

- ▶ 3-phase half-cycle controlled
- ▶ Reduced mechanical stress on drives
- ▶ Reduced starting current compared to direkt start
- ▶ Integrated phase sequence, phase loss and PTC-control
- ▶ Integrated bridging contactor
- ▶ Maintenance-free
- ▶ Industrial design



Technical data

1. Functions

Electronic motor softstarter for asynchronous motors reducing mechanical stress on drives.
 Temperature monitoring of device and motor winding (max. 6PTC).
 Phase sequence and phase failure monitoring (MSG5.5 and MSG11 only)

2. Adjustments

	Adjustment range	
Acceleration time T_{ON}	0s	30s *
Retardation time T_{OFF}	0s	30s *
Starting torque M_{ON}	0	80%
Stopping torque M_{OFF}	0	80%

*) MSG 3 also available with adjustment range of 0s to 3s!

3. Indicators

Green LED (U) ON: indication of supply voltage
 Yellow LED (Start) ON: indication of activation
 Yellow LED (100%)ON: output voltage 100%, integrated bypass contactor activ
 Red LED (Fault) flashes: indication of overtemperature
 Red LEDs (Ph)+(Fault) flashing: indication of phase failure (MSG5.5 and MSG11 only)

4. Mechanical design

Self-extinguishing plastic housing, IP rating IP20
 Mounted on DIN-Rail TS 35 according to EN 50022
 Mounting position: any
 Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20
 Tightening torque: max. 0.5Nm
 Terminal capacity control circuit:
 1 x 0.5 to 2.5mm² with/without multicore cable end
 1 x 4mm² without multicore cable end
 2 x 0.5 to 1.5mm² with/without multicore cable end
 2 x 2.5mm² flexible without multicore cable end

Terminal capacity of power circuit depending on power classes

5. Control circuit

Supply voltage: internal generated
 Tolerance: -
 Rated frequency: -
 Duration of operation: 100%

6. Control contact 1-2

Function: activation of softstart via potential free contact (see figure 1)
 Loadable: No
 Line length: max.10m, twisted pair
 Control pulse length: -

7. Control contact 2-3

Function: activation of softstart via external signaling voltage 12-24VDC (see figure 2)
 Loadable: No
 Line length: max.10m, twisted pair
 Control pulse length: -

8. Control contact 3-4

Function: connection of PTC according to DIN 44081 or bridged
 Line length: max. 10m, twisted pair

9. Signaling contact 5-6-7

1 potential free change-over contact (MSG5.5 and MSG11 only)
 Function: general fault
 Switching capacity: 1500VA (6A/250V AC)
 Fusing: 6A

10. Power circuit

Supply voltage: 3~ 400V
 Tolerance: ±20%
 Rated frequency: 48 to 63Hz
 Start-up cycles: 30/hour (at medium load)
 Bypass contactor: integrated
 Surge voltage: 2.5kV (according to IEC 60947-1 and DINVDE 0110 Teil1)
 Rated voltage: 345/600V (acc. to IEC60947-1, 4.3.1.2)

11. Power classes

type	motor power max. (kW)	rated motor current max. (A)	start-up current max. (5s) (A)	recom- mended semicon- ductor fuse (A)	weight (g)
MSG 3	3.0	6	18	16	330
MSG 5.5	5.5	11	30	35	410
MSG 11	11.0	22	60	63	620

12. Accessories

Sealable front cover

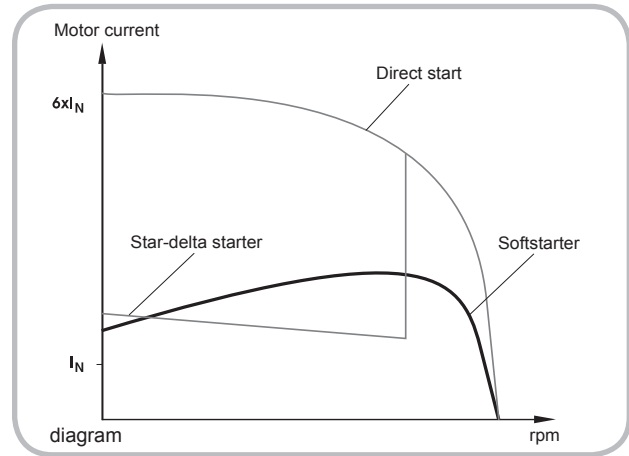
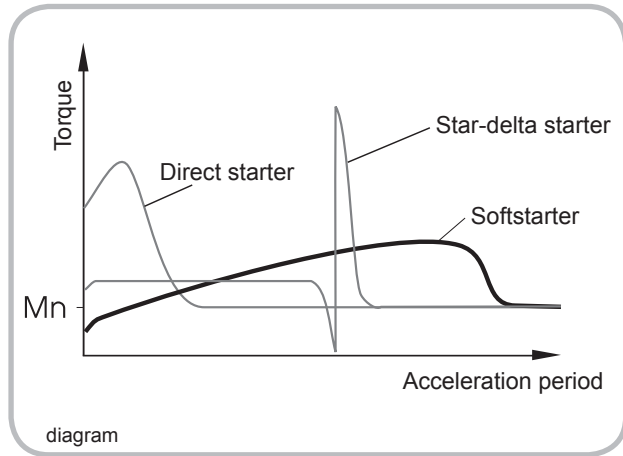
13. Ambient condition

Ambient temperature: -25 to +50°C (according to IEC 68-1)
 A distance of at least 100mm must be kept between two MSG or other devices.
 Storage temperature: -25 to +70°C
 Transport temperature: -25 to +70°C
 Relative humidity: 5% to 95% not condensing
 Pollution degree: 2 (according to IEC 664-1)

Advantages of softstarters

The softstarters series MSG are optimized to reduce mechanical stress on drives during the start-up and retardation phase. Therefore the softstarters rise the motor voltage during the start-up phase within the adjusted time from zero to maximum supplying voltage. This ensures a steady increase of the motor torque

and protects the machinery from torque shocks. The slow rise of the motor voltage can be used to reduce the maximum start-up current. The maximum possible reduction of current depend on the type of machinery and adjusted softstarter settings.



Functions

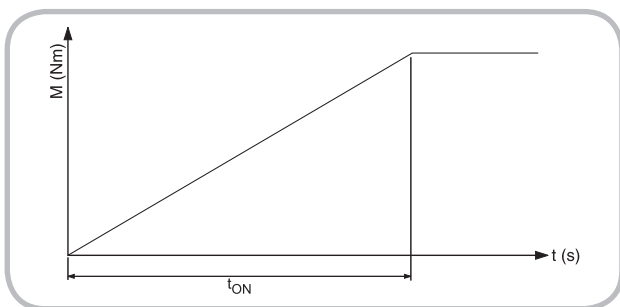
Softstart and softstopp

In the soft startup devices in the MSG series the main circuit is not controlled by mechanical switching elements but by semiconductor elements (thyristor modules).

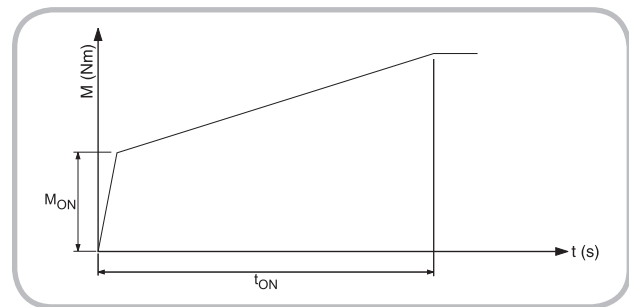
Each phase contains a thyristor and an antiparallel diode which are partially or wholly conducting during a half-period. The conducting period is determined by the ignition angle of the thyristor, which in turn is determined by the internal control electronics. Because of this, the device can be operated in a star circuit only without a neutral conductor.

Before the soft startup device is activated the MSG checks the supply system each time for phase failure and phase sequence. If there is no fault, soft startup is activated and voltage monitoring is deactivated.

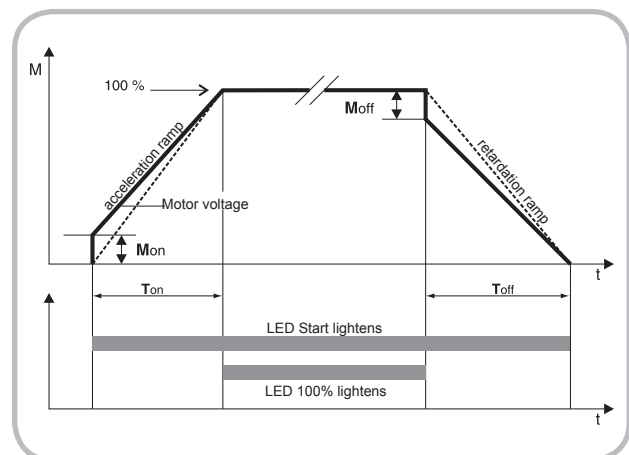
The MSG now increases the voltage at the motor linearly with the startup time to full ac voltage. The time for this voltage ramp can be set on the TON controller to any value from 0 to 30 seconds. As the voltage increases, so too does the torque, just rising above the load moment. The motor therefore starts with slow acceleration.



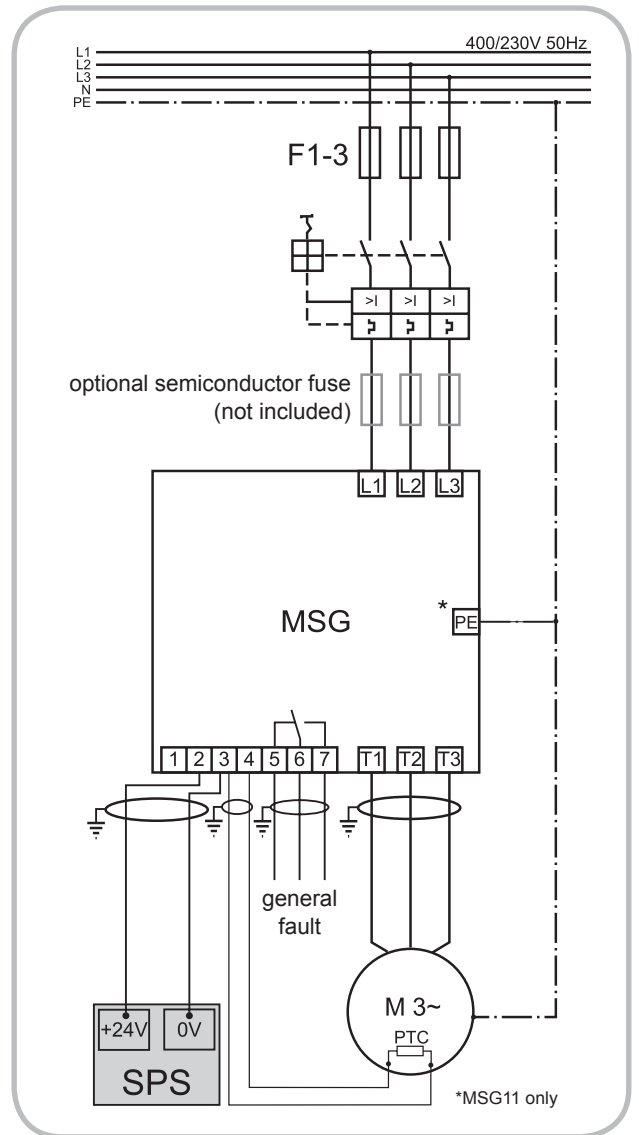
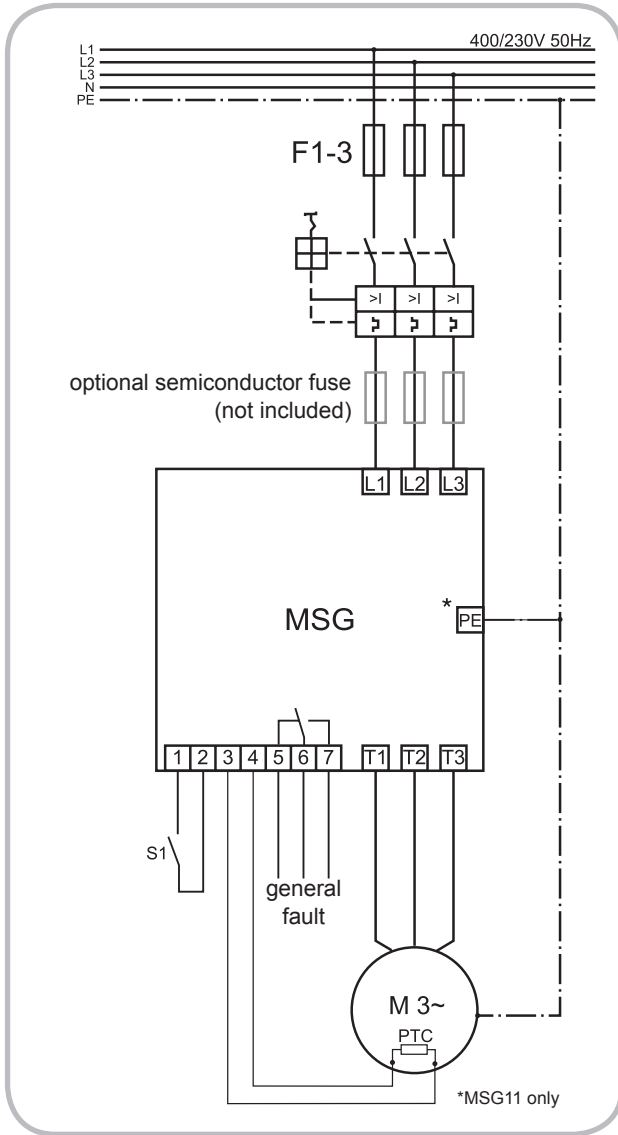
Specifying a motor-specific startup moment means that the voltage (torque) increases rapidly when the soft startup device is activated until the startup moment set on the MON controller is reached. Only then does the voltage start increasing slowly for the remaining startup time until full system voltage is reached (100% LED lights up). In this way, more effective use is made of the startup time and wear and tear is kept to a minimum.



If the start button is opened, soft rundown is activated (100% LED goes out). The torque is immediately reduced by the value set on the MOFF controller (0 to 80%) and uniformly reduced over the set run-down time (0 to 30s) to zero (Start LED goes out).

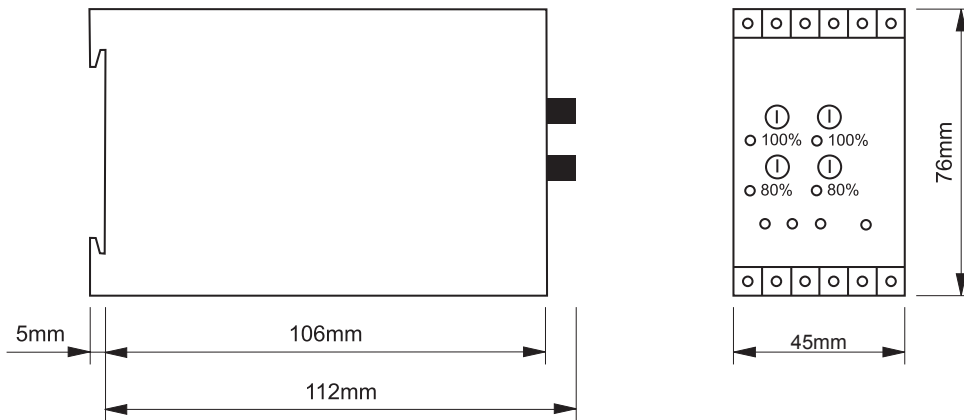


Connections

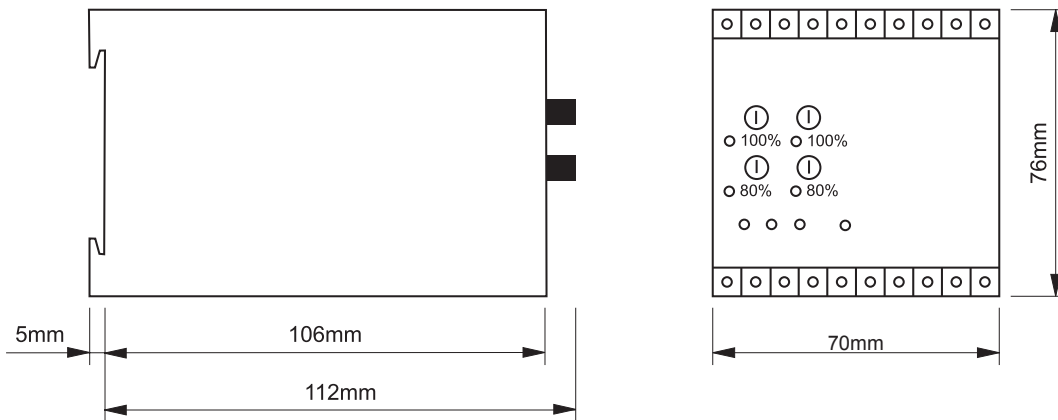


► Dimensions

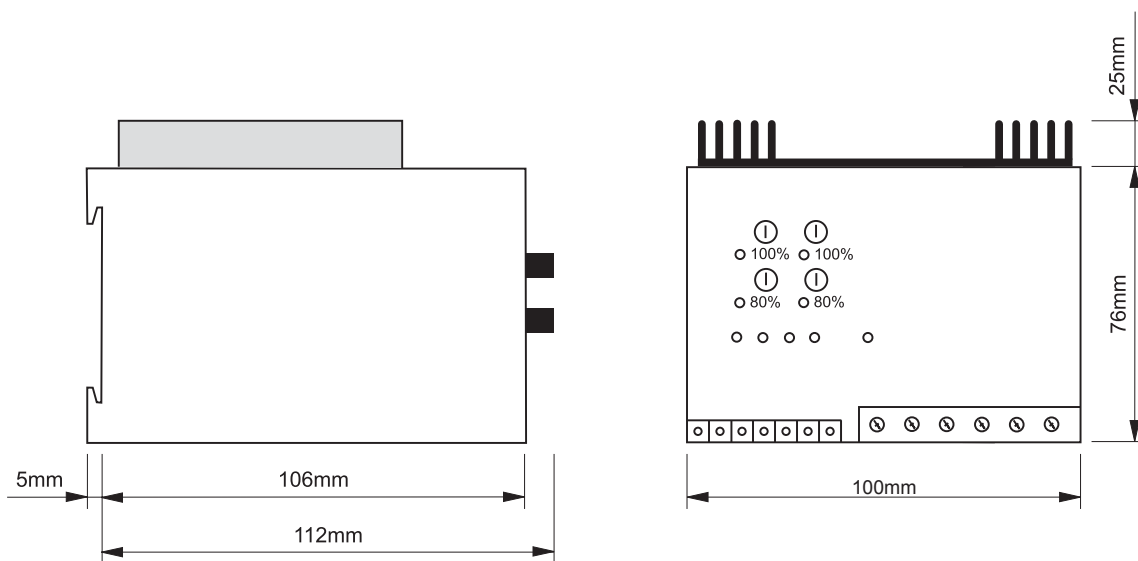
MSG 3



MSG 5.5



MSG 11



Subject to alterations and errors