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Data Sheet
Single phase snatch - free softstart modules

Size	RS **stock number**
2.2kW	**209-6340**

For use on the following types of motor:

- Capacitor start, capacitor run with centrifugal switch
- Permanent capacitor
- Capacitor start, capacitor run with internal switching facility.

General

Single phase snatch-free soft-start modules provide a compact and simple means of reducing the problems associated with the starting shocks of direct on line started single phase induction motors. Damage to products, packaging and the maintenance cost and down time of transmission components can be effectively reduced.

Compact DIN rail-mounted module suitable for motors from fractional horsepower up to 2.2kW and can easily be retrofitted due to their compact size.

Principle of operation

The single phase snatch-free soft-start modules make use of the principle of phase control on the supply phase. The voltage in the controlled phase increases to full voltage over the set time. The starting torque is limited and the stress of the transmission components reduced.

The power supply for the internal control circuit is incorporated in the module. A special arrangement of triacs varies the voltage between the terminals L1-T1 using phase control. The firing circuit uses the available line voltage to generate the trigger pulses which are synchronised to the supply frequency.

A relay is used to bridge the triacs after ramp-up. The losses following ramp-up are therefore very small.

Applications

There are two main areas of application:

- Those requiring protection to the product, wrapping or parcels such as with bottling or other conveyors, packaging machinery etc
- Applications with problems in connection with the shock loading on power transmission components such as gear boxes, belt or chain drives. With gear boxes the smooth start-up torque is particularly beneficial.

Features

- Switch-on torque and run-up voltage ramp separately adjustable
- Compact size. The modules are suitable for mounting on symmetrical 35mm DIN rails
- Live terminals well protected against accidental damage
- Easy to retrofit.

Technical data

Supply voltage	230V ±10% ac
Rated frequency	50/60Hz
Operating temperature range	0°C to +45°C
Storage temperature range	–40°C to +70°C
Rated motor power	2.2kW
*Max. starting duty	15%
Semi-conductor fuse size	50A
Recommended RS stock no. for semi-conductor fuse	414-774
Weight (approx.)	450g
Dimensions	
Height	70mm
Width	45mm
Depth	120mm

Note: Starting duty refers to the percentage of operating time the snatch-free soft-start module is soft starting.

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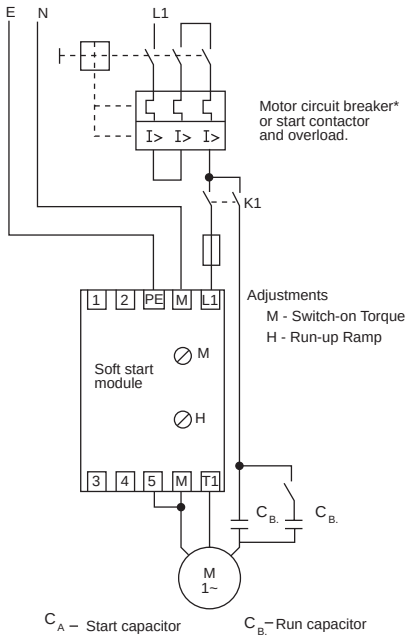
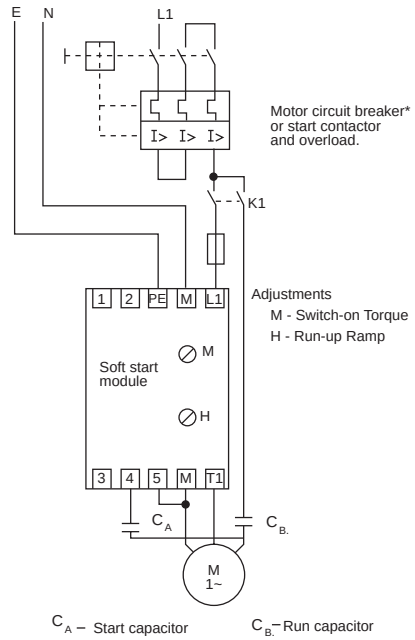
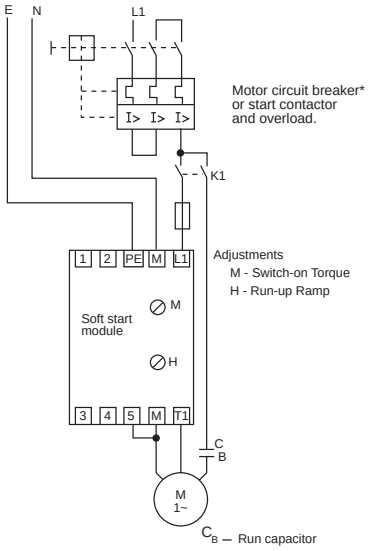
1. Capacitor start, capacitor run with centrifugal switch



2. Permanent capacitor



3. Capacitor start, capacitor run with internal switching facility (max. current in C A is 2 A)



Planning the installation

Snatch-free soft-starts have a ramp-up characteristic which is considerably influenced by the inertia and friction of the load. The starting torque is damped with these modules. Run-up times of a few seconds are only possible if the load has significant inertia.

Short circuit protection of wiring

Conventional short circuit protection of the connections to the controller and the motor in accordance with the wiring regulations must be provided. A circuit breaker, motor starter or additional circuit protection fuses may be used.

Thermal protection

The snatch-free soft-start modules are designed for continuous operation up to the indicated power. Overload protection of the controller and motor should be provided. Suitable protection may be a thermal overload relay, a motor starter or thermistor protection of the motor.

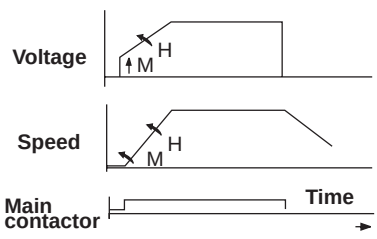
Please note that the indicated starting duty refers to:

$$\text{Starting duty} = \frac{\text{Ramp-up time}}{\text{Cycle time}}$$

Installation notes

The use of measuring equipment with a high voltage, for example, a megger, can result in damage to the device.

4. Soft-start sequence



M = switch-on torque
H = run-up ramp time