



MOCOTECH

WE START YOUR LARGE DRIVES

Solid state soft starter type VFS

Rated voltage: up to 17,5 kV

Rated current: up to 1400 A



MOCOTECH.DE



MOCOTECH - YOUR PARTNER

Mocotech GmbH is a German specialist for MV motor starting applications established in 2000. We are well-known by our customers as a reliable and strong partner. Our experienced and qualified team takes the full responsibility for the design, production, commissioning and after sales service of our products. Several hundreds of references installed worldwide prove our quality and competitiveness.

BENEFITS

The solid state soft starter type VFS from Mocotech GmbH is a microprocessor controlled reduced voltage soft starter (RVSS) for medium voltage three phase induction asynchronous and synchronous motors.

The advanced controller technology with integrated motor protection functions increase your process stability and protects your equipment. Different selectable and adjustable starting characteristics reduce the voltage drop in your power supply and eliminate reliable the mechanical stress on your equipment during motor acceleration. For some applications like water pumps it might be beneficial to slowly decrease the speed of the motor instead of coasting to a stop. The solid state soft starter type VFS provides a soft stop function with final torque adjustment for these applications.

We start your large drive and with the integrated motor protection functions our solid state soft starter type VFS protects your motor against electrical, mechanical and thermal stress during start-up, soft stop and continuous operation.

COMPETENCE AND A CLEAN DESIGN

Our capable and committed employees stay with advice and assistance at your disposal during design, project handling and the complete lifetime of our solid state soft starter type VFS. The clean design of our products makes commissioning, operation and maintenance as easy as it could ever be.

Never accept less than the highest standards! The solid state soft starter type VFS is type approved according to IEC 62271-200 and will be manufactured in compliance with IEC standards, the EC directives and the ISO 9001 standard. Individual approvals by ABS, BV, DNV-GL, LRS, etc. are available for our solid state soft starter type VFS.

Do not waste time during installation and commissioning! Each solid state soft starter type VFS will be delivered factory tested and completely assembled with a preset software as a turnkey solution.

Never fear to lose the control about your process! Your operators have the direct access to all functions, the settings and the status of our solid state soft starter type VFS via the self-luminous alphanumeric plain text display with keypad and the serial interface.

Minimize expenses for maintenance and repairs! The exclusive use of parts with a high reliability together with our TQM ensure a meantime between failures (MTBF) which meets highest expectations. The clean design grants easy access to all components and keeps the meantime to repair (MTTR) at a minimum.



Technical specifications	
Rated voltage:	3,6 kV up to 17,5 kV
Operating voltage:	2,3 kV up to 13,8 kV
Power frequency withstand voltage:	up to 38 kV
Basic impulse level (BIL):	up to 95 kV
Peak inverse voltage (PIV):	up to 41000 V
Rated frequency:	50/60 Hz
Rated current (FLC):	up to 1400 A
Rated short circuit current:	up to 40 kA
Rated short circuit duration:	1 s
Max. starting current of FLA:	400 % *
Max. starting and stopping time:	20 s *
Number of starts per hour:	3/2 *
Control voltage:	230 V AC *
Communications protocol:	MODBUS RTU RS485 *
Ambient temperature:	0 to +50 °C *
Relative humidity:	5 to 95 %
Installation altitude:	≤1000 m *
Degree of protection:	IP 4X up to IP54
Cable entry:	Bottom *
Cabinet colour:	RAL 7035 *

Ansi Code	Description
19	Starting to running transition
27	Undervoltage
37	Undercurrent
37	Underpower (optional)
38	Bearing RTD protection (optional)
39	Mechanical condition protection (optional)
46	Phase-balance current
46	Phase loss
47	Phase-sequence
48	Incomplete sequence
48	Locked rotor
49	I ² t electronic motor overload
49	Stator RTD protection (optional)
50	Instantaneous overcurrent
50G	Instantaneous earth overcurrent
51	AC inverse time overcurrent
51G	AC inverse time earth overcurrent
51LR	AC inverse time overcurrent/locked rotor
55	Power factor protection (optional)
59	Overvoltage
66	Number of starts per hour
81	Frequency protection (optional)
86	Lockout
94/95	External fault
	Shorted thyristor (SCR) protection
	Thyristor (SCR) overtemperature protection
	Transient voltage protection (optional)

PROTECTION FUNCTIONS

Based on up-to-date microprocessor technology in corporation with precise measuring circuits and well-selected utilized equipment, our solid state soft starter type VFS provides a comprehensive set of electrical protection functions to meet all requirements for safe and reliable operation. Individual parameters for the most common protection functions as well as for special project demands can be set in the soft starter to ensure reliable operation of the equipment – soft starter, motor and driven machine.

The wide variety of applications for soft starters require careful and experienced selection of the protection parameters and extended testing of the applied functions to reduce down-time of the equipment. Mocotech GmbH verifies all defined protection values with state-of-the-art testing and simulation equipment during development and testing of the supplied soft starter equipment.

*other on request

STARTING AND STOPPING FUNCTIONS

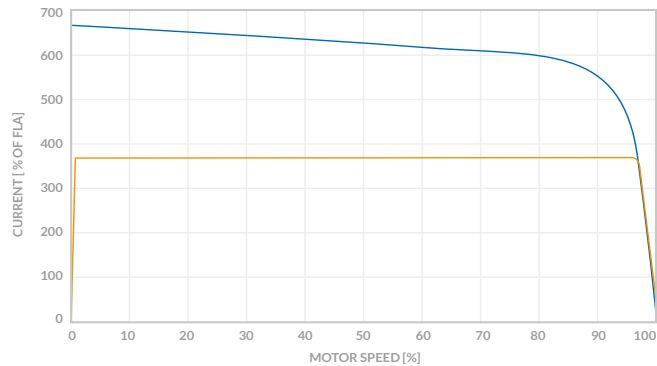
The solid state soft starter type VFS from Mocotech GmbH provides you with multiple options and extended functions for the motor acceleration and deceleration. A suitable acceleration and deceleration ramp is available for almost all applications and can be easily selected via the self-luminous alphanumeric

plain text display with keypad and the serial interface.

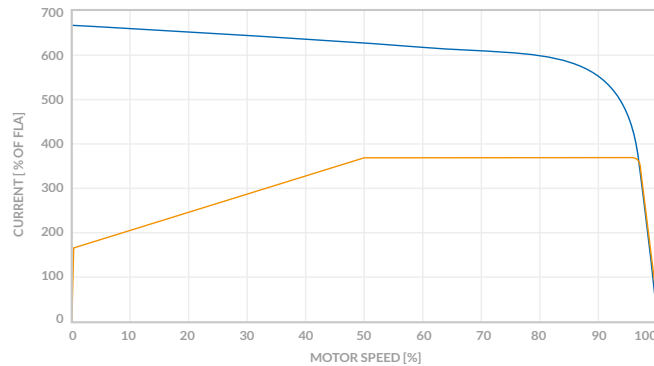
Suitable ramps can be selected depending on the load requirements during starting and stopping. Special ramps beside the well-known and commonly used constant current ramp can be enabled to suit any individual application or network requirement. The selectable and adjustable pulse start (kick-start) function provides the motor with

a torque boost for the breakaway of heavy loads. Furthermore, the dual adjustment feature provides multi-selectable parameters for two different motor settings or for perfect matching of any torque or current limitation requirement, such as extra-smooth ramping in generator-supplied networks. The soft stop function with adjustable final torque enables you to control the deceleration of your motor and load to avoid the water hammer on pump applications.

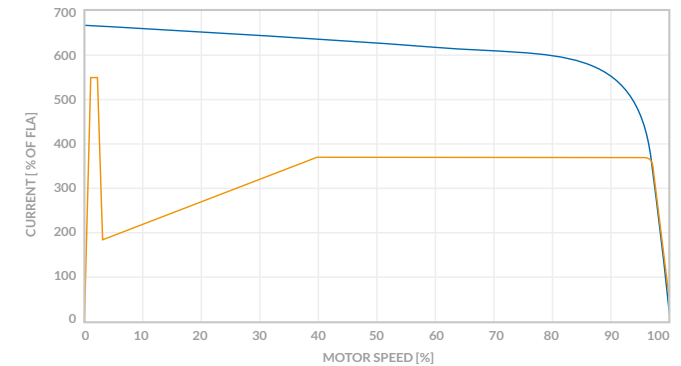
CONSTANT CURRENT



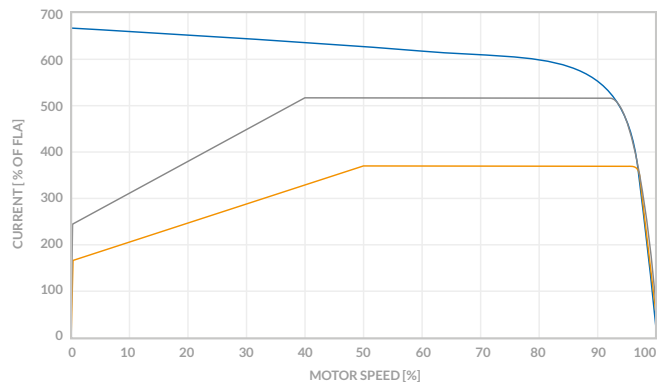
INITIAL VOLTAGE (CURRENT RAMP)



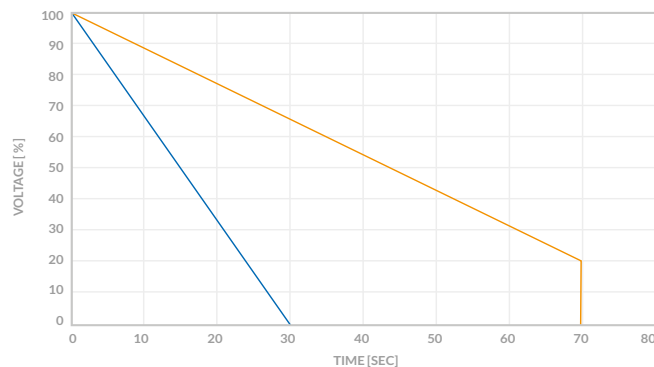
PULSE START (KICK-START)



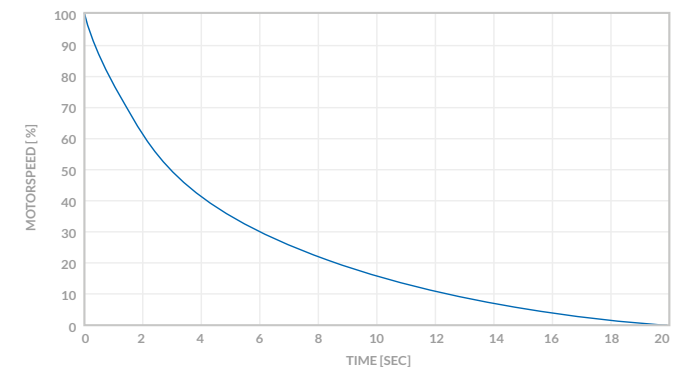
DUAL ADJUSTMENT



SOFT STOP



COAST TO STOP



OUR PRODUCTS

Increase your process stability and protect your equipment with products and technologies from Mocotech GmbH.



COMPACT STARTER TYPE KAE

Autotransformer starter (ATS)

Rated voltage: up to 17,5 kV

Rated current: up to 630 A



MEGA STARTER TYPE MAE

Autotransformer starter (ATS)

Rated voltage: up to 17,5 kV

Rated current: up to 1600 A



SOLID STATE SOFT STARTER TYPE VFS

Reduced voltage soft starter (RVSS)

Rated voltage: up to 17,5 kV

Rated current: up to 1400 A

Mocotech GmbH reserves the right to perform technical changes or modifications without prior notification. For orders, agreed conditions will be binding.

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