**Power Electronics / Installation technique**

**MINISTART**  
Softstarter With Softstop  
IL 9017/300

- Increases life of 1-phase squirrel motors and mechanical drives  
- For single phase motors up to 1.5 kW  
- Adjustable ramp time/deceleration time and starting torque/deceleration torque  
- Semiconductors will be bridged after start up  
- LED indication  
- Width 35 mm

**Function Diagram**

- These softstart and softstop devices are robust electronic control units for softstart and softstop of AC motors. By means of phase-angle control the current rises e.g. drops continuously. The motor torque behaves in the same way during start-up e.g. deceleration. This ensures that the drive can start and stop without jerking. This eliminates the risk of damage to drive elements because the sudden starting e.g. deceleration torque does not occur during direct switch-on. This feature allows a low-cost design of the drive elements. A significant reduction in starting noise can also be observed.

- In belt conveyor systems, slippage or tipping over of the conveyed material is avoided. After successful start-up, the power electronics are bridged by means of an internal relay contact in order to minimise the losses in the device.

**Indication**

- LED green: softstart active  
- LED yellow: softstart is finished, short flashing when mains frequency is outside limits

**Approvals and Markings**

- CE

**Applications**

- Drives with gears, belts or chains  
- Conveyor belts, fans  
- Pumps, compressors

**Function**

- LED green: softstart active  
- LED yellow: softstart is finished, short flashing when mains frequency is outside limits

**Block Diagram**

All technical data in this list relate to the state at the moment of edition. We reserve the right for technical improvements and changes at any time.
Notes

The speed setting of drives is not possible with these devices. Likewise, no pronounced soft starting behaviour is achieved in uncoupled state, i.e., without load. If the power semiconductor is to be protected against short-circuit or ground fault during start-up, a semiconductor fuse (see technical data) must be used. Otherwise, the usual cable and motor protection measures must be applied. In case of high switching frequency, monitoring the winding temperature is recommended as a motor protection measure. The soft starter must not be operated with a capacitive load, such as reactive power compensation, at the output.

To ensure the safety of persons and systems, only suitably qualified personnel may work on this device.

Technical Data

**Nominal voltage** $U_n$: AC 230 V -15 % +10 %
**Nominal frequency:** 50 / 60 Hz
**Nominal motor power** $P_n$: 1.5 kW
**Min. motor power:** Approx. 0.1 $P_n$
**Nominal current:** 10 A
**Semiconductor fuse:** max. 340 A²s
**Starting torque/deceleration torque:** 20 ... 70 %
**ramp-up time/deceleration time:** 0.1 ... 10 s
**Recovery time:** 45 ms
**Switching frequency:** 10/h at $3 \times I_r / \tan(\vartheta) = 10 \, \text{s}$, $\vartheta = 20 \, ^\circ \text{C}$
**Power consumption:** 1.4 VA

General Data

**Operating mode:** Continuous operation
**Temperature range:** 0 ... + 55 °C
**Storage temperature:** - 25 ... + 75 °C
**Clearance and creepage distances rated impulse voltage / pollution degree:** 4 kV / 2 IEC 60664-1
**EMC**
- Electrostatic discharge: 8 kV (air) IEC/EN 61000-4-2
- HF irradiation: 10 V / m IEC/EN 61000-4-3
- Fast transients: 2 kV IEC/EN 61000-4-4
- Surge voltages between wires for power supply: 1 kV IEC/EN 61000-4-5
- between wire and ground: 2 kV IEC/EN 61000-4-5
- HF wire guided: 10 V IEC/EN 61000-4-6
- Interference suppression: Limit value class B EN 55011
**Degree of protection**
- Housing: IP 40 IEC/EN 60529
- Terminals: IP 20 IEC/EN 60529
**Housing:** Thermoplastic with V0 behaviour according to UL subject 94
**Vibration resistance:** Amplitude 0.35 mm, IEC/EN 60068-2-6 frequency 10 ... 55 Hz
**Climate resistance:** 0 / 05S / 04 IEC/EN 60068-1
**Terminal designation:** EN 50005
**Wire connection:** 2 x 2.5 mm² solid or 2 x 1.5 mm² stranded ferruled DIN 46228-1/-2/-3
**Wire fixing:** Flat terminals with self-lifting clamping piece IEC/EN 60999-1
**Mounting:** DIN rail IEC/EN 60715
**Weight:** 135 g

Dimensions

| Width x height x depth | 35 x 90 x 61 mm |

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Standard Type

**IL 9017/300** AC 230 V 1.5 kW
**Article number:** 0058831
- Nominal voltage $U_n$: AC 230 V
- For motors up to 1.5 kW
- Width: 35 mm

Adjustment Facilities

**Ramp up/deceleration time:** With potentiometer $t_{\text{on,off}}$ the ramp up and deceleration time can be adjusted within the range 0.1 to 10 s.
**Starting and deceleration torque:** With potentiometer $M_{\text{on,off}}$ the starting torque and the deceleration torque can be adjusted in the range of 20 to 70 % of the max. value.

Attention:

If the ramp-up time is adjusted to short, the internal bridging contact closes before the motor is on full speed.
This may damage the bridging relay.
Changes on potentiometer settings are only accepted in the waiting for start status.

Set-up Procedure

1. Set potentiometer $M_{\text{on,off}}$ fully anti-clockwise
2. Start motor by closing contact input Q1-Q2. If the motor does not start, interrupt the process and adjust $M_{\text{on,off}}$ to a higher value. New start.
3. Adjust potentiometer $t_{\text{on,off}}$ to give the desired ramp time.
   Stop and restart the motor, readjusting the potentiometers until the desired starting characteristics are achieved.

Application Example

[Diagram]

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