

Technical data

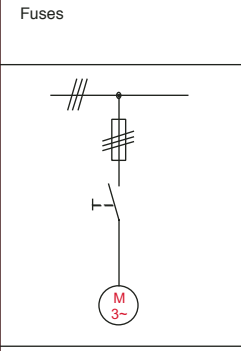
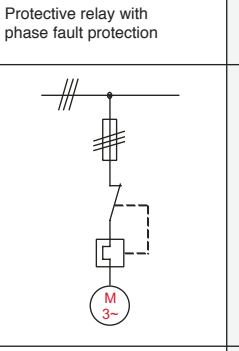
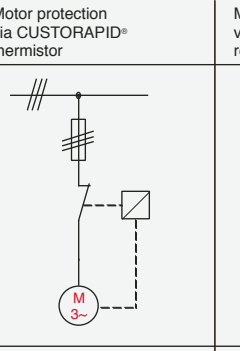
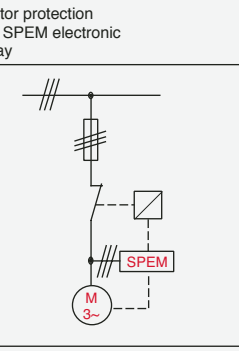
Motor protection; Choice of protective device

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Motor Protection — general

It is very important to choose an adequate protective device for the safety of the motor during operation and for its durability. The efficiency of protection methods varies according to the application. The overview below will help you to choose. There is no general rule and we are available to advise you for special applications and especially in the case of difficult starting.

Protective devices and efficiency

	Protection in relation to current:		Protection in relation to temperature:	
	Fuses	Protective relay with phase fault protection	Motor protection via CUSTORAPID® thermistor	Motor protection via SPEM electronic relay
				
Causes of dangerous overloads for the motor windings				
1 Overload with current 1.2 times the nominal current	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2 S1-S8 nominal duties according to IEC 34-I	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3 Operation with starting, braking, reversal in operating direction	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4 Operation with starting rate at > 15 cycles/hour	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5 Locked rotor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> ■ for motors with special rotor	<input checked="" type="checkbox"/>
6 Overloads due to phase failure	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7 Network undervoltage or overvoltage	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
8 Fluctuation of network frequency	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9 Ambient temperature too high	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10 Overheating due to external cause (i.e. overheating of bearings)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11 Motor cooling disturbed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12				Undercurrent protection on drop in load
13				Protection of asymmetry: wrong phase direction rotation or asymmetrical load
14				Earth fault protection
15				Automatic disconnection for auxiliary load fault

Protection efficiency:

- unsuitable
- very average efficiency
- perfectly efficient

Note: Fuses

Fuses do not protect motors against overloads. They are only used to protect installations and lines against short circuits.

To ensure efficient protection of a motor against short circuits, it is advisable to use aM type fuses in association with thermal OLR relays.

For the selection of fuses or circuit-breakers, refer to the indications given in this catalogue concerning contactors on the one hand and thermal O/L relays on the other.

In general, fuse protection for direct-on-line starting must be sized as follows:

– aM fuses: choose the fuse rating immediately above the full load value of the motor current.

– gG (gl) fuses: determine the fuse rating immediately above the motor current value and choose the next highest fuse rating.