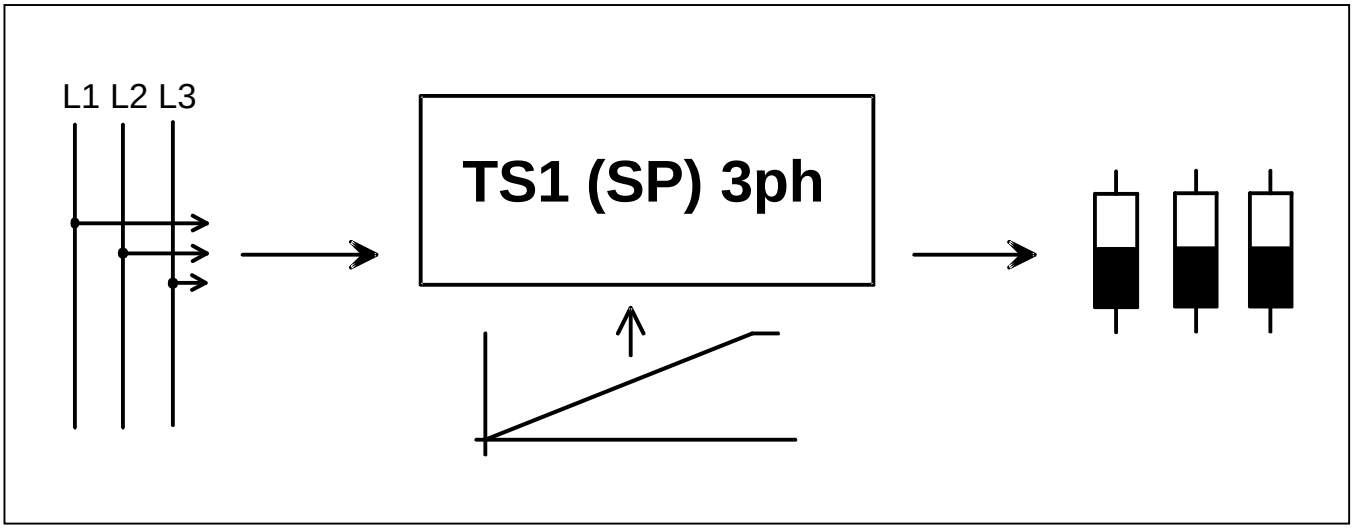
thermokon®
Sensortechnik GmbH

Power Thyristor TS1 (SP) 3ph

Installation Guide



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1. General Description

Power Thyristors are more and more used where increased resistive and inductive loads have to be controlled (e.g. industry furnace construction, plastics processing and so on).
By means of the modular and compact construction as well as the controly by a continuous action control signal, these Power Thyristors are becoming a perfect actuator for industrial power control.
The power unit of the Thyristor is made up of two anti-parallel connected Thyristors, the insulated heat sink and the control electronics.

Explanation of Types:

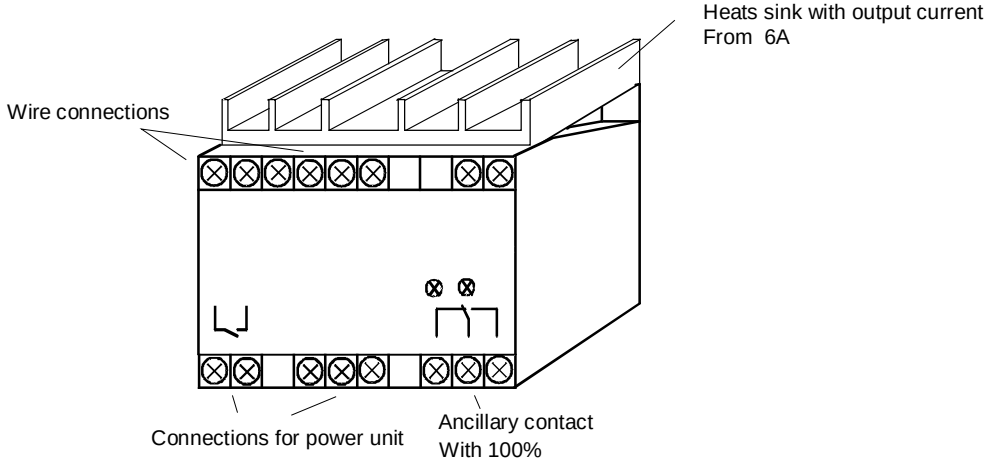
TS1 3ph	Andiductor, phase angle control for three-phase systems
TS1 SP 3ph	Andiductor in pulse group operation (Osciallation package)

Power Supply:

Different mains voltages are adjusted to maxium of power without causing any on-load voltage problems.

Construction:

The Thyristors correspond to the VDE 0558 Part 1 and VDE 0160 Table 4.
The power thyristor TS1 (SP) 3ph is integrated into a plastic enclosure (ABS). The main items of the power thyristor are a
Power Unit with heat sink and Thyristor wiring and a
Control Unit with starter and control electronics.



2. Installation of Power Thyristor TS1 (SP) 3ph

A sufficient cooling (e.g. forced-air cooling) is of paramount importance. Temperature is not allowed to exceed 50°C. The device has to be mounted on a vertical surface, so that a sufficient air circulation is guaranteed. Moreover, the Thyristor has to be mounted in dry rooms.

Further on-site conditions:

- Protection against dust and humidity
- Protection against aggressive atmosphere
- Free of virbrations

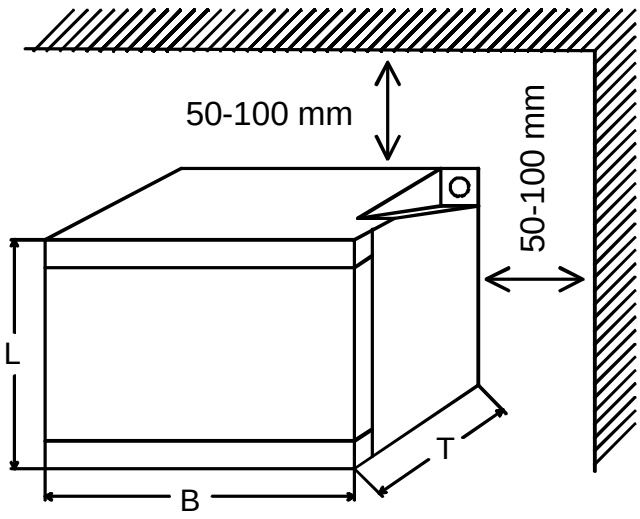
In order to avoid any intereferences of the cooling, no further components should be installed around the Thyristor within a distance from 50 to 100mm.

Wiring:

Power supply (L1, L2, L3) must be produced via a fail-save circuit breaker with the common backups.

The wiring for the power supply and the control unit must be done in separate channels or protection tube.

During the electrical installation procedure, the general VDE-regulations (VDE 0100, VDE 0113, VDE 160) must be observed, accordingly.



3. Setting-up

First of all, all electrical connections should be set-up, according to the attached circuit diagrams: L1, L2, L3, T1 (U), T2 (V), T3 (W).

According to the VDE-regulations, the Thyristors must be connected to the supply net in that way, that they can be separated from the net by means of corresponding clearing instruments (e.g. main switch, contactor, protective power-switch).

Cabling:

The net and consumer lead wires as well as the control circuit must be lead in separate cables.

In order to avoid any interferences, it is advisable to wire the electronic signal lines separated from the load leads and/or the contactor control circuit and to twist the coming and going wires of the signal line.

Protections:

The net protection depends on the recommended respectively the used conductor cross section and must be made according to DIN 57100 Part 430/VDE 0100 Part 430/6.81.

4. Meaning of Terminal Connectors

Control voltage:

L1, L2, L3:	400V AC/50 Hz (Option: Any control voltage can be realised according to customers' request)
L1, N:	external power supply (optional, not necessary, on request any control voltage can be realised)

Power output:

T1, T2, T3:	Load connection

Activation:

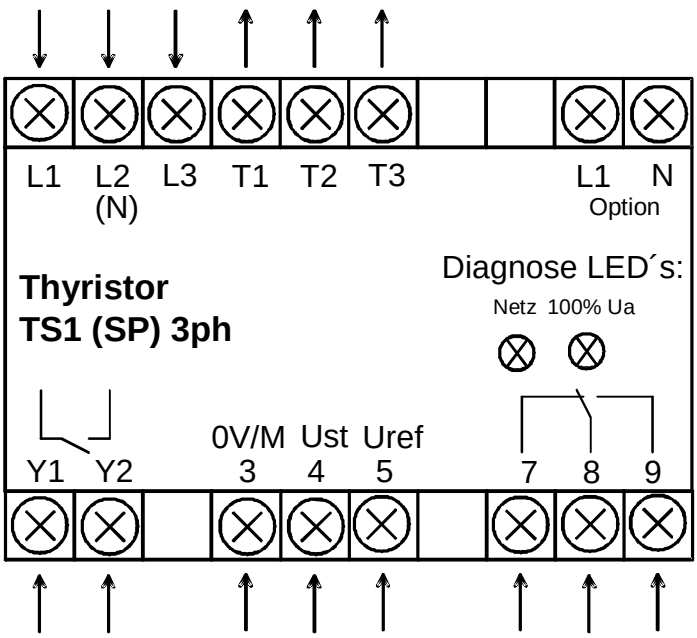
Y1, Y2	Activated:	closed
	Readiness:	opened

Control:

3, 4	Setpoint signal 0-10V
5	Reference voltage 10V/20mA DC (power supply for control of potentiometer)

Switch output:

7, 8, 9	Switch output (activation is made if 100% of the output voltage is reached)

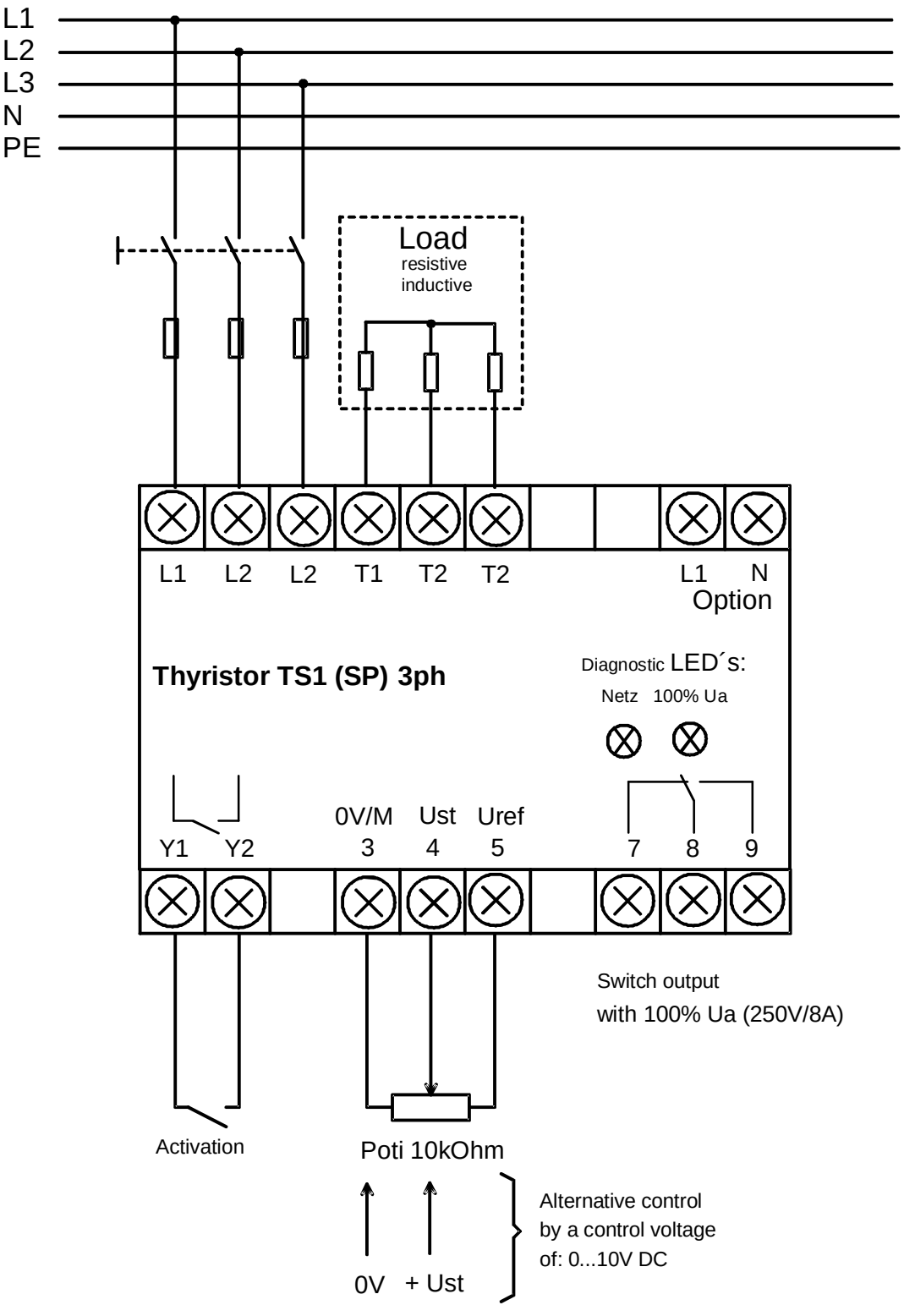


Optional connector (not necessary) e.g. for special voltage

Meaning of LED´s:

Net:	Operating voltage existing Ready for operation
100%	Device has reached its full modulation

5. Basic Circuit

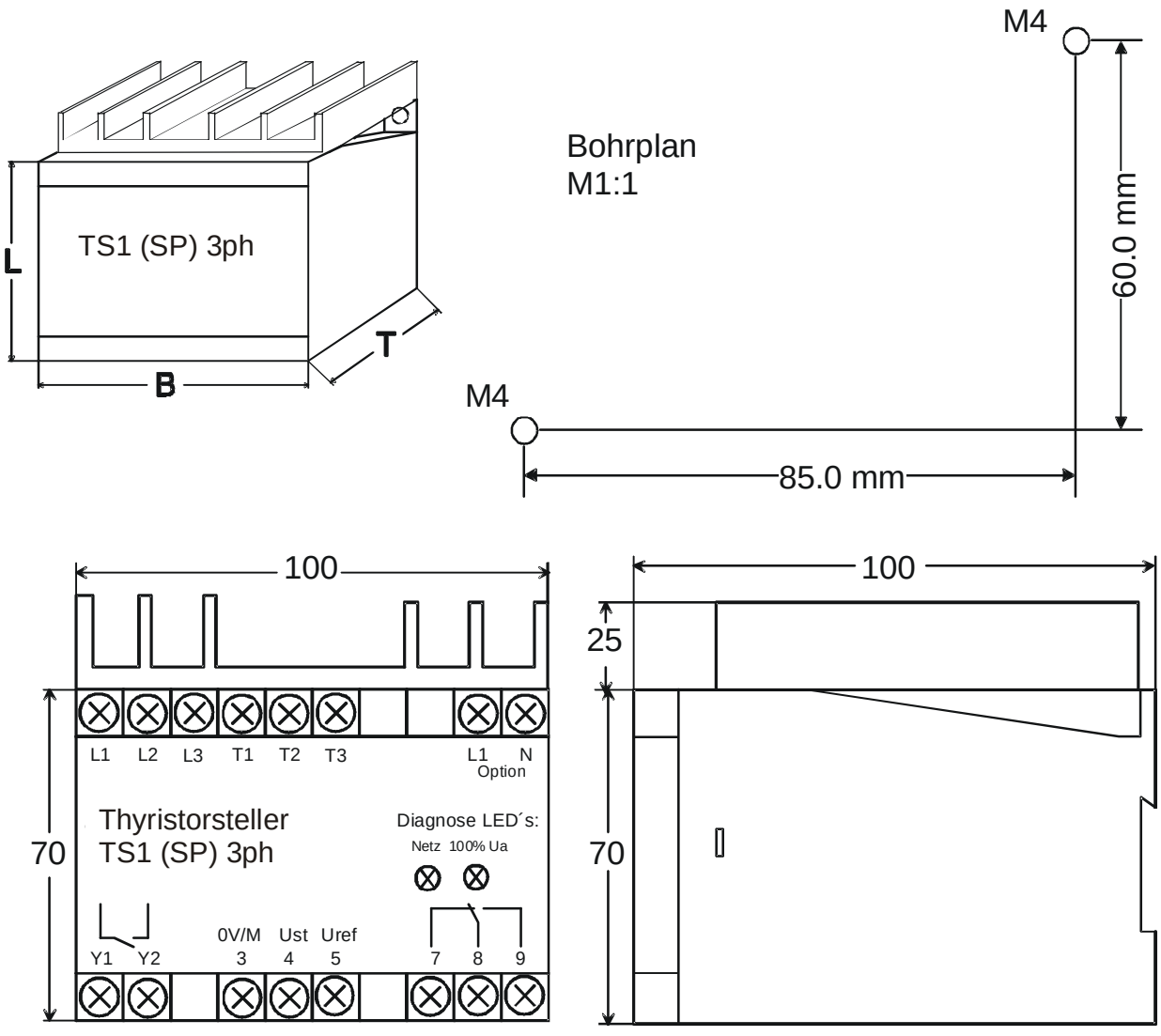


6. Types Available

Typ	Maximum Motor current [A]	Recommended Semi-conductor fuse [A]	Wire protection [A]	Recommended Cross Section [mm²]
TS1 (SP) 3ph 2A	2	2	6	1,5
TS1 (SP) 3ph 4A	4	4	6	1,5
TS1 (SP) 3ph 6A	6	6	10	1,5
TS1 (SP) 3ph 8A	8	6	10	2,5
TS1 (SP) 3ph 10A	10	8	16	2,5

The values mentioned for the load are valid for an ambient temperature of 40°C and a mounting height of max. 1000m as well as a nominal operating voltage of 400V AC.

7. Mechanical Data



8. Technical Data

Mains voltage:	400V AC/50... 60Hz
Supply voltage:	internal production
Ambient temperature:	0... 45°C, storage: -10°C to 70°C
Protection:	IP 40 Clamps IP20 (VBG 4)
Weathering resistance:	Humidity class FDIN 40040
Vibration resistance:	4g
Enclosure:	ABS (Terulan) 877 T, UL 94 HB
Weight:	0,35kg
Mounting:	DIN-rail system or screwable mounting plate
CE-approval:	accord. to European Low Voltage Directive 73/23/EEC and EMV Richtlinie 89/336 EWG for industrial sector