

EAW

Product Range

THERMAL SWITCHES



RELAIS FOR CONTROL AND SUPERVISIONS PURPOSES



LOW VOLTAGE SWITCHGEARS



EAW RELAISTECHNIK GMBH

Ein Unternehmen der PORTAGE ELECTRIC PRODUCTS, INC. (Pepi®)

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Overview

- Overcurrent relays AC
IOw10 / IOw20 / IIw20 / IOw20z
- Current relays / Current time relays AC
IOw7. / IUw7. / IOw7.z / IUw7.z
- Voltage relays AC, DC
UUw1. / UUG1. / UOw1. / UOG1.
- Earth-fault monitoring relays AC
UEw01
- Earth-fault monitoring relays DC
IEg11, IEg11z
- Voltage relays AC
UOw6. / UOw6.z
Option: Time-stage module
- Phase sequence measuring relays AC
UP3w01
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UF3w13
- Three-phase undervoltage relays AC
UU3w10
- Isolating relay for binary current loop interface
SOA1

Current and Voltage Measuring Relays

LOW-VOLTAGE SWITCHGEAR

- Motor Contactors Series ELS** page 14
 - ELS12-ELS400 5,5 kW-200 kW 400 V 50 Hz
- Auxiliary Contactors Series EHS** page 14
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Motor Contactors ELS

Auxiliary Contactors EHS

Thermal Overload Relays ETR

Capacitor Contactors ECS

Vacuum Contactors EVS

RELAYS FOR PROTECTION AND CONTROL PURPOSES

The sale and the service of the digital protection devices series **D ...**, the electronic directional earth-fault protection devices **ERER3** and the tripping capacitor devices **KA4** is provided by the company:

Digital Protection Devices Series ... D

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PRODUCTS UNDER PHASE OUT

- Overview of prior product designs page 16

THERMAL SWITCHES

Thermostat with an Automatic Reset – Series KO, KS, CO, CS

Temperature controllers with a plastic (K) or ceramic (C) case. The temperature interface is effected by a bimetal snap-action disc which is located directly under the metal cover. The thermostats type KO, CO are provided with a contact version normally closed (N.C.) respectively the types (KS, CS) normally open (N.O.).

The switching process is carried out temperature-dependently in a switching temperature range from $-25\text{ }^{\circ}\text{C}$ to $390\text{ }^{\circ}\text{C}$ automatically.

Manual Reset Thermal Cut-outs Respectively Electric Self-holding – Series KB, CB, SO, CSO, SOD

In case of a temperature limiter no automatic reset takes place.

The resetting can be done manual (KB,CB) respectively types with an electrical interlock and latching function (SO,CSO) can be reset by disconnecting from the power supply. At the application-Single operation device (SOD) the switching off isn't reversible.

Multifunctional Thermo Switch – Serie CSS

This mini thermostat enables the simultaneous realization of two different switching functions in one application. With the same thermostat a defined time delayed switch-on respectively switch-off can be realized as well the same thermostat gets effective as a overheating protection, when a determined adjusted limit temperature get exceeded.

Thermostats with Change-over Contact – Serie CW

Thermostats with a change-over contact working in accordance to the bimetal disc principle. The change-over contact is in a ceramic housing and designed for an application with a working temperature range of up to max. $200\text{ }^{\circ}\text{C}$.

Bimetal Discs 12,7mm

Switching temperature range $-25\text{ }^{\circ}\text{C}$ to $390\text{ }^{\circ}\text{C}$.

Tolerances and hysteresis of the switching temperatures on inquiry.

Typical Applications

- Coffee machines
- Cable reels
- Dryers
- Vehicle heatings
- Oil radiators
- Washing machines
- Steam cleaner
- Heating appliances
- Ovens
- Fans
- Hot water boilers
- Dishwashers
- Gas heaters
- Microwaves
- etc.

Motor Protectors / Miniature Thermal Controls

Current-dependent respectively current-independent thermal controls with a metal or a plastic case and an automatic resetting. The internal switching contact is working as a current limiter respectively with a continuous switching function. Thermal controls with a continuous switching function are especially suitable in cases where a very small switching differential is requested. One type is provided with an internal heating resistor and an electrical interlock. To reset the thermostat it must be disconnected from the power supply.

Typical Applications

- Electric motors
- Heating pads
- Halogen lamps
- Battery packs
- Fan Heaters
- Cooling element for electronic devices
- Water boilers
- Small-sized transformers

RELAYS FOR CONTROL AND SUPERVISION PURPOSES

Switching Relays

For Diverse Switching Functions

- Amplification of weak signals
- Interlinking of systems operating on different voltages
- Isolation between electronic and power systems
- Coupler for SPC

Model Overview

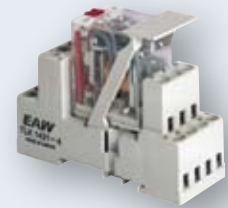
Model	Number of Contacts	Rated Voltages/ Tolerance Range	Contact Rating	Special Features
RH02	2 CO	24, 48, 110 V DC 0,675-1.35xU _n	8 A/ 230 V AC; cosφ = 1	Extended rated voltage according to UIC-approval Overall width 22.5 mm Snap-fixing on 35 mm DIN EN mounting rail or screw-fixing
RH32	2 CO	12-15, 24-28, 42-60 100-127 220-230 V AC/DC	8 A/ 230 V AC; cosφ = 1	Short operate and release time Input voltage range up to 1:2 Operating temperature range -40° to +70°C
RH04	2 CO	24, 60, 110, 230 V DC	16 A/ 250 V AC/DC	Overall width 17.5 mm Snap-fixing on 35 mm Mounting rail or screw-fixing
RH33	2 CO	24, 42, 48, 60, 110, 230 V DC/AC	16 A/ 250 V AC/DC	High terminal current of 16 A Integrated free-wheeling diode Manual operation
RH34	2 CO	24, 60, 110, 230 V AC	16 A/ 250 V AC/DC	

Miniature Relays
for Circuit Boards

Industrially Relays

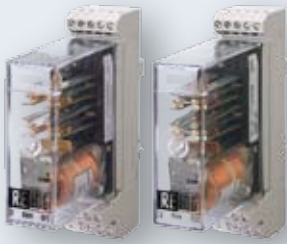
For the assortments miniature, industry and interface relays we like to send you our technical documentations on inquiry

Interface Relays



Rugged Electromechanical Switching Relays

RELOG Switching Relays



Application:	In small-scale automation and control equipment Special design with twin contacts for greater contact reliability and long-term stability
Degree of protection:	IP40, IP50
Design:	For assembly on plug-in (DIN EN mounting rail) or adapter (screw fastening) Plastic cap, slotted or solid Metal cap, slotted 4 or 8 change-over contacts in working - or closed-circuit arrangement
Option:	Drop indicator or flag Gold-plated contacts

Model Overview

12 to 220 V DC:	24 to 400 V AC:
2 RH01	2 RH30 4 change-over contacts in a case, single contacts
2 RH02	2 RH32 4 change-over contacts in a case, twin contacts
4 RH10	2 RH40 8 change-over contacts in a case, single contacts
4 RH12	4 RH42 8 change-over contacts in a case, twin contacts



Supplementary range:	<ul style="list-style-type: none"> • Models with current coils and 60 Hz designs • Weatherproof designs • Voltage range acc. to UIC
Contact rating:	$\cos\varphi = 1$ 230 V AC / 1.5 A $\cos\varphi = 0.4$ 230 V AC / 1 A $\tau = 0$ ms 220 V DC / 0.4 A
Current:	Max. switch-on 10 A DC / AC

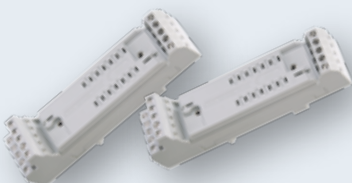
RELOG Latching Relays (12 to 220 V DC Remanence Relays)

2 RH60	2 states, with the „ON“ state retained, even after the excitation ceases 4 change-over contacts in a case one coil
2 RH62	Special design with twin contacts



SSB Plug Socket for RELOG

Special plug socket for fixing on 35 mm mounting rail
Front wiring via screw terminals for maximum 2.5 mm² cross section
(special design with built-in free-wheeling diode)



Signalling Relays

Drop Indicator Relays RA70

Indicating faults, voltage breakdown, operating states and storing the information until it is manually accepted or the fault is removed.

Rated voltage:	Driving system up to 220 V DC, 400 V AC Contact system up to 250 V DC, AC
Design:	Panel mounting case with screw terminals, respectively flat plug connector or solder terminals
Option:	Free-wheeling diode 144 x 144 mm panel mounting case for 2 to 4 pcs RA70



Modular Alarm Annunciator MBAS0600

Function

Monitors the input potential free, contacts (N.O. or N.C.) 4 to 16, for any change of status (abnormal) and activates one common output relay for audible device with respective flashing LED windows. This indicates „Alarm“. This flashing annunciation windows is „Acknowledged“ and „Reset“ (when returns back to normal) by external push buttons.

Features

- Modular construction
- Up to 16 messages in 144 x 144 mm dimensional case
- Two window sizes, big and small
- Only potential-free contact necessary for optocoupler input, power supply voltage of MBAS 0600
- DIL switch-settings for different properties of device
- Function test per button
- Self-monitoring of controller



Discrepancy / Control Discrepancy Switches

Discrepancy Switches BM2

For controlling, indicating and monitoring switch positions in mimic diagrams and illuminated mimic diagrams of electric systems.

- For indicating valve positions in piping systems
- For signalling faults by emitting audible or visual alarms
- For operating breakers with simultaneous indication of the switch position

Rated voltage:	For switch up to 220 V DC, 400 V AC For lamp up to 230 V DC, AC
Contact elements:	3 change-over contacts
Installation:	Panel mounting

Control Discrepancy Switches SM2

- For controlling circuit breakers and disconnectors
- For indicating and monitoring switch positions in mimic diagrams and illuminated mimic diagrams

Rated voltage:	For switch up to 220 V DC, 400 V AC For lamp up to 230 V DC, AC
Contact elements:	4 change-over contacts for signalling 2 break contacts, 1 make contact
Installation:	Panel mounting



Electronic Timing Relays

Model Overview

Model	Functions	Time Range	Rated Voltage
ZA...	Operate delay	0.05 s to 100 h	24, 42-48 V UC 60 V DC 110-127 V AC 220-240 V AC
ZR...	Release delay (passing make with auxiliary voltage)	0.05 s to 100 h	110, 220 V DC
ZO...	Release delay (without auxiliary voltage)	0.05 s to 300 s	24-240 V UC
ZT...	Clock 1:1 Starting of interval/pulse	0.1 s to 12 min	24 V UC 42-48 V AC 48-60 V DC 110-127 V AC 220-240 V AC
ZS 60	Y/ Δ -change-over	1 s to 100 s	110-127 V AC 220-230 V AC
ZM...	Multifunction	0.05 s to 800 min	24-240 V UC

- Operate delay
- Passing make
- Pulse generator
- Clock 1:1
- Release delay
- Passing break
- Pulse shape



Electronic Measuring and Monitoring Relays

The extensive range of electronic measuring and monitoring relays are designed for use in power generation, transmission and distribution systems.

Therefore their excellent features include

- High accuracy
- High EMC standard
- High overload capacity
- Extremely short operate and release times with exact value average
- High harmonic suppression
- Complete electric isolation (measuring circuit, supply voltage, output)
- Signalling of excitation by means of miniature drop indicators even after supply voltage breakdown
- Sealed cover for adjusting elements

Because of these features, the electronic measuring and monitoring relays can be used e.g. in plant engineering, mechanical engineering, automotive engineering and ship building.

16 $\frac{2}{3}$ Hz designs are available for use in railway networks.

In accordance to their functions, cases designed for surface-mounting with front terminals, screw-type or snap-on rail fixtures and widths of 45/75/150 mm are available.



Measuring Relays



AC Current Measuring Relays - Self-Supplied Series IOw10/20

Electronic over-current relays for protection and monitoring purposes. The model IIw20 includes additional high-current module adjustable up to 20·In. Large range of functions, high accuracy, low power consumption and a small size are the specific features.



AC over-current relays:	IOw10; IOw20; IIw20		
AC over-current time relays:	IOw20z		
Outputs:	1 relay with change-over contact per function		
Rated current (In):	1; 2.5; 5; 10 A		
Rated frequency:	50/60 Hz		
Setting range:	IOw10	0.8 - 1.6	x In
		1.6 - 3.2	x In
Over-current module:	IOw20(z); IIw20	0.8 - 2.06	x In
		1.6 - 4.12	x In
High-current module:	IIw20	4 - 10	x In
		8 - 20	x In
Time-stage module:	IOw20z	0 - 3 s;	0 - 10 s
Operate time:	≤ 30 ms		
Dimensions W x H x D:	75 x 75 x 120 mm		

Drop indicator installed in the models I...w20/IOw20z

Single-Phase AC Current Measuring Relays Series I...70

Electronic current relays for protection and monitoring purposes as well as for zero current monitoring. Very high overload capacity, high accuracy, adjustable resetting ratio, low power consumption and a small size are the particular merits of these relays.

AC undercurrent relays:	IUw70; IUw71; IUw72		
AC over-current relays:	IOw70; IOw71; IOw72		
AC current relays:	IOw70z; IUw70z		
with time-stage module:			
Outputs:	2 change-over contacts and optocoupler		
Rated frequency:	50/60 Hz; for I.w71: 16 ² / ₃ Hz		
Operate time:	≤ 30 ms; for I.w71: ≤ 90 ms		
Setting range:	IUw70z/IOw70(z)	0.08 - 0.32 A	(In max. 1 A)
		0.2 - 0.8 A	(In max. 5 A)
		0.4 - 1.6 A	(In max. 5 A)
	IUw71/IOw71	0.8 - 3.2 A	(In max. 5 A)
	IUw72/IOw72	0.8 - 3.2 A	(In max. 5 A)
		2 - 8 A	(In max. 5 A)
		4 - 16 A	(In max. 5 A)
		8 - 32 A	(In max. 5 A)
Time-stage module:	I.w70z	0 - 3 s;	0 - 10 s
Auxiliary voltage:	100 ... 230 V AC / 100 ... 220 V DC		
	42 ... 100 V AC / 48 ... 110 V DC		
Dimensions W x H x D:	75 x 75 x 120 mm		

Drop indicators available for all models. Closed-circuit current design available on request.



Voltage Measuring Relays, Single Phase, Self Powered Series U...10/11/12

Electronic voltage relays for protection and monitoring purposes with high accuracy and low power consumption.

AC undervoltage relays:	UUw10; UUw11; UOw 12
AC overvoltage relays:	UOw10; UOw11; UOw12
Output:	1 change-over contact
Rated voltage (Un):	UUw10; UUw11; UUw12 42, 100-110, 230, 400/460 V UOw10; UOw11; UOw12 63, 100-110, 230 V
Setting range:	UUw10; UUw11; UUw12 0.45 - 0.9 x U_n (steady) UOw10; UOw11; UOw12 1 - 2 x U_n (steady)
Rated frequency:	50/60 Hz; for UOw12: 16 $\frac{2}{3}$ Hz
Operate time:	≤ 45 ms; for UOw12: ≤ 180 ms
Drop indicator installed in the models U...11	

DC undervoltage relays:	UUg10; UUg11
DC overvoltage relays:	UOg10; UOg11
Output:	1 change-over contact
Rated voltage (Un):	UUg10; UUg11 24, 48, 60, 110, 220 V UOg10; UOg11 110, 220 V
Setting range:	UUg10; UUg11 0.45 - 0.9 x U_n (steady) UOg10; UOg11 1 - 2 x U_n (steady)
Operate time:	≤ 45 ms

Drop indicator installed in the models U...11

AC Voltage Measuring Relays, Single Phase, Self-powered for Earth-fault Signalling UEw01

Signalling of earth-faults in 3-phase isolated or compensated systems by means of a relay contact (1 change-over contact) and optical indicator (drop indicator).

Rated voltage:	100 V AC
Rated frequency:	50 Hz
Operate value:	0.28 x U_n ; 10.50 x U_n (fixed value)
Operate time :	< 60 ms
Power consumption:	
Not started:	< 0.025 VA
Started:	< 4 VA
Dimensions W x H x D:	45 x 75 x 120 mm





DC Earth-fault Monitoring Relays (without Auxiliary Voltage) IEG11, IEG11z

Signalling of single pole earth-faults and asymmetrical deterioration of insulation in unearthed direct current power systems (IT system) by means of a relay (2 change-over contacts) and a drop indicator. The IEG11z has a timer stage integrated.

Rated voltage:	110 ... 220 V DC
Adjusting range of fault current:	0.1 – 0.4 (...1) mA
Max. measuring current:	($R_F = 0 \Omega$, 264 V DC) 1.5 mA
Timer stage (IEG11z):	0 ... 10 s

Voltage Measuring Relays with and without time-stage modul Series U...61/62

Electronic single-pole AC over-voltage relays for protection and monitoring purposes.



Model:	UOw61, UOw61z (with time-stage module)
Setting range:	2.5 ... 25 V AC 5.0 ... 50 V AC
Rated voltage:	127 V AC
Rated frequency:	UOw61: 50 ... 60 Hz UOw62: 16 $\frac{2}{3}$ Hz
Auxiliary voltage:	100 ... 230 V AC / 110 ... 220 V DC SF ($100/\sqrt{3}$) ... 100 V AC / 60 ... 110 V DC 42 ... 60 V AC / 48 ... 60 V DC
Time-stage module (U...Z):	24 ... 36 V DC / 0 ... 10 s
Outputs:	2 change-over contacts
Dimensions W x H x D:	45 x 75 x 120 mm



Phase Sequence Relays UP3w01

The relay monitors the phase sequence in 3-phase systems.

Rated voltage:	42 ... 60 V AC 100 ... 127 V AC 230 ... 240 V AC 380 ... 500 V AC
Outputs:	2 change-over contacts
Dimensions W x H x D:	22,2 x 81 x 100 mm

3-Phase Voltage Measuring Relays (without Auxiliary Voltage) UF3w13

The relays monitors the arithmetic mean value of half-wave rectified voltage between the 3-phases of a 3-phase system.



Rated voltage:	100/230/400/500/660 V AC
Setting:	0.85 ... 1.15 x U_n
Time-stage module:	1 ... 20 s
Outputs:	2 change-over contacts
Dimensions W x H x D:	100 x 78 x 115 mm

3-Phase Undervoltage Relays UU3w10

The relay monitors the arithmetic mean value of voltage

- between each phase and the neutral at the execution with N-connection
- between the individual phases at the execution in the triangle

Rated voltage: 57 / 100 V, 127 / 230 V, 230 / 400 V
Line to earth/line to line: 240 / 415 V, 254 / 440 V, 290 / 500 V AC
Setting range: U_{an} 0,85 ... 1,05 x U_n
 U_{ab} 0,75 ... 0,95 x U_{an}

Outputs: 2 change-over contacts

Dimensions W x H x D: 45 x 75 x 120 mm



Isolating Relays SOA1

The relay offers two galvanic insulated bounce-free outputs of the connection to a binary 20 mA current interface according to DIN 43864 for the transmission of meter pulses.

Input: Current impulse width > 30 ms
Max. resistance: „ON“ 800 Ω
Min. resistance: „OFF“ 20 k Ω
Output: Current < 100 mA
Voltage: <253 V AC, 350 V DC
Isolation strength: Current input in current input-output 4 kV
Auxiliary supply: 115 V or 230 V AC

Dimensions W x H x D: 22,2 x 81 x 100 mm



LOW VOLTAGE SWITCH GEAR

Motor Contactors Series ELS

Motor contactors series ELS is intended for switching of three-phase motors in a range of capacity 4 kW to 200 kW at 400 V AC. Further applications are electro furnaces, pumps, magnets and capacitors.

The devices are in conformity with the standards IEC 60947-4-1 and VDE 0660.

Type	Rated Current Ie A	Rated Voltage Ue V	Motor rating in kW AC2 and AC3		
			230 V	400 V	690 V
ELS12	12	690	3	5,5	7,5
ELS16	16	690	4	7,5	11
ELS22	22	690	5,5	11	11
ELS30	30	690	7,5	15	15
ELS36	36	690	11	18,5	26
ELS45	45	690	15	22	37
ELS60	60	690	18,5	30	37
ELS75	75	690	22	37	55
ELS90	90	690	26	45	67
ELS110	110	690	37	55	90
ELS140	140	690	45	75	100
ELS170	170	690	55	90	132
ELS200	200	690	60	105	155
ELS250	250	690	75	132	160
ELS315	315	690	90	160	200
ELS400	400	690	115	200	355

Auxiliary Contactors Series EHS

Type	Number of Auxiliary Contacts	Rated Voltage Ie AC15 / AC14 at			
		230 V	400 V	500 V	690 V
EHS14/24	4	10	6	4	2
EHS18/28	8	10	6	4	2

Thermal Overload Relays Series ETR

Thermal overload relay series ETR is intended to protect low voltage motors and other consumers against non permissible overloads and phase-failure operation. The relays are mountable on contactor series ELS directly or by snap-on fastening to 35 mm mounting rail (according to DIN EN 50022). The relays are in conformity with IEC 60947 and VDE 0660.

Unusual features

- Ambient temperature compensation
- Manual or automatic selectable - reset
- With indication of the switching position
- 1NO + 1NC Auxiliary contact

Type	Direct assembly to air contactor	Overcurrent adjustment range	
		A	
ETR12	ELS12	0,1-0,16	10-16
ETR22	ELS16 / ELS22 / ELS30	0,1-0,16	24-30
ETR75-36	ELS36	16-25	25-40
ETR75-60	ELS45 / ELS60	16-25	50-63
ETR75-110	ELS75 / ELS90 / ELS110	16-25	63-80
ETR400	ELS110 ... ELS400	70-100	250-400

Capacitor Contactors Series ECS

Capacitor contactors ECS are equipped with early-make auxiliary contacts connecting for a short time (2-3ms) resistances which limit the inrush current before main contact making. After current commutation to the main contacts these resistances are without effect.

Type	ECS12	ECS15	ECS20	ECS25	ECS30	ECS40	ECS50	ECS60
Capacitor rating								
230 V kvar	6,7	8,5	11	14	20	25	29	34
400 V kvar	12	15	20	25	30	40	50	60
Rated isolation voltage (V)	690			750			1000	

Power Contactors with Vakuum Switching System EVS

The main switching system is hermetically sealed and operates under vacuum. This is how arcing and arcing-related emissions into the environment and the influence on the contacts of the surrounding atmosphere is prevented. The switching systems are operated electromagnetically. The EVS vacuum contactors are suitable for all applications of AC and three-phase load switching. Vacuum contactors are designed to directly switch motors, in particular when operating in the AC3 and AC4 modes, arrange star-delta combinations and reversing connections and function as rotor contactors.

The areas of application include:

- Basic industry
- Metallurgy
- Construction of heavy machinery
- Shipbuilding
- Oil rigs / Petrochemical industry
- Chemical industry
- Underground and open-pit mining

The devices comply with the regulations of:

- EN 60 947-4-1
- IEC 947-4-1



Vacuum Contactors EVS 160/161 ... EVS 630/631

Modular designs of single-pole basic contactors can be combined to form multi-pole units with each phase being operated separately and no mechanical connection between the phases. EVS160-630 are open at all sides. EVS161-631 with covers to guarantee the protection of the back of the hand and of the fingers.

		EVS160	EVS320	EVS400	EVS630
		EVS161	EVS321	EVS401	EVS631
Rated service voltage	V	1000	1000	1000	1000
Rated service current	A	160	320	400	525/630
AC1 - AC3/AC4					
Rated power for 400 V	KW	80	160	220	280/315
AC2 - AC3/AC4 at 400 V					
Rated power for 1000 V	KW	220	450	600	800/900
AC2 - AC3/AC4 at 1000 V					
Driving input voltage	V		24 - 400 AC	24 - 400 DC	



Vacuum Contactors EVS 102 ... EVS 302

Compact, completely insulated and sealed three-pole contactors with main terminals, both wire and bus bar being freely accessible.

		EVS102	EVS142	EVS162
Rated service voltage	V	1000	1000	1000
Rated service current AC1 - AC4	A	100	140	160
Rated power AC2 - AC4 at 400 V	KW	55	75	80
Rated power AC2 - AC4 at 1000 V	KW	132	185	220
		EVS222	EVS252	EVS302
Rated service voltage	V	1000	1000	1000
Rated service current	A	225	250	300
Rated power AC2 - AC4 at 400 V	KW	110	132	160
Rated power AC2 - AC4 at 1000 V	KW	280	315	400
Driving input voltage	V		24 - 400 AC	24 - 400 DC



PRODUCTS UNDER PHASE OUT

Delivery of devices, spareparts and repairs on demand.

Relais for Control Purposes

Industrial switching relays	RH01 RH31 RH95e RH102
Elektromechanical timing relays	RZf2 RZw / RZwa RZa ... 6
Elektromechanical current/Voltage relays	RUf5 AC, DC RSf5 AC, DC
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