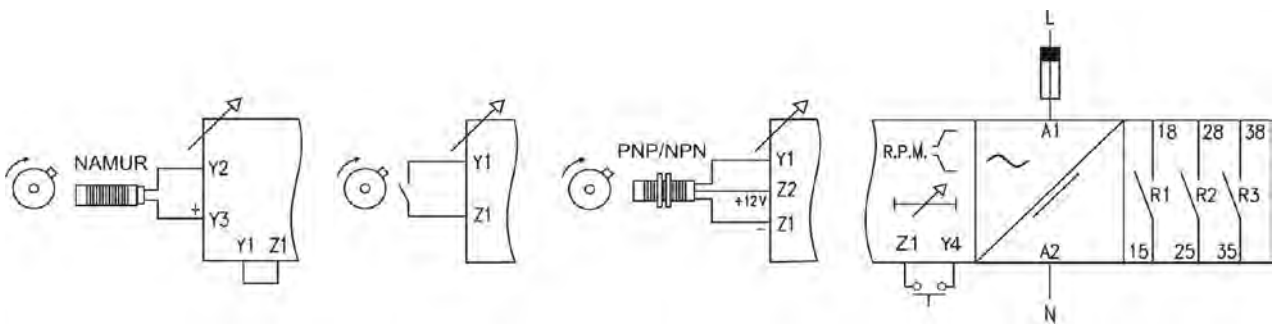
DISIBEINT

SHA

TACHOMETRIC RELAY

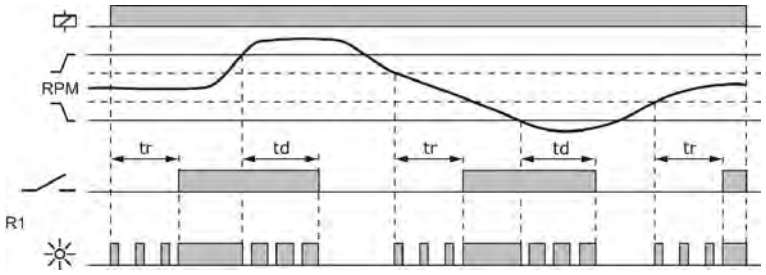
Function	Tachometric relay for general application. Control and visualization of the rotation speed of motors shafts, turbines, etc., speed control on conveyor belts, control the stop or break transmission chains or endless conveyor.
Operating mode	Configurable by the user. Each relay is assigned with its own operating mode.
Control of rotation speed	· Operating margin: 3..9999 rpm · The device does not process impulses with a duration less than 1/8 of the full cycle. · Operability for max. and/or min. rotation speed. In each case, detection and release is to be adjusted. · Operability for minimum rotation speed and engine starting. You can control the motor start by using a push button between terminals Z1-Y4 (see example on page 2)
Timer	· Associable to the detection and/or release of any relay and to the engine startup. · Adjustable from 0.01 s .. 999.9 h · Repeating precision ± 30 ppm
Resolution	1 rpm
Precision	1%
Time of detection	3 flanks of the input signal plus 5 ms of the relay reaction.
Types of rpm input signal	· Contact free potential: Y1 / Z1 · Namur sensor: Y2 / Y3(+), link Y1/Z1 · PNP / NPN sensor: Y1 / Z1(-) / Z2(+12VCC). Maximum 10 mA
Type of input of the engine startup	Contact free potential: Y4 / Z1 Only for the operability by minimum rotation speed in the engine startup.
Visualization to read value	The read magnitud value is displayed by the status screen: · ROTATION SPEED: rpm
Output relay	From 1 to 3 independent relays, SPST NO. Three relays are supplied with the standard model.
Output 4-20 mA	Assigned to the measure of the magnitude to be transmitted by the 4-20 mA current loop. It can coexist with the relays. Precision: 1% additional to the read value. This kind of output is optional.
PC communication	It is possible establish different types of communication with a computer (see also the last page): - By telephone connector that incorporates standard device and programming interface CPBZ. - By a RS232 connection board (optional). - By a RS2485 connection and the SBAZ converter (optional).

Connection diagram



Control of maximum and minimum rotation speed

Settings available in the program 1 for relay R3. Parameters must be adapted to your installation.

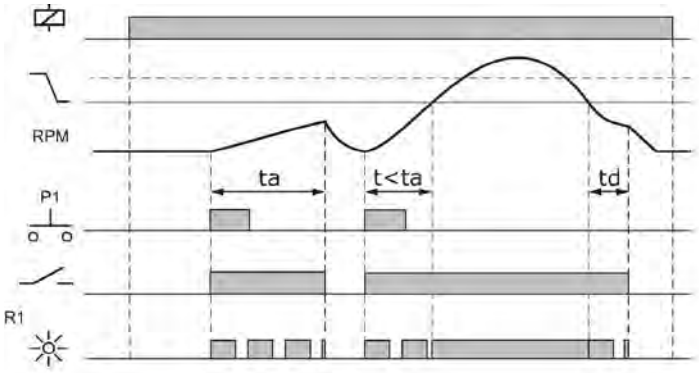


td: Detection timer
tr: Release timer

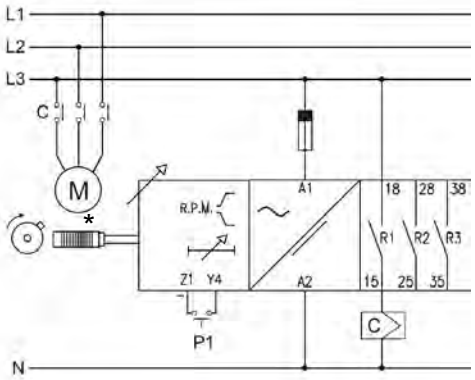
Control of minimum rotation speed and engine startup

At a minimum control rotation speed, the relay SHA requires that the motor runs at its rated speed to get an effective control.
This application allows to assign a start timing during which inhibits the control of the rotational speed. It is essential to start the engine by a push button connected to terminals Z1-Y4.

Settings available in program 1 for relay R1. Parameters must be adapted to your installation.



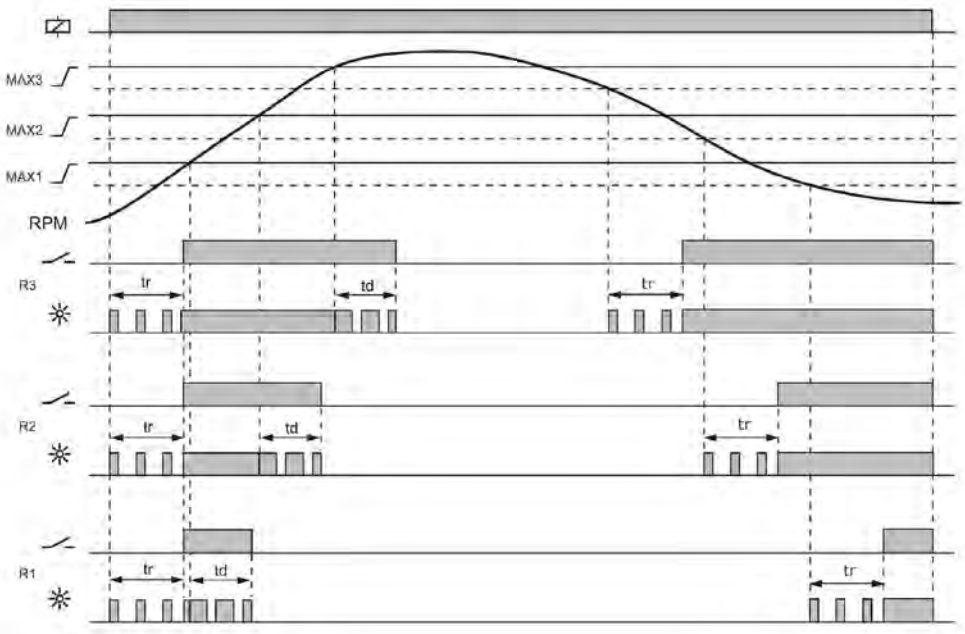
ta: Startup timer
td: Detection timer



* See at page 1 the types of sensors that can be used in this device

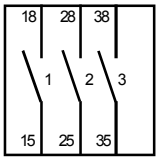
Scaling control of maximum rotation speed

In this application there are controlled three different points of maximum rotation speed, assigning each one to a different relay.
Settings available in the program 2 for relays R1, R2 and R3. Parameters must be adapted to your installation.

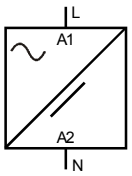
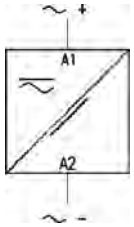


tr: Release timer
td: Detection timer

Output relays

		SHA
		
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 ºC)
Voltage between contacts		1000 VAC
Voltage coil/contact		4000 VAC
Isolation resistance		> 100 MΩ (500 VDC)
Indication		1 red led per relay

Supply voltage

	SHA		
	AC	AC - DC	
			
Supply voltage code	[024] .. [440]	[903]	[904]
Galvanic isolation	4000 V	2500 V	
Frequency	50/60 Hz	-	
Operating margins	+10% -15%	15-70 V	60-240 V
Consumption	2,5 VA	3,5 W	3,1 W
Startup time	75 ms	< 525 ms*	< 135 ms*
Reset	> 1 network cycle and/or -30% of the nominal voltage	>70 ms* and/or -30% of the nominal voltage	
Indication	Green led		

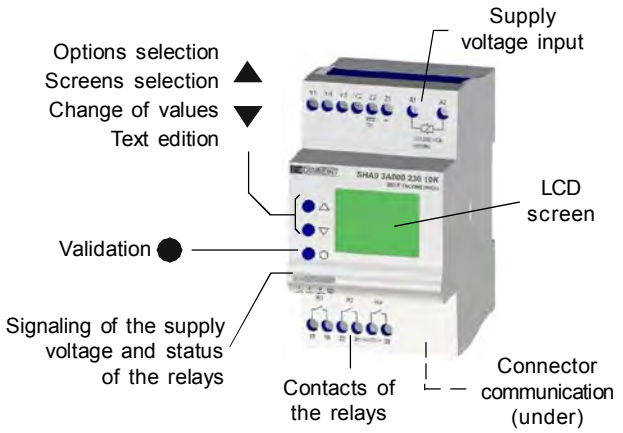
* In the worst of the cases

Constructive and enviromental 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..+80ºC
Operating temperature	-20..+50ºC
Humidity	< 95% HR
Housing	Cycoloy - Light grey
Leds window	Lexan - Transparent
Buttons, connector, clamp	Technyl - Dark blue
Connector's terminals	Brass
Screws torque	0,8 Nm

Dessigned 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

Parts of the equipment

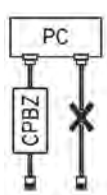
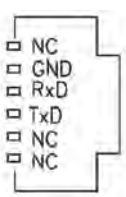
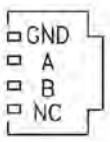
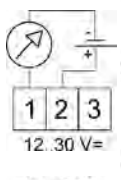


Order code

	Control - Interface	Number of relays	Type of relays	Communication	Version	Supply	Range
SHA	9 - 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 3 - RS232 8 - RS485	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	[10K] 3..9999 rpm
	Q - Without display. Without communication						
	U - Without display. Communication RS232 / RS485	(By default, 3)	(By default, A)	(By default, 0)	(By default, 00)		

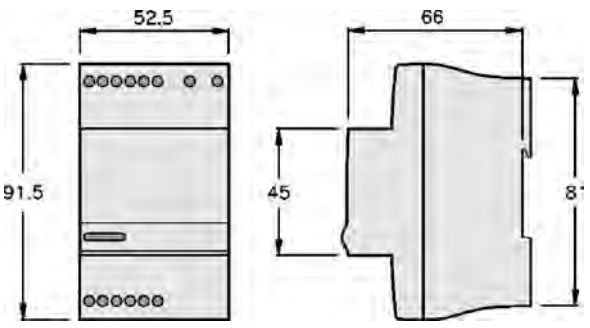
To compose a reference, select one option of each one of the columns. Example: SHA9 3A000 230 10K

Communication (According options)

Standard Code 0	RS232 Code 3	RS485 Code 8	4-20 mA Code 4
			

Dimensions

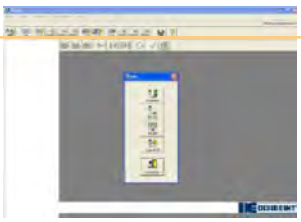
SHA



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 donwloaded 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 betwen 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 programms	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 backlihghted 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.
Value added	- 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

PC COMMUNICATION	
deCom	· Communication and programming soft-ware for the digital control relays. · It allows the interactivity between the different types of communication: through the CBPZ interface, RS232 or RS485. · It displays the complete data related to the relay, gruoped by concepts and easing the intuitive programming. · It has control tools to do not exceed the operating margins of each model according to its range. · It is provided with templates to facilitate the programming of each model. · It allows to store the own settings. Windows XP operative system (.NET Framework required).

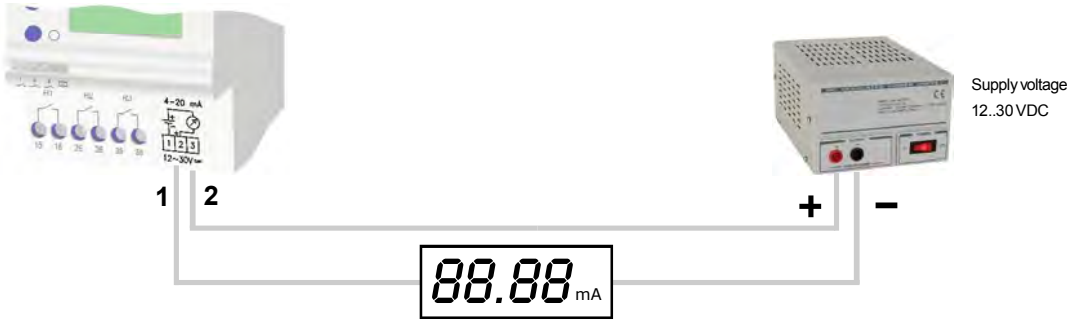





OUTPUTS COMMUNICATIONS

REMOTE PROGRAMMING FROM PC

CURRENT LOOP 4-20 mA



ACCESSORIES

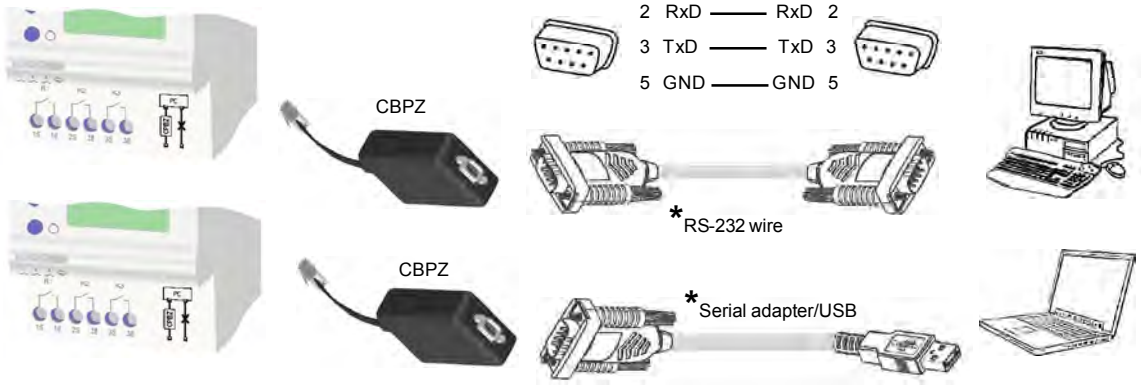
CBPZ

Interface for remote programming from a PC.
It allows the connection between whichever digital relay not provided with bus and a PC.
Not required for devices provided with bus RS232, RS485 or with 4-20mA output.

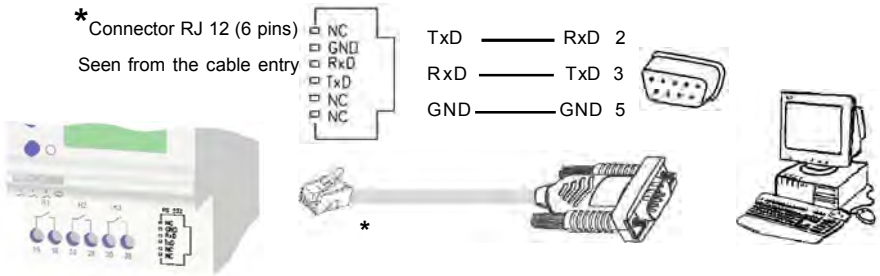
SBAZ

RS485 to RS232 signal converter for the remote programming or for the data capture and visualization from a PC.
It allows the connection of up to 31 digital control relays provided with RS485 communication bus, to get a unique codified RS232 output.

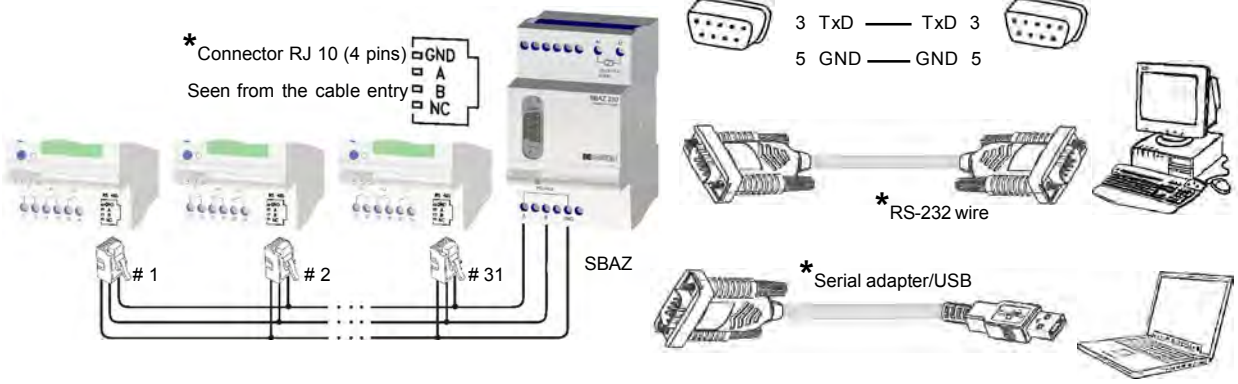
STANDARD MODE



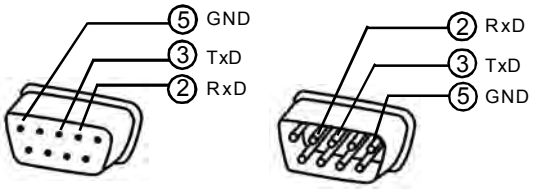
RS232 COMMUNICATION



RS485 COMMUNICATION



* Disibeint not supply cables or connectors. You can find these products in stores specializing in computer equipment.



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