



Solid State Relay

Chassis mounting



For resistive, capacitive as inductive load

Zero switching

Rated operational current up to 50 A

Rated operational voltage up to 480 VAC

Indication of control input

Varistor integrated

EMC-conform

Protective cover included

PROFILE

The demand on moduls applied as interfaces between open or closed loop controls and loads is growing steadily. This means, that in numerous applications, where contactors together with their protective components use to be installed, power semiconductor devices, so called SOLID STATE RELAYS (SSR) are used.

An SSR does not incorporate any moving parts, thus it has an increased life time compared to electromechanical devices. As long as it is not exposed to excessive thermal stress it will outlast a contactor multiple times.

High quality optocouplers ensure galvanical separation between control input and power output. The input current necessary to control the output is kept at a very low level and thus in nearly all cases logic compatible.

It is indispensable to use an adequate heatsink for the power dissipation.

TECHNICAL DATA

INPUT

Control voltage: 4,5 up to 32 VDC

Input current: 10 mA AC

Pick-up voltage: $\leq 4,25$ VDC

Drop-out voltage: ≥ 2 VDC

Response time, pick-up: $\leq \frac{1}{2}$ cycle

: $\leq \frac{1}{2}$ cycle

OUTPUT

Type 9407-509-	22221	22421	22431
Operational voltage VAC	24...265		42 ... 530
Non rep. peak voltage	650 Vp		≥ 1200 Vp
Varistor-voltage	275 V		550 V
Operat. current ⁴⁾	AC1 AC3	25 A _{RMS} 5 A _{RMS}	50 A _{RMS} 15 A _{RMS}
Min. operational current	150 mA		
Overload current ²⁾ [A AC _{RMS}]	< 55		< 125
Surge current ³⁾	250 As		600 As
I _t for fusing 10ms [A ² s]	≤ 310		1800
Critical di/dt	100 A/ μ s		
Critical du/dt	$\leq 1,6$ V _{RMS}		
On state voltage drop at I _{Rated}	$\leq 1,6$ V _{RMS}		
Leakage current [mA] ¹⁾	3 mA _{RMS}		
Rated insulation voltage	4000 V _{RMS}		

Loadfrequency: 45 up to 65 Hz

Power factor $\cos \varphi \geq 0,5$ at 230
respectively 480 VAC

THERMAL SPECIFICATIONS

Rated operational current	25 A	50 A
Operating temperature	-20...+70 °C	
Storage temperature	40...+100 °C	
Junction temperature	125 °C	

Humidity: 95 % rH, not condensing

- 1) Off-state at rated voltage and – frequency
2) repetitive, t = 1s
3) Non repetitive, t = 10 ms
4) see basics

ELEKTRICAL SAFETY

Over voltage categorie: III

Over voltage protection: Optocoupler
and Varistor

Test voltage for insulation: 4000 V

GENERAL

Electrical connections

Control circuit

Screws M3, terminals self-lifting for
conductors of 2 x 0,5 mm² AWG 20
up to 2 x 2,5 mm² AWG 12

Load circuit

Screws M5, terminals self-lifting for
conductors of 2 x 1 mm²
up to 2 x 6 mm² AWG 10

Mounting

By means of screws onto an appropriate
heat sink. Use heat sink compound

Mode of protection: IP 20

Material of housing: GE Noryl SE1 GFN1

Base plate: Aluminium

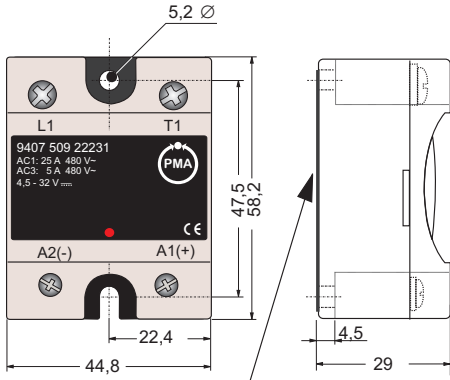
Weight: 0,06 kg

APPROVALS

EN 50082-1

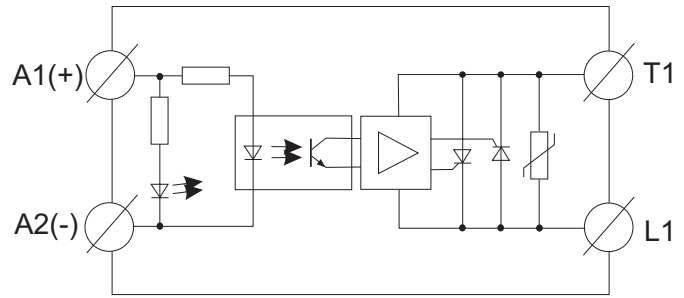
UL 508

Fig. 1 dimensions (mm)



Wärmeleitpaste aufbringen / Apply heatsink compound

Fig. 2 functional diagram



HEAT SINK SELECTION

Following informations are necessary

Operational ambient temperature e.g. 40 °C
Load current e.g. 10 A

According to adjacent tabel a load current of 10 A at 40 °C ambient temperature requires for the 25 A SSR a heat sink with a thermal resistance of 6,14 K/W or better.

With the 50 A SSR at a load of 15 A a heat sink with a thermal resistance of 3,19 K/W or better is required at 50 °C.

Tab. 1 heat sink dimensions for 25 A

Load [A]	Thermal resistance [K/W]							Heat-losses
	20 °C	30 °C	40 °C	50 °C	60 °C	70 °C		
25,0	2,70	2,34	1,98	1,61	1,25	0,89	28	
22,5	3,10	2,69	2,28	1,86	1,45	1,04	24	
20,0	3,61	3,13	2,65	2,18	1,70	1,23	21	
17,5	4,26	3,70	3,14	2,59	2,03	1,47	18	
15,0	5,14	4,47	3,80	3,14	2,47	1,80	15	
12,5	6,38	5,56	4,73	3,91	3,09	2,27	12	
10,0	8,25	7,19	6,14	5,08	4,02	2,97	9	
7,5	11,4	9,94	8,49	7,04	5,59	4,14	7	
5,0	17,7	15,4	13,2	11,0	8,74	6,51	4	
2,5	-	-	-	-	18,2	13,6	2	

Tab. 2 heat sink dimensions for 50 A

Load [A]	Thermal resistance [K/W]							Heat-losses
	20 °C	30 °C	40 °C	50 °C	60 °C	70 °C		
50,0	1,03	0,86	0,70	0,53	0,37	0,20	61	
45,0	1,27	1,09	0,90	0,71	0,52	0,33	53	
40,0	1,54	1,32	1,10	0,89	0,67	0,45	46	
35,0	1,85	1,59	1,34	1,08	0,82	0,57	39	
30,0	2,26	1,95	1,65	1,34	1,03	0,72	33	
25,0	2,85	2,47	2,08	1,70	1,32	0,94	26	
20,0	3,73	3,24	2,75	2,26	1,77	1,27	20	
15,0	5,22	4,54	3,86	3,19	2,51	1,83	15	
10,0	8,21	7,16	6,11	5,05	4,00	2,95	10	
5,0	17,2	15,0	12,9	10,7	8,51	6,33	5	

ORDERING INFORMATIONEN

Description SSR chassis mount	Order number
230 VAC 25 A	9407-509-22221
230 VAC 50 A	9407-509-22421
480 VAC 50 A	9407-509-22431



Deutschland

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