

Pump thermal circuit breaker and water leakage signals which were supplied from manufacturer for pumps (common or separately depending on property of equipment) will be communicated to PLC too. (mechanical reference)

8.7.15 Soft starters

(1) Introduction

This specification guide describes the required performance, functional specification, fabrication details and installation of a microprocessor controlled low voltage Softstarter, used for stepless start and stop as well as protecting of standard AC squirrel cage induction motors.

It should have internal bypass contactor, triphase controlled moment control system and minimum IP 20 protection class.

(2) Codes and Standards

The softstarter shall be designed, built and tested according to the latest editions of applicable IEC standards, i.e EN60947-4-2.

The softstarter shall also have the CCC approval.

The softstarter(s) shall be approved certified by.

(3) Main Features

The softstarter shall contain at least the features, functions and adjustments described below, in order to provide the motor and application with sufficient protection, and start and stop the motor in a precise and controlled manner.

(4) Acceleration Control with built-in "Torque Control" Option

Acceleration Control shall be fully adjustable in programming to match any application. As a minimum, the softstarter shall come complete with the following setting possibilities.

Ramp Type For Start: For the start ramp, it shall be possible to select between voltage ramp and torque control.

Initial Voltage: Initial voltage output shall be adjustable between 30-70% of the nominal voltage. The end voltage shall be set at the same time having the range of 20 to 60%

Current Limit: Current Limit shall be adjustable between 150% and 700% of the softstarters rated full load current.

Torque Control: Torque control feature shall be based on closed-loop principle with self-adjusting output to thyristors. The self-adjustment in the closed-loop shall be in relation to an actual and ideal load characteristic, where the ideal torque is set up using the softstarter parameters. The objective of the torque control feature shall be to obtain smoothest possible start-ramp where output torque curve closely follows the load curve in a near-linear manner.

Ramp Time For Start: The time between Initial and Full output voltage shall be adjustable between 1 and 30 seconds

Kick Start: The starter shall include a Kick Start feature. The Kick Start voltage level shall be adjustable between 30-100% of nominal voltage, and the kick time should automatically be adjustable between 0.3 and 1.0 seconds

(5) Deceleration Control with built-in "Torque Control" option