Safety Control Unit F25

2-Hand Operation Module with Solid-State Outputs

Characteristics

- Two-Hand relay, configurable acc. EN574 Type IIIC or IIIA
- Up to safety category 4 per EN954-1
- 2 Solid-state safety outputs
- 1 Solid-state auxiliary output
- 2-channel control
- Cyclical self-test
- Cross-fault and ground fault monitoring
- LED PWR with diagnostic functions
- Optional plug-in terminal block
- Compact 22.5mm wide housing

The **F25** 2-Hand Safety Control Unit is for the protection of human operators of power presses and stamping machines. It compels the operator to use both hands for initiating a machine operating cycle, ensuring that the hands are outside the danger zone during the machine closing movement.

Safety Rules

The ZH1/456 rules specify that the 2-hand operation switches of the safety circuit must be spaced far enough apart so that if even one hand is taken off a switch, it can reach into the danger zone only after the closing movement of the machine is interrupted or terminated.

The minimum spacing between the switches is determined according to the EN999 standard.

Wherever European (or other local) machine-specific standards for 2-handed safety switches specify a different spacing distance, the greater of the two values must be used.

The ZH1/457 rules also specify that all contactors / relays connected before or after the safety controller must have positively-guided contacts. Clause 3.7 specifies that the circuit must be include interlocking logic to stop the in-feed when safety tripping occurs.

Mode of Operation

Both 2-hand push-button switches must be pressed within 0.5 seconds of each other: only then will the **F25** actuate the contactors that control the closing movement of the machine. The solid-state switch outputs remain switched on until one or both the 2-handed push-button switches are released. These outputs are then switched off, terminating the closing action of the machine.

If the time gap between the actuated of both 2-handed push-button switches is more than 0.5 seconds, or if only one of the two switches is actuated, the outputs of the **F25** are not switched on.

The outputs of **F25** will be ready to be switched on only after both the 2-handed push-button switches are released. After that, both switches must be simultaneously actuated again to initiate the next machine closing action.

For feedback circuit monitoring, terminals A1 (+24V) and Y2 must be shorted, either through N/C contacts of a contactor, or by a jumper.

By continuously scanning all inputs, faults or configuration changes during operation are detected, resulting in immediate tripping action.

Test pulses are used to dynamically check the input and output circuits. All inputs and outputs are short-circuit protected.

Diagnostic LEDs indicate the status of the power input and the active control outputs of both channels.

The **F25** is optionally available with coded plug-in terminal blocks, to reduce installation and servicing time.The **F25** conforms to the application-specific regulations for 2-handed controls:

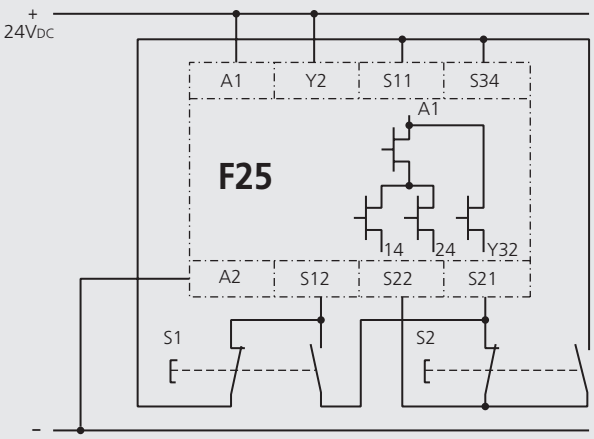
- Monitors actuation of both switches within 0.5 sec of each other
- Monitors the closing time of both switches
- Execution of the close command by a self-monitoring circuit
- Control of press stroke contactors by a latching device connected to Y2
- Prevention of a press stroke if any 2-hand switch connections are open- or short-circuited, or if a module develops a fault.

Models and Ordering Data

Outputs	2 safety outputs 1 auxiliary output
Model F25 24VDC	**Ordering code:**
Standard terminals	075 00028
Plug-in terminals	075 00042

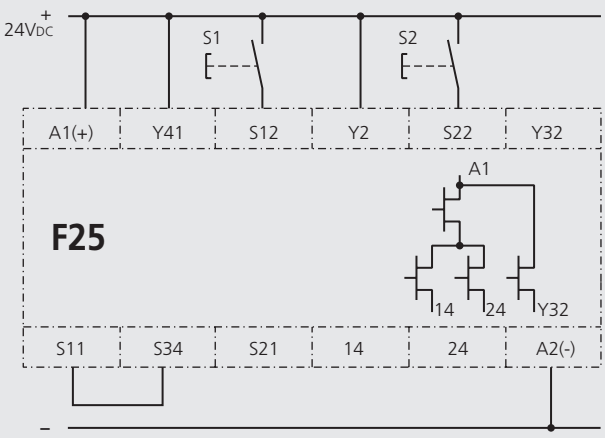
TÜV | c UL us LISTED

Wiring Diagram acc.to EN574:IIIC



Two-hand switches connected to the dynamic outputs S11and S21,
S11 to be connected to S34
Note: Mark configuration: **EN574IIIC** on the side label

Wiring Diagram acc.to EN574:IIIA

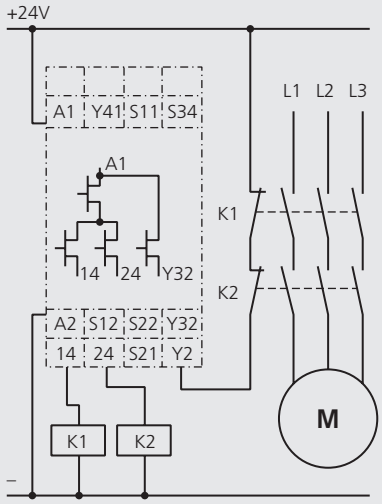


Two-hand switches connected directly to the supply voltage:
+24Vconnected to terminal Y41 and S11 linked to S34
Note: Mark configuration: **EN574IIIA** on the side label

Technical Data

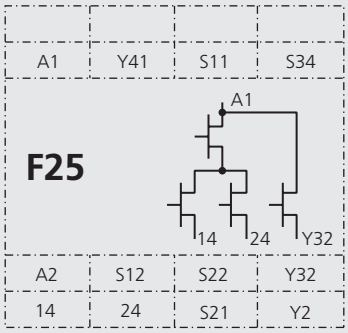
Rated voltage	24VDC SELV (per IEC 61496-1)
Voltage range	0.8 to 1.1 x rated voltage
Power consumption	Without output loads: 3W
Operating temperature	-5°C to +55°C
Storage temperature	-20°C to +70°C
Protection class	Terminals IP 20; housing IP 40. Per DIN VDE 0470-1
Mounting	In panel enclosure (IP 54)
Switching output load	24VDC, 2A per safety output; Y32 auxiliary output: 50mA; all short-circuit protected
Response time	< 15ms
Recovery time	< 20ms
Start-up time	3s system check, after applying power
Outputs	2 solid state safety outputs (terminals 14 and 24) 1 solid state auxiliary output (Y32)
Terminals	Terminal box with wire protection
Wire size	2.5mm²
Control circuit	Approx. 24VDC, 8.5mA
Weight	Approx. 130g

Wiring Example

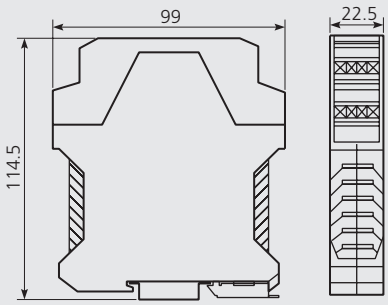


2-channel contactor control
with feedback circuit monitoring

Wiring Diagram



Dimensional Diagram



DIN rail mounting (EN 50022 - 35 x 7.5)
(all dimensions in mm)

LED PWR / Diagnostics

Initialization:	Blinks - 3 secs
Normal operation:	Constant
Cross-fault after reset:	2 blinks
Solid-state output switch fault:	4 blinks
Internal fault:	Continuous blinking

TESCH GmbH & Co.KG
Automatic Control Components
Gräfrather Straße 124
D-42329 Wuppertal
Phone (0202) 7391-0
Fax (0202) 7391-115
http://www.tesch.de
eMail:tesch-vertrieb-ak@ra.rockwell.com
Germany