Operating Instructions
Version: 1.0.6

Multi-channel display device and data logger

VarioLog®

Type: AD-VL 8–A1 (1 channel)
Type: AD-VL 8–A4 (4 channel)
Type: AD-VL 8–A8 (8 channel)

Type: AD-VL8A4 – S (4 channel)
(with integrated transmitter supply)

Type: AD-VL8A4 – G (4-channel)
(with galvanically insulated current inputs)



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Function and applications

The VarioLog® 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 VarioLog® 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 VarioLog AD-VL 8® 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)

Type key

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

Type	Hardware
AD-VL8A1	1 analogue input: current (up to 20 mA) or voltage (up to 10V) freely selectable
AD-VL8A4	4 analogue inputs: for each channel current (up to 20 mA) or voltage (up to 10V) selectable
AD-VL8A8	8 analogue inputs: for each channel current (up to 20 mA) or voltage (up to 10V) selectable
AD-VL8A4-S	4 analogue inputs: for each channel current (up to 20 mA) or voltage (up to 10V) selectable with integrated transmitter supply, **without galvanic isolation**
AD-VL8A4-G	4 analogue inputs: for each channel current (up to 20 mA) or voltage (up to 10V) selectable with galvanically insulated current input

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Technical data

Type of construction	Control panel housing acc. To DIN 43 700 for front frame	48 x 96 mm
	Dimensions (W x H x D)	91.5x43x131 mm
	mounting	with 2 retaining brackets
	Control panel cutout: 92x44 mm	control panel thickness 1.5-10 mm
	Weight	approx. 230 g
Connection	Terminal cross section	2.5 mm² for circuit terminal, all others 1.5 mm²
Environmental conditions	Admissible ambient temperature	0 ...+50°C
	Storage and transport	-30°C ... +80°C (no dewing)
Electrical protective measures	Protection classification	II
	Type of protection	front IP 20, terminals IP 20
Supply voltage	Wide range	20-253 VDC or 50-253 VAC
Terminal 31, 32	Power intake	max. 1.2 W or 3.0 VA
	Power intake (with transmitter feeding)	max. 5.0 W or 7.0 VA
Transmitter supply (VL8A4-S)	20...17 V (at 4...20 mA), max. 25 mA	
Measuring inputs	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 (AD-VL8A4-G: 230 Ohm)
Channel separation	proof test voltage, current inputs (only VL8A4-G)	500V, 1 min
Function of each channel	display of measured analogue value	
	display of scaled measured quantity as numerical value (high-order digits)	
	display of scaled quantities as quasi-analogue bars	
	display of measuring tendency	
	display of channel description and of scaling unit	
	display of minimum and maximum values	
	display of a linearised measuring value (over 24 x/y points)	
	saving all measuring values on SD-cards, min. cycle 1 s	
	trigger functions each threshold, also onto other channels	
	filter functions	
Display	graphic-LCD, background lighting	grey 122x32 pixel
	digital display	5 digit (6 in counter mode), freely configurable
	scaling unit	freely selectable from list
Memory cards	SD up to max. 2 GB, preformatted FAT 12 / 16 (not supplied)	
Galvanic isolation, test voltages	Signal/auxiliary voltage	4 kV, 1 min
EMC (CE-conformity)		
Product family standard	EN 61326	
Emitted interference	EN 55011, CISPR11 Cl. B	
During electromagnetic disturbance minor changes in output signal are possible		
Electrical safety requirements		
Product family standard	EN 61010-1	

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.

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

The multi-channel displays and data logger VarioLog® must generally be installed outside explosion-endangered areas!

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!

Operating the device

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.



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
„set“	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. By depressing the key „set“ for longer (>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.

Switching over the operating language

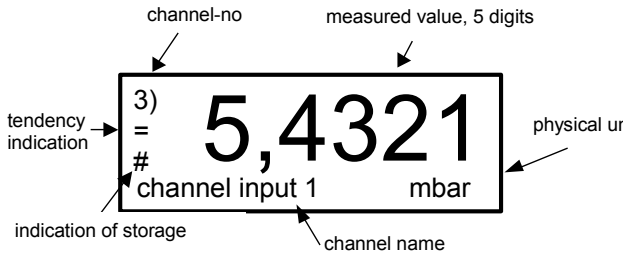
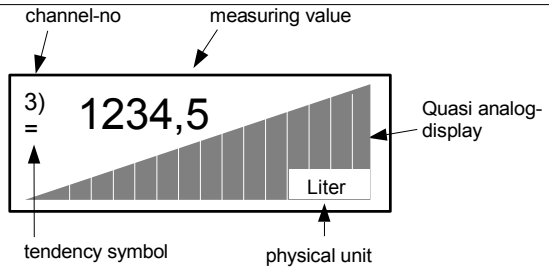
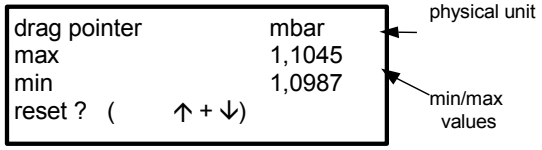
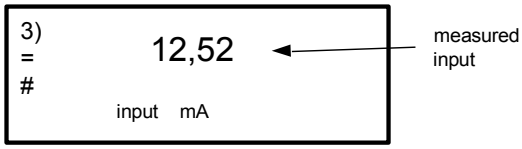
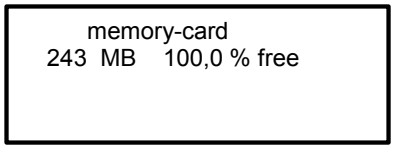
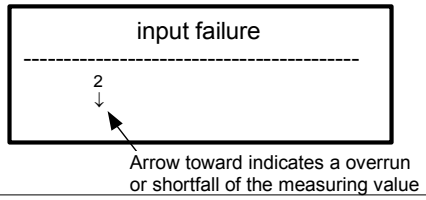
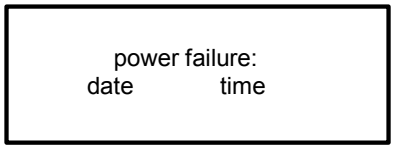
The VarioLog is equipped with three language modules at the works: German, English and French. The operating language is set by pressing the 3 operating keys simultaneously for a few seconds. The switchover can be carried out in any window. The changing of the language is equally possible on programming: parameter → functions → display ½ → language.

The different 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.

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 showed and the tendency indicator displaying the input level.
Quasi analogue		In mode „Quasi analogue display“ an angle bar appears, which shows the measuring range.
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 value.
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 is 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)

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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.

Signal input selection

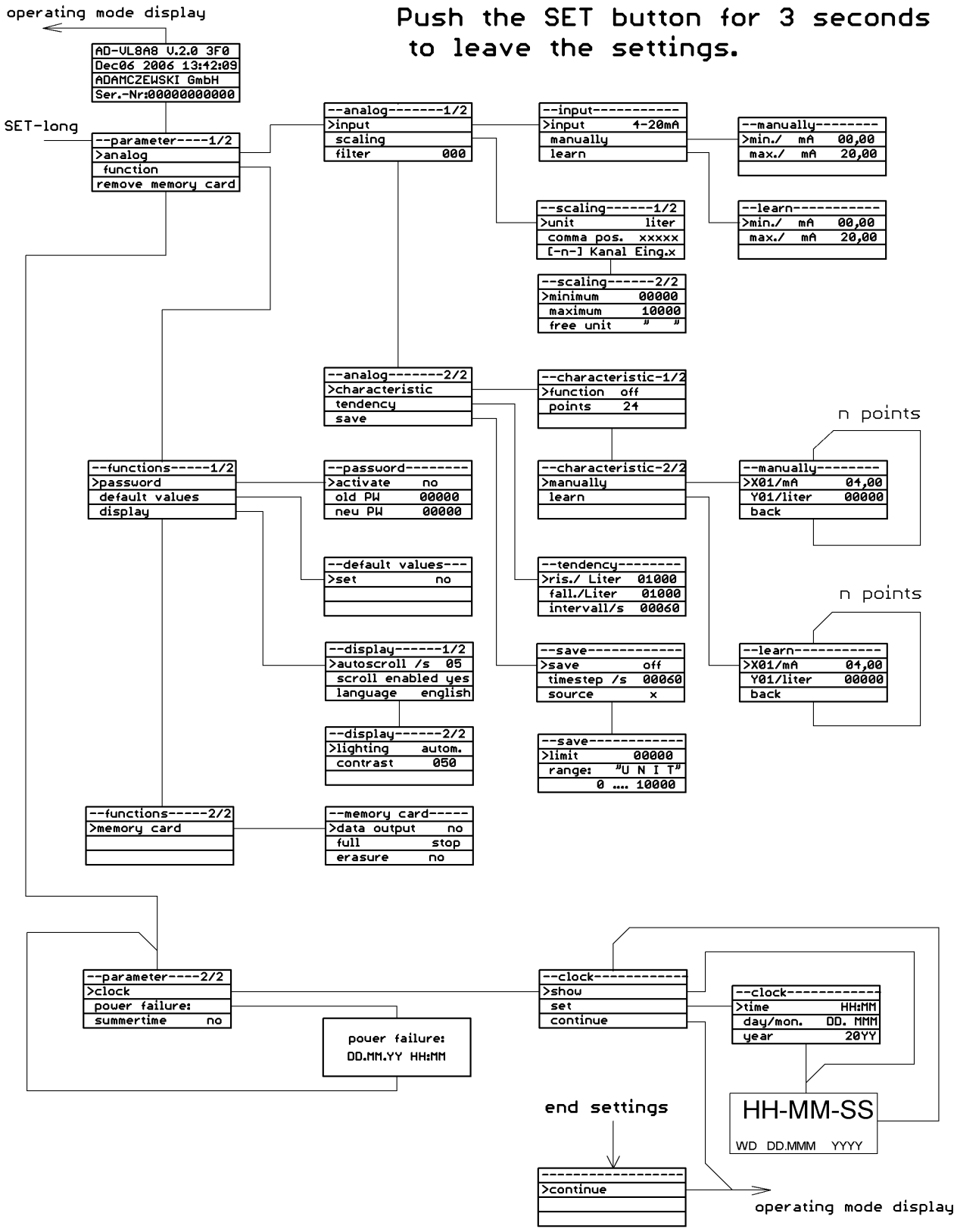
On each alteration, begin and end will be changed **automatic** in realtime to the physical input limits.

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

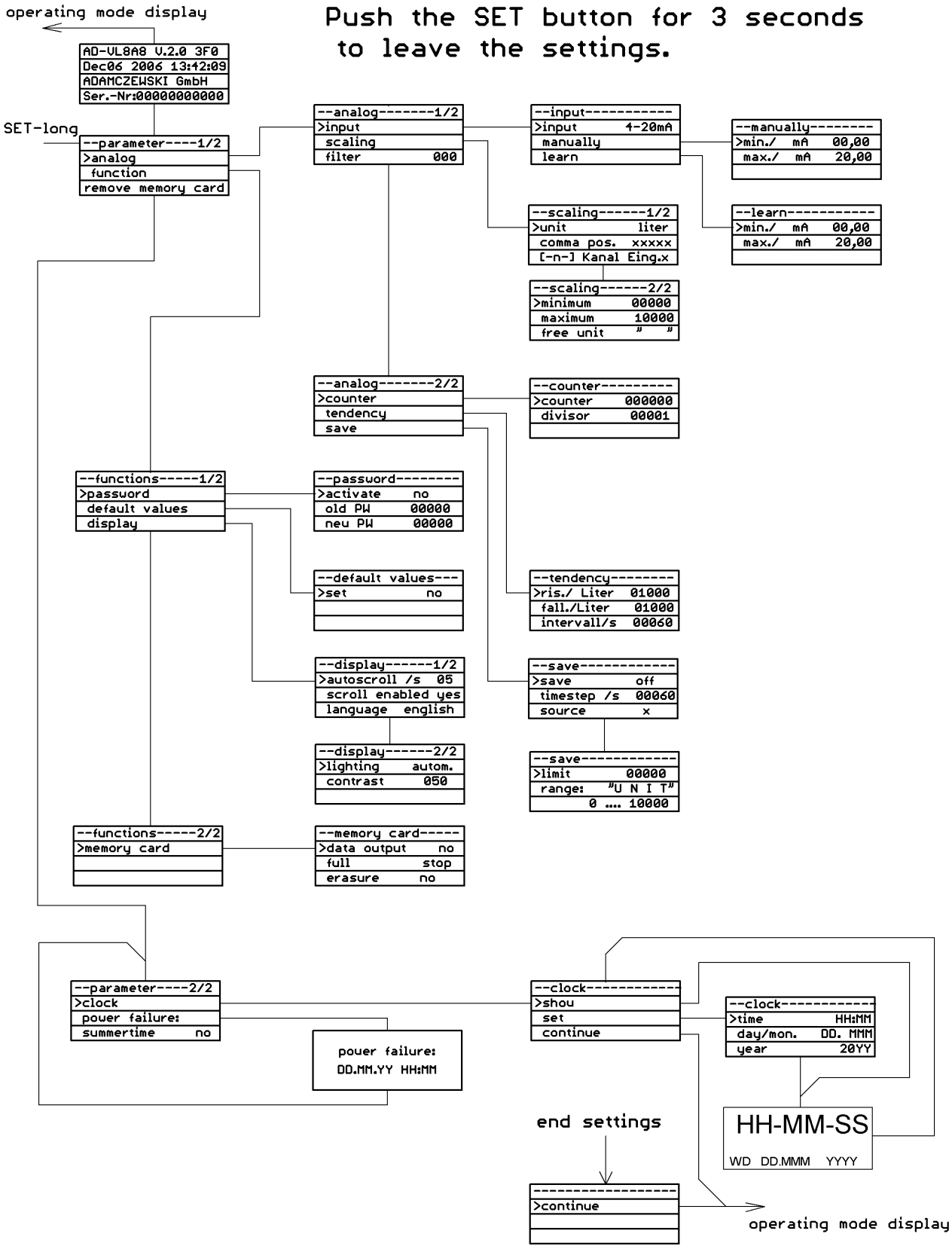
Counter operation

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 VL8A4-S 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.

Programming block diagram



Programming block diagram (counter activated)



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, 24V, NAMUR	0-20 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.

Parameter	Unit	Admiss. value range	Default setting	Comment
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.
[-Cannel-]	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.
free unit	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:

Measuring value(i) = (measuring value(i) + (filter value) * measuring value(i-1)) / (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:
build-up time in s = 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“ „horiz. 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.
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 physikal 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 preset 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.
Interval/s	s	1 - 65535	60	The period in which the measuring value must be altered by the delta to trigger a display.

Save
Conditions to generate a storage event.

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. **Only displayed if save limit active!**

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“. **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.**
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 (autoscroll)		„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. **The data output is only effected with inserted memory card.**
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 whithout confirmation through the menu causes data loss!

Display clock

Parameter	Unit	Admiss. value range	Default setting	Comment
display		00:00 ....23:59	no change	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

VarioLog 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	pulse↑ pulse↓ ↑ + ↓	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.
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.

The memory card

Inserting 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.

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	Version: V.4.1 Dec….	current device firmware
3	ser.-no:nnnnnnnnnnnn	device serial number for data allocation
4	power failure: 25.07.13 15:53	date of last power failure/switch-off
5	time: 02.08.13 12:16:33	present time (storage start)
6	memory card: 122MB	available memory medium
7…n	1)	analogue channel number 1...n (n=dependent on device)
	channel input.1	channel description in plain language
	0-20mA	selected physical input signal
	00,00...20,00	set physical measuring range
	->	according to following scaling
	00000...10000	set scaling range
	liter	selected scaling unit
	save: from	save function (from / to / < / >)
	60s	storage step in seconds (00001...99999)
	source: 1	releasing trigger source
	limiting value: 00000	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 temporary 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.

Each data block starts with an absolute time stamp (17 characters).

Time stamp format: [DD/MM/YY hh:mm:ss]

TT	= day 01...31
MM	= month 01...12 (January...December)
JJ	= last two positions of the year 13...99 (2013...2099)
hh	= time (hour)
mm	= time (minute)
ss	= time (second)

Data format of day file

Line	Entry	Explanation
1	JJMMTT00.CSV	own file name for checking purposes
2	Ser.-no:nnnnnnnnnnn	device serial number data allocation
3	DD/MM/YY hh:mm:ss;	table header (time stamp column)
	0-20mA;	(selected physical input signal)
	channel input 1/litre;	(channel name / scaling unit)
	0-20mA;	
	channel input 2/litre;	
	0-20mA;	
	channel input 3/litre;	
	0-20mA;	
	channel input 4/litre;	last column for VL8A4
	0-20mA;	
	channel input 5/litre;	
	0-20mA;	
	channel input 6/litre;	
	0-20mA;	
	channel input 7/litre;	
	0-20mA;	
	channel input 8/litre;	last column VL8A8

Line	Example for 2 activated channels (channel 1 and 2) of a VL8A8
4	02.08.05 12:21:02;00,00;00000;00,00;00000;;;;;;;;;;;
4+1	02.08.05 12:22:02;00,00;00000;00,00;00000;;;;;;;;;;;
4+2	02.08.05 12:23:02;00,00;00000;00,00;00000;;;;;;;;;;;
4+n	02.08.05 12:24:02;00,00;00000;00,00;00000;;;;;;;;;;;

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 VL8A1 34 character positions (Byte),
for a VL8A4 73 character positions (Byte),
for a VL8A8 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	each sec	512	4386	183
1	each sec	1024	8772	366
4	each sec	128	511	21
4	each sec	512	2043	85
4	each sec	1024	4086	170
8	each sec	128	298	12
8	each sec	512	1193	50
8	each sec	1024	2386	99
1	each min	128	65792	2741
1	each min	512	263171	10965
1	each min	1024	526343	219331
4	each min	128	30643	1277
4	each min	512	122573	5107
4	each min	1024	245146	10214
8	each min	128	17895	746
8	each min	512	71583	2983
8	each min	1024	143165	5965
1	each hour	128	3947520	164480
1	each hour	512	15790261	657928
1	each hour	1024	31580582	1315858
4	each hour	128	1838571	76607
4	each hour	512	7354368	306432
4	each hour	1024	14708764	612865
8	each hour	128	1073725	44739
8	each hour	512	4294951	178956
8	each hour	1024	8589918	357913

Analysis software VarioView

The optional pc software **VarioView** is used to view and printing of the stored data.
The basic functions are: open files, catenate files, viewing and printing the data and charts.
The software VarioView is available free of charge:
http://www.adamczewski.com/download/varioview2.zip

File tool

The file tool software **Dateiverkettung** catenates the day files of a VarioLog to one single file.
The software Dateiverkettung is available free of charge:
http://www.adamczewski.com/download/dateiverkettung.zip

Firmware update

Sometimes a new firmware is available and the device has to be upgraded.
The firmware tool software is available free of charge:
http://www.adamczewski.com/download/bootflash.zip

To update a device, a special serial interface converter can ordered on ADAMCZEWSKI GmbH.
The newest firmware (SL8_V_4_1_zip) is downloadable free of charge:
de/download.html

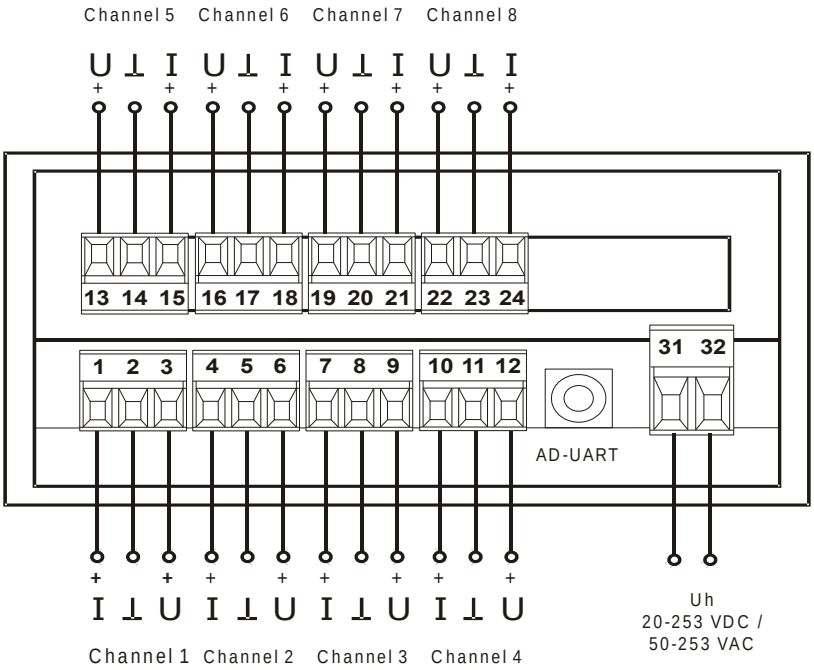
Prior a firmware update the device parameters has to be saved by using the pc software **AD-Studio**.
The software AD-Studio is available free of charge:
de/download.html

Update:

1. Connect the device with power, connect the device to the personal computer (use the serial interface).
2. Start **BOOTFLASH.EXE**.
3. After the device is found, a dialog box is opened, choose the new firmware file **SL8_V_4_1.hex**.
4. Wait for finish of update. Do not disconnect the device! The update takes some minutes.
   The device makes a reboot.
5. Wait for the message „Device update successful“ and confirm (press „ok“).

A transfer of a wrong firmware destroy the device.
In this manner the device has to be send to the manufacturer!

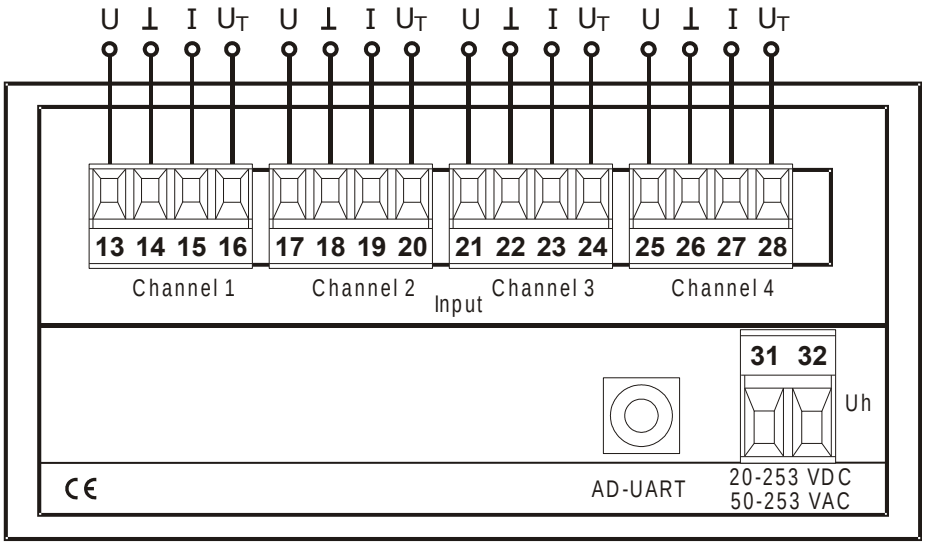
Connection diagram AD-VL8A1…A8 (view from the back)



Terminal allocation

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
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
32	Uh	20-253 V DC or 50-253 V AC
A	RS 485	Interface (optional)
B	RS 485	Interface (optional)

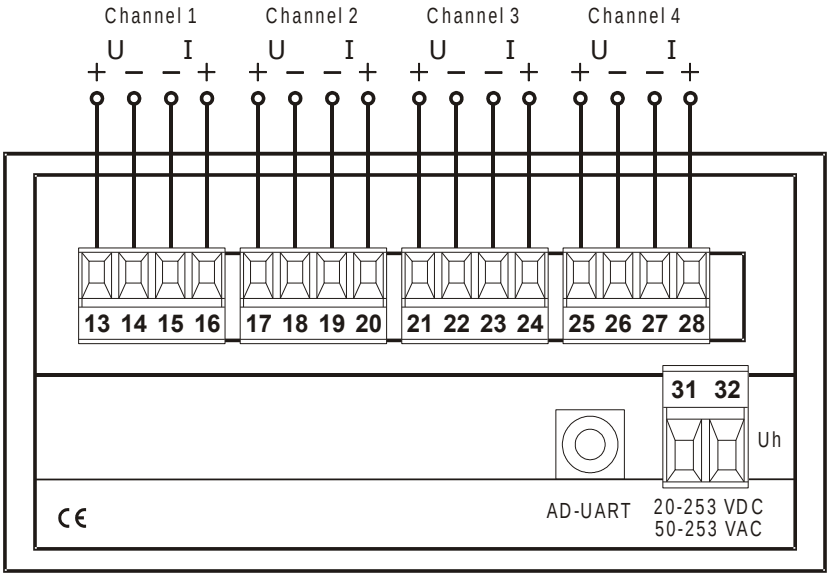
Connection diagram AD-VL8A4-S (view from the back)



Terminal allocation

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_T 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_T 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_T 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_T 4	Positive pole transmitter supply channel 4
31	Uh	Supply voltage wide range power pack 20-253 V DC or 50-253 V AC
32	Uh	

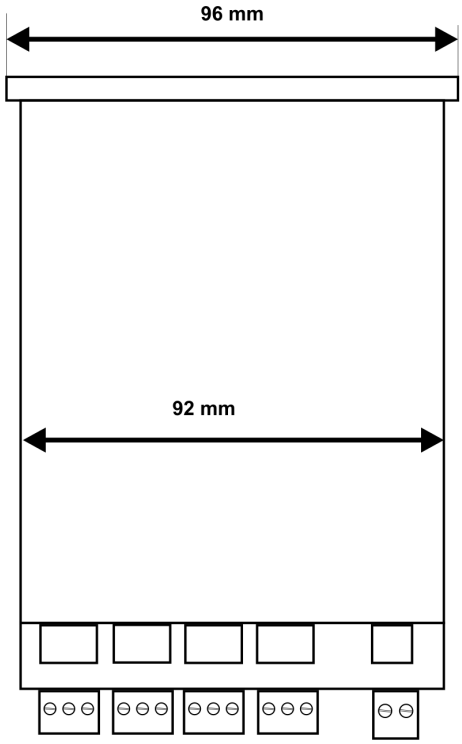
Connection diagram AD-VL8A4-G (view from the back)

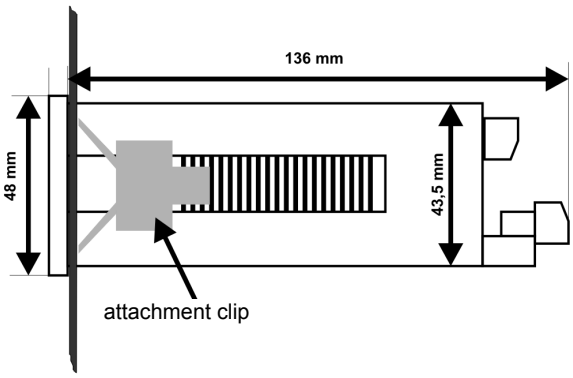


Terminal allocation

Terminal no.	Function	Comment
13	+ Ue 1	Positive pole voltage input channel 1
14	- Ue 1	Negative pole voltage inputchannel 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 inputchannel 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 inputchannel 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 inputchannel 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
32	Uh	20-253 V DC or 50-253 V AC

Dimensions





Applications