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Operating Manual STW81V

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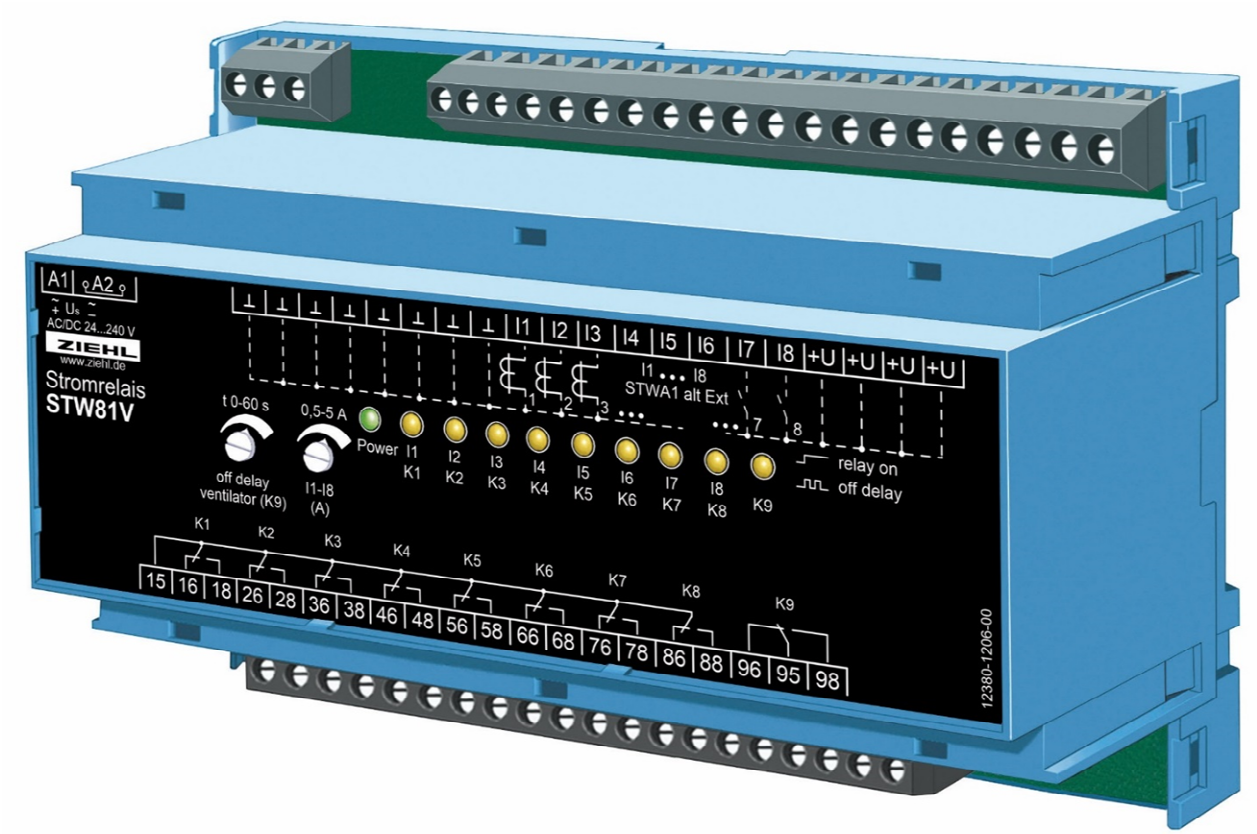
For more information and help about this product please scan the QR-Code or choose the following link: STW81V

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

- Current relay, 8-channel, single evaluation + OR-circuit, adjustable switching point 0,5 - 5 A



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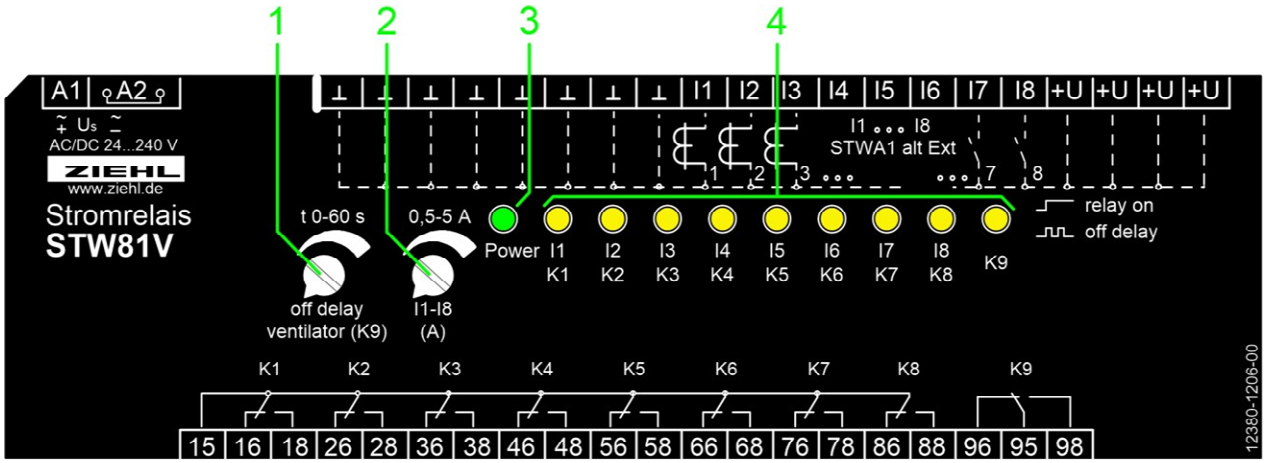
1 General Notes

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 controls



1 **Potentiometer t(s)**
Switch-off delay for contacts 95, 96, 98 adjustable 0...60s

2 **Potentiometer I1-I8(A)**
Switching threshold for transformer inputs I1...I8 adjustable 0,5...5A

3 **Power LED (green)**

ON	STW81V active
OFF	STW81V inactive (no control voltage)

4 **Relay status LED (yellow)**

OFF	Relay off
ON	Relay on
MIGA	Activity ongoing

3 Default settings

The STW81V current relay is supplied with a switch-off delay of 0s and a set switching threshold of 0.5

4 Application and brief description

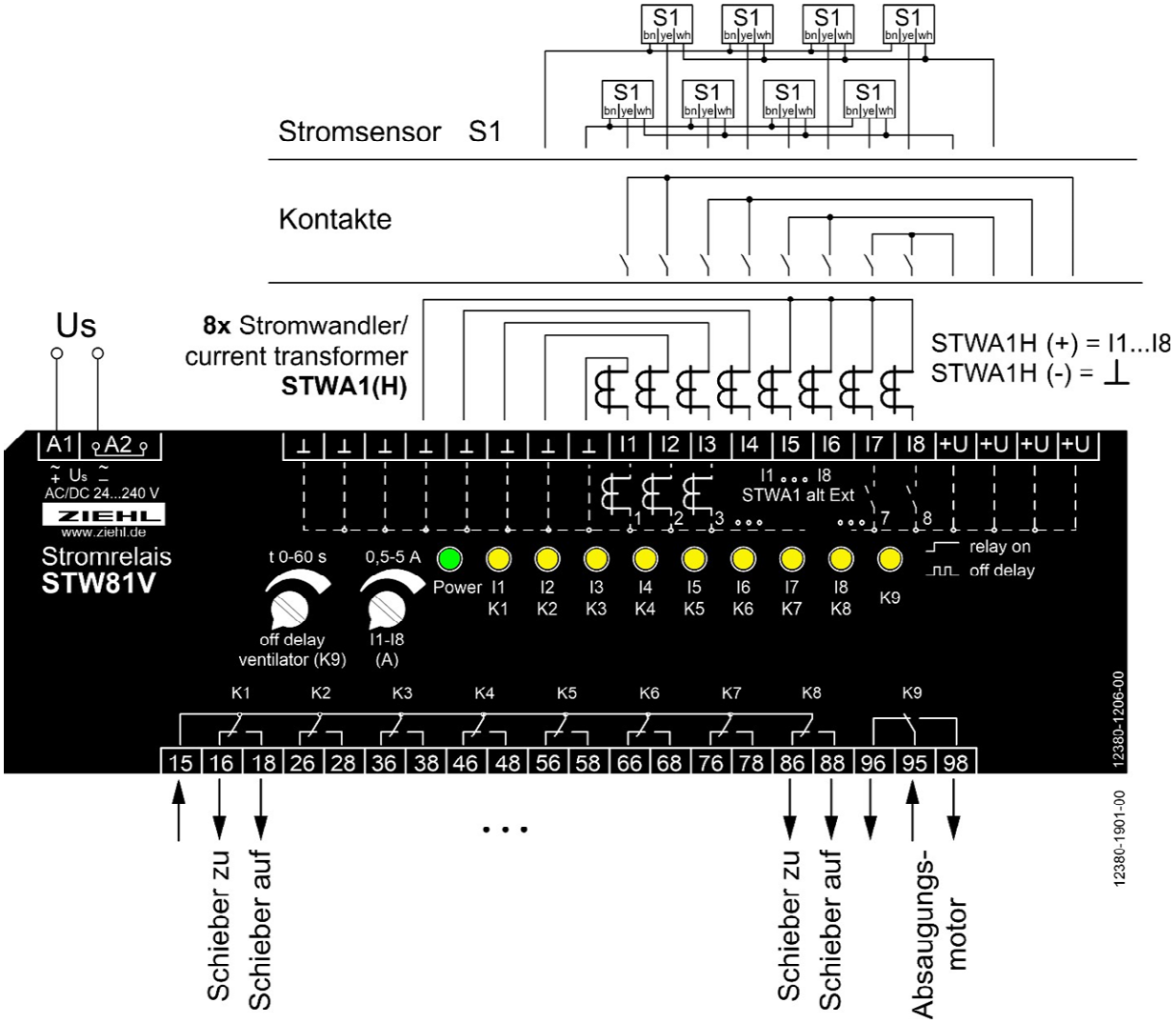
The STW81V current relay is an 8-fold AC current meter with individual evaluation of 8 current circuits and OR connection of all inputs.

Usage:
The STW81V current relay is particularly suitable for the central control of gate valves in extraction systems to be actuated according to the operating status of individual machines. It can simultaneously control the central extraction system.

5 Functional overview

- OR 8 inputs (I1...I8)
- individual evaluation of 8 machines (STWA1(H), current sensor S1 or contact)
- 8 relays for sliders with open and closed contacts
- 1 relay for exhaust with open and closed contact
- relay status LED indicators
- adjustable response threshold 0.5...5A
- switch-off delay for contacts 95, 96, 98 adjustable 0. 60 s
- slide observation time 10 s
- delay time for last slide = extraction release delay + 20 s
- wide range power supply AC/DC 24...240 V
- power consumption during normal operation with STWA1(H), < 0.6 W
- 8 TE distributing enclosure, installation depth 55 mm
- mounting on standard 35 mm rail DIN EN 60715

6 Connection Diagram



Stromsensor	Current sensor
Kontakte	Contacts
Stromwandler	Current transducer
Schieber zu	Closed slide
Schieber auf	Open slide
Absaugungsmotor	Extraction motor

7 Function

If a current between 0.5 and 5A flows through the connected current transducer type STWA1(H) (adjustable by potentiometer I1-I8) or the current sensor S1 signals the current flow, or if the connected contact is closed, the corresponding relay activates and the yellow LED goes on. If the current on STWA1(H) falls below the set switching threshold, the corresponding relay is de-energized with a fixed delay of 10 seconds. If it is the last relay energized, it switches off 20 s after K9.

At the same time, all 8 inputs are OR connected. If current is detected in at least one of the monitored circuits, relay K9 closes contacts 95-98. The switching status of this relay is also indicated by a yellow LED. The switch-off delay can be set in the range of 0 ... 60 s.

The corresponding yellow LED flashes during the delay. The STWA1(H) current transducer can be loaded with a maximum current of AC 100 A.

8 Important notes

WARNING!
Dangerous electrical voltage!
May cause electric shock and burns.
Disconnect the system and equipment from the power source before starting any work.

Caution!
Only one live wire may be fed through the current transducer!

Failure-free and safe operation of the equipment requires that it is properly transported and stored, professionally installed and commissioned, and operated as intended.
Work on the unit may only be performed by persons who are familiar with the installation, startup and operation of the unit and who have the necessary qualifications for this works. They must comply with the operating manual, the instructions placed on the device and the relevant safety regulations for the installation and operation of electrical systems.
The devices are built and tested according to DIN VDE/EN/IEC standards and leave the factory in perfect safety condition.
To maintain this condition, follow the safety instructions in the manual marked "Caution". Failure to follow the safety instructions could result in death, personal injury, or property damage to the device itself and to other units and equipment.
If the information in the manual is not sufficient, please contact us directly or your sales agent.
Instead of the industrial standards and regulations mentioned in the operating manuals and applicable in Europe, observe any relevant regulations valid in the country of use, should the device is operated outside the above area.

9 Installation

The unit can be mounted as follows:

- mounting of the distributor on a 35 mm mounting rail according to EN 60715.
- using M4 screws for wall mounting. (additional screws are not included)
- make the connection in accordance with the wiring diagram or the nameplate

Install a circuit breaker marked as a isolating device and an overcurrent protection device (rated current ≤ 10 A) in the power line near the unit (easily accessible).

Observe the maximum permissible temperature when installing in the control box. Ensure adequate distance from other appliances or heat sources. If cooling is impeded, e.g. by close proximity to equipment with a higher surface temperature or hindered cooling air flow, the permissible ambient temperature will be reduced.

Caution
Before connecting the unit to the mains supply, make sure that the Us control voltage on the side rating plate corresponds to the mains voltage connected to the unit!

Switch on the control voltage.
When the device is ready for operation, the relay must activate, when a current greater than the Ion response value flows through one of the current transducers.

10 Connections

10.1 Connections

Connection	Function
A1 and A2	Control voltage Us, see technical data
15	Common switching contact for slider outputs
⏚ (GND)	Current transducer common earth connection STWA1(H)
I1 … I8	Inputs for STWA1(H), potential free contacts or current sensor S1
+U	Common supply voltage for potential free contacts or S1 current sensor
16, 26, … 86	8 outputs for closed gate
18, 28, … 88	8 outputs for open slider
95, 96, 98	Exhaust performance (95-98 = exhaust on)

10.2 Tipps:

Response threshold is too high (current flow in the wire is too low):

- reduce the response threshold by potentiometer
- if the smallest setting option is insufficient, loop the lines through the current transducer STWA1(H) several times.

Response threshold is too low (base load current must be extinguished):

- increase the response threshold by potentiometer
- connect a resistor (0.25 W / 200 V) before the corresponding input of STW81V in parallel to the current transducer STWA1(H).
- 750 Ω resistor = increase by a factor 2
- 330 Ω resistor = increase by a factor 4
- Due to large tolerances that must be considered, we recommend that the best values be determined by trial and error method.

Length of connecting cables STWA1(H):

Up to 50 m, but much longer are also possible.
Shielding may be required when laid parallel to power lines.

11 Troubleshooting

Problem	Cause	Remedy
Relay does not switch	Supply voltage is not connected to terminals A1, A2	Check that the power supply voltage is connected and that it corresponds to the voltage of the unit indicated on the side nameplate.
	No current through current transducer	Check that the current transducer is properly connected and that the receiver is turned on
	More than 1 conductive wire routed through the transducer	Run only one current-carrying wire through the transducer.
	Relay does not turn on	Check the switching threshold on potentiometer I1-I8.
Relay does not switch at potential-free contacts	Incorrectly connected contacts	Potential-free contacts must be connected to +U

12 Maintenance and servicing

STW81V is maintenance free. If necessary, check regularly to make sure the unit is working.

13 Technical data

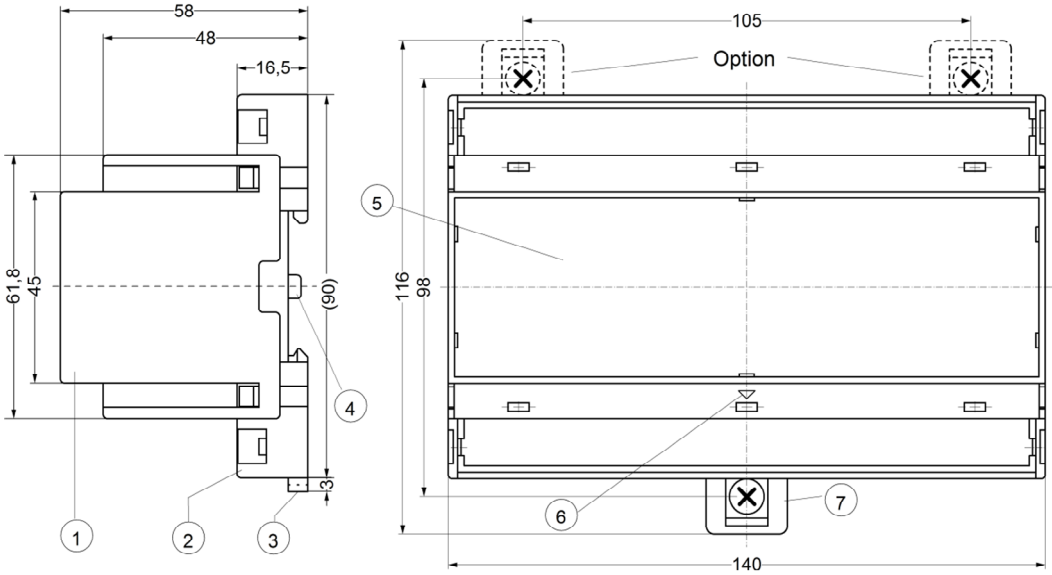
Control voltage Us:	DC/AC 24 – 240 V 0/50/60 Hz		
Tolerance	DC 20,4 - 297 V		AC 20 - 264 V
Power consumption	< 2 W		< 6 VA
Relay outputs K1...K9	9 x 1 switching contact		
Switching voltage	max 300 V AC; 300 V DC		
Normally open (NO) inrush current	AC 15 A 4s 10% ED		
Minimum values Voltage/current	12 V 10 mA		
Conventional thermal current Ith	max 5A		
Total current through terminal 15	max 5A		
Switching capacity max AC cos φ = 1	1500 VA		
Switching capacity max DC (ohmic)	0.3 A 300 V; 0.4 A 120 V; 0.8 A 60 V; 5 A 30 V		
Electrical contact life cos φ = 1	cos φ = 1 -> 5 x 105 switching cycles at 250 V / 2 A		
Durability of mechanical contact	3 x 107 switching cycles		
Short circuit resistance (NO)	4 A slow action or LS switch B4 3.15 A slow action		
Short circuit resistance (NC)			
Capacity Utilization category	AC-15.	Ie = 3 A	Ue = 250 V
Nominal operating current Nominal operating voltage	DC-13 DC-13 DC-13.	Ie = 2 A Ie = 0,4 A Ie = 0.2 A	Ue = 24 V Ue = 120 V Ue = 240 V
Transducer connection			
Connectable transducers	1 STWA1(H) transducer or potential free contact, or 1 S1 current sensor per channel.		
AC internal resistance	ca. 15kΩ		
Overload capacity STWA1(H)	max 100A continuous, max 300A for 10s		
Voltage output +U			
Parameters	17 … 21V; max 120mA at 230V Us (max 8x current sensor S1) max 10mA at 24V Us (max 0x current sensor S1)		
Testing conditions	EN 61010-1		
Rated withstand surge voltage	4000V		
Overvoltage category	III		
Degree of contamination	2		
Rated insulation voltage Ui	300V		
Work cycle	100%		
EMC tests	EN 61326-1 industrial environment		
Interference emission	EN 61326-1; CISPR 11 Class B		
Interference immunity	EN 61326-1 industrial environment		
Rapid transient disturbances/impacts	EN 61000-4-4 ±4.5 kV pulses 5/50 ns, f = 5 kHz, t = 15 ms, T = 300 ms		
High energy surge voltage (SURGE)	IEC 61000-4-5 ±2 kV		
Environmental conditions			
Permissible ambient temperature	-20 °C ... +65°C		
Permissible storage temperature	-20 °C …+70 °C		

Installation altitude	< 2000 m a.s.l.
Resistance to climatic conditions	585% relative humidity, non-condensing
Permissible wiring temperature	-5 °C ...+70 °C
Vibration resistance EN 60068-2-6	2 … 13.2 Hz ±1 mm 13.2 ... 100 Hz 1 g 2…25 Hz ±1.6 mm 25 ... 150 Hz 5 g
Casing	**Type V8, transducer mounting**
Installation depth	58 mm
Width	8 TE
Dimensions (W x H x D)	140 x 90 x 58 mm
Cable connection one wire	1 x 0.34 - 2.5 mm² / AWG 22 - 12
Fine wire with wire end	1 x 0.34 - 2.5 mm² / AWG 22 - 12
Tightening length / torque	8 mm / 0.5 Nm
Degree of protection Casing / terminals	IP 30 / IP20
Fastening	Snap-on mounting on 35 mm mounting rail according to EN 60 715 or screw fixing M 4 (additional clamp is not included)
Weight	approx. 300 kg.

Subject to technical changes

2 Type V8

Dimensions in mm



1. Upper part / cover
2. Bottom part / base
3. Snap / bar for snap mounting
4. Sealing latch
5. Front panel insert / front panel
6. Position downward
7. Snap on wall mount with screws. Screw hole Ø 4,2 mm / for fixing to the wall with screws, Ø 4,2 mm.

14 Entsorgung

Die Entsorgung muss sachgerecht und umweltschonend nach den gesetzlichen Bestimmungen erfolgen.
ZIEHL ist bei der Stiftung EAR (Elektro Altgeräte Register) unter der WEEE-Nr.: DE 49 698 543 registriert.