

Product Overview

Medium-voltage Soft Starters
VEDA-in MV SFT 100–1400 A



VEDA-in MV SFT Soft Starters

VEDA-in MV SFT soft-starters (SS) are designed for the smooth starting and stopping of asynchronous motors with a squirrel-cage rotor and synchronous motors with a voltage of 1.2–10 kV. Voltage regulation is carried out by controlled thyristors. VEDA-in MV soft starters cannot control asynchronous motors with a wound rotor. Structurally, VEDA-in MV SFT represents a basic cell soft starter cabinet in a basic configuration, as well as a system of additional cabinets for input and output cells and an optional controller cabinet.

Soft Starter Cabinet

Includes low-voltage and high-voltage compartments.

High-voltage compartment contains:

- thyristor power unit;
- linear vacuum contactor;
- shunt vacuum contactor;
- electronic potential transformer;
- current transformers.

Low-voltage compartment contains:

- «Start», «Stop», «Emergency Stop» buttons;
- indicator lights;
- Smooth start – Direct start switch;
- Relay-contactor assemblage;
- power supply unit;
- control unit with controller, display, and keyboard.

Input Cabinet

If additional switching devices (disconnectors and/or fuses) are required, an additional input cabinet is used. Depending on the rated current of the soft starter, a linear contactor may be located in this cell. Basic dimensions of the input cell (W x H x D): 800 x 2300 x 1300 (1500) mm. Maximum weight — 500 kg.

Output Switching Cabinet

Necessary for the «multi-start» system (sequential starting of multiple motors).



Soft starter cabinet with linear and shunt contactors
(without input and output power cells)

Table 1. General Conditions for Selecting Soft Starters

Load Type	Selection Coefficient (C) I _{ss} /I _{rc}
Centrifugal Pumps	1
Submersible Pumps	1
Piston Pumps	1
Fans, Blowers, Exhausters, Towers	1–1.5
Crushers	1.2–1.5
Compressors	1–1.6
Extruders	1.2–1.8
Mixers	1.2–2
Conveyors	1.5–2
Mills	2.5

Advantages of soft starters:

- Reduction of voltage dips and blackouts.
- Elimination of mechanical impacts on equipment and reduction of wear.
- Reduction of starting current.
- Smooth starting and stopping of the motor.
- Easily adjustable and user-friendly interface.
- Fault log.
- Start statistics log.
- Low-voltage test mode for soft starters.
- Current limiting.
- No additional voltage required for high voltage synchronization.
- Prevents excess pressure in the system during pump start-up.
- Eliminates backflow valve shock during smooth pump stop.
- Selection of the optimal start curve depending on the load type.
- Alternative settings for start/stop characteristics for different load modes.

Table 2. VEDA-in MV Soft Starter Characteristics for Currents up to 1400 A at 6 and 10 kV*

Rated Voltage, kV	Motor Power, kW	Rated Current, A	Width, mm	Depth, mm	Height, mm	Weight (max), kg	Max. Thermal Loss, kW
6	950	100	1000	1300	2300	900	8
	1290	150	1000	1300	2300	900	10
	1750	200	1000	1300	2300	900	15
	2800	300	1000	1300	2300	900	25
	3500	400	1200	1300	2300	950	30
	4400	500	1200	1300	2300	950	35
	5250	600	3300	1500	2400	1650	45
	7050	800	3300	1500	2400	1650	60
	8800	1000	4250	1500	2400	2000	70
	10000	1250	4250	1500	2400	2000	90
	12000	1400	4250	1500	2400	2000	100
10	1600	100	1000	1300	2300	1300	12
	2150	150	1000	1300	2300	1300	18
	2900	200	1000	1300	2300	1300	26
	4700	300	1000	1300	2300	1300	38
	5880	400	1200	1300	2300	1400	48
	7300	500	1200	1300	2300	1400	62
	8800	600	3300	1600	2400	2000	70
	11750	800	3300	1600	2400	2000	92
	14500	1000	4250	1600	2400	2500	110
	18200	1250	4250	1600	2400	2500	160
	20300	1400	4250	1600	2400	2500	180

* The typical configuration variants of the VEDA-in MV soft starters are given. If other configuration options are required, please contact VEDA-in DRIVES d.o.o.

Soft Starter Protections

- Reduced current
- Low voltage
- Current unbalance
- Ground short circuit
- Overvoltage
- Overload
- Maximum current
- Shut-off at applied high voltage but no start signal
- Prohibition of operation with open shunting contactor
- Prohibition of operation when the number of starts exceeds the set interval
- Phase loss
- Incorrect phase sequence
- Thyristor radiator overheating
- Thyristor breakdown
- Exceeded start time
- Stop on external emergency command

Technical Specifications

Parameter	Value
Rated voltage	3 kV, 3.3 kV, 6 kV, 6.6 kV, 10 kV, 11 kV (+10%, -15%)
Frequency	45–65 Hz
Control circuit power	110–240 V AC (+10%, -15%)
Motor current	33–100% of rated soft starter current
Initial voltage	10–50% of rated voltage
Current limiting	100–400% of motor current
Acceleration time	1–30 s
Deceleration time	1–30 s
Alternative setting	Two sets of parameters for start/stop with separate settings: motor current, initial voltage, current limit, acceleration and braking time
Auxiliary contact	1 normally open/closed, 8 A, 250 V AC, 2000 VA
End of acceleration	1 normally open/closed, 8 A, 250 V AC, 2000 VA
Fault contact	1 normally open/closed, 8 A, 250 V AC, 2000 VA
Communication interfaces	ModBus RTU, ProfiBus DP
Operating temperature	-10...+50 °C
Storage and transport temperature	-20...+70 °C
Cooling system	Natural or forced air cooling
Air humidity	No more than 95 %, without condensation
Altitude	No more than 1000 m
Protection degree	IP31, IP42, IP54

Main Configurations and Characteristics

A typical soft starter code consists of 16 main symbols and additional options.

Example: **VSTL06010031L1B1+RTU**

Description: Soft starter with a rated voltage of 6 kV and a rated current of 100 A, with a Modbus RTU communication module. Suitable for starting an asynchronous motor with a fan load and a rated voltage of 6 kV, power not exceeding 950 kW, and a rated current not exceeding 100 A.

For the smooth starting and stopping of a synchronous motor, an additional relay module option for connecting the existing excitation system is required.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Additional settings
V	S	T	L									L		B		

Description	Position	Designation		
Item name	1–3	VST – VEDA-in medium-voltage soft starter		
Rated voltage	4–6	L02: 2,3 kV L03: 3,3 kV	L04: 4,16 kV L06: 6 kV L66: 6.6 kV	L10: 10 kV L11: 11 kV L13: 13,8 kV
SS rated current	7–10	0100: 100 A 0150: 150 A 0200: 200 A	0300: 300 A 0400: 400 A 0500: 500 A 0600: 600 A	0800: 800 A 1000: 1000 A 1250: 1250 A 1400: 1400 A
Enclosure protection degree	11–12	31: IP31	42: IP42	54: IP54
Input switching device	13–14	L0: Without input switching device L1: With input switching device		
Shunt switching device	15–16	B0: Without shunt switching device B1: With shunt switching device		
Additional settings	+FU	SS input fuses		
	+IQS	SS input isolators		
	+FCBL	Input switching device – Fixed vacuum switch		
	+WCBL	Input switching device – Sliding vacuum switch		
	+FCBB	Shunt switching device – Fixed vacuum switch		
	+WCBB	Shunt switching device – Sliding vacuum switch		
	+RTU	Modbus RTU		
	+PDP	Profibus DP		