

DATALOGGER FOR  
LEVEL MEASUREMENT  
WITH CONDUCTIVITY  
MODULE  
DL/N



### Features

- Any measuring range between 0...1 m and 0...250 mH<sub>2</sub>O available
- Conductivity module (20  $\mu$ S/cm...20 mS/cm) with integrated temperature measurement (option)
- Temperature measurement (option)
- Measuring interval adjustable from 0.5 s to 24 h
- Data memory for up to 500'000 measurement values
- Recording of measured values as a function of time or threshold value (option)
- Battery can be replaced on-site

### Typical applications

Recording of level and water quality:

- Ground water
- Wells
- Boreholes
- Lakes, rivers

## Technical specifications

Pressure ranges	[mH2O]	1 ... 5	> 5 ... 20	> 20 ... 250
Overload		3 bar	3 x FS (minimum 3 bar)	3 x FS
Deviation in characteristics <sup>1)</sup> [± % FS]		≤ 0.25	≤ 0.1	≤ 0.1
Temperature error	[± % FS/°C]			
Zero	-5...50°C	≤ 0.06 <sup>2)</sup>	≤ 0.03	≤ 0.015
Span	-5...50°C	≤ 0.015	≤ 0.015	≤ 0.015
Temperature range <sup>3)</sup>			-5...50°C	
Long-term stability (1 year) - (typ./max)		≤ 0.5% FS/< 4mbar	≤ 0.2% FS/< 4mbar	≤ 0.1% FS/< 0.2% FS
Measuring range		Resolution		Accuracy
Temperature measurement with conductivity	-5...50°C	0.1°C		± 0.25°C
Temperature measurement without conductivity	-5...50°C	0.1°C		± 1°C
Conductivity	20 µS/cm...20 mS/cm	1 µS/cm		20 µS/cm...500 µS/cm = ± 2% ±4 digits on the measured value 500 µS/cm...20 mS/cm = ± 2% on the measured value

Datalogger	
Measurands	Pressure (Temperature measurement as an option), pressure and conductivity incl. temperature
Resolution	Pressure < 0.01% FS
Real-time clock	Quartz-precision clock with date; Start-time of datalogging configurable
Data memory	Up to 500'000 measurement values, non-volatile, data remain in memory even without battery, each measurement value is correlated with time and date
Interface	RS485
Identification	Each datalogger has a unique serial number, as well as a user-definable description
Power supply	Lithium battery 3.6 V / type AA (battery can be changed on-site) 1 battery for a cable length of ≤ 100m, 2 batteries for a cable length of > 100m (max. 300m)

Data readout and configuration	
<b>PC program for measurement-data readout and datalogger configuration:</b>	
System requirements	IBM-compatible PC or Notebook with 200 MHz processor or faster; Min. 50 MB hard-disk space, 64 MB RAM or higher Free serial interface (9-pin or 25-pin with adapter) or USB with adapter Windows 98 / 98 SE / ME Operating System NT from Version 4 (min. Service Pack 6 and Internet Explorer from Version 6.0) / 2000 / XP
Data transfer <sup>4)</sup>	Read out data per measurement series, Read out all stored data, Read out data for a defined time-period
Configuration	Sample- and storage rate Recording of data in a defined time-window Identification (f.e. measuring site) Tare; the datalogger stores the height of the air column, and not the pressure at the sensor Taring of measurement value; the current pressure can be set to the actual value Threshold value (option); Storage of the measurement data within the defined range Density of the measuring medium (option); Set the density of the measuring medium, which is automatically calculated in as well Data recording as a function of time or threshold value (option)
Data format	Data are stored in ASCII or XML format and can be read with all common programs such as Excel, Lotus, etc.

## Electromagnetic compatibility

Standard	Level	Typical sources of interference
<b>Emissions:</b> EN 61000-6-3 EN 55022	Generic emission standard Emission, class B	
<b>Immunity:</b> EN 61000-6-2	Generic immunity standard	
EN 61000-4-2	Electrostatic discharge	4 kV contact, 8 kV air
EN 61000-4-3	Radiated electromagnetic field	10V/m, 80-1000 MHz, 80% AM 1kHz
EN 61000-4-3	Radiated electromagnetic field (GSM)	10V/m, 950 MHz, 200 Hz on/off
EN 61000-4-4	Fast transients (burst)	2 kV
EN 61000-4-6	Line-conducted electromagnetic interference	10 V, 0.15-80 MHz, 80% AM 1 kHz
		Radio sets, wireless phones digital portable phone Motors, valves Radio sets, wireless phones

<sup>1)</sup> Deviation in characteristics according to DIN 16086 initial-point setting, including hysteresis and repeatability

<sup>2)</sup> 0.5 – 0.99 mH2O: ≤ 0.12

<sup>3)</sup> Other temperature range on request

<sup>4)</sup> Order data-transfer cable/interface converter and PC software separately:

Data-transfer cable (2m): VART333  
Interface converter: VART336  
PC software: VART332  
USB converter cable: VART381

## Ordering Information

		70	X	. XXXX	. XXXX	. XX	. XXX
<b>Type</b>	DL/N	70					
<b>Pressure type</b>	Relative pressure	1					
	Absolute pressure (vacuum)	2					
<b>Pressure range</b> <sup>1)</sup>	Any pressure ranges from 0...1 mH <sub>2</sub> O to 0...250 mH <sub>2</sub> O available		XX				
<b>Model</b>	Battery in transmitter housing (absolute model)	(Fig. 1)	2	0			
	with battery housing <sup>2)</sup>	(Fig. 2)		1			
	without battery housing <sup>3)</sup>	(Fig. 2c only)		3			
<b>Cabel</b>	PUR cable <sup>4)</sup>			0			
	PE cable <sup>4) 5)</sup>			1			
	Teflon cable <sup>4)</sup>	(Fig. 4)		2			
	PUR cable connectable at the transmitterhousing <sup>4)</sup>			4			
<b>Pressure connection</b>	open				58		
	closed				57		
	G 1/4 A				11		
	G 1/2 A				13		
<b>Transmitter-housing material</b>	Stainless steel 1.4435 (316L)				0		
	Titanium grade 2				1		
<b>Battery-housing material</b>	Stainless steel 1.4435 (316L)				0		
	Titanium grade 2				1		
<b>Seal material</b>	Viton (standard)				0		
	EPDM				1		
	Kalrez				2		
<b>Medium-temperature range</b>	-5...50°C					4	
<b>Options</b>	Conductivity 20 µS/cm...20 mS/cm, incl. temp measurement -5...50°C						D
	Temperature measurement <sup>6)</sup>						E
	Flooding protection	(Fig. 5)					I

<sup>1)</sup> Any measurement units (e.g. bar, mWS, etc.) available

<sup>2)</sup> Specify size of thrust ring when ordering

<sup>3)</sup> for external connection box

<sup>4)</sup> State desired cable length (max. 300 m) and medium when ordering

<sup>5)</sup> Drinking-water approved (KTW)

<sup>6)</sup> If conductivity option not selected

## Dimensions

Fig. 1

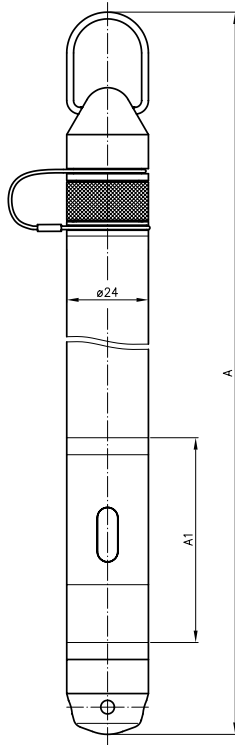


Fig. 2

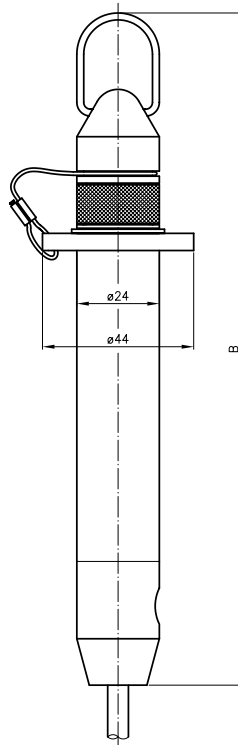


Fig. 3

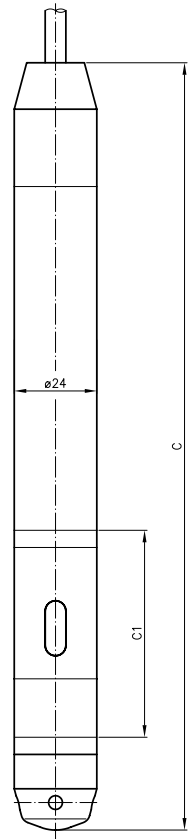


Fig. 1b/2b/  
3b/4b

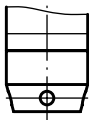


Fig. 4

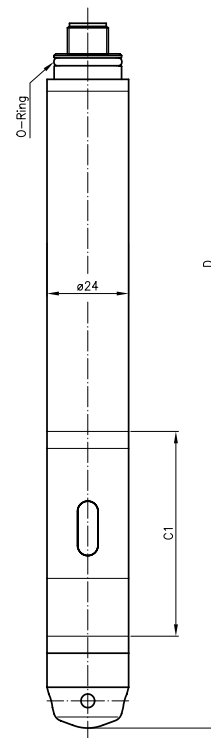
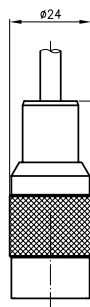
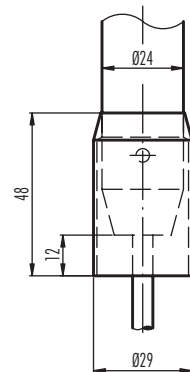


Fig. 5



Version	Model	Fig.	Length	Weight <sup>4)</sup> [g]	Length <sup>3)</sup>	Weight <sup>3)</sup> [g]	Conductivity
absolute	closed	1a	A=291	365			A1=60
	open	1b	A=287	365			A1=60
relative	1 battery <sup>1)</sup>	2a	B=196	270			
	2 batteries <sup>2)</sup>	2a	B=266	320			
	closed	3a	C=225	300	310	560	C1=60
	open	3b	C=221	300	306	560	C1=60
connect.	closed	4a	D=249	340			C1=60
	open	4b	D=245	340			C1=60

<sup>1)</sup> Cable length ≤ 100m

<sup>2)</sup> Cable length > 100m

<sup>3)</sup> with weight extension

<sup>4)</sup> without cable



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