

SVO

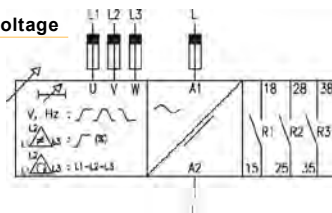


CONTROL AND VISUALIZATION OF VOLTAGE, PHASE AND FREQUENCY IN THREE-PHASE LINES WITHOUT NEUTRAL

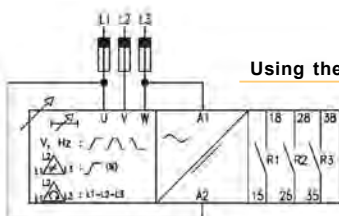
Function	Voltage relay for three-phase lines without neutral. Control of an auxiliary voltage or of its own supply voltage.																														
Operating mode	Configurable by the user. Each one of the available relays it is assigned with its own operating mode for one or more magnitudes, reacting by the first one which is produced.																														
Voltage control	<ul style="list-style-type: none"> · Operating margin: $\pm 18\%$ of the nominal voltage. · Operativity by maximum and/or minimum voltage between phases. Independent adjustment L1-L2, L1-L3 and L2-L3. At each case, adjustment for detection and/or for release. · Reading value RMS 																														
Phase sequence control	It is detected that the phases come in the correct order.																														
Control of the phases unbalance	<ul style="list-style-type: none"> · Adjustable from 0 and 100%. · Only one adjustment for the three phases. 																														
Frequency control	<ul style="list-style-type: none"> · Adjustable from 43..70 Hz. · Operativity by maximum and/or minimum frequency. At each case, adjustment for detection and/or for release. · If the frequency changes in such a value that the relay loose the required precision for a normal operating mode, it switches to the alarm mode (See page 4 for detailed information). 																														
Timing	<ul style="list-style-type: none"> · Associable to the detection and/or to the release of whichever relay. · Adjustable from 0,01s..999,9h · Repeating precision ± 30 ppm 																														
Voltage precision	Taken over the read value: <ul style="list-style-type: none"> · For L1-L3 and L2-L3: At 50Hz: 0,8% · At 60Hz: 1,0% · For L1-L2: At 50Hz: 0,9% · At 60Hz: 1,1% 																														
Frequency precision	Taken over the read value: 0,3%																														
Display of the reading value	The value of the read magnitudes is displayed by means of the following status screen: <ul style="list-style-type: none"> · VOLTAGE L1-L3: Voltage between L1 and L3 · VOLTAGE L2-L3: Voltage between L2 and L3 · VOLTAGE L1-L2: Voltage between L1 and L2 · FREQUENCY: Frequency in the line · $\neq L_i-L_j$: Unbalance between phases · PHASE CYCLE: Phase sequence 																														
Output relay	From 1..3 independent relays, SPST NO. By default, we supply three relays.																														
Output 4-20 mA	It is assigned to whichever of the measured magnitudes (voltage L1-L2, voltage L2-L3, voltage L1-L3, frequency, phases unbalance) to be transmitted through a 4-20 mA current loop, being able to coexist with the relays. Precision: 1% additional to the read value. This kind of output is optional.																														
Supply voltage	[024] 24 VAC 50/60Hz [110] 110..125 VAC 50/60Hz [230] 220..240 VAC 50/60Hz [400] 380..415 VAC 50/60Hz [440] 440 VAC 50/60Hz [903] 15..70 VAC/DC [904] 60..240 VAC/DC	Ranges (VAC)	<table border="1"> <thead> <tr> <th></th> <th>-18%</th> <th></th> <th>+18%</th> </tr> </thead> <tbody> <tr> <td>90,20</td> <td>110..125</td> <td>147,50</td> <td></td> </tr> <tr> <td>180,40</td> <td>220..240</td> <td>283,20</td> <td></td> </tr> <tr> <td>311,60</td> <td>380..415</td> <td>489,70</td> <td></td> </tr> <tr> <td>360,80</td> <td>440</td> <td>519,20</td> <td></td> </tr> <tr> <td>410</td> <td>500</td> <td>590</td> <td></td> </tr> <tr> <td>566</td> <td>690</td> <td>814</td> <td></td> </tr> </tbody> </table>		-18%		+18%	90,20	110..125	147,50		180,40	220..240	283,20		311,60	380..415	489,70		360,80	440	519,20		410	500	590		566	690	814	
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	Warning	Three-phase voltage must be disconnected before or simultaneously than the supply voltage, never later.																													
	Mounting	On DIN rail																													

Connection diagram

With an auxiliary supply voltage



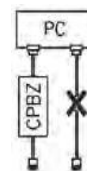
Using the own supply voltage



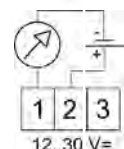
Voltage in A1-A2 can be connected to whichever of the phases.

Communication (According options)

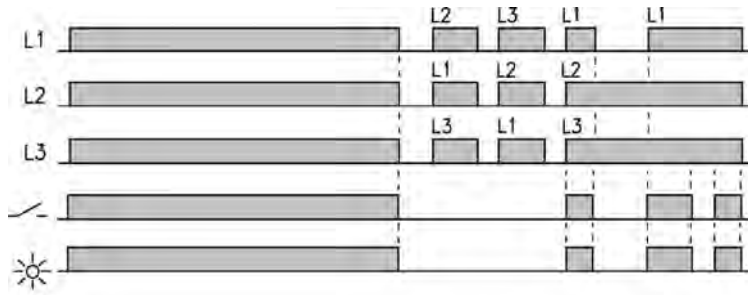
Standard
Code 0



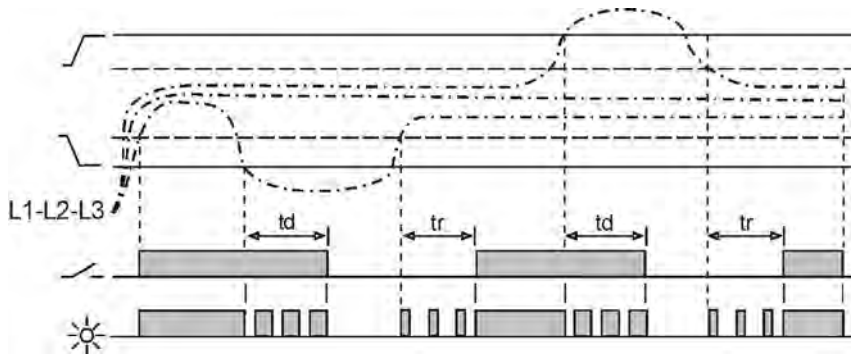
4-20 mA
Code 4



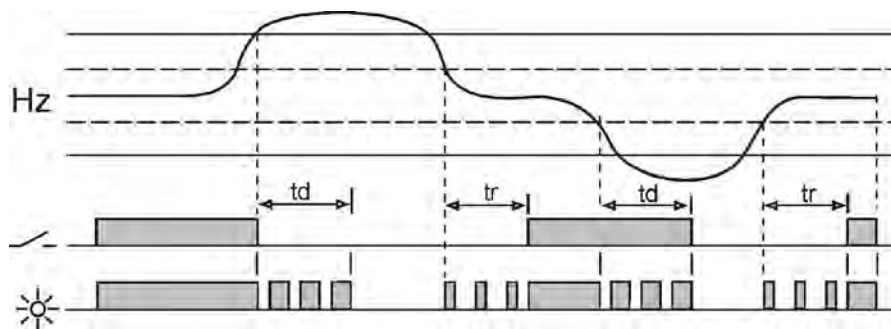
Phase sequence



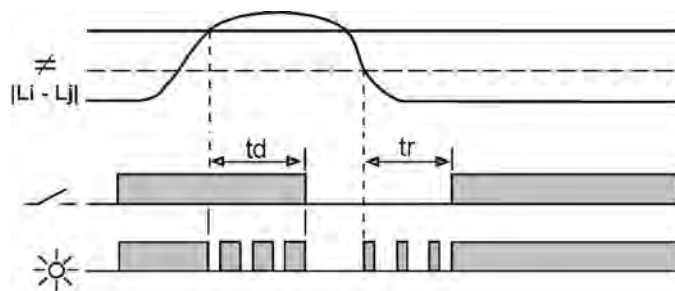
Control of the voltage among phases



Frequency control



Unbalance among phases

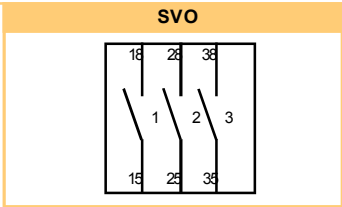


td = Delay on detection // tr = Delay on release

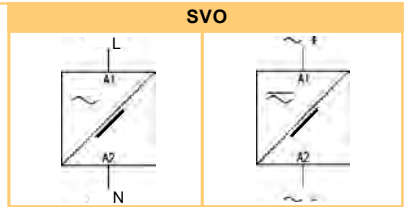


State of the relay may vary according to the application. What is shown in the diagrams belongs to the set-up of the default user's programmes 1 and 2.

		SVO		
Output relays	Resistive load	AC	6 A / 240 V	
		DC	6 A / 24 V	
	Inductive load	AC	3 A / 240 V	
		DC	3 A / 24 V	
	Mechanical life		> 10 ⁶ oper.	
	Max. mech. operations		18.000 operations / hour	
	Electric life at full load		360 operations / hour	
	Contact material		AgSnO Alloy	
	Operating voltage		240 VCA (85 °C)	
	Voltage between contacts		1000 VAC	
	Voltage coil/contact		4000 VAC	
	Isolation resistance		> 100 MΩ (500 VDC)	
	Indication		1 red led per relay	

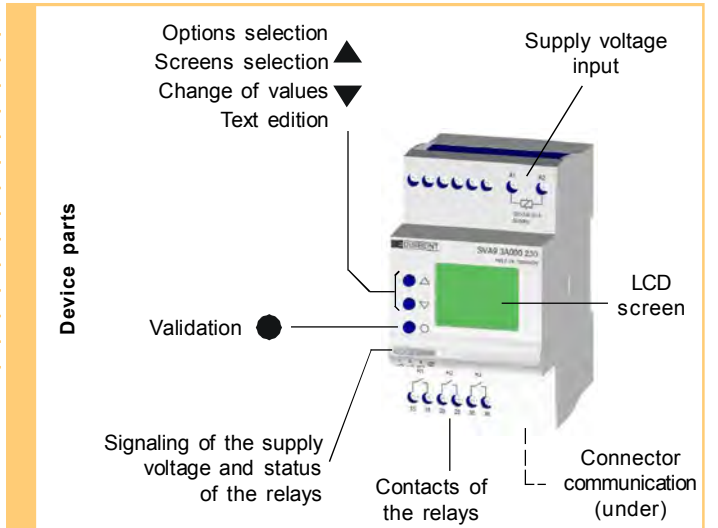


		SVO			
Supply voltage		[024]..[440]	[903]	[904]	
	Galvanic isolation	4000 V	2500 V		
	Frequency	50 Hz	60 Hz	-	
	Operating margins	±18%		15..70 V	60..240 V
	Consumption	2,5 VA		3,5 W	3,1 W
	Start-up time	120 ms	110 ms	< 600 ms* < 200 ms*	
	Detection time	45 ms	40 ms	135 ms	130 ms
	Reset	1 net cycle and/or -30% of the nominal voltage		>70 ms* and/or -30% of the nominal voltage	
	Indication	Green led			
	* In the worth of the cases				



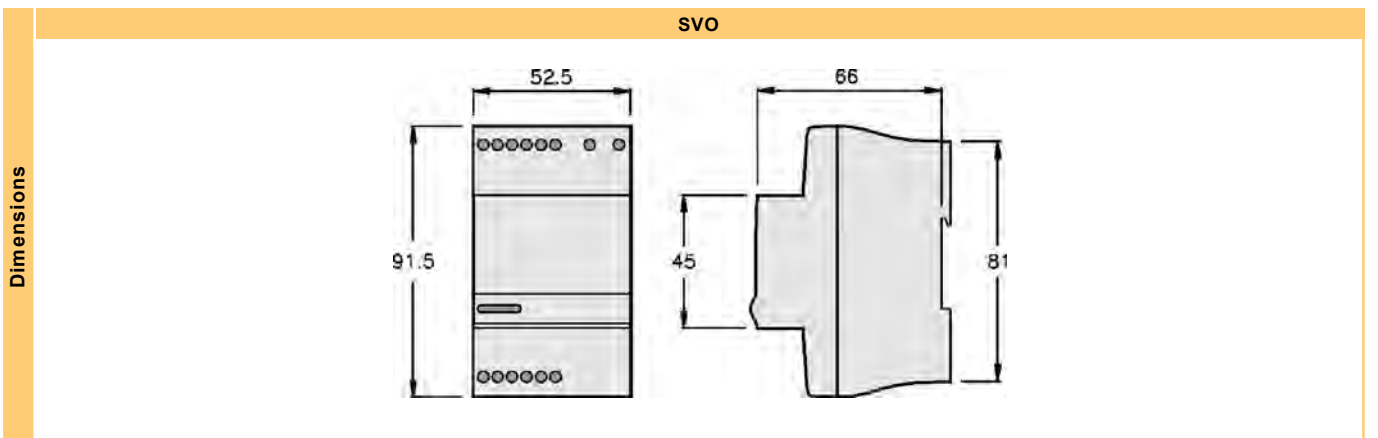
Constructive and environmental data	Voltage phase-neutral	300 V
	Overvoltage category	III
	Shock voltage	4 kV
	Pollution degree	2 (EN61010)
	Protection	IP 20
	Approx. weight	280 g
	Store temperature	-30..+80°C
	Operating temperature	-20..+50°C
	Humidity	< 95% HR
	Housing	Cycloxy - Light grey
	Leds window	Lexan - Transparente
	Buttons, connector, clamp	Technyl - Dark blue
	Connector's terminals	Brass
	Screws torque	0,8 Nm

Designed and manufactured under EEC normative.
Directives referred:
Electromagnetic compatibility: EMC 2004/108/EEC.
Low voltage: LVD 2006/95/EEC.
Hazardous substances: 2011/65/EEC
Plastics: UL 91 V0



Order code	Control - Interface	Number of relays	Type of relay	Communication	Version	Supply	Ranges
SVO	With display. Default languages: · Spanish · English · French · Catalan (Other on request)	0 - No relays 3 - 3 relays	0 - No relays A - SPST NO	0 - No bus 4 - 4-20 mA	00..99	[024] 24 VAC [110] 110..125 VAC [230] 220..240 VAC [400] 380..415 VAC [440] 440 VAC [903] 15..70 VAC/DC [904] 60..240 VAC/DC	[110] 110..125 VAC [230] 220..240 VAC [400] 380..415 VAC [440] 440 VAC [500] 500 VAC [690] 690 VAC
	Q - Without display.	(By default, 3)	(By default, A)	(By default, 0)	(By default, 00)		

To compose the reference, select one option of each column. Example: **SVO9 3A400 230 690**



GENERAL CHARACTERISTICS OF THE DIGITAL CONTROL RELAYS

User's manual	For a wide knowledgment of the options offered by the digital control relays, the own User's Manual for each model must be read. Although an issue is given with every purchased device, a copy can be downloaded in our web site (www.disibeint.com).
How to programm	The digital control relays can be indistinctly programmed either with the buttons placed in the front of the housing or with a personal computer. Please refer at the end of this page to learn more about the PC programming alternative.
Types of screens	Status: They show the actual values of the magnitudes controlled by the relay. User: Where the user can write a customized text to help to the relay identification. Options: For accessing to the menus for the options selection. Informatives for values: They show the information of the different set parameters. Change of value: For modifying the values of the different values. Screens menus: Group of screens related under the same concept and that can contain whichever type of the screens previously described.
Interactive menus	For an ease programming, into the menus only the options that can be set are the ones visible. The rest of the options are not visible. This feature is interactive, ie., it is produced automatically according whether other functions are activated or not.
Changing values	The screens for changing the values contain the margins between such value can be adjusted. These margins can depend of other options and this is because different margins could be displayed according to other previous relations.
User's programm	Provided by factory two programs with options and pre-configured settings for quick start-up team. In most cases, these parameters should be tweaked to suit the characteristics of each installation. The user can create your own program and store it on your computer.
Display lighting	The display remains backlihgthed while it is accessed to the different screens. If any button is not pressed for longer than 30 seconds, the light turns off. In order to turn the light on, it is enough to press any button only once.
Value added	<ul style="list-style-type: none"> - Four languages available in each relay - Graphic bar for the intuitive visualization of the displayed value - Historical control of the maximum values obtained by the relay - Screen's refresh selectable between 1 and 8 times per second - Possibility of locking the keyboard to avoid any undesired modification - Complementary timing functions

SPECIFIC CHARACTERISTICS FOR THE MODEL SVO

Alarm by frequency deviation	<p>This option affects to those relays with any voltage parameter activated. By default, this option is activated. Inhibits the activation of the relay in the state of alarm when the requecy is deviated in $\pm 0,4$ Hz during the detection process, and of $\pm 0,3$ Hz during the releas process.</p> <p>For this kind of deviation in the frequency, the operating precision is reduced. More the frequency in the net is deviated, worse precision when reading its voltage.</p> <p>If this option is deactivated, you must remember that the reading precision of the voltage parameters decrease when the frequency gets deviations from its nominal values (50 Hz / 60 Hz).</p> <p>You must consider this reduction of precision when setting the values for detection and/or release.</p>
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