTD version from the standard DCX-22. The pressure and temperature specifications are set out in detail in the data sheets for the DCX-22AA and DCX-22(SG/VG).

Conductivity is increasingly being monitored in conjunction with depth measurements, in which changes in water quality and depth are required to be detected simultaneously. Thus it is possible to detect contamination caused by salt water, waterborne particles or general pollutants when measuring groundwater levels.

KELLER's KOLIBRI Desktop programming and readout software is used to select a conductivity range (0...0.2 mS/cm, 0...2 mS/cm, 0...20 mS/cm or 0...200 mS/cm) and set the temperature coefficient for the medium. This process produces compensated conductivity measured values standardised at 25 °C.

DCX-22AA-CTD

The DCX-22AA-CTD data collector records groundwater levels using the AA (absolute-absolute) measurement method, whereby fluctuations in atmospheric pressure are measured and compensated for by the watertight atmospheric pressure sensor with its stainless steel diaphragm. The advantage of this measurement method is that no humidity-sensitive capillary tube is required. As well, it is not required that the DCX-22AA-CTD be removed from the immersion tube in order to extract the data.

DCX-22-CTD

In the DCX-22-CTD, the sensor, electronics and battery are contained within the same housing. The data collector needs to be withdrawn from the immersion tube in order to extract the data. The DCX-22-CTD uses an absolute pressure sensor. For long-term measurements, where the impact of atmospheric pressure fluctuations is to be compensated, a second DCX, acting as a barometer, is placed at the surface to record changes in atmospheric pressure. The pressure difference or, as appropriate, the water level is then calculated in the Kolibri Desktop Software by subtracting both measured values.

DCX-22(SG/VG)-CTD

The DCX-22SG/VG-CTD versions have a cable outlet with a readout plug, which is fixed to the surface of the measuring point with a locking disc. This means that the data logger does not have to be pulled out of the measuring point to read out the data. In the VG version (reference pressure measurement), the reference equalisation capillary tube in the cable is inserted until the read-out connector, where the reference opening protected by a Gore-Tex® diaphragm is located.



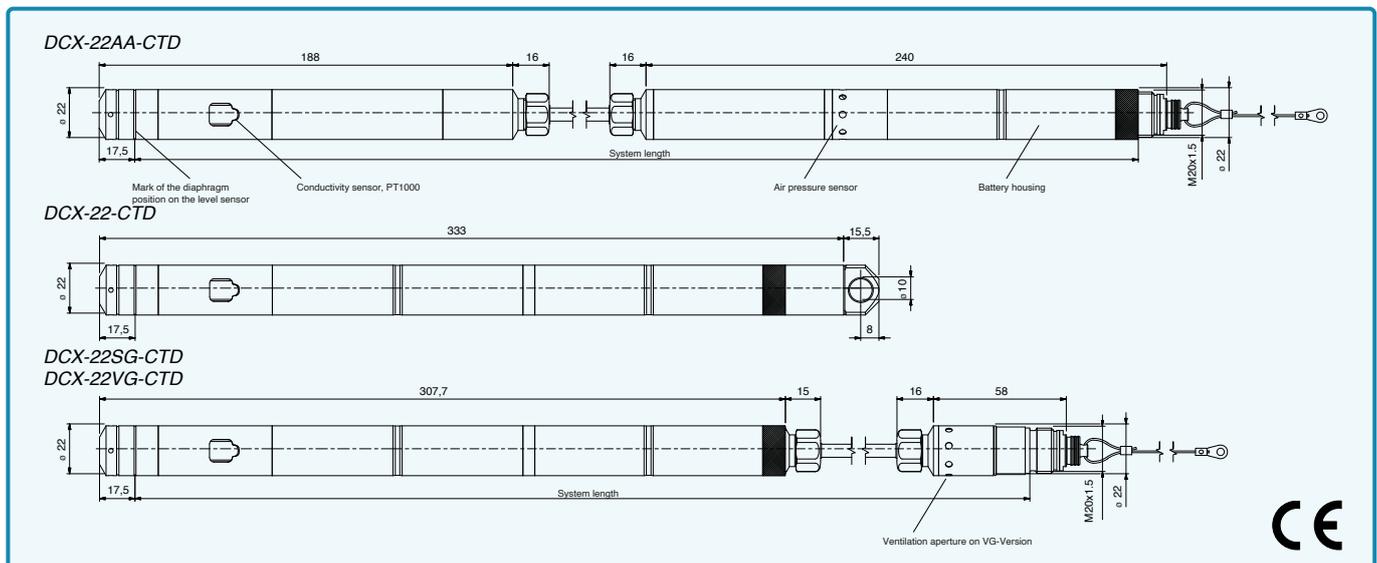
DCX-22AA-CTD



DCX-22SG-CTD
DCX-22VG-CTD



DCX-22-CTD



Specifications

Data Logger 114'000 measured values based on a storage interval ≤ 15 s, otherwise 56'000 (with time always specified), selected from immersion probe pressure, barometric pressure, associated temperatures, difference between the two pressures, conductivity, temperature-compensated conductivity (@25 °C), temperature of the conductivity sensor

Power Supply	Lithium battery 3,6 V (type AA)	<u>Conductivity sensor</u>	
Battery Life	8 years based on 1 measurement per hour (external influences may reduce service life)	Measurement Ranges	0...200 mS/cm ³⁾
External Voltage Supply	8...28 VDC via plug	Measurement Range Selection	Choice of 4 ranges: 0...0,2 mS/cm, 0...2 mS/cm, 0...20 mS/cm or 0...200 mS/cm*
Shortest Measurement Rate	1x per second	Resolution	$\leq 0,01$ % max. of the selected range
Output	RS 485 digital	Accuracy	$\pm 2,5$ % max. of the selected range
Electrical Connector	Fischer DEE 103A054	Measurement Method	6-electrode conductivity measurement cell
Housing Material	Stainless steel 316L (DIN 1.4435), O-ring: Viton®	Method of Temperature Comp.	Linear of 0 to 8 %/K standardised to 25 °C (according to DIN/EN27888)*
Cable Material	Polyethylene (PE)	<u>Temperature sensors</u>	
Conductivity Sensor Material	Housing: polyether ether ketone (PEEK), measurement electrodes: titanium	PT 1000 (in the conductivity sensor)	Measurement range 0...50 °C, accuracy 0,1 °C, resolution 0,01 °C
Standard System Lengths	As per the data sheet for the DCX-22AA, DCX-22SG and DCX-22VG	TOB Temperature ⁴⁾ (immersion probe/barometer)	Measurement range -10...+40 °C, typical accuracy $\pm 0,5$ °C
Measurement/Pressure Ranges	As per the data sheet for the DCX-22AA and DCX-22(SG/VG)		
Operating Temperature Range	-5...55 °C (Conductivity sensor, icing not permitted) -20...80 °C (Barometer)		
<u>Pressure Sensors</u>			
Accuracy ¹⁾	$\pm 0,02$ %FS max.		
Resolution	$\leq 0,0025$ %FS		
Comp. Temperature Range	-10...40 °C		
Total Error Band (-10...40 °C) ²⁾	$\pm 0,05$ %FS typically / $\pm 0,1$ %FS max. (optional $\pm 0,05$ %FS max.)		
Longterm Stability	± 1 mbar max.		

¹⁾ Linearity (BFSL), hysteresis and repeatability

²⁾ Accuracy and temperature errors

³⁾ mS/cm = milliSiemens per centimeter

⁴⁾ Temperature information for the measuring bridge of the pressure sensor (TOB: top of bridge)

* Standard settings, Measuring range 0...200 mS/cm linear compensation with 2,25 %/K

KOLIBRI Desktop

With the «KOLIBRI Desktop» Windows software, data recorded using KELLER instruments with a recording function can be read and visualised. This data can be exported in CSV, JSON, Excel or Word format, as an image, or in other formats for further processing or documentation. The data loggers are easy to configure, thanks to the intuitive software interface. And, the various recording functions provide an optimum level of adaptability to suit the measuring task at hand. Additionally, installation site information and other parameters necessary for water level calculations can be saved directly in the measuring device.



KOLIBRI Desktop can be used license-free and fits all KELLER products with an integrated logger.

Configuration options

- Pressure and temperature channels, selectable
- Adjustable measurement interval (1 s...99 Tage)
- Averaging with selectable number of measurements
- Adjustment of pressure zero point
- Start measurements immediately or at a set time
- Water level calculation
- Data storage: linear or ring-type memory
- Recording modes
 - continuous interval measurement
 - event-controlled recording
 - recording starts when value is exceeded
 - recording starts when value is undercut
 - Storage of measured values when a value changes
 - > combination of continuous and event-controlled recording is possible