

# INVERSEURS DE SENS DE ROTATION MOTOR REVERSER

*Entraxe 47,5mm /47,5mm mounting*

Le relais SG969500E est étudié pour démarrer et inverser le sens de rotation de moteurs triphasés asynchrones, avec la commutation de 2 phases uniquement ( 4 commutateurs : 2 legs ). Le calibre des thyristors est de 75ARMS, ce qui permet de contrôler un moteur avec un courant nominal de 16ARMS soit 7,5kWatts sous 400VAC, en tenant compte des courants de démarrage et d'inversion. Ces produits sont réalisés avec des composants haute immunité, sans relais REED ( tout électronique ), avec toutes les protections : RC, VDR,... mais aussi intervrouillage, temporisation entre chaque inversion,... Ces relais sont équipés de thyristors 1600V avec une protection adaptée pour des réseaux jusqu'à 550VRMS.

*The relay SG969500E is designed for controlling and inverting the direction of a three-phase motors without direct third leg ( two legs). The maximum current of semiconductors is 75 Amps. RMS, which allows a motor with a current rating of 16 Amps.rms or approximately 7,5 kW under 400 V, taking the starting and reversing current into account.*

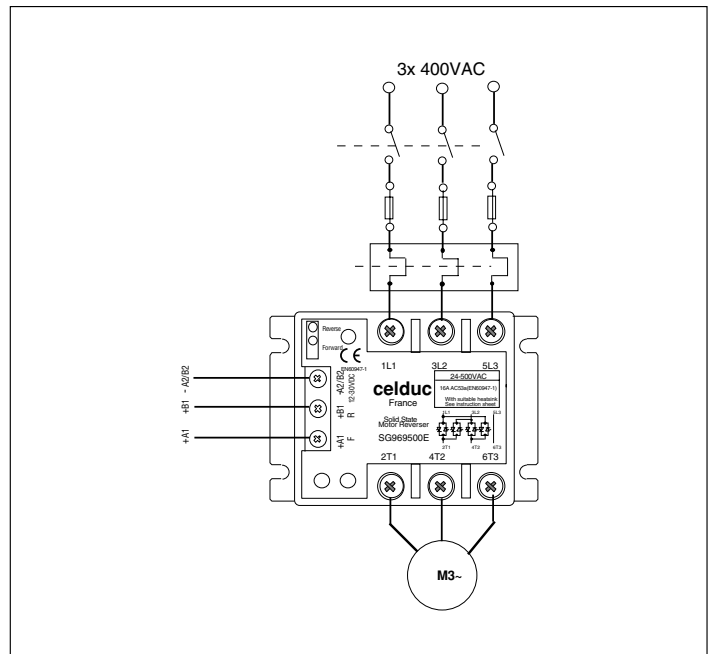
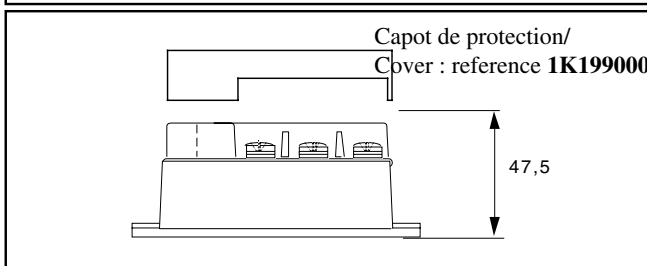
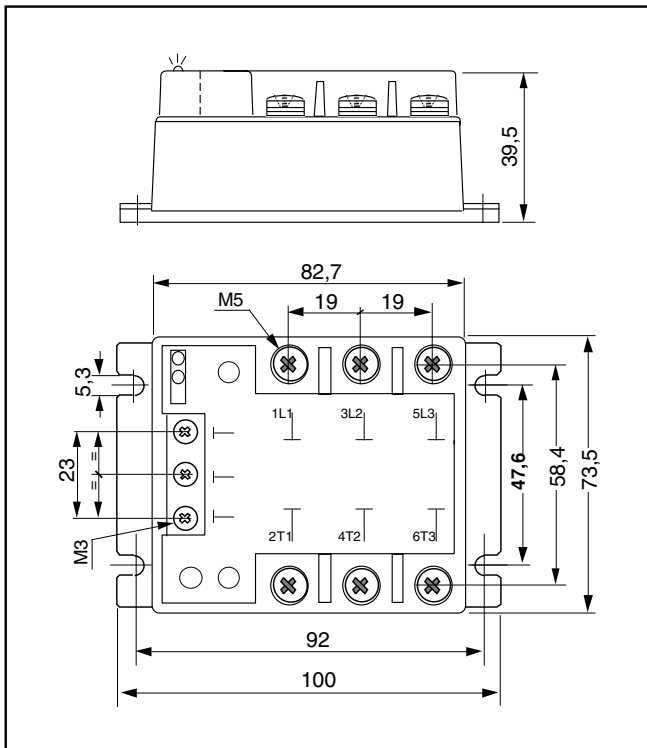
*These products are designed with very high immunity components, without REED switches (only composed of solid state components), with all protections : RC, VDR, ..... temporisation, ....., and 1600Volt peak voltage components with on this model a voltage protection up to 550VRMS mains.*

## SG969500E

**3x400VAC 7,5KW  
two legs model**

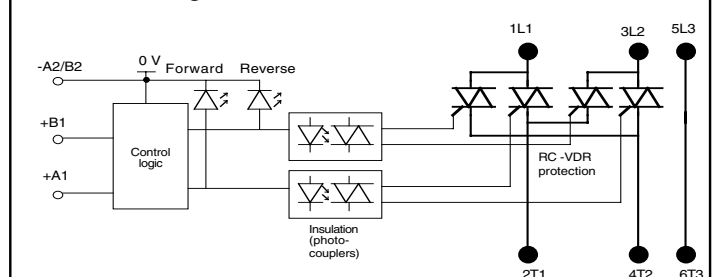


### Dimensions / Dimensions:



### Circuit équivalent/Equivalent circuit :

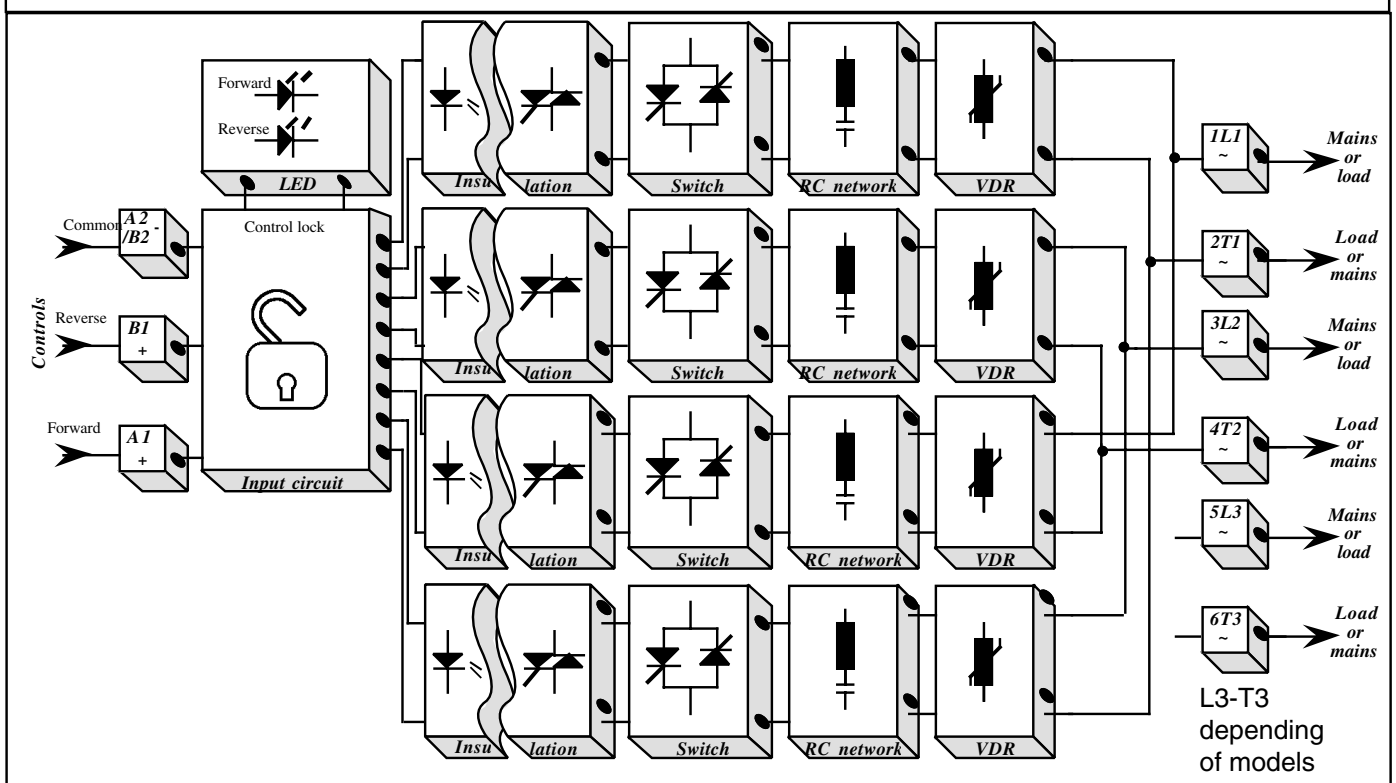
### Internal block diagram :



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All technical characteristics are subject to change without previous notice.  
Caractéristiques sujettes à modifications sans préavis.

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**Synoptique interne / Internal diagram for two leg models :**

Développé conformément aux normes / Designed in compliance with standards:

->EN60947-4-2 (V.D.E. 0660 part 109, I.E.C. 158-2)

->EN60947-1 & A11

->EN60950 (V.D.E. 0805-> office equipment) (Pending approval)

->U.L. 508 (Pending approval)

->c.U.L (Pending approval)

Control	Plage de tension de commande / Control voltage range	Uc	12-30VDC
	Plage de courant de commande / Control current range	Ic	15-25mADC
	Tension de non fonctionnement/ Release voltage	Ur	6VDC
	LED de visualisation / Display LED		Yes
	protection en cas de cdes simultanées / protection against simultaneous controls		Yes
	tension inverse maxi / Maximum reverse voltage	Urv	30V
	Signal de sortie / Output signal		no output
	temporisation inversion / Reversing time		fixed 70ms

Caractéristiques d'entrée-sortie (à 20°C) / Input-output characteristics (at 20°C)				Unit
Isolement entrée-sortie/ Input-output isolation @500m	Ui	3300		VRMS
Isolement sortie-semelle/ Output-case isolation @500m	Ui	3300		VRMS
Tension assignée isolement/rated impulse voltage	Uimp	4000		V

Caractéristiques générales / General characteristics				Unit
Poids/Weight		130g		g
Plage de température de stockage / Storage temperature range		-40 / +100		°C
Plage de température de fonctionnement/ Operating temperature range		-40 / +100		°C

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<b>Sortie/ Output</b>	Tension nominale/ <i>Standard mains voltage</i>	Ue	400 VAC
	Plage de tension de fonctionnement / <i>Mains voltage range</i>	Un	24-550VAC
	tension crête non répétitive/ <i>Non-repetitive maximum peak voltage</i>	Up	1600V
	Courant AC-53 maxi/ <i>Max. nom. current (AC53a=AC3) @40°C</i>	Ie	16A
	Puissance moteur/ <i>3 pole power motor ( 3x400VAC)</i>	Pn	7,5kW
	Chute directe / <i>Max Direct voltage drop (@Ie)</i>	Ud	1,4VRMS
	Courant crête non répétitif/ <i>Non repetitive overload current (@ 1 cycle of 10ms)</i>	ITSM	1000A
	I <sup>2</sup> t value/ <i>Melting limit (choice of fuse) @10ms</i>	I <sup>2</sup> t	5000 A <sup>2</sup> s
	Courant minimal de charge / <i>Minimum load current</i>	Imin	100 mA
	facteur de puissance/ <i>Power factor (@ Ith)</i>	Pf	0 up to 1
	Temps d'ouverture et de temporisation/ <i>Turn on time-reversing time(@50Hz)</i>	ton/trv	20ms / 100ms
	Temps d'ouverture/ <i>Turn off time (@50Hz)</i>	toff	10ms
	Courant de fuite / <i>Maximum leakage current (@Ue/50Hz)</i>	I <sub>lk</sub>	5 mARMS
dv/dt / <i>Max off state voltage rise</i>	dv/dt	500V/μs	
Fréquence de réseau / <i>Operating frequency range</i>	f	25 up to 440Hz	

<b>E.M.C.</b>	Max conducted immunity level Test accord. to I.E.C.1000-4-4 (bursts)		4KV direct at output, 4KV with a clamp at input <b>no turn on or damage</b>
	Max conducted immunity level Test acc. to I.E.C.1000-4-5 (el. shocks)		2KV in common mode, 1KV in differential mode (Input & output) <b>no turn on or damage</b>
	Max radiated immunity level Test accord. to I.E.C.1000-4-3		10V/m <b>no turn on or damage</b>
	Max electrostatic disch. immunity level Test accord. to I.E.C.1000-4-2		8KV in the air / 4KV touching <b>no turn on or damage</b>
	Max conducted emission level (0,8<Pf<1) Test according to EN55011		The conducted noise made by SSR depends on the wiring configuration and the load type. Test methods recommended by European E.M.C. standards giving results far from reality, we have chosen to advise the right filter suited for the customer's use: Refer to EMC chapter
	Max radiated emission level Test accord. to EN55011 @Ie		<30dBμV from 30 up to 230MHz ; <37dBμV from 230 up to 1000MHz

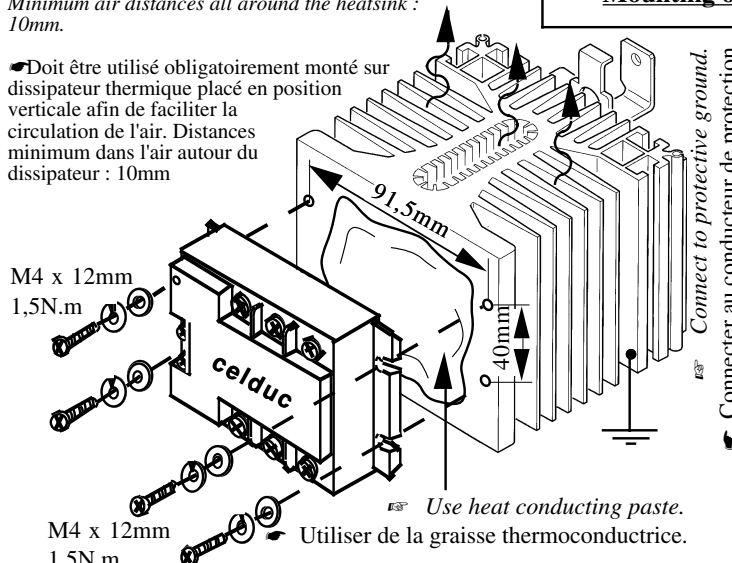
<b>Misc.</b>	Base/junction thermal resistance	Rthjc	0,5K/W (1 leg)
	Ambient/junction thermal resistance (relay mounted vertically)	Rthja	5K/W
	Weight		130g

Characteristics given at 25°C unless otherwise specified

☞ *Must be used only in conjunction with a heatsink mounted in vertical position to help the air flow. Minimum air distances all around the heatsink : 10mm.*

☞ *Doit être utilisé obligatoirement monté sur dissipateur thermique placé en position verticale afin de faciliter la circulation de l'air. Distances minimum dans l'air autour du dissipateur : 10mm*

**MONTAGE D'UN RELAIS**  
**Mounting of a relay on a heatsink**



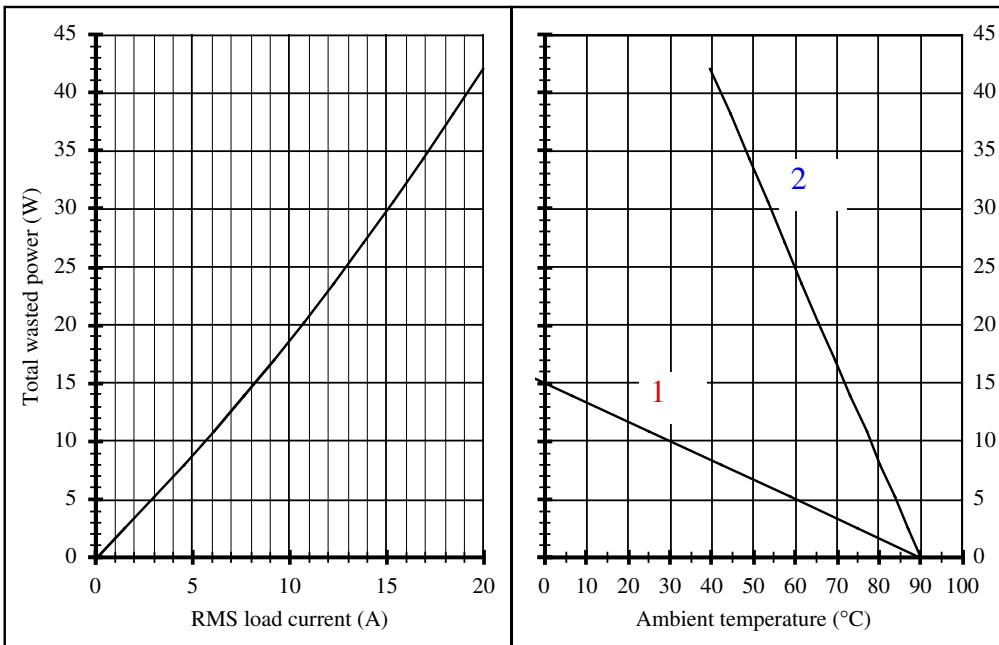
☞ *Use heat conducting paste.*  
*Utiliser de la graisse thermoconductrice.*

☞ *Connect to protective ground.*  
*Connecter au conducteur de protection*

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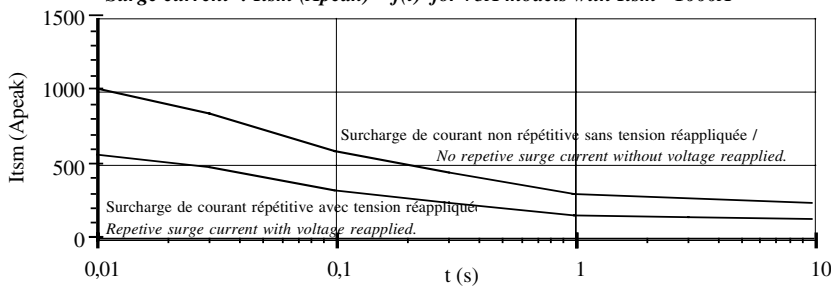
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1 : without heatsink

2 : with WF121000  
heatsink ( 1,2K/W)

Fig.3 Surcharge de courant :  $I_{tsm} (A_{peak}) = f(t)$  pour modèle 75A ( $I_{tsm}=1000A$ ),  
Surge current :  $I_{tsm} (A_{peak}) = f(t)$  for 75A models with  $I_{tsm} = 1000A$



1 -  $I_{tsm}$  non répétitif sans tension réappliquée est donné pour la détermination des protections.

No repetitive  $I_{tsm}$  is given without voltage reapplied for the determination of the protection.

2 -  $I_{tsm}$  répétitif est donné pour des surcharges de courant ( $T_j$  initiale = 70°C). La répétition de ces surcharges de courant diminue la durée de vie du Relais.

Repetitive  $I_{tsm}$  is given for inrush current with initial  $T_j = 70^\circ C$ . The repetition of the surge current decrease the lifetime SSR's.

**Précautions :**

\* Les relais à semiconducteurs ne procurent pas d'isolation galvanique entre le réseau et la charge.

**Cautions :**

\* Semiconductor relays don't provide any galvanic insulation between the load and the mains.

**REVERSERS + HEATSINK SELECTION IN COMPLIANCE WITH EN60947-4-2**

SSR SELECTION motors soft-staters for a permanent current		Relays without heatsink	Heatsink ambient =40°C heatsink =80°C	Relays with heatsink	Ferraz fuse type 14x51 size / max. rating	Overload relay type Klöckner-Moeller
<b>Motor power</b>	In motor (@ 400V)	two legs models 50A	with integrated DIN RAIL adaptor	two legs ambient =40°C		
0,75 kW	2A	SG969300 -SV969300	none	SW960330	am 8A/500V	Z00-2.4
1,1 kW	2,6A	SG969300 -SV969300	none	SW960330	am 8A/500V	Z00-6
1,5 kW	3,5A	SG969300 -SV969300	none	SW960330	am 12A/500V	Z00-6
2,2 kW	5A	SG969300 -SV969300	WF121000	SW961230	am 12A/500V	Z00-6
3 kW	6,6A	SG969300 -SV969300	WF121000	SW961230	am 12A/500V	Z00-10
4 kW	8,5A	SG969300 -SV969300	WF121000	SW961230	am 12A/500V	Z00-10
5,5 kW	12A	SV969500	WF121000		am 20A/500V	Z00-16
7,5 kW	16A	SV969500	WF121000		am 32A/500V	Z00-16