

MEDIUM VOLTAGE SOFT STARTER TYPICAL SPECIFICATIONS

GENERAL

The soft starter shall apply a slowly increasing voltage to the motor, providing smooth acceleration whilst drawing the minimum necessary starting current. Once full voltage is reached, a bypass contactor shall engage to carry the continuous motor running current, thereby reducing the starter's heat dissipation. A soft stop or controlled deceleration may be used to overcome effects of water hammer or pressure surges during motor stopping.

A microprocessor-based circuit shall control the starter, providing stable & repeatable performance in both 3 wire and 6 wire (inside delta) motor connections, with and full control, status and diagnostic information clearly displayed using LED indicators.

The starter shall intelligently protect itself and the motor from common faults and be designed for continuous operation at rated current in 45°C ambient, and for operation at 55°C with not more than 10% de-rating.

POWER CIRCUITRY

In each phase the power module shall comprise two back-to-back SCRs with integral semiconductor fuses incorporated onto the input busbar. Phase modules shall be interchangeable between phases within the starter, and between starters of the same rating without the need for calibration or adjustment.

The low voltage control circuitry shall be isolated from the SCR assembly, and employ pulse transformers to carry the SCR firing signals.

Metal Oxide Varistors and RC snubber networks shall be used to provide transient and false firing protection.

Input and output power connections shall be arranged in a contactor like format, with input at the top, and output from the bottom of the starter.

CONTROL CIRCUITRY

Selectable features or modes shall be set using dedicated DIP type switches, whilst adjustable parameters shall be set using multi step rotary type switches.

The control board(s) will be plug connectable for all inputs and outputs, and will be identical to and interchangeable between all starter sizes.

As a minimum, individual LEDs shall be used to indicate the following operating conditions: Power On, Starting, Run, Stopping, Stopped, and Fault.

A set of voltage free changeover contacts shall be available to control an external bypass contactor and signal a fault condition.

The starter shall be used in conjunction with an external motor protection relay, and should have no motor protection functions or, if provided, these functions shall be switch defeated.

START & STOP CONTROL

The soft starter shall provide the following range of adjustments:

Initial Current	200-450% I_n
Ramp up time	1-60s
Ramp down time	1-120s
Pump Control Ramp	adjustable pump stop profile
Current Limit (Starting)	200-450% I_n
Pulse start	450% current for 0.5-2.0s
Motor FLC	50-100% of starter FLC

STARTER PROTECTION

The soft starter shall protect against the following:

Phase Loss	one or two missing phases
Phase Sequence	incorrect phase sequence
SCR	faulty or shorted SCR
Motor Stall	motor under-speed after completion of start
Auto Restart	will attempt to restart faults
Over-temperature	heatsink hotter than 85°C
Bypass Failed	one or more bypass contactor phases open
Wrong connection	incorrect or missing motor connection

INPUT & OUTPUT

The soft starter shall provide the following inputs:

Control Voltage	110/240VAC +10% -10% 50/60Hz
Control Inputs	optically isolated control inputs
Relay Outputs	5A @ 250V Change over

STATUS & FAULT INDICATION

The soft starter shall provide the following:

Status Indication	Control Power On Standby Accelerating Up to Speed Bypass Mode Decelerating Energy Save 3 Wire Mode
Fault Indication	Control Voltage Fault Bypass Fault Over-Temperature Phase Reversal Motor Stalled Phase A fault Phase B fault Phase C fault

COMPLIANCE

The starter shall comply with the Australian C-Tick EMC Regulations.