MINISTART
Softstarter
IL 9017, SL 9017

- Increases life of 1-phase squirrel motors and mechanical drives
- For single phase motors up to 1.5 kW
- Adjustable ramp time and starting torque
- Semiconductors will be bridged after start up
- LED indication
- Devices available in 2 enclosure version:
  - IL 9017: Depth 61 mm with terminals at the bottom for installations systems and industrial distribution systems according to DIN 43880
  - SL 9017: Depth 100 mm with terminals at the top for cabinets with mounting plate and cable duct
- Width 35 mm

These soft starters are robust electronic control units for soft starting of AC motors. By means of phase-angle control the current rises continuously. The motor torque behaves in the same way during start-up. This ensures that the drive can start without jerking. This eliminates the risk of damage to drive elements because the sudden starting 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.

Indicators
- LED green: Supply connected on softstarter
- LED yellow: Softstart is finished

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

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>IL 9017</th>
<th>SL 9017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal voltage UN</td>
<td>AC 230 V</td>
<td>AC 230 V</td>
</tr>
<tr>
<td>Nominal frequency</td>
<td>50 / 60 Hz</td>
<td></td>
</tr>
<tr>
<td>Nominal motor power Pn</td>
<td>1.5 kW</td>
<td></td>
</tr>
<tr>
<td>Min. motor power</td>
<td>Approx. 0.1 Pn</td>
<td></td>
</tr>
<tr>
<td>Nominal current</td>
<td>10 A</td>
<td></td>
</tr>
<tr>
<td>Semiconductor fuse</td>
<td>max. 340 A²s</td>
<td></td>
</tr>
<tr>
<td>Starting voltage</td>
<td>20 ... 70%</td>
<td></td>
</tr>
<tr>
<td>Acceleration time</td>
<td>at starting voltage 20 %: 0.1 ... 10 s</td>
<td></td>
</tr>
<tr>
<td>Recovery time</td>
<td>200 ms</td>
<td></td>
</tr>
<tr>
<td>Switching frequency</td>
<td>10/3 x 1/n / 1/n = 10 s, θn = 20 °C</td>
<td></td>
</tr>
<tr>
<td>Power consumption</td>
<td>1.4 VA</td>
<td></td>
</tr>
</tbody>
</table>

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 wired: 10 V IEC/EN 61000-4-8
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 / 055 / 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
IL 9017: 135 g
SL 9017: 164 g

Dimensions
Width x height x depth
IL 9017: 35 x 90 x 61 mm
SL 9017: 35 x 90 x 100 mm

Setting Facilities
Ramp up time: With potentiometer "Iₚ" the ramp up time until the Triacs are bridged can be adjusted between 0.1 and 10 s.
Starting torque: With potentiometer "Mₚ" the starting torque can be adjusted between 0 and 75% of the maximum value.

Set-up Procedure
1. Set potentiometer "Mₚ" to minimum (fully anti-clockwise)
2. Start the motor and turn potentiometer "Iₚ" to maximum (fully clockwise)
3. Adjust potentiometer "Mₚ" to give the desired ramp time.
Stop and restart the motor, readjusting the potentiometers until the desired starting characteristics are achieved.

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 contactor or bridging relay.

Application Example

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