Motor protection
Regulations and standards

The harmonised European standards and national Installation regulations stipulate that electric motors must be protected against thermal overload. This can be done in several ways and it depends on the motor features.

- Optimal protection is provided by thermal contacts (hereinafter "TK") which monitor the winding temperature. They also protect speed-controlled motors.
- The "TK" are connected in series with the winding, i.e. internally wired, for low motor outputs. This results in an automatic function (deactivation and reactivation after cooling) without the operator necessarily having to react to the fault.
- In case of motors/fans with larger outputs, the "TK" or PTC thermistor temperature sensors are connected to the terminal block and must be wired to the adjoining motor protection circuit breakers/triggering devices. Warranty claims shall only be applicable if this condition is met.
- Motors/fans without thermal monitoring elements in the winding (e.g. IEC standard motors) must have all-pole protection with appropriate motor protection circuit breakers.

For alternating current fans with external thermal contacts on terminal board

Motor protection circuit breaker MW
Switch and motor protection circuit breaker in plastic casing for surface-mounted installation or installation in switch cabinet (clamp fastening for mounting rails).

For three-phase current fans with thermal contacts

Motor protection circuit breaker MD
Switch and motor protection circuit breaker in plastic casing for surface-mounted installation or installation in switch cabinet (clamp fastening for mounting rails).

For pole-changing three-phase current fans with separate winding and thermal contacts

Motor protection circuit breaker M 2
Switch and motor protection circuit breaker in light grey plastic casing with indicator lights for surface-mounted installation.

For pole-changing three-phase current fans with Dahlander winding and thermal contacts

Motor prot. circuit breaker M 3
Design and function like M 2.

For two-speed three-phase current fans with Y/Δ connection and thermal contacts

Motor prot. circuit breaker M 4
Design and function like M 3.

For three-phase current fans with built-in PTC thermistors (PTC temperature sensors) for thermal motor protection. Mandatory use for speed-controlled, explosion-proof fans.

Motor prot. circuit breaker MSA
Triggering device with restart lockout for 1 to 6 in PTC thermistor temperature sensors connected in series.

Reference	Page
Technical information	19 ff.
Transformer speed controller with motor protection circuit breaker	
– for 1~ altern. current MWS	606
– for 3~ 3-ph. current RDS	607

MW



MW Ref. no. 01579
On/off operation by pushbutton switch. Manual recommissioning after fault.
Potential-free auxiliary contact for connection for fault signal.

	250 V, 1~, 50/60 Hz
Rated current	0.5 to 10 A
Protection category	IP55
Weight	aprx. 0.6 kg
Dim. mm	W 80 x H 135 x D 96
Wiring diagram no.	1485

MD



MD Ref. no. 05849
On/off operation by pushbutton switch. Manual recommissioning after fault.
Potential-free auxiliary contact for connection for fault signal.

	400 V, 3~, 50/60 Hz, applic. from 80 V
Rated current	0.1 to 16 A
Protection category	IP55
Weight	aprx. 0.6 kg
Dim. mm	W 80 x H 135 x D 96
Wiring diagram no.	1486

M 2 / M 3



M 2 Ref. no. 01292
Motor disconnected from mains when TK react. Recommissioning after fault by turning switch to "0" position.

Voltage	400 V, 50/60 Hz
Switching capacity	AC 3 / 5.5 kW
Rated current approx.	12 A
Protection category	IP55
Weight	aprx. 1.0 kg
Dim. mm	W 150 x H 195 x D 145
Wiring diagram no.	142

M 4



M 3 Ref. no. 01293
Like M 2, but for pole-switching 3~ fans with Dahlander winding and built-in TK.
Wiring diagram no. 143

M 4 Ref. no. 01571
Like M 3, but for two-speed 3~ fans with Y/Δ connection and built-in TK.
Wiring diagram no. 144

MSA



When a PTC thermistor reaches the nominal response temperature, the built-in relay drops out. Faults are indicated by the built-in LED. Recommissioning by pressing the "Reset" button or via external connectable switches. Plastic casing for switch cabinet installation on mounting rails according to DIN EN 60715.

MSA Ref. no. 01289
For the thermal protection of electric motors (even explosion-proof electric motors according to Directive 2014/34/EU (ATEX) with built-in PTC thermistor temp. sensors according to DIN 44081 and DIN 44082.

Voltage	230 V ± 15 %, 50/60 Hz
	3~ operation via contactor
Switching capacity at 230 V	3 A AC 15
Connection options	1 to 6 PTC thermistors connected in series.
	Type 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 category	IP20
Weight approx.	0.2 kg
Dim. mm	W 35 x H 90 x D 58
Wiring diagram no.	325.1