

■ **Motor protection**

**Regulations and standards**

The harmonised European standards and national installation directives require thermal overload protection for electric motors. This can be achieved in various ways and depends on the motor specification.

- Optimal protection is provided by thermal contacts ("TK" consecutively), which monitor the motor winding temperature. These contacts protect also the speed controlled motors.
- For low motor powers, the thermal contacts are wired in series with the motor windings, in other words, they are internally wired. This ensures an automatic function (resetting after cooling), without the operator reacting necessarily on the interference.
- For motors/fans with higher performances the leads of the thermal contacts or PTC thermistor-temperature sensor are wired to the terminal block and must be connected to the adjacent motor full protection/tripping units. Only under this condition is the warranty claim valid.
- Motors/fans without thermal monitoring elements in the windings (e.g. IEC norm motors) must be secured on all poles by a suitable motor protection switch.

**For 1 ph. fans with thermal contact leads wired to the terminal block**

**Motor full protection switch MW**  
in polymer casing for surface mounting or installation in fuse board (clamping assembly for support rail).



**Type MW** Ref. no. 1579

On/off operation via push-button switch. Manual reset function interference.  
Volt free auxiliary contact for connection of failure indication alarm.  
230 V, 1~, 50/60 Hz, applicable from 80 V  
Nominal current 0.4 to 10 A  
Protection to IP 55 Weight approx. 0.5 kg  
Dimensions mm W 80 x H 140 x D 95  
Wiring diagram no. SS-517

**For 3 ph. fans with thermal contacts**

**Motor full protection switch M**  
Operation and full protection unit in polymer casing for surface mounting or installation in fuse board (clamping assembly for support rail).



**Type MD** Ref. no. 5849

On/off operation via push-button switch. Manual reset function interference.  
Volt free auxiliary contact for connection of failure indication alarm.  
400 V, 3~, 50/60 Hz, applicable from 80 V  
Nominal current 0.1 to 25 A  
Protection to IP 55 Weight approx. 0.5 kg  
Dimensions mm W 80 x H 140 x D 95  
Wiring diagram no. SS-518

**For pole changing 3 ph. fans with separate windings and thermal contacts**

**Motor full protection switch M 2**  
Switching and full protection unit in light grey polymer casing with control lamp for surface mounting.



**Type M 2** Ref. no. 1292

If the thermal contact opens the motor disconnects from the supply. Restarting after interference via "0" position on the switch.

Voltage 400 V, 50/60 Hz  
Power AC 3 / 5.5 kW  
Nominal current approx. 12 A  
Protection to IP 55 Weight approx. 1.0 kg  
Dimensions mm W 170 x H 135 x D 115  
Wiring diagram no. SS-142

**For pole changing 3 ph. fans with Dahlander windings and thermal contacts**

**Motor full protection switch M 3**  
Design and functions as M 2.

**For two speed 3 ph. fans with Y/Δ switching and thermal contacts**

**Motor full protection switch M 4**  
Design and function as M 3.



**Type M 3** Ref. no. 1293

As M 2, but suitable for pole changing 3 ph. fans with Dahlander windings and built-in thermal contacts.  
Dimensions mm W 170 x H 135 x D 135  
Wiring diagram no. SS-143

**Type M 4** Ref. no. 1571

As M 3, but suitable for two speed 3 ph. fans with Y/Δ switching and built-in thermal contacts.  
Wiring diagram no. SS-144

**For 3 ph. fans with built-in positive temperature coefficient thermistors (PTC temperature sensors) for thermal motor protection. Specified for use in speed controlled, explosion proof fans.**

**Motor full protection switch MSA**  
Tripping unit with manual reset for 1 to 6, PTC thermistors wired in series.



**Type MSA** Ref. no. 1289

For thermal protection of electric motors (even explosion-proof electric motors) according to Directive 2014/34/EU (ATEX) with integrated PTC temperature sensors according to DIN 44081 and DIN 44082.

Voltage 230 V ± 15 %, 50/60 Hz  
3 phase operation via contactor  
Current at 230 V 3 A AC 15  
Connection options 1 to 6 PTC thermistors in series

If the nominal response temperature in PTC thermistors reaches a set limit the built-in relay disconnects the motor. The fault is indicated by a light emitting diode. Restarting via pressing the "Reset" button or an external switch. Casing made of polymer, suitable for fuse board installation on support rail according to DIN EN 60715.

Tested by Physikalisch-Technische Bundesanstalt, according to  
DIN EN 60079-14 / VDE 0165-1,  
DIN EN 60079-0 / VDE 0170-1,  
DIN EN 60079-17 / VDE 0165-10-1.  
Protection to IP 20  
Weight approx. 0.2 kg  
Dimensions mm W 35 x H 90 x D 58  
Wiring diagram no. SS-325.1

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