

Limitamp® MVSS

Solid state medium voltage soft starter ratings up to 5 KV



The standard medium voltage soft starter is an SCR-based motor controller designed for the starting, protection and control of AC medium voltage motors. Solid state controllers are available for applications requiring very tightly controlled motor torque and acceleration times and where avoidance of sudden switch-on of inrush current is desired. Reduced voltage soft starter controllers offer several advantages over full voltage non-reversing controllers:

- Reduces mechanical stress on driven equipment and motor linkage while maximizing torque capability of the motor
- Provides for special stopping requirements of motor/pumps (soft stop/eliminating water hammer effect, etc.)
- Minimizes voltage fluctuations on weak power distribution systems, reducing undervoltage supply to critical loads or causing light flicker

Standard features of Class E-2 controller

- Heavy duty soft starter
- Seismic certification IBC 2018
- 125 percent continuous duty rating
- Digital microprocessor control with non-volatile memory
- LCD display with programming keypad and status LEDs
- Advanced solid state motor protection: 2 stage overload for starting and running protection (programmable NEMA Class 5–30)
- Control power transformer with primary and secondary fuses
- Built-in normal/test circuit
- N1, 1A, 12 or 3R enclosure
- Isolated low voltage compartment
- Mechanical and electrical interlocks

Options

- Up to 3600 A busbars
- MCC style line-ups

Specifications

Load type

Three-phase medium voltage AC induction motors or synchronous motors

AC supply voltage

- 2300, 3300, 4800
- +10 percent to -15 percent
- 50/60 Hz line voltages

HP ratings

Up to 3000 HP @ 4800 V (360 A max)

Contact factory for higher rating requirements

Overload ratings

500 percent – 60 seconds, 600 percent – 30 seconds

Power circuits

Series strings of SCR power modules (1, 2 or 3 matched pairs of SCRs per phase depending on voltage rating)

SCR Peak inverse voltage

Line voltage	PIV rating
2300	6,500
3300–4160	13,000
4800	13,000

Transient voltage protection

dv/dt circuits (1 per SCR power module)

Vacuum bypass contactor

Standard on all models, line start rated

Ambient operating temperature

0–40 °C (32 °F to 104 °F)

(Optional –20 °C with heaters and 50 °C with derating)

Digital control unit (DCU)

Programmable keypad/operator with 2 lines × 20 character backlit LCD display LCD Status/Alarm LEDs (indicate: Power, Run, Alarm, Trip, Aux 1–8) Non-volatile memory

Communications

RS485/RS232 or RS422 with either Modbus RTU protocol or Windows interface

Auxiliary contacts

Multiple contacts rated NEMA A600

Programmable features

Motor FLA	
Dual ramp adjustments – two independent settings for:	
Initial voltage	0–100% of nominal voltage
Current limit	200–500% of motor FLA
Acceleration time	1–120 seconds
Three custom curves	Via plotted torque/time axis points
Deceleration time	1–60 seconds
Kick start	0.1–2.0 seconds (10–100% voltage)
Tach feedback (option)	Closed loop speed ramp

Motor and starter protection

Electronic overload	2 stage programmable NEMA Class 5–30
Phase los	One or more phases missing
Phase imbalance	Adjustable trip level with delay
Phase reversal	Phase sequence varies from initial start
Short circuit detection	Starting and running protection
Over current	100–300% of FLA with trip delay
Under current/load loss	10–90% of FLA with trip delay
Over voltage	Trips at high line setpoint
Under voltage	Trips at low line setpoint
Shorted SCR	Internal fault detected
Shunt trip	Prevents start if SCR(s) are shorted
Starter over-temp	Thermal sensors on heatsink
Ground fault (option)	Alarm and 2 trip levels with trip delay
Coast down lockout	0–60 minutes following stop command
Starts per hour lockout	1–10 starts per hour
Time between starts	0–60 minutes between start attempts
RTD input (option)	12 RTDs for motor/bearing protection

Statistical data

Elapsed run time, last start time, average starting current, stores history of up to 60 events (data includes date and time, phase and ground fault current)

Metering (voltage and current)

Percent of FLA, phase currents, KVAR, KVA, KW avg. start time, ground fault current, remaining thermal register, thermal capacity to start, avg. start time and current, measured capacity to start, time since last start, line frequency, phase order, motor RPM (requires tach feedback option).

Enclosure

NEMA 1 Standard, Also available in NEMA 1A, 12, 3R, top and bottom entrance plates 13 gauge steel, ANSI #61 gray paint with lifting eyes

Approvals

UL, cUL Listed