

VS65

MV ELECTRONIC SOFT STARTER



VS65

Power Electronics' VS65 medium voltage soft starter is the most reliable and safest solution, fully flexible with a customised arrangement of MV cells. Applications range from 2.3kV to 13.8kV and the VS65 combines outstanding design and hardware under the most stringent IEC regulations, using advanced technology motor control and safety, allowing for smooth starts and stops under any circumstances.

The VS65 series have been designed and tested under the most demanding environments, together with an easy to use robust interface unit which allows the user to configure the ultimate motor control and safety protection, taking care of your valuable rotating assets. The VS65 is compartmentalised in 4 independent arc-resistant sections that cleverly isolate the medium voltage parts from the low voltage control sections. Fiber optic communications between the control board and the power stage offering the maximum safety and immunity levels.

Our vertical integration production strategy and a dedicated project department allow us to offer customised equipment such as input MV protection cells, user terminal strips, communications protocols, ... the VS65 by Power Electronics is your fully integrated tailor made solution, manufactured and factory tested, together with the most reliable warranty and unique on-site technical service.

THE MOST RELIABLE
AND SAFE CUSTOMER
ORIENTED SOLUTION

- HIGHEST OPERATOR SAFETY AND BUILT-IN MOTOR PROTECTION FUNCTIONALITIES
- HIGH RELIABILITY AND AVAILABILITY, EASY OPERATION AND INTUITIVE CONTROL
- HIGHEST BREAK AWAY TORQUE
- FULLY CUSTOMISABLE TO THE MOST DEMANDING REQUIREMENTS

VS65 - TOPOLOGY

MV CONNECTION AND VACUUM CONTACTORS

The input and output bus bars are tailor made to be ready to plug in to your mains. Top and bottom and either cable or copper bus bar connection options are available.

The VS65 integrates built-in as standard two MV vacuum contactors (line and bypass). The START command initialises the starting sequence by enabling the line contactor, and then the pre-configured soft start is performed. Once the motor reaches the designated point, the bypass contactor is enabled and the line contactor is opened.

This topology isolates the thyristors from the mains at rated speed, hence the VS65 offers 100% efficiency with maximum reliability and protection.

LV USER INTERCONNECTION AND INTERFACE

The user has easy frontal and safe access to the terminal strip (I/O signals) where the centralised control signals will be connected.

The front panel integrates built-in as standard: 3 push buttons (start, stop, E-stop), 1 start mode selector (LOC, REM, STOP), 5 status pilots lamps (running, stop, ready, power supply, warning). Additionally the user can easily configure the soft starter due to its intuitive backlit display and comprehensive documentation.

SCR POWER STAGE

The power stage consists of high voltage anti-parallel pairs of SCR, which are connected in series depending on the rated voltage. Available from 2,3kV to 13.8kV. Our heavy duty design has a maximum overload capacity of 500% In.

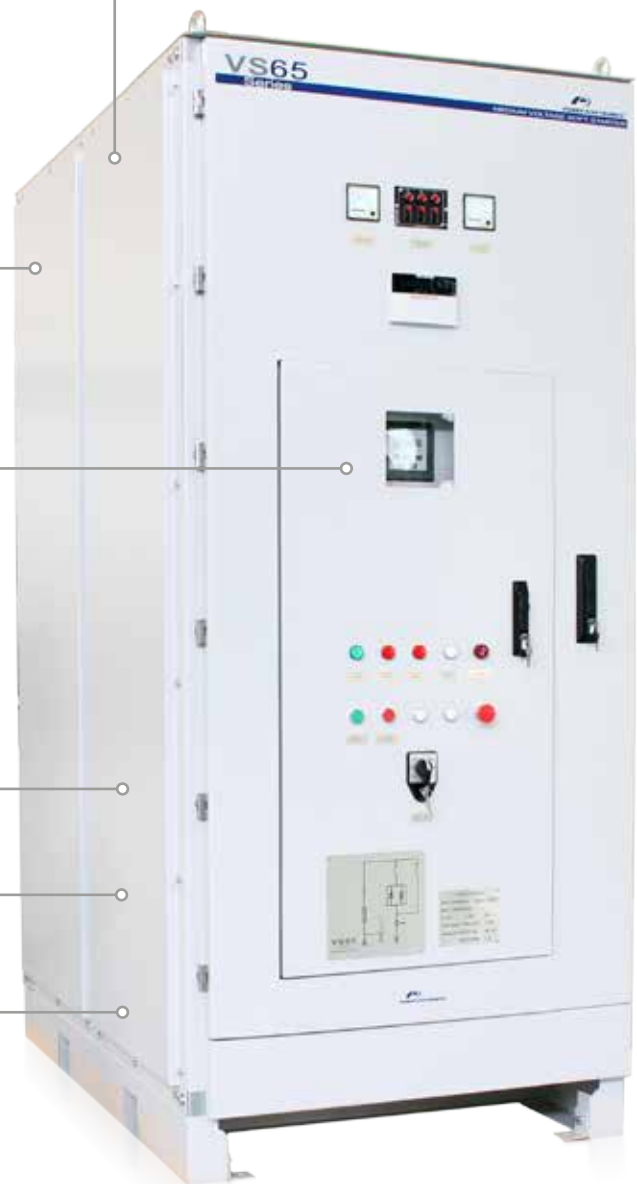
The VS65 takes care of its thyristors at any load and temperature condition by means of its built-in SCR snubber circuit and hardware protections. The Snubber circuit balances and protects the SCR stacks to enable a safe start and stop under any circumstance.

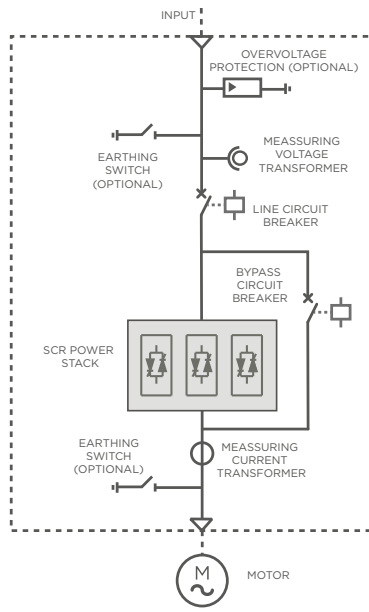
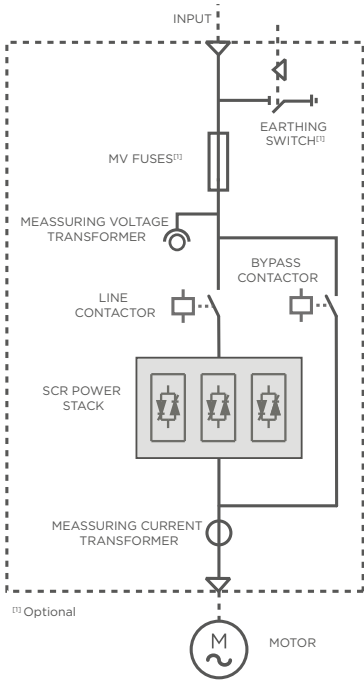
Located above the power stage is the trigger circuit. This board communicated through fibre optic to the main control board that precisely sends the triggering pulses to perform a soft start. A fibre optic communication offers maximum safety, total immunity to noise and fast communication rates.

TRIGGER
CIRCUIT

SCR STACKS

MV TRANSFORMER
FOR AUXILIARY
POWER SUPPLY





HIGHEST
OPERATION
SAFETY WITH
INTERNAL ARC
APPROVED



EXPLOSION
RELEASE DUCTS

LINE VACUUM
CONTACTOR

BYPASS VACUUM
CONTACTOR

OUTPUT BUSBAR
INPUT BUSBAR



POWER ELECTRONICS
MEDIUM VOLTAGE SOFT STARTER



Maximum safety

The VS65 has been designed under the stringent IEC and EN standards and regulations, hence minimising the inherent risk of medium voltage equipment.



MAXIMUM SAFETY

- Independent sections isolate terminal strip and interface, from medium voltage equipment.
- Mechanic interlock or by procedure that avoid unexpected door opening that give access to live parts of the equipment.
- Optional input grounding switch that connects to ground each phase avoiding unexpected reconnections during maintenance.
- Pre start low voltage test by using a LV motor allows a safely fully functional performance test including: plant control integration, enabling bypass and line contactors, I/O settings and thyristor firing.
- Explosion proof cabinet resistant to internal shortcircuit. The energy generated is released through a dedicated duct on the top, therefore avoiding any personal injury.
- BIL rating up to 50kV for safety and reliability. Clearance and creepage distances oversizing offers maximum safety.
- Factory tested at full current and optionally specific witness testing available.
- Power Electronics personnel is present in every commissioning to get the most to your application.

MAXIMUM SAFETY AND
OUTSTANDING FEATURES
DESIGNED FOR THE MOST
DEMANDING INDUSTRY



Maximum motor care and soft starter protection



The VS65 soft starter includes built-in as standard the ultimate motor and soft starter protections, features that allow it to act as a motor protection relay.

STANDARD MOTOR AND SOFT STARTER PROTECTIONS

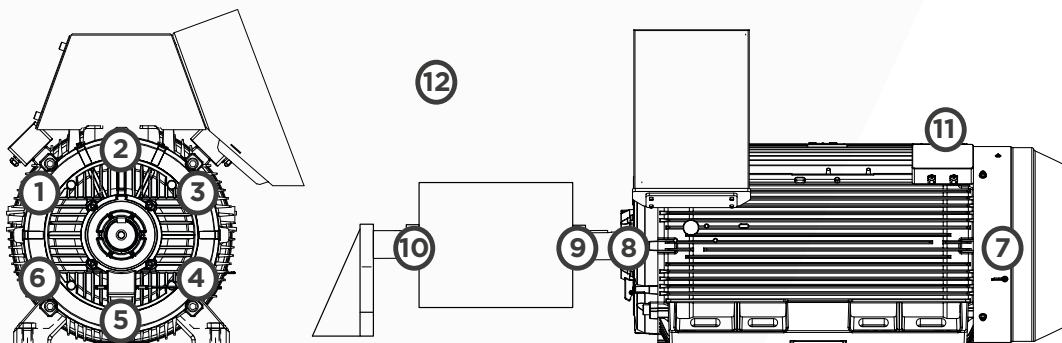
- Motor start delay
- Door open sensor
- Accelerating and decelerating control
- Starting to running transition
- SCRs over temperature
- Low input voltage
- Under-load protection
- Local and remote control selector
- Current imbalance
- Phase rotation
- Locked rotor / incomplete sequence
- i²t Electronic motor over load
- Instantaneous electronic over current trip / Shearpin
- Motor overcurrent
- Over voltage protection
- Input phase loss
- Controlled stopping ramp
- Starts per hour - Notching and jogging
- Communication loss
- Local emergency stop
- Line contactor
- Remote emergency stop
- Excessive start time (max. 120s)

OPTIONAL

- Input automatic circuit breaker, fuses, on-load disconnect or contactor
- Grounding switch
- Instantaneous ground fault detection
- Stator and bearing RTD protection
- Power factor protection
- Automatic circuit breaker, fuses and contactor status indicator
- Over and under frequency protection

REMOTE RTD SENSORS (OPTIONAL)

① STATOR WINDING 1	⑤ STATOR WINDING 5	⑨ APPLICATION BEARING 1
② STATOR WINDING 2	⑥ STATOR WINDING 6	⑩ APPLICATION BEARING 2
③ STATOR WINDING 3	⑦ MOTOR BEARING 1	⑪ CASE
④ STATOR WINDING 4	⑧ MOTOR BEARING 2	⑫ AMBIENT



CONTINUOUS CURRENT AND
VOLTAGE MONITORING



Reliability

Our record in industrial technical service has set the boundaries to all of our designs in terms of reliability. Hence, we offer the most comprehensive and extended warranties of the market.



- Electronics conformally coated with military and aerospace technology (IEC61086-1:2004, -3-1) and totally sealed, allow to be installed in harsh environments.
- Heavy duty SCR design (125% continuous, 500% 5s and 50°C) and high inverse peak voltage without reactors (chokes).
- IP44 and optional IP54 degree of protection. No dust filters that is suitable for humid and polluted environments.
- EMC cabinet design to offer maximum immunity and minimum emissions.
- Line and bypass vacuum contactors isolate the power stage in running mode against mains disturbances.
- Copper busbars that can withstand from 40kA to 80kA short circuit currents.

Rated voltage	SCR pairs in series	SCRs Inverse Peak Voltage
2.3kV	1	6.500V
3.3kV/4.16kV	2	13.000V
5kV/5.5kV/6kV/6.6kV	3	18.000V
10kV	4	26.000V
11kV	5	32.500V
13.8kV	6	39.000V

TOTALLY SEALED
AND CONFORMALLY
COATED ELECTRONICS

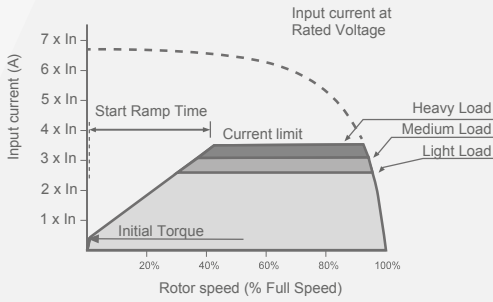
Multiple features

A high investment in the development of control software has led to the most accurate, powerful and flexible performance.

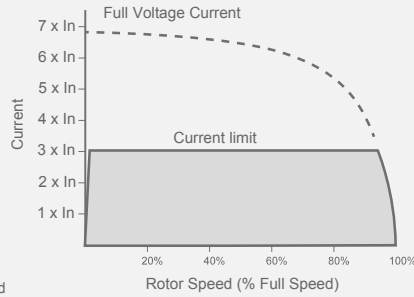


The VS65 soft starter gets the most from your facilities, by implementing the unique dynamic torque control algorithm (CDP) that offers an ultimate break away torque and starts the most demanding applications. Some of the starting and stopping extended settings are:

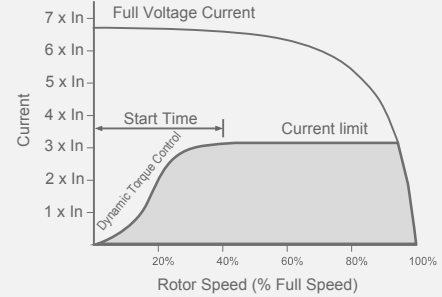
STARTING MODES



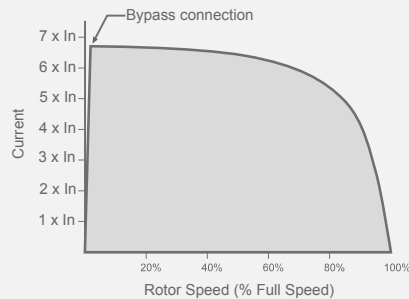
VOLTAGE RAMP



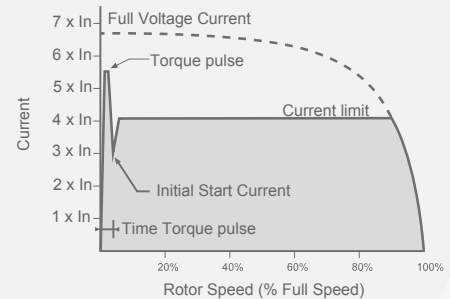
CURRENT LIMIT STARTING



DYNAMIC TORQUE CONTROL

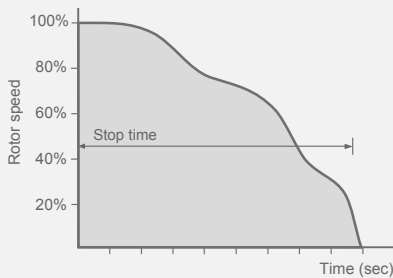


DIRECT STARTING

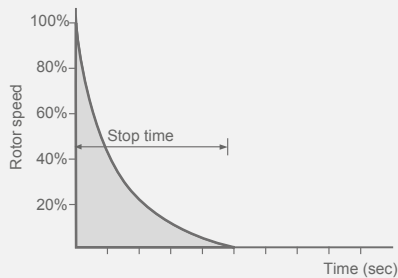


ROTOR LOCKED

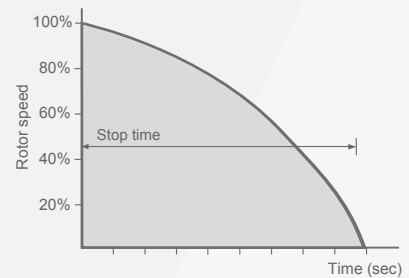
STOP MODES



WATER HAMMER CONTROL



SPIN STOP



STOP WITH VOLTAGE RAMP

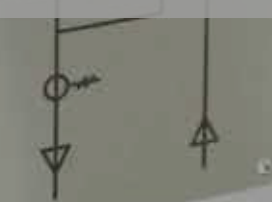
GET THE MOST OF YOUR APPLICATION WITH THE DUAL SETTING FUNCTION

The VS65 soft starter offers a double independent setting of the start and stop parameters, which permits the soft starter to shift performance according to the conditions: loaded or unloaded, raw material conditions, static pressure, temperature variations, blocked shaft, etc... the VS65 control allows the advanced users to adjust: torque pulse duration, break away torque and time, current limit, stop time, level and time of the overload and underload protections, i^2t overload curve, n^2 start per hour, minimum speed and water hammer control algorithm.



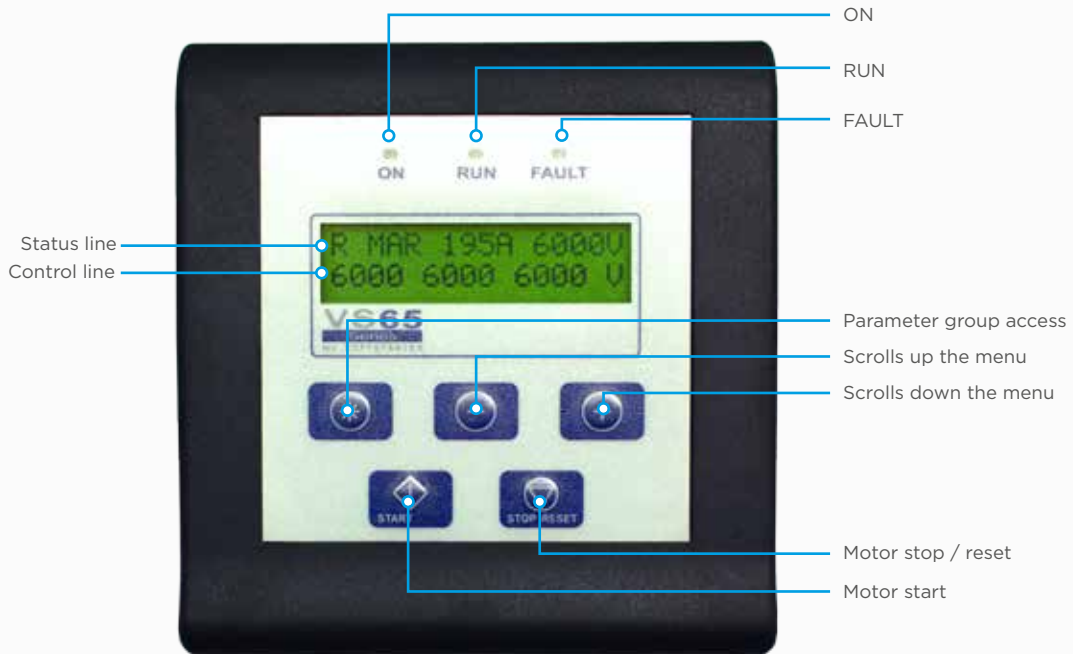
Intuitive control

The VS65 integrates an intuitive and dust resistant interface that includes backlit alphanumeric display with membrane key pad, status lights and pushbuttons that allow the user an easy operation and visualisation under the most demanding conditions.





Local operation through display or pushbuttons, and remote operation through serial communication or I/O signals, can both be easy selected using the door mounted selector.



COMMUNICATIONS



Modbus-RTU over serial communication (RS232/RS485) built-in as standard, optionally communications gateways are available: Ethernet TCP/IP, Profibus-DP and DeviceNet.

PROFIPOWER: Modbus RTU (RS485) to Profibus-DP (9 Pin D-SUB/F). Communication speed máx. 12MB, Profibus cable recommended.

DEVICENET: Modbus RTU (RS485) to Devicenet (CAN) gateway. 31 nodes maximum. Asynchronous communication control mode. Half Duplex communication system, Transmission type: Bus method, Multi drop Link system. Communication speed: 125kbps, 250kbps, 500kbps, 1000 kbps. Transmission distance max. 500m. (125kbps Devicenet cable).

ETHERNET: Modbus RTU (RS485) to Modbus TCP (Ethernet). Communication system: Half Duplex, Full Duplex. CSMA/CD communication method. Communication speed: 10Mbps, 100Mbps.

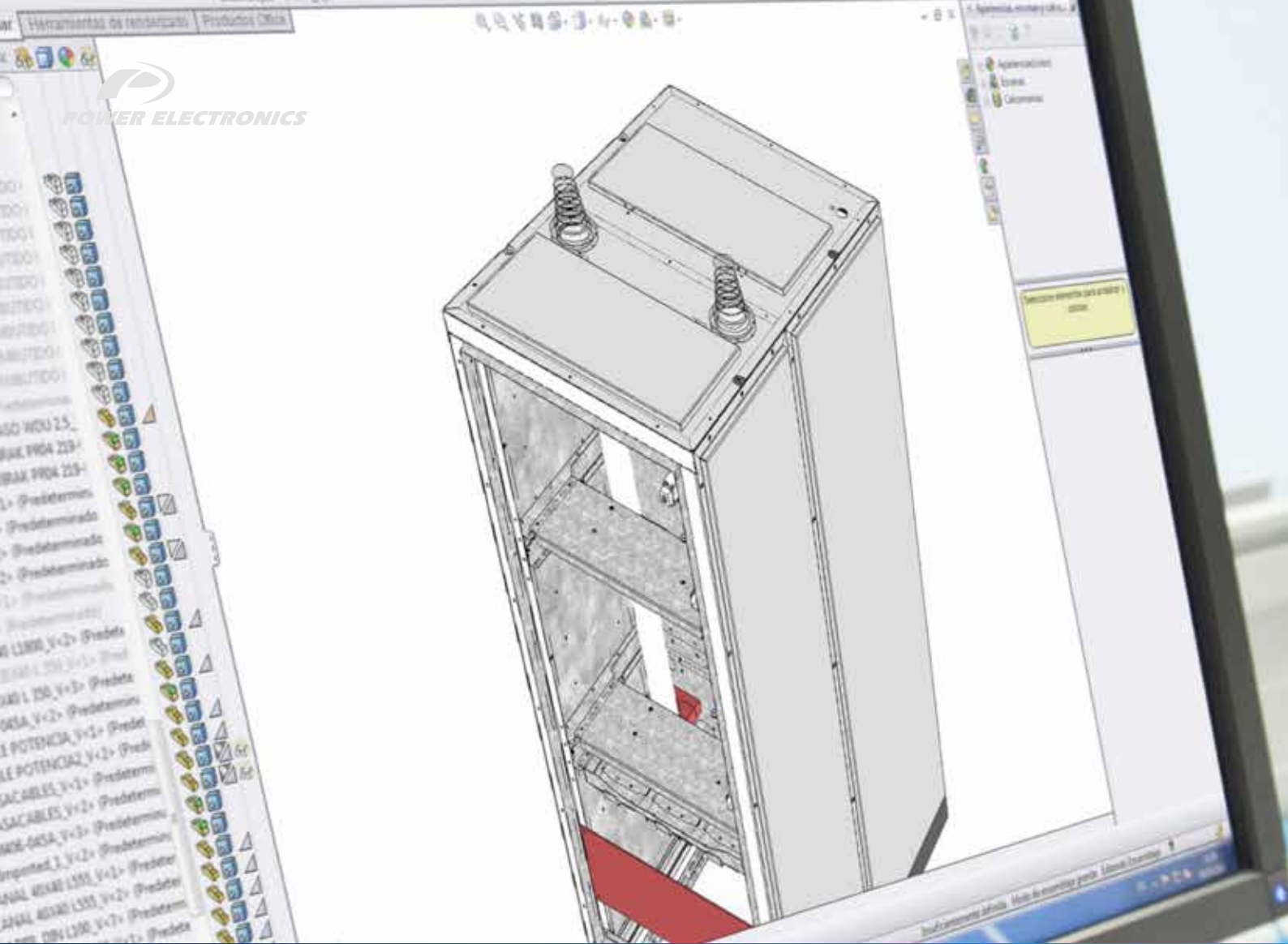
VS65

TECHNICAL CHARACTERISTICS

INPUT	Input voltage ^[1]	2,3kVca, 3kVca-3.3kVca, 4.16kVca, 5kVac-5.5kVac, 6kVca-6.6kVac, 10kVca-11kVca, 13.8kVca ^[1]
	Input frequency	47 - 62Hz
	Control voltage ^[1]	230Vac ±10%, 50Hz / 110Vac ±10%, 50Hz
	Phase sequence	Compatible with any phase sequence
	Transitory over voltage protection	Snubber network / Optional Surge arresters
OUTPUT	Efficiency (full load)	> 99.6%, 100% Bypass activated
	Overload	125% of the continuous rated value 100% to 500% (during 1 - 60s configurable)
	Bypass contactor	Capacity to start the motor in direct start mode
ENVIRONMENTAL CONDITIONS	Protection degree	IP44, IP54 (optional)
	Cooling system	Natural
	Work temperature	0°C to +50°C
	Storage temperature	-25°C to +55°C
	Humidity	5% - 95%, non condensing
	Altitude ^[1]	1000m, (reinforced isolation optional for 4500masl)
Painting ^[1]	RAL 7035, C4 corrosion (ISO 12944-2)	
INTERCONNECTION	Digital inputs	5 configurable input
	Analogue inputs	2 analogue inputs of 0-20mA or 4-20mA, 0-10V
	Output relays	3 switched relays (non-inductive 10A 250Vac)
	Analogue outputs	1 configurable output 0-20mA or 4-20mA
OPERATION MODES	Starting modes	Current limit starting
		Current ramp and current limit starting
		Dynamic torque control
		Initial torque pulse starting
	Direct starting	
Stop modes	Spin stop	
	Stop by voltage ramp	
	Stop by water hammer control	
KEYPAD AND CONTROL PUSH BUTTONS	Display	Backlit, alphanumeric 2x16 characters
		5 keys: start, stop, access and scroll menu
		Status leds: ON: Green. Turned on indicates there is voltage in the control boards. RUN: Orange. Flashing shows when the motor accelerates or decelerates. When turned on indicates the motor is working. FAULT: Red. Indicates fault.
	Door mounted indicators and buttons (soft starter)	3 push buttons: Start, Stop and emergency stop
		1 starting mode selector
	Door mounted indicators and buttons (Optional Input module)	7 status pilots (running, stopped, ready, power supply, alarm, line contactor and bypass contactor)
		7 status pilots (Power supply L1/L2/L3, MV switches status on/off/loaded control voltage supply)
	Display information	3 push buttons: switch status, connection and disconnection
		1 selector of MV locking
		Current of the three phases
Line average voltage		
Digital inputs and relays status		
Analogue inputs and outputs status		
Power supply and motor frequency		
Power factor		
Motor torque and power		
Fault history (5 last faults)		
Total and partial starts number		
Total and partial operation hours		
Partial motor consumption (kWh)		

NOTES [1] Other configurations consult with Power Electronics.

COMMUNICATIONS	Standard Hardware	RS232 / RS485
	Optional Hardware	Ethernet / 9-Pin D-SUB/F
	Standard Protocol	Modbus-RTU
	Optional Protocol	Profibus DP, Devicenet, Ethernet, IEC 61850
	Control modes	Local: from keyboard and pushbuttons Remote: from the digital and analogic inputs. PLC: start / stop
STANDARD MOTOR PROTECTIONS ^[1]	Input phases sequence	
	High voltage	
	Input low voltage	
	Start current limit	
	Rotor locked	
	Motor overload (thermal model)	
	Under load	
	Unbalanced phases	
	Shearpin current	
	Maximum number of starts/hour	
	Other, consult Power Electronics	
SOFT STARTER PROTECTIONS	SCR overheat	
	Excessive start time (max 120s)	
	Input phase loss	
SOFT STARTER SETTINGS	Torque pulse	
	Initial torque	
	Initial torque time	
	Acceleration time	
	Current limit: 1to 5•In	
	Overload: 0.8 to 1.2•In, Overload curve: 0 to 10	
	Deceleration time / Spin stop	
	Slow Speed(1/7 fundamental frequency)	
	Dual setting	
	Number of Starts/hour allowed	
	Torque control	
Water hammer control		
REGULATIONS	Certification	CE
	Designed as	EMC Directive (2004/108/CE) EN61000-6-2, -4
	Design and construction	EN62271-1,-200
		EN60071-1,-2



CUSTOMISED SOLUTIONS

High value medium voltage projects often require customer specific solutions. Our team of highly experienced engineers are available to modify our standard products to suit your specific demands to ensure you get the product you need.



• Reactive power compensation module:

- Medium voltage line fuses
- Withdrawable vacuum contactors
- Current limit inductances
- Medium Voltage capacitor banks

Input protection module:

- Automatic Circuit Breaker (VCB)
- Medium Voltage Line Fuses
- Withdrawable vacuum contactors
- Earthing switch
- Commutation MV cabin
- Surge arresters
- Line switch with earthing

Customised control and pushbuttons:

- Selectors and pushbuttons
- Digital and analogue I/O pre-configuration
- Customised user terminal strip
- PTC and PT100 relays
- Instantaneous ground fault protection relay.
- Specific external Power Supply (UPS, 110Vac,...)
- Optional communication protocols (Profibus-DP, Devicenet, Modbus TCP,...)
- Soft starter's and motor's heating resistor control.

Documentation:

- Electrical and dimensional drawings.
- ITP reports
- Witness factory Acceptance test (FAT)
-

Cabinet features:

- Special RAL, special labelling and warning labels.
- Incoming MV cable or busbar connection from top, right or backside.
- Lined up soft starters with common main input busbar and protection "Run busbar".

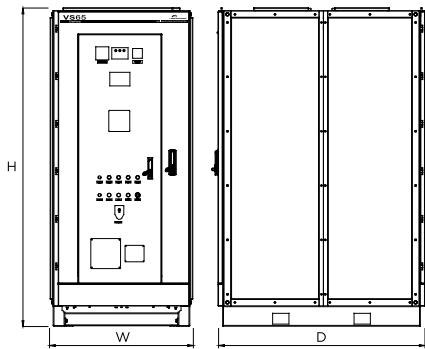
CONFIGURATION TABLE - VS65 SOFT STARTER MODULE

V65	200		4		4		CL		F		3		0	
VS65 Series	Rated output current (1)		Rated input voltage		Degree of protection		Configuration		Earth switch + Fuses		Isolation		Power cable access	
V65	045	45A	2	2.3kV	1	NEMA1	CL	Fixed - Line contactor	O	O	1	3.6kV	O	Bottom
	050	50A	3	3kV 3.3kV	3	NEMA3R	CX	Withdrawable - Line contactor/ Fixed bypass	F	Fuses	2	4,76kV	T	Top input bottom output
	055	50A	4	4.1kV	4	IEC IP41	XX	Line contactor and withdrawable bypass	S	On/Off/Earth	3	7.2kV	U	Top both
	5	5kV 5.5kV	5	IEC IP54	IA	Fixed - Line circuit breaker	E	Earth	4	8.25 kV	S	Side
	120	120A	6	6kV 6.3kV 6.6kV	...	Under request	IX	Withdrawable - Line circuit breaker	G	F+E	5	12kV	B	Bus bars
	200	200A	8	10kV 11kV			...	Under request	H	F+S	6	15kV	...	Under request
	300	300A	9	13.2kV 13.8kV					...	Under request	7	17.5kV		
	450	450A	...	Under request							...	Under request		
	630	630A												
	900	900A												
	K00	1000A												
	K25	1250A												
	...	Under request												

NOTES Check the rated current of the motor nameplate and indicate the short circuit current to guarantee the compatibility with the selected soft starter.

Consult configuration availabilities with Power Electronics.

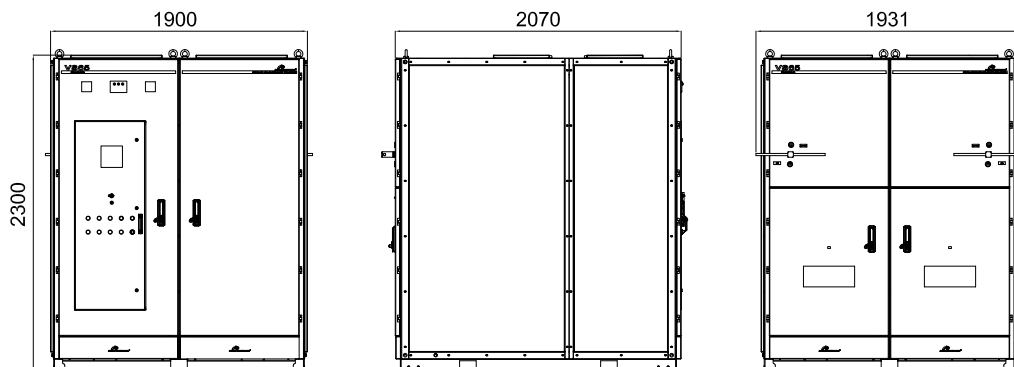
DIMENSIONS - VS65 SOFT STARTER MODULE - UP TO 6.6kV



VS65				
VOLTAGE	CONFIGURATION	DIMENSIONS		
		WIDTH W (mm)	DEPTH D (mm)	HEIGHT H (mm)
<4.16kV	CL, CL_F, CL_E	1050	1550	2300
	CL_S, CL_FS, CL_FE	1050	1820	2300
5kV-6.6kV	CL, CL_F	1050	1550	2300
	CL_E, CL_S	1050	1820	2300

NOTE Units I_n<300A. Other voltages and configurations consult Power Electronics.

DIMENSIONS - VS65 SOFT STARTER MODULE - 13.8kV



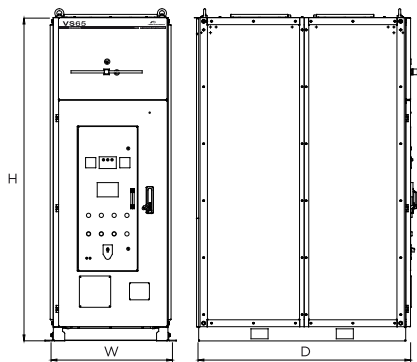
CONFIGURATION TABLE - PROTECTION MODULE VS65R

V65R	300		3		4		IA		F		O	
VS65 Protection module	Rated current ^[1]		Rated voltage		Degree of protection		Configuration		Earth switch and Fuses		Cables access	
V65R	045	45A	1	3.6kV	4	IEC IP44	CL	Fixed line contactor	O	-	O	Bottom
	050	50A	2	4,76kV	5	IEC IP54	CX	Withdrawable line contactor	F	Fuses	T	Top input bottom output
	055	55A	3	7.2kV	...	Under request	XX	Line contactor and withdrawable bypass	E	Earth	U	Top both
	--	---	4	8.25 kV			IX	Withdrawable VCB	G	F+E	S	Side
	120	120A	5	12kV			SI	On/Off/Earth input & output	I	On/Off/Earth input & output	B	Bus bars
	200	200A	6	15kV			IA	Automatic circuit breaker	M	On/Off/Earth input & output	...	Under request
	300	300A	7	17.5kV			SE	Disconnecter and Earth	...	Under request		
	450	450A	...	Under request			PF	Reactive power capacitors + Fuses + Contactor + Choke				
	630	630A					BP	Line contactor and bypass				
	900	900A					...	Under request				
	K00	1000A										
	K25	1250A										
	K50	1500A										
	2K0	2000A										
	...	Under request										

NOTES [1] Check the rated current of the motor nameplate and indicate the short circuit current to guarantee the compatibility with the selected protection module.

Consult availability with Power Electronics.
Please consult Power Electronics with your additional demands.

DIMENSIONS - PROTECTION MODULE VS65R



VS65R			
CONFIGURATION	DIMENSIONS		
	WIDTH W (mm)	DEPTH D (mm)	HEIGHT H (mm)
<7.2kV	900	1550/1820	2300
>7.2kV	1050	1550/1820	2300

STANDARD RATINGS - VS65 SOFT STARTER MODULE

VS65 2.3kV			
CODE	NOMINAL CURRENT (A)	MOTOR POWER	
		(kW)	(HP) ^[1]
V65040 2	40	149	200
V65050 2	50	186	250
V65060 2	60	224	300
V65070 2	70	261	350
V65090 2	90	298	400
V65100 2	100	336	450
V65110 2	110	373	500
V65130 2	130	447	600
V65150 2	150	522	700
V65170 2	170	597	800
V65190 2	190	671	900
V65210 2	210	746	1000
V65270 2	270	932	1250
V65320 2	320	1119	1500
V65370 2	370	1305	1750
V65420 2	420	1491	2000
V65480 2	480	1678	2250
V65530 2	530	1864	2500
V65590 2	590	2051	2750

[1] HP standard motor rated power (cos ϕ = 0.88, 2.3kV)

VS65 3kV-3.3kV			
CODE	NOMINAL CURRENT (A)	MOTOR POWER	
		(kW) ^[2]	(HP)
V65040 3	40	200	268
V65050 3	50	250	335
V65060 3	60	315	422
V65070 3	70	355	476
V65080 3	80	400	536
V65090 3	90	450	603
V65100 3	100	500	670
V65110 3	110	560	751
V65120 3	120	630	845
V65140 3	140	710	952
V65160 3	160	800	1073
V65180 3	180	900	1207
V65200 3	200	1000	1341
V65250 3	250	1250	1676
V65280 3	280	1400	1877
V65320 3	320	1600	2145
V65360 3	360	1800	2413
V65400 3	400	2000	2681
V65450 3	450	2240	3003
V65500 3	500	2500	3352
V65560 3	560	2800	3754

[2] kW standard motor rated power (cos ϕ = 0.88, 3.3kV)

VS65 4.16kV			
CODE	NOMINAL CURRENT (A)	MOTOR POWER	
		(kW)	(HP) ^[3]
V65050 4	50	298	400
V65055 4	55	336	450
V65060 4	60	373	500
V65070 4	70	447	600
V65080 4	80	522	700
V65095 4	95	597	800
V65110 4	110	671	900
V65120 4	120	746	1000
V65150 4	150	932	1250
V65180 4	180	1119	1500
V65210 4	210	1305	1750
V65240 4	240	1491	2000
V65270 4	270	1678	2250
V65300 4	300	1864	2500
V65320 4	320	2051	2750
V65350 4	350	2237	3000
V65410 4	410	2610	3500
V65470 4	470	2983	4000
V65530 4	530	3356	4500
V65590 4	590	3728	5000

[3] HP standard motor rated power (cos ϕ = 0.88, 4.16kV)

VS65 5-5.5kV			
CODE	NOMINAL CURRENT (A)	MOTOR POWER	
		(kW) ^[4]	(HP)
V65050 5	50	400	536
V65055 5	55	450	603
V65060 5	60	500	671
V65065 5	65	560	751
V65075 5	75	630	845
V65085 5	85	710	952
V65095 5	95	800	1073
V65110 5	110	900	1207
V65120 5	120	1000	1341
V65150 5	150	1250	1676
V65170 5	170	1400	1877
V65190 5	190	1600	2146
V65220 5	220	1800	2414
V65240 5	240	2000	2682
V65270 5	270	2240	3004
V65300 5	300	2500	3353
V65330 5	330	2800	3755
V65380 5	380	3150	4224
V65420 5	420	3550	4761
V65480 5	480	4000	5364
V65540 5	540	4500	6035
V65600 5	600	5000	6705

[4] kW standard motor rated power (cos ϕ = 0.88, 5.5kV)

VS65 6kV - 6.6kV			
CODE	NOMINAL CURRENT (A)	MOTOR POWER	
		(kW) ^[5]	(HP)
V65040 6	40	400	536
V65045 6	45	450	603
V65050 6	50	500	671
V65055 6	55	560	751
V65060 6	60	630	845
V65070 6	70	710	952
V65080 6	80	800	1073
V65090 6	90	900	1207
V65100 6	100	1000	1341
V65125 6	125	1250	1676
V65140 6	140	1400	1877
V65160 6	160	1600	2146
V65180 6	180	1800	2414
V65200 6	200	2000	2682
V65220 6	220	2240	3004
V65250 6	250	2500	3353
V65280 6	280	2800	3755
V65300 6	300	3150	4224
V65350 6	350	3550	4761
V65400 6	400	4000	5364
V65450 6	450	4500	6035
V65500 6	500	5000	6705
V65560 6	560	5600	7510

[5] kW standard motor rated power (cos ϕ = 0.88, 6.6kV)

VS65 10kV - 11kV			
CODE	NOMINAL CURRENT (A)	MOTOR POWER	
		(kW) ^[6]	(HP)
V65020 8	20	355	476
V65025 8	25	400	536
V65030 8	30	500	671
V65035 8	35	630	845
V65040 8	40	710	952
V65050 8	50	800	1073
V65055 8	55	900	1207
V65060 8	60	1000	1341
V65075 8	75	1250	1676
V65085 8	85	1400	1877
V65095 8	95	1600	2146
V65110 8	110	1800	2414
V65120 8	120	2000	2682
V65135 8	135	2240	3004
V65150 8	150	2500	3353
V65170 8	170	2800	3755
V65190 8	190	3150	4224
V65210 8	210	3550	4761
V65240 8	240	4000	5364
V65270 8	270	4500	6035
V65300 8	300	5000	6705
V65340 8	340	5600	7510
V65380 8	380	6300	8449

[6] kW standard motor rated power (cos ϕ = 0.88, 11kV)

VS65 13.8kV - NEMA			
CODE	NOMINAL CURRENT (A)	MOTOR POWER	
		(kW) ^[7]	(HP)
V65040 138	40	746	1000
V65050 138	50	932	1250
V65060 138	60	1119	1500
V65070 138	70	1305	1750
V65080 138	80	1491	2000
V65090 138	90	1678	2250
V65100 138	100	1864	2500
V65120 138	120	2237	3000
V65140 138	140	2610	3500
V65160 138	160	2983	4000
V65180 138	180	3356	4500
V65200 138	200	3728	5000
V65220 138	220	4101	5500
V65240 138	240	4474	6000
V65270 138	270 ^[8]	5220	7000
V65310 138	310 ^[8]	5966	8000

[7] kW standard motor rated power (cos ϕ = 0.8, 13.8kV).

[8] Overload capacity limited.

NOTES

Request your quote by filling the Ordering info template; please consult Power Electronics with your additional demands.

Soft starters over 400A and 7.2kV will be equipped with automatic circuit breaker instead of vacuum contactors and engineered under request, consult availability.