

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

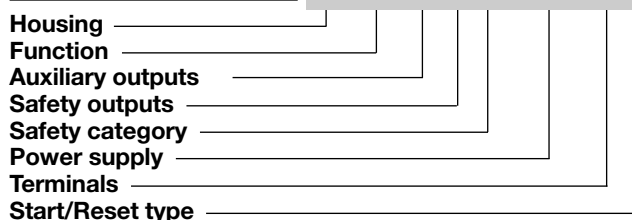
Emergency Stop and Safety Gate modules according to EN 60204-1 and EN 13849-1: 2007.

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 | N DS 1 2 B B24 S A |
| 1 NO | 2 NO | Screw, detachable | Automatic / Manual | N DS 1 2 B B24 D A |

Time Specifications

| | |
|--|-----------------------|
| Delay ON energisation | ≤ 40 ms |
| Delay ON de-energisation | ≤ 40 ms 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 max 8 mA max 8 mA |
| Terminals | |
| S11-S12, S33-S34 S21-S22 Y1-Y2 | |

Output Specifications

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

Supply Specifications

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

General Specifications

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

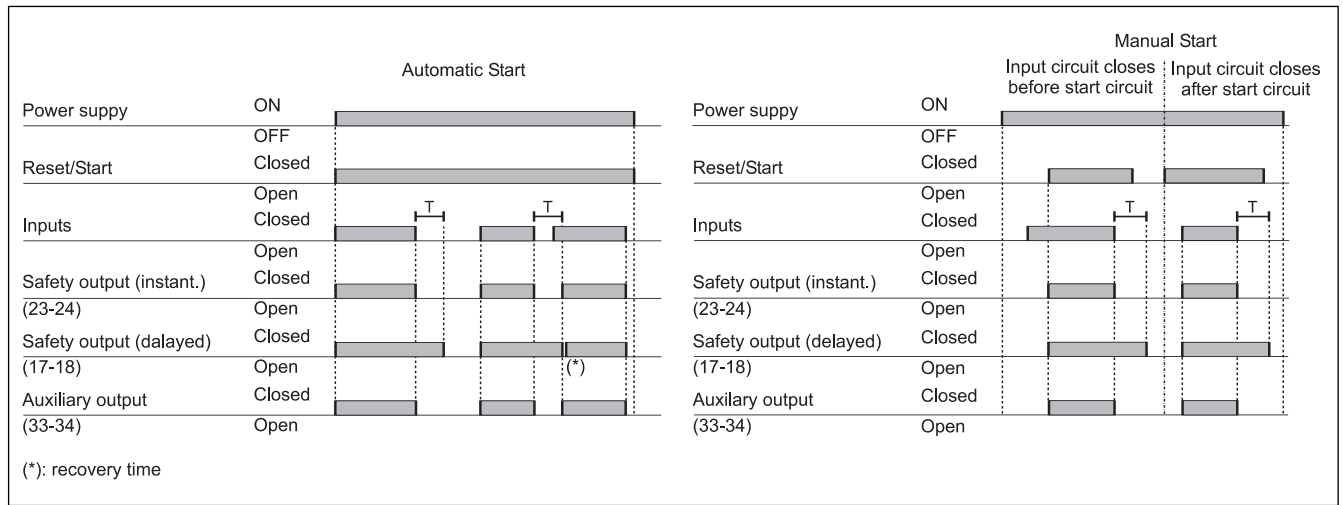
Provided that both S1 (E-Stop) and S2 (Guard) switches are closed and the terminals Y1-Y2 (feedback input) are connected, the safety outputs close as soon as the NO START pushbutton is pushed. The relevant "Out" LED turns ON.

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

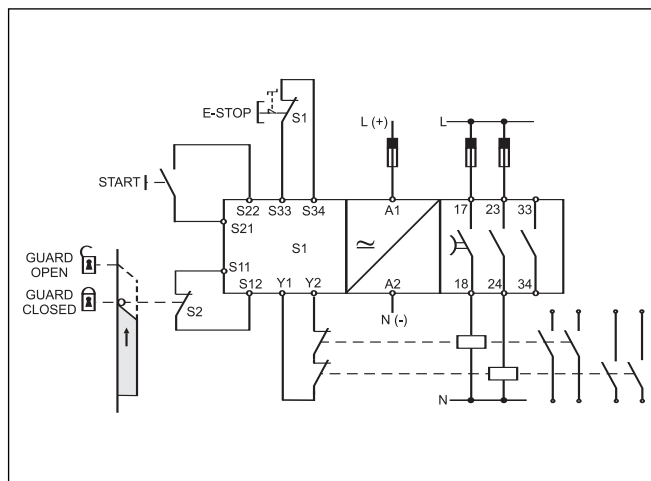
iary output (33-34) to immediately open; the other safety output (17-18) opens at the end of the set delay time. The "Out" LED turns OFF and the "Stop Guard" LED turns ON.

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

