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Thyristor Power Switches

with integrated heat sink
 for DIN rail or screw mounting

- load currents 3x20A, 30A and 45A (max.)
- load voltages 265V and 660V (max.)
- control voltage 4 – 32V DC
- UL approval

Brief description

Thyristor power switches are used for contact-free switching of a.c. loads. A typical application is the switching of resistive-inductive loads at high switching rates, especially in the industrial sector, such as in the plastics packing industry, in HVAC engineering and in the construction of industrial furnaces.

Control and power section are electrically isolated by optocouplers.

The control signal range is compatible with the logic outputs of JUMO controllers.

The power section operates as a zero-voltage switch, which means that it always switches when the voltage passes through zero, irrespective of the instant of the signal change.

This reduces the generation of interference in the electrical supply.

The input status is indicated by an LED.



TYA 432-100/
30, 265 (660)



TYA 432-100/
45, 660



TYA 432-100/3,
20, 660

Technical data

Load circuit

Type	TYA 432-100/30, 265	TYA 432-100/30, 660	TYA 432-100/45, 660	TYA 432-100/3, 20, 660
Load voltage	24 – 265V _{rms}		42 – 660V _{rms}	
Load current (maximum)	30A _{rms} (T _a = 25 °C)		45A _{rms} (T _a = 25 °C)	20A _{rms} (T _a = 25 °C)
Load current (minimum)	150mA _{rms}			
Fuse load integral limit I ² · t (t=10msec)	1800A ² · sec		6600A ² · sec	1800A ² · sec
Frequency	45 – 65Hz			
Peak off-state voltage	650V _{pk}		1200V _{pk}	
Leakage current	<3mA _{rms}			
cos φ (p.f.)	>0.5 at 230V AC		>0.5 at 600V AC	

Control

Type	TYA 432-100/30, 265	TYA 432-100/30, 660	TYA 432-100/45, 660	TYA 432-100/3, 20, 660
Control signal range	4 – 32V DC			5 – 32V DC
Switch-on voltage	3.8V DC			4.7V DC
Switch-off voltage	1.2V DC			
Input current	12mA at 32V DC			24mA at 32V DC
Response delay	1 · cycle length			<1 · cycle length

General data

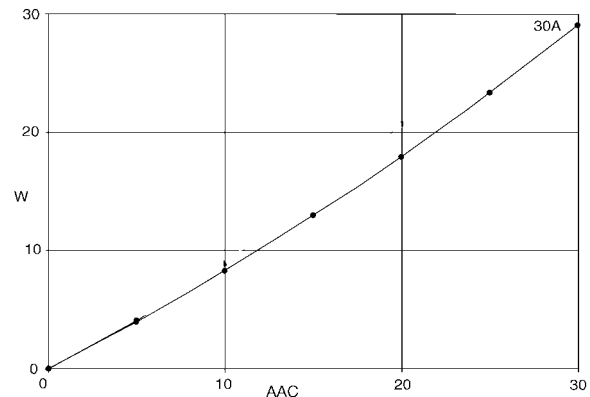
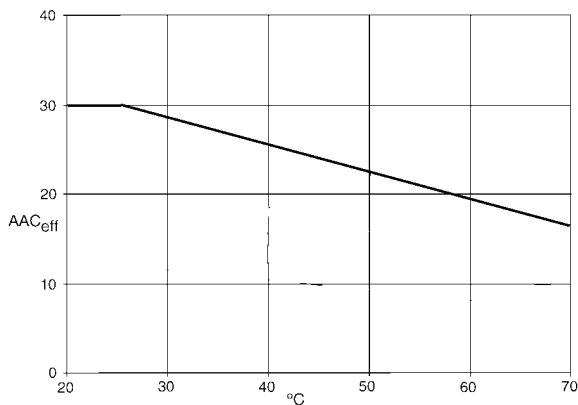
Type	TYA 432-100/30, 265	TYA 432-100/30, 660	TYA 432-100/45, 660	TYA 432-100/3, 20, 660
Operating mode	zero-crossing switching			
Electrical isolation	by optocoupler between control and load section; insulation voltage 4kV _{rms}			
Permissible ambient temperature	-30 to +70°C			
Electrical connection	by screw terminals; load / control (max. cross-section) □ 2x2.5mm ² / 2x2.5mm ² □ 25mm ² / 4.0mm ² □ 2x2.5mm ² / 2x2.5mm ²			
Housing	PBT FR		Crustan SK641-FR, PBT	PBT
Protection	IP20			
Weight	200g		360g	380g

Derating curves

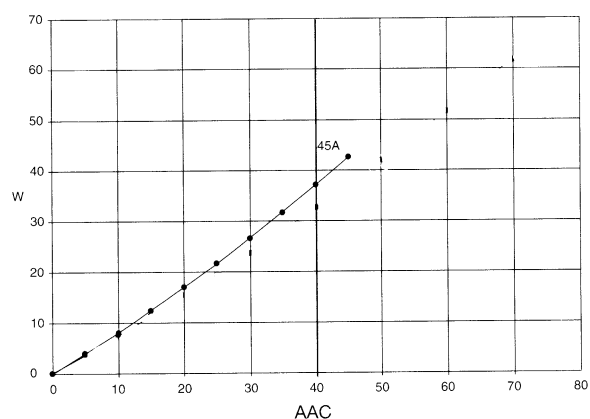
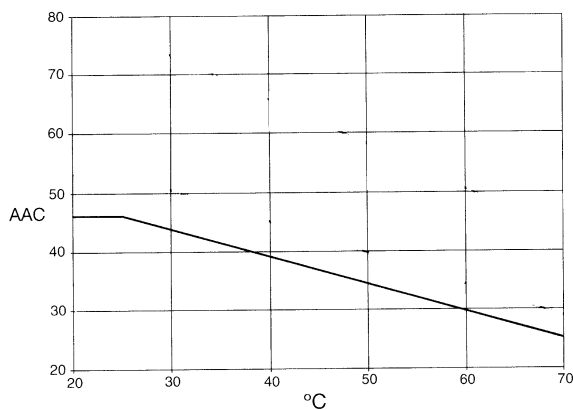
Permissible load current as a function of ambient temperature

Power loss as a function of the load current

TYPE 432-100/30, 265 (660)



TYPE 432-100/45, 660

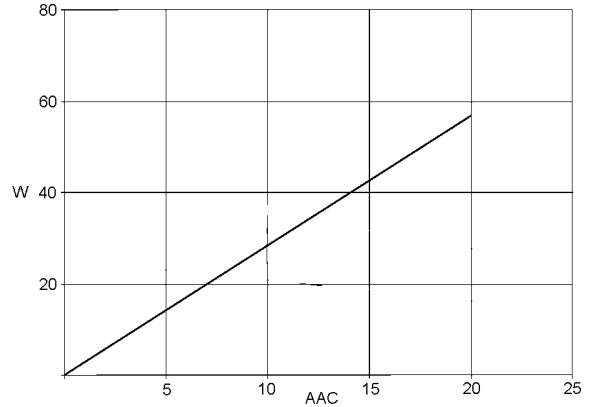
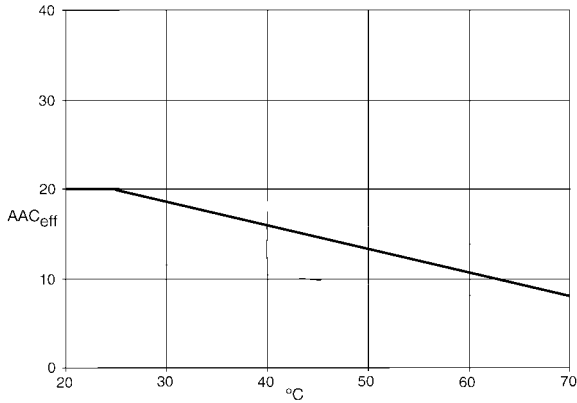


Note

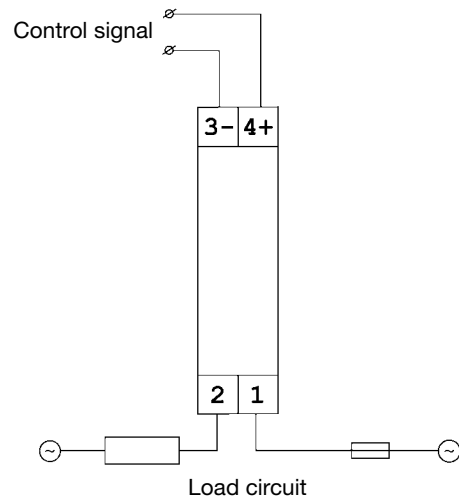
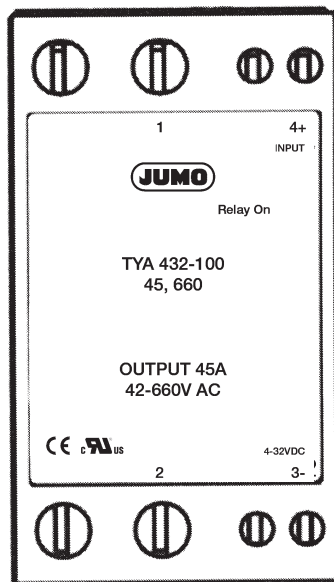
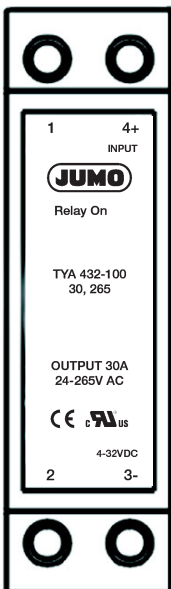
The fins of the heat sink must be oriented vertically, to allow the heat to dissipate by natural convection. Do not install any heat-sensitive components or devices in the vicinity of the power switch.

Derating curves

TYPE 432-100/3, 20, 660

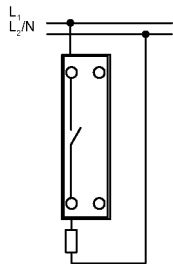


Connection

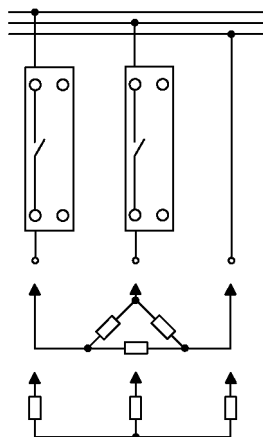


TYA 432-100/30, 265 (660) TYA 432-100/45, 660

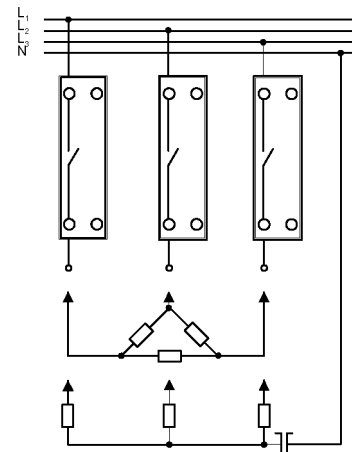
1-pole solid-state relay in a 1-phase application phase-neutral, phase-phase



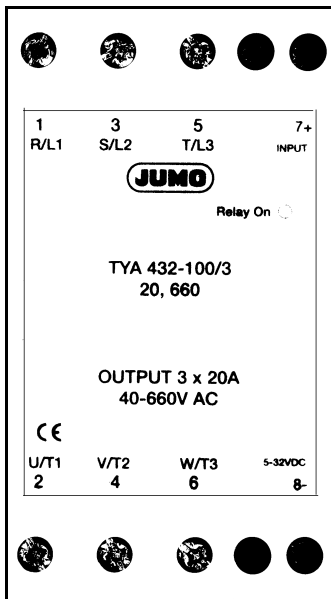
Two 1-pole solid-state relays in a 3-phase application delta and star (economy circuit)



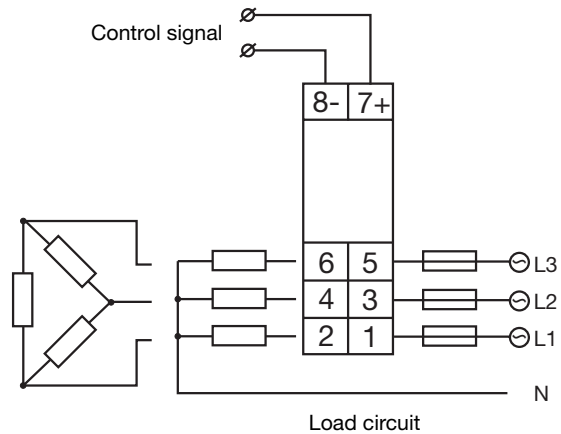
Three 1-pole solid-state relays in a 3-phase application delta, star, star with neutral



Connection

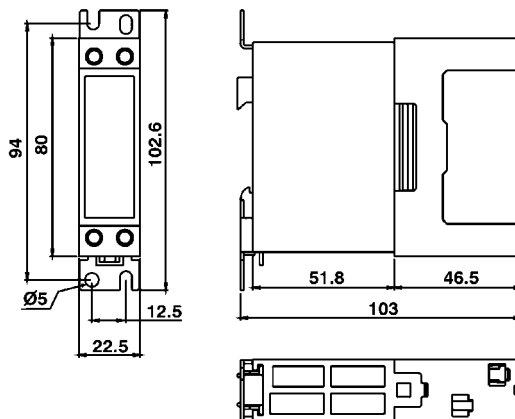


TYA 432-100/3, 20, 660

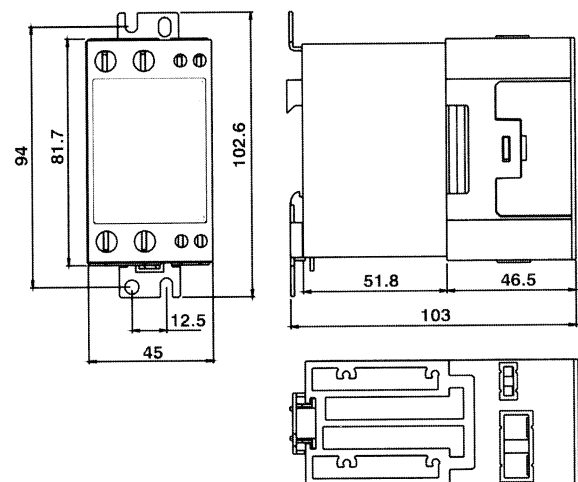


Dimensions

TYPE 432-100/30, 265 (660)



TYPE 432-100/45, 660 and TYA 432-100/3 20, 660



Minimum spacing for side-by-side mounting:

horizontal: 22.5mm

vertical: 120mm

Order details

Type	Load voltage	Load current	Sales No.
TYA 432-100/30, 265	24 – 265V _{rms}	30A _{rms}	70/00408538
TYA 432-100/30, 660	42 – 660V _{rms}	30A _{rms}	70/00418274
TYA 432-100/45, 660	42 – 660V _{rms}	45A _{rms}	70/00408540
TYA 432-100/3, 20, 660	42 – 660V _{rms}	20A _{rms}	70/00427435

In order to ensure fault-free operation as well as a higher reliability when using thyristor power switches, we recommend the use of fuses with a superior breaking capacity (e. g. from Ferraz).