

# NDS

## Технические характеристики

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| Россия (495)268-04-70       | Киргизия (996)312-96-26-47      | Казахстан (7172)727-132        |                           |

# Safety Modules Emergency Stop and Safety Gate Type NDS12B

CARLO GAVAZZI



Screw, fixed



Screw, detachable

- Safety Category 2 according to EN 13849-1: 2007
- Category 0 Emergency Stop (EN 60204-1) for 1 instantaneous safety output
- Category 1 Emergency Stop (EN 60204-1) for 1 delayed safety output
- Adjustable safety output delay (from 0.1 to 10 s)
- 2 x 5 A NO safety outputs (1 instantaneous + 1 delayed)
- 1 x 5 A NO auxiliary output (instantaneous)
- Automatic or manual reset
- Two single channel inputs (E-Stop, Guard)
- Feedback circuit for external contactors monitoring
- LED indications for outputs and inputs (E-Stop, Guard) status, power supply ON and feedback circuit fault
- Connection by fixed or detachable terminals
- For mounting on DIN-rail in accordance with DIN/EN 50 022
- 22.5 mm Euronorm housing

## Product Description

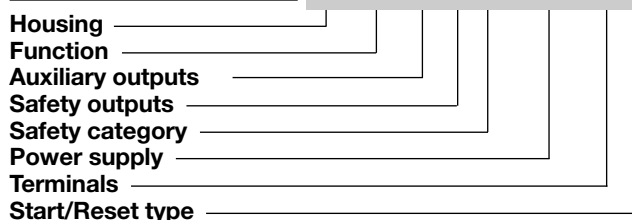
Emergency Stop and Safety Gate modules according to EN 60204-1 and EN 13849-1: 2007.

This family of safety modules in Safety Category 2 is suitable for applications where both instantaneous

and delayed outputs are needed. Available with both fixed screw and detachable screw terminals.

## Ordering Key

**N DS 1 2 B B24 S A**



## Type Selection

| Auxiliary outputs | Safety outputs | Terminals         | Start/Reset type   | Supply: 24 VAC/DC         |
|-------------------|----------------|-------------------|--------------------|---------------------------|
| 1 NO              | 2 NO           | Screw, fixed      | Automatic / Manual | <b>N DS 1 2 B B24 S A</b> |
| 1 NO              | 2 NO           | Screw, detachable | Automatic / Manual | <b>N DS 1 2 B B24 D A</b> |

## Time Specifications

|  |                       |
|--|-----------------------|
| Delay ON energisation                      | ≤ 40 ms               |
| Delay ON de-energisation                   | ≤ 40 ms<br>0.1 ÷ 10 s |
| Terminals                                  |                       |
| 23-24, 33-34                               |                       |
| 17-18                                      |                       |
| Recovery time                              | < 300 ms              |
| Channel simultaneity during inputs closing | Infinite              |

## Input Specifications

|                                      |                                  |
|--------------------------------------|----------------------------------|
| Function                             | 2 NO, voltage free               |
| Input current                        | max 6 mA<br>max 8 mA<br>max 8 mA |
| Terminals                            |                                  |
| S11-S12, S33-S34<br>S21-S22<br>Y1-Y2 |                                  |

## Output Specifications

|                                       |  |
|---------------------------------------|--|
| Safety outputs                        | Category 2<br>(EN 13849-1: 2007)<br>1 NO (17-18), delayed<br>1 NO (23-24), instantaneous |
| Auxiliary output                      | 1 NO (33-34), instantaneous  |
| Contact ratings (AgSnO <sub>2</sub> ) | 0.2 μm Au  |
| Safety outputs (17-18, 23-24)         |  |
| Resistive loads                       | AC1 5 A @ 230 VAC<br>DC12 5 A @ 24 VDC   |
| Small inductive loads                 | AC15 1.5 A @ 230 VAC<br>DC13 1.2 A @ 24 VDC  |
| Auxiliary output (33-34)              |  |
| Resistive loads                       | AC1 5 A @ 230 VAC<br>DC12 5 A @ 24 VDC   |
| Small inductive loads                 | AC15 1.5 A @ 230 VAC<br>DC13 1.2 A @ 24 VDC  |
| External contact fuse protection      | 4 A fast or 4 A delayed  |
| Mechanical life                       | > 10 <sup>7</sup> operations   |
| Electrical life                       | > 10 <sup>5</sup> operations   |

## Supply Specifications

|   |  |
|---|--|
| <b>Power supply</b><br>Rated operational voltage through terminals:<br>A1, A2       | Overvoltage cat. III (IEC 60664)<br><br>24 VAC $\pm 10\%$ , 50 to 60 Hz<br>24 VDC $\pm 10\%$ |
| <b>Short circuit protection</b>   | Internal PTC   |
| <b>Dielectric voltage</b><br>Supply to input<br>Supply to output<br>Input to output | none<br>4 kV 1.2/50 $\mu$ s<br>4 kV 1.2/50 $\mu$ s   |
| <b>Rated operational power</b>  | 5 VA   |

## General Specifications

|  |   |
|--|---|
| <b>Indication for</b><br>Power supply ON<br>Output relays ON<br>Stop/Guard switch open<br>Feedback fault | LED, green<br>LED, green<br>LED, red<br>LED, red  |
| <b>Accuracy</b><br>Temperature drift<br>Delay<br>Repeatability   | 0.2% / °C<br>$\pm 10\%$ on set value $\pm 100$ ms<br>$\pm 0.5\%$ on full-scale          |
| <b>Environment</b><br>Protection degree housing<br>Operating temperature<br>Storage temperature          | (EN 60529)<br>IP 20<br>0 to 55 °C, R.H. < 95 %<br>-25 to +65 °C, R.H. < 95 %            |
| <b>Housing dimensions</b>  | 22.5 x 99 x 114 mm  |
| <b>Weight</b>  | Approx. 175 g   |
| <b>Screw terminals</b><br>Tightening torque<br>Upper terminals<br>Lower terminals                        | Max. 0.5 Nm<br>Max 0.8 Nm   |
| <b>CE Marking</b>  | Yes   |
| <b>EMC</b><br>Immunity<br>Emission   | Electromagnetic Compatibility<br>According to EN 61000-6-2<br>According to EN 61000-6-3 |

## Mode of Operation

The safety module NDS12B monitors E-stop pushbutton and limit switch devices, according to 98/37/CE Machinery Directive.

If the unit is correctly supplied and the input terminals are closed (i.e. E-Stop not pushed and Guard closed), the module is enabled to close the safety outputs and the external contactors can be energized.

When the input terminals are open (i.e. E-Stop pushed and/or Guard open) the module is not enabled to close the safety outputs and the external contactors can not be energized.

### Automatic START

Provided that the terminals S21-S22 (start input) and Y1-Y2 (feedback input) are connected, the safety outputs close as soon as both the switches S1 (E-Stop) and S2 (Guard) close. The relevant "Out" LED turns ON.

Releasing even one input contact (S1 and/or S2) the module forces one safety output (23-24) and the auxiliary output (33-34) to immediately open; the other safety output (17-18) opens at the end of the set delay time. The "Out" LED turns OFF and the "Stop Guard"

LED turns ON.

A new operating cycle is possible only after reclosing the open input contact(s) (S1 and/or S2).

### Manual START

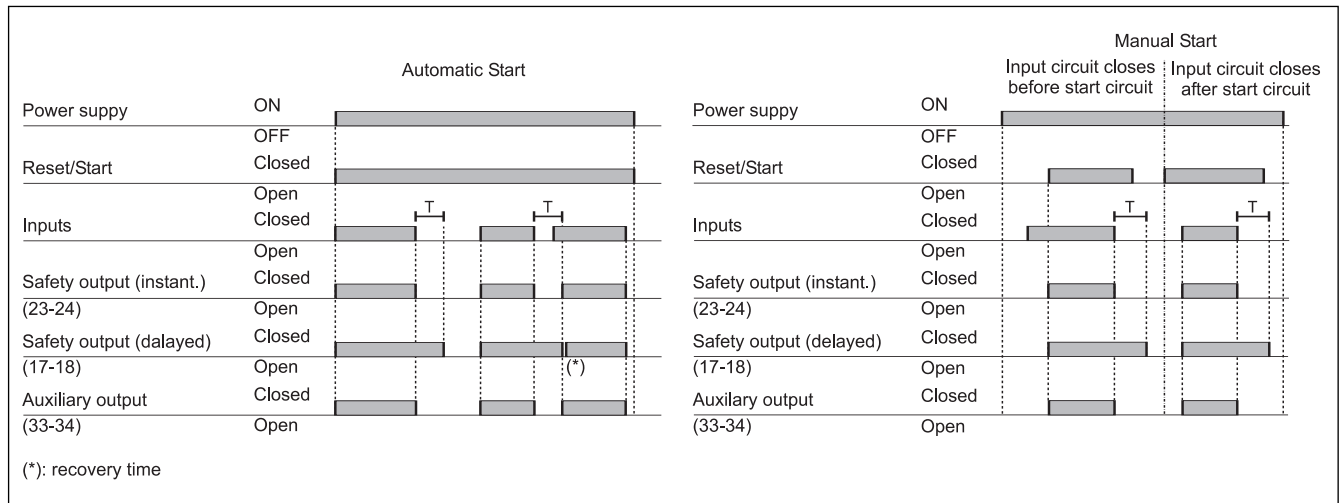
Provided that both S1 (E-Stop) and S2 (Guard) switches are closed and the terminals Y1-Y2 (feedback input) are connected, the safety outputs close as soon as the NO START pushbutton is pushed. The relevant "Out" LED turns ON.

Releasing even one input contact (S1 and/or S2) the module forces one safety output (23-24) and the auxil-

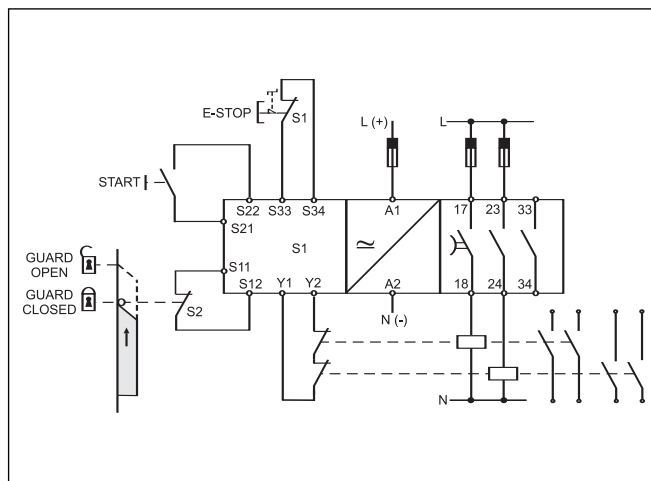
iary output (33-34) to immediately open; the other safety output (17-18) opens at the end of the set delay time. The "Out" LED turns OFF and the "Stop Guard" LED turns ON.

A new operating cycle is possible only after reclosing the open input contact(s) (S1 and/or S2) and pushing again the START pushbutton.

## Operation Diagrams



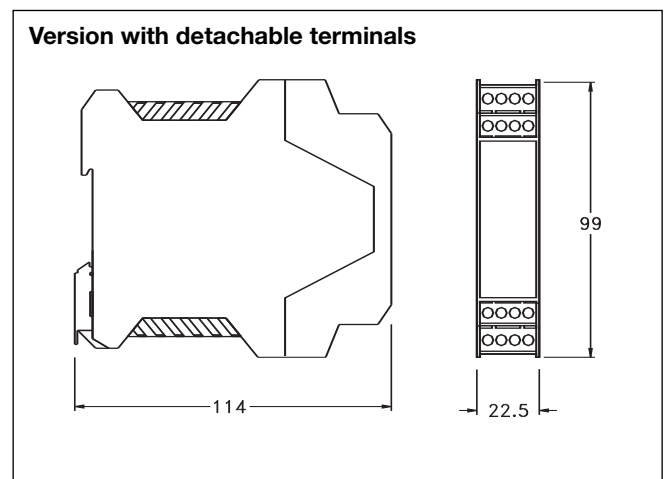
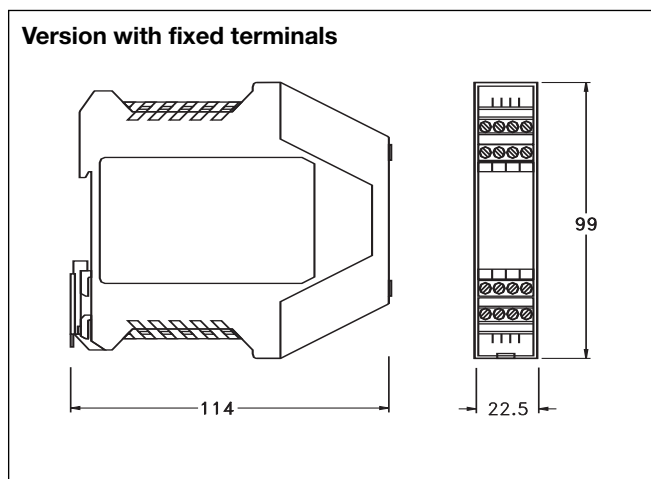
## Wiring Diagrams



## Time Setting

**Front knob:**  
 Delayed safety output time setting on absolute scale (0.1 to 10 s).

## Dimensions



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