

Safety relays



mecotron® - SAFETY RELAYS

Spacing 22.5 mm (7/8"), 45 mm (1.77") and 90 mm (3.54")

DIN 3

EMERGENCY STOP MONITORING

ESTOP-2 ESTOP-3

- Supply voltage 24 V AC/DC, 115 V AC, 230 V AC
- The modules conform to European Standards EN 418 and EN 60204-1 relating to safety circuits
- Applications requiring the disconnect of several safety circuits by a single emergency stop instruction (emergency stop action by means of interposing relays)

ESTOP-2a ESTOP-2b

- Supply voltage 24 V AC/DC, 115 V AC, 230 V AC
- **ESTOP-2a:**
2 voltage free safety outputs
- **ESTOP-2b:**
2 voltage free safety outputs
2 semiconductor outputs

ESTOP-3a ESTOP-3b

- Supply voltage 24 V AC/DC, 115 V AC, 230 V AC
- **ESTOP-3a:**
3 voltage free safety outputs
1 voltage free N/C contact
- **ESTOP-3b:**
3 voltage free safety outputs
1 voltage free N/C contact
2 semiconductor outputs

ESTOP-6a ESTOP-6b

- Supply voltage 24 V AC/DC, 115 V AC, 230 V AC
- **ESTOP-6a:**
6 voltage free safety outputs
1 voltage free N/C contact
- **ESTOP-6b:**
6 voltage free safety outputs
1 voltage free N/C contact
2 semiconductor outputs

OUTPUT CONTACT EXTENSION

EBLOC-4 EBLOC-8

- Supply voltage 24 V AC/DC, 115 V AC, 230 V AC
- **EBLOC-4:**
4 floating safety outputs of stop category 0
1 voltage free N/C contact
1 semiconductor output
- **EBLOC-8:**
8 floating safety outputs of stop category 0
1 voltage free N/C contact
1 semiconductor output

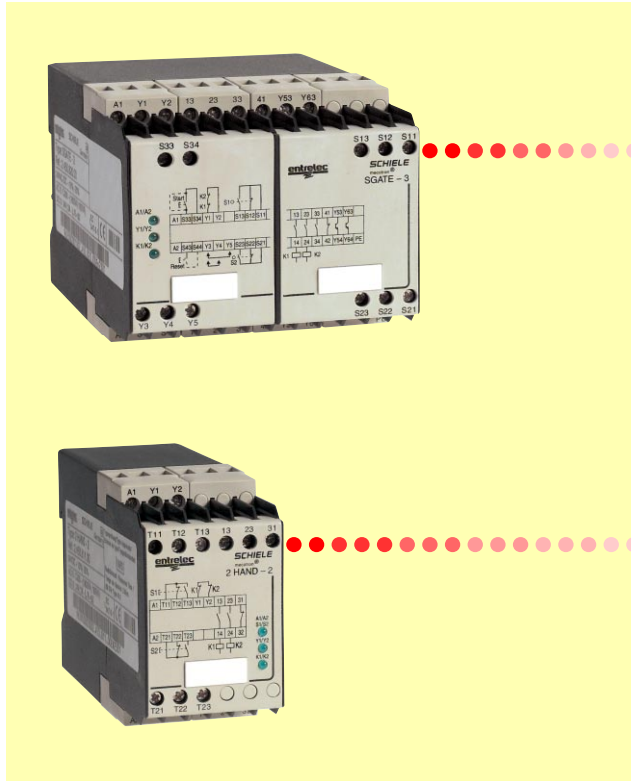
Safety relays mecotron®



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Spacing 22.5 mm (7/8"), 45 mm (1.77") and 90 mm (3.54")

DIN 3



ELECTRICAL MONITORING OF LIMIT SWITCHES

SGATE-3

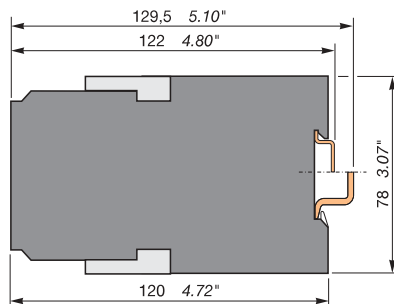
- Supply voltage AC/DC 24 V, AC 115 V, AC 230 V
- Electrical control of limit switches combined in pairs of monitoring devices for the protection of personnel

ELECTRICAL MONITORING OF TWO-HAND CONTROL UNITS

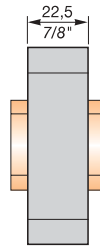
2HAND-2

- Supply voltage DC 24 V, AC 115 V, AC 230 V
- Two-hand control units protect operators against the risk of hand injuries by forcing them to keep their hands out of the danger zone, away from moving parts

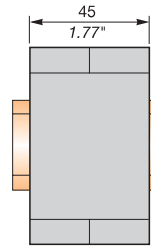
Dimensions



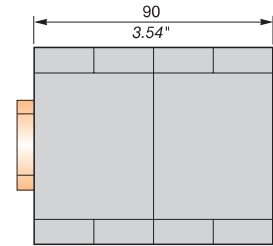
ESTOP-2
ESTOP-3



ESTOP-2a
ESTOP-2b
2HAND-2

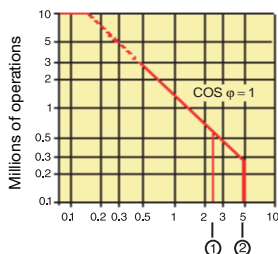


ESTOP-3+2
ESTOP-3a, ESTOP-3b
ESTOP-6a, ESTOP-6b
SGATE-3
EBLOC-4 and EBLOC-8



Number of full-load operations

Figure 1

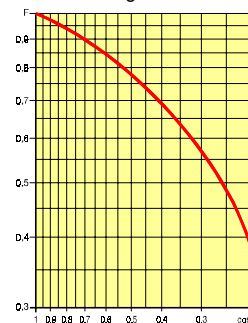


Utilization category AC-15
Number of operating cycles

- ① Contact 41-42, 57-58, 67-68 - C300
② Contact 13-14, 23-24, 33-34 - B300

Reduction factor for inductive circuits

Figure 2



Note:

In AC inductive circuits, the breaking capacity and electrical durability depend on $\cos \phi$. The breaking capacity and electrical durability may be calculated by using the curves of Figures 1 and 2.

Example: Per the reduction factor curve (Figure 2), an electrical circuit with a power of 1000 VA and $\cos \phi = 0.4$ gives a reduction factor F of 0.7. The power therefore becomes $1000 \times 0.7 = 700$ VA.

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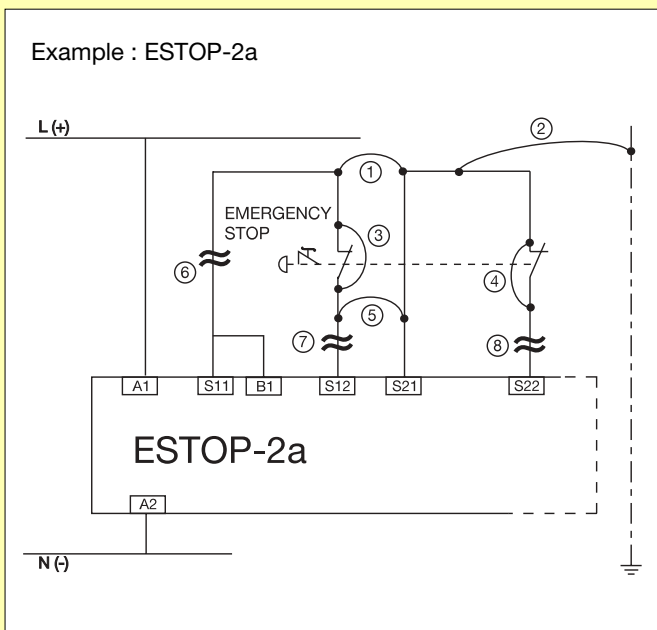
Cross short-circuit safety

Definition

Cross short-circuit safety denotes the ability of monitoring modules to detect faults (caused by pinched cable, ground leakage, etc.) that can occur in the application being monitored and to prevent the release of the safety circuits until external faults have been removed.

On mecotron® (ESTOP ...) safety relays, which are designed to monitor EMERGENCY STOP, two-hand control units and safety gates, cross short-circuit safety is achieved by two-channel (redundant) wiring of EMERGENCY STOP control devices (see diagram below). The two EMERGENCY STOP channels are operated at different voltages; thus the units will detect excessive current flow between the two points and disconnect the release circuits.

Cross short-circuit safety



Type of fault

- ① Connection (cross short-circuit) between S12 and S21
==> The fault will be detected as a short-circuit (excessive current flow). The unit will disconnect the release circuits.
 - ② Short of S21 to common
==> The fault will be detected as a short-circuit (excessive current flow). The unit will disconnect the release circuits.
 - ③ Next operation of S1 (EMERGENCY STOP button) will detect the fault as no voltage change will occur on S12.
==> The unit will prevent restarting until the fault has been removed and the EMERGENCY STOP module reset.
 - ④ Next operation of S1 (EMERGENCY STOP button) will detect the fault as no voltage change will occur on S12.
==> The unit will prevent restarting until the fault has been removed and the EMERGENCY STOP module reset.
 - ⑤ Connection (cross short-circuit) between S12 and S21
==> The fault will be detected as a short-circuit (excessive current flow). The unit will disconnect the release circuits.
 - ⑥ - ⑧ Broken wire will be detected immediately (voltage change on S12). The release circuits will open.
==> The unit will prevent restarting until the fault has been removed and the EMERGENCY STOP module reset.
- ==> The units incorporate internal electrical short-circuit protection which will trip when a fault occurs (short-circuit, cross short-circuit, ...) and disconnect the release circuits. After a fault has been removed, the safety relay will recognize this and again be ready for operation. Neither the unit nor any internal fuses will need to be exchanged.