

Pump Starters - Specification

General

Electronic reduced voltage starters (soft starters) shall be used to accelerate, run and decelerate three-phase AC motors greater than 4kW that are used to drive water pumps, thereby reducing the electrical and hydraulic impact of pump starting and stopping.

The soft starter shall be of a microprocessor-based design, use a true six pulse SCR switching circuit for controlling the voltage supplied to the motor and be an Australian made Zener AMC-2000 or approved equivalent.

Functionality

The enclosed starter unit shall comprise the soft starter with integral bypass contactor, electronic thermal overload and all other items contained within this specification.

The soft starter shall use a timed voltage ramp with current limit override and self-tuning pump optimised deceleration.

Initial motor torque adjustable in 1% steps from 10% to 25% of locked rotor torque.

Start time adjustable in 1 second steps from 5 to 60 seconds.

Current limit adjustable in 10% steps from 200% to 500% of motor full load current.

The SCR's shall be protected against excessive dV/dT by RC snubber networks. MOVs shall be fitted to provide the SCR's with over voltage protection.

Deceleration shall be adjustable in 1 second steps from 0 to 120 seconds.

User Interface

Starter adjustment shall be made via pushbuttons with all settings, status and fault messages displayed clearly in plain English on a backlit LCD screen. Alarm messages shall cause the LCD to flash conspicuously.

The starter shall continuously and simultaneously display the motor current in Amps, and as a percentage of motor full load current during normal operation. Motor thermal capacity shall be displayed if required.

User settings to be made only whilst the starter is stopped in SETUP mode, and these settings may be viewed but not changed whilst starter is running.

Electrical Interface

A set of voltage free changeover contacts shall be provided to indicate starter RUN and FAULT modes. The FAULT relay shall be magnetically latched to maintain a fault 'memory' even if supply power is removed.

All auxiliary connections shall be made via a removable type screw connector block.

Sizing and Ratings

Each soft starter shall be selected on the basis of the motor full load 'nameplate' amps and be suitable for continuous rated operation at 45°C ambient air temperature.

The soft starter shall be self powered from the three phase supply and operate reliably between 350 and 480Vac.

Protection

The soft starter shall be rated to IP20 and suitable for mounting inside existing or new switchboards.

The soft starter shall protect against the following conditions:

- motor thermal overload
(to AS1023 with memory function, type R1, class 10A, 10 or 20)
- short circuit SCR
- overtemperature SCR
- bypass contactor failure
- phase loss
- selectable under and over current alarm with adjustable trip level and trip time
- motor stall detection
- microprocessor failure

Service, Support and Warranty

The soft starter must be supported by 24 hour locally based spare parts and service personnel, with demonstrated experience in the commissioning and repairs of this type of equipment in similar applications.

Warranty period to be no less than 2 years from date of supply.