

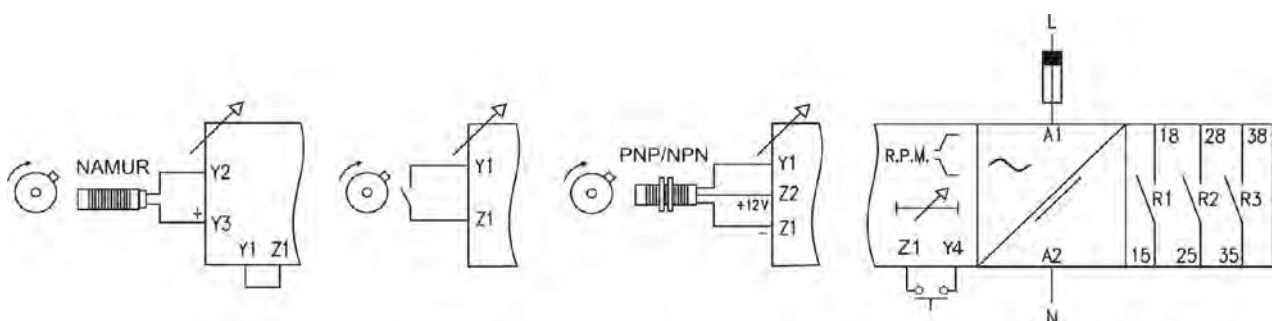
SHA



TACHOMETRIC RELAY

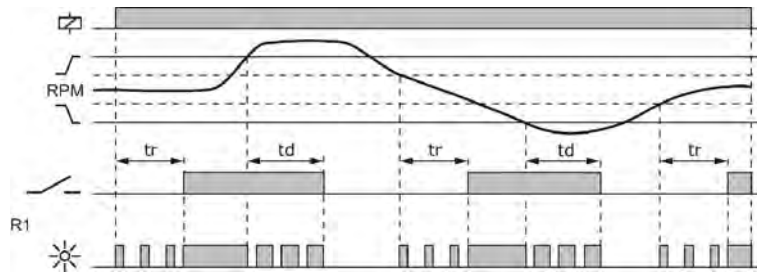
| | |
|-------------------------------------|---|
| Function | Tachometric relay for general application. Control and visualization of the rotation speed of motors shafts, turbines, etc., speed control on conveyor belts, control the stop or break transmission chains or endless conveyor. |
| Operating mode | Configurable by the user. Each relay is assigned with its own operating mode. |
| Control of rotation speed | <ul style="list-style-type: none"> · 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 | <ul style="list-style-type: none"> · 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 | <ul style="list-style-type: none"> · 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. |
| Mounting | On DIN rail |

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.

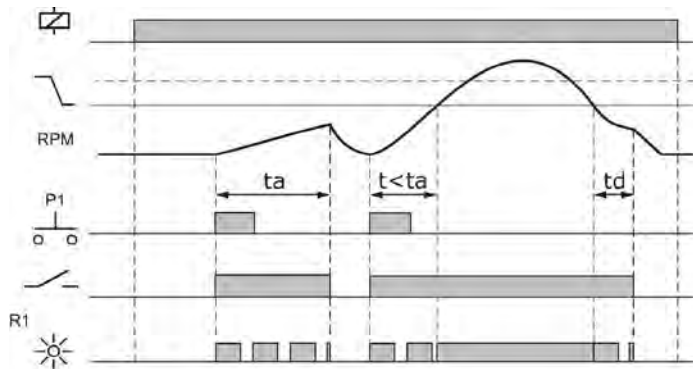


td: Detection timer
tr: Release timer

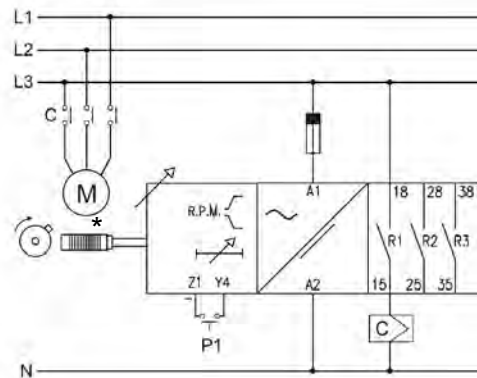
Control of minimum rotation speed and engine startup

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.



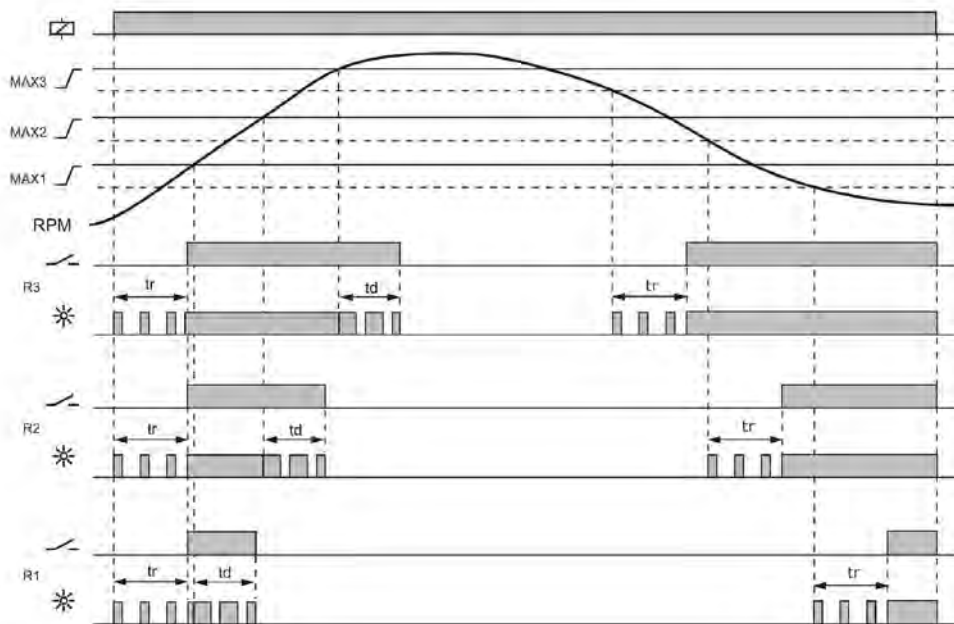
ta: Startup timer
td: Detection timer



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

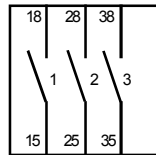
Scaling control of maximum rotation speed

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.

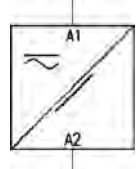
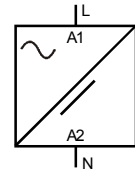


tr: Release timer
td: Detection timer

| | | SHA | | |
|----------------------|----------------------------|---------------------|--------------------------|--|
| 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 | | |

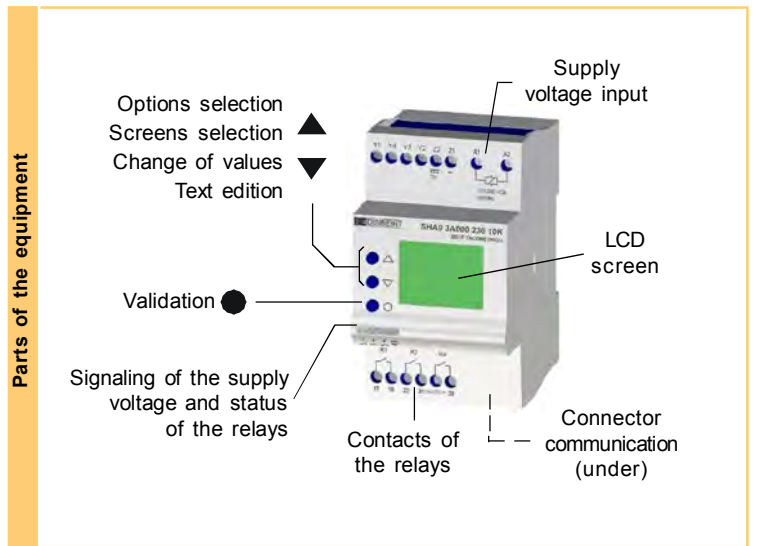


| | | SHA | | |
|----------------|-----------------------------|--|--|--|
| | | AC | AC - DC | |
| Supply voltage | Supply voltage code | [024] .. [440] | [903] [904] | |
| | Galvanic isolation | 4000 V | 2500 V | |
| | Frequency | 50/60 Hz | - | |
| | Operating margins | +10% -15% | 15-70 V 60-240 V | |
| | 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 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 | Cyclopol - Light grey |
| | Leds window | Lexan - Transparent |
| | Buttons, connector, clamp | Technyl - Dark blue |
| | Connector's terminals | Brass |
| | Screws torque | 0,8 Nm |

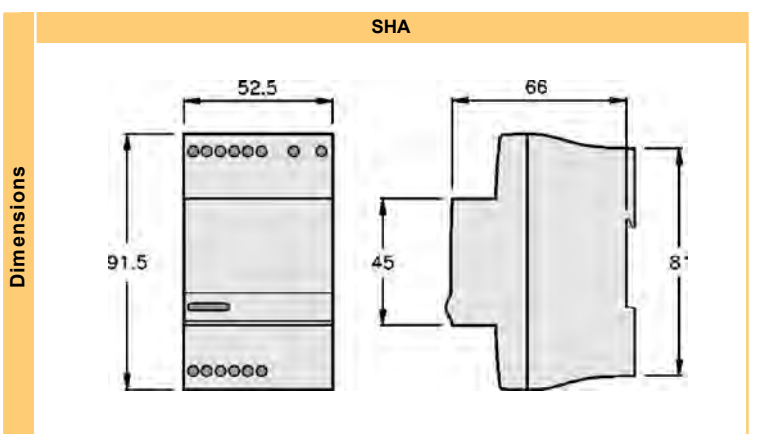
Designed and manufactured under EEC normative.
 Directives referred:
 Electromagnetic compatibility: EMC 2004/108/EEC.
 Low voltage: LVD 2006/95/EEC.
 Hazardous substances: 2011/65/EEC
 Plastics: UL 91 V0



| Order code | Control - Interface | Number of relays | Type of relays | Communication | Version | Supply | Range |
|------------|---------------------|--|--|---|--|--------------------------------|--|
| | SHA | With display Default languages: · Spanish · English · French · Catalan (Other on request) Q - Without display | 0 - No relays 3 - 3 relays (By default, 3) | 0 - No relays A - SPST NO (By default, A) | 0 - No bus 4 - 4-20 mA (By default, 0) | 00..99 (By default, 00) | [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 |

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

| Communication (According options) | |
|-----------------------------------|---------|
| Standard | 4-20 mA |
| Code 0 | Code 4 |
| | |



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 backlighthed 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 | <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 |

