



# Instruction Manual

## Data logger with display device

### DL 10-4 SV

DL 10-1  
DL 10-4  
DL 10-8  
DL 10-4 G

-  Read manual before use!
-  Observe all safety information !
-  Keep manual for future use!





# 1 Safety

## 1.1 Intended use

The Data logger with display device is suitable only for use:

- To display and storage of analog measurement values.

Any use other than the application explicitly permitted in this instruction manual is not permitted.

## 1.2 Predictable incorrect applications

The Data logger with display device must never be used in the following cases:

- Hazardous area (Ex)  
If the device is operated in hazardous areas, sparks may cause deflagrations, fires or explosions.
- Use to human and animal

## 1.3 Safe handling

This Data logger with display device represents state-of-the-art technology and is made according to the pertinent safety regulations. Each product is subjected to a function and safety test prior to shipping.

- ▶ Operate the Data logger with display device only when it is in perfect condition. Always observe the operating instructions, all pertinent local and national directives and guidelines as well as the applicable safety regulations and directives concerning the prevention of accidents.

## 1.4 Staff qualification

The product may only be mounted, commissioned, operated, maintained, decommissioned and disposed of by qualified, specially trained staff.

Electrical work may only be performed by trained electricians and in compliance with all applicable local and national directives.

## 1.5 Modifications to the product

Changes or modifications made to the product by unauthorised persons may lead to malfunctions and are prohibited for safety reasons.



## 1.6 Liability information

The manufacturer shall not be liable in any form whatsoever for direct or consequential damage resulting from failure to observe the technical instructions, guidelines and recommendations.

The manufacturer or the sales company shall not be liable for costs or damages incurred by the user or by third parties in the usage or application of this product, in particular in case of improper use of the product, misuse or malfunction of the connection, malfunction of the product or of connected products. The manufacturer or the sales company shall not be liable for damage whatsoever resulting from any use other than the use explicitly permitted in this instruction manual.

The manufacturer shall not be liable for misprints.

## 2 Product description

The Data logger with display device is a freely programmable digital display unit for up to 8 input signals with integral data logger function. For each channel, voltages up to 10 V and analogue currents up to 20 mA are possible as input signals. Each channel can be parameterised separately and each measuring signal is displayed in a freely definable scaling. Additionally, the measuring values can be filed formatted on a SD memory card for each channel via adjustable time functions. The memory functions can also be triggered via thresholds.

The menu guided parameterisation level, shown in plain language, convinces through easy and operator friendly build-up. The input of all characteristic values is carried out directly at the unit without aids. A code word, which can be activated, protects the device against undesired parameterisation modifications. Due to integral function components such as scaling, linearisation, tendency display, automatic scroll function and the supply voltage range of 20-253 VDC or 50-253 VAC, independent of location, the Data logger with display device fulfils all tasks of an universal, multi-channel process display and at the same time extends the functions with the possibilities of a data logger.

All configuration data can be read, modified and filed in archives via a PC or laptop.



In summary, the Data logger with display device shows the following functions:

- selectable voltage input or current input each channel
- each channel usable as counter
- up to 4 channels with galvanically insulated current inputs or with integrated transmitter supply (option -G , -S)
- limiting the measuring range (zoom)
- freely definable scaled display via different display modes
- saving the measuring values of up to 8 channels (max. speed: one second)
- saving all measuring values in clear day files
- triggering the memory function via threshold value or event threshold, also cross channel
- display of the measured analogue value
- parameterisation of a tendency display each channel
- linearised illustration over 24 x/y points
- slave pointer function each channel (minimum / maximum memory)
- selectable quasi-analogue display via angle bar
- selectable participation to autoscroll technique for each channel
- background illuminated grey LCD-display with high contrast value and power save
- locking of parameterisation via password
- saving of all set parameter
- status memory after power fail
- logging the power fail time (only by activated SD memory card)
- PC interface (special interface cable not supplied), free of charge operating software
- operating languages German, English and French (set at the device)



## 2.1 Types

Please note that all device features are listed in these operating instructions, including those which your device possibly does not have.

Tab. 1: Types

Typ	Hardware
Data logger with display device DL 10-1	1 analogue input: current (up to 20 mA) or voltage (up to 10V) freely selectable
Data logger with display device DL 10-4	4 analogue inputs: for each channel current (up to 20 mA) or voltage (up to 10V) selectable
Data logger with display device DL 10-8	8 analogue inputs: for each channel current (up to 20 mA) or voltage (up to 10V) selectable
Data logger with display device DL 10-4 SV	4 analogue inputs: for each channel current (up to 20 mA) or voltage (up to 10V) selectable with integrated transmitter supply, <b>without galvanic isolation</b>
Data logger with display device DL 10-4 G	4 analogue inputs: for each channel current (up to 20 mA) or voltage (up to 10V) selectable with galvanically insulated current input

## 3 Technical data

Tab. 2: Technical data

Parameters	Value
<b>Type of construction</b>	
Control panel housing acc. To DIN 43 700 for front frame	48 x 96 mm
Dimensions (W x H x D)	91,5 x 43 x 131 mm
Mounting	with 2 retaining brackets
Control panel cutout: 92x44 mm	1,5 bis 10 mm
Weight	approx. 230 g
<b>Connection</b>	
Terminal cross section	2,5 mm <sup>2</sup> for circuit terminal, all others 1,5 mm <sup>2</sup>
<b>Environmental conditions</b>	
Admissible ambient temperature	0 ...+50°C
Storage and transport	-30°C ... +80°C (no dewing)
<b>Electrical protective measures</b>	



Parameters		Value
Protection classification	II	
Type of protection	front IP 20, terminals IP 20	
<b>Supply voltage (Terminal 31, 32)</b>		
Wide range	20...253 V DC or 50...253 V AC	
Power intake Power	max. 1,2 W or 3,0 VA	
Intake (with transmitter feeding) (DL 10-4 SV)	5 W or 7 VA	
<b>Transmitter supply (only Type DL 10-4 SV)</b>		
	20...17 V (at 4...20 mA), max. 25 mA	
<b>Measuring inputs</b>		
Resolution, precision	10 bit, 0,2 %	
Counter input	voltage, frequency	max. 30 V, max. 2 Hz
	shape, duty cycle	any, 50 %
Analogue voltage	nominal value, Ri	10 V, 100 kOhm
Analogue current	nominal value, Ri	20 mA, 121 Ohm (DL 10-4 G: 230 Ohm)
<b>Channel separation</b>		
Proof test voltage, current inputs DL 10-4 G	500 V AC, 1 min.	
<b>Function of each channel</b>		



Parameters	Value
	<ul style="list-style-type: none"><li>- display of measured analogue value</li><li>- display of scaled measured quantity as numerical value (high-order digits)</li><li>- display of scaled quantities as quasi-analogue bars</li><li>- display of measuring tendency</li><li>- display of channel description and of scaling unit</li><li>- display of minimum and maximum values</li><li>- display of a linearised measuring value (over 24 x/y points)</li><li>- saving all measuring values on SD-cards, min. cycle 1 s</li><li>- trigger functions each threshold, also onto other channels filter functions</li></ul>
<b>Display</b>	
Graphic-LCD, background lighting	grey 122x32 pixel
Digital display	5 digit (6 in counter mode), freely configurable
Scaling unit	freely selectable from list
<b>Memory cards</b>	
	SD up to max. 2 GB, preformatted FAT 12 / 16 (not supplied)
<b>Norms</b>	
<b>EMC (CE-conformity)</b>	EN 61326
Emitted interference	EN 55011, CISPR11 Class B
Electrical safety requirements	EN 61010-1



### 3.1 Dimensions

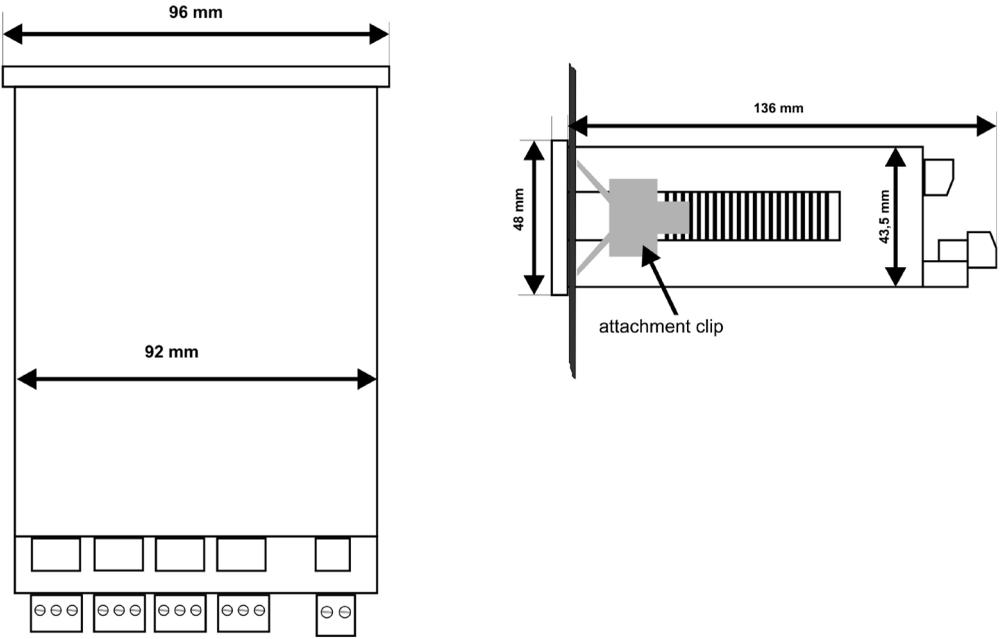
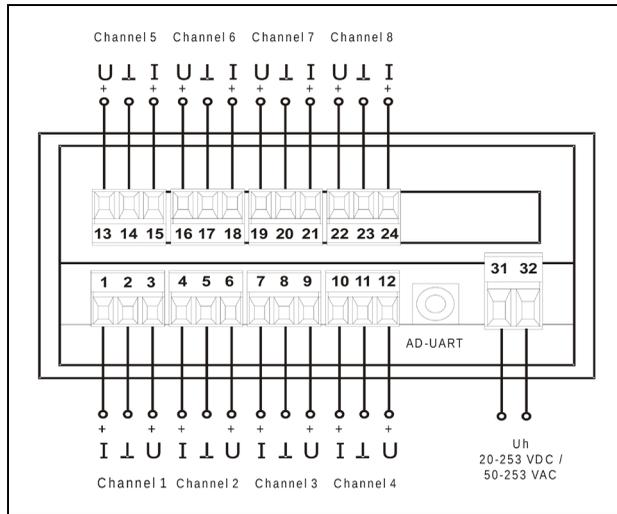


Fig. 1: Dimensions

## 3.2 Connection diagram and Terminal allocation

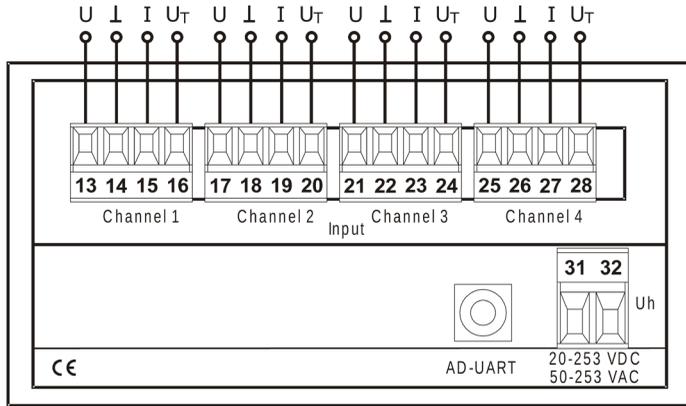
Type: DL 10-8 (view from the back)



Terminal no.	Function	Comment
1	+ Ie 1	Positive pole current input channel 1
2	- Ie1 / Ue1	Negative pole current / voltage channel 1
3	+ Ue1	Positive pole voltage input channel 1
4	+ Ie 2	Positive pole current input channel 2
5	- Ie2 / Ue2	Negative pole current / voltage channel 2
6	+ Ue2	Positive pole voltage input channel 2
7	+ Ie 3	Positive pole current input channel 3
8	- Ie3 / Ue3	Negative pole current / voltage channel 3
9	+ Ue3	Positive pole voltage input channel 3
10	+ Ie 4	Positive pole current input channel 4
11	- Ie4 / Ue4	Negative pole current / voltage channel 4
12	+ Ue4	Positive pole voltage input channel 4
13	+ Ie 5	Positive pole current input channel 5
14	- Ie5 / Ue5	Negative pole current / voltage channel 5
15	+ Ue5	Positive pole voltage input channel 5
16	+ Ie 6	Positive pole current input channel 6



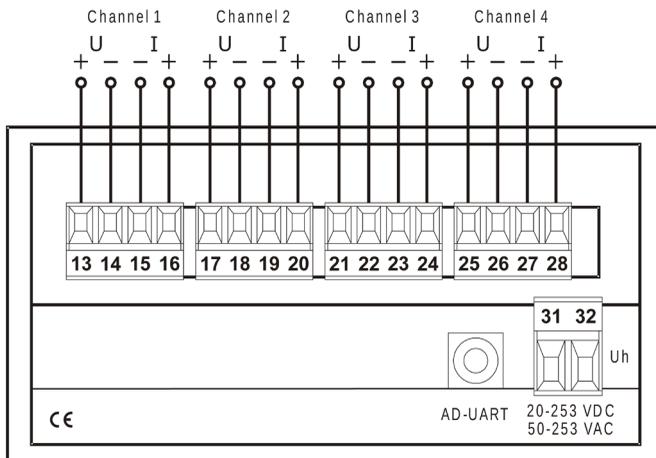
Terminal no.	Function	Comment
17	- Ie6 / Ue6	Negative pole current / voltage channel 6
18	+ Ue6	Positive pole voltage input channel 6
19	+ Ie 7	Positive pole current input channel 7
20	- Ie7 / Ue7	Negative pole current / voltage channel 7
21	+ Ue7	Positive pole voltage input channel 7
22	+ Ie 8	Positive pole current input channel 8
23	- Ie8 / Ue8	Negative pole current / voltage channel 8
24	+ Ue8	Positive pole voltage input channel 8
31	Uh	Supply voltage wide range power pack 20-253 V DC or 50-253 V AC
32	Uh	
A	RS 485	Interface (optional)
B	RS 485	Interface (optional)

**Type: DL 10-4 SV (view from the back)**

Terminal no.	Function	Comment
13	+ U 1	Positive pole current input channel 1
14	- Ie 1 / Ue 1	Negative pole current / voltage channel 1
15	+ Ie 1	Positive pole current input channel 1
16	+ U <sub>T</sub> 1	Positive pole transmitter supply channel 1
17	+ U 2	Positive pole current input channel 2
18	- Ie 2 / Ue 2	Negative pole current / voltage channel 2
19	+ Ie 2	Positive pole current input channel 2
20	+ U <sub>T</sub> 2	Positive pole transmitter supply channel 2
21	+ U 3	Positive pole current input channel 3
22	- Ie 3 / Ue 3	Negative pole current / voltage channel 3
23	+ Ie 3	Positive pole current input channel 3
24	+ U <sub>T</sub> 3	Positive pole transmitter supply channel 3
25	+ U 4	Positive pole current input channel 4
26	- Ie 4 / Ue 4	Negative pole current / voltage channel 4
27	+ Ie 4	Positive pole current input channel 4
28	+ U <sub>T</sub> 4	Positive pole transmitter supply channel 4
31	U <sub>h</sub>	Supply voltage wide range power pack 20-253 V DC or 50-253 V AC
32	U <sub>h</sub>	



**Type: DL 10-4 G (view from the back)**



Terminal no.	Function	Comment
13	+ Ue 1	Positive pole voltage input channel 1
14	- Ue 1	Negative pole voltage input channel 1
15	- Ie 1	Negative pole current input channel 1
16	+ Ie 1	Positive pole current input channel 1
17	+ Ue 2	Positive pole voltage input channel 2
18	- Ue 2	Negative pole voltage input channel 2
19	- Ie 2	Negative pole current input channel 2
20	+ Ie 2	Positive pole current input channel 2
21	+ Ue 3	Positive pole voltage input channel 3
22	- Ue 3	Negative pole voltage input channel 3
23	- Ie 3	Negative pole current input channel 3
24	+ Ie 3	Positive pole current input channel 3
25	+ Ue 4	Positive pole voltage input channel 4
26	- Ue 4	Negative pole voltage input channel 4
27	- Ie 4	Negative pole current input channel 4
28	+ Ie 4	Positive pole current input channel 4
31	Uh	Supply voltage wide range power pack 20-253 V DC or 50-253 V AC
32	Uh	



## 4 Commissioning

- ▶ Switch off the voltage supply prior to any connection work.
- ▶ Ensure sufficient contact protection of the connections during set-up.
- ▶ The current supply and the measuring inputs must be provided with suitable overvoltage protection. All connections must be protected against electro-static discharge.
- ▶ This device has been constructed and tested according to DIN EN 61010-1 (protective measures for electronic measuring devices) and has left the works in a safety-technical perfect condition. To retain this condition and to ensure a danger free operation, the user must observe the notes contained in these operating instructions.
- ▶ The commissioning must be carried out by personnel sufficiently trained. Connection and maintenance work must only be carried out with switched off current supply.
- ▶ The device is according to protection classification II for fixed connection on site. The connection between a possibly available protective conductor connection and a protective conductor must be established prior to any other connections.
- ▶ The device is supplied ready for fitting. It does not need to be opened for connection nor for input of characteristic values.
- ▶ Fitting is possible in any position, however, not in the immediate vicinity of sources of strong interference. The display is designed for installation in dry spaces, i.e. control panels, frames or cabinets.
- ▶ The recording function is not designed for safety relevant or manipulation-secure data storage.

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**NOTICE**

Do not use the data logging function for safety-related instrumentation and control systems.

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**WARNING****Wrong mounting**

- ▶ The Data logger with display device must generally be installed outside explosion-endangered areas!
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**NOTICE** The serial interface is potential connected with the inputs. To prevent error functions of the device, the PC, with which the device is parameterized, must not have any galvanic connection to the input signals!

## 5 Operation

### 5.1 Display and operating elements

The device is provided with three short-stroke keys for operating, which are hidden underneath the membrane, and a graphic display with background lighting for displaying the measuring value and the parameter. Additionally, the push-in compartment for the SD memory card is located at the front. When pushing in the card it must be ensured that the contacts are pointing in the direction of the display.



- 1 Key „UP“
- 2 Key „DOWN“
- 3 Key „SET“
- 4 Slot for SD-memory-card

### 5.2 Operating

The unit can be completely parameterised and set via the three keys „UP“, „DOWN“ and „SET“. The keys have the following functions, dependent on the current operating mode:

Key	Function
UP	In normal mode, the channels are changed with this key. Each channel is shown in the same display mode (i.e. all in capital number or all in drag pointer etc.) The device function is not influenced by this. In parameterising mode, a menu input or list elements can be selected with this key, or a number can be edited. If this key is depressed longer than approx. 3 seconds in normal mode, the autoscroll mode is started. The channel view changes every „n“-seconds to the next channel (n = adjustable from 1-31 seconds, default setting = 5s).
DOWN	As key „up“ just in other direction



Key	Function
SET	<p>By depressing the „set“-key briefly, you can change each display mode in one channel, i.e. quasi-analogue bar, capital number, „real“ measuring value or drag pointer.</p> <p>By depressing the key „set“ for longer (&gt;3s), you change from normal mode to parameterising mode and back again, if you want to return before time, without running through the entire menu tree. This key also has the function of a confirmation key for numeric inputs or when selecting an element from a list.</p>

### 5.3 Switching over the operating language

The Data logger with display device is equipped with three language modules at the works: German, English and French. The operating language is set by pressing the 3 operating keys simultaneously for a few seconds. The switchover can be carried out in any window. The changing of the language is equally possible on programming:  
parameter → function → display → language.

### 5.4 Operating modes

The device is always in one of the three operating modes „normal mode“, „Auto-Scroll“ or „Parameterising“. After switching on the device it is in „normal mode“. An activated „autoscroll“ will be continued.

### 5.5 Normal mode

In normal mode the device carries out all functions set according to its parameter. With the keys „UP“ and „DOWN“ you can switch between the different input channels. Depressing the key „SET“ briefly you change the different types of display in the relevant channel.

On counter mode just the standard view is visible. The comma is furthermore usable. By pressing the keys „UP“ an „DOWN“ at once:

On counter view, the counter will be reset

On drag pointer view, the drag pointer will be set to the actual input value

View	Display image	Comment
Standard		After switching on the device it goes into normal mode and shows the standard display of the device. In counter mode, the counter value is shown and the tendency indicator displaying the input level.
Quasi analogue		In mode „Quasi analogue display“ an angle bar appears, which shows the measuring range.



View	Display image	Comment
Drag pointer		The drag pointer function is active immediately after starting the device. To start the drag pointer function at a certain time, activate the keys "UP" and "DOWN" for approx.. 3 s simultaneously. This sets the minimum value and the maximum value to the current measuring valve.
Input signal		In this window the actual measured input signal is shown (unscaled).
Memory card		Here the card capacity is shown and what percentage of this memory capacity is still available.
Input failure		If the input signal ist outside the engaged physical range, the message „Input failure“ appears. By depressing any key the message disappears, however, it appears again after 3 minutes if the error is still present.
Power failure		This message appears after the device has again been "switched on". This also enables the determination if and when a power failure occurred during operation (is also saved).

## 5.6 Programming mode

The programming mode is accessed from the normal mode by depressing the key „SET“ for a longer time (>3s). Ensure that first the desired channel is selected in normal mode and then press the key for a few seconds.

A switching over to other channels is not possible within the parameterising level! The active channel number is visible in the upper left corner.

Global parameter and parameter trees has no channel number.

Numeric or alpha numeric letters can be changed by an incremental function by pressing key "UP" or "DOWN" for a longer time (>3s).

Altered parameter will be stored on the confirmation of the last letter position and will be effective immediately. By keypress „SET“ for a longer time (>3s) the normal mode is again reached, if you do not want to run through the entire menu tree.

The settings carried out will be accepted under the following conditions:



### Numeric values

If the menu is excited with the navigation keys and when the values are valid. If the menu is exited by depressing the key „SET“ for longer (>3s), normal mode is again reached, whereby possibly altered values are discarded.

### List elements

Always if the key „SET“ has been activated. The key „SET“ (>3s) discards the selection and returns to normal mode.

### String elements

Always if the last character is confirmed. The key „SET“ (>3s) discards the selection and returns to normal mode.

## 5.7 Signal input selection

On each alteration, begin and end will be changed **automatic** in realtime to the physical input limits:

Input signal selection	Begin / Limit Low	End / Limit High
4 - 20 mA (current terminal)	4 mA	20 mA
0 – 20 mA (current terminal)	0 mA	20 mA
0 – 10 V (voltage terminal)	0 V	10 V
24 V (voltage terminal)	8 V	9 V
NAMUR (current terminal)	1,2 mA	2,1 mA

## 5.8 Counter operation

Each analog input channel is usable as digital counter. Choose NAMUR or 24V as input signal.

You can use any physical input signal. As needed change analog begin and analog end to define the switch limits of pulse counting. The pulse source must send an active signal (current or voltage).

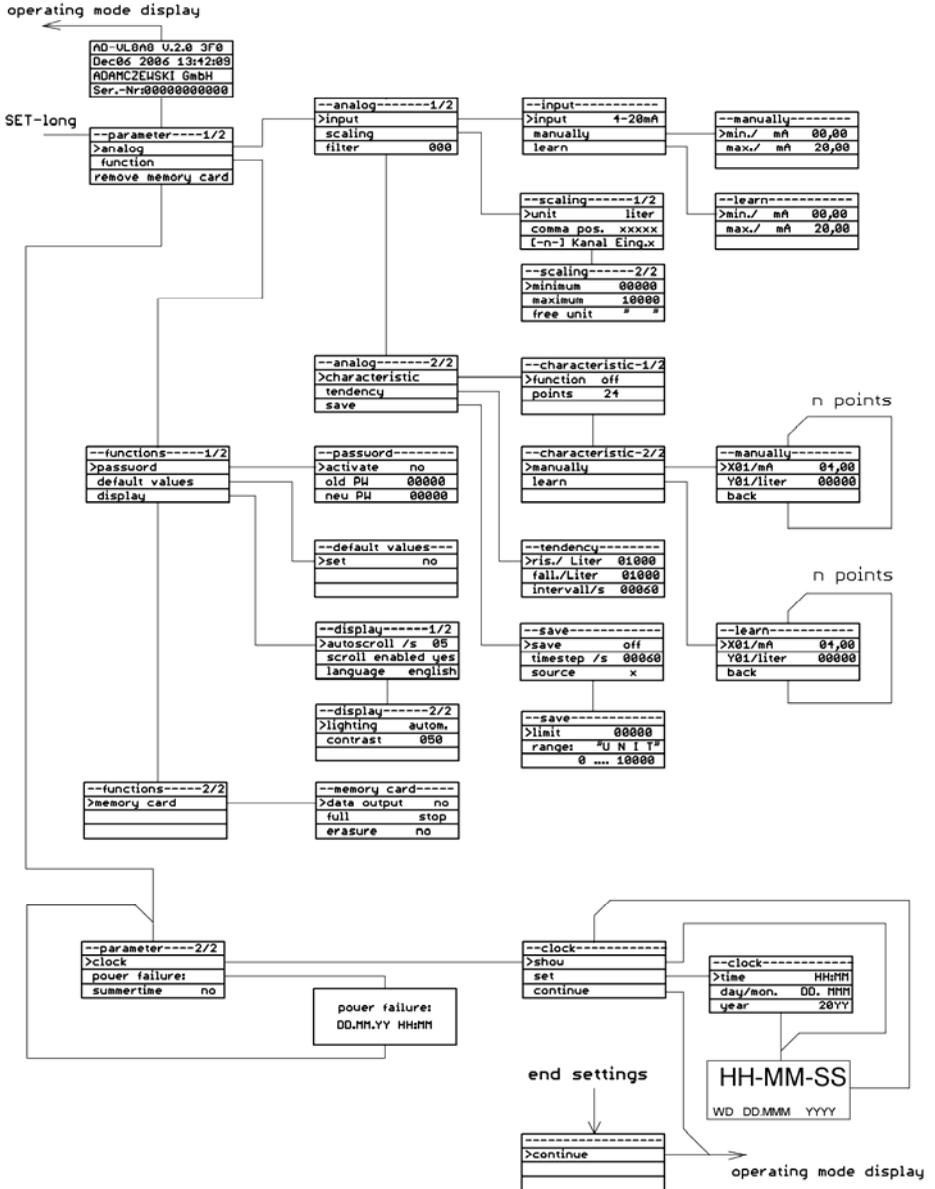
Any way the transmitter feeding voltage of then DL 10-4 SV is also usable to feed a passive contact. A pre-setting of the counter is possible under: parameter 1/2 ' analog 2/2 ' counter.

The characteristic of the channel at the counter operation is not usable.



## 5.9 Programming block diagram

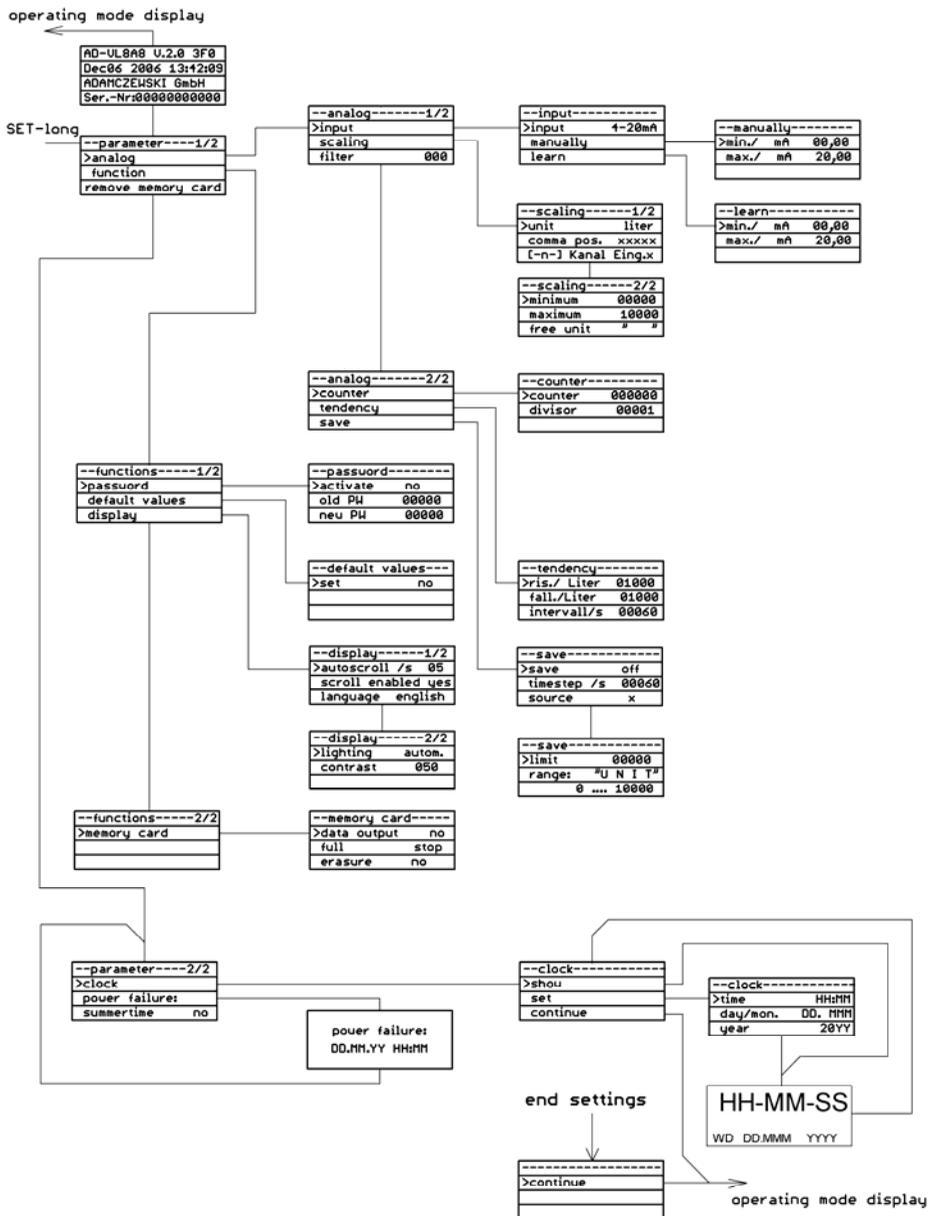
Push the SET button for 3 seconds to leave the settings.





## 5.10 Programming block diagram (Counter activated)

Push the SET button for 3 seconds to leave the settings.





## 5.11 Changing parameters

### Input signal

In this menu point the applied input signal is selected.

Parameter	Unit	Admiss. Value range	Default setting	Comment
Input	-	4-20 mA, 0-20 mA, 0-10 V, 24 V, NAMUR	1-20 mA	-

### Input manual

In this menu the measuring range minimum and the measuring range maximum can be set numerically.

Parameter	Unit	Admiss. Value range	Default setting	Comment
Minimum	Unit of the selected input signal	0.20 mA or 0...10 V	0 mA	Used as limit of LOW level in counter mode
Maximum	mA	0...20	20 mA	Used as limit of HIGH level in counter mode

### Input teach-in

In this menu the measuring range minimum and the measuring range maximum can be accepted. Here the currently existing measuring value serves as default value.

Parameter	Unit	Admiss. Value range	Default setting	Comment
Minimum	mA	Approx. 0...20,5	0	The current input current can be accepted as minimum with the key „SET“
Maximum	mA	Approx. 0...20,5	20	The current input current can be accepted as maximum with the key „SET“



## Scaling

In this menu the measuring value can be linear scaled and a physical unit can be allocated to it.

Parameter	Unit	Admiss. Value range	Default setting	Comment
Scaling unit	-	„Liter“ „cbm“ „%“ „mWS“ „mm“ „cm“ „m“ „mbar“ „bar“ „psi“ „`WC“ „MPa“ „°C“ „mV“ „V“ „mA“ „l/s“ „l/min“ „cbm/h“ „kg“ „t“ „??? 1“	„Liter“	The desired unit can be selected from a list. Alterations of this list with future company ware versions are possible.  The last unit can be freely defined (on each channel) manually or via the PC programming software.  Free editable string manual or through PC
Commapos.	-	„XXXXX“ „XXXX,X“ „XXX,XX“ „XX,XXX“ „X,XXXX“	„XXXXX“	The comma position of the scaled measuring value can be selected from a list.
<b>[-Cannel-]</b>	String	Any	No change	free name of the monitoring executive
Scaling minimum	Selected scaling unit	-9999...99999	0	The scaling minimum can be greater than the scaling maximum
Scaling maximum	Selected scaling unit	-9999...99999	10000	The scaling maximum can be smaller than the scaling minimum



Parameter	Unit	Admiss. Value range	Default setting	Comment
Free uni	String	Any	??? n	Any 5 letter string each channel

### Filter

In this menu the filter value can be determined, with which the input signal is filtered. The measuring value is linked with the filter value prior to further processing:

$$\text{Measuring value}(i) = (\text{measuring value}(i) + (\text{filter value}) * \text{measuring value}(i-1)) / (\text{filter value}+1)$$

Measuring value(i) = current measuring value

Measuring value(i-1) = last measuring value

Filter value = number between 0..999

To determine the connection between filter value and build-up time, the interval between two scans must be considered. With the following rule-of-thumb, the build-up time can be determined:

$$\text{build-up time in s} = \text{filter value} / 2$$

Parameter	Unit	Admiss. Value range	Default setting	Comment
Filter	-	0...999	0	The greater the entered number, the greater is also the filter effect.

### Characteristic

In this menu, up to 24 points can be entered for linearisation of the display. Alternatively, one of two fixed characteristics (horizontal cylindrical tank or ball tank) can be selected.

The entered points will not be overwritten by the default setting. In counter mode this tree will be invisible.

Parameter	Unit	Admiss. Value range	Default setting	Comment
Function	-	„off“ „table“ „hori. Cyl.“ „ball“	„off“	„off“ switches the characteristic processing off. Table activates the user-defined table. „cylinder horizontal“ or „ball tank“ activates a fixed characteristic for a lying round tank or a ball tank



Parameter	Unit	Admiss. Value range	Default setting	Comment
Points	-	3...24	24	Number of points of the user defined table
Xn	mA (V)	0...20 (0...10)	none	X-value of the current point of the user defined table
Yn	Scaling unit	Scaling range	none	Y-value of the current point of the user defined table

### Counter

The counter tree will only be displayed if the physical input signal 24V or NAMUR is activated. The prescaler is used as input divisor.

Parameter	Unit	Admiss. Value range	Default setting	Comment
Counter	Scale unit	0...999999	0	To present the counter value
Divisor	-	1...99999	1	Prescaler value

### Tendency

For configuration of the tendency display. The delta of the measuring values is specified for each time unit, for the rising as well as the falling tendency.

Parameter	Unit	Admiss. Value range	Default setting	Comment
Ris./unit	Selected unit	Selected measuring range	1000 litre	A tendency direction is displayed only after the measuring value alteration has run through the value of the delta in the defined period
Fall./unit	Selected unit	Selected measuring range	1000 litre	A tendency direction is displayed only after the measuring value alteration has run through the value of the delta in the defined period



Parameter	Unit	Admiss. Value range	Default setting	Comment
Interval/s	s	1...65535	60	The period in which the measuring value must be altered by the delta to trigger a display

### Save

Parameter	Unit	Admiss. Value range	Default setting	Comment
Save		„off“ „on“ „↑“ „↓“ „Imp↑“, „Imp↓“, „↑+↓“	off	Here the save function is defined. The up arrow means triggering (=switch-on) when the limiting value has been exceeded, the down arrow when the limiting value fell short of, impulse-triggered, edge-triggered
Timestep/s	s	1...99999	60s	The interval at which measuring values are recorded
Source/s		1 – n	1	Channel number, which triggers this channel according to the above mentioned function
Limit	Selected unit	0...99999	05000	Definition of the limiting value, at which, dependent on function, the save mode is activated. <b>Only displayed if save limit active!</b>



## 5.12 Function parameter

### Password

In this menu the password can be altered and the password interrogation can be activated/deactivated.

Parameter	Unit	Admiss. Value range	Default setting	Comment
Activating	-	„no“ „yes“	no	The password interrogation is activated/deactivated. When editing a parameter with activated switch, you will be asked to enter the password. Then you can edit for the next 3 minutes without entering the password again
Old password	-	00000...99999	none	You will be led to this field to enter the password if the password is activated. If you want to change the password, enter the same value in „old password“ and „new password“.  <b>This field receives a device dependent number on entering the menu. If you have forgotten the password, you will receive a password valid for one time from the manufacturer when quoting this number.</b>
New password	-	00000...99999	none	If you want to change the password, enter the same value in „old password“ and „new password“.



### Default setting (Reset)

In this menu the device can be reset to the parameter of the default setting, to obtain a defined basic condition. The value, which is set during this, is stated with all parameter in the column „default setting“. The name of the monitoring executive will not changed.

Parameter	Unit	Admiss. Value range	Default setting	Comment
Set	-	„no“ „yes“	no	With „Yes“, all parameter with default setting are described on exiting the menu, the device carries out a reset and then goes into normal mode
Characteristic	-	„no“ „yes“	no	With „Yes“, all parameter with default setting are described on exiting the menu, the device carries out a reset and then goes into normal mode

### Display (autoscroll, lighting, contrast, language)

Display settings (ad rotation, lighting, contrast).

Parameter	Unit	Admiss. Value range	Default setting	Comment
Autoscroll	s	1 - 31	5	Display time of each channel. At least two channels has to activated in this mode
Ad rotation		„no“ / „yes“	Yes	Autoscroll participation of each channel
Language		DE/EN/FR	No change	Selection of language in list
Lighting		Autom./on	Autom.	Automatic display cut-off after 3 min. This function can be permanent switched on with the setting „on“
Contrast		0...100%	50%	Display contrast settings



## Memory card

In this menu the function of the memory mode is defined and the card is deleted.

Parameter	Unit	Admiss. Value range	Default setting	Comment
Data output	-	„no“ / „yes“	No	To activate the data output over serial port. Data format: 19200 Baud, 1 stop bit, no parity. <b>The data output is only effected with inserted memory card</b>
Full	-	„stop“ „rotating“	Stop	Behaviour at exhausted memory volume: „stop“: the memory mode is stopped „rotating“: the file with the oldest date is always deleted and the current day for this is saved
Delete	-	„no“ „yes“	No	The card can only be deleted completely. All data is deleted, including external files! Formatting the card is not possible. Deletion can take some time, dependent on card capacity

## Remove memory card

This menu point has no parameter. If this menu point is selected and confirmed, the memory mode is stopped and all data in the puffer will still be written onto the card.

***Important: removing the memory card without confirmation through the menu causes data loss!***

**Display clock**

Parameter	Unit	Admiss. Value range	Default setting	Comment
Display		00:00...23:59	No changes	A separate window is opened, in which the current time and the date is shown. The window is only released with the "SET" key.

**Setting the clock**

With the menu item "summertime" is a automatic daylight saving time identification with a clock reset (for Europe only) programmable (default setting = "no").

**Note: There are double or missing time stamp information's within the resetting time phase.**

Parameter	Unit	Admiss. Value range	Default setting	Comment
Time		00:00...23:59	No change	Setting the time
Day/Mon.		1...31 / Jan...Dec	No change	Setting the date
Year/s		2013...2099	No change	Setting the year

**5.13 Memory functions****Description of the function of data recording**

Please note: the recording function is not designed for safety-relevant or manipulation-proof data storage. Prerequisite for a timely correct data recording is a correctly set time.

The VarioLog checks the presence of a storage medium approx. every four seconds. For data recording the device expects a preformatted memory card (SD/MMC) in the format: FAT12 or FAT16.

Only these admissible formats are recognised. Formatting the memory card is not possible.

Formatting of memory media to these formats is possible without problems on the PC operating systems existing at this time.

However, the memory media can be completely deleted with the device. Possible write protection switches are monitored and processed.

All data is filed on the memory card in a legible plain text format.



A memory card can be alternately inserted in different devices. The data recorded to this time can still be clearly allocated. Each individual device accesses only its own directory.

External data is never overwritten or deleted.

Exception: targeted execution of the card deletion function.

### Settings for memory mode

Global settings are valid for all data recordings and are carried out in the menu guide under:

„Functions -> memory card“.

In the menu point „full“ the memory function can be configured with full memory medium. There are two possibilities:

1. Stop save when the memory medium is full („stopp“),
2. Deletion of the oldest day file („rotating“).

The complete deletion of all data on the memory medium can be carried out under the menu point „delete“. Parameter setting = „no“ or „yes“.

When selecting „yes“, the delete function is carried out on exiting the menu window. Separate channel settings are valid for the analogue input selected in the operating mode. All settings for data recording are carried out in the menu guide under:

“Analogue values > analogue values 2/2 > save”.

Parameter	Value	Explanation
Save	Off	no data recording (default setting)
Save	On	time controlled data recording activated
Save	‘	A source releases the time controlled data recording when exceeding the limiting value
Save	“	A source releases the time controlled data recording when falling below the limiting value
Save	Imp.‘ Imp.“ ‘ + “	Pulse command. A source releases a unique recording when exceeding the limiting value. The time controlled data recording is hereby not affected by. The max. pulse length is unlimited. The pulse end is recognized after falling below the limiting value less hysteresis. The hysteresis is 10% of the trigger channel limiting value setting
Time Step	1...99999	Adjustable recording time step in seconds
Source	1...8	The measuring value of this source is used for limiting value monitoring, it is therefore the trigger channel



Parameter	Value	Explanation
Limiting value	nnnnn	Decision threshold value for triggering the time controlled data recording. The limiting value refers to the current scaling settings of the selected source. Minimum pulse length for identification is >1 sec.

## 5.14 The memory card

### Insert the memory card

- Contacts must point towards the display.
- The memory capacity is shown in MB.
- The device checks the inserted memory card completely.
- The checking time can be several seconds, dependent on the memory capacity.
- Display of the available memory capacity in percent.
- Display of a switched on write protection.
- In operating mode, a recognized memory medium is shown as a dot (.) after the analogue channel number.
- An analogue channel, activated for data recording, is in operating mode marked with a hash sign (#) in line 3.
- A memory card status display is inserted in the operating display mode.

### File creation

In the base directory, a clear subdirectory is created at first, if it does not yet exist. All information is always filed in this directory.

Im Stammverzeichnis wird einmalig, falls noch nicht vorhanden, ein eindeutiges Unterverzeichnis angelegt. Alle Informationen werden grundsätzlich in diesem Verzeichnis abgelegt.

Format: [ADnnnnnn]

- AD = first two signs of the device name
- nnnnnn = last 6 numbers of the device serial number

**Information file**

In the subdirectory an information file is created if this does not already exist. Here current device settings are filed which are necessary for data storage.

At each card exchange or reinsertion or return of power after power failure, a new current data block is entered in this file.

Format: [ADnnnnnn.TXT]

- AD = first two signs of the device name
- nnnnnn = last 6 numbers of the device serial number
- TXT = standard extension for text file

Data format of the information file:

Line	Entry	Explanation
1	ADnnnnnn.TXT	own file name for checking purposes
2	Ser.-No:nnnnnnnn	device serial number for data allocation
3	Version: V.4.1 Feb....	current device firmware
4	Power failure: 25.04.13 15:53	date of last power failure/switch-off
5	Time: 26.04.13 12:16:33	present time (storage start)
6	Memory card: 122MB	available memory medium
7...n	1) Channel input.1 0.20 mA 00,00...20,00 -> 00000...10000 Liter save: from 60s Source: 1 Limiting value: 00000 CNT: 000000	analogue channel number 1...n (n=dependent on device) channel description in plain language selected physical input signal set physical measuring range according to following scaling set scaling range selected scaling unit save function ( from / to / < / > ) storage step in seconds (00001...99999) releasing trigger source threshold for triggering storage, treatment dependent on memory function



## Data recording

If at least one analogue channel is activated for storage, the data recording is carried out in a daily recording file.

File name of the day

- file format: [JJMMTT00.CSV]
- JJ = last two positions of the year 13...99 (2013...2099)
- MM = month 01...12 (January...December)
- TT = day 01...31
- 00 = always „00“ reserved for future extensions.
- .CSV = standard extension for table calculation (Autostart)

To guarantee a long useful life of the card the recorded data is temporarily saved into an internal data puffer. Blocks of data will only be written onto the card when the internal data puffer is sufficiently filled. At the moment these are 488 characters including control characters (page break).

As long as there is space available in the data puffer, the data continues to be recorded even without memory medium. However, so that the data present in the data puffer is not lost, the memory medium should always be removed via the menu point: „remove memory card“. With this all data blocks at present in the data memory will be written onto the memory medium.

If the memory medium is directly removed (without menu guide), the last data blocks will be retained in the internal data puffer. If the data memory is full, the device stops the data recording. After removal of the memory medium, the full stop „.“ shown in operating mode changes again to a bracket „)“.

Switching off the device results in the loss of the data in the data puffer. All data fields are separated with a semicolon „;“ as separation mark.

Available but not recorded channels appear as empty data fields. With this, completely time synchronized data blocks can be created.

A day file always contains the file name, the device serial number, a header with the channel settings and, in the following, the recorded data blocks.



**Data streaming**

An additional streaming of the data line to the serial interface is activatable. Format: 19200 baud, 1 stopp bit, no parity.

See table (memory card) at page 14.

This data stream is only possible by an inserted memory card!

**Memory requirement**

The required memory capacity on the memory medium used is dependent on device and setting. An information file with a data block requires 1023 Byte maximum.

A single recording data block requires, dependent on device, a maximum of:

- for a DL 10-1 34 character positions (Byte),
- for a DL 10-4 73 character positions (Byte),
- for a DL 10-8 125 character positions (Byte).

A memory card contains 1048576 Byte per megabyte.

In the table approximate values of storage periods can be read of under different conditions.

Channels	Storage cycle	Card capacity in MB	Storage period in hours	Storage period in days
1	Each sec	128	1097	46
1		512	4386	183
1		1024	8772	366
4		128	511	21
4		512	2043	85
4		1024	4086	170
8		128	298	12
8		512	1193	50
8		1024	2386	99
1	Each min	128	65792	2741
1		512	263171	10965
1		1024	526343	219331
4		128	30643	1277
4		512	122573	5107
4		1024	245146	10214



Chan-nels	Storage cycle	Card capacity in MB	Storage period in hours	Storage period in days
8		128	17895	746
8		512	71583	2983
8		1024	143165	5965
1	Each std	128	3947520	164480
1		512	15790261	657928
1		1024	31580582	1315858
4		128	1838571	76607
4		512	7354368	306432
4		1024	14708764	612865
8		128	1073725	44739
8		512	4294951	178956
8		1024	8589918	357913

## 6 Customer satisfaction

Customer satisfaction is our prime objective. Please get in touch with us if you have any questions, suggestions or problems concerning your product.

## 7 Addresses

The addresses of our worldwide representations and offices can be found on the Internet at [www.afriso.com](http://www.afriso.com).



## 8 Appendix

### 8.1 EC Declaration of Conformity

Technik für Umweltschutz		Messen, Regeln, Überwachen.	
<b>EU – Konformitätserklärung</b> <i>EU-Declaration of Conformity / Déclaration EU de conformité</i> <i>Declaración de conformidad CE / Declaração de conformidade CE</i>			
		<b>Formblatt</b> <b>FB 27 - 03</b>	
Name und Anschrift des Herstellers: <u>AFRISO-EURO-INDEX GmbH, Lindenstr. 20, 74363 Güglingen</u> <i>Manufacturer / Fabricant / Fabricante / Nome e endereço do fabricante:</i>			
Erzeugnis: <u>Datenlogger mit Anzeige</u> <i>Product / Produit / Producto / Produto:</i>			
Typenbezeichnung: <u>DL10-1, DL10-4, DL10-8, DL10-4 SV, DL10-4 G</u> <i>Type / Type / Tipo / Tipo:</i>			
Betriebsdaten: <u>50 ... 253 V AC; 7 W; IP 20</u> <i>Techn. Details:</i> <i>Caractéristiques / Características / Detalhes técnicos:</i>			
Das bezeichnete Erzeugnis stimmt mit den Vorschriften folgender Europäischer Richtlinien überein: <i>The above mentioned product meets the requirements of the following European Directives</i> <i>Le produit mentionné est conforme aux prescriptions des Directives Européennes suivantes</i> <i>El producto indicado cumple con las prescripciones de las Directivas Europeas siguientes</i> <i>O produto indicado cumpre com as prescrições das seguintes Diretivas Europeias:</i>			
<b>Elektromagnetische Verträglichkeit (2014/30/EU)</b> <i>Directive Electromagnetic Compatibility / Directive compatibilité électromagnétique / Directiva compatibilidad electromagnética / Diretiva sobre compatibilidade eletromagnética</i>			
- DIN EN 61326-1			
<b>Niederspannungsrichtlinie (2014/35/EU)</b> <i>Low Voltage Directive / Directive basse tension / Directiva baja tensión / Diretiva sobre baixa tensão</i>			
- DIN EN 61010-1			
<b>RoHS-Richtlinie (2011/65/EU)</b> <i>RoHS Directive / Directive RoHS / Directiva RoHS / Diretiva RoHS</i>			
Unterzeichner: <i>Signed / Signataire / Firmante / Assinado por:</i>		<u>Dr. Späth, Geschäftsführer Technik</u> <i>Technical Director / Diretor Técnico</i>	
<u>29. Juli 2020</u> <i>Datum / Date / Fecha / Data</i>		 Unterschrift / Signature / Firma / Assinatura	
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