

## Thyristor and TRIAC power switches

with integral heat sink  
for mounting on DIN rail or screw mounting



- Load currents 20A and 45A (max.)
- Load current (3-phase) 20A (max.)
- Load voltages 280V and 660V (max.)
- Load voltage (3-phase) 660V (max.)
- Control voltage 4—32V DC
- UL approval

### Brief description

Thyristor/TRIAC power switches are required for the contact-free switching of a.c. loads. A typical application is the switching of resistive-inductive loads at high switching rates, especially in industrial applications, such as in the plastics packaging industry, in HVAC and industrial furnaces.

Control and power circuits are electrically isolated from each other by optocouplers.

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

The power circuit 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 prevents the generation of interference voltages. On the output side, an RC combination is fitted internally.

The input condition is shown on an LED.

#### 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.



TYA 432-100/  
20, 280 (660)

TYA 432-100/  
45, 660



TYA 432-100/3, 20, 660

## Technical data

### Load circuit

Type	TYA 432-100/20, 280 (TRIAC)	TYA 432-100/45, 660 (Thyristor)	TYA 432-100/20, 660 (Thyristor)	TYA 432-100/3, 20, 660 (Thyristor)
Load voltage	24 — 280V <sub>eff</sub>	48 — 660V <sub>eff</sub>	48 — 660V <sub>eff</sub>	48 — 660V <sub>eff</sub>
Load current (maximum)	20A <sub>eff</sub> (T <sub>amb</sub> =40°C)	45A <sub>eff</sub> (T <sub>amb</sub> =25°C)	20A <sub>eff</sub> (T <sub>amb</sub> =40°C)	3 x 20A <sub>eff</sub> (T <sub>amb</sub> =40°C)
Load current (minimum)	50mA <sub>eff</sub>	100mA <sub>eff</sub>	100mA <sub>eff</sub>	100mA <sub>eff</sub> /phase
Fuse load integral limit I <sup>2</sup> · t (t=10msec)	750A <sup>2</sup> · sec	5000A <sup>2</sup> · sec	1250A <sup>2</sup> · sec	1250A <sup>2</sup> · sec
Frequency	47 — 80Hz			
Peak off-state voltage	600V <sub>pk-pk</sub>	1200V <sub>pk-pk</sub>	1200V <sub>pk-pk</sub>	1200V <sub>pk-pk</sub>
Leakage current	15mA	20mA	20mA	20mA/phase
cos φ (p.f.)	>0.5			

**Control**

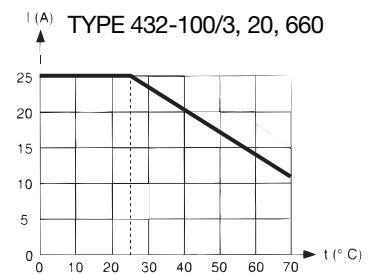
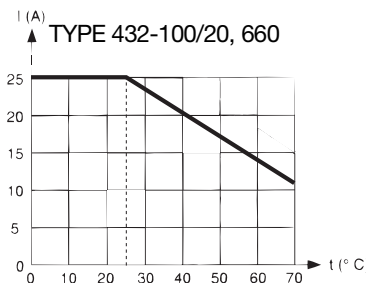
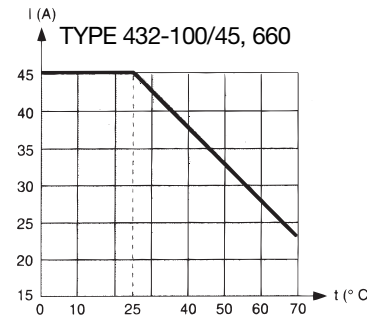
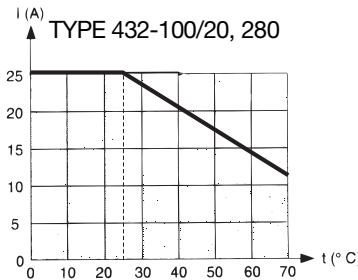
Control signal range	4 – 32V DC
Input impedance	3kΩ
Response delay	0.5 · cycle length

**General data**

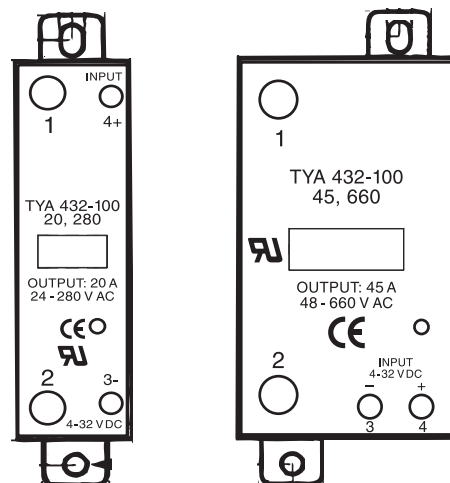
Type	TYA 432-100/20, 280 (TRIAC)	TYA 432-100/45, 660 (Thyristor)	TYA 432-100/20, 660 (Thyristor)	TYA 432-100/3, 20, 660 (Thyristor)
Operating mode	zero control			
Electrical isolation	by optocoupler between control and load circuit; insulation voltage 4kV <sub>eff</sub>			
Heat resistance junction-air	3.6 °C/W	1.5 °C/W	2.2 °C/W	1 °C/W
Permissible ambient temperature	-20 to +80°C			
Electrical connection	by screw terminals; load / control (max. cross-section) □ 2.5mm <sup>2</sup> / 2.5mm <sup>2</sup>   □ 10mm <sup>2</sup> / 2.5mm <sup>2</sup>   □ 2.5mm <sup>2</sup> / 2.5mm <sup>2</sup>   □ 2.5mm <sup>2</sup> / 2.5mm <sup>2</sup>			
Case	self-extinguishing (UL 94 V0)			
Protection	IP20			
Weight	250g	490g	250g	940g

**Derating curves**

Permissible operating current as a function of ambient temperature



**Connection**

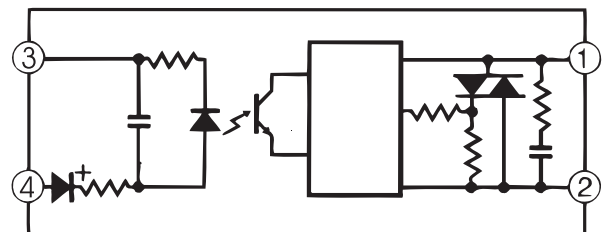


- 1 - load circuit
- 2 - load circuit
- 3 - control signal +
- 4 - control signal -

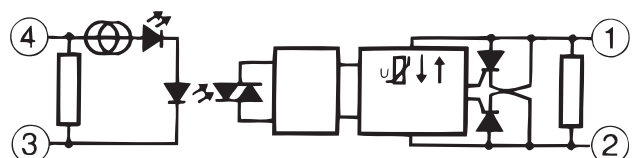
(also TYA 432-100/20, 660)

**Equivalent circuit diagram**

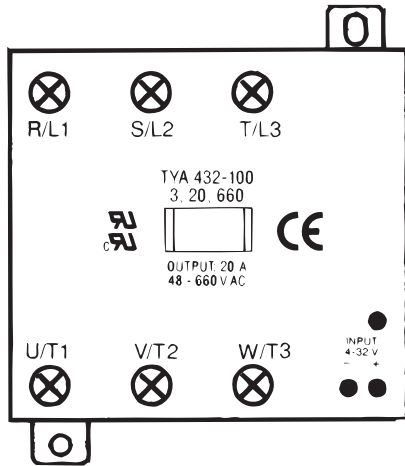
TYA 432-100/20, 280



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

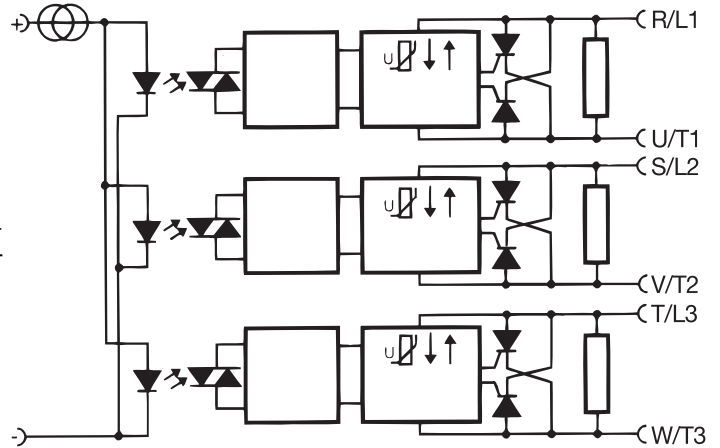


### Connection



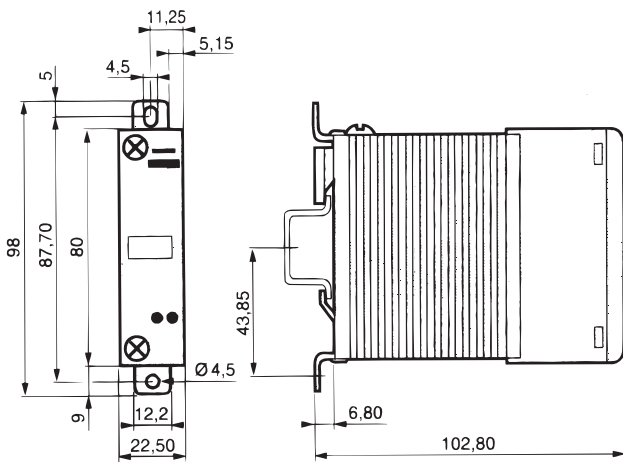
R/L1- load circuit 1  
U/T1- load circuit 1  
S/L2- load circuit 2  
V/T2- load circuit 2  
T/L3- load circuit 3  
W/T3- load circuit 3  
+ - control signal +  
- - control signal -

### Equivalent circuit diagram

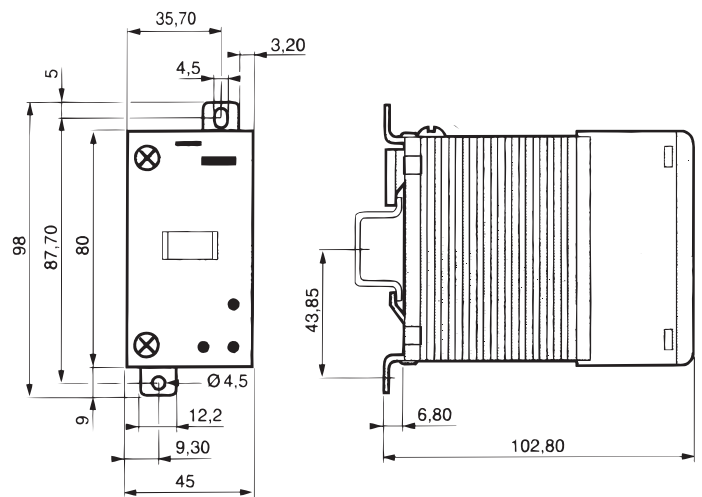


### Dimensions

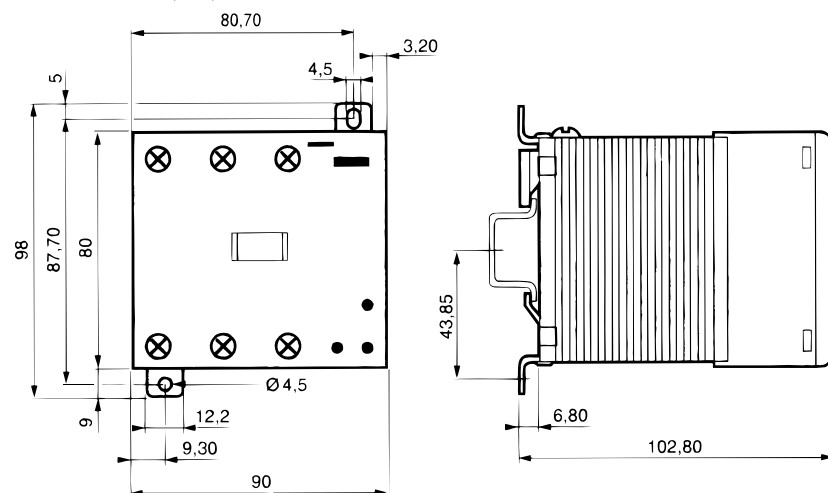
TYPE 432-100/20, 280 (660)



TYPE 432-100/45, 660



TYPE 432-100/3, 20, 660



### Order details

Type	Load voltage	Load current
TYA 432-100/20, 280	24 – 280V <sub>eff</sub>	20A <sub>eff</sub>
TYA 432-100/20, 660	48 – 660V <sub>eff</sub>	20A <sub>eff</sub>
TYA 432-100/45, 660	48 – 660V <sub>eff</sub>	45A <sub>eff</sub>
TYA 432-100/3, 20, 660	3x 48 – 660V <sub>eff</sub>	3x 20A <sub>eff</sub>