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JUMO TS 7090 Thyristor power switch

with integral heat sink and semiconductor fuse
for DIN-rail mounting or screw fixing

Brief description

Thyristor power switches are used for solid-state switching of AC loads. Typical applications are switching of resistive and resistive-inductive loads with high switching frequencies in industrial sectors, such as in the plastic packaging industry, in HVAC. engineering and in the construction of industrial ovens.

The control and power sections are electrically isolated by optocoupler.

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

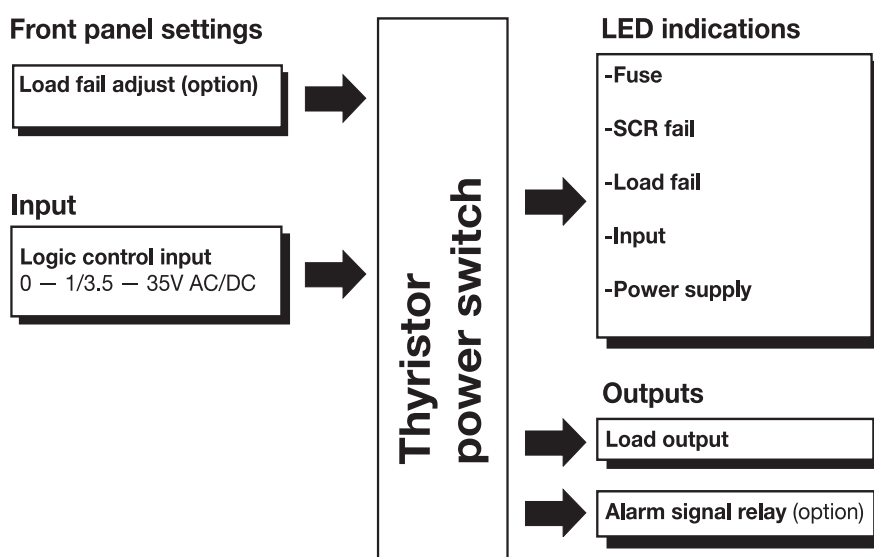
The power section operates as a zero-voltage switch on the full-wave cycle principle, i.e. in principle, the voltage is switched as it passes through zero, independently of the time and the control pulse.

Even with short control pulses (min. pulse width 2 msec), at least one full wave is switched through. An RC protection circuit and a semiconductor fuse are incorporated internally.



Type 709025 ...

Block structure



SCR:

Abbreviation for silicon controlled rectifier

Features

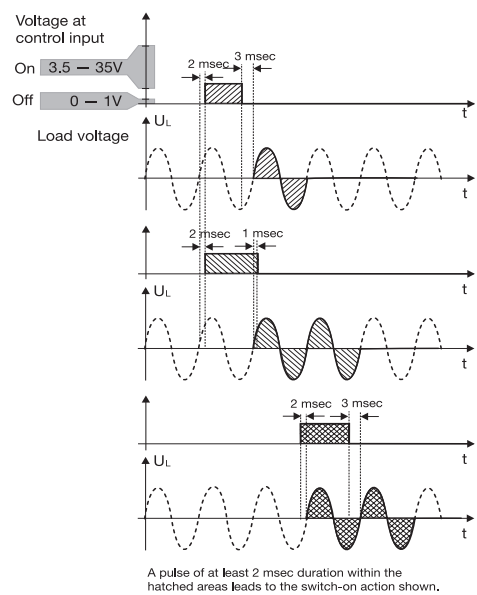
- operates on the full-wave switching principle
- load currents 25A / 50 A
- logic control input
0 – 1 / 3.5 – 35V AC/DC
- detects partial load fail
- detects semiconductor fuse fail
- fault detection e.g. on thyristor short-circuit
- LED for status of the control input
- LED for supply to control section electronics
- LED for partial load fail
- LED for semiconductor fuse fail
- LED signal on fault in the SCR module (silicon controlled rectifier)
- two single-phase units can be wired up as an economy circuit for purely resistive loads.

Technical data

Control

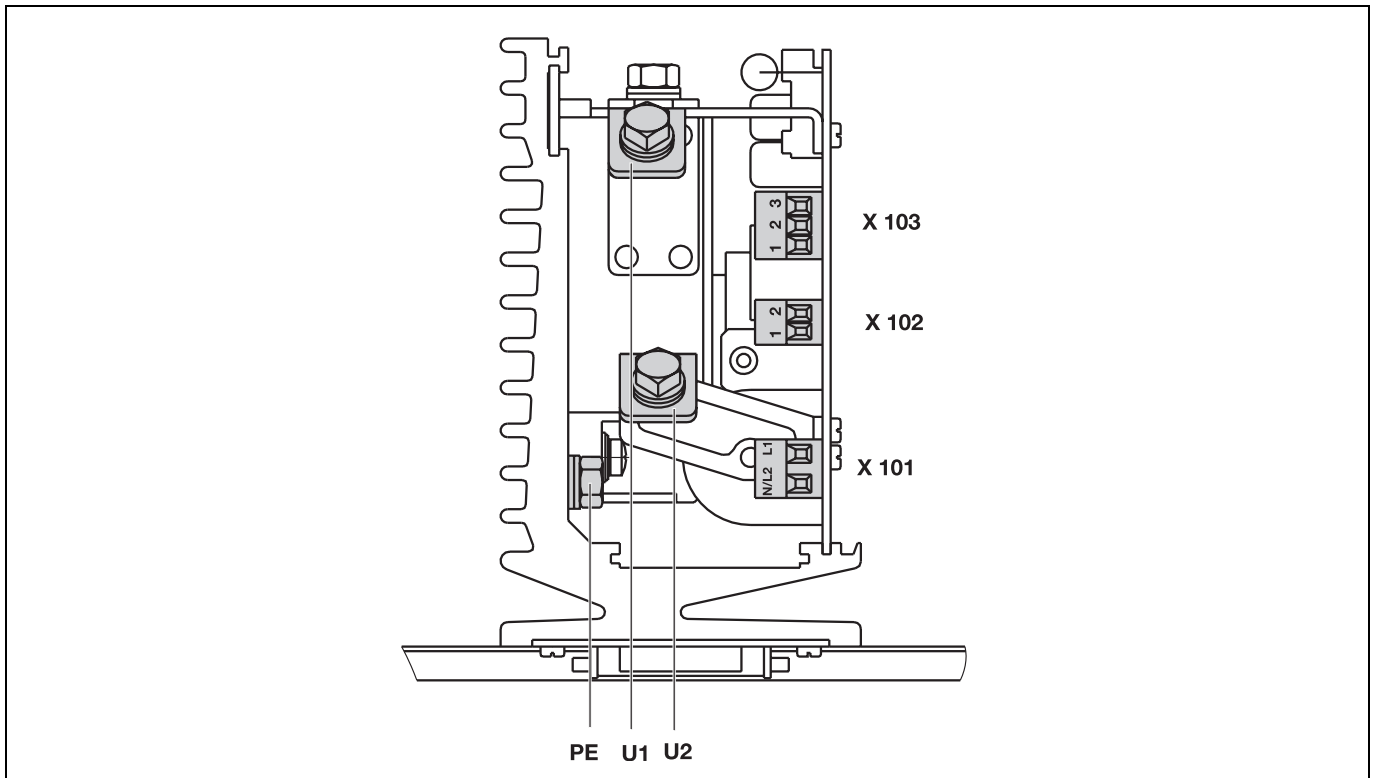
Logic control input	Control voltage 0 – 1 / 3.5 – 35V AC/DC
Input impedance	2K Ω

General data

Continuous load current	25A, 50A
Load type	resistive and resistive-inductive loads
Nominal load voltage	115V -20%/+15%, 45 – 63Hz AC 230V -20%/+15%, 45 – 63Hz AC 400V -20%/+15%, 45 – 63Hz AC 500V -20%/+15%, 45 – 63Hz AC
Power loss	$\approx 1.3V \times I_L$ (A)
Power consumption	5VA
Protection	IP20 to EN 60 529, heat sink is earthed
Protection class	Protection class I, logic control input and load fault output can be connected to SELV circuits.
Creepage distances	Control electronics-logic input ≥ 10 mm Control electronics-housing ≥ 5 mm Logic input can be connected to SELV circuits. SELV = Safety Extra-Low Voltage
Test voltage	to EN 50 178
Operating conditions	The thyristor power controller is designed as a panel-mounting instrument in accordance with EN 50178
Supply system types	for TT and TN systems
Permissible ambient temperature range	0 – 45°C The permissible current is reduced by 2% per °C increase in ambient temperature; the maximum permissible ambient temperature must not exceed 60°C.
Permissible storage temp. range	-10 to +70°C
Climatic conditions	rel. humidity $\leq 75\%$ annual mean, non-condensing
Cooling	natural convection
Operating position	vertical
Operating mode	<p>Burst-firing operation for resistive-inductive loads</p>  <p>A pulse of at least 2 msec duration within the hatched areas leads to the switch-on action shown.</p>
Electrical connection	Control cables via screw terminals for conductor cross-sections 0.2 – 2.5mm ² . Load connections via cable lugs to DIN 46 212.
Circuit variants	<ul style="list-style-type: none"> - single-phase operation - star connection with star point brought out - open delta connection - economy circuit (star or delta) in burst-firing mode

Housing	polycarbonate self-extinguishing
Weight	1.7 kg
Standard accessory	1 Operating Instructions B 70.9025
Fusing	super-fast blow semiconductor fuse
Electromagnetic compatibility	EN 61 326
	Interference emission: Class B
	Immunity to interference: to industrial requirements
Snubber circuit	RC network as standard

Connection diagram



	Connection for	Screw terminal X101	Detail
	Supply for control section	L1 N (L2)	L1 — o L1 N (L2) — o N (L2)

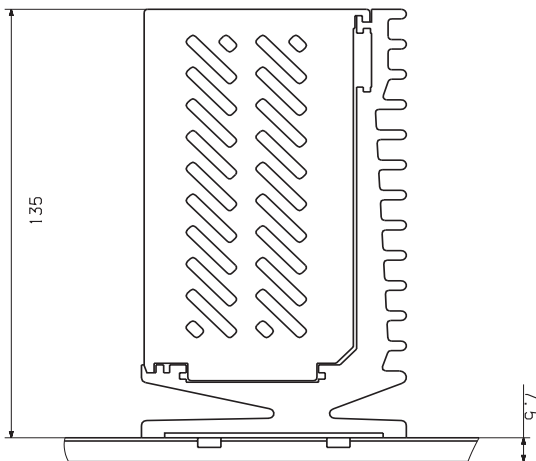
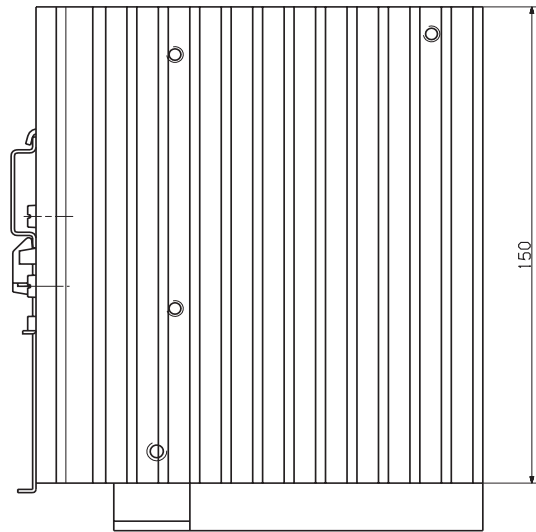
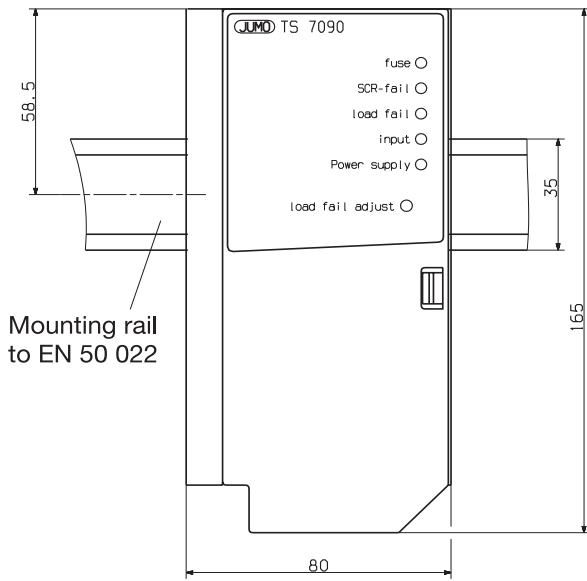
	Connection for	Screw terminal X102	Detail
	Logic control input 0 — 1 / 3.5 — 35V AC/DC	1 2	1 — o 1 2 — o 2

	Connection for	Screw terminal X103	Detail
	Fault signal relay contact rating 3A 230V AC resistive load relay de-energized on fault.	1 n.o. (make) 2 n.c. (break) 3 common	

	Connection for	Screw connections in power section	Detail
	Load output	U 1 U 2	U 1 o — L1 U 2 o — — N (L2)
	Protective earth	PE	PE — o PE

Dimensions

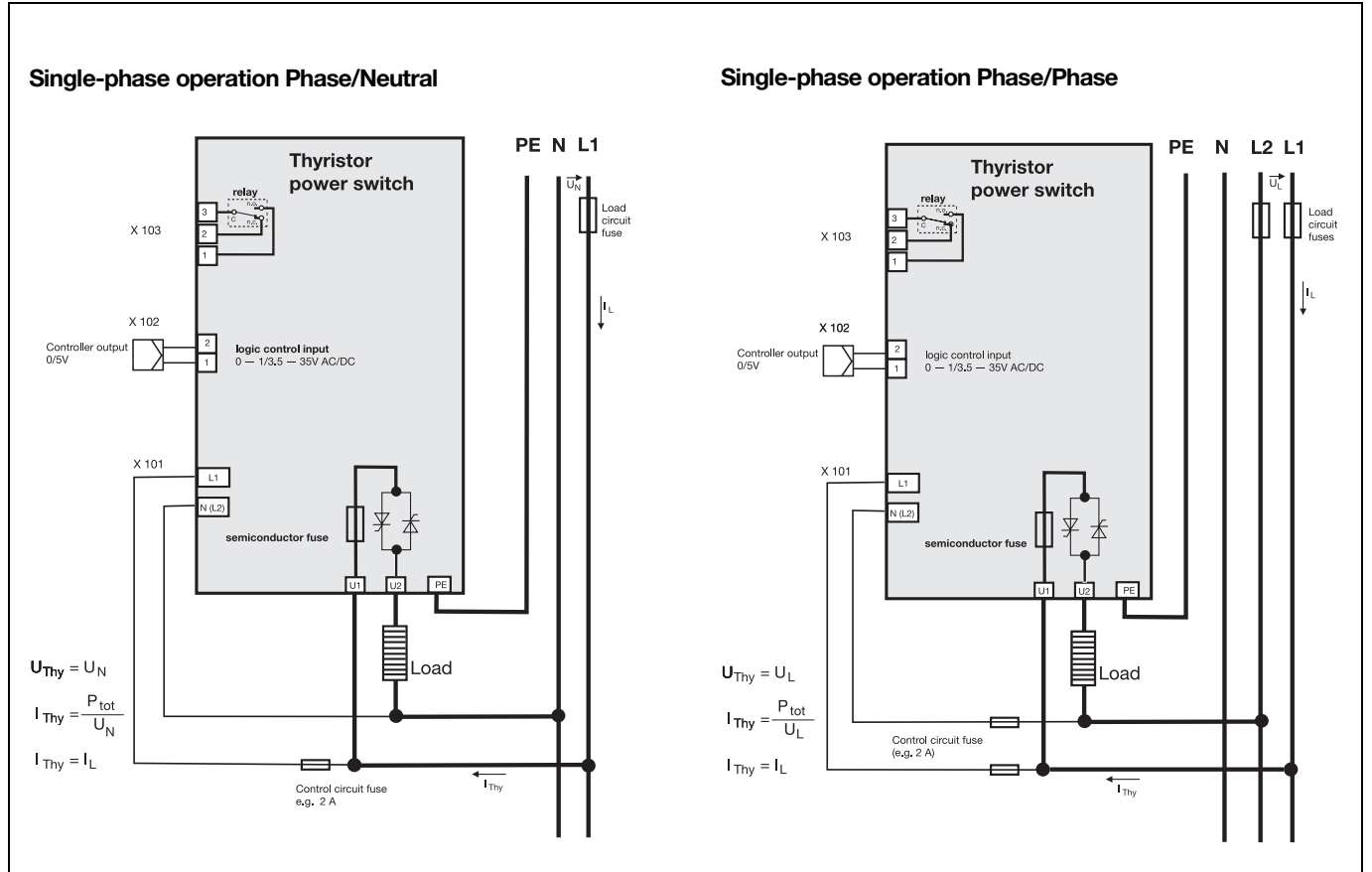
Type 709025/050-400-252



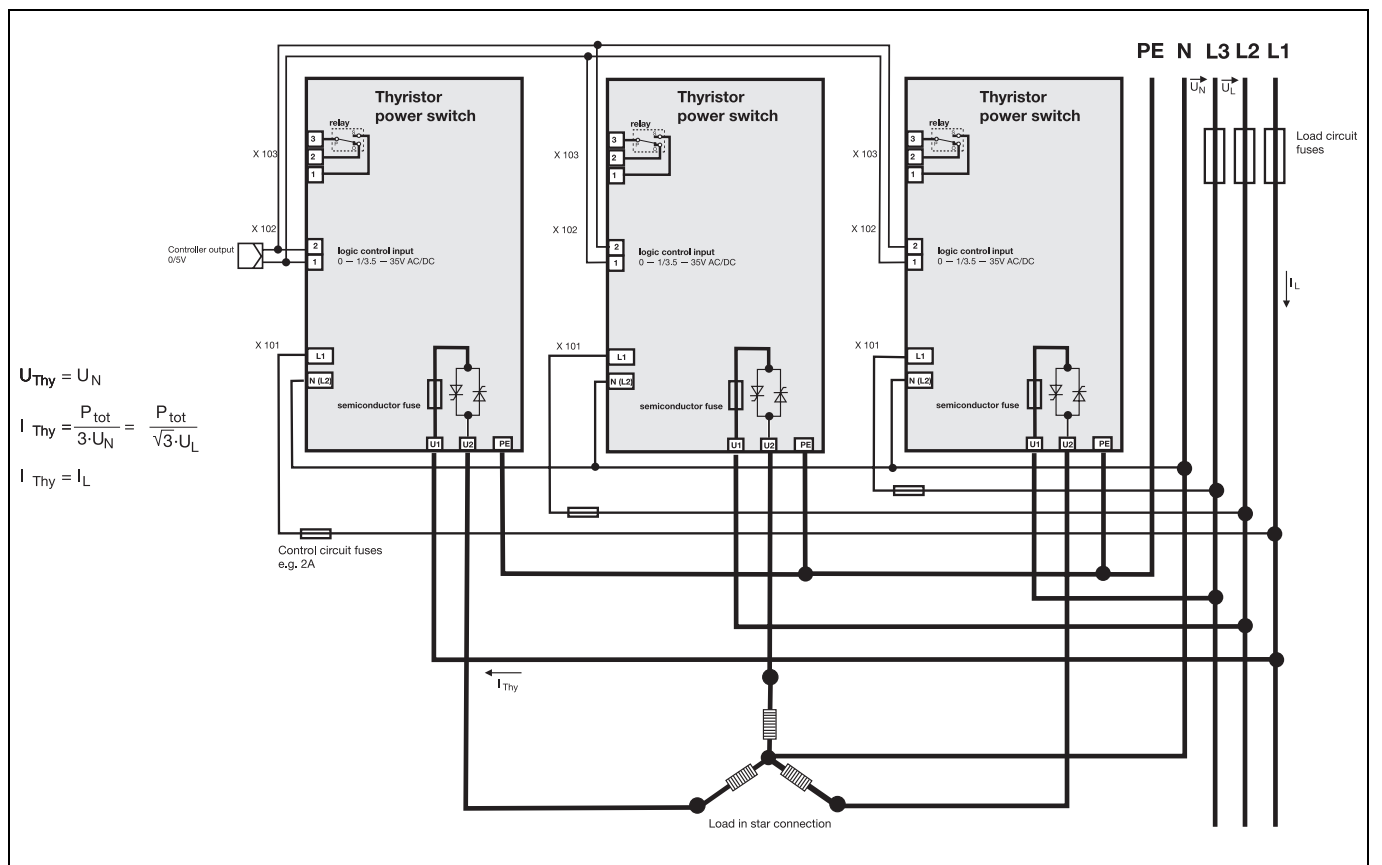
Note:

The cooling fins of the heat sink must be aligned vertically so that the heat can be carried away upwards by natural convection.

Types of circuit

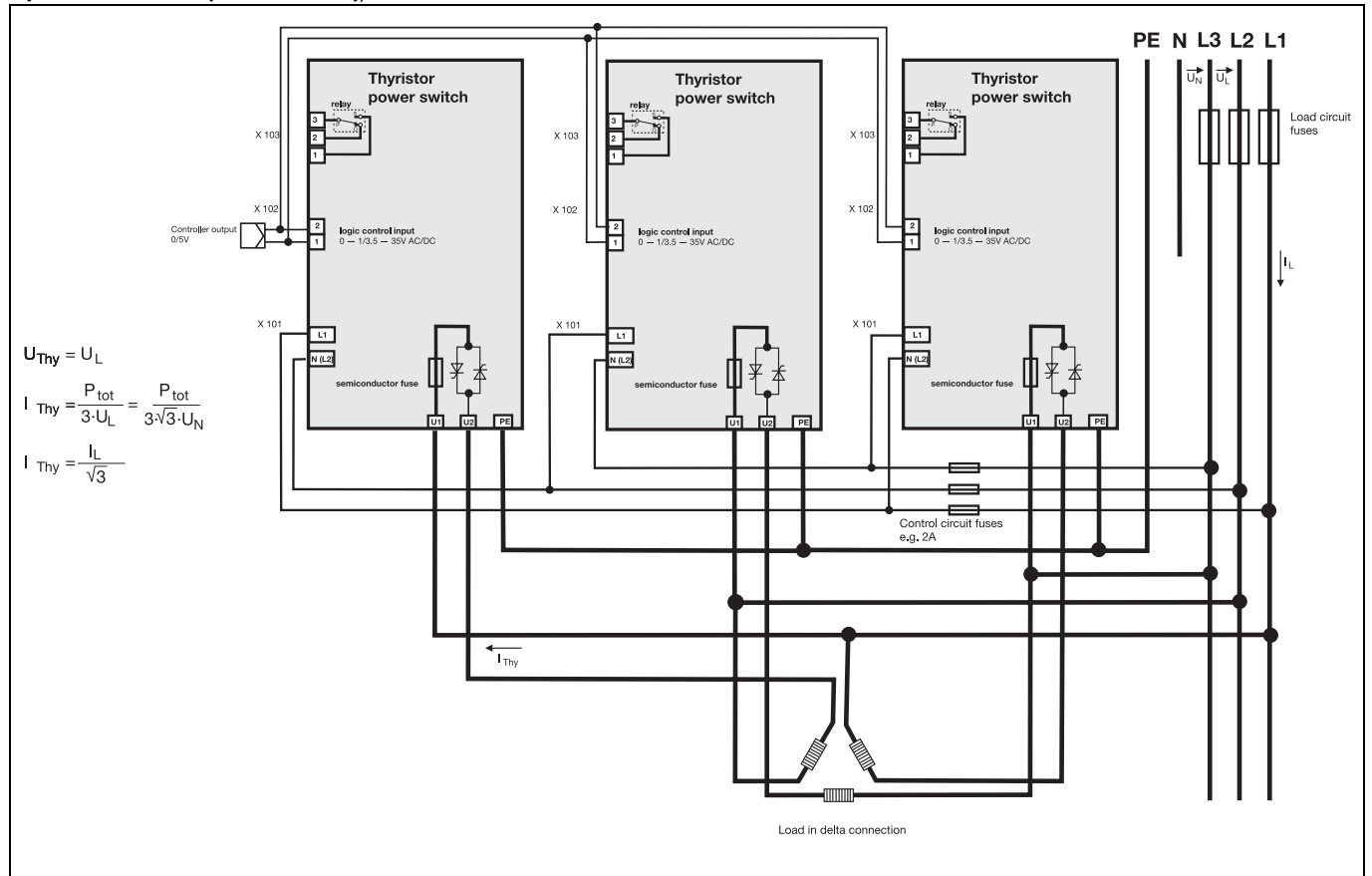


Star connection with star point (N) brought out

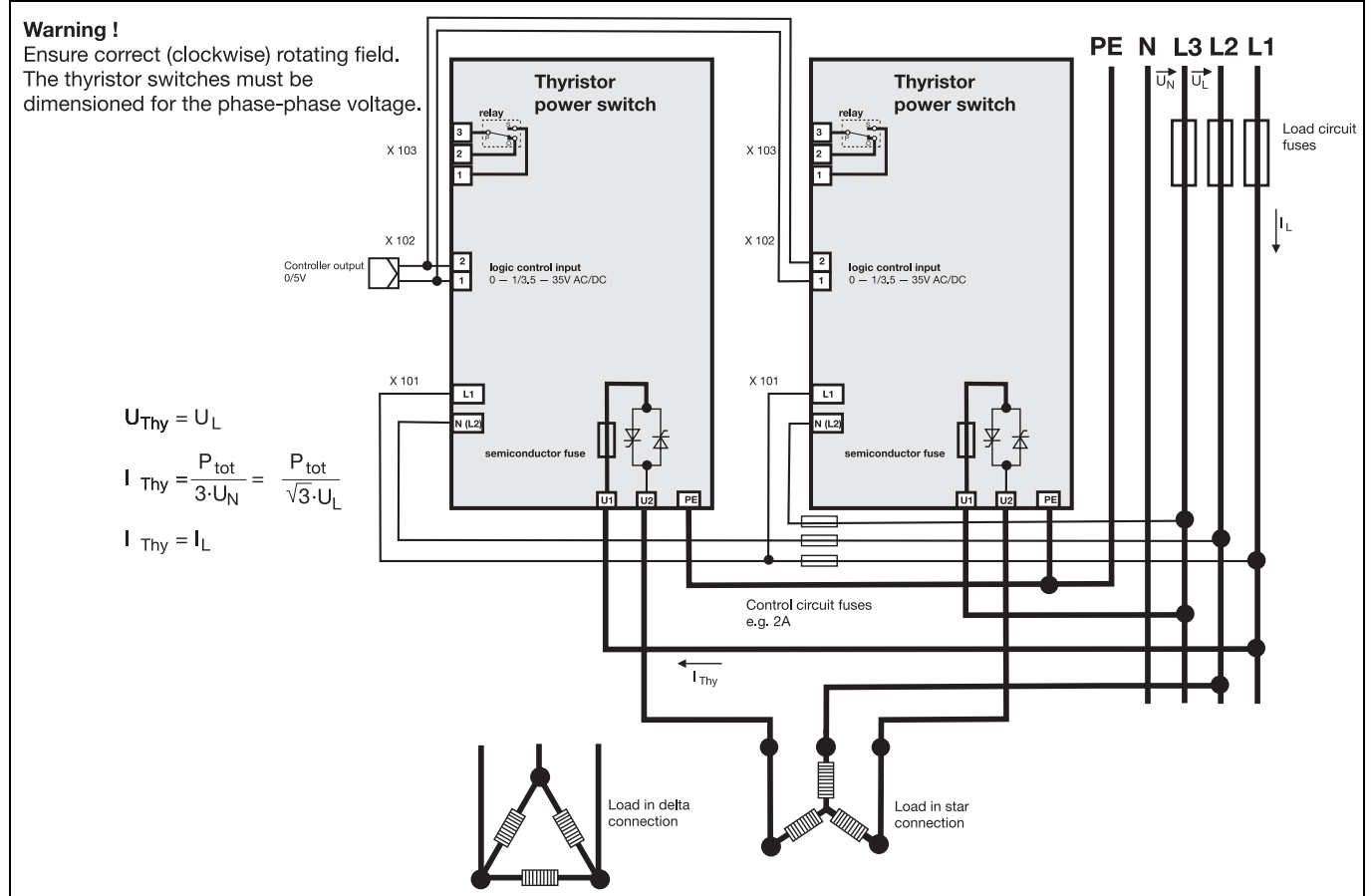


Types of circuit

Open delta circuit (6-wire circuit)



Economy circuit with pure resistive loads, star or delta (only in burst-firing mode)



Order details

		(1) Basic type	
		709025	TS 7090
		(2) Load current	
x	025	25 A AC	
x	050	50 A AC	
		(3) Load voltage	
x	115	115 V AC	
x	230	230 V AC	
x	400	400 V AC	
x	500	500 V AC	
		(4) Extra code	
x	252	alarm signal relay (changeover contact) 3A	

Order code **(1)** **(2)** **(3)** **(4)**
 / - -

Order example 709025 / 050 - 400 - 252

Accessories

Semiconductor fuses	Sales No.
32A for I _N = 25A	70/00068009
80A for I _N = 50A	70/00068011