

Specifications –Medium Voltage Soft Starter

The AuCom Medium Voltage soft starter provides electronic reduced voltage starting for three-phase induction motors.

The AuCom MV Starter is based on modern microprocessor and fibre-optic technology.

Environmental conditions

Operating temperature range	: -10 to 60 deg. C
Relative humidity	: 95% max. non-condensing
Altitude	: 1000 m max. Derating applies above 1000 m.
Degree of protection	: IP 00
Degree of pollution	: Degree 3
Equipment class	: Class A
Vibration	: As per IEC 60068-2-6

Specifications & ratings

Control	: 3-phase closed loop current control
Mains voltage	: 2300, 3300, 4160, 6600, 7200 V, +10 -15%
Mains frequency	: 45 – 66 Hz (auto-select 50 / 60 Hz nominal)
Control voltage	: 1-phase, 110 / 230 VAC, +10 – 15% (575 V AC possible using an add-on auto-transformer)
Configuration	: Externally bypassed Line & Bypass contactors must be used
Rating basis	: AC53b
Starts per hour	: 2 (standard), higher starts per hour can be achieved but a de-rating factor may apply
Current ratings	: 143 A, AC53b 5-30:3570; 156 A, AC53b 4-30:1770 : 300 A, AC53b 5-30:3570; 313 A, AC53b 4-30:1770 <i>Current ratings may change pending further tests</i>
Continuous rating	: 125% continuous
Isolation	The power and control circuits are totally isolated from each other by means of a 2-way fibre-optic connection. This ensures personnel safety and equipment reliability.

Standards & approvals (pending)

: UL, CE, C-tick
: Lloyds for marine version

SCRs

SCRs per phase	: 2300 V starter – 1 per phase : 3300 / 4160 V starter – 2 in series, per phase : 6600 / 7200 V starter – 3 in series, per phase
SCR PIV	: 2300 V starter – 6500 V : 3300 / 4160 V starter – 13000 V : 6600 / 7200 V starter – 19500 V

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Dimension (w x h x d), mm & weight, kg

2300 V power assembly	: 650 mm x 600 mm x 420 mm (25.6" x 23.6" x 16.5")
3300 / 4160 V power assembly	: 650 mm x 672 mm x 650 mm (25.6" x 26.5" x 25.6") : Weight 200 kg (440 lbs) for 4.2 kV assembly
6600 / 7200 V power assembly	: 700 mm x 950 mm x 650 mm (27.6" x 37.4" x 25.6")

Dimensions & weight may change.

Clearance required around starter power assembly	: above:100 mm (4"), below: 0 mm : to left: 0 mm, to right:0 mm : in front: 0 mm
Control module	: 300 mm x 250 mm x 50 mm (12" x 10" x 2") : to be mounted in the LV compartment of the cubicle

Human Interface

Human interface	: 20 character, 2 line LCD display, keypad & diagnostic LEDs
Text language	: English, German, Spanish (only English at present)
Real time clock	: Provided, with battery back-up : Even if the RTC is not set-up, all events and trips will still be logged in the correct chronological sequence of occurrence.
Event log	: 99 position, date & time stamped
Trip log	: 8 position, date & time stamped
Metering screens	: Standard screens for parameters such as voltage, current, power, power factor, temperature, run-hours, elapsed time ... : User-configurable metering screens, where any 4 of the available parameters can be monitored simultaneously. This helps analysis without the need to flick through different screens.
Trip log	: Phase voltage & current pertaining to the last 8 trips are memorised to facilitate useful analysis.
Information about start	: Crucial information about every start is captured. Information such as max. current drawn, actual start duration, estimated motor temperature rise during start is displayed for the last start.
Keypad	: Start, Stop, Reset, Local/Remote : Up, Down, Left, Right keys for programming : Local/ Remote selection
LEDs	: Starter status – Ready, Start, Run, Trip, Remote enabled : Remote inputs : Relay outputs
Password protection	: Multi-level password protection
Menu structure	: Easy to use, intuitive menu structure and simple set-up

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Protections

- : Mains under / over voltage
- : Mains under/ over frequency
- : Phase sequence
- : Mains voltage without start signal
- : Start signal, but mains voltage absent

- : Shorted SCR
- : Open motor connection
- : Starter over-temperature
- : Bypass contactor

- : Motor electronic overload, with selectable trip class
- : Motor thermistor
- : Electronic shearpin
- : Excess start time
- : Undercurrent
- : Phase imbalance, phase loss
- : Ground fault
- : External trip command via Remote input
- : External trip command via Comms.

- : Emergency re-start capability
- : 2 motor sets
- : Auto reset for under-voltage, under-current, and phase imbalance

Start / stop functionality

- Number of motor profiles : 2 motor profiles
- Current limit start : 100 – 600%
- Current ramp start : 50 – 600%
- Kick start : settable
- Torque control mode
- Stop modes : Coast to stop, soft stop, pump control profiles (2)
- : Auto stop, programmable

Remote control inputs

- : Start, stop, reset
- : 2 x programmable inputs, potential free
- : 2-wire/ 3-wire control

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Outputs

Relay outputs	: 2 x fixed outputs bypass contactor, main contactor : 3 x programmable outputs : status of starter : status of remote inputs : flags : trips : all 1 x changeover output , 5 A @ 250 VAC : optional 4 x relay outputs additional
Analog output	: 1 x programmable, 4-20 mA : galvanically isolated : parameters such as current, temperature, power (kW), voltage, power factor

Communication

Standard	: AuCom ASCII
Optional	: Modbus RTU, Devicenet, Profibus implemented via interface modules : Parameters upload/ download/ modify : Control (start, stop, reset, forced comms trip) : Monitoring (status, trip codes, measured values)

Sundry features

Construction	: Draw-out construction of the power assembly
Busbar orientation	: Bottom-in, top-out or Top-in, bottom-out, factory assembly
Connection between MV & LV part	: by a single fibre-optic cable
Fibre-optic test	: verifies proper connection between fibre-optic transmitters & receivers
Test mode	: allows use of a small, low voltage motor to verify that the starter is healthy
Control terminals	: 2.5 sq. mm

Options

RTD interface	: RTD relay, interfaced through Modbus to the MV starter
Communication interface	: As described under “Communication”
Cubicle	: Complete panel with Earthing switch, Main & Bypass contactor
Addl. Relay o/p module	: 4 additional relay outputs, 1 c/o