V5

ELECTRONIC SOFT STARTER

V5 SERIES

The V5 Series soft starters are Power Electronic's fifth generation, ranging from 2kW to 1500kW. An electronic starter with the most advanced control systems and voltage during motor starting and stopping, ensuring the best performance for any industrial application.

Motors are the driving force of the industry and to protect them, the V5 series integrate protections that allow a thorough diagnosis of your motor and its application. The V5 series are engineered and manufactured under the most demanding quality controls, offering a rugged mechanical design and top class hardware and software performance to those applications that run under harsh environments.

QUALITY AND RELIABILITY FOR THE MOST DEMANDING APPLICATIONS

- VOLTAGE RANGE FROM 230V-1000V AND POWER FROM 2KW TO 1500KW
- BUILT-IN MOTOR PROTECTIONS
- CONFORMAL COATED ELECTRONICS AND OPERATING TEMPERATURE OF UP TO 50°C
- HIGHEST BREAK AWAY TORQUE
- 3 WIRES OR 6 WIRES (DELTA) CONNECTION
- BUILT-IN OR EXTERNAL BYPASS
- 3 YEAR WARRANTY AND 24H SERVICE AND REPLACEMENT COMMITMENT

V5 SERIES - TOPOLOGY

EASY FRONT ACCESS AND INSTALLATION

Its metallic cabinet enclosure simplifies the installation and enables easy access to the control and power terminals, electronic boards, bypass contactors and cooling fans. With its vertical cooling system the user can install multiple units in the same cabinet.

DYNAMIC TORQUE CONTROL

The V5 Series integrates a “Dynamic Torque Control”, an exclusive starting mode from Power Electronics, that optimises starting and stopping sequences, smoothing the current peaks and the mechanical requirements of the applications.

CONTROL FLEXIBILITY

Programming by the local display unit or PC (PowerCOMMS Program). Two analogue and five digital inputs, three relays and one analogue output provide the V5 with many possibilities of control.

RS232/RS485 serial communications and Modbus are built-in.

Profibus and DeviceNet protocols are available.

RELIABILITY

25 years of evolution and field testing have gone into the V5 soft starter, and in conjunction with our technical service assistance, we guarantee the maximum availability of these units, in the harshest conditions.

Overload, underload, phase sequence, sequence imbalance, rotor locked, shearpin current, phase imbalance, are some of the motor protections functions embedded in the V5 as standard.

EXTERNAL OR BUILT-IN BYPASS

The V5 softstarter offers both possibilities. The user can select the standard model that offers the possibility to install an external contactor to bridge the power stage once the acceleration ramp is finished, and re-engages for the deceleration ramp.

Otherwise the user can choose the V5 model with built in bypass which offers the same functionality without requiring any external installation.

3 WIRES AND 6 WIRES (DELTA) CONNECTION

The 5th generation of the V5 series enables 3 wires or 6 wires (delta) connection that can down-size the unit to 30% in certain applications.

BUILT-IN MONITORING

V_{RS}, V_{ST}, V_{TR}, I_R, I_S, I_T, Cos phi, Power (kW), Frequency (Hz), Energy kW/h. Maximum motor care and protection of the application.

STRONG AND EASY TO OPERATE

Unique control board. Conformally coated electronics.

PERMANENT INFORMATION

The V5 series display constantly motor status and complete information of the installation where it is integrated. The user has access locally (keypad unit) or remote (serial communications) to the following information:

- Voltage in each phase
- Number of starts
- Total and Partial
- Power (kW) and current (A) in each phase
- Analogue input/output status
- Motor phi cosine (Power Factor), digital input/ output status
- Motor shaft torque,
- Timer total and partial
- Fault history (5 most recent fault).

INDICATING LEDS

ON Indicate power in the control board.

RUN Flashing: Accelerating/Decelerating.
Lighting: The motor is running at nominal speed.

FAULT The V5 has tripped on fault protection.

LCD DISPLAY

STATUS LINE - Top.

CONTROL LINE - Bottom.

CONTROL KEYPAD

To unfold the screen groups.

To scroll between screen groups.

To scroll between screen groups.

Motor start.

Motor Stop/Reset.

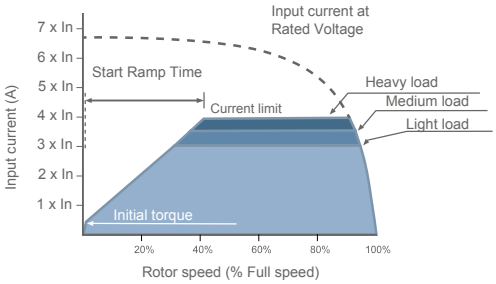
Multiple features

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

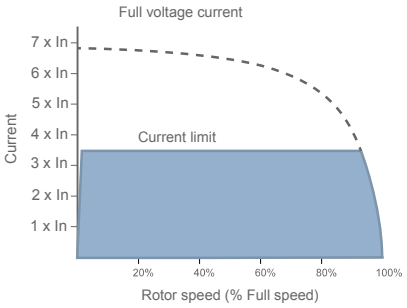
POWERFUL CONTROL

The V5 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:

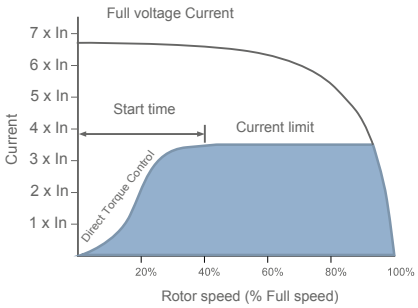
STARTING MODES



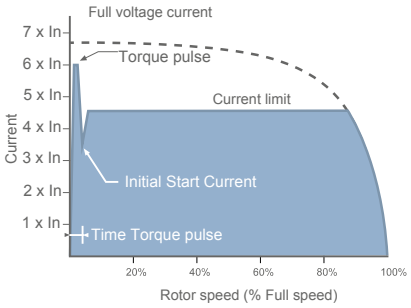
VOLTAGE RAMP



CURRENT LIMIT STARTING

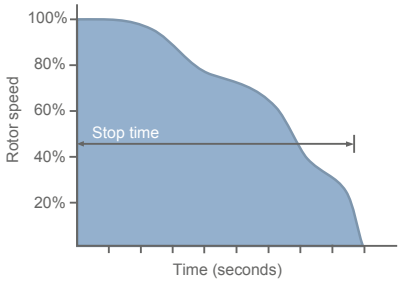


DYNAMIC TORQUE CONTROL (CDP)

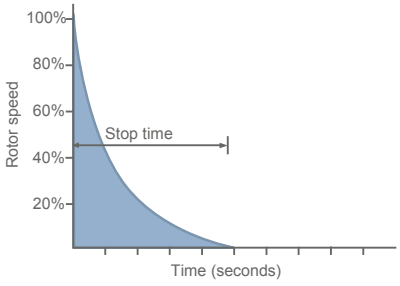


ROTOR LOCKED

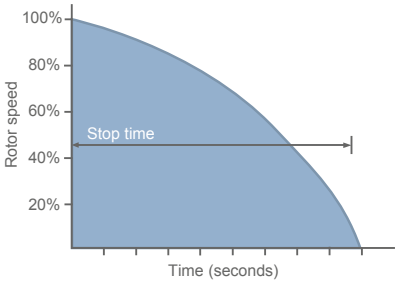
STOP MODES



WATER HAMMER CONTROL



SPIN STOP



STOP WITH VOLTAGE RAMP

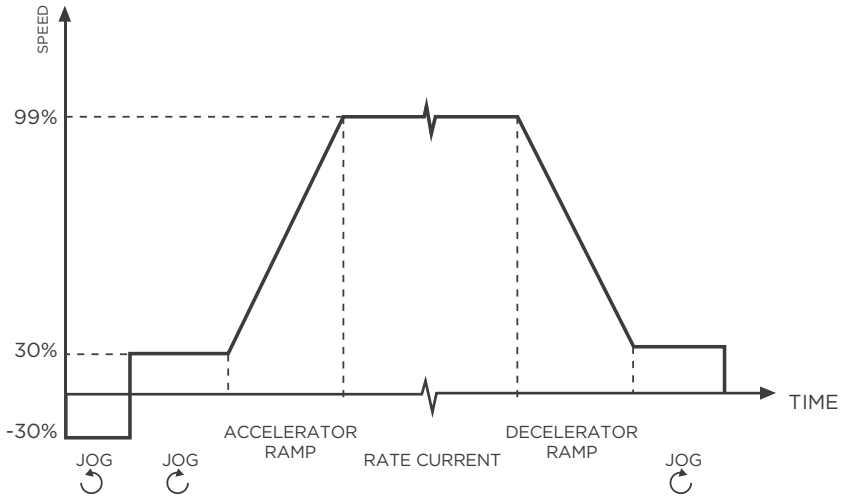
THE DUAL SETTING FUNCTION

The V5 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 V5 control allows 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, i2t overload curve, number of start per hour, minimum speed and water hammer control algorithm.

GET THE MOST OF YOUR APLICATION WITH THE DUAL SETTING FUNCTION

SLOW SPEED

The V5 Series allow adjusting torque to slow speed driving backward or forward (JOG FUNCTION). This slow speed will be active during the time assigned before acceleration ramp or after stop deceleration. Load and download of centrifuges or mixing, machine positioning or unblocking pumps are some of the applications of JOG Function.



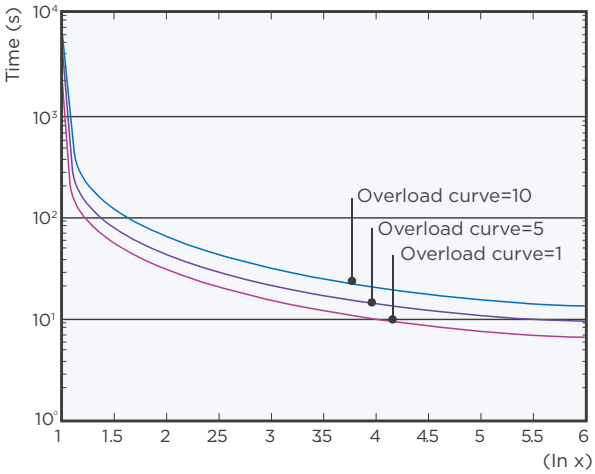
DC BRAKE

In some applications, specially in high load inertia machines, DC injection with a precise torque is possible with V5 soft starter during the time needed for each application.

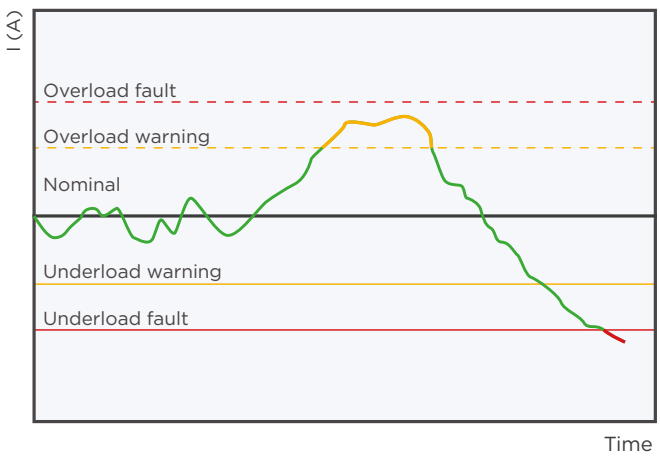
FULL PROTECTIONS

- Input phase sequency
- High input voltage
- Low input voltage
- Start current limit
- Overlock rotor
- Motor overload
- Motor underload
- Motor overtemperature PTC
- Shearpin Current
- Unbalanced phases
- Phase Sequence
- Maximum number of starts per hour
- Thyiristor fault
- Equipment temperature

OVERLOAD CURVE



OVERLOAD AND UNDERLOAD

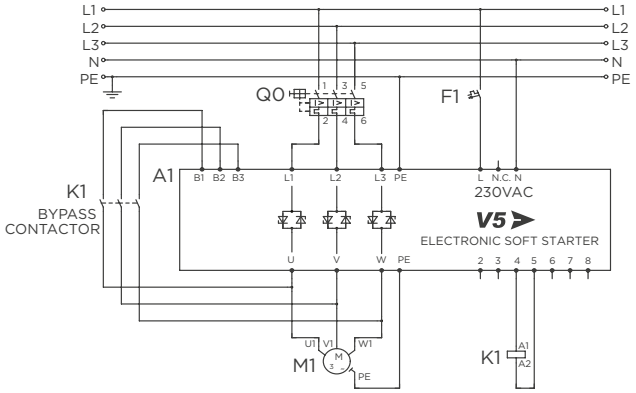


BUILT-IN AND EXTERNAL BYPASS

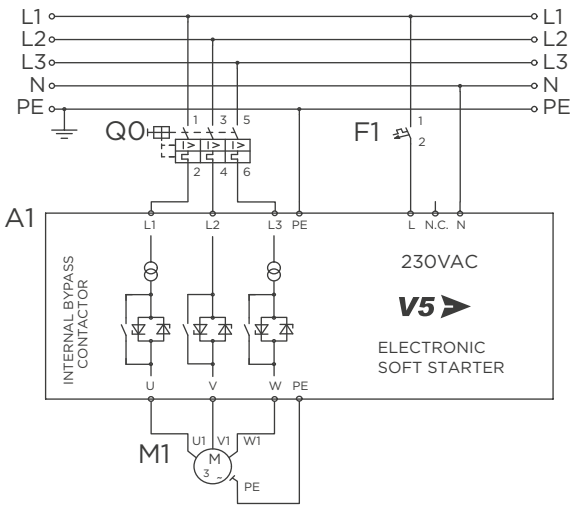
The bypass is activated after reaching the nominal speed and provides a yield of 100% because switching losses and heat dissipation in thyristors are removed from the circuit maximising savings. All protections and functionalities continue to be active with the starter in bypass.

The V5 soft starters are equipped with additional terminals for the easy connection of an external bypass contactor. If you prefer, you can select the integrated bypass, simplifying the external hardware with consequent savings in installation time and wiring.

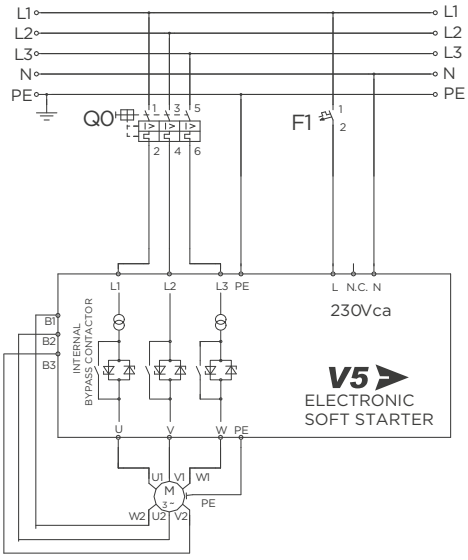
V5 - EXTERNAL BYPASS



V5 - BUILT-IN BYPASS



V5 - 6 WIRES - BUILT-IN BYPASS



ALL PROTECTIONS AND FUNCTIONALITIES CONTINUE TO BE ACTIVE WITH THE DRIVEN BYPASS, BUILT-IN OR EXTERNAL

CONFORMAL COATING

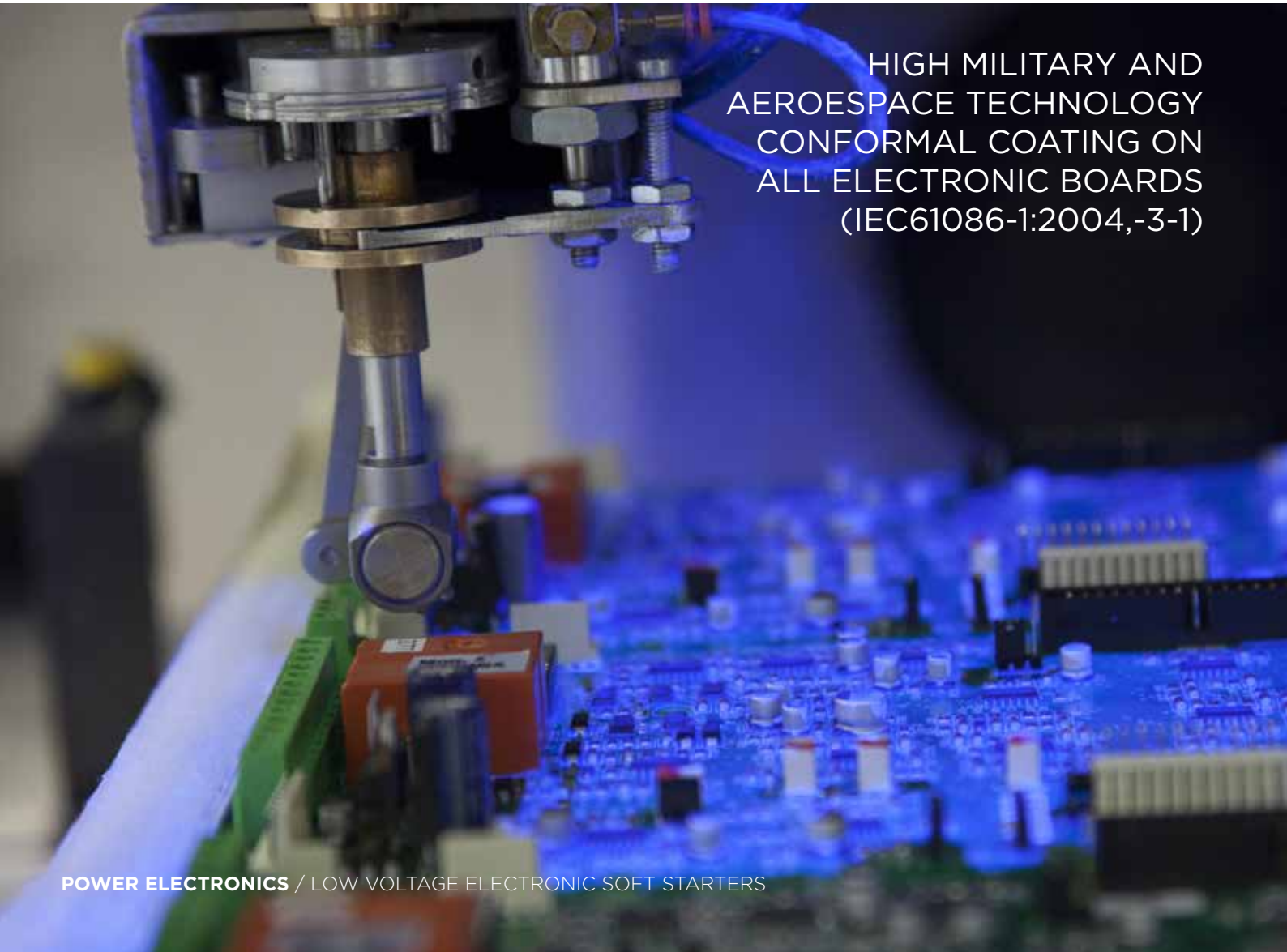
The PCB coating protects the micro lead components that are vulnerable to dust, moisture, pollution (PD3) and corrosive gasses 3C3 bulid up. Which can produce conductive paths that can result in pins short circuiting. Power Electronics designs are dedicated to harsh environments thus PCBs cards are fully coated with the latest high military and aerospace technolog y (IEC61086-1:2004,-3-1).

EMC METAL CABINET

Design metal enclosure improves EMC, obtaining maximum immunity and minimum emissions.

THYRISTORS OVERSIZED UP TO 450%

Allows its installation in applications with high starting torque and overload.



COMMUNICATIONS

Modbus-RTU over serial communication (RS232/RS485) built-in as standard, optionally communicatons gateways are available: Ethernet TCP/IP, Profibus-DP, N2 Metasys and DeviceNet.

PROFIPOWER. Modbus RTU (RS485) to Profibus-DP (9-pinD-SUB/F). Communication speed max 12MB, Profibus cable recommended.

POWERNET. Communications gateway is available: Modbus TCP, Devicenet and CANopen.

DEVICENET
DeviceNet (CAN) to Modbus RTU (RS485). 31 max. nodes. Asynchronous communication control mode. Half Duplex Communication System, Transmission Type: Bus method, Multi drop link system. Communications speeds: 125kbps, 250kbps, 500kbps, 1000kbps. Transmission distance max. 500m . (125kbps Devicenet cable).

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

CANOPEN
CANOpen (CAN) to Modbus RTU (RS485) communication speed 50kbps, 250kbps, 500kbps, 1Mbps. 31 max. nodes. Transmission distance max. 500m. available with SDO y PDO.

PUMPING

VENTILATION

Pumping and ventilation

In pumping systems, the V5 also offers functions such as water hammer surge control stop, to gradually reduce the flow and avoid mechanical stress on valves and pipes. Besides, there are an underload function which determines when the pump is working without water, or overload function which is activated when possible clogging has occured. There are also some protections available in the special menu for pumping control. The JOG function enables slow speed in the forward or reverse direction for a possible unblock.

In fan applications, the soft starter is used to limit input current and to reduce mechanical and electrical stress preventing slipping belts. If a fan is rotating in the wrong direction when starting, the V5 slows down the speed until it stops and then it starts in the right direction avoiding surges and mechanical tension. The direction of the starting is always under control.

The V5 starter has been designed to operate under the harshest environments with fully coated electronics and high operating temperature.

Its design is optimal for waste water treatment plant (WWTP), drinking water treatment stations, desalination plants, watering stations, tunnels and mines extractions, etc.

MOTION

MILLING

Mills, crushers and conveyors

When controlling conveyor belts, crushers and conveyors, any overload or underload situation that could cause inefficiency or damage, is detected immediately by the V5 to avoid potential problems.

In addition, in crushers or mills, the torque pulse provides an additional overload that allows starting even if the load torque is high. Once this function completes, the starting continues according to the selected starting method. The PTC signal prevents the motor from overheating in applications with a high duty cycle.

The slow speed or JOG function, in forward or reverse can be useful for aligning a load or to allow a slow speed for performing maintenance tasks or testing.

Overall, our equipment s is ready when needed, when a high starting torque is required without mechanical shock, smooth acceleration without overload, even when the machines is being charged with a very high torque, providing minimal mechanical stress.

V5

TECHNICAL CHARACTERISTICS

INPUT	Input voltage	(3 phase) 230-500V (-20% to +10%) (3 phase) 690V (-20% to +10%) (3 phase) 1000V (-20% to +10%)
	Current range	9A to 1500A
	Supply frequency	47 to 62 Hz
	Control voltage	230V ±10%, others under demand
OUTPUT	Connection	3 wires / 6 wires (Delta)[1]
	Output voltage	0 to 100% Supply voltage
	Output frequency	Same as the input
	Efficiency (at full load)	>99%
ENVIRONMENTAL CONDITIONS	Ambient temperature	Minimum: 0°C / Maximum: +50°C
	Storage temperature	-10°C to +70°C
	Ambient humidity	< 95%, non-condensing
	Altitude losses	>1000m, 1% each 100m; 3000m max
	Protection degree	IP20
	Degree of pollution	Degree of pollution 3
MOTOR PROTECTIONS	Input phase missing	
	Low input voltage	
	High input current	
	Starting current limit	
	Rotor locked	
	Underload	
	Motor overtemperature (PTC, normal status 150R-2K7)	
	Number of start / hour	
	Motor overload (thermal mode)	
	Phase umbalance	
	Shearpin current	
SOFT STARTER PROTECTIONS	Thyristor fault	V5 over temperature
ADJUSTMENTS	Torque pulse	
	Initial torque	
	Initial torque time	
	Current limit: 1 to 5 In	
	Acceleration time	
	Deceleration time / Freewheel stop	
	Slow speed (1/7 fundamental frequency)	
	Number of starts/hour allowed	
	Water hammer surge control stop	
	Overload: 0.8 to 1.2 In, Overload slope: 0 to 10	
	DC braking	
	Dual setting	
	Torque control	
	For additional information consult the technical manual	
INPUT AND OUTPUT SIGNALS	2 analogue inputs, 0-20mA or 4-20mA, 0-10V	5 configurable digital inputs
	1 PTC input	3 changeover output relays (10A 250Vac non inductive)
	1 analogue output 0-20 mA or 4-20mA	
COMMUNICATIONS	Physical level RS232/RS485	
	Modbus RTU Protocol	
	Optional Protocol: Profibus-DP, DeviceNet, CANOpen, Modbus TCP-IP	
CONTROL	Local via keypad	
	Communications (Modbus RTU, RS232/RS485)	
	Remote via digital input	
LED´S INDICATIONS	LED1 Green, voltage present on control board	
	LED2 Orange, Blinking: Motor accelerating / decelerating - On: Motor running	
	LED3 Red, fault present	
REGULATIONS	CE, UL, cUL, cTick.	

NOTE [1] Consult availability with Power Electronics.

V5 - CONFIGURATION TABLE

V5	0275		.6		B		W	
V5 series	Output current[1]		Input voltage		Internal bypass		Connection	
V5	0009	9A	-	230-500V	-	Without internal bypass	-	3 wires
	0017	17A	.8	550V	B	With internal bypass	W	6 wires (Delta)[2][3]
	...	...	.6	690V				
	1500	1500A	.10	1000V[2]				

NOTES [1] Check the rated current of the motor nameplate to ensure compatibility with the chosen softstarter.
[2] Consult availability and standard rating with Power Electronics.
[3] Only with internal bypass.

V5 - CLASSIFICATION OF STARTERS

A) In the table below select the starting current depending on the application.
B) Once the motor voltage (note whether or not with internal bypass) select the column for this current rate, 3xIn , 4xIn or 4.5xIn.
C) Select the correct model considering power and rated current of the motor plate.

EXAMPLE • Refiners Pumps, 400VAC, 83A, 45kW motor. Characteristics starting of Refining Pump if 10 startings per hour, 50 % duty cycle, 50°C and altitude ≤ 1000m: 4.0xIn.
Look at 400VAC table, equipment with bypass, select the column to select 4xIn power 45kW. The starter V50075B with a rated current of 85A is suitable for this application.

V5 - STARTING CURRENTS

COMMON APPLICATIONS	CHARACTERISTIC STARTING CURRENT
GENERAL	
Hydraulic Equipment	3.5 x In
Agitators	4.0 x In
Compressors (Screw compressor, without load)	3.0 x In
Compressors (Reciprocating compressors, without load)	4.0 x In
Conveyors	4.0 x In
Mixers	4.5 x In
WATER AND WASTE WATER	
Centrifugal Pumps	3.0 x In
Mono and High Pressure Pumps	4.0 x In
Multistage Pumps	4.0 x In
Vertical Pumps	3.0 x In
Split Chamber Pumps	3.5 x In
Submersible Pumps	3.5 x In
VENTILATION	
Fans (extraction)	3.5 x In
Fans (fresh air)	4.5 x In
Condensor Fans	3.5 x In
Climatization Turbine	4.5 x In
PULP AND PAPER INDUSTRY	
Refiner Pumps	4.0 x In
Pulp Pumps	4.0 x In
Vacuum Pumps	4.0 x In
Pulp Machines	4.5 x In
Trommels	4.0 x In
Pulp Mixers	4.0 x In
Filters	4.0 x In
METALS, AGGREGATES AND MINERALS	
Dust Filters Fans	3.5 x In
Conveyor Belts	4.5 x In
Crushers	3.0 x In
Hammer Mills	4.5 x In
Jaw Crushers	4.0 x In
Rotor Bar Mills	4.5 x In
Ball Mills	4.5 x In
Secondary Mills and Sand Pulverizers	3.5 x In
Eccentric Feeder	4.5 x In
Trommels	4.0 x In
Vibrators	4.0 x In
Separators	4.0 x In
Feeders	3.5 x In

COMMON APPLICATIONS	CHARACTERISTIC STARTING CURRENT
FOOD INDUSTRY	
Air Compressors	4.0 x In
Sorters	3.5 x In
Bottle Wash Machines	3.0 x In
Driers	4.5 x In
Centrifuges	4.0 x In
Crushers, punchers	4.5 x In
Palletizers	4.5 x In
Separators	4.5 x In
Cutters	3.0 x In
Material Handling	3.5 x In
TOOLING MACHINES	
Arm Saws	4.5 x In
Buzz Saws	3.5 x In
Stamping Presses	4.5 x In
Crumbing Machines	3.5 x In
Chamfering Tools	3.5 x In
Flatters	3.5 x In
Sanding Machines	4.0 x In
Lathes	4.5 x In
Crusher Machines	3.5 x In
Palletizers	4.5 x In
Presses	4.0 x In
Turn Tables	4.0 x In
Transporters	4.0 x In
PETROCHEMICAL	
Centrifugal Machines	4.0 x In
Screw Pumps	4.0 x In
Gas Pumps (propane, butane, ...)	3.0 x In
Crude Oil Extraction Pumps	4.5 x In
Crude Oil Transfer Pumps	4.5 x In
Hydrocarbon Transfer Pumps (liquid stage)	3.5 x In
Transport and Packaging	3.5 x In
Conveyors	3.5 x In

V5
STANDARD RATINGS

STANDARD V5 SOFT STARTER

230V to 500V (-20% to +10%)						
FRAME	CODE	Rated I(A)	Power motor until (kW)			
			230V	400V	440V	500V
1	V50009	9	2	4	5	5.5
	V50017	17	5	7	9	11
	V50030	30	9	15	18.5	18
	V50045	45	14	22	25	30
	V50060	60	18	30	35	40
	V50075	75	22	37	45	50
	V50090	90	25	45	55	65
2	V50110	110	35	55	65	80
	V50145	145	45	75	90	100
	V50170	170	50	90	110	115
	V50210	210	65	110	120	150
	V50250	250	75	132	160	180
3	V50275	275	85	150	170	200
	V50330	330	100	185	200	220
	V50370	370	115	200	220	257
	V50460	460	145	250	270	315
4	V50580	580	185	315	375	415
	V50650	650	200	355	425	460
	V50800	800	250	450	500	560
	V50900	900	280	500	560	630
	V51000	1000	322	560	616	700
5	V51200	1250	400	710	800	900
	V51500	1500	500	800	900	1100

690V (-20% to +10%)			
FRAME	CODE	Rated I(A)	Power motor until (kW)
			690V
1	V50009.6	9	7.5
	V50017.6	17	15
	V50030.6	30	30
	V50045.6	45	45
	V50060.6	60	60
	V50075.6	75	75
	V50090.6	90	90
2	V50110.6	110	110
	V50145.6	145	140
	V50170.6	170	160
	V50210.6	210	200
	V50250.6	250	230
3	V50275.6	275	250
	V50330.6	330	315
	V50370.6	370	355
	V50460.6	460	450
4	V50580.6	580	560
	V50650.6	650	630
	V50800.6	800	800
	V50900.6	900	900
	V51000.6	1000	960
5	V51200.6	1250	1250
	V51500.6	1500	1500

NOTES
- The values of the tables are valid for 4-pole AC motors.
- For current values which are not in accordance with the values in these tables, please contact Power Electronics.
- For higher power ratings, contact to Power Electronics customer support.
- Classification of soft starters according to UNE-EN60947-4-2. 10 starts per hour, 50% duty cycle, 50°C and altitude<1000m.

V5 SOFT STARTER WITH BUILT IN BYPASS

400Vac (-20% to +10%)							
FRAME	CODE	Starting current 3.0xIn		Starting current 4.0xIn		Starting current 4.5xIn	
		Max. Rated I(A)	Motor power (kW) at 400Vac	Max. Rated I(A)	Motor power (kW) at 400Vac	Max. Rated I(A)	Motor power (kW) at 400Vac
1	V50009B	14	7.5	10	5.5	9	4
	V50017B	26	15	19	11	17	7.5
	V50030B	45	22	34	18.5	30	15
	V50045B	68	37	51	30	45	22
	V50060B	90	45	68	37	60	30
	V50075B	113	55	85	45	75	37
	V50090B	135	75	101	55	90	45
2	V50110B	165	90	140	75	110	55
	V50145B	218	110	164	90	145	75
	V50170B	255	150	192	110	170	90
	V50210B	315	185	237	132	210	110
	V50250B	375	200	281	150	250	132
3	V50275B	412	220	310	185	275	150
	V50330B	495	280	370	200	330	185
	V50370B	555	315	416	220	370	200
	V50460B	690	400	518	280	460	250
4	V50580B	870	450	650	355	580	315
	V50650B	975	500	731	400	650	355
	V50800B	1200	630	900	500	800	450

500Vac (-20% to +10%)							
FRAME	CODE	Starting current 3.0xIn		Starting current 4.0xIn		Starting current 4.5xIn	
		Max. Rated I(A)	Motor power (kW) at 500Vac	Max. Rated I(A)	Motor power (kW) at 500Vac	Max. Rated I(A)	Motor power (kW) at 500Vac
1	V50009B	14	11	10	7.5	9	5.5
	V50017B	26	18.5	19	15	17	11
	V50030B	45	30	34	22	30	18.5
	V50045B	68	45	51	37	45	30
	V50060B	90	55	68	45	60	37
	V50075B	113	75	85	55	75	45
	V50090B	135	90	101	75	90	55
2	V50110B	165	110	140	90	110	75
	V50145B	218	150	164	110	145	90
	V50170B	255	185	192	132	170	110
	V50210B	315	220	237	185	210	150
	V50250B	375	250	281	200	250	185
3	V50275B	412	280	310	220	275	200
	V50330B	495	355	370	250	330	220
	V50370B	555	400	416	280	370	250
	V50460B	690	500	518	355	460	315
4	V50580B	870	560	650	450	580	400
	V50650B	975	630	731	500	650	450
	V50800B	1200	710	900	630	800	560

690Vac (-20% to +10%)							
FRAME	CODE	Starting current 3.0xIn		Starting current 4.0xIn		Starting current 4.5xIn	
		Max. Rated I(A)	Motor power (kW) at 690Vac	Max. Rated I(A)	Motor power (kW) at 690Vac	Max. Rated I(A)	Motor power (kW) at 690Vac
1	V50009.6B	14	15	10	11	9	7.5
	V50017.6B	26	22	19	18.5	17	15
	V50030.6B	45	45	34	37	30	30
	V50045.6B	68	75	51	55	45	45
	V50060.6B	90	90	68	75	60	55
	V50075.6B	113	110	85	90	75	75
	V50090.6B	135	132	101	110	90	90
2	V50110.6B	165	150	140	132	110	110
	V50145.6B	218	200	164	150	145	132
	V50170.6B	255	250	192	200	170	150
	V50210.6B	315	315	237	220	210	200
	V50250.6B	375	355	281	250	250	220
3	V50275.6B	412	400	310	315	275	250
	V50330.6B	495	450	370	355	330	315
	V50370.6B	555	500	416	400	370	355
	V50460.6B	690	630	518	500	460	450
4	V50580.6B	870	800	650	630	580	560
	V50650.6B	975	900	731	710	650	630
	V50800.6B	1200	1000	900	900	800	800

NOTES
- Rated power and current at 400Vac, 500Vac and 690Vac (-20% to +10%) for motors at 1500rpm.
- The values of the tables are valid for 4-pole AC motors.
- For current values which are not in accordance with the values in these tables, please contact Power Electronics.
- For higher power ratings, contact to Power Electronics customer support.
- Classification of soft starters according to UNE-EN60947-4-2. 10 starts per hour, 50% duty cycle, 50°C and altitude<1000m.

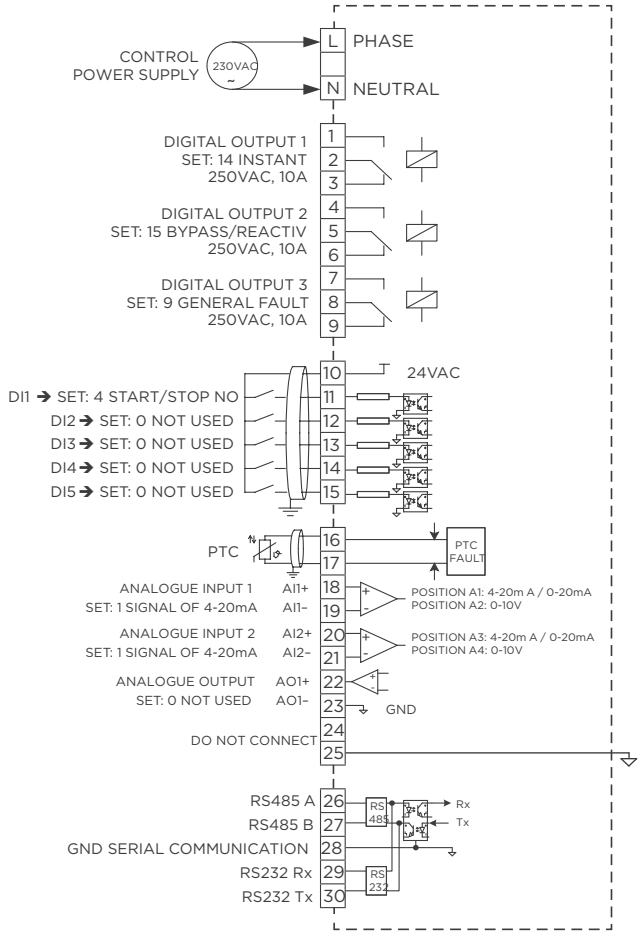
CONFIGURATION CONTROL AND POWER WIRING

The V5 series include multiple control possibilities, not only due to a large number of inputs and outputs, but also for the versatility of the configuration of all of them.

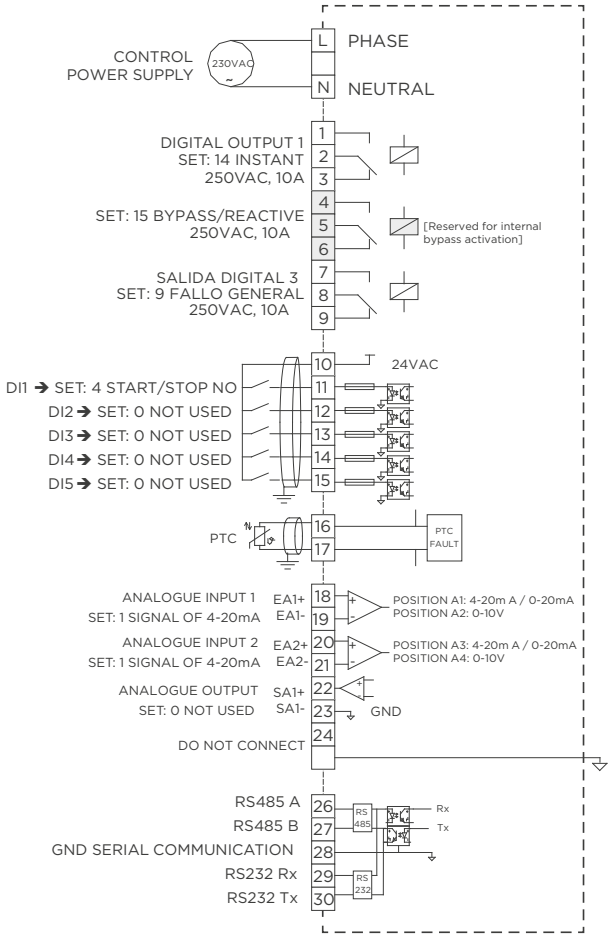
INPUT AND OUTPUT

Five digital multifunctions inputs, 2 analogue inputs and one digital input available and the 6th digital input is dedicated for the PTC input, 3 relay outputs and 1 analogue available.

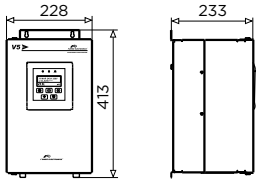
CONFIGURATION OF POWER WIRING FOR SOFTSTARTER WITH STANDARD BYPASS



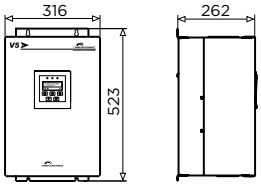
CONFIGURATION OF POWER WIRING FOR SOFTSTARTER WITH INTERNAL BYPASS



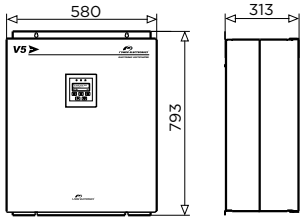
DIMENSIONS



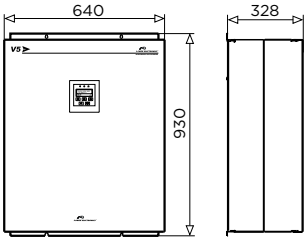
FRAME	WEIGHT (kg) Standard V5	WEIGHT (kg) Bypass V5
1	10	12



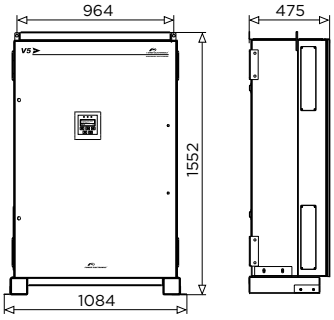
FRAME	WEIGHT (kg) Standard V5	WEIGHT (kg) Bypass V5
2	20	22



FRAME	WEIGHT (kg) Standard V5	WEIGHT (kg) Bypass V5
3	50	57



FRAME	WEIGHT (kg) Standard V5	WEIGHT (kg) Bypass V5
4	80	90



FRAME	WEIGHT (kg) Standard V5
5	310

ACCESSORIES

CODE	ACCESSORIES DESCRIPTION
I001	Profipower Communication module
I004	PowerNET Communication module
P0015[1][2]	Bypass Kit V50060-V50090
P054-005A[1][2]	Bypass Kit V50110-V50250
L051[1]	Bypass terminal 9-17A
L057[1]	Bypass terminal 30-45A

CODE	ACCESSORIES DESCRIPTION
V01	Display kit 2m extender with casing
V02	Display kit 1m extender with casing
V09	Display kit 3m extender with casing
V16	Display kit 5m extender with casing
MFV50275	DC braking module 275A

NOTES [1] Accesories for external bypass in standard V5 soft starter.
[2] Each equipment needs three units.