

M-SERIES MVE SOFT STARTER

The power of
medium voltage
soft starting

AuCom
MOTOR CONTROL SPECIALISTS

RIGHT FROM
THE START

M-Series MVE

IEC STYLE SOFT STARTER PANELS

AuCom's M-Series MVE medium voltage soft starters are an integrated solution for motor control and protection. MVE starters combine advanced soft start and soft stop functionality with extensive motor and system protection, plus a user-friendly interface and complete commissioning diagnostics.



MVE uses voltage dividing resistors connected to the IBT board for maximum measurement accuracy

Easy to service.
The MVE power section's modular design simplifies the disassembly process, making servicing much easier. Each phase arm is separate and can be individually removed for maintenance if required. AuCom supplies a purpose-built lifting tool to make phase arm installation safe and easy.

A world of experience

The MVE soft starter is the latest iteration of AuCom's industry tested medium voltage soft start platform.

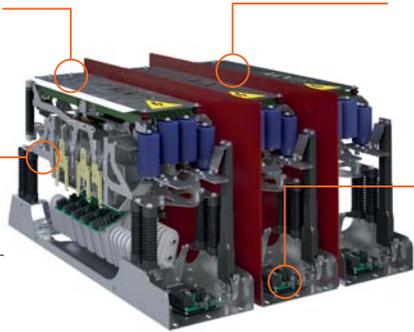
By integrating motor protection with soft start and soft stop control, the M-Series MVE provides a simple and cost effective solution for most major applications.

	Water / Wastewater	Power generation	Pulp / Paper	Chemical / Petrochemical	Mining	Cement / Stone	Wood processing	Building technology	Marine / Off shore	Industry / Production
Pump	■	■	■	■				■	■	■
Fan/Blower/Aerator	■	■	■	■	■	■			■	■
Compressor		■		■				■	■	■
Chiller				■				■	■	■
Refiner			■				■			
Extruder				■						
Centrifuge				■						■
Mill crusher		■				■	■			
Hacker			■				■			
Conveyor		■				■	■			■
Roller		■								■
Rotating converter		■						■	■	■
Bow thruster									■	
Main propulsion									■	

Powerful and reliable

Every application is different, and selecting the right starter for the job can sometimes seem like a daunting task. Variables such as altitude, ambient temperature, load and starts per hour all affect selection of the ideal motor starting solution. At AuCom, we employ sophisticated engineering tools to help you select the right MVE starter for your site conditions. No matter the application, you can trust our team of experienced motor control professionals to get your motor running smoothly.

A design based on standard components reduces the need for spare parts and simplifies support



Individually removable phase arm design allows for simple installation, service or replacement

Conformal coating on PCBs for protection in environments up to pollution degree 3

Ultra-compact form factor supports vertical or horizontal integration of power electronics, saving valuable space

TECHNICAL DATA

Motor voltage:	2.3 - 13.8 kV ± 15 % (maximum 11 kV in
M-Series panel) Control voltages:	85 - 264 VAC or 90 - 350 VDC
Frequency:	50 ± 15 % Hz (autotrigger)
Starter current:	70 A - 1700 A (maximum 540 A in M-Series Panel)
Starting time :	1 second - 90 seconds
Stopping time :	0 second - 90 seconds
Starting current:	100% to 700% Irated
Starting voltage	5 to 80% Urated
Kickstart current / Kickstart time:	70 to 400% Irated/ 0 to 10 seconds
CT type:	Standard MV CTs (adjustable ratio) .Direct mesuare on busbar
VT type:	EPT type
MV/LV isolation:	100% fibre optic connection
Digital input:	3 fixed (start, stop, reset), 2 programmable (A, B)
Relay output:	4 fixed, 3 programmable (A, B, C)
Analog output:	1 analog output
RTD input :	6 input (optional)
Communications I/O:	Modbus RTU, Modbus TCP, Profibus, Profinet, DeviceNet , Ethernet/IP, USB

Rely on MVE

Feature	Benefit
Quick Application Setup	Easy commissioning
Multi-language Graphical Display	Ease of use and communication
Dual Motor Set	Allows for two different starting and stopping motor data sets
Starting and Stopping Options	A range of starting methods including current based torque control make the MVE soft starter suitable for all applications
Simulation Mode	Support simulation run mode, protection mode, analog output
Real-time Performance Graph	Real-time graphs of motor performance and current quickly and clearly illustrate how your motor is performing
Diagnostic Tool	Recorded waveforms can help diagnose conditions interfering with operation
LV/MV Isolation via IBT Technology	AuCom IBT Interface Board Technology isolates the core starter control system and HMI from the MV power section, creating a safer work environment
LV Motor Test	Conduct factory testing without the need for a medium voltage motor or supply
Secondary Injection Testing	Allows full testing of motor protections via an external system such as Omicron
Complete Motor Protection	A wide range of protection features including ground fault protection ensure that your equipment can operate safely even in the most demanding environments
DOL+ Mode	Protects your motor even while operating in bypass mode
Ground current input	Power Interface Board build-in zero sequence current transformer input
Advanced Thermal Modelling	Intelligent thermal modelling allows the soft starter to dynamically calculate motor temperature and determine whether the motor can start successfully

Take control from the start

Medium voltage installations are complex enough without making the starter hard to use as well. MVE is packed with features designed to make your life easier, including real-language feedback messages, so you don't have to look up codes to know what's happening.

Built-in monitoring and indicators, and extensive on-board input and output functionality reduce the need for space and avoid the cost of auxiliary equipment, while simplifying installation. Real-time graphs of motor operating performance and current quickly and clearly illustrate exactly how your motor is performing. No fuss, no trouble - a smoother start in every sense.

Three start/stop curves for selecting, which helps control motor more easily
More safer with built in self-check motor insulation before starting

METERING FUNCTIONALITY:

- Motor current
- Motor voltage
- Mains frequency
- Motor pf
- Motor kW
- Motor HP
- Motor temperature
- kWh
- Hours run
- Real-time graphs



Clear, easy to read, programmable screen
Four-line with graph
Start, stop, reset, local/remote push buttons

Shortcut buttons for quick access to common tasks

Multilingual controller with a choice of eight languages

Status LEDs for immediate feedback

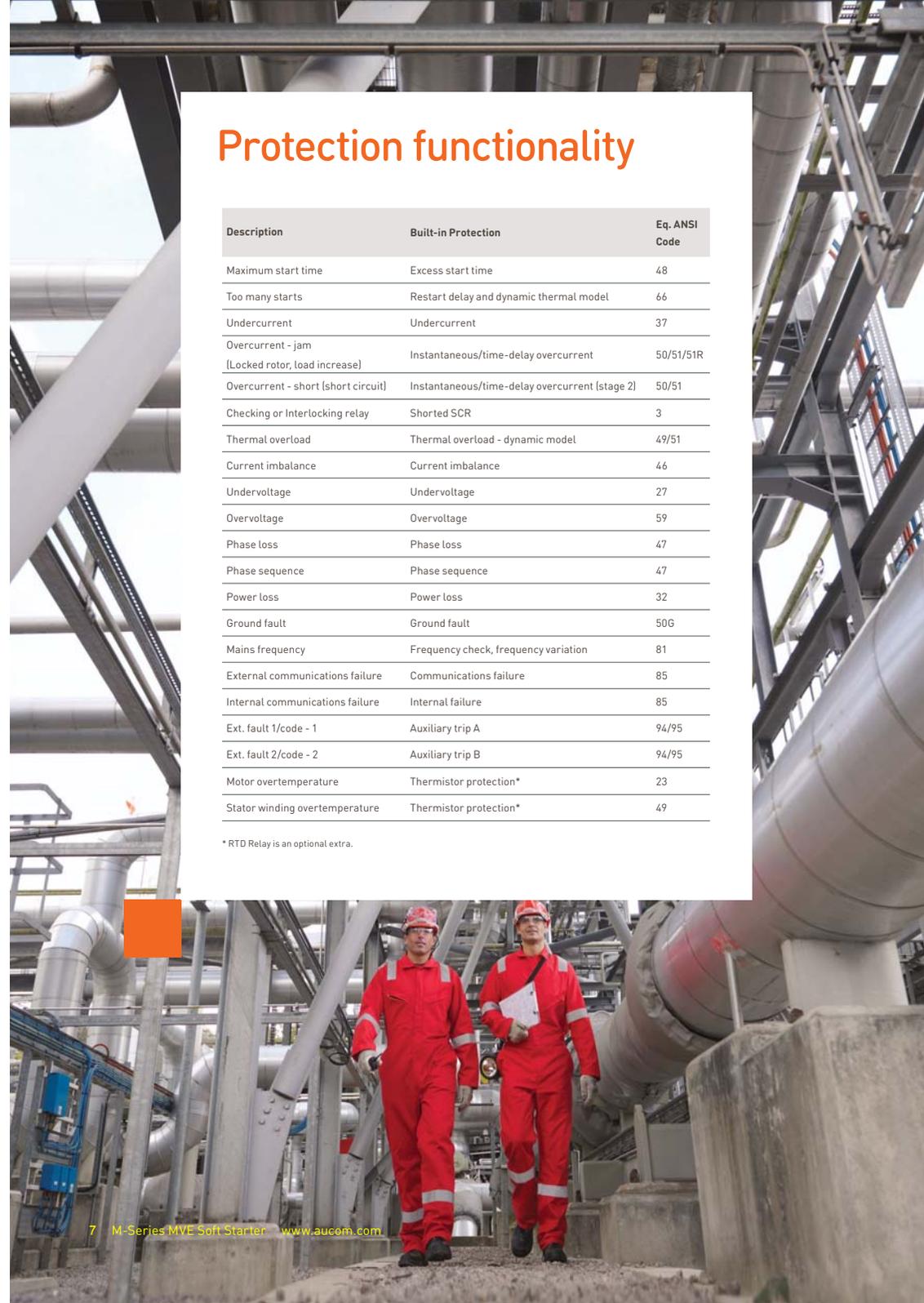
Intuitive interface and menu structure for easy setup, with multi-level password protection

IP54 keypad mounted on cabinet exterior

Protection functionality

Description	Built-in Protection	Eq. ANSI Code
Maximum start time	Excess start time	48
Too many starts	Restart delay and dynamic thermal model	66
Undercurrent	Undercurrent	37
Overcurrent - jam (Locked rotor, load increase)	Instantaneous/time-delay overcurrent	50/51/51R
Overcurrent - short (short circuit)	Instantaneous/time-delay overcurrent (stage 2)	50/51
Checking or interlocking relay	Shorted SCR	3
Thermal overload	Thermal overload - dynamic model	49/51
Current imbalance	Current imbalance	46
Undervoltage	Undervoltage	27
Overvoltage	Overvoltage	59
Phase loss	Phase loss	47
Phase sequence	Phase sequence	47
Power loss	Power loss	32
Ground fault	Ground fault	50G
Mains frequency	Frequency check, frequency variation	81
External communications failure	Communications failure	85
Internal communications failure	Internal failure	85
Ext. fault 1/code - 1	Auxiliary trip A	94/95
Ext. fault 2/code - 2	Auxiliary trip B	94/95
Motor overtemperature	Thermistor protection*	23
Stator winding overtemperature	Thermistor protection*	49

* RTD Relay is an optional extra.



Knowledge is power

We don't just get you started – we're committed to keeping you running smoothly too. Our dedicated diagnostic tools simplify support and maintenance.

DIAGNOSTICS

The MV Diagnostic Board is a data acquisition and recording board that is provided as standard with all AuCom MV products.

The MV Diagnostic Board records waveforms that can help diagnose problems with the starter's installation or operation, including:

- Excessive supply impedance (voltage sag and SCR conduction angle)
- Generator set frequency stability at on/off load transitions
- Disconnection of non-conduction fibre optic connections
- A shorted SCR or welded bypass (can be isolated to individual phases)
- Presence or absence of an MV supply
- Supply quality issues (harmonics)
- Gate drive failures

DETAILED EVENT LOG

The 99-place event log records time-stamped details of operation and performance, making it easier than ever to track how your motor is performing.

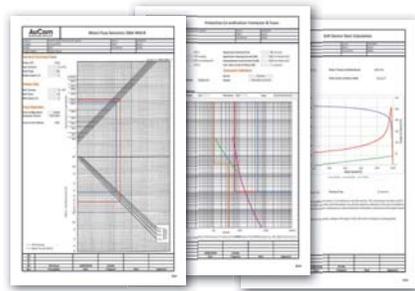
An eight position trip log records trip states and operating conditions at the time of trip, including:

- Phase currents and voltages
- Mains frequency
- Starter state
- Time & date

Support download log and event to csv files using software



MV Diagnostic Board
8 M-Series MVE Soft Starter www.aucom.com



Customer listening

Beside standard configuration and design. Aucom offers design base on customer requirement.

Aucom has a completely automation factory, which could produce any order within 4 weeks

For specific design or project base design, please contact us for further discussion



The soft start specialists

At AuCom our focus is exclusively on soft starters. We provide a range of industry leading products utilising the latest technology.

A dedicated medium voltage laboratory with full manufacturing and on-site testing facility provides selectable voltage sources from 2.3 kV to 13.8 kV, pump load, electronically controlled test load and synchronous motor testing capabilities.

TESTING AND VERIFICATION

Our comprehensive MV testing routine is designed to guarantee that our products are safe and reliable. This process involves:

- Functional testing of each individual phase arm
- Functional testing of each 3 phase arm block
- Dielectric testing to ensure safety
- Full testing of all logic controls
- A full operational test

We also offer factory acceptance testing (FAT) and third party test audits on request.



THE PROOF IS IN THE POWER UP

All AuCom MV starters run a motor at rated voltage before they leave the factory so we're sure that you're getting the performance we promised.

FULL TRACEABILITY

Automated testing routines verify operational performance and record results so that all necessary information is readily available in the rare event that things don't go as planned.

THIRD PARTY CALIBRATION

Third party calibration professionals carry out regular calibration of all our equipment including test and measurement fixtures.

We have high standards

AuCom is accredited to ISO9001:2000, with all products designed and tested to international standards. All of our products are thoroughly tested in certified facilities and in the field before release, and every soft starter is tested before leaving the factory.

The AuCom MVE soft starter is designed and manufactured to the following standards:

EN 50178:1998	Electronic equipment for use in power installation
IEC 60060-1	High voltage test techniques
IEC 60071-1	Insulation coordination - Part 1: Definitions, principles and rules
IEC 60071-2	Insulation coordination - Part 2: Application guide
IEC 60270	High voltage test techniques - Partial discharge measurements
IEC 60282-1	High voltage fuses - Part 1: Current-limiting fuses
IEC 60529	Degrees of protection provided by enclosures (IP Rating and Tests)
IEC 61000-6-2	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
IEC 61000-6-4	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Emission standard for industrial environments
IEC 62271-1	High-voltage switchgear and control gear - Part 1: Common specifications
IEC 62271-100	High-voltage switchgear and control gear - Part 100: High-voltage alternating-current circuit breakers
IEC 62271-102	High-voltage switchgear and control gear - Part 102: Alternating current disconnectors and earthing switches
IEC 62271-105	High-voltage switchgear and control gear - Part 105: Alternating current switch-fuse combinations
IEC 62271-106	Alternating current contactors, contactor-based controllers and motor-starters
IEC 62271-200	High-voltage switchgear and control gear - Part 200: AC metal-enclosed switchgear and control gear for rated voltages above 1kV and up to and including 52 kV