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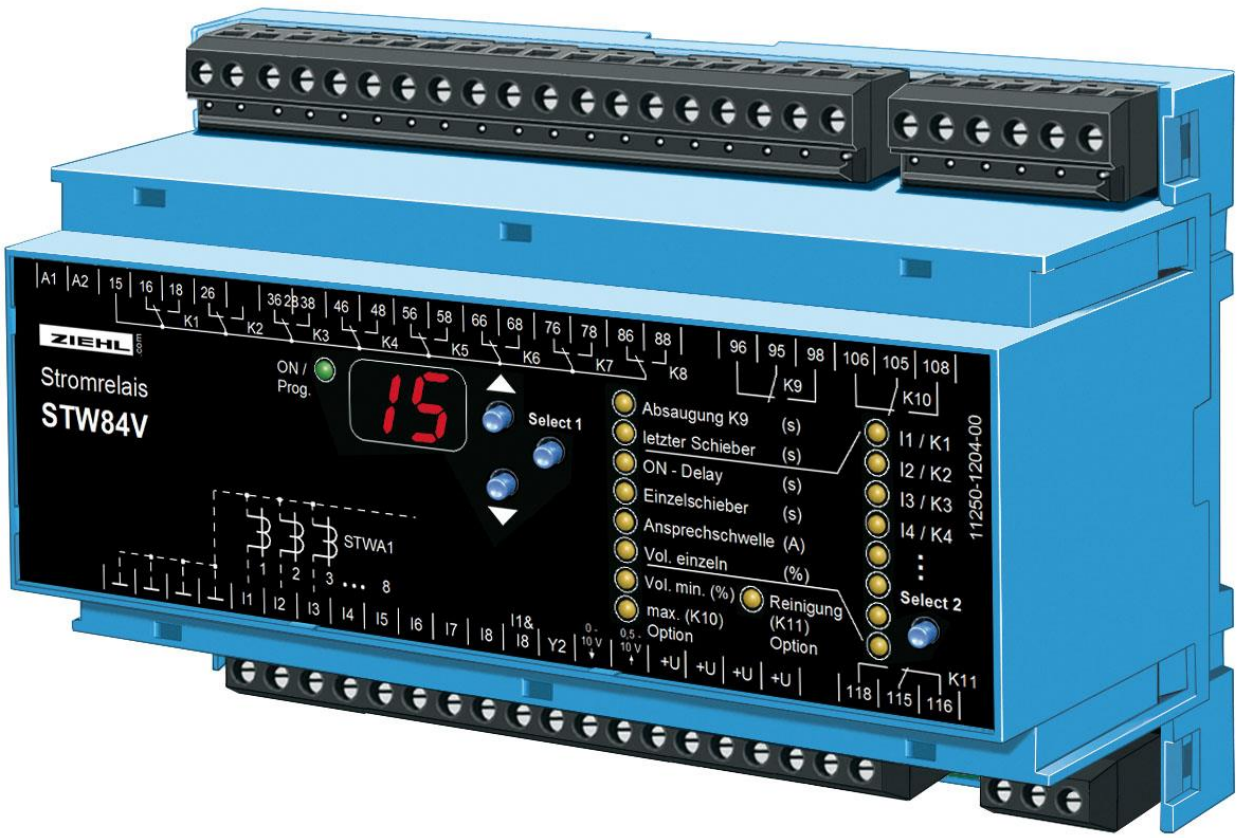
Operating Manual STW84V

updated: 2024-04-18 /Sc
from Firmware: 43-06

For more information and help about this product please scan the QR-Code or choose the following link: STW84V

Operating manual, Quick guide, Datasheet, Connection diagram, CAD Data
Firmwareupdates, FAQ, Videos about installation and settings, Certificates

- Control for suction plants



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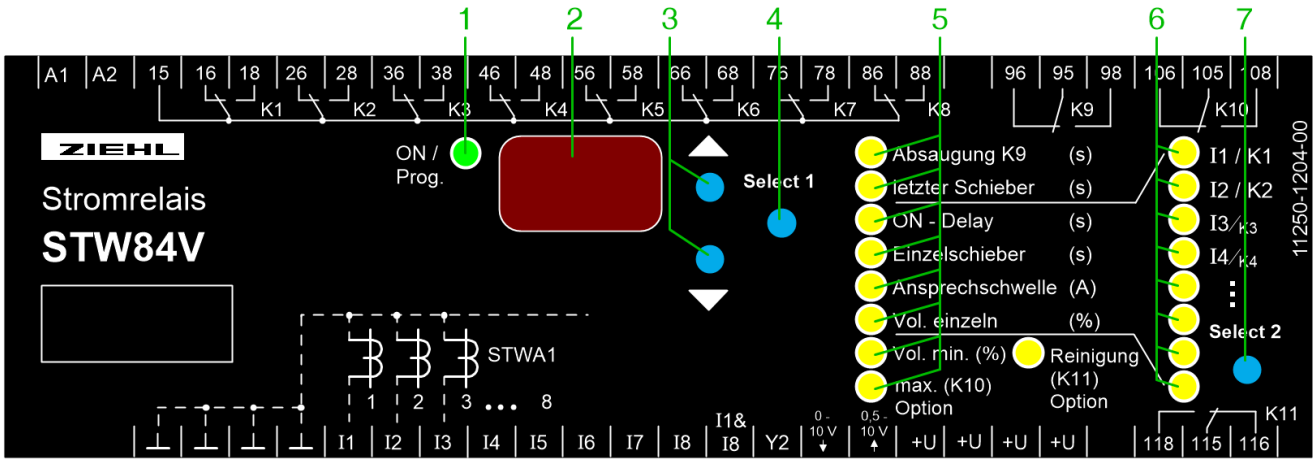
1 General Notes

Compliance with the following instructions is mandatory to ensure the functionality and safety of the product. If the following instructions given especially but not limited for general safety, transport, storage, mounting, operating conditions, commissioning and disposal / recycling are not observed, the product may not operate safely and may cause a hazard to the life and limb of users and third parties.

Deviations from the following requirements may therefore lead both to the loss of the statutory material defect liability rights and to the liability of the buyer for the product that has become unsafe due to the deviation from the specifications.

2 Display and operating elements



1) LED: ON / Programming Mode
2) Digital display, during programming for programmed values, in operation display of actual volume-flow
3) Button up / down
4) Button for selecting the function
5) LEDs for selecting the function and display of operating state
6) LEDs für selecting the channel (I1/K1...I8/K8) and display of active channels
   OFF: relay off
   blinking 1xON 4xOFF: input active, ON-delay running
   ON: relay on
   blinking 1:1 : slide-valve is opened additionally (LED Vol. min. ON)
   or OFF-delay running
   or slide-valve cannot be opened because Vol. is exceeded
7) Button for selecting the channel

3 Application and short description

The current relay STW84V monitors up to 8 alternating current sets on current flow yes/no. The inputs can analyse signals of current transformers type STWA1(H) or of potential-free contacts.
For controlling of great dedusting plants several relays can be combined.

Applications:
Controlling of dedusting plants in the timber and plastic processing industry according to the technical rules for dangerous materials TRGS 553.
The central suction is switched on, as soon as any machine is put into operation. According slide-valves in the suction ducts of the individual machines are opened.
In addition, cleaning of a filter (vibration) and a cellular wheel/discharge can be controlled, an external cleaning (with pressurized air) can be started or exceeding of max. volume flow can be reported.
The analog output 0...10 V can control a frequency-converter at the motor of the ventilator and thus optimize performance and save energy.

- Monitoring of 8 machines (STWA1(H) or contact)
- input for "open all slide-valves"
- 8 relays (with change-over contacts) for slide-valves
- 1 relay for control ventilator
- 1 relay for filter-cleaning
- 1 relay for control of cellular wheel/discharge or report exceeding max. volume-flow
- analog output for control of frequency-converter and combination of more STW84V
- terminals pluggable

4 Overview of functions

Functions/adjustments:

- run-after last slide-valve 0... 99 s
- turn-off delay ventilator 0...99 s
- minimum volume-flow 1...100 %, (if necessary automatic opening of additional slide-valves, beginning with K8)
- maximum volume-flow 5... 100 %

Individually adjustable per channel:

- turn-on-delay I1... I8: 0... 20 s
- turn-off-delay relay K1...K8: 0... 99 s
- operating value I1...I8: app. 0.5... 5 A
- volume-flow of slide-valves 1...100 %

Combination of more STW84V:

Master-relay considers volume-flow of other relays for:

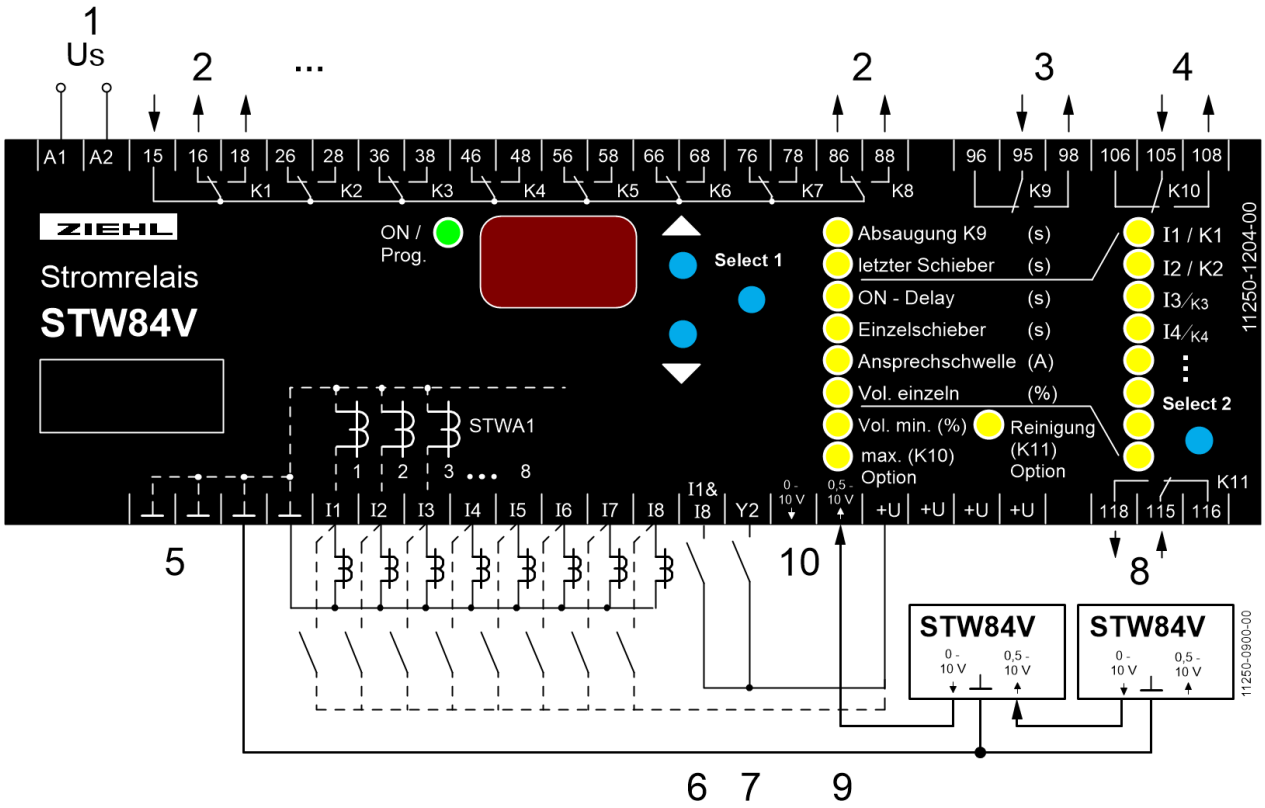
- control of suction-fan (relay K9 and analog output 0-10 V)
- opening of additional slide-valves
- adding time for filter-cleaning
- report of exceeding max. volume-flow

Control of cleaning (dedusting) of filters:

The run time of the suction is added with consideration of the volume flow. The dedusting of the filters is started after the programmed time is reached (starts only with when suction off).

- time for addition: 0... 99 min.
- added time stored permanently even at loss of power (power failure or upon completion of work)
- delay before start of dedusting: 0... 990 s
- number of dedusting impulses: 0... 20
- impulse-on-time: 1... 30 s
- impulse-off-time: 1... 990 s
- time of continuous dedusting: 0... 990 s
- alternatively impulse shaking 0.1... 9.9 s (square)
- alternatively request for external dedusting (with running suction)
- input for external dedusting command (after next stop of suction)
- controlling a cellular wheel / discharge during dedusting

5 Connection plan



1) power supply
2) 8 outputs for slide-valves
   (16, 26...86= close, 18, 28...88=open)
3) suction on
4) max. volume-flow exceeded / option
5) inputs for current transformers STWA1(H)

- STWA1H (+) = I1…I8
- STWA1H (-) = ⊥

6) open all slide valves
7) external dedusting command
8) dedusting / option
9) analog input
10) Control of suction power

6 Important notes

DANGER!
Hazardous voltage!
Will cause death or serious injury. Turn off and lock out all power supplying this device before working on this device.

Attention! Universal power supply
The device have a universal power supply, that is suitable for DC- and AC-voltages. Before connecting the device to supply-voltage make sure that the connected voltage corresponds with the voltage on the lateral type on the device

DANGER!
In a non-loaded (open) secondary circuit of the current transformer STWA1(H) high voltages are induced at the secondary terminals.
For primary currents > 16 A, this voltage can be dangerous for human beings.
An "open mode", i.e. operation of the current transformer without secondary wiring, should be avoided.

To use the equipment flawless and safe, transport and store properly, install and start professionally and operate as directed.
Only let persons work with the equipment who are familiar with installation, start and use and who have appropriate qualification corresponding to their function. They must observe the contents of the instructions manual, the information which are written on the equipment and the relevant security instructions for the setting up and the use of electrical units.
The equipment is built according to DIN VDE/EN/IEC and checked and leave the plant according to security in perfect condition. If, in any case the information in the instructions manual is not sufficient, please contact our company or the responsible representative.
In order to maintain this status, you must observe the safety regulations entitled “caution” in this operating manual. Failures to follow the safety regulations can result in death, personal injury or property damage to the device itself and to other devices and facilities.
To maintain this condition, you must observe the safety instructions in this instruction manual titled “Important Information”. Failure to follow the safety instructions may result in death, personal injury, or property damage to the equipment itself and other equipment and facilities.
Instead of the industrial norms and regulations written in this instruction manual valid for Europe, you must observe out of their geographical scope the valid and relevant regulations of the corresponding country.

Attention!
Observe the maximum temperature permissible when installing in switching cabinet. Make sure sufficient space to other equipment or heat sources. If the cooling becomes more difficult e.g. through close proximity of apparatus with elevated surface temperature or hindrance of the cooling air, the tolerable environmental temperature is diminishing.

7 Installation

The unit can be installed as follows:

- Installation in switchgear cabinet on 35 mm mounting rail according to EN 60715
- With screws M4 for installation on walls or panel. (additional latch included in delivery)

Connection according to connection plan or type plate.

A circuit-breaker or switch must be situated within easy reach of the unit and fused. Installation excess current protection should be ≤ 10 A.

DANGER!
The current transformer STWA1 is suitable for current detection in insulated cables. At applications with non-insulated conductors the operator must take care for touch safety. The insulation of the connection cables of the STWA1 must not be damaged. When laying the cable, make sure that there is sufficient distance to not isolated live parts (such as busbars).
If necessary, use an additional electric insulation hose.

Attention!
The polarity of the STWA1 current transformer output (white marking on the cable) must be observed only if several current transformers are connected in series to increase the sensitivity.

Attention!
Only one current-carrying conductor may be routed through the transformer!

8 Detailed description

8.1 Selecting and Programming the Parameters:

Open programming mode with button "Select 1" (LED "ON/Prog." blinking) and select the function. Set value with "▼ / ▲" ("99." stands for 100 %).
When parameters can be set for every channel independently, at least 1 LED is on in the second column of LEDs. The appropriate channel can be selected with "Select 2". The values set with "▼ / ▲" are relevant for the selected channel only. All channels can be activated by multiple pushing of "Select 2" (all LEDs I/K ON, value is set for all channels simultaneously). This allows fast programming of standard-values for all channels.

Leave programming mode with button ”Select 1” (multiple pushing until LED ”ON/Prog.” is ON continuously).
When no button is pushed for 30s, the device returns into operating mode

8.2 Functions / Setting of Parameters:

(Selection with ”Select 1”, MS = manufacturers setting)

- **Suction K9** (Absaugung K9):
  - I1 is ON: OFF-delay suction ”Absaugung K9”: 0 ... 99 s MS: 60 s
  - I2 is ON: ON-delay K9: 0 ... 99 s MS: 0 s
  - I3 is ON factor "M" for multiplication 1 ... 10 MS: 1

  K9 switches on the suction after the programmed "ON-delay" multiplied with factor "M".
  K9 switches off the suction the programmed time, multiplied with "M", after OFF-delay of last valve.

- **OFF-Delay last Valve** (letzter Schieber)

  I1 is ON: OFF-delay last slide-valve 0 ... 99 s MS: 60 s
  I2 is ON factor "M" for multiplication 1 ... 10 MS: 1
  The last slide-valve and if applicable additionally opened slide-valves (8-7-6-...) stay open for this time (x "M") after suction (K9) has been turned off.

- **Minimum Volume-Flow**, output 0-10 V (Vol. min):
  - I1 is ON: minimum volume-flow 1 ... 100 % MS: 1 %

  (when necessary additional slide-valves are opened, beginning with K8)
  The STW84V opens slide-valves until, under consideration of the programmed volume-flow of the single valves, the minimum volume-flow is reached. Therefore slide-valves are opened in the order K8-K7-K6-K5-. They are closed in reverse order, when additional machines are switched on.
  - I2 is ON: output-voltage at 0 % volume-flow 0 ... 10 V MS: 0,5
  - I3 is ON: volume-flow at 10V at the output 0 ... 100 % MS: 100 %

  When the input 0,5 … 10 V of a STW84V is connected to the output it is recommended to use the manufacturers setting (MS) for the output.
  - I4 is ON: Function dedusting input Y2 0/1...100 % MS: 0%

  Parameter 0% = dedusting request with Y2, dedusting is started at the next possible opportunity (= after switching off the suction)
  Parameters 1...99 % - Blocking of dedusting as long as Y2 is active. The programmed value is the volume-flow that is added to addition time for cleaning as long as Y2 is active.
  This function allows to blow into the filter with a second, independent fan.
  - I5 is ON: Suction K9 on/off if input I1&I8 active 0 = off, 1 = on MS: 1

I1&I8 closed -> Suction K9 on	**I1&I8 closed -> Suction K9 off**
- open all valves	- open all valves
- after „ON-delay suction K9“	
- suction K9 = on	- suction K9 = off

- **Maximum Volume-Flow** (max. (K10 Option) 5 ... 100 % MS: 100%
  Exceeding is signalized with K10 (Mode 0 only = Standard). Blocking of opening of further valves can be blocked. Programming see "Modes K10".

- Individually programmable for every channel (Selection with "Select 2"):
  - **ON-Delay Slide-Valves** (ON-Delay) I1 ... I8: 0 ... 20 s MS: 3 s
    (Suction/valve is activated after this time)
  - **OFF-Delay** (Einzelschieber) K1 ... 8: 0 ... 99 s MS: 10 s
    (Valve is closed after this time, exception: last valve)
  - **Operating Value** (Ansprechschwelle) I1 ... 8: app. 0,5 ... 5,0 A MS: app.1 A
    (Sensitivity of the input. Set to higher values when the input shall be active at higher currents only)

Volume-Flow Single-Valve (Vol. einzeln): 1 ... 100 % MS: 10%
Value is considered at control of minimum volume flow, max volume flow, output 0,5…10 V and addition time for cleaning
Setting of proportional volume-flow of single valve in %.
Set the value in consideration of the cross section of the slide-valve and the suction duct and the suction resistance of the machine.
When 2 or more STW84V are combined it is recommended to set the proportional value of the whole system for the slide-valve.

8.3 Selection and programming of other modes of K10 / K11:

Push ”Select 1” until LED ”K10” resp. ”K11” is on.
Push and hold ”Select 1” until LED ”K10” resp. ”K11” blinks . Select the mode (0/1) with ▼ / ▲ .
Pust ”Select 1” to store the mode. Then set the parameters. LED ”K10” resp. ”K11” is on.
Signalizing of the max. volume flow is omitted in other modes than "0", the setting if further valves are opened or not when max. volume-flow is exceeded remains programmed.

8.4 K10 Mode 0, signalizes when max. volume-flow is exceeded (=standard) :

Shift with ”Select 2” between:
- LED I1 is ON: max. volume-flow is exceeded, K10 signalizes, further slide-valves are opened
- LED I1 is blinking: max. volume-flow is exceeded, K10 signalizes, no further slide-valves are opened

Set max. volume-flow with ▼ / ▲ (steps 5%). K10 picks up when this value is exceeded.

<u>During operation:</u>
- LED ” Vol. max. (K10) / Option” is ON: max. exceeded, further slide-valves open
- LED ” Vol. max. (K10) / Option ” is blinking: max. exceeded, **no** further valves open

8.5 Dedusting/Cleaning (Reinigung K11) Mode 0

K11 controls dedusting of the filter. The running-time of the suction is added and stored (power failure or upon completion of work). The time refers to 100% of volume-flow and is extended automatically at little volume-flow, e.g. value = 30 minutes, average volume-flow = 40 % --> addition-time = 30 minutes / 0,4 =75 minutes.
Dedusting is started when the time is reached or a contact at Y2 is closed (only when Y2 is set for dedusting request, short pulse at any time is sufficient) and after the next stop of the suction. Starting an external dedusting device can be done while suction is on.
Dedusting is stopped when the suction is started during dedusting or when a contact at Y2 closes (only when Y2 is set for blocking of dedusting). Dedusting is repeated at the next opportunity (when suction is turned off) when less than 50 % of the time for continuous dedusting have been completed.

For setting the parameters change with button ”Select 2”:

- I1 is ON: addition-time 1 ... 99 min (buttons ▼ / ▲) MS: 30 min
- I2 is ON: delay before start dedusting (after suction K9 is off) 0 ... 99 s (buttons ▼ / ▲) MS: 50 s
- I3 is ON: impulse-on-time 1 ... 30s (buttons ▼ / ▲) MS: 3 s
- I4 is ON: impulse-off-time 1 ... 99 s (buttons ▼ / ▲) MS: 10 s
- I5 is ON: number of dedusting pulses 0 ... 20 (buttons ▼ / ▲) MS: 0
- I6 is ON: continuous dedusting 0 ... 99 s (buttons ▼ / ▲) MS: 50 s
- I7 is ON: pulse-shaking 0 ... 9.9s P1 (buttons ▼ / ▲) MS: 0 s
  - with value 0 s: K 10 picks up during impulse-on-time and continuous dedusting.
  - with value 0,1...9,9s: K10 works as a blinking relay during impulse-on-time and continuous dedusting, changing 1:1 with the selected time.
  - With value P1: K10 picks up for 1 s when addition time is reached (also when suction is on) and the addition time is set to 0. This allows to start an externally controlled dedusting with pressurized air.
- I8 is ON: factor "M" for multiplication 1 ... 10 (buttons ▼ / ▲) MS: 1
  for addition time, delay before start and time for continuous dedusting. These times are multiplied with factor "M".

Display during operation:

LED ”Reinigung K11” blinks: addition-time exceeded -> dedusting starts at next stop of suction.
LED ”Reinigung K11” and ”I1/K1” ON -> delay before start dedusting
LED ”Reinigung K11” and ”I2/K2” ON -> impulse on
LED ”Reinigung K11” and ”I3/K3” ON -> impulse off
LED ”Reinigung K11” and ”I4/K4” ON -> continuous dedusting
When button "▼ " is pushed during operation, the remaining time until the next dedusting is displayed. The value (minutes) has to be multiplied with the factor M (set under I8) and refers to 100% of volume-flow for the remaining time.

8.6 K10/K11 Mode 1, for K10 or K11. Control of discharge.

For programming the parameters change with button ”Select 2” between:

- I2 is ON: Mode 0 or 1 MS: 0
  Mode 0: K10 resp. K11 picks up when addition-time is reached and releases a programmable turn-off-delay after dedusting has been completed.
  Mode 1: K10 resp. K11 picks up when at least 1 slide-valve is open and releases a programmable turn-off-delay after suction is stopped (K9 releases) or dedusting has been completed.
- I3 is ON: turn-off-delay 0 ... 99 s MS: 0 s
- I4 is ON: factor "M" for turn-off-delay 1 ... 10 MS: 1

8.7 Query firmware version

The firmware version is displayed when the device is switched on.
The display shows for approx. 1s, e.g. 43. / 0.6. (Firmware 43-06).

8.8 Tips

Limit too high (current in wire too low):

- Loop through wire several times

Limit too low (small loads shall not be recognized)

- Connect a resistor (0,25 W / 200 V) in parallel to the current transformer STWA1(H)
  - - - resistor 750 Ohm = enhancement by factor 2x
  - - - resistor 330 Ohm = enhancement by factor 4x
  - - - resistor 150 Ohm = enhancement by factor 10x

Because of high tolerances we recommend to determine the best value by try out.

Cable length of STWA1(H):
50 m and longer is possible.
If extreme inductive or capacitive stray effects are to be expected by parallel cables of the power installation, shielded control lines should be used.

9 Trouble shooting

"EE" is blinking in the display -> parameter-error when reading EEPROM:
Check all parameters
Switch off and on the device
If the error remains make a reset to manufacturers settings -> push buttons ” ▼ / ▲ ” simultaneously for app. 2 s.

Attention ! This will reset all parameters to manufacturers settings (MS). Only mode of K10 and K11 and the function of the input Y2 are not affected!
If the error still remains send back to factory for repair.

10 Technical Data

Rated supply voltage Us	AC/DC 24 - 270 V, 0/50/60 Hz
Tolerance	AC/DC 20,4 - 297 V
Power consumption	< 12 VA
Inputs, Sensor connections	I1, I2, I3, I4, I5, I6, I7 und I8
Connectable sensors	- current transformer STWA1(H) - potential-free contact - ZIEHL Current-Sensor S1
Internal resistance of inputs	ca. 15 kΩ
current overload capacity with STWA1(H)	max. 100 A continuously, max. 300 A for 10 s
Switching points	
Operating value	adjustable 0,5 … 5 A with current transformer STWA1(H)
Tolerance	±20 %
Hysteresis	ca. 2 %
Inputs I1&I8, Y2	
Input resistance	approx. 26 kΩ
Switching threshold	<DC 5 V off; >DC 10 V on;
Input 0,5 – 10 V	
Input resistance	ca. 8,5 kΩ
Input signal	DC ≥ 0 … ≤ 20 V
Output +U	17 ... 21 V max. 120 mA at Us = 230 V (max. 8 Current-Sensors S1) max. 10 mA at Us = 24 V (max. 0 Current-Sensors S1)
Analog output 0 – 10 V	
Tolerance	4 % of full scale
Load	≥ 1 kΩ
Relay output K1…K11	1 change-over (co) contact
Switching voltage	max. AC 250 V
Switching current	max. 5 A
Total current via terminal 15	max. 5 A
Switching power	max. 1250 VA (resistive load) max.48 W at DC 24 V
Rated operational current Ie	AC15 Ie = 2 A Ue = 250 V DC13 Ie = 2 A Ue = 24 V Ie = 0,2 A Ue = 125 V Ie = 0,1 A Ue = 250 V
Expected life mechanical	3 x 10^7 operations
Expected life electrical cos φ = 1	1 x 10^6 operations with AC 250 V / 5 A 2 x 10^6 operations with AC 250 V / 3A 2 x 10^7 operations with AC 250 V / 1A
Derating factor cos φ 0,7	0,5

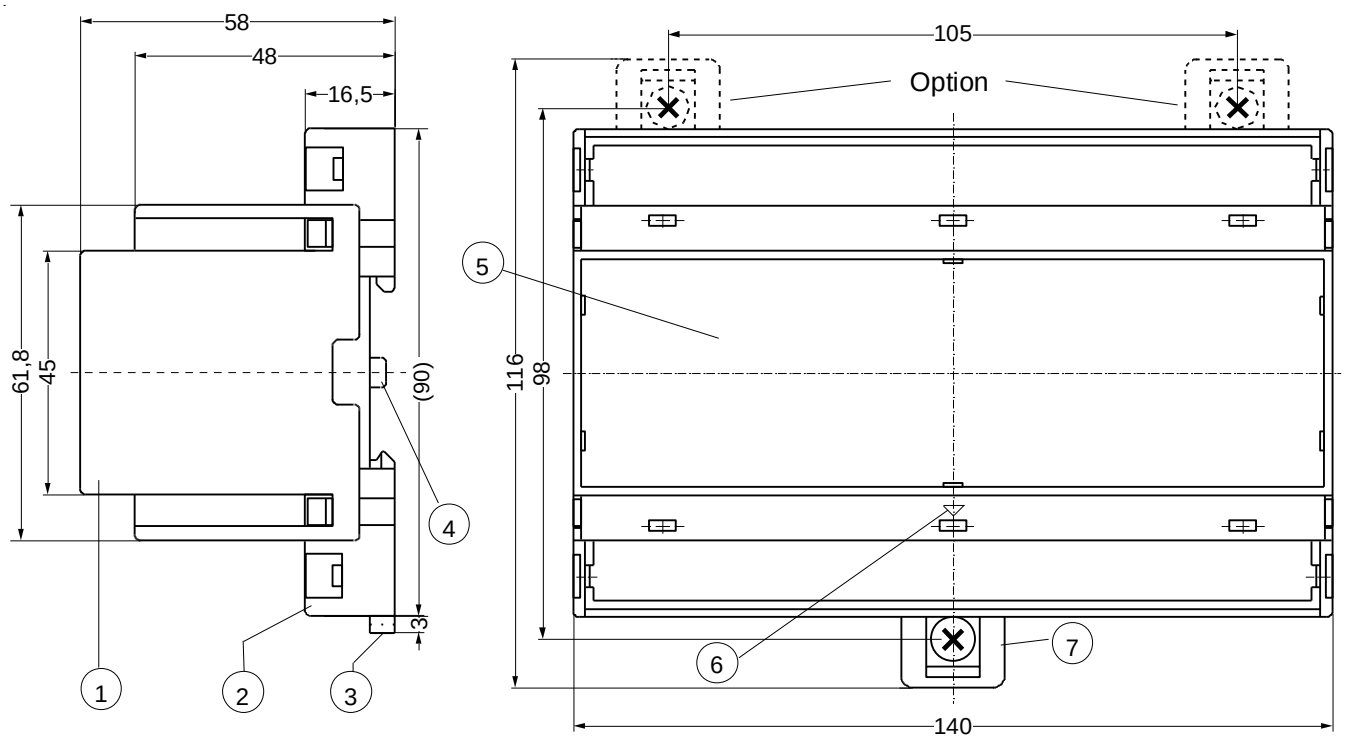
Testing conditions	**EN 61010**
Rated impulse voltage	4000 V
Pollution degree	2
Rated insulation voltage Ui	250 V
On-period	100 %
Max. ambient temperature	-20 °C ... +45 °C -20 °C ... +60 °C at I_{+U} < 20 mA (current at +U)
EMC-immunity	EN 61326-1 (industrial electromagnetic environment))
EMC-emission	EN 61326-1 CISPR 11 Class B

Housing	**design V8**
Dimensions (W x H x D)	140 x 90 x 58 mm
Wire connection	1 x 1.5 mm² per pole
Protection housing/terminals	IP30 / IP20
Mounting	snap mounting on 35 mm standard rail EN 60715 or screws M4
Weight	approx. 350 g

Subject to technical modifications

11 Design V8

(dimensions in mm)



1	cover
2	base
3	bar for snap mounting
4	latch for sealing
5	front panel
6	position downward
7	for fixing to wall with screws, Ø 4.2 mm

12 Disposal

Disposal should be carried out properly and in an environmentally friendly manner in accordance with legal provisions.
ZIEHL is registered with the EAR Foundation under WEEE no .: DE 49 698 543.

13 Overview of Settings and Quick guide

Date:

Choice with "Select 1"				Enter settings different from manufacturers settings here:		Choice with "Select 2"							
Function	Explanation	Scope for settings	Manufacturer's settings (MS)	Setting	Factor M (MS=1)	I1/K1	I2/K2	I3/K3	I4/K4	I5/K5	I6/K6	I7/K7	I8/K8
Suction K9 (ventilator)	Turn-off-delay central suction	0...99 s	60 s			X	-	-	-	-	-	-	-
	Switch-on-Delay	0...99 s	0 s			-	X	-	-	-	-	-	-
	Factor M	1…10	1	-		-	-	M	-	-	-	-	-
Last slide-valve	Run-after-Time	0...99 s	60 s			X	-	-	-	-	-	-	-
	Factor M	1…10	1	-		-	M	-	-	-	-	-	-
ON-delay slide-valves	Turn-on-delay of single valves	0...20 s	3 s	-	-								
OFF-delay slide-valves	Turn-off-delay of single valves	0...99 s	10 s	-	-								
Operating value	Current through transmitter	0,5...5 A	1.0 A	-	-								
Volume-flow single valve	Volume-flow / valve	1...100 %	10 %	-	-								
Volume-flow. minimum	Minimum total volume-flow	1...100 %	1 %		-	X	-	-	-	-	-	-	-
Analog Output:	Output-voltage at 0%	0...10 V	0,5 V		-	-	X	-	-	-	-	-	-
	Volume-flow at 10 V	0...100 %	100 %		-	-	-	X	-	-	-	-	-
Cleaning of filter	Dedusting request with Y2	0	0		-	-	-	-	X	-	-	-	-
	Blocking of dedust with Y2	1...100 %	0		-	-	-	-	X	-	-	-	-
Suction K9	by I1&I8 0 = off / 1 = on	0…1	1		-	-	-	-	-	X			
Vol. max. K10 (operation mode 0)	Monitoring of max. volume-flow	5...100 %	100 %		-	**blinking**	blocking of opening of further valves when maximum volume-flow is exceeded				-	-	-
	(Setting under I1/K1, setting remains set in other modes)				-	**lighting**	further valves are opened				-	-	-
Dedusting K11 (Mode 0)	Addition-time	1...99 min	30 min			X	-	-	-	-	-	-	-
Delay before start of cleaning	after suction K9 switched off	0...99 s	50 s			-	X	-	-	-	-	-	-
Impulse-on-time		1...30 s	3 s		-	-	-	X	-	-	-	-	-
Impulse-off-time		1...99 s	10 s		-	-	-	-	X	-	-	-	-
Number of de-dusting pulses	repetitions	0...20 x	0 x		-	-	-	-	-	X	-	-	-
Continuous dedusting	time	0...99 s	50 s			-	-	-	-	-	X	-	-
Pulse-shaking	Time of pulses (rectangle), 0 = OFF	0,0...9,9 s	0 s		-	-	-	-	-	-	-	X	-
P1 = pulse (1 x 1 s) = dedusting request (with suction on)		P1	-		-	-	-	-	-	-	-	X	-
Factor M for multiplication	(same factor for addition-time, delay before start and continuous dedusting)			-		-	-	-	-	-	-	-	M
(Mode 1) for K10 / K11	Mode ** discharge	0…1	0		-	-	X		-	-	-	-	-
(Mode 1) for K10 / K11	(Turn-off delay after K9)	0...99 s	0 s			-	-	X	-	-	-	-	-
(Mode 1) for K10 / K11	Factor M discharge	1…10	1	-		-	-	-	M	-	-	-	-

At unit "%" , display of "99." means value 100.
Change of operation mode: keep "Select 1" pressed until LED blinks. Select operation mode with up/down.

Return to manufacturer's setting (MS) : Press keys UP and DOWN simultaneously for 2s. All settings are set to MS. Operation mode of K10 and K11 and function of Y2 (dedusting) remain unchanged.

Settings are being multiplied with the factor M (MS=1).

** Mode 0: K10 picks up when addition time is reached and remains picked up until the programmed time after dedusting has been accomplished.
Mode 1: K10/K11 picks up as soon as a valve is opened and remains picked up until the programmed time after K9 has been switched off or after dedusting has been accomplish

13.1 setting values

Button "Select 1" Function	Button "Select 2" I1 / K1	I2 / K2	I3 / K3	I4 / K4	I5 / K5	I6 / K6	I7 / K7	I8 / K8	Button ▼▲ Scope for settings min.	max.	Manufacturer's settings (MS)	My Data
Absaugung K9												
Turn-off-delay	○	○	○	○	○	○	○	○	0 s	99 s	60 s	
Switch-on-Delay	○	●	○	○	○	○	○	○	0 s	99 s	0 s	
Factor M	○	○	●	○	○	○	○	○	1	10	1	
Letzter Schieber												
Turn-on-delay	○	○	○	○	○	○	○	○	0 s	99 s	60 s	
Factor M	○	●	○	○	○	○	○	○	1	10	1	
ON-Delay slide valves	○	/	○	separate / all					0 s	20 s	3 s	
Einzelschieber OFF-delay	○	/	○	separate / all					0 s	99 s	10 s	
Ansprechschwelle	○	/	○	separate / all					0.5	5.0 A	1.0 A	
Vol. einzeln	○	/	○	separate / all					1%	100%	10%	
Vol. min.												
Min. volume flow	○	○	○	○	○	○	○	○	1%	100%	1%	
Analog output:												
Output voltage at 0%	○	●	○	○	○	○	○	○	0 V	10 V	0,5 V	
Volume flow at 10V	○	○	●	○	○	○	○	○	0%	100%	100%	
Dedusting with Y2	○	○	○	●	○	○	○	○			0	
-> Request									0	0		
-> Blocking									1%	100%		
Suction K9 with I1&I8	○	○	○	○	●	○	○	○	0=off	1=on	1	
Operation mode 0:												
max. (K10) Option	☼ blocking of further valves											
Max. volume-flow	● further valves are opened								5%	100%	100%	
Reinigung (K11) Option												
Addition-time	○	○	○	○	○	○	○	○	1 Min	99 Min	30 Min	
after suction K9 switched off	○	●	○	○	○	○	○	○	0 s	99 s	50 s	
Impulse-on-time	○	○	●	○	○	○	○	○	1 s	30 s	3 s	
Impulse-off-time	○	○	○	●	○	○	○	○	1 s	99 s	10 s	
Number of dedusting pulses	○	○	○	○	●	○	○	○	0x	20x	0x	
Continuous dedusting	○	○	○	○	○	●	○	○	0 s	99 s	50 s	
Pulse-shaking	○	○	○	○	○	○	●	○			0.0	
-> off									0.0			
-> Pulse change time									0.1 s	9.9 s		
-> Pulse (1s)									P1			
Factor M	○	○	○	○	○	○	○	●	1	10	1	
Operation mode 1:												
Reinigung (K11) Option												
** Mode discharge	○	●	○	○	○	○	○	○	0	1	0	
Turn-off delay after K9	○	○	●	○	○	○	○	○	0 s	99 s	0 s	
Factor M	○	○	○	●	○	○	○	○	1	10	1	

- At unit "%", display of "99." means value 100.
- Change of operation mode: keep "Select 1" pressed until LED blinks. Select operation mode with up/down.
- Return to manufacturer's setting (MS): Press keys UP and DOWN simultaneously for 2s. All settings are set to MS. Operation mode of K10 and K11 and function of Y2 (dedusting) remain unchanged.
- Settings are being multiplied with the factor M (MS=1).
- ** Mode 0: K10 picks up when addition time is reached and remains picked up until the programmed time after dedusting has been accomplished.
- ** Mode 1: K10/K11 picks up as soon as a valve is opened and remains picked up until the programmed time after K9 has been switched off or after dedusting has been accomplish