

Multifunctional E-Stop Relay

Characteristics

- Stop category 0
- Safety category 4
- 3 Safety contacts
- 2 Auxiliary contacts
- 2 Semiconductor outputs with short circuit protection
- 6 diagnosis LEDs
- Crossfault monitoring
- Monitored or automatic reset
- Tested for light curtain and safety mat applications
- Removable terminal blocks

DIN En60204 Section 1/ VDE0113 Section 1 (11/98) prescribes that power circuits with a safety function must be specified as per Section 9.4.

Emergency-stop relay **F131** fulfils this requirement – EN954-1 (3.97) – to the highest safety grade 4.

The **F131** can be used as a safety guard monitor or as an E-stop relay in single- or dual-channel applications with- or without crossfault monitoring.

Reset is possible either via reset contact, monitored from the **F131**, or automatically via supply voltage.

The diagnosis LEDs inform if there is:

1. supply voltage on A1-A2
2. activation of the reset-button
3. closed E-stop circuits
4. energised internal relays.

Semiconductor output Y35 is active when the E-stop circuits are closed, Y32 is active when the internal relays are energised.

Mode of Operation

The dual-channel operation shown in wiring examples 1 and 3 include crossfault monitoring between both E-stop circuits. That means in case of shorts between the E-stop circuits caused by safety mat activation or wiring mistakes, the **F131** will break the contact. This will be effected by an electronic protection circuit in the safety relay.



During that short circuit all LEDs will go out and only the power LED will start flashing. After the safety mat is set free again or the cause of the malfunction has been eliminated, the **F131** is ready for operation again.

The application with monitored start checks the start circuit (S33 / S34) and will only activate the **F131** if there is a leading edge in this circuit. An activation with closed start circuit via resetting the E-stop button or energising with the supply voltage is not possible.

If wired for autostartfunction (X1-X2 as well as X3-X4 linked) the **F131** will be activated automatically by the supply voltage if the E-stop circuits and the feedback loop (Y1-Y2) are closed.

In applications, where both E-stop circuits are not closed simultaneously, channel 2 has to be activated before channel 1 (e.g. safety gates).

If the inputs will be activated with external 24V_{DC}, the negative pole has to be connected to S21 (Lightcurtain

application).

The PNP semiconductor outputs may transfer the status of the **F131** direct to a PLC input.

To control function of external contactors NC contacts have to be wired between Y1 and Y2 (feedback loop).

The relays have removable terminal blocks for easy installation.

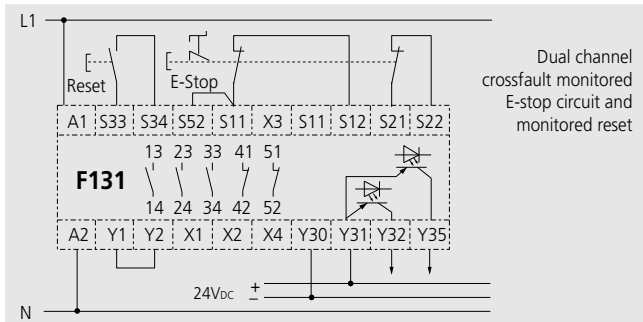
Models and Ordering Data

Contacts	3 N/O Safety contacts 2 N/C Auxiliary contacts 2 Semiconductor outputs
Type F 131A	Order No.
230 V _{AC}	074 00086
115 V _{AC}	074 00087
42 V _{AC}	074 00088
24 V _{AC/DC}	074 00089

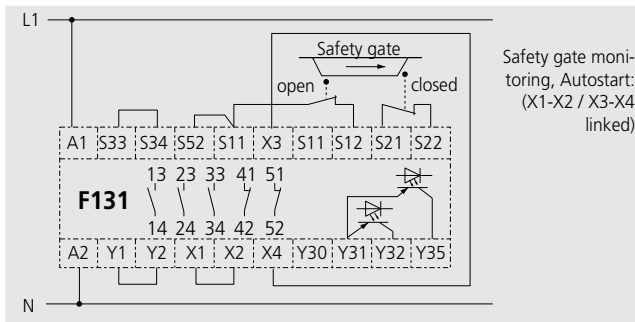


* = Approval expected

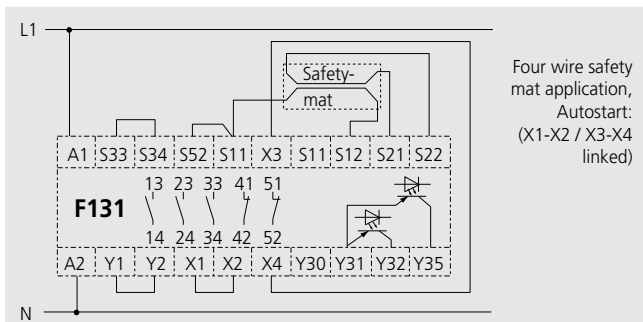
Wiring example 1



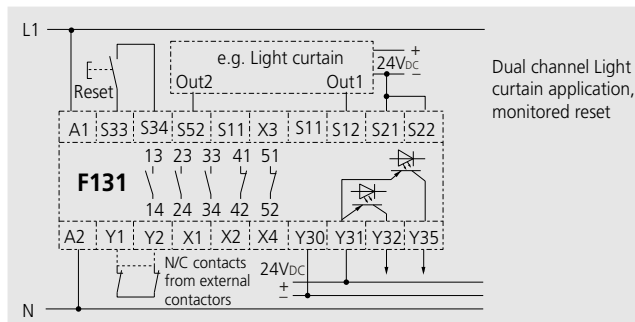
Wiring example 2



Wiring example 3



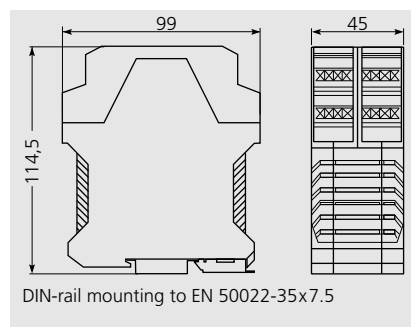
Wiring example 4



Technical Data

Rated voltage	230 / 115 / 42 V _{AC} ; 24 V _{AC/DC}
Voltage range	0.85 to 1.1 x rated voltage
Power consumption	Approx. 4 W
Rated insulation voltage	250 V
Creep distance and gaps	Overtoltage categorie III, Pollution level 2 to DIN VDE 0110-1 (04/97)
Test voltage	2.5 kV
Ambient temperature	-5 °C to + 55 °C
Mode of protection	Terminals IP 20, IP 40 casing to DIN VDE 0470-1 (11/92)
Switching capacity	250 V _{AC} ; 1250 VA / 24 V _{DC} ; 120 W, Preferably with spark arrest
Thermic current I _{th}	3 x 5 A (max. 6 A in one current path)
Utilisation categorie	AC-15 230 V 3 A; DC-13 24 V 2.5 A
Response time	Via reset button: < 60 ms; Autostart: < 300 ms
Release time at rated voltage	Via E-stop button: < 15 ms; loss of supply: < 140 ms
Recovery time	E-Stop or Light curtain application: > 0,1 s Via supply voltage: > 1 s With monitored reset > 3 s
Output contacts	3 N / O (safety contacts) 2 N / C (auxiliary contacts)
Semi conductor output	2x PNP, max 30 V _{dc} / 20 mA, with short circuit protection
Mechanical lifetime	10 ⁷ switching cycles
Switch material	Ag Sn O ₂ + 2μ Au
Terminals	Terminal box with wire protection
Line cross section	2.5 mm ²
Control circuit	Approx. 24 V _{dc}
Contact protection	Screwed-type fuse max. 6 A slow blow Auto circuit breaker max. C10 quick break
Weight	450 g; Type 24 V _{AC/DC} 320 g

Dimensional Diagram



Circuit Diagram

