Catalog

Softstarters
Type PSR, PSS, PSE, PST and PSTB

Power and productivity
for a better world™

News

Efficient PSE Range – World's first compact softstarter with Torque control

The latest addition to the ABB softstarter family is the efficient PSE range. This softstarter has been equipped with all the most important features making it a very efficient choice. During the development process, great focus has been put into making sure that both the softstarter and the process are even more reliable. Further more, the softstarter has been equipped with built-in by-pass to reduce the wiring and also with a back-lit display to provide a hassle free and easy set-up and monitoring.

The complete range of Softstarters

The ABB softstarter portfolio now consists of 4 different ranges making it possible to find a suitable softstarter for almost all possible applications and motor sizes all the way up to 1800A. The softstarter family consists of the Compact PSR, the Flexible PSS, the Efficient PSE and the Advanced PST(B) range.

Semiconductor fuses changed to knife type

The Bussmann semiconductor fuses, recommended to be used together with PSS, PSE and PST(B) softstarters have been changed from screw fixing (DIN43 653) to knife fixing (DIN43 620). This will make it possible to use the standard OS type switch fuses from ABB.

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Softstarters

From the moment the first electrical motors was developed, engineers have been searching for a way to avoid electrical and mechanical problems that usually occur when starting the motor. These problems include high inrush current and current spikes as well as excessive mechanical wear. One traditional way to avoid this is to use a star delta starter. This starting method is in many applications insufficient, as problems with current spikes and torque peaks will remain. In addition, it does not provide any way to perform a soft stop. A softstarter on the other hand will provide far better performance during the start and also the possibility to soft stop the motor.

ABB has been producing softstarters since the beginning of the 1980's. The valuable experience gained since the early 80's has been incorporated into the design of today's product ranges. Matching modern power electronics with smart circuitry and software, the ABB softstarters offer superior control of the current and voltage during motor start-up and stop, in addition to several state of the art design features.

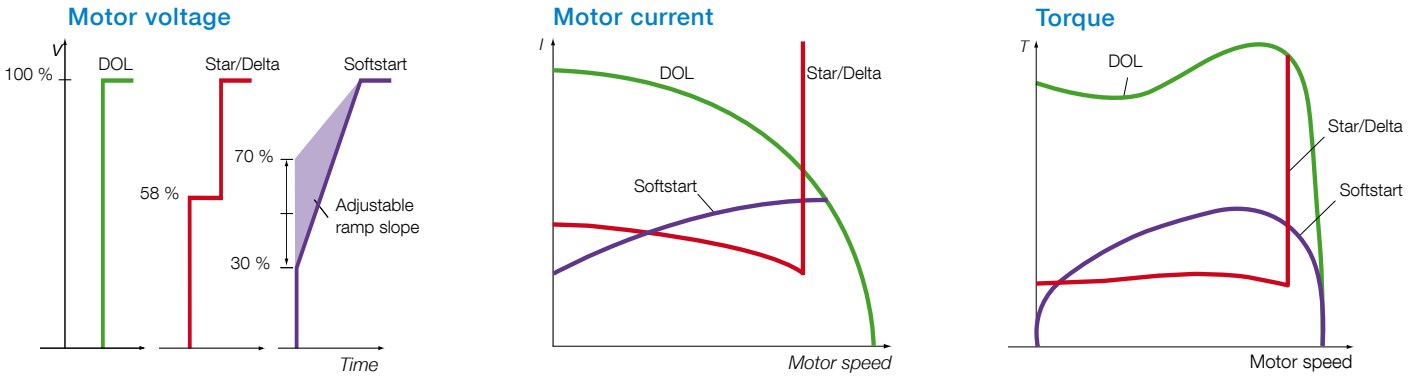
The solution to both mechanical and electrical problems

AC motors, "the workhorse of the industry", are used to drive fans, crushers, agitators, pumps, conveyors, etc. Depending on how it is installed, too often unnecessary and unwanted torque and current peaks are an everyday reality in production plants all over the world, causing damage in several ways. Among them are:

- Electrical problems due to voltage and current transients arising from Direct-On-Line or Star-Delta starts. Such transients may overload the local supply network and cause unacceptable voltage variations that interfere with other electrical equipment connected to the network.
- Mechanical problems that address the entire drive chain, from motor to driven equipment, causing a big need for service and repair as well as unwanted down time.
- Operational problems, such as damage to products on conveyor belts.
- Water hammering and pressure surges in pipe systems when starting and stopping pumps.

The financial consequences are considerable; every technical problem and every breakdown costs money in terms of repairs as well as lost production.

The easy solution to all of these problems is to install an ABB Softstarter type PSR, PSS, PSE or PST(B). With ABB Softstarters, it is possible to start and stop smoothly while keeping mechanical and electrical stresses to a minimum.



Graphs showing the basic differences between direct-on-line starting (DOL), star-delta starting and soft starting in terms of the motor voltage (V), motor current (I) and motor torque (T).

Softstarters
ABB softstarters – The complete range

ABB offers four different ranges of softstarters to cover every customer need for solutions for motor sizes up to 1800 A. This page decribes the main characteristics of the different softstarter ranges

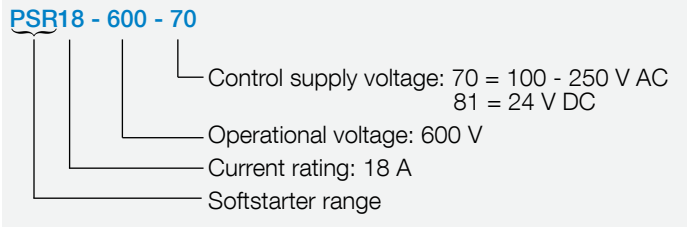
PSR — The compact range
The PSR softstarter is the most compact of all the softstarter ranges, thereby making it possible to design compact starting equipments. The system concept with Manual Motor Starters and the PSR provides a far more compact starting solution than for instance a star delta starter.

Built-in by-pass reduces the energy loss and makes the connection easier and with only three potentiometers, the set-up couldn't be any easier. Still, the optimized ramping characteristics will ensure a very smooth start and stop for all applications.

PSS — The flexible range
The PSS softstarter allows both in line and inside delta connection making it a very flexible option. Just as on the PSR softstarter, the few settings make the set-up very easy. Connecting an external current transformer makes it possible to activate the current limit function, which will allow you to keep the current at a pre-set level also when starting heavy duty applications. The PSS softstarter is the ideal solution when looking for a robust solid state starting solution where many starts per hour are required.

PSE — The efficient range
The PSE softstarter is the world's first compact softstarter with both built-in electronic overload for motor protection and torque control for an excellent control of pumps. The compact design with the most important functionality integrated provides a very efficient starting solution.

The illuminated language neutral display and the four button keypad make it easy to take advantage of all the advanced functionality in the softstarter. The display will also provide all the necessary information both during ramping and continuous operation.



PST(B) — The advanced range
The PST(B) softstarter is the most advanced softstarter in the range with almost all imaginable functionality included. All the advanced protections for the motor, the softstarter and the load ensure a trouble free operation. Pre-warnings even allow problems to be detected before the motor needs to be stopped and thereby avoiding unnecessary downtime.

The torque control function has been developed and tested together with well known pump manufacturers to ensure the absolutely best possible stop of pumps without water hammering and pressure surges.

With the full text LCD display in your own language, pre-programmed application settings and event logging, it couldn't be easier to set-up and operate.

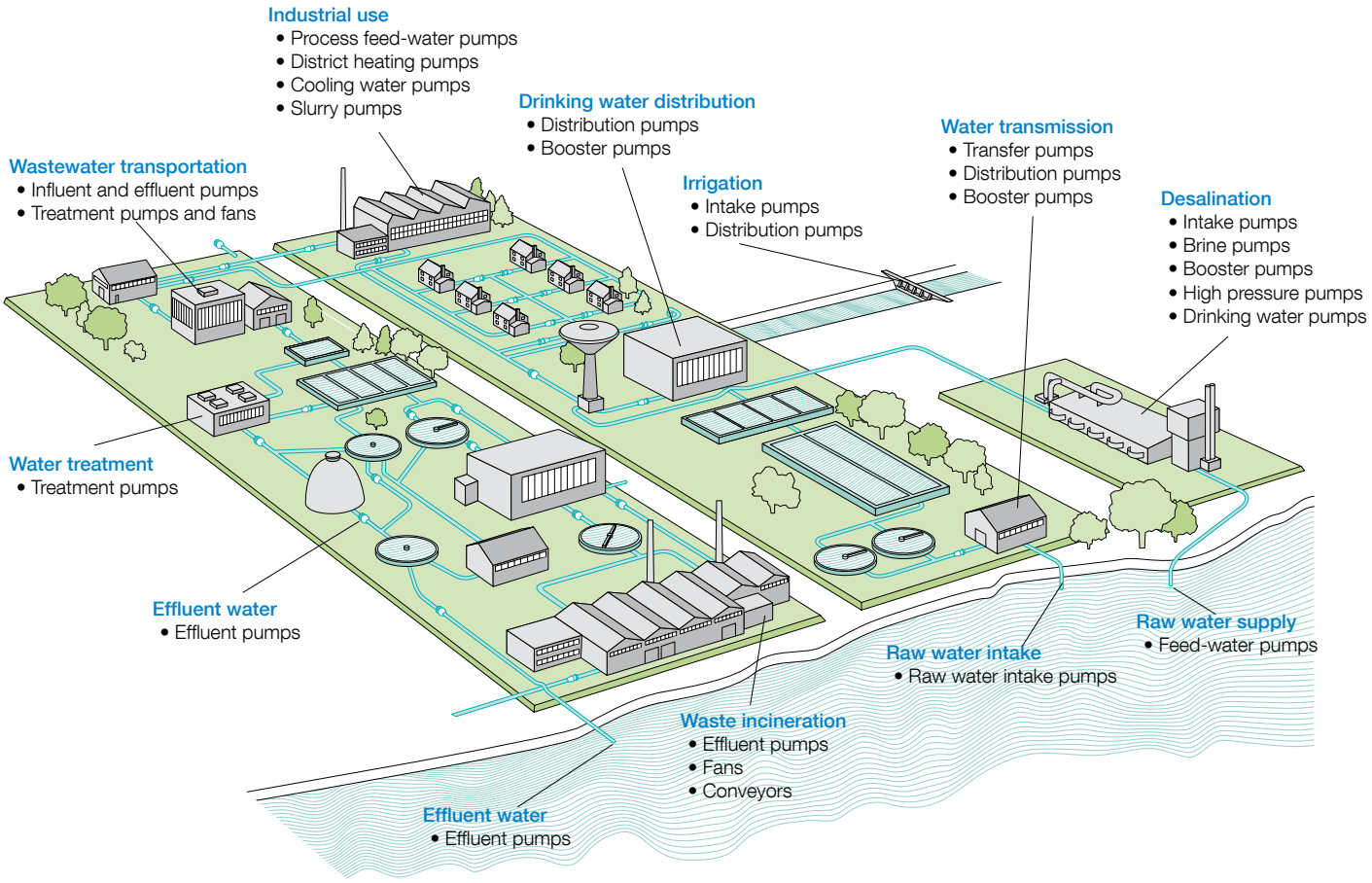
By using the ABB FieldBusPlug, you can decide at any time which bus protocol to use. The fieldbus system will allow you to set-up, control and monitor the softstarter.

PSR	PSS	PSE	PST(B)	• Standard O Opional – Not available
•	–	•	• 1)	Built-in by-pass 1) on PSTB
–	•	–	•	Inside delta connection
–	–	•	O	Coated PCBs
–	–	•	•	Display and keypad
–	–	•	•	Torque control
–	O	•	•	Settable current limit function
–	–	•	•	Electronic motor overload protection
–	–	–	•	PTC input for motor protection
–	–	–	•	Phase imbalance protection
–	–	–	•	Phase reversal protection
–	–	•	•	Locked rotor protection
–	•	•	•	Thyristor overtemperature protection
–	–	•	•	Underload protection
–	–	–	•	Programmable warning functions
–	–	•	•	Analog output
O	–	O	•	FieldBus communication
–	–	O	•	Event log
–	–	O	O	External keypad

Applications

Pumps

Water is the world's most important resource and water facilities can be found all over the world. Examples of water applications are freshwater and wastewater systems, circulating water for heating or cooling and irrigation.



Common questions:

- How to avoid voltage drops when starting?
- ABB softstarter will reduce the starting current and thereby avoid the voltage drops.

- How to avoid water hammering when stopping?
- Use our softstarters equipped with an optimized stop ramp or even better with torque control.

- How to ensure high reliability in harsh environments?
- Use our softstarters equipped with coated circuit boards to better withstand those environments.

- How to protect my pumping equipment in the best possible way?
- Use ABB softstarters equipped with our special designed protections such as overload, underload, and locked rotor protection.

Applications

Fans

Common questions:

– How to avoid extended voltage drops due to long starting time?
– Use an ABB softstarter equipped with current limit to keep control of the starting current.

– How to extend the life of the driving belts?
– Our softstarters will reduce the mechanical stress during start, thus avoiding slipping belts.

– How to ensure the operation of the fan?
– A softstarter with underload protection will detect broken belts, making the operator immediately aware of the problem.

Compressors

Common questions:

– How to ensure a long life of the compressor?
– Using a softstarter for starting will reduce the accelerating torque, thereby minimizing the mechanical stress.

– How to build a compact compressor unit?
– Using a compact softstarter like PSR or PSE will allow a much more compact starting equipment than for instance a star delta starter.

Conveyor belts

Common questions:

– How to reduce the need for service and repair of the conveyor belt?
– A softstarter from ABB will cause minimal mechanical stress on the conveyor belt.

– How to avoid that the conveyor belt is running in the wrong direction?
– Use a softstarter with phase reversal protection.

– How to improve the efficiency of the conveyor belt?
– Using softstarters with high and low current warnings allows you to load on and off the conveyor belt.

– How to ensure a successful start even after longer times without operation?
– A softstarter with kick start function will provide sufficient torque to be able to overcome the initial high friction from a temporarily jammed belt.

PSR – The compact range
Description

Product description

- Wide rated operational voltage 208 – 600 V
- Rated control supply voltage 24 V DC or 100 – 240 V AC
- Rated operational current 3 – 105 A
- Wide ambient temperature range, -25 to +60 °C
- Built-in by-pass on all sizes, saving energy and reducing installation time
- Potentiometer settings
- Run signal relay on all devices
- TOR signal relay on PSR25 … PSR105
- Optional fieldbus communication using Profibus, Modbus, Devicenet or CANopen
- DIN rail mounting on PSR3 … PSR45
- Screw mounting on all sizes
- Connection kits for easy connection with ABB manual motor starters
- Sophisticated algorithm eliminating the DC-component and thereby providing excellent starting performance.

The PSR range is the most compact of all the ABB softstarter ranges, thereby making it possible to fit many devices into the same enclosure. The system concept with Manual Motor Starters provides a far more compact starting solution than for example a star delta starter.

Flexible mounting

PSR softstarters from 3 to 45 A are possible to mount on a din rail, ensuring quick and easy mounting. Naturally, all sizes can be screw mounted.

Few settings

The set-up of the PSR is easily done and confirmed using the three clearly marked potentiometers on the front.

Built-in by-pass for energy saving

The built-in by-pass on all sizes does not only save energy; it will also ensure the most compact ABB softstarter design and reduce the installation time. Thanks to the reduced heat generation, the softstarter can be mounted inside high IP class enclosures.

Suitable for stopping pumps

Even without using torque control, the PSR range is designed to reduce water hammering and will allow a superior stop compared to the direct stop resulting from a star delta starter or a DOL starter. See the special designed stop ramp with step down voltage below.

System concept with manual motor starters

All PSR softstarter sizes can easily be connected to the corresponding manual motor starters from ABB, using the special designed connection kits. This will both make the mounting and the connection easier and will provide a very compact starting solution containing short circuit and thermal protection, isolation function and soft starter - everything that you need.

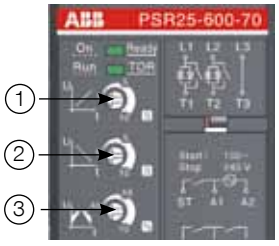
Settings

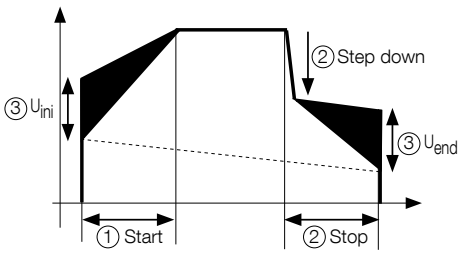
① Start = 1 ... 20 sec

Stop = 0 ... 20 sec - including the step down voltage.

② Step down = 2% reduction for each second increased stop ramp
Stop ramp 10 sec -> Step down 80% (20% reduction)

③ U_{ini} = 40 ... 70% results in End voltage = 30 ... 60%





PSR – The compact range
Overview

	PSR3 ... PSR16					PSR25 ... PSR30		PSR37... PSR45		PSR60 ... PSR105			
	Softstarter. Type												
Normal start In-line connected	PSR3	PSR6	PSR9	PSR12	PSR16	PSR25	PSR30	PSR37	PSR45	PSR60	PSR72	PSR85	PSR105
(400 V) kW	1.5	3	4	5.5	7.5	11	15	18.5	22	30	37	45	55
IEC, Max. A	3.9	6.8	9	12	16	25	30	37	45	60	72	85	105
(440-480 V) hp	2	3	5	7.5	10	15	20	25	30	40	50	60	75
UL, Max FLA	3.4	6.1	9	11	15.2	24.2	28	34	46.2	59.4	68	80	104
	400 V, 40 °C												
Using manual motor starters type 1 coordination will be achieved	**Manual motor starter (50 kA) type**												
	MS116			MS132				MS450		MS495			–
Using gG fuses type 1 coordination will be achieved	**Fuse protection (50 kA) gG Fuse**												
	10 A	16 A	25 A	32 A		50 A	63 A	100 A	125 A		200 A		250 A
Suitable switch fuse for the above gG fuses	**Switch fuse, type**												
	OS32GD							OS125GD			OS250GD		
Overload protection is used to protect the motor from over heating	**Thermal overload relay**												
	TF42DU								TA75DU			TA110DU	
The line contactor is not required for the softstarter itself but often used to open if OL trips	**Line contactor, type**												
	AF9			AF12	AF16	AF26	AF30	AF38	A50	A63	A75	A95	A110
Using by-pass will reduce the power loss and allow more starts per hour	**By-pass contacts**												
	Built-in												

PSR – The compact range
Ordering details

PSR3 ... PSR16

PSR25 ... PSR30

PSR37 ... PSR45

PSR60 ... PSR105

PSR3 ... PSR105

Rated operational voltage U_e, 208-600 V AC

Rated control supply voltage, U_s, 100 - 240 V AC

Motor power

230 V P_e kW	400 V P_e kW	500 V P_e kW	IEC Max rated operational current I_e A	Type	Order code	Weight kg 1 piece
0.75	1.5	2.2	3.9	**PSR3-600-70**	**1SFA896 103 R7000**	0.450
1.5	3	4	6.8	**PSR6-600-70**	**1SFA896 104 R7000**	0.450
2.2	4	4	9	**PSR9-600-70**	**1SFA896 105 R7000**	0.450
3	5.5	5.5	12	**PSR12-600-70**	**1SFA896 106 R7000**	0.450
4	7.5	7.5	16	**PSR16-600-70**	**1SFA896 107 R7000**	0.450
5.5	11	15	25	**PSR25-600-70**	**1SFA896 108 R7000**	0.650
7.5	15	18.5	30	**PSR30-600-70**	**1SFA896 109 R7000**	0.650
7.5	18.5	22	37	**PSR37-600-70**	**1SFA896 110 R7000**	1.000
11	22	30	45	**PSR45-600-70**	**1SFA896 111 R7000**	1.000
15	30	37	60	**PSR60-600-70**	**1SFA896 112 R7000**	2.200
22	37	45	72	**PSR72-600-70**	**1SFA896 113 R7000**	2.270
22	45	55	85	**PSR85-600-70**	**1SFA896 114 R7000**	2.270
30	55	55	105	**PSR105-600-70**	**1SFA896 115 R7000**	2.270

Rated operational voltage U_e, 208-600 V AC

Rated control supply voltage, U_s, 24 V DC

0.75	1.5	2.2	3.9	**PSR3-600-81**	**1SFA896 103 R8100**	0.450
1.5	3	4	6.8	**PSR6-600-81**	**1SFA896 104 R8100**	0.450
2.2	4	4	9	**PSR9-600-81**	**1SFA896 105 R8100**	0.450
3	5.5	5.5	12	**PSR12-600-81**	**1SFA896 106 R8100**	0.450
4	7.5	7.5	16	**PSR16-600-81**	**1SFA896 107 R8100**	0.450
5.5	11	15	25	**PSR25-600-81**	**1SFA896 108 R8100**	0.650
7.5	15	18.5	30	**PSR30-600-81**	**1SFA896 109 R8100**	0.650
7.5	18.5	22	37	**PSR37-600-81**	**1SFA896 110 R8100**	1.000
11	22	30	45	**PSR45-600-81**	**1SFA896 111 R8100**	1.000
15	30	37	60	**PSR60-600-81**	**1SFA896 112 R8100**	2.200
22	37	45	72	**PSR72-600-81**	**1SFA896 113 R8100**	2.270
22	45	55	85	**PSR85-600-81**	**1SFA896 114 R8100**	2.270
30	55	55	105	**PSR105-600-81**	**1SFA896 115 R8100**	2.270

PSR – The compact range
Accessories

PSR16-MS116

PSR30-MS132

PSR45-MS450

PSR105-MS495

PSR-FAN3-45A

PSR-FAN60-105A

PS-FBPA

PSLW

Connection kit

For softstarter type	Type	Order code	Packing piece	Weight kg 1 piece
PSR3...PSR16 with MS116 or MS132	**PSR16-MS116**	**1SFA896 211 R1001**	1	0.030
PSR25...PSR30 with MS132-12...MS132-32	**PSR30-MS132**	**1SFA896 212 R1001**	1	0.030
PSR37...PSR45 with MS450	**PSR45-MS450**	**1SFA896 213 R1001**	1	0.030
PSR60...PSR105 with MS495	**PSR105-MS495**	**1SAM501 903 R1001**	1	0.050

Fan

For softstarter type	Type	Order code	Packing piece	Weight kg 1 piece
PSR3...PSR45	**PSR-FAN3-45A**	**1SFA896 311 R1001**	1	0.010
PSR60...PSR105	**PSR-FAN60-105A**	**1SFA896 313 R1001**	1	0.013

Terminal enlargements

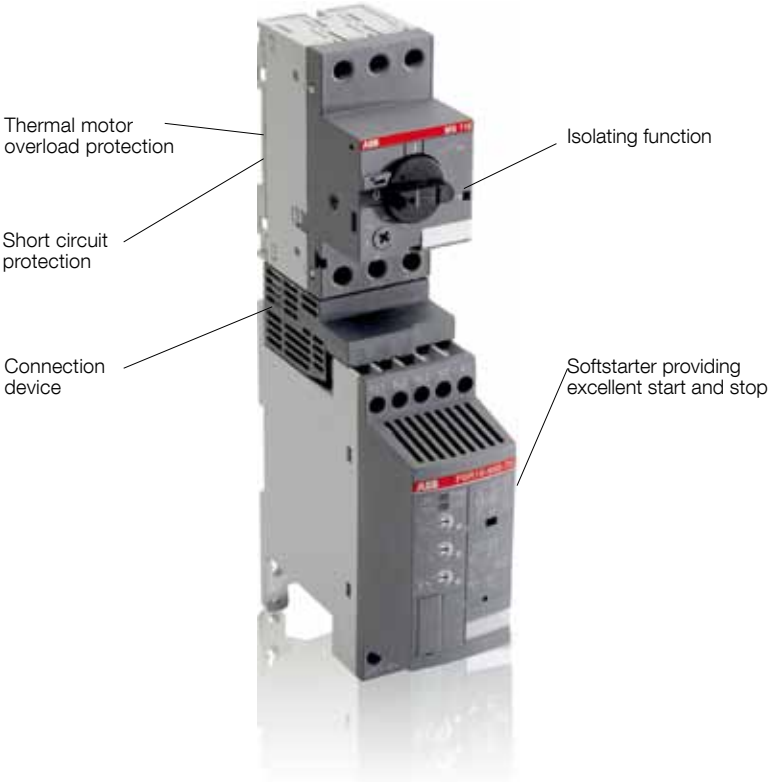
For softstarter type	Type	Order code	Packing piece	Weight kg 1 piece
PSR60...105 Wire range mm2 1x10...50, 2x10...25	**PSLW-72**	**1SFA899 002 R1072**	1	0.150

FieldBus plug connection accessory

For softstarter type	Type	Order code	Packing piece	Weight kg 1 piece
The same accessory for all sizes	**PS-FBPA**	**1SFA896 312 R1002**	1	0.060

ABB Field Bus Plug suitable for all sizes. See page 50-53

Connection kit



PSR – The compact range
Technical data

Rated insulation voltage U_i	600 V												
Rated operational voltage U_e	208...600 V +10 %/-15 %, 50/60 Hz ±5 %												
Rated control supply voltage U_s	100...240 V AC, 50/60Hz ±5 % or 24 V DC, +10 %/-15 %,												
Power consumption	**PSR3**	**PSR6**	**PSR9**	**PSR12**	**PSR16**	**PSR25**	**PSR30**	**PSR37**	**PSR45**	**PSR60**	**PSR72**	**PSR85**	**PSR105**
Supply circuit													
at 100-240 V AC	12 VA							10 VA					
at 24 V DC	5 W												
Max. Power loss at rated I_e	**PSR3**	**PSR6**	**PSR9**	**PSR12**	**PSR16**	**PSR25**	**PSR30**	**PSR37**	**PSR45**	**PSR60**	**PSR72**	**PSR85**	**PSR105**
	0.7 W	2.9 W	6.5 W	11.5 W	20.5 W	25 W	36 W	5.5 W	8.1 W	3.6 W	5.2 W	7.2 W	6.6 W
Starting capacity at I_r	4 x Ir for 6 sec.												
Number of starts per hour	See table below for details												
standard	10[1)]												
with aux. fan	20[1)]												
Service factor	100 %												
Ambient temperature													
during operation	-25 °C to + 60 °C [2)]												
during storage	-40 °C to + 70 °C												
Maximum altitude	4000 m [3)]												
Degree of protection	**PSR3**	**PSR6**	**PSR9**	**PSR12**	**PSR16**	**PSR25**	**PSR30**	**PSR37**	**PSR45**	**PSR60**	**PSR72**	**PSR85**	**PSR105**
main circuit	IP20							IP10					
control circuit	IP20												

Connectable cable area,	**PSR3-PSR16**	**PSR25-PSR30**	**PSR37-PSR45**	**PSR60-PSR105**
main circuit	1 x 0.75 - 2.5mm²	1 x 2.5 - 10mm²	1 x 6 - 35mm²	1 x 10 - 95mm²
	2 x 0.75 - 2.5mm²	2 x 2.5 - 10mm²	2 x 6 - 16mm²	2 x 6 - 35mm²
	PSR3-PSR16	**PSR25-PSR105**		
control circuit	1 x 0.75 - 2.5mm²	1 x 0.75 - 2.5mm²		
	2 x 0.75 - 2.5mm²	2 x 0.75 - 1.5mm²		

Signal relays	**PSR3-PSR16**	**PSR25-PSR105**	
for Run signal			
Resistive load	240 V AC, 3 A / 24 V DC, 3 A	240 V AC, 3 A / 24 V DC, 3 A	
AC-15 (Contactor)	240 V AC, 0.5 A / 24 V DC, 0.5 A	240 V AC, 0.5 A / 24 V DC, 0.5 A	
for Top ramp signal			
Resistive load	-	240 V AC, 3 A / 24 V DC, 3 A	
AC-15 (Contactor)	-	240 V AC, 0.5 A / 24 V DC, 0.5 A	
LED for On/Ready	Green		
for Run/Top Of Ramp	Green		
Settings Ramp time during start	1-20 sec.		
Ramp time during stop	0-20 sec.		
Initial- and End Voltage	40-70%		

[1)] Valid for 50 % on time and 50 % off time. 4 x I_e for 6 sec., if other data is required, contact your sales office.
[2)] Above 40 °C up to max. 60 °C reduce the rated current with 0.8 % per °C.
[3)] When used at high altitudes above 1000 meters up to 4000 meters you need to derate the rated current using the following formula.
[% of I_e = 100 - $\frac{x - 1000}{150}$] x = actual altitude for the softstarter

Number of starts per hour using PSR softstarters

Motor current I_e	Starts/hour without auxiliary fan							
	10	**20**	**30**	**40**	**50**	**60**	**80**	**100**
3 A	PSR3							PSR6
6 A	PSR6						PSR9	
9 A	PSR9				PSR12		PSR16	PSR25
12 A	PSR12			PSR16	PSR25		PSR30	
16 A	PSR16	PSR25			PSR30		PSR37	
25 A	PSR25	PSR30	PSR37			PSR45		PSR60
30 A	PSR30	PSR37		PSR45		PSR60		PSR72
37 A	PSR37	PSR45		PSR60		PSR72	PSR85	PSR105
45 A	PSR45		PSR60		PSR72	PSR85	PSR105	-
60 A	PSR60		PSR72	PSR85	PSR105		-	-
72 A	PSR72	PSR85	PSR105		-	-	-	-
85 A	PSR85	PSR105		-	-	-	-	-
105 A	PSR105	-	-	-	-	-	-	-

Starts/hour with auxiliary fan							
10	**20**	**30**	**40**	**50**	**60**	**80**	**100**
PSR3							PSR6
PSR6							PSR9
PSR9					PSR12		
PSR12				PSR16	PSR25		
PSR16	PSR25				PSR30		
PSR25	PSR30		PSR37				PSR45
PSR30	PSR37		PSR45				
PSR37		PSR45				PSR60	
PSR45			PSR60			PSR72	
PSR60			PSR72	PSR85	PSR105	-	
PSR72		PSR85	PSR105		-	-	
PSR85	PSR105		-	-	-	-	
PSR105	-	-	-	-	-	-	

Data based on an ambient temperature of 40°, starting current of 4 x I_e and ramp time 6 seconds.
For more optimized selections, or to use PSR for heavy duty starts, please use the softstarter selection program, ProSoft.

PSR – The compact range
UL ratings

UL ratings

Softstarter	Motor power P (hp) and full load current FLA (A)					
Type	Max FLA A	U_e 200 V/208 V hp	U_e 220 V/240 V hp	U_e 440 V/480 V hp	U_e 550 V/600 V hp	Max. fuse A, Type
PSR3	3.4	0.5	0.75	2	2	35 A J-Type
PSR6	6.1	1	1.5	3	5	35 A J-Type
PSR9	9	2	2	5	7.5	35 A J-Type
PSR12	11	3	3	7.5	10	35 A J-Type
PSR16	15.2	3	5	10	10	35 A J-Type
PSR25	24.2	7.5	7.5	15	20	60 A J-Type
PSR30	28	7.5	10	20	25	60 A J-Type
PSR37	34	10	10	25	30	90 A J-Type
PSR45	46.2	15	15	30	40	90 A J-Type
PSR60	59.4	20	20	40	50	110 A J-Type
PSR72	68	20	25	50	60	125 A J-Type
PSR85	80	25	30	60	75	150 A J-Type
PSR105	104	30	40	75	100	200 A J-Type

PSS – The flexible range
Description

Product description

- Rated operational voltage 208 – 690 V AC
- Rated control supply voltage 110 – 120 V AC or 220 – 240 V AC
- Rated operational current 18 – 300 A (Up to 515 A Inside Delta)
- Wide ambient temperature range, -25 to +60 °C
- Settings done by rotating switches
- Designed for continuous operation without by-pass
- By-pass signal relay allowing easy control of external by-pass contactor
- Fault signal relay (NO or NC)
- Current limit function as an option

The PSS softstarter allows both in line and inside delta connection making it a very flexible option. It is the ideal solution when looking for a robust solid state starting solution when for instance many starts per hour are required.

Flexible connection

The PSS softstarter can be connected both in line and inside delta. The inside delta connection makes it possible to select a smaller size softstarter matching the inside delta current. All functionality will still remain the same.

Replacement for star delta starters

As the PSS can be connected inside delta, it is very cost efficient for replacing existing star delta starters, by reusing the two sets of motor cables as well as the contactors and thermal overload.

Solid state starting solution

The robust design of the PSS softstarter has no mechanical moving parts and it is dimensioned to handle many starts per hour, which can be required in for instance elevator applications.

Few settings

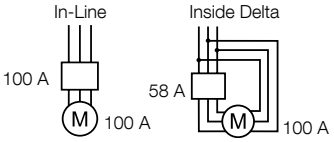
The set-up of the PSS softstarter is easily done using the three rotating switches to adjust the start and stop and the dip switch to select between in line or inside delta connection. This will also give a quick and easy overview of the used settings.

Possible to use current limit

Using an external current transformer will make it possible to activate the current limit function. This will allow you to keep the current at a pre-set level also when starting heavy duty applications.

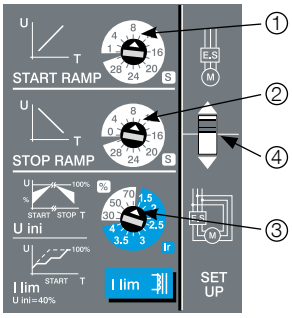
PSS – The flexible range
Description

The PSS Softstarter can be selected according to the rated motor power in normal duty applications like pumps, compressors, elevators, escalators, short conveyor belts and bow thrusters. See page 18-19.
For heavy duty applications like centrifugal fans, crushers, mixers, mills, stirrers and long conveyor belts, select a softstarter from page 20-21.



In-Line and Inside Delta connection of PSS18/30 … PSS300/515

Settings



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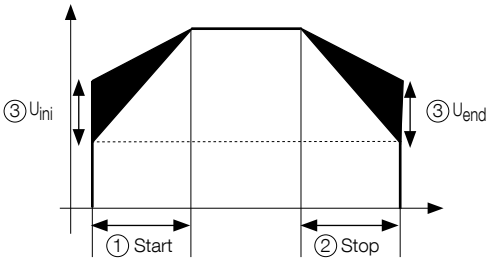


① Ramp time START = 1 ... 30 sec

② Ramp time STOP = 0 ... 30 sec

③ Initial voltage U_{ini} and end voltage = 40 ... 70 %
Level of current limit = 1.5 ... 4xI_e.
When current limit is used, initial voltage and end voltage is fixed at 40 %

④ Switch for In-line or Inside Delta connection

PSS – The flexible range
Overview

	PSS18/30...PSS44/76				PSS50/85...PSS72/124		
Softstarter. Type							
Normal start In-line connected	PSS18/30	PSS30/52	PSS37/64	PSS44/76	PSS50/85	PSS60/105	PSS72/124
(400 V) kW	7.5	15	18.5	22	25	30	37
IEC, Max. A	18	30	37	44	50	60	72
(440-480 V) hp	10	20	25	30	30	40	50
UL, Max FLA	18	28	34	40	47	56	67
400 V, 40° C							
Using MCCB type 1 coordination will be achieved	**MCCB (50kA), type**						
	T2S160						
To achieve type 2 coordination semi-conductor fuses must be used	**Fuse protection (65kA), Semi-conductor fuses, Bussmann, type**						
	170M1564	170M1566	170M1568	170M1569		170M1570	170M1571
Suitable switch fuse for the recommended semi-conductor fuses	**Switch fuse, type**						
	OS32GD03P		OS63GD03P				OS125GD03P
Overload protection is used to protect the motor from over heating	**Thermal overload relay, type**						
	TF42DU			TA75DU			
The line contactor is not required for the softstarter itself but often used to open if OL trips	**Line contactor, type**						
	AF16	AF30	AF38	A50		A63	A75
The by-pass contactor will reduce the power loss of the softstarter. All softstarters can be operated without by-pass	**By-pass contactor, type**						
	AF9	AF16	AF26		AF30	A40	A50
Must be used if current limit function is required	**Current transformers, type**						
	PSCT-30 1 turn	PSCT-40 1 turn	PSCT-50 1 turn	PSCT-60 1 turn	PSCT-75 1 turn		PSCT-100 1 turn

A50 ... A300 might be replaced by AF50 ... AF300
The table above is an overview of possible combinations of devices.
Complete coordination tables are available at www.abb.com/lowvoltage

PSS – The flexible range
Overview

	PSS85/147...PSS142/245			PSS175/300...PSS300/515		
	Softstarter. Type					
Normal start In-line connected	PSS85/147	PSS105/181	PSS142/245	PSS175/300	PSS250/430	PSS300/515
(400 V) kW	45	55	75	90	132	160
IEC, Max. A	85	105	142	175	250	300
(440-480 V) hp	60	75	100	125	150	200
UL, Max FLA	85	105	125	156	225	248
	400 V, 40 °C					
Using MCCB type 1 coordination will be achieved	**MCCB (50kA), type**					
	T2S160	T3S250			T4S320	T5S400
To achieve type 2 coordination semi-conductor fuses must be used	**Fuse protection (65kA), Semiconductor fuses, Bussmann, type**					
	170M1572	170M3819	170M5809	170M5810	170M5813	170M6813
Suitable switch fuse for the recommended semi-conductor fuses	**Switch fuse, type**					
	OS125GD03P	OS250D03P	OS400D03P			OS630D03P
Overload protection is used to protect the motor from over heating	**Thermal overload relay, type**					
	TA110DU		TA200DU		TA450DU	
The line contactor is not required for the softstarter itself but often used to open if OL trips	**Line contactor, type**					
	A95	A110	A145	A185	A260	A300
The by-pass contactor will reduce the power loss of the softstarter. All softstarters can be operated without by-pass	**By-pass contactor, type**					
	A50	A63	A95	A145		A210
Must be used if current limit function is required	**Current transformers, type**					
	PSCT-125 1 turn	PSCT-150 1 turn	PSCT200 1 turn	PSCT-250 1 turn	PSCT-400 1 turn	

How to select correct size

By using the guide here, you can quickly select a suitable softstarter for the most common applications.

If a more precise selection is required, you can use Prosoft, a selection software available at www.abb.com/lowvoltage

Quick guide for selection

Normal start Class 10	**Heavy duty start class 30**
Ordering - see page 18 - 19	Ordering - see page 20 - 21

Typical applications

• Bow thruster	• Centrifugal pump	• Centrifugal fan	• Conveyor belt (long)
• Compressor	• Conveyor belt (short)	• Crusher	• Mill
• Elevator	• Escalator	• Mixer	• Stirrer

If more than 10 starts/h

Select one size larger than the standard selection

PSS – The flexible range
Normal starts, class 10, In-Line, ordering details

PSS18/30-500 ... 44/76-500

PSS50/85-500 ...72/124-500
PSS18/30-690 ... 72/124-690

PSS85/147-500 ...142/245-500
PSS85/147-690 ...142/245-690

PSS175/300-500 ... 300/515-500
PSS175/300-690 ... 300/515-690

PSS18/30 ... PSS300/515

Rated operational voltage, U_e, 208 - 500 V

Motor power

400 V P kW	500 V P kW	690 V P kW	IEC Max rated operational curent I_e A	Type*)	Order code**)	Weight kg 1 piece
7.5	11	-	18	PSS18/30-500□■	1SFA892 001 R▽00▼	2.30
15	18.5	-	30	PSS30/52-500□■	1SFA892 002 R▽00▼	2.30
18.5	22	-	37	PSS37/64-500□■	1SFA892 003 R▽00▼	2.30
22	25	-	44	PSS44/76-500□■	1SFA892 004 R▽00▼	2.30
25	30	-	50	PSS50/85-500□■	1SFA892 005 R▽00▼	3.60
30	37	-	60	PSS60/105-500□■	1SFA892 006 R▽00▼	3.80
37	45	-	72	PSS72/124-500□■	1SFA892 007 R▽00▼	3.80
45	55	-	85	PSS85/147-500□■	1SFA892 008 R▽00▼	8.60
55	75	-	105	PSS105/181-500□■	1SFA892 009 R▽00▼	10.40
75	90	-	142	PSS142/245-500□■	1SFA892 010 R▽00▼	10.40
90	110	-	175	PSS175/300-500□■	1SFA892 011 R▽00▼	20.50
132	160	-	250	PSS250/430-500□■	1SFA892 013 R▽00▼	22.00
160	200	-	300	PSS300/515-500□■	1SFA892 014 R▽00▼	22.00

Rated operational voltage, U_e, 400 - 690 V

7.5	11	15	18	PSS18/30-690□■	1SFA893 001 R▽00▼	2.30
15	18.5	25	30	PSS30/52-690□■	1SFA893 002 R▽00▼	2.30
18.5	22	30	37	PSS37/64-690□■	1SFA893 003 R▽00▼	2.30
22	25	37	44	PSS44/76-690□■	1SFA893 004 R▽00▼	2.30
25	30	45	50	PSS50/85-690□■	1SFA893 005 R▽00▼	3.60
30	37	55	60	PSS60/105-690□■	1SFA893 006 R▽00▼	3.80
37	45	59	72	PSS72/124-690□■	1SFA893 007 R▽00▼	3.80
45	55	75	85	PSS85/147-690□■	1SFA893 008 R▽00▼	8.60
55	75	90	105	PSS105/181-690□■	1SFA893 009 R▽00▼	10.40
75	90	132	142	PSS142/245-690□■	1SFA893 010 R▽00▼	10.40
90	110	160	175	PSS175/300-690□■	1SFA893 011 R▽00▼	20.50
132	160	220	250	PSS250/430-690□■	1SFA893 013 R▽00▼	22.00
160	200	257	300	PSS300/515-690□■	1SFA893 014 R▽00▼	22.00

*) Add code letter in Type for:
Rated control supply voltage, U_s
□ F = 110-120 V, 50/60 Hz
L = 220-240 V, 50/60 Hz
Fault signal relay
■ no code letter = NO
C = NC

**) Add code number in Order code for:
Fault signal relay
▽ 1 = NO
2 = NC
Rated control supply voltage, U_s
▼ 1 = 110-120 V, 50/60 Hz
2 = 220-240 V, 50/60 Hz

PSS – The flexible range
Normal starts, class 10, Inside Delta, ordering details

PSS18/30-500 ... 44/76-500

PSS50/85-500 ...72/124-500
PSS18/30-690 ... 72/124-690

PSS85/147-500 ...142/245-500
PSS85/147-690 ...142/245-690

PSS175/300-500 ... 300/515-500
PSS175/300-690 ... 300/515-690

PSS18/30 ... PSS300/515

Rated operational voltage, U_e, 208 - 500 V

Motor power

400 V P kW	500 V P kW	690 V P kW	IEC Max rated operational curent I_e A	Type*)	Order code**)	Weight kg 1 piece
15	18.5	-	30	PSS18/30-500□■	1SFA892 001 R▽00▼	2.30
25	30	-	52	PSS30/52-500□■	1SFA892 002 R▽00▼	2.30
30	37	-	64	PSS37/64-500□■	1SFA892 003 R▽00▼	2.30
37	45	-	76	PSS44/76-500□■	1SFA892 004 R▽00▼	2.30
45	55	-	85	PSS50/85-500□■	1SFA892 005 R▽00▼	3.60
55	75	-	105	PSS60/105-500□■	1SFA892 006 R▽00▼	3.80
59	80	-	124	PSS72/124-500□■	1SFA892 007 R▽00▼	3.80
75	90	-	147	PSS85/147-500□■	1SFA892 008 R▽00▼	8.60
90	110	-	181	PSS105/181-500□■	1SFA892 009 R▽00▼	10.40
132	160	-	245	PSS142/245-500□■	1SFA892 010 R▽00▼	10.40
160	200	-	300	PSS175/300-500□■	1SFA892 011 R▽00▼	20.50
220	295	-	430	PSS250/430-500□■	1SFA892 013 R▽00▼	22.00
257	355	-	515	PSS300/515-500□■	1SFA892 014 R▽00▼	22.00

Rated operational voltage, U_e, 400 - 690 V

15	18.5	25	30	PSS18/30-690□■	1SFA893 001 R▽00▼	2.30
25	30	45	52	PSS30/52-690□■	1SFA893 002 R▽00▼	2.30
30	37	55	64	PSS37/64-690□■	1SFA893 003 R▽00▼	2.30
37	45	59	76	PSS44/76-690□■	1SFA893 004 R▽00▼	2.30
45	55	75	85	PSS50/85-690□■	1SFA893 005 R▽00▼	3.60
55	75	90	105	PSS60/105-690□■	1SFA893 006 R▽00▼	3.80
59	80	110	124	PSS72/124-690□■	1SFA893 007 R▽00▼	3.80
75	90	132	147	PSS85/147-690□■	1SFA893 008 R▽00▼	8.60
90	110	160	181	PSS105/181-690□■	1SFA893 009 R▽00▼	10.40
132	160	220	245	PSS142/245-690□■	1SFA893 010 R▽00▼	10.40
160	200	257	300	PSS175/300-690□■	1SFA893 011 R▽00▼	20.50
220	295	400	430	PSS250/430-690□■	1SFA893 013 R▽00▼	22.00
257	355	500	515	PSS300/515-690□■	1SFA893 014 R▽00▼	22.00

*) Add code letter in Type for:
Rated control supply voltage, U_s
□ F = 110-120 V, 50/60 Hz
L = 220-240 V, 50/60 Hz
Fault signal relay
■ no code letter = NO
C = NC

**) Add code number in Order code for:
Fault signal relay
▽ 1 = NO
2 = NC
Rated control supply voltage, U_s
▼ 1 = 110-120 V, 50/60 Hz
2 = 220-240 V, 50/60 Hz

PSS – The flexible range
Heavy duty starts, class 30, In-Line, ordering details

PSS18/30-500 ... 44/76-500

PSS50/85-500 ...72/124-500
PSS18/30-690 ... 72/124-690

PSS85/147-500 ...142/245-500
PSS85/147-690 ...142/245-690

PSS175/300-500 ... 300/515-500
PSS175/300-690 ... 300/515-690

PSS18/30 ... PSS300/515

Rated operational voltage, U_e, 208 - 500 V

Motor power

400 V P_e kW	500 V P_e kW	690 V P_e kW	IEC Max rated operational curent I_e A	Type*)	Order code**)	Weight kg 1 piece
5.5	7.5	-	13	PSS18/30-500❑■	1SFA892 001 R▽00▼	2.30
7.5	11	-	18	PSS30/52-500❑■	1SFA892 002 R▽00▼	2.30
15	18.5	-	30	PSS37/64-500❑■	1SFA892 003 R▽00▼	2.30
18.5	22	-	37	PSS44/76-500❑■	1SFA892 004 R▽00▼	2.30
22	25	-	44	PSS50/85-500❑■	1SFA892 005 R▽00▼	3.60
25	30	-	50	PSS60/105-500❑■	1SFA892 006 R▽00▼	3.80
30	37	-	60	PSS72/124-500❑■	1SFA892 007 R▽00▼	3.80
37	45	-	72	PSS85/147-500❑■	1SFA892 008 R▽00▼	8.60
45	55	-	85	PSS105/181-500❑■	1SFA892 009 R▽00▼	10.40
55	75	-	105	PSS142/245-500❑■	1SFA892 010 R▽00▼	10.40
75	90	-	142	PSS175/300-500❑■	1SFA892 011 R▽00▼	20.50
90	110	-	175	PSS250/430-500❑■	1SFA892 013 R▽00▼	22.00
132	160	-	250	PSS300/515-500❑■	1SFA892 014 R▽00▼	22.00

Rated operational voltage, U_e, 400 - 690 V

5.5	7.5	11	13	PSS18/30-690❑■	1SFA893 001 R▽00▼	2.30
7.5	11	15	18	PSS30/52-690❑■	1SFA893 002 R▽00▼	2.30
15	18.5	25	30	PSS37/64-690❑■	1SFA893 003 R▽00▼	2.30
18.5	22	30	37	PSS44/76-690❑■	1SFA893 004 R▽00▼	2.30
22	25	37	44	PSS50/85-690❑■	1SFA893 005 R▽00▼	3.60
25	30	45	50	PSS60/105-690❑■	1SFA893 006 R▽00▼	3.80
30	37	55	60	PSS72/124-690❑■	1SFA893 007 R▽00▼	3.80
37	45	59	72	PSS85/147-690❑■	1SFA893 008 R▽00▼	8.60
45	55	75	85	PSS105/181-690❑■	1SFA893 009 R▽00▼	10.40
55	75	90	105	PSS142/245-690❑■	1SFA893 010 R▽00▼	10.40
75	90	132	142	PSS175/300-690❑■	1SFA893 011 R▽00▼	20.50
90	110	160	175	PSS250/430-690❑■	1SFA893 013 R▽00▼	22.00
132	160	220	250	PSS300/515-690❑■	1SFA893 014 R▽00▼	22.00

*) Add code letter in Type for:
Rated control supply voltage, U_s
❑ F = 110-120 V, 50/60 Hz
L = 220-240 V, 50/60 Hz
Fault signal relay
■ no code letter = NO
C = NC

**) Add code number in Order code for:
Fault signal relay
▽ 1 = NO
2 = NC
Rated control supply voltage, U_s
▼ 1 = 110-120 V, 50/60 Hz
2 = 220-240 V, 50/60 Hz

PSS – The flexible range
Heavy duty starts, class 30, Inside Delta, ordering details

PSS18/30-500 ... 44/76-500

PSS50/85-500 ...72/124-500
PSS18/30-690 ... 72/124-690

PSS85/147-500 ...142/245-500
PSS85/147-690 ...142/245-690

PSS175/300-500 ... 300/515-500
PSS175/300-690 ... 300/515-690

PSS18/30 ... PSS300/515

Rated operational voltage, U_e, 208 - 500 V

Motor power 400 V P_e kW	500 V P_e kW	690 V P_e kW	IEC Max rated operational curent I_e A	Type*)	Order code**)	Weight kg 1 piece
11	15	-	22	PSS18/30-500□■	1SFA892 001 R▽00▼	2.30
15	18.5	-	30	PSS30/52-500□■	1SFA892 002 R▽00▼	2.30
25	30	-	52	PSS37/64-500□■	1SFA892 003 R▽00▼	2.30
30	37	-	64	PSS44/76-500□■	1SFA892 004 R▽00▼	2.30
37	45	-	76	PSS50/85-500□■	1SFA892 005 R▽00▼	3.60
45	55	-	85	PSS60/105-500□■	1SFA892 006 R▽00▼	3.80
55	75	-	105	PSS72/124-500□■	1SFA892 007 R▽00▼	3.80
59	80	-	124	PSS85/147-500□■	1SFA892 008 R▽00▼	8.60
75	90	-	147	PSS105/181-500□■	1SFA892 009 R▽00▼	10.40
90	110	-	181	PSS142/245-500□■	1SFA892 010 R▽00▼	10.40
132	160	-	245	PSS175/300-500□■	1SFA892 011 R▽00▼	20.50
160	200	-	300	PSS250/430-500□■	1SFA892 013 R▽00▼	22.00
220	295	-	430	PSS300/515-500□■	1SFA892 014 R▽00▼	22.00

Rated operational voltage, U_e, 400 - 690 V

11	15	18.5	22	PSS18/30-690□■	1SFA893 001 R▽00▼	2.30
15	18.5	25	30	PSS30/52-690□■	1SFA893 002 R▽00▼	2.30
25	30	45	52	PSS37/64-690□■	1SFA893 003 R▽00▼	2.30
30	37	55	64	PSS44/76-690□■	1SFA893 004 R▽00▼	2.30
37	45	59	76	PSS50/85-690□■	1SFA893 005 R▽00▼	3.60
45	55	75	85	PSS60/105-690□■	1SFA893 006 R▽00▼	3.80
55	75	90	105	PSS72/124-690□■	1SFA893 007 R▽00▼	3.80
59	80	110	124	PSS85/147-690□■	1SFA893 008 R▽00▼	8.60
75	90	132	147	PSS105/181-690□■	1SFA893 009 R▽00▼	10.40
90	110	160	181	PSS142/245-690□■	1SFA893 010 R▽00▼	10.40
132	160	220	245	PSS175/300-690□■	1SFA893 011 R▽00▼	20.50
160	200	257	300	PSS250/430-690□■	1SFA893 013 R▽00▼	22.00
220	295	400	430	PSS300/515-690□■	1SFA893 014 R▽00▼	22.00

*) Add code letter in Type for:
Rated control supply voltage, U_s
□ F = 110-120 V, 50/60 Hz
L = 220-240 V, 50/60 Hz
Fault signal relay
■ no code letter = NO
C = NC

**) Add code number in Order code for:
Fault signal relay
▽ 1 = NO
2 = NC
Rated control supply voltage, U_s
▼ 1 = 110-120 V, 50/60 Hz
2 = 220-240 V, 50/60 Hz

PSS – The flexible range
Accessories

PSCT-30

Current transformer for current limit function
To be connected to terminals 11 and 12 on the softstarter.
The setting range (1.5 – 4) corresponds to a multiple of the transformer ratio.
Technical data below shows transformer ratio and number of turns for the primary winding.
You can also use your own current transformer with corresponding transformer ratio and with minimum 1 VA.

For softstarter type	Transformer ratio, Number of turns	Type	Order code	Packing piece	Weight kg 1 piece
PSS18/30	30/1 – 1 turn	**PSCT-30**	**1SFA 899 001 R1030**	1	0.300
PSS30/52	40/1 – 1 turn	**PSCT-40**	**1SFA 899 001 R1040**	1	0.300
PSS37/64	50/1 – 1 turn	**PSCT-50**	**1SFA 899 001 R1050**	1	0.300
PSS44/76	60/1 – 1 turn	**PSCT-60**	**1SFA 899 001 R1060**	1	0.300
PSS50/85	75/1 – 1 turn	**PSCT-75**	**1SFA 899 001 R1075**	1	0.300
PSS60/105	75/1 – 1 turn	**PSCT-75**	**1SFA 899 001 R1075**	1	0.300
PSS72/124	100/1 – 1 turn	**PSCT-100**	**1SFA 899 001 R1100**	1	0.250
PSS85/147	125/1 – 1 turn	**PSCT-125**	**1SFA 899 001 R1125**	1	0.250
PSS105/181	150/1 – 1 turn	**PSCT-150**	**1SFA 899 001 R1150**	1	0.250
PSS142/245	200/1 – 1 turn	**PSCT-200**	**1SFA 899 001 R1200**	1	0.250
PSS175/300	250/1 – 1 turn	**PSCT-250**	**1SFA 899 001 R1250**	1	0.250
PSS250/430	400/1 – 1 turn	**PSCT-400**	**1SFA 899 001 R1400**	1	0.250
PSS300/515	400/1 – 1 turn	**PSCT-400**	**1SFA 899 001 R1400**	1	0.250

LZ...

Cable connectors for Cu cables

For softstarter type	Wire range mm^2	Tightening torque max. Nm	Type	Order code	Packing piece	Weight kg 1 piece
PSS85/147 ... 142/245	6-185	16	–	**1SDA023 354 R0001**	3	0.200
PSS85/147 ... 142/245	2 x (50-120)	16	**LZ185-2C/120**	**1SFN074 709 R1000**	3	0.300
PSS175/300 ... 300/515	16-240	25	–	**1SDA023 368 R0001**	3	0.400

Cable connectors for Al and Cu cables

For softstarter type	Wire range mm^2	Tightening torque max. Nm	Type	Order code	Packing piece	Weight kg 1 piece
PSS85/147 ... 142/245	35-95	13.5	–	**1SDA023 356 R0001**	3	0.100
PSS85/147 ... 142/245	25-150	31	–	**1SDA023 357 R0001**	3	0.100
PSS175/300 ... 300/515	120-240	43	–	**1SDA023 370 R0001**	3	0.100

PSLW-44

Terminal enlargements

For softstarter type	Wire range mm^2	Type	Order code	Packing piece	Weight kg 1 piece
PSS18/30-500 ... 44/76-500	1x6 ... 35 2x6 ... 16	**PSLW-44**	**1SFA899 002 R1044**	1	0.100
PSS50/85-500 ... 72/124-500 PSS18/30-690 ... 72/124-690	1x10 ... 50 2x10 ... 25	**PSLW-72**	**1SFA899 002 R1072**	1	0.150

LW...

For softstarter type	Dimensions hole ø mm^2	bar mm	Type	Order code	Packing piece	Weight kg 1 piece
PSS85/147 ... 142/245	10.5	17.5 x 5	**LW185**	**1SFN074 707 R1000**	1	0.250
PSS175/300 ... 300/515	10.5	20 x 5	**LW300**	**1SFN075 107 R1000**	1	0.450

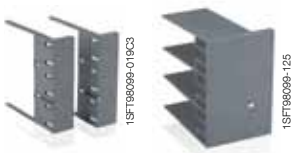
Terminal nut washer

For softstarter type	Req. qty	Type	Order code	Packing piece	Weight kg 1 piece
PSS85/147 ... 142/245	2	**LE185**	**1SFN074 716 R1000**	2	0.200
PSS175/300 ... 300/515	2	**LE300**	**1SFN075 116 R1000**	2	0.300

LE185

Terminal shrouds

For softstarter type	Suitable for	Req. qty	Type	Order code	Packing piece	Weight kg 1 piece
PSS85/147 ... 142/245	Cable connectors	2	**LT185-AC**	**1SFN124 701 R1000**	2	0.050
PSS85/147 ... 142/245	Compression lugs	2	**LT185-AL**	**1SFN124 703 R1000**	2	0.220
PSS175/300 ... 300/515	Cable connectors	2	**LT300-AC**	**1SFN125 101 R1000**	2	0.070
PSS175/300 ... 300/515	Compression lugs	2	**LT300-AL**	**1SFN125 103 R1000**	2	0.280



LT ... -AC LT ... -AL

PSS – The flexible range
Technical data

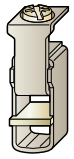
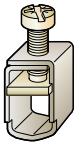
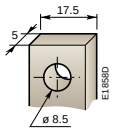
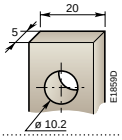
Rated insulation voltage U_i	690 V			
Rated operational voltage U_e	208 ... 500 V AC, 400 ... 690 V AC + 10 % / -15 %, 50/60 Hz ±5 %			
Rated control supply voltage U_s	110 ... 120 V or 220 ... 240 V +10 % / -15 %, 50/60 Hz ±5 %			
Rated control circuit voltage U_c	Internal 24 V DC			
Starting capacity at I_r				
at max. rated current, I_e	4 x I_e for 10 sec.			
Number of starts per hour	30 [1]			
Overload capability				
Overload class	10			
Service factor	**PSS18/30 ... 250/430**			**PSS300/515**
	115 %			110 %
Ambient temperature				
during operation	-25 °C to + 60 °C [2]			
during storage	-40 °C to + 70 °C			
Maximum altitude	4000 m [3]			
Degree of protection	**PSS18/30-500 ... 44/76-500**	**PSS50/85-500 ... 72/124-500**	**PSS85/147-500 ... 300/515-500**	
Main circuit	IP20	IP10	IP00	
	PSS18/30-690 ... 72/124-690		**PSS85/147-690 ... 300/515-690**	
	IP10		IP00	
Supply and control circuit	**PSS18/30 ... PSS300/515**			
	IP20			
Signal relays				
By-pass signal	Yes			
Fault signal	Yes (NO or NC)			
Rated operational voltage, U_e	250 V AC / 24 V DC			
Rated thermal current I_e	5A			
Rated operational current I_e at AC-15 (U_e=250 V)	1.5 A			
Signaling indication LED				
Ready to start / ON	Green			
Completed start ramp / T.O.R	Green			
General fault	Red			
External fault	Red			
Settings				
Ramp time during start	1 – 30 sec			
Ramp time during stop	0 – 30 sec			
Initial voltage during start	30 – 70 %			
Current limit function x CT-ratio	1.5 ... 4[4]			
Switch for In-line / Inside Delta	Yes			

[1] Valid for 50 % on time and 50 % off time. 3.5 x I_e for 7 sec., if other data is required, contact your sales office.
[2] Above 40 °C up to max. 60 °C reduce the rated current with 0.8 % per °C.
[3] When used at high alitudes above 1000 meters up to 4000 meters you need to derate the rated current using the following formula.
[% of I_e = 100 - $\frac{x - 1000}{150}$] x = actual altitude for the softstarter

[4] Only if current transformer is connected (accessory).

PSS – The flexible range
Technical data

Cross section of connection cables

		Type of softstarter PSS18/30-500 ... PSS44/76-500	PSS50/85-500 ... PSS72/124-500, PSS18/30-690 ... PSS72/124-690	PSS85/147 ... PSS142/245	PSS175/300 ... PSS300/515
Main circuit Connection clamp					
Solid/stranded	1 x mm²	2.5 – 16	6 – 50	See accessories	
Solid/stranded	2 x mm²	2.5 – 16	6 – 25	See accessories	
Tightening torque (recommended)	Nm	2.6	4.5	See accessories	
Connection bar					
Width and thickness	mm	–	–		
Hole diameter	mm	–	–		
Tightening torque (recommended)	Nm	–	–	18	28
Supply and control circuit Connection clamp					
Solid/stranded	1 x mm²	2.5	2.5	2.5	2.5
Solid/stranded	2 x mm²	–	–	–	–
Tightening torque (recommended)	Nm	0.5	0.5	0.5	0.5

Fuse ratings and power losses

For Softstarter	Recommended ABB Overload protection		Max power loss at rated I_e		Max fuse rating - main circuit [1) 3)] Bussman Fuses, DIN43 620			Power requirements of supply
		Current range	without by-pass[2)]	with external by-pass				
Type	Type	A	W	W	A	Type	size	VA
PSS18/30	TF42DU	7.6 - 18	65	13.5	50	170M1564	000	9
PSS30/52	TF42DU	7.6 - 30	100	14.6	80	170M1566	000	9
PSS37/64	TF42DU	7.6 - 37	120	17.5	125	170M1568	000	9
PSS44/76	TA75DU	18 - 44	142	17.5	160	170M1569	000	9
PSS50/85	TA75DU	18 - 50	160	20.5	160	170M1569	000	10
PSS60/105	TA75DU	18 - 60	190	22	200	170M1570	000	10
PSS72/124	TA75DU	18 - 72	226	30.5	250	170M1571	000	10
PSS85/147	TA110DU	65 - 85	291	56.5	315	170M1572	000	36
PSS105/181	TA110DU	65 - 105	351	61	400	170M3819	1*	36
PSS142/245	TA200DU	66 - 142	462	63	450	170M5809	2	36
PSS175/300	TA200DU	66 - 175	590	117	500	170M5810	2	65
PSS250/430	TA450DU	130 - 250	815	117	700	170M5813	2	65
PSS300/515	TA450DU	130 - 300	965	140	900	170M6813	3	65

[1)] For the supply circuit 6 A delayed, for MCB use C characteristics.
[2)] Calculated power loss at operational current (Iop) without by-pass.
Ptot = 3 x Iop + VA value
Example: PSS 60/105 running at 52A
Ptot = 3 x 52 + 10 = 166W
[3)] Max fuse rating independent if In-Line or Inside Delta connection. In Inside Delta connections of PSS, the fuses can be placed outside of the delta.

PSS – The flexible range
UL ratings

3-phase motor rating – In-Line

Softstarters	Motor power P (hp) and full load current FLA, (A)				
		U_e	U_e	U_e	U_e
	Max. FLA	200V / 208V	220V / 240V	440V / 480V	550V / 600V
Type	A	hp	hp	hp	hp
PSS18/30	18	5	5	10	15
PSS30/52	28	7.5	10	20	25
PSS37/64	34	10	10	25	30
PSS44/76	40	10	10	30	30
PSS50/85	47	15	15	30	40
PSS60/105	56	15	20	40	50
PSS72/124	67	20	20	50	60
PSS85/147	85	25	30	60	75
PSS105/181	105	30	40	75	100
PSS142/245	125	40	40	100	125
PSS175/300	156	50	60	125	150
PSS250/430	225	75	75	150	200
PSS300/515	248	75	100	200	250

3-phase motor rating – Inside Delta

Softstarters	Motor power P (hp) and full load current FLA, (A)				
		U_e	U_e	U_e	U_e
	Max. FLA	200V / 208V	220V / 240V	440V / 480V	550V / 600V
Type	A	hp	hp	hp	hp
PSS18/30	30	7.5	10	20	25
PSS30/52	48	15	15	30	40
PSS37/64	58	20	20	40	50
PSS44/76	69	20	25	50	60
PSS50/85	81	25	30	60	75
PSS60/105	96	30	30	75	75
PSS72/124	116	40	40	75	100
PSS85/147	147	50	50	100	150
PSS105/181	181	60	60	150	150
PSS142/245	215	75	75	150	200
PSS175/300	270	75	100	200	250
PSS250/430	389	125	150	300	400
PSS300/515	429	150	150	350	400

PSE – The efficient range
Description

Product description

- Wide rated operational voltage 208 – 600 V AC
- Wide rated control supply voltage 100 – 250 V, 50/60 Hz
- Rated operational current 18 to 370 A
- Wide ambient temperature range, -25 to +60 °C
- Coated circuit boards for reliable operation in harsh environment
- Built-in by-pass on all sizes, saving energy and reducing installation time
- User friendly HMI with illuminated language neutral display and four button keypad
- Optional external keypad, IP66
- Torque control for excellent control of pumps
- Current limit, adjustable between 1.5 – 7 x I_e
- Motor overload protection with classes 10A, 10, 20 and 30
- Motor underload protection to detect pumps running dry
- Locked rotor protection, detecting jammed pumps
- Kick start to start jammed pumps or conveyor belts
- Analog output showing operational current, 4 – 20 mA
- Optional fieldbus communication using Profibus, Modbus, Devicenet or CANopen
- Sophisticated algorithm eliminating the DC-component and thereby providing excellent starting performance.

The PSE softstarter range is the world's first compact softstarters with Torque Control. This makes the PSE range an excellent choice for pumping application where water hammering normally is a big problem. With its compact design and advanced functionality, the PSE is also a very efficient solution for other common applications such as compressors and fans.

Torque control

The most important function when stopping pumps is torque control. Since the PSE softstarter is optimized for controlling pumps, this feature is a must.

Built-in by-pass for energy saving

Using by-pass after reaching full voltage will greatly reduce the power loss and thereby save energy. In the PSE softstarter range, the by-pass is built-in on all sizes, which will give the most compact starting solution and reduce the need for wiring during installation.

Coated circuit boards

All circuit boards in the new PSE softstarter have a protective coating to ensure a reliable operation even in tough environments like wastewater plants, where corrosive gases and acids may exist.

Motor protection

The PSE softstarter is equipped with built-in electronic overload protection, protecting the motor from overheating. Since no additional overload device is needed, our efficient design saves both space, installation time, and ultimately money.

Analog output

The analog output terminals can be connected to an analog current meter to show the current during operation and thereby eliminating the need for an additional current transformer. The analog output signal can also be used as an analog input to a PLC.

Display and keypad

The set-up of the PSE softstarter is done using the four button keypad and the illuminated display, providing a quick and easy set-up. While operating, the display will also provide important status information such as current and voltage.

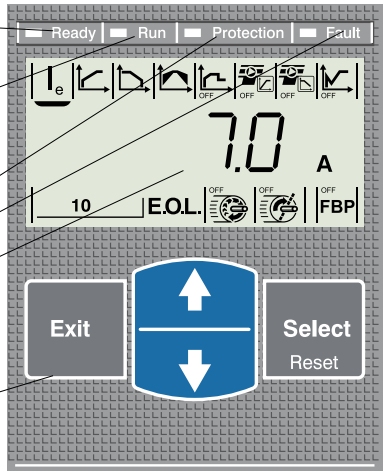
External keypad

As an option the PSE softstarter can be equipped with an external keypad for easy set-up and monitoring of the unit without opening the enclosure door. The keypad can also be used to copy parameters between different softstarters.

PSE – The efficient range
Description

The PSE Softstarter can be selected according to the rated motor power in normal duty applications like pumps, compressors, elevators, escalators, short conveyor belts and bow thrusters. See page 30.
For heavy duty applications like centrifugal fans, crushers, mixers, mills, stirrers and long conveyor belts, select a softstarter from page 31.

Settings



PSE – The efficient range
Overview

PSE18 ... PSE105

	Softstarter. Type								
Normal start In-line connected	PSE18	PSE25	PSE30	PSE37	PSE45	PSE60	PSE72	PSE85	PSE105
(400 V) kW	7.5	11	15	18.5	22	30	37	45	55
IEC, Max. A	18	25	30	37	45	60	72	85	106
(440-480 V) hp	10	15	20	25	30	40	50	60	75
UL, Max FLA	18	25	28	34	42	60	68	80	104
	400 V, 40 °C								
Using MCCB only, type 1 coordination will be achieved	**MCCB (50 kA), type**						**MCCB (75 kA), type**		
	T2L160						T4L250		
To achieve type 2 coordination, semi-conductor fuses must be used	**Fuse protection (85 kA), Semiconductor fuses, Bussmann, type**								
	170M1563	170M1564	170M1566	170M1567	170M1568	170M1569	170M1571	170M1572	170M3819
Suitable switch fuse for recommended semi-conductor fuses	**Switch fuse, type**								
	OS32GD03P			OS63GD03P			OS125GD03P		OS250D03P
The line contactor is not required for the softstarter itself but often used to open if OL trips	**Line contactor, type**								
	AF26		AF30	AF38	A50	A63	A75	A95	A110
Overload protection is used to protect the motor from over heating	**Electronic overload relay, type**								
	Built-in								
The by-pass will reduce the power loss of the softstarter.	**By-pass, type**								
	Built-in								

A50 ... A300 might be replaced by AF50 ... AF300
The table above is an overview of possible combinations of devices.
Complete coordination tables are available at www.abb.com/lowvoltage

PSE – The efficient range
Overview

	PSE142 ... PSE170		PSE210 ... PSE370			
	Softstarter. Type					
Normal start In-line connected	PSE142	PSE170	PSE210	PSE250	PSE300	PSE370
(400 V) kW	75	90	110	132	160	200
IEC, Max. A	143	171	210	250	300	370
(440-480 V) hp	100	125	150	200	250	300
UL, Max FLA	130	169	192	248	302	361
	400 V, 40 °C					
Using MCCB only, type 1 coordination will be achieved	**MCCB (75 kA), type**					
	T4L250		T4L320	T5L400		T5L630
To achieve type 2 coordination, semi-conductor fuses must be used	**Fuse protection (85kA), Semiconductor fuses, Bussmann, type**					
	170M5809	170M5810	170M5812	170M5813	170M6812	170M6813
Suitable switch fuse for recommended semi-conductor fuses	**Switch fuse, type**					
	OS400D03P				OS630D03P	
The line contactor is not required for the softstarter itself but often used to open if OL trips	**Line contactor, type**					
	A145	A185	A210	A260	A300	AF400
Overload protection is used to protect the motor from over heating	**Electronic overload relay, type**					
	Built-in					
The by-pass will reduce the power loss of the softstarter.	**By-pass, type**					
	Built-in					

How to select correct size

By using the guide here, you can quickly select a suitable softstarter for the most common applications.

If a more precise selection is required, you can use Prosoft, a selection software available at www.abb.com/lowvoltage

Quick guide for selection

Normal start Class 10	**Heavy duty start class 30**
Ordering - see page 30	Ordering - see page 31

Typical applications

• Bow thruster	• Centrifugal pump	• Centrifugal fan	• Conveyor belt (long)
• Compressor	• Conveyor belt (short)	• Crusher	• Mill
• Elevator	• Escalator	• Mixer	• Stirrer

If more than 10 starts/h

Select one size larger than the standard selection

PSE – The efficient range
Normal starts, class 10, In-Line, ordering details

PSE18 ... PSE105

PSE142 ... PSE170

PSE210 ... PSE370

PSE18 ... PSE370

Rated operational voltage, U_e, 208 - 600 V AC

Rated control supply voltage, U_s, 100 - 250 V AC, 50/60 Hz

Motor power

230 V P_e kW	400 V P_e kW	500 V P_e kW	IEC Max rated operational curent I_e A	Type	Order code	Weight kg 1 piece
4	7.5	11	18	**PSE18-600-70**	**1SFA897 101 R7000**	2.4
5.5	11	15	25	**PSE25-600-70**	**1SFA897 102 R7000**	2.4
7.5	15	18.5	30	**PSE30-600-70**	**1SFA897 103 R7000**	2.4
9	18.5	22	37	**PSE37-600-70**	**1SFA897 104 R7000**	2.4
11	22	30	45	**PSE45-600-70**	**1SFA897 105 R7000**	2.4
15	30	37	60	**PSE60-600-70**	**1SFA897 106 R7000**	2.4
18.5	37	45	72	**PSE72-600-70**	**1SFA897 107 R7000**	2.5
22	45	55	85	**PSE85-600-70**	**1SFA897 108 R7000**	2.5
30	55	75	106	**PSE105-600-70**	**1SFA897 109 R7000**	2.5
40	75	90	143	**PSE142-600-70**	**1SFA897 110 R7000**	4.2
45	90	110	171	**PSE170-600-70**	**1SFA897 111 R7000**	4.2
59	110	132	210	**PSE210-600-70**	**1SFA897 112 R7000**	12.4
75	132	160	250	**PSE250-600-70**	**1SFA897 113 R7000**	13.9
90	160	200	300	**PSE300-600-70**	**1SFA897 114 R7000**	13.9
110	200	250	370	**PSE370-600-70**	**1SFA897 115 R7000**	13.9

PSE – The efficient range
Heavy duty starts, class 30, In-Line, ordering details

PSE18 ... PSE105

PSE142 ... PSE170

PSE210 ... PSE370

PSE18 ... PSE370

Rated operational voltage, U_e, 208 - 600 V AC

Rated control supply voltage, U_s, 100 - 250 V AC, 50/60 Hz

Motor power

230 V P_e kW	400 V P_e kW	500 V P_e kW	IEC Max rated operational curent I_e A	Type	Order code	Weight kg 1 piece
3	5.5	7.5	12	**PSE18-600-70**	**1SFA897 101 R7000**	2.4
4	7.5	11	18	**PSE25-600-70**	**1SFA897 102 R7000**	2.4
5.5	11	15	25	**PSE30-600-70**	**1SFA897 103 R7000**	2.4
7.5	15	18.5	30	**PSE37-600-70**	**1SFA897 104 R7000**	2.4
9	18.5	22	37	**PSE45-600-70**	**1SFA897 105 R7000**	2.4
11	22	30	45	**PSE60-600-70**	**1SFA897 106 R7000**	2.4
15	30	37	60	**PSE72-600-70**	**1SFA897 107 R7000**	2.5
18.5	37	45	72	**PSE85-600-70**	**1SFA897 108 R7000**	2.5
22	45	55	85	**PSE105-600-70**	**1SFA897 109 R7000**	2.5
30	55	75	106	**PSE142-600-70**	**1SFA897 110 R7000**	4.2
40	75	90	143	**PSE170-600-70**	**1SFA897 111 R7000**	4.2
45	90	110	171	**PSE210-600-70**	**1SFA897 112 R7000**	12.4
59	110	132	210	**PSE250-600-70**	**1SFA897 113 R7000**	13.9
75	132	160	250	**PSE300-600-70**	**1SFA897 114 R7000**	13.9
90	160	200	300	**PSE370-600-70**	**1SFA897 115 R7000**	13.9

PSE – The efficient range
Accessories

LZ...

LW...

LL140

LE185

LT ... -AC

LT ... -AL

PSEEK

PS-FBPA

Cable connectors for Cu cables

For softstarter type	Wire range mm²	Tightening torque max. Nm	Type	Order code	Packing piece	Weight kg 1 piece
PSE142 …170	6-185	16	–	1SDA 023 354 R0001	3	0.200
PSE142 …170	2 x (50-120)	16	LZ185-2C/120	1SFN 074 709 R1000	3	0.300
PSE210 … 370	16-240	25	–	1SDA 023 368 R0001	3	0.400

Cable connectors for Al and Cu cables

For softstarter type	Wire range mm²	Tightening torque max. Nm	Type	Order code	Packing piece	Weight kg 1 piece
PSE142 …170	35-95	13.5	–	1SDA 023 356 R0001	3	0.100
PSE142 …170	25-150	31	–	1SDA 023 357 R0001	3	0.100
PSE210 … 370	120-240	43	–	1SDA 023 370 R0001	3	0.100

Terminal enlargements

For softstarter type	Dimensions hole ø mm²	bar mm	Type	Order code	Packing piece	Weight kg 1 piece
PSE18...105	10.5	17.5 x 5	LW110	1SFN 074 307 R1000	1	0.100
PSE142...170	10.5	20 x 5	LW185	1SFN 074 707 R1000	1	0.450
PSE210...370	13	40 x 6	LW300	1SFN 075 107 R1000	1	1.230

Terminal nut washer

For softstarter type	Req. qty	Type	Order code	Packing piece	Weight kg 1 piece
PSE18...105	6	LL140	1SFN 074 211 R1000	6	–
PSE142...170	2	LE185	1SFN 074 716 R1000	2	0.200
PSE210...370	2	LE300	1SFN 075 116 R1000	2	0.300

Terminal shrouds

For softstarter type	Suitable for	Req. qty	Type	Order code	Packing piece	Weight kg 1 piece
PSE18...105	Compression lugs	2	LT140-30L	1SFN 124 203 R1000	2	–
PSE142...170	Cable connectors	2	LT185-AC	1SFN 124 701 R1000	2	0.050
PSE142...170	Compression lugs	2	LT185-AL	1SFN 124 703 R1000	2	0.220
PSE210...370	Cable connectors	2	LT300-AC	1SFN 125 101 R1000	2	0.070
PSE210...370	Compression lugs	2	LT300-AL	1SFN 125 103 R1000	2	0.280

External keypad including a 3m cable

For softstarter type	Type	Order code	Packing piece	Weight kg 1 piece
PSE18...370	PSEEK	1SFA 897 100 R1001	1	–

Fieldbus plug connection accessory

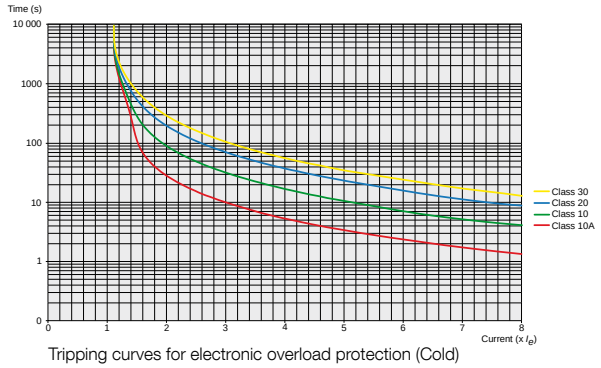
For softstarter type	Type	Order code	Packing piece	Weight kg 1 piece
The same accessory for all sizes	PS-FBPA	1SFA 896 312 R1002	1	0.060

ABB Field Bus Plug suitable for all sizes. See page 50-53

PSE – The efficient range
Technical data

Rated insulation voltage U_i	600 V
Rated operational voltage U_e	208 ... 600 V +10 %/-15 %
Rated control supply voltage U_s	100 ... 250 V +10 %/-15 %, 50/60 Hz ±5 %
Rated control circuit voltage U_c	Internal 24 V DC
Starting capacity	4xI_e for 10 sec.
Number of starts per hour	10 [1]
Overload capability,	
Overload Class	10
Ambient temperature	
During operation	-25 … +60 °C [2]
During storage	-40 … +70 °C
Maximum Altitude	4000 m [3]
Degree of protection	
Main circuit	IP00
Supply and Control circuit	IP20
Main circuit	
Built-in By-pass	Yes
Cooling system - Fan cooled (thermostat controlled)	Yes
HMI for settings	
Display	4 7-segments and icons. Illuminated
Keypad	2 selection keys and 2 navigation keys
Main settings	
Setting current	Size dependent
Ramp time during start	1-30 sec
Ramp time during stop	0-30 sec
Initial / end voltage	30-70%
Current limit	1,5-7xI_e
Torque control for start	Yes / No
Torque control for stop	Yes / No
Kick start	Off, 30-100%
Signal relays	
Number of signal relays	3
K2	Run signal
K3	TOR (By-pass) signal
K1	Event signal
Rated operational voltage U_e	250 V AC / 24 V DC [4]
Rated thermal current I_{th}	3 A
Rated operational current I_e at AC-15 (U_e = 250 V)	1.5 A

Analog output	
Output signal reference	4 ... 20 mA
Type of output signal	I Amp
Scaling	Fixed at 1.2 x I_e
Control circuit	
Number of inputs	3 (start, stop, reset of faults)
Signal indication LED's	
On / Ready	Green flashing / steady
Run / TOR	Green flashing / steady
Protection	Yellow
Fault	Red
Protections	
Electronic overload	Yes (Class 10A, 10, 20, 30)
Locked rotor protection	Yes
Underload protection	Yes
Field bus connection	
Connection for ABB FieldBusPlug	Yes (option)
External keypad	
Display LCD type	
Ambient temperature	
during operation	-25 … +60 °C
during storage	-40 … +70 °C
Degree of protection	IP66

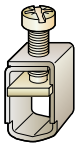
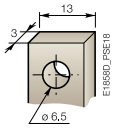
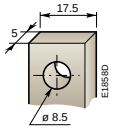
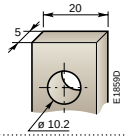


Tripping curves for electronic overload protection (Cold)

[1] Valid for 50 % on time and 50 % off time, with 3.5 x I_e for 7 seconds. If other data is required, please contact your sales office
[2] Above 40 °C up to max. 60 °C reduce the rated current with 0.6 % per °C.
[3] When used at high alitudes above 1000 meters up to 4000 meters you need to derate the rated current using the following formula.
[% of I_e = 100 - $\frac{x - 1000}{150}$] x = actual altitude for the softstarter
[4] A common voltage needs to be used for all 3 signal relays

PSE – The efficient range
Technical data

Cross section of connection cables

		Type of softstarter PSE18 ... PSE105	PSE142 ... PSE170	PSE210 ... PSE370
Main circuit Connection clamp				
Solid/stranded	1 x mm²	2.5 – 70	See accessories	
Solid/stranded	2 x mm²	2.5 – 70	See accessories	
Tightening torque (recommended)	Nm	9	See accessories	
Connection bar				
Width and thickness	mm			
Hole diameter	mm			
Tightening torque (recommended)	Nm	9	18	28
Supply and control circuit Connection clamp				
Solid/stranded	1 x mm²	2.5	2.5	2.5
Solid/stranded	2 x mm²	1.5	1.5	1.5
Tightening torque (recommended)	Nm	0.5	0.5	0.5

Fuse ratings and power losses

For Softstarter	Recommended ABB Overload protection		Max power loss at rated I_e (Internal by-pass)	Max fuse raiting - main circuit [1] Bussman Fuses, DIN43 620			Power requirements supply circuit
Type	Type	Current range A	W	A	Type	Size	VA/VA pull in
PSE							
PSE18	Integrated	5.4-18	0.2	40	170M1563	000	16
PSE25	Integrated	7.5-25	0.4	50	170M1564	000	16
PSE30	Integrated	9-30	0.5	80	170M1566	000	16
PSE37	Integrated	11.1-37	0.8	100	170M1567	000	16
PSE45	Integrated	13.5-45	1.2	125	170M1568	000	16
PSE60	Integrated	18-60	2.2	160	170M1569	000	16
PSE72	Integrated	21.6-72	3.1	250	170M1571	000	16
PSE85	Integrated	25.5-85	4.3	315	170M1572	000	16
PSE105	Integrated	31.8-106	6.6	400	170M3819	1*	16
PSE142	Integrated	42.9-143	12.1	450	170M5809	2	16
PSE170	Integrated	51.3-171	17.6	500	170M5810	2	16
PSE210	Integrated	63-210	8.8	630	170M5812	2	23/350
PSE250	Integrated	75-250	12.5	700	170M5813	2	23/350
PSE300	Integrated	90.6-302	18	800	170M6812	3	23/350
PSE370	Integrated	111-370	27.4	900	170M6813	3	23/350

[1] For the supply circuit 6 A delayed, for MCB use C characteristics.

PSE – The efficient range
UL ratings

3-phase motor rating – In-Line

Softstarters	Motor power P (hp) and full load current FLA, (A)				
	Max	U_e	U_e	U_e	U_e
	FLA	200V / 208V	220V / 240V	440V / 480V	550V / 600V
Type	A	hp	hp	hp	hp
PSE18	18	5	5	10	15
PSE25	25	7.5	7.5	15	20
PSE30	28	7.5	10	20	25
PSE37	34	10	10	25	30
PSE45	42	10	15	30	40
PSE60	60	20	20	40	50
PSE72	68	20	25	50	60
PSE85	80	25	30	60	75
PSE105	104	30	40	75	100
PSE142	130	40	50	100	125
PSE170	169	60	60	125	150
PSE210	192	60	75	150	200
PSE250	248	75	100	200	250
PSE300	302	100	100	250	300
PSE370	361	125	150	300	350

PST(B) – The advanced range
Description

Description

- Wide rated operational voltage 208 – 690 V AC
- Wide rated control supply voltage 100 – 250 V, 50/60 Hz
- Rated operational current 30 to 1050 A (Up to 1810 A inside delta)
- Both in line and inside delta connection
- Coated circuit boards available, for reliable operation even in harsh environments
- Full text display in 14 languages and 4 button keypad for easy set-up and operation
- Optional external keypad, IP66
- Built-in by-pass contactor on PSTB (from 370 A) for energy saving and easy installation
- Prepared for external by-pass on PST (30 – 300 A)
- Torque Control for excellent control of pumps
- Current limit, adjustable between 1.5 – 7 x I_e
- Fieldbus communication using Profibus, Modbus, Devicenet or CANopen
- Dual motor overload protection with classes 10A, 10, 20 and 30
- Adaptable motor underload protection to detect pumps running dry
- Adaptable locked rotor protection to detect jammed pumps
- PTC protection to protect the motor from overheating
- Adjustable kick start to start jammed pumps
- Programmable output signal relays
- Programmable pre-warning functions
- Event log with time stamp
- Analog output showing current, voltage, power factor etc. 0 – 10 V, 0 – 20 mA, 4 – 20 mA

The PST(B) softstarter is the most advanced softstarter in the ABB product portfolio and is equipped with almost all imaginable features. This makes the PST(B) ideal for almost every application.

Torque Control
The ABB torque control function is developed together with pump manufacturers to ensure the best possible pump stop, eliminating problems with water hammering and pressure surges.

By-pass for energy saving
By-passing the softstarter after reaching full voltage, will save energy and reduce the heat generaton. The PST softstarters are equipped with extra terminals making the connection of an external by-pass contactor easier and allowing all protections to be active during by-pass. On the PSTB softstarters, an ABB AF-contactor is already built-in, ensuring a compact starting solution with minimal wiring during installation.

Advanced protections
The PST(B) softstarters are equipped with almost all protections imaginable for protecting the motor, the softstarter and the application. To offer more flexibility, all protections can be tailored to your specific needs.

Flexible analog output
The analog output terminals can be connected to an analog current meter to show the current during operation and thereby eliminating the need for an additional current transformer. The analog output signal can also be used as an analog input to a PLC.

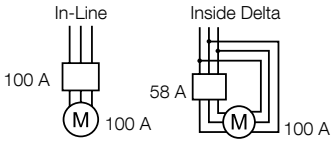
Fieldbus communication
Using the ABB FieldBusPlug, all the most common fieldbus protocols are supported. Using the PLC system it is possible to set-up the softstarter, read status information and also to control the softstarter.

Display and keypad
The PST(B) softstarter is equipped with a full text display showing all information in clear text in your own language. To make it even easier to set-up, there are standard settings for many common applications, such as centrifugal pump. Selecting this will automatically provide all required settings including torque control when stopping.

External keypad
As an option, the PST(B) softstarter can be equipped with an external keypad for easy set-up and monitoring of the unit without opening the enclosure door. The keypad can also be used to copy parameters between different softstarters.

PST(B) – The advanced range
Description

The PST Softstarter can be selected according to the rated motor power in normal duty applications like pumps, compressors, elevators, escalators, short conveyor belts and bow thrusters. See page 40 – 41, For heavy duty applications like centrifugal fans, crushers, mixers, mills, stirrers and long conveyor belts, select a softstarter from page 42 – 43.



In-Line and Inside Delta connection of PST30 … PSTB1050

External keypad with same design as the fixed one

PST(B) – The advanced range
Overview

	PST30 ... PST72						PST85 ... PST142		
	Softstarter. Type								
Normal start In-Line connected	PST30	PST37	PST44	PST50	PST60	PST72	PST85	PST105	PST142
(400 V) kW	15	18.5	22	25	30	37	45	55	75
IEC, Max. A	30	37	44	50	60	72	85	105	142
(440-480 V) hp	20	25	30	40	40	50	60	75	100
UL, Max FLA	28	34	42	54	60	68	80	104	130
	400 V, 40 °C								
Using MCCB only, type 1 coordination will be achieved.	**MCCB (50kA), type**								
	T2S160							T3S250	
To achieve a type 2 coordination, semi-conductor fuses must be used.	**Fuse protection (65kA), Semiconductor fuses, Bussmann, type**								
	170M1566	170M1568	170M1569		170M1570	170M1571	170M1572	170M3819	170M5809
Suitable switch fuse for recommended semi-conductor fuses.	**Switch fuse, type**								
	OS32GD03P	OS63GD03P				OS125GD03P		OS250D03P	OS400D03P
The line contactor is not required for the softstarter itself but often used to open if OL trips	**Line contactor, type**								
	AF30	AF38	A50		A63	A75	A95	A110	A145
Overload protection is used to protect the motor from over heating	**Electronic overload relay**								
	Built-in								
The by-pass contactor will reduce the power loss of the softstarter. All softstarters can be operated without by-pass	**By-pass contactor, type**								
	AF16	AF26		AF30	A40	A50		A63	A95

A50 ... A300 might be replaced by AF50 ... AF300.
The table above is an overview of possible combinations of devices.
Complete coordination tables are available at www.abb.com/lowvoltage

PST(B) – The advanced range
Overview

	PST175 ... PST300				PSTB370 ... PSTB470		PSTB570 ... PSTB1050			
	Softstarter. Type									
Normal start In-Line connected	PST175	PST210	PST250	PST300	PSTB370	PSTB470	PSTB570	PSTB720	PSTB840	PSTB1050
(400 V) kW	90	110	132	160	200	250	315	400	450	560
IEC, Max. A	175	210	250	300	370	470	570	720	840	1050
(440-480 V) hp	125	150	200	250	300	400	500	600	700	900
UL, Max FLA	156	192	248	302	361	480	590	720	840	1062
	400 V, 40 °C									
Using MCCB only, type 1 coordination will be achieved.	**MCCB (50kA), type**									
	T4S250		T5S400		T5S630		T6S630	T6S800	T7S1250	T7S1600
To achieve a type 2 coordination, semi-conductor fuses must be used.	**Fuse protection (65kA), Semiconductor fuses, Bussmann, type**									
	170M5810	170M5812	170M5813	170M6813	170M5813	170M6813		170M8554	170M8556	170M8558[2]
Suitable switch fuse for recommended semi-conductor fuses.	**Switch fuse, type**									
	OS400D03P			OS630D03P	OS400D03P	OS630D03P		OS800D03P	1)	
The line contactor is not required for the softstarter itself but often used to open if OL trips	**Line contactor, type**									
	A185	A210	A260	A300	AF400	AF580		AF750	AF1350	AF1650
Overload protection is used to protect the motor from over heating	**Electronic overload relay, type**									
	Built-in									
The by-pass contactor will reduce the power loss of the softstarter. All softstarters can be operated without by-pass	**By-pass contactor, type**									
	A145			A210	Built-in					

1) Switch fuse not available. Use Bussman Fuse Base SB2-D
2) PSTB1050-690-70 has 170M8557

How to select correct size

By using the guide here, you can quickly select a suitable softstarter for the most common applications.

If a more precise selection is required, you can use Prosoft, a selection software available at www.abb.com/lowvoltage

Quick guide for selection

Normal start Class 10	**Heavy duty start class 30**
Ordering - see page 40 - 41	Ordering - see page 42 - 43

Typical applications

• Bow thruster	• Centrifugal pump	• Centrifugal fan	• Conveyor belt (long)
• Compressor	• Conveyor belt (short)	• Crusher	• Mill
• Elevator	• Escalator	• Mixer	• Stirrer

If more than 10 starts/h
Select one size larger than the standard selection

PST(B) – The advanced range
Normal starts, class 10, In-Line, ordering details

PST30 ... PST72

PST85 ... PST142

PST175 ... PST300

PSTB370 ... PSTB470

PSTB570 ... PSTB1050

PST30 ... PSTB1050

Rated operational voltage U_e, 208 - 600 V

Rated control supply voltage, U_s, 100 - 250 V AC, 50/60 Hz

Motor power

400 V P_e kW	500 V P_e kW	690 V P_e kW	IEC Max rated operational curent I_e A	Type*)	Order code**)	Weight kg 1 piece
15	18.5	-	30	PST30-600-70□	1SFA894 002 R70▽0	4.80
18.5	22	-	37	PST37-600-70□	1SFA894 003 R70▽0	4.80
22	25	-	44	PST44-600-70□	1SFA894 004 R70▽0	4.80
25	30	-	50	PST50-600-70□	1SFA894 005 R70▽0	4.80
30	37	-	60	PST60-600-70□	1SFA894 006 R70▽0	5.00
37	45	-	72	PST72-600-70□	1SFA894 007 R70▽0	5.00
45	55	-	85	PST85-600-70□	1SFA894 008 R70▽0	11.20
55	75	-	105	PST105-600-70□	1SFA894 009 R70▽0	13.00
75	90	-	142	PST142-600-70□	1SFA894 010 R70▽0	13.00
90	110	-	175	PST175-600-70□	1SFA894 011 R70▽0	21.50
110	132	-	210	PST210-600-70□	1SFA894 012 R70▽0	21.50
132	160	-	250	PST250-600-70□	1SFA894 013 R70▽0	23.00
160	200	-	300	PST300-600-70□	1SFA894 014 R70▽0	23.00
200	257	-	370	PSTB370-600-70□	1SFA894 015 R70▽0	31.00
250	315	-	470	PSTB470-600-70□	1SFA894 016 R70▽0	31.00
315	400	-	570	PSTB570-600-70□	1SFA894 017 R70▽0	52.00
400	500	-	720	PSTB720-600-70□	1SFA894 018 R70▽0	55.00
450	600	-	840	PSTB840-600-70□	1SFA894 019 R70▽0	60.00
560	730	-	1050	PSTB1050-600-70□	1SFA894 020 R70▽0	60.00

PST30 ... PSTB1050

Rated operational voltage U_e, 400 - 690 V

Rated control supply voltage, U_s, 100 - 250 V AC, 50/60 Hz

15	18.5	25	30	PST30-690-70□	1SFA895 002 R70▽0	4.80
18.5	22	30	37	PST37-690-70□	1SFA895 003 R70▽0	4.80
22	25	37	44	PST44-690-70□	1SFA895 004 R70▽0	4.80
25	30	45	50	PST50-690-70□	1SFA895 005 R70▽0	4.80
30	37	55	60	PST60-690-70□	1SFA895 006 R70▽0	5.00
37	45	59	72	PST72-690-70□	1SFA895 007 R70▽0	5.00
45	55	75	85	PST85-690-70□	1SFA895 008 R70▽0	11.20
55	75	90	105	PST105-690-70□	1SFA895 009 R70▽0	13.00
75	90	132	142	PST142-690-70□	1SFA895 010 R70▽0	13.00
90	110	160	175	PST175-690-70□	1SFA895 011 R70▽0	21.50
110	132	184	210	PST210-690-70□	1SFA895 012 R70▽0	21.50
132	160	220	250	PST250-690-70□	1SFA895 013 R70▽0	23.00
160	200	257	300	PST300-690-70□	1SFA895 014 R70▽0	23.00
200	257	355	370	PSTB370-690-70□	1SFA895 015 R70▽0	31.00
250	315	450	470	PSTB470-690-70□	1SFA895 016 R70▽0	31.00
315	400	560	570	PSTB570-690-70□	1SFA895 017 R70▽0	52.00
400	500	710	720	PSTB720-690-70□	1SFA895 018 R70▽0	55.00
450	600	800	840	PSTB840-690-70□	1SFA895 019 R70▽0	60.00
560	730	1000	1050	PSTB1050-690-70□	1SFA895 020 R70▽0	60.00

*) Add code letter in Type acc. to below:
□ No code letter = Normal
T = Coated PCBs

**) Add code number in Order code acc. to below:
▽ 0 = Normal
2 = Coated PCBs

PST(B) – The advanced range
Normal starts, class 10, Inside Delta, ordering details

PST30 ... PST72

PST85 ... PST142

PST175 ... PST300

PSTB370 ... PSTB470

PSTB570 ... PSTB1050

PST30...PSTB1050

Rated operational voltage U_e, 208 - 600 V

Rated control supply voltage, U_s, 100 - 250 V AC, 50/60 Hz

Motor power

400 V P_e kW	500 V P_e kW	690 V P_e kW	IEC Max rated operational curent I_e A	Type*)	Order code**)	Weight kg 1 piece
25	30	-	52	PST30-600-70□	1SFA894 002 R70▽0	4.80
30	37	-	64	PST37-600-70□	1SFA894 003 R70▽0	4.80
37	45	-	76	PST44-600-70□	1SFA894 004 R70▽0	4.80
45	55	-	85	PST50-600-70□	1SFA894 005 R70▽0	4.80
55	75	-	105	PST60-600-70□	1SFA894 006 R70▽0	5.00
59	80	-	124	PST72-600-70□	1SFA894 007 R70▽0	5.00
75	90	-	147	PST85-600-70□	1SFA894 008 R70▽0	11.20
90	110	-	181	PST105-600-70□	1SFA894 009 R70▽0	13.00
132	160	-	245	PST142-600-70□	1SFA894 010 R70▽0	13.00
160	200	-	300	PST175-600-70□	1SFA894 011 R70▽0	21.50
184	250	-	360	PST210-600-70□	1SFA894 012 R70▽0	21.50
220	295	-	430	PST250-600-70□	1SFA894 013 R70▽0	23.00
257	355	-	515	PST300-600-70□	1SFA894 014 R70▽0	23.00
355	450	-	640	PSTB370-600-70□	1SFA894 015 R70▽0	31.00
450	600	-	814	PSTB470-600-70□	1SFA894 016 R70▽0	31.00
540	700	-	987	PSTB570-600-70□	1SFA894 017 R70▽0	52.00
710	880	-	1247	PSTB720-600-70□	1SFA894 018 R70▽0	55.00
800	1000	-	1455	PSTB840-600-70□	1SFA894 019 R70▽0	60.00
1000	1250	-	1810	PSTB1050-600-70□	1SFA894 020 R70▽0	60.00

PST30 ... PSTB1050

Rated operational voltage U_e, 400 - 690 V

Rated control supply voltage, U_s, 100 - 250 V AC, 50/60 Hz

25	30	45	52	PST30-690-70□	1SFA895 002 R70▽0	4.80
30	37	55	64	PST37-690-70□	1SFA895 003 R70▽0	4.80
37	45	59	76	PST44-690-70□	1SFA895 004 R70▽0	4.80
45	55	75	85	PST50-690-70□	1SFA895 005 R70▽0	4.80
55	75	90	105	PST60-690-70□	1SFA895 006 R70▽0	5.00
59	80	110	124	PST72-690-70□	1SFA895 007 R70▽0	5.00
75	90	132	147	PST85-690-70□	1SFA895 008 R70▽0	11.20
90	110	160	181	PST105-690-70□	1SFA895 009 R70▽0	13.00
132	160	220	245	PST142-690-70□	1SFA895 010 R70▽0	13.00
160	200	257	300	PST175-690-70□	1SFA895 011 R70▽0	21.50
184	250	315	360	PST210-690-70□	1SFA895 012 R70▽0	21.50
220	295	400	430	PST250-690-70□	1SFA895 013 R70▽0	23.00
257	355	500	515	PST300-690-70□	1SFA895 014 R70▽0	23.00
355	450	600	640	PSTB370-690-70□	1SFA895 015 R70▽0	31.00
450	600	800	814	PSTB470-690-70□	1SFA895 016 R70▽0	31.00
540	700	960	987	PSTB570-690-70□	1SFA895 017 R70▽0	52.00
710	880	1200	1247	PSTB720-690-70□	1SFA895 018 R70▽0	55.00
800	1000	1400	1455	PSTB840-690-70□	1SFA895 019 R70▽0	60.00
1000	1250	1700	1810	PSTB1050-690-70□	1SFA895 020 R70▽0	60.00

*) Add code letter in Type acc. to below:
□ No code letter = Normal
T = Coated PCBs

**) Add code number in Order code acc. to below:
▽ 0 = Normal
2 = Coated PCBs

PST(B) – The advanced range
Heavy Duty, class 30, In-Line, ordering details

PST30 ... PST72

PST85 ... PST142

PST175 ... PST300

PSTB370 ... PSTB470

PSTB570 ... PSTB1050

PST30...PSTB1050

Rated operational voltage, U_e, 208 - 600 V
Rated control supply voltage, U_s, 100 - 250 V AC, 50/60 Hz
Motor power

400 V P kW	500 V P kW	690 V P kW	IEC Max rated operational curent I_e A	Type*)	Order code**)	Weight kg 1 piece
11	15	-	22	PST30-600-70□	1SFA894 002 R70▽0	4.80
15	18.5	-	30	PST37-600-70□	1SFA894 003 R70▽0	4.80
18.5	22	-	37	PST44-600-70□	1SFA894 004 R70▽0	4.80
22	25	-	44	PST50-600-70□	1SFA894 005 R70▽0	4.80
25	30	-	50	PST60-600-70□	1SFA894 006 R70▽0	5.00
30	37	-	60	PST72-600-70□	1SFA894 007 R70▽0	5.00
37	45	-	72	PST85-600-70□	1SFA894 008 R70▽0	11.20
45	55	-	85	PST105-600-70□	1SFA894 009 R70▽0	13.00
55	75	-	105	PST142-600-70□	1SFA894 010 R70▽0	13.00
75	90	-	142	PST175-600-70□	1SFA894 011 R70▽0	21.50
90	110	-	175	PST210-600-70□	1SFA894 012 R70▽0	21.50
110	132	-	210	PST250-600-70□	1SFA894 013 R70▽0	23.00
132	160	-	250	PST300-600-70□	1SFA894 014 R70▽0	23.00
160	200	-	300	PSTB370-600-70□	1SFA894 015 R70▽0	31.00
200	257	-	370	PSTB470-600-70□	1SFA894 016 R70▽0	31.00
250	315	-	470	PSTB570-600-70□	1SFA894 017 R70▽0	52.00
315	400	-	570	PSTB720-600-70□	1SFA894 018 R70▽0	55.00
400	500	-	720	PSTB840-600-70□	1SFA894 019 R70▽0	60.00
450	600	-	840	PSTB1050-600-70□	1SFA894 020 R70▽0	60.00

PST30...PSTB1050

Rated operational voltage U_e, 400 - 690 V
Rated control supply voltage U_s, 100 - 250 V AC, 50/60 Hz

11	15	18.5	22	PST30-690-70□	1SFA895 002 R70▽0	4.80
15	18.5	25	30	PST37-690-70□	1SFA895 003 R70▽0	4.80
18.5	22	30	37	PST44-690-70□	1SFA895 004 R70▽0	4.80
22	25	37	44	PST50-690-70□	1SFA895 005 R70▽0	4.80
25	30	45	50	PST60-690-70□	1SFA895 006 R70▽0	5.00
30	37	55	60	PST72-690-70□	1SFA895 007 R70▽0	5.00
37	45	59	72	PST85-690-70□	1SFA895 008 R70▽0	11.20
45	55	75	85	PST105-690-70□	1SFA895 009 R70▽0	13.00
55	75	90	105	PST142-690-70□	1SFA895 010 R70▽0	13.00
75	90	132	142	PST175-690-70□	1SFA895 011 R70▽0	21.50
90	110	160	175	PST210-690-70□	1SFA895 012 R70▽0	21.50
110	132	184	210	PST250-690-70□	1SFA895 013 R70▽0	23.00
132	160	220	250	PST300-690-70□	1SFA895 014 R70▽0	23.00
160	200	257	300	PSTB370-690-70□	1SFA895 015 R70▽0	31.00
200	257	355	370	PSTB470-690-70□	1SFA895 016 R70▽0	31.00
250	315	450	470	PSTB570-690-70□	1SFA895 017 R70▽0	52.00
315	400	560	570	PSTB720-690-70□	1SFA895 018 R70▽0	55.00
400	500	710	720	PSTB840-690-70□	1SFA895 019 R70▽0	60.00
450	600	800	840	PSTB1050-690-70□	1SFA895 020 R70▽0	60.00

*) **Add code letter in Type acc. to below:**
□ No code letter = Normal
T = Coated PCBs

) **Add code number in Order code acc. to below:
▽ **0** = Normal
2 = Coated PCBs

PST(B) – The advanced range
Heavy Duty, class 30, Inside Delta, ordering details

PST30 ... PST72

PST85 ... PST142

PST175 ... PST300

PSTB370 ... PSTB470

PSTB570 ... PSTB1050

PST30...PSTB1050

Rated operational voltage U_e, 208 - 600 V
Rated control supply voltage U_s, 100 - 250 V AC, 50/60 Hz
Motor power

400 V P_e kW	500 V P_e kW	690 V P_e kW	IEC Max rated operational curent I_e A	Type*)	Order code**)	Weight kg 1 piece
18.5	25	-	42	PST30-600-70□	1SFA894 002 R70▽0	4.80
25	30	-	52	PST37-600-70□	1SFA894 003 R70▽0	4.80
30	37	-	64	PST44-600-70□	1SFA894 004 R70▽0	4.80
37	45	-	76	PST50-600-70□	1SFA894 005 R70▽0	4.80
45	55	-	85	PST60-600-70□	1SFA894 006 R70▽0	5.00
55	75	-	105	PST72-600-70□	1SFA894 007 R70▽0	5.00
59	80	-	124	PST85-600-70□	1SFA894 008 R70▽0	11.20
75	90	-	147	PST105-600-70□	1SFA894 009 R70▽0	13.00
90	110	-	181	PST142-600-70□	1SFA894 010 R70▽0	13.00
132	160	-	245	PST175-600-70□	1SFA894 011 R70▽0	21.50
160	200	-	300	PST210-600-70□	1SFA894 012 R70▽0	21.50
184	250	-	360	PST250-600-70□	1SFA894 013 R70▽0	23.00
220	295	-	430	PST300-600-70□	1SFA894 014 R70▽0	23.00
257	355	-	515	PSTB370-600-70□	1SFA894 015 R70▽0	31.00
355	450	-	640	PSTB470-600-70□	1SFA894 016 R70▽0	31.00
450	600	-	814	PSTB570-600-70□	1SFA894 017 R70▽0	52.00
540	700	-	987	PSTB720-600-70□	1SFA894 018 R70▽0	55.00
710	880	-	1247	PSTB840-600-70□	1SFA894 019 R70▽0	60.00
800	1000	-	1455	PSTB1050-600-70□	1SFA894 020 R70▽0	60.00

PST30...PSTB1050

Rated operational voltage, U_e, 400 - 690 V
Rated control supply voltage, U_s, 100 - 250 V AC, 50/60 Hz

18.5	25	37	42	PST30-690-70□	1SFA895 002 R70▽0	4.80
25	30	45	52	PST37-690-70□	1SFA895 003 R70▽0	4.80
30	37	55	64	PST44-690-70□	1SFA895 004 R70▽0	4.80
37	45	59	76	PST50-690-70□	1SFA895 005 R70▽0	4.80
45	55	75	85	PST60-690-70□	1SFA895 006 R70▽0	5.00
55	75	90	105	PST72-690-70□	1SFA895 007 R70▽0	5.00
59	80	110	124	PST85-690-70□	1SFA895 008 R70▽0	11.20
75	90	132	147	PST105-690-70□	1SFA895 009 R70▽0	13.00
90	110	160	181	PST142-690-70□	1SFA895 010 R70▽0	13.00
132	160	220	245	PST175-690-70□	1SFA895 011 R70▽0	21.50
160	200	257	300	PST210-690-70□	1SFA895 012 R70▽0	21.50
184	250	315	360	PST250-690-70□	1SFA895 013 R70▽0	23.00
220	295	400	430	PST300-690-70□	1SFA895 014 R70▽0	23.00
257	355	500	515	PSTB370-690-70□	1SFA895 015 R70▽0	31.00
355	450	600	640	PSTB470-690-70□	1SFA895 016 R70▽0	31.00
450	600	800	814	PSTB570-690-70□	1SFA895 017 R70▽0	52.00
540	700	960	987	PSTB720-690-70□	1SFA895 018 R70▽0	55.00
710	880	1200	1247	PSTB840-690-70□	1SFA895 019 R70▽0	60.00
800	1000	1400	1455	PSTB1050-690-70□	1SFA895 020 R70▽0	60.00

*) **Add code letter in Type acc. to below:**
□ No code letter = Normal
T = Coated PCBs

) **Add code number in Order code acc. to below:
▽ **0** = Normal
2 = Coated PCBs

PST(B) – The advanced range
Accessories

LZ...

LX...

LW...

LE185

LE460

LT ... -AC

LT ... -AL

PSTEK

PSTM-2

Cable connectors for Cu cables
For PST85...300 you need 9 pieces if also using the terminals B1, B2, B3 for external by-pass contactor.

For softstarter type	Wire range mm²	Tightening torque max. Nm	Type	Order code	Packing piece	Weight kg 1 piece
PST85 …142	6-185	16	-	1SDA 023 354 R0001	3	0.200
PST85 …142	2 x (50-120)	16	LZ185-2C/120	1SFN 074 709 R1000	3	0.300
PST175 …PSTB470	16-240	25	-	1SDA 023 368 R0001	3	0.400

Cable connectors for Al and Cu cables
For PST85...300 you need 9 pieces if also using the terminals B1, B2, B3 for external by-pass contactor.

For softstarter type	Wire range mm²	Tightening torque max. Nm	Type	Order code	Packing piece	Weight kg 1 piece
PST85 …142	35-95	13.5	–	1SDA 023 356 R0001	3	0.100
PST85 …142	25-150	31	–	1SDA 023 357 R0001	3	0.100
PST175 …300	120-240	43	–	1SDA 023 370 R0001	3	0.100
PSTB370 …1050	3 x (70-185)	43	–	1SDA 023 384 R0001	3	0.265
PSTB370 …1050	2 x (120-240)	31	–	1SDA 023 380 R0001	3	0.110

Terminal extensions

For softstarter type	Dimensions hole ø mm²	bar mm	Type	Order code	Packing piece	Weight kg 1 piece
PST85…142	8.5	17.5 x 5	LX185 [1]	1SFN 074 710 R1000	1	0.250
PST175…300	10.5	20 x 5	LX300 [2]	1SFN 075 110 R1000	1	0.350
PSTB370...470	10.5	25 x 5	LX460	1SFN 075 710 R1000	1	0.500
PSTB570...1050	13	40 x 6	LX750	1SFN 076 110 R1000	1	0.850

Terminal enlargements

For softstarter type	Dimensions hole ø mm²	bar mm	Type	Order code	Packing piece	Weight kg 1 piece
PST30…72	6.5	15 x 3	LW110 [1]	1SFN 074 307 R1000	1	0.100
PST85…142	10.5	17.5 x 5	LW185 [1]	1SFN 074 707 R1000	1	0.250
PST175...300	10.5	20 x 5	LW300 [1]	1SFN 075 107 R1000	1	0.450
PSTB370...470	10.5	25 x 5	LW460	1SFN 075 707 R1000	1	0.730
PSTB570...1050	13	40 x 6	LW750	1SFN 076 107 R1000	1	1.230

Terminal nut washer

For softstarter type	Req. qty	Type	Order code	Packing piece	Weight kg 1 piece
PST85...142	1	LE185 [1]	1SFN 074 716 R1000	2	0.200
PST175...300	3	LE300 [2]	1SFN 075 116 R1000	2	0.300
PSTB370...470	6	LE460	1SFN 075 716 R1000	6	0.600
PSTB570...1050	6	LE750	1SFN 076 116 R1000	6	0.750

Terminal shrouds

For softstarter type	Suitable for	Req. qty	Type	Order code	Packing piece	Weight kg 1 piece
PST85...142	Cable connectors	1 pce and	LT185-AC	1SFN 124 701 R1000	2	0.050
		1 pce	LT460-AC	1SFN 125 701 R1000	2	0.100
PST85…142	Compression lugs	1 pce and	LT185-AL	1SFN 124 703 R1000	2	0.220
		1 pce	LT460-AL	1SFN 125 703 R1000	2	0.800
PST175...300	Cable connectors	3 pcs	LT300-AC [2]	1SFN 125 101 R1000	2	0.070
PST175...300	Compression lugs	3 pcs	LT300-AL [2]	1SFN 125 103 R1000	2	0.280
PSTB370...470	Cable connectors	2 pcs	LT460-AC	1SFN 125 701 R1000	2	0.100
PSTB370...470	Compression lugs	2 pcs	LT460-AL	1SFN 125 703 R1000	2	0.800
PSTB570...1050	Cable connectors	2 pcs	LT750-AC	1SFN 126 101 R1000	2	0.120
PSTB570...1050	Compression lugs	2 pcs	LT750-AL	1SFN 126 103 R1000	2	0.825

External keypad including a 3m cable

For softstarter type	Type	Order code	Packing piece	Weight kg 1 piece
PST30...300 PSTB370...1050	PSTEK	1SFA 899 003 R1000	1	0.400

Marine Kit

For softstarter type	Type	Order code	Packing piece	Weight kg 1 piece
PST85…142	PSTM-2	1SFA 899 004 R1000	1	0.240

Fieldbus plug
ABB Filedbus Plug suitable for all sizes. See page 50-53

[1] Only fits on the motor side
[2] Use two sets of the accessories on the line side and one set on the motor side.

PST(B) – The advanced range
Technical data

Rated insulation voltage U_i	690 V	
Rated operational voltage U_e	208...600 V, 400...690 V + 10 % / -15 % 50/60 Hz ±5%	
Rated control supply voltage U_s	100...250 V +10% / -15% 50/60 Hz ±5%	
Rated control circiut voltage U_c	Internal or external 24 V DC	
Starting capacity at I_r	3 x I_e for 15 sec.	
Number of starts per hour	**PST30...300**	**PSTB370...1050**
	30 [1]	10 [1]
Overload capability		
Overload class	10	
Service factor	**PST(B)30...840**	**PSTB1050**
	115 %	100 %
Ambient temperature		
during operation	±0 ... +50 °C [2]	
during storage	-25 ... +70 °C	
Maximum altitude	4000 m [3]	
Degree of protection	**PST30...72**	**PST85...PSTB1050**
main circuit	IP10	IP00
Supply and control circuit	IP20	
Main circuit	**PST30...300**	**PSTB370...1050**
Built-in By-pass contactor	No	Yes
Cooling system - Fan cooled	Yes (thermostat controlled)	
HMI for settings (Human Machine Interface)		
Display	Full text	
Languages	English, German, Italian, Dutch, Chinese, Finnish, Swedish, French, Spanish, Russian, Portugese, Turkish, Polish and Czech	
Keypad	2 selection keys and 2 navigating keys	
Signal relays		
Number of programmable signal relays	3 (each relay can be programmed to be Run, By-pass or Event signal)	
K4	Default as Run signal	
K5	Default as TOR (By-pass) signal	
K6	Default as Event signal	
Rated operational voltage, U_e	250 V AC / 24 V DC	
Rated thermal current I_{th}	5 A	
Rated operational current I_e at AC-15 (U_e=250 V)	1.5 A	
Analog output		
Output signal reference	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA	
Type of output signal	I Amp, U Volt, P kW, P hp, Q kVAr, S kVA, TmpMot, TmpSCR, cosPhi	

Control circuit	
Number of inputs	2 (start, stop)
Number of additional programmable inputs	2 (Each input can be programmed to be either; Non, Reset, Enable, Jog, DOL- On, Start motor 2, Start motor 3 or FB-Dis)
Signalling indication LED	
Power on	Green
Fault	Red
Protection	Yellow
Protections	
Electronic overload	Yes (Class 10A, 10, 20, 30)
Dual overload	Yes (separate overload function for start and run)
PTC connection	Yes
Locked rotor protection	Yes (Level and delay adjustable)
Underload protection	Yes (Level and delay adjustable)
Phase imbalance	Yes (Level and delay adjustable)
High current (8 x I_e)	Yes
Phase reversal protection	Yes
Warnings (pre-warning)	
High current	Yes (Level and delay adjustable)
Low current (underload)	Yes (Level and delay adjustable)
Overload trip	Yes (Level and delay adjustable)
Overtemp, thyristor (SCR)	Yes
Start of several motors	
Possible to set-up and start three different motors	Yes (Different parameter sets)
Field bus connection	
Connection for ABB FiledBus Plug	Yes
PTC input	
Switch off resistance	2825 ohm ± 20%
Switch on resistance	1200 ohm ± 20%
External keypad	
Display	LCD type
Ambient temperature	
During operation	±0 ... +50 °C
During storage	-25 ... +70 °C
Degree of protection	IP66

[1] Valid for 50 % on time and 50 % off time. 3.5 x I_e for 7 sec., if other data is required, contact your sales office.
[2] Above 40 °C up to max. 50 °C reduce the rated current with 0.8 % per °C.
[3] When used at high altitudes above 1000 meters up to 4000 meters you need to derate the rated current using the following formula.

$$[\ \%\ \text{of}\ I_e = 100 - \frac{x - 1000}{150}\ ]$$ x = actual altitude for the softstarter

PSTB Integrated by-pass ratings

Softstarter	PSTB370	PSTB470	PSTB570	PSTB720	PSTB840	PSTB1050
Integrated contactor	AF300		AF460	AF580	AF750	
AC-3 rating (A)	305		460	580	750	

PST(B) – The advanced range
Technical data

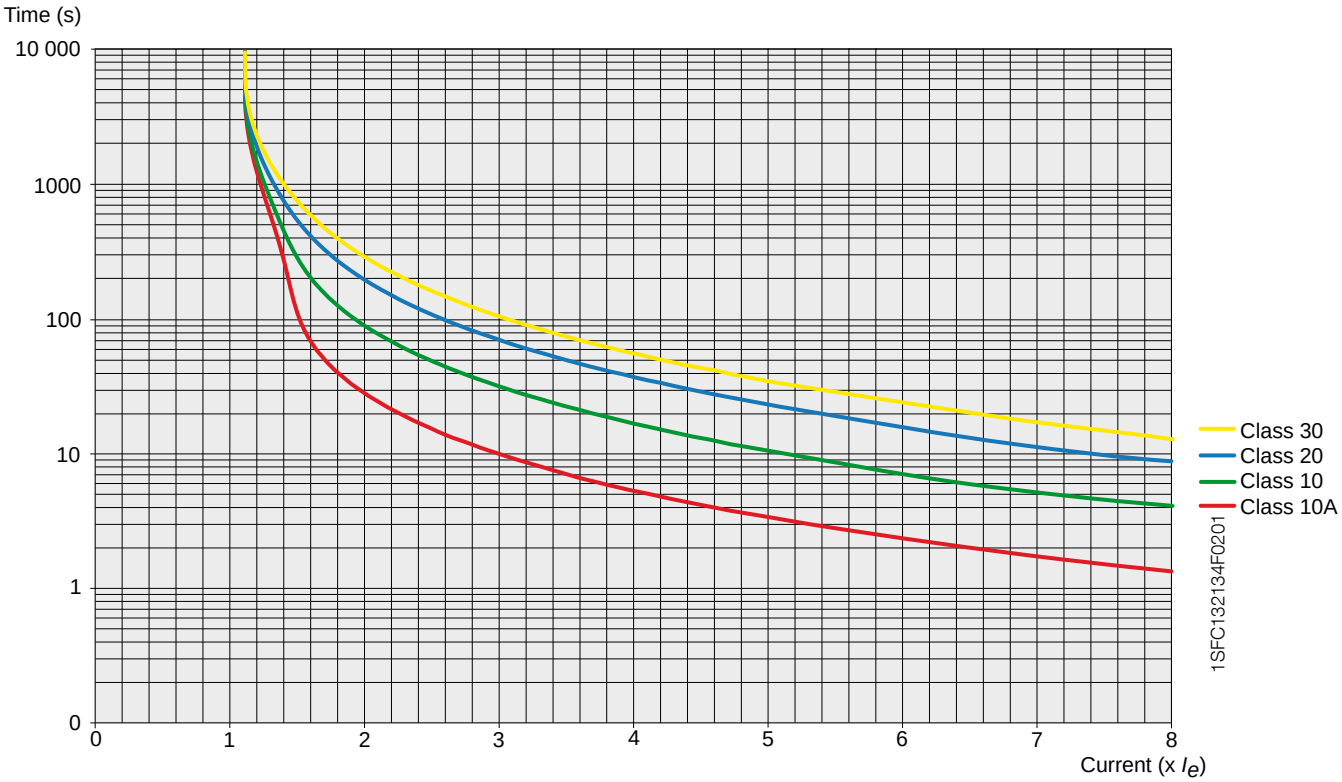
Major possible settings and the displayed text and the set default values

Description	Text on display Eng)	Values on display	Default value
Setting current for overload, locked rotor etc.	Setting I_e	9.0 ...1207 A divided into 19 overlapping ranges.	See table, page 48
Time for start ramp	Start Ramp	1 ... 30 s, 1 ... 120 s (Range depends on Start Range)	10 s
Time for stop ramp	Stop Ramp	0 ... 30 s, 0 ... 120 s (Range depends on Stop Range)	0 s
Initial voltage for start ramp	Init Volt	30 ... 70 %	30 %
End voltage for stop ramp	End Volt	30 ... 70 %	30 %
Step down voltage	Step Down	30 ...100 %	100 %
Level of the current limit.	Current Lim	1.5 ... 7.0 x I_e	4.0 x I_e
Selection of Kick start	Kick Start	Yes, No	No
Level of Kick start if selected	Kick Level	50 ... 100 %	50 %
Time for Kick start if selected	Kick Time	0.1 ... 1.5 s	0.2
Selectable range for start ramp	Start Range	1 ... 30 s, 1...120 s	1 ... 30 s
Selectable range for stop ramp	Stop Range	0 ... 30 s, 0 ... 120 s	0 ... 30 s
Overload protection	Overload	No, Normal, Dual	Normal
Overload Class	OL Class	10 A, 10, 20, 30	10
Overload Class, Dual type, Start Class	OL Class S	10A, 10, 20, 30	10
Overload Class, Dual type, Run Class	OL Class R	10A, 10, 20, 30	10
Type of operation for overload protection	OL Op	Stop-M, Stop-A, Ind	Stop-M
Locked rotor protection	Locked Rotor	Yes, No	No
Trip level for locked rotor protection	Lock R Lev	0.5 ... 8.0 x I_e	4.0 x I_e
Trip time for locked rotor protection	Lock R Time	0.2 ... 10 s	1.0 s
Type of operation for locked rotor protection	Lock R Op	Stop-M, Stop-A, Ind	Stop-M
Underload protection	Underload	Yes, No	No
Trip level for Underload protection	Underl Lev	0.4 ... 0.8 x I_e	0.5 x I_e
Trip time for Underload protection	Underl Time	1 ... 30 s	10 s
Type of operation for Underload protection	Underl Op	Stop-M, Stop-A, Ind	Stop-M
Phase imbalance protection	Phase Imb	Yes, No	No
Trip level for phase imbalance protection	Ph Imb Lev	10 ... 80 %	80 %
Type of operation for phase imbalance protection	Ph Imb Op	Stop-M, Stop-A, Ind	Stop-M
High current protection	High I	Yes, No	No
Type of operation for high current protection	High I Op	Stop-M, Stop-A, Ind	Stop-M
Phase reversal protection	Phase Rev	Yes, No	No
Type of operation for phase reversal protection	Ph Rev Op	Stop-M, Stop-A, Ind	Stop-M
PTC protection	PTC	Yes, No	No
Type of operation for PTC protection	PTC Op	Stop-M, Stop-A	Stop-M
An external Bypass contactor is used	Ext ByPass	Yes, No	No
High current warning	Warn I=High	Yes, No	No
Trip level for high current warning	Wa I=H Lev	0.5 ... 5.0 x I_e	1.2 x I_e
Low current warning	Warn I=Low	Yes, No	No
Trip level for low current warning	Wa I=L Lev	0.4 ...1.0 x I_e	0.8 x I_e
Overload warning	Warn OL	Yes, No	No
Trip level for overload warning	Wa OL Lev	40 ... 99 %	90 %
Thyristor overload warning	Warn SCR OL	Yes, No	No
Type of operation for phase loss fault	Ph Loss Op	Stop-M, Stop-A	Stop-M
Type of operation for by-pass doesn't close	BP open Op	Stop-M, Stop-A	Stop-M
Type of operation for by-pass doesn't open	BP closed Op	Stop-M, Stop-A	Stop-M
Type of operation for fieldbus fault	FB Fault Op	Stop-M, Stop-A	Stop-M
Type of operation for frequency fault	Freq F Op	Stop-M, Stop-A	Stop-M
Type of operation for heat sink over temperature fault	HS Temp Op	Stop-M, Stop-A	Stop-M
Type of operation for thyristor short circuit fault	SCR SC Op	Stop-M, Stop-A	Stop-M
Function of programmable input In_0	In0	None, Reset, Enable, Jog, DOL, Start 2, FB-Dis	Reset
Function of programmable input In_1	In1	None, Reset, Enable, Jog, DOL, Start 3, FB-Dis	Reset
Function of programmable relay output K4	Relay K4	Run, TOR, Event	Run
Function of programmable relay output K5	Relay K5	Run, TOR, Event	TOR
Function of programmable relay output K6	Relay K6	Run, TOR, Event	Event
Control of the softstarter with fieldbus	Fieldb Ctrl	Yes, No	No
Number of sequences for sequence start.	No of Seq	No, 2, 3	No
Language to use on display	Language	US/UK, FI, SE, PT, NL, IT, FR, ES, DE, CN, RU, TR, PL, CZ	US/UK
Password for display	Password	No, 1 ... 255	
Start mode	Start Mode	Volt, Torque	Volt
Stop mode	Stop Mode	Volt, Torque	Volt
Torque limit	Torque limit	20 ... 200 %	150 %
Analog output	Analogue Out	Yes, No	No
Analog output, reference	Anl Ref	0 ...10 V, 0 ... 20 mA, 4 ... 20 mA	4 ...20 mA
Analog output, type of value	Anl Type	I Amp, U Volt, P kW, P hp, Q kVAr, S kVA, TmpMot, TmpSCR, cosPhi	I Amp

PST(B) – The advanced range
Technical data

Tripping curves for the integrated electronic overload protection

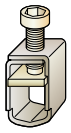
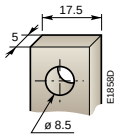
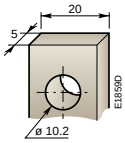
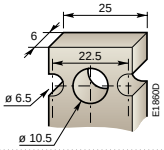
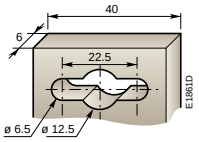
All units have an integrated electronic overload protection possible to set on four different tripping classes.
Below you find a curve for each tripping class in cold state. These tripping curves are valid for PSE, PST and PSTB



Tripping curves for electronic overload protection (Cold) for PSE, PST and PSTB.

PST(B) – The advanced range
Technical data

Cross section of connection cables

		Type of softstarter PST30 ... 72	PST85 ... 142	PST175 ... 300	PSTB370 ... 470	PSTB570 ... 1050
Main circuit						
Available teminals:	L1, L2, L3	Yes	Yes	Yes	Yes	Yes
	T1, T2, T3	Yes	Yes	Yes	Yes	Yes
(For external by-pass)	B1, B2, B3	Yes	Yes	Yes	No	No
Connection clamp						
Solid/stranded	1 x mm²	10 ... 95	See accessories			
Solid/stranded	2 x mm²	6 ... 35	See accessories			
Tightening torque (recommended)	Nm	6.0	See accessories			
Connection bar		No				
Width and thickness	mm	–				
Hole diameter	mm	–				
Tightening torque (recommended)	Nm	–	18	28	35	45
Supply and control circuit						
Connection clamp		Yes				
Solid/stranded	1 x mm²	2.5				
Solid/stranded	2 x mm²	1.5				
Tightening torque (recommended)	Nm	0.5				

Fuse ratings and power losses

For Softstarter	Recommended ABB Overload protection		Max power loss at rated I_e		Max fuse raiting - main circuit [1) 3)]			Power requirements supply circuit
		Current range	without by-pass[2)]	with by-pass	Bussman Fuses, DIN43 620			
Type	Type	A	W	W	A	Type	Size	VA/VA pull in
PST								
PST30	Integrated	9...35	100	9.5	80	170M1566	000	5
PST37	Integrated	11...43	120	10.5	125	170M1568	000	5
PST44	Integrated	13...51	140	13.5	160	170M1569	000	5
PST50	Integrated	15...58	160	13.5	160	170M1569	000	5
PST60	Integrated	18...69	190	15.5	200	170M1570	000	5
PST72	Integrated	22...83	230	17	250	170M1571	000	5
PST85	Integrated	25...98	270	30.5	315	170M1572	000	10
PST105	Integrated	32...120	325	35	400	170M3819	1*	10
PST142	Integrated	43...163	435	37	450	170M5809	2	10
PST175	Integrated	53...201	540	62	500	170M5810	2	15
PST210	Integrated	63...241	645	67	630	170M5812	2	15
PST250	Integrated	75...288	765	67	700	170M5813	2	15
PST300	Integrated	90...345	920	90	900	170M6813	3	15
PSTB 600 V								
PSTB370	Integrated	111...425	N/A	90	700	170M5813	2	20/480
PSTB470	Integrated	141...540	N/A	110	900	170M6813	3	20/480
PSTB570	Integrated	171...655	N/A	105	900	170M6813	3	25/900
PSTB720	Integrated	216...828	N/A	110	1250	170M8554	3	25/860
PSTB840	Integrated	252...966	N/A	170	1500	170M8556	3	25/860
PSTB1050	Integrated	315...1207	N/A	170	1800	170M8558	3	25/860
PSTB 690 V								
PSTB370	Integrated	111...425	N/A	90	700	170M5813	2	20/480
PSTB470	Integrated	141...540	N/A	110	900	170M6813	3	20/480
PSTB570	Integrated	171...655	N/A	105	900	170M6813	3	25/900
PSTB720	Integrated	216...828	N/A	110	1250	170M8554	3	25/860
PSTB840	Integrated	252...966	N/A	170	1500	170M8556	3	25/860
PSTB1050	Integrated	315...1207	N/A	170	1600	170M8557	3	25/860

[1)] For the supply circuit 6 A delayed, for MCB use C characteristics.
[2)] See PSS page 24
[3)] Max fuse rating independent if In-Line or Inside Delta connection. In Inside Delta connections of PST, the fuses can be placed outside of the delta. For PSTB the fuses shall be placed inside the delta. Contact ABB for more information.

PST(B) – The advanced range
UL ratings

3-phase motor rating – In-Line

Softstarters	Motor power P (hp) and full load current FLA, (A)				
		U_e	U_e	U_e	U_e
	Max. FLA	200V / 208 V	220 V / 240 V	440 V / 480 V	550 V / 600 V
Type	A	hp	hp	hp	hp
PST30	28	7.5	10	20	25
PST37	34	10	10	25	30
PST44	42	10	15	30	40
PST50	54	15	20	40	50
PST60	60	20	20	40	50
PST72	68	20	25	50	60
PST85	80	25	30	60	75
PST105	104	30	40	75	100
PST142	130	40	50	100	125
PST175	156	50	60	125	150
PST210	192	60	75	150	200
PST250	248	75	100	200	250
PST300	302	100	100	250	300
PSTB370	361	125	150	300	350
PSTB470	480	150	200	400	500
PSTB570	590	200	250	500	600
PSTB720	720	250	300	600	700
PSTB840	840	300	350	700	800
PSTB1050	1062	400	450	900	1000

3-phase motor rating – Inside Delta

Softstarters	Motor power P (hp) and full load current FLA, (A)				
		U_e	U_e	U_e	U_e
	Max. FLA	200 V / 208 V	220 V / 240 V	440 V / 480 V	550 V / 600 V
Type	A	hp	hp	hp	hp
PST30	42	10	15	30	40
PST37	54	15	20	40	50
PST44	72	20	25	50	60
PST50	80	25	30	60	75
PST60	104	30	40	75	100
PST72	104	30	40	75	100
PST85	130	40	50	100	125
PST105	156	50	60	125	150
PST142	192	60	75	150	200
PST175	248	75	100	200	250
PST210	302	100	100	250	300
PST250	361	125	150	300	350
PST300	480	150	200	400	500
PSTB370	590	200	250	500	600
PSTB470	720	250	300	600	700
PSTB570	840	300	350	700	800
PSTB720	1247	400	500	1000	1200
PSTB840	1454	500	600	1200	1500
PSTB1050	1839	600	700	1500	1800

FBP FiledBusPlug
DeviceNet, MODBUS-RTU and CANopen, ordering details

Black cable

DNP21-FBP
MRP21-FBP
COP21-FBP

DeviceNet FieldBusPlug
Ready-made DeviceNet fieldbus interface with various cable lengths.
- Applicable on all FBP motor starters and other devices
- Degree of protection IP65, diagnostic LED

Designation	Cable length	Type	Order code	Packing piece	Weight kg 1 piece
DeviceNet-FBP	0.25 m	**DNP21-FBP.025**	**1SAJ 230 000 R1003**	1	0.09
DeviceNet-FBP	0.50 m	**DNP21-FBP.050**	**1SAJ 230 000 R1005**	1	0.10
DeviceNet-FBP	1.00 m	**DNP21-FBP.100**	**1SAJ 230 000 R1010**	1	0.13
DeviceNet-FBP	5.00 m	**DNP21-FBP.500**	**1SAJ 230 000 R1050**	1	0.36

MODBUS-RTU FieldBusPlug
Ready-made MODBUS-RTU fieldbus interface with various cable lengths.
- Applicable on all FBP motor starters and other devices
- Degree of protection IP65, diagnostic LED

Designation	Cable length	Type	Order code	Packing piece	Weight kg 1 piece
MODBUS-RTU-FBP	0.25 m	**MRP21-FBP.025**	**1SAJ 250 000 R0003**	1	0.09
MODBUS-RTU-FBP	0.50 m	**MRP21-FBP.050**	**1SAJ 250 000 R0005**	1	0.10
MODBUS-RTU-FBP	1.00 m	**MRP21-FBP.100**	**1SAJ 250 000 R0010**	1	0.13
MODBUS-RTU-FBP	5.00 m	**MRP21-FBP.500**	**1SAJ 250 000 R0050**	1	0.36

CANopen FieldBusPlug
Ready-made CANopen fieldbus interface with various cable lengths.
- Applicable on all FBP motor starters and other devices
- Degree of protection IP65, diagnostic LED

Designation	Cable length	Type	Order code	Packing piece	Weight kg 1 piece
CANopen-FBP	0.25 m	**COP21-FBP.025**	**1SAJ 230 100 R1003**	1	0.09
CANopen-FBP	0.50 m	**COP21-FBP.050**	**1SAJ 230 100 R1005**	1	0.10
CANopen-FBP	1.00 m	**COP21-FBP.100**	**1SAJ 230 100 R1010**	1	0.13

To connect the PST Softstarter to a DeviceNet or CANopen fieldbus system...
you need specific software for PLC set-up, (EDS file) which is available at **www.abb.com/lowvoltage** on the Softstarter pages. Look under the documentation-link named Software. If you need help or advice, please contact your local ABB office.

FBP FieldBusPlug
DeviceNet, MODBUS-RTU and CANopen accessories, ordering details

Black cable

Accessories for the DeviceNet, MODBUS-RTU and CANopen bus connector

DNF11-FBP.050

DNM11-FBP.050

DeviceNet, MODBUS-RTU and CANopen round cable for bus junctions

Ready-made bus cable with an M12 connector and an open cable end.

Designation	Cable length	Type	Order code	Packing piece	Weight kg 1 piece
Round cable with female connector	0.50 m	**DNF11-FBP.050**	**1SAJ 923 002 R0005**	1	0.04
Round cable with male connector	0.50 m	**DNM11-FBP.050**	**1SAJ 923 003 R0005**	1	0.04

DNX11-FDP

DeviceNet, MODBUS-RTU and CANopen round cable for bus extension

Ready-made bus cable with M12 male and female connectors

Designation	Cable length	Type	Order code	Packing piece	Weight kg 1 piece
Extension cable	1.00 m	**DNX11-FBP.100**	**1SAJ 923 001 R0010**	1	0.08
Extension cable	3.00 m	**DNX11-FBP.300**	**1SAJ 923 001 R0030**	1	0.20
Extension cable	5.00 m	**DNX11-FBP.500**	**1SAJ 923 001 R0050**	1	0.31
Round cable	100.00 m	**DNC11-FBP.999**	**1SAJ 923 004 R0001**	1	5.60

DNM11-FBP.0

DNF11-FBP.0

DeviceNet, MODBUS-RTU and CANopen round cable connectors

Bus cable and coupling accessories

Designation	Type	Order code	Packing piece	Weight kg 1 piece
Male connector for round cable	**DNM11-FBP.0**	**1SAJ 923 005 R0001**	5	0.15
Female connector for round cable	**DNF11-FBP.0**	**1SAJ 923 006 R0001**	5	0.15

DNR11-FBP.120

DeviceNet, MODBUS-RTU and CANopen termination resistor

Designation	Type	Order code	Packing piece	Weight kg 1 piece
Termination Resistor, 120 Ohm	**DNR11-FBP.120**	**1SAJ 923 007 R0001**	1	0.02

FBP FieldBusPlug
Profibus DP, ordering details

Purple cable

PDP22-FBP

Profibus DP FieldBusPlug

Ready-made Profibus DP fieldbus interface with various cable lengths.
- Supports PROFIBUS DP V0 and V1
- Applicable on all FBP motor starters and other devices
- Degree of protection IP65, diagnostic LED

Designation	Cable length	Type	Order code	Packing piece	Weight kg 1 piece
Profibus DP FBP	0.25 m	**PDP22-FBP.025**	**1SAJ 240 100 R1003**	1	0.09
Profibus DP FBP	0.50 m	**PDP22-FBP.050**	**1SAJ 240 100 R1005**	1	0.10
Profibus DP FBP	1.00 m	**PDP22-FBP.100**	**1SAJ 240 100 R1010**	1	0.13
Profibus DP FBP	2.00 m	**PDP22-FBP.200**	**1SAJ 240 100 R1020**	1	0.20
Profibus DP FBP	5.00 m	**PDP22-FBP.500**	**1SAJ 240 100 R1050**	1	0.36

2CDC 341 048 F0006

PDQ22-FBP

Profibus DP FieldBusPlug for 4 devices

PDQ22 is a member of the ABB FieldBusPlug family of bus connectors. It allows the connection of up to four devices to Profibus DP by just using one Profibus node access. This allows a cost efficient device integration for devices that are located physically nearby. PDQ22 supports DP-V0 and DP-V1. The degree of protection is IP66. There are separate diagnosis LEDs for bus and device status.

Note that the accessorie PDQ22-FBP only works with the PSR and PSE and not with the PST(B) softstarter.

Designation	Type	Order code	Packing piece	Weight kg 1 piece
Quadruple bus connector	**PDQ22-FBP**	**1SAJ 240 200 R0050**	1	0.20
DINrail adapter for PDQ22-FBP	**CDA11-FBP. 0**	**1SAJ 929 300 R0001**	1	0.11
Fixing bracket for passive plug of connection cable	**CDP11-FBP.0**	**1SAJ 929 100 R0001**	1	0.50

2CDC341015S0010

Configuration software

This cable and software can be used for set-up and comissioning of the softstarter as well as to keep back-up of the parameter settings.

Designation	Type	Order code	Packing piece	Weight kg 1 piece
USB to FBP interface cable	**UTF21-FBP**	**1SAJ 929 400 R0002**	1	
PDP22/PDQ22 Device Type Manager (DTM) incl. FDT/DTM frame application	**PBDTM-FBP**	**1SAJ 924 012 R0003**	1	

To connect the PST Softstarter to a Profibus DP fieldbus system...

you need specific software for PLC set-up, (GSD file) which is available at www.abb.com/lowvoltage on the Softstarter pages. Look under the documentation-link named Software. If you need help or advice, please contact your local ABB office.

PDP21 is replaced by PDP22.
Use PDP22 with the GSD-file Abb_082d.gsd regardless if the PLC is a DP/V0 or DP/V1.

FBP FieldBusPlug
Profibus DP accessories, ordering details

Purple cable

Accessories for the Profibus DP Bus Connector

PDF11-FBP.50

PDM11-FBP.50

Profibus DP Round Cable for Bus Junctions

Ready-made bus cable with an M12 connector and an open cable end.

- Application on bus junctions such as e.g. Profibus DB couplers or devices with an integrated Profibus DB interface

Designation	Cable length	Type	Order code	Packing piece	Weight kg 1 piece
Round Cable with female connector	0.50 m	PDF11-FBP.050	1SAJ 924 002 R0005	1	0.04
Round Cable with male connector	0.50 m	PDM11-FBP.050	1SAJ 924 003 R0005	1	0.04

PDX11-FBP

Profibus DP Round Cable for Bus Extension

Ready-made bus cable with M12 male and female connectors
Round cable on coil

Designation	Cable length	Type	Order code	Packing piece	Weight kg 1 piece
Extension Cable	0.50 m	**PDX11-FBP.050**	**1SAJ 924 001 R0005**	1	0.04
Extension Cable	1.00 m	**PDX11-FBP.100**	**1SAJ 924 001 R0010**	1	0.08
Extension Cable	3.00 m	**PDX11-FBP.300**	**1SAJ 924 001 R0030**	1	0.20
Extension Cable	5.00 m	**PDX11-FBP.500**	**1SAJ 924 001 R0050**	1	0.31
Round Cable	100.00 m	**PDC11-FBP.999**	**1SAJ 924 004 R1000**	1	5.60

PDM11-FBP

PDF11-FBP

Profibus DP Accessories for Bus Extension

Designation	Type	Order code	Packing piece	Weight kg 1 piece
Male Connector for round cable	**PDM11-FBP.0**	**1SAJ 924 005 R0001**	5	0.03
Female Connector for round cable	**PDF11-FBP.0**	**1SAJ 924 006 R0001**	5	0.03

PDR11-FBP.150

PDV11-FBP,
PDV12-FBP

Profibus DP Termination Resistor, Miscellaneous Accessories

Designation	Type	Order code	Packing piece	Weight kg 1 piece
Termination Resistor, 150 Ohm	**PDR11-FBP.150**	**1SAJ 924 007 R0001**	1	0.03
Feeding connector 24V DC, Code B-A	**PDV11-FBP.0**	**1SAJ 924 008 R0001**	1	0.04
Feeding connector 24V DC, Code A-A	**PDV12-FBP.0**	**1SAJ 924 011 R0001**	1	0.04
Adaptor M12-Dsub9-M12 Cable length 0.50m	**PDA11-FBP.050**	**1SAJ 924 009 R0001**	1	0.04
Adaptor M12-Dsub9-M12 Cable length 2 x 0.50m	**PDA12-FBP.050**	**1SAJ 924 010 R0001**	1	0.04

PDA11-FBP.050

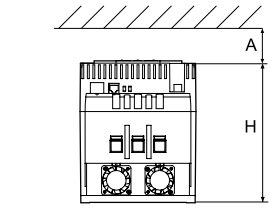
PDA12-FBP.050

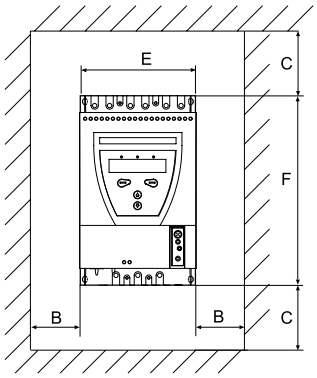
Extension cable

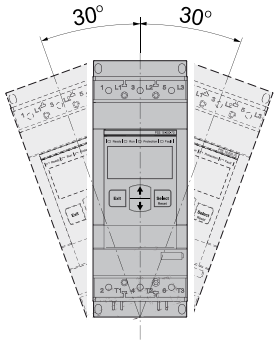
Designation	Cable length	Type	Order code	Packing piece	Weight kg 1 piece
Extension cable (female/male), shielded	0.3 m	**CDP15-FBP.030**	**1SAJ 929 140 R0003**	1	
Extension cable (female/male), shielded	0.6 m	**CDP15-FBP.060**	**1SAJ 929 140 R0006**	1	
Extension cable (female/male), shielded	1.5 m	**CDP15-FBP.150**	**1SAJ 929 140 R0015**	1	0.20
Extension cable (male/open), shielded	1.5 m	**CDP16-FBP.150**	**1SAJ 929 150 R0015**	1	0.20

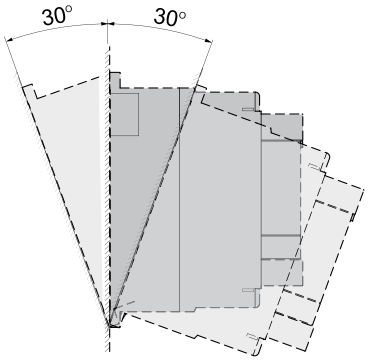
Wall mounting instructions
Softstarters

Minimum distance to wall/front







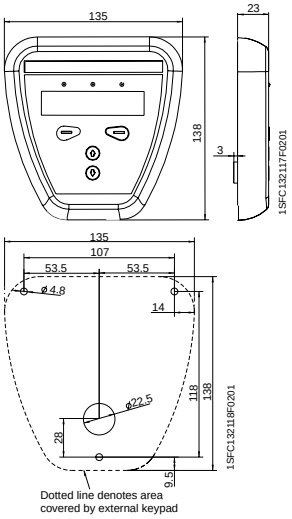


Dimensions

Softstarter, type	A	B	C	E	F	H
PSR						
PSR3 ... 16	25	0*	0	45	140	114
PSR25 ... 30	25	0*	0	45	160	128
PSR37 ... 45	25	0*	0	54	187	153
PSR60 ... 105	25	0*	0	70	220	180
PSS ... -500 for 500 V						
PSS18/30 ... 44/76	20	10	100	120	200	162
PSS50/85 ... 72/124	20	10	100	140	250	162
PSS85/147 ... 142/245	20	10	100	181	340	265
PSS175/300 ... 300/515	20	10	100	356	340	265
PSS ... -690 for 690 V						
PSS18/30 ... 72/124	20	10	100	140	250	163
PSS85/147 ... 142/245	20	10	100	181	340	265
PSS175/300 ... 300/515	20	10	100	356	340	265
PSE						
PSE18 ... 105	20	10	100	90	245	185.5
PSE142 ... 170	20	10	100	130	295	219.5
PSE210 ... 370	20	10	100	190	550	236.5
PST						
PST30 ... 72	20	10	100	160	260	196
PST85 ... 142	20	10	100	186	390	270
PST175 ... 300	20	10	100	360	420	270
PSTB						
PSTB370 ... 470	20	15	150	365	460	361
PSTB570 ... 1050	20	15	150	435	515	381

*) 5 mm for the 24 V DC version

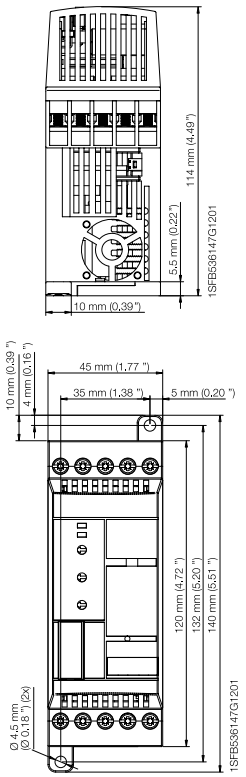
Dimensions
PSTEK



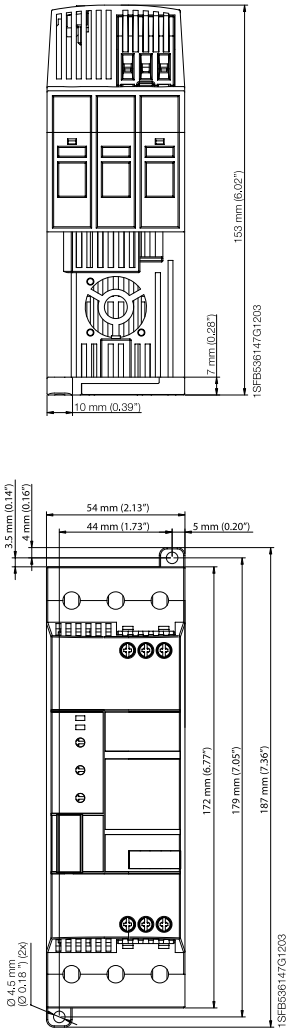
Dimensions in mm

Dimensions
Softstarters, type PSR

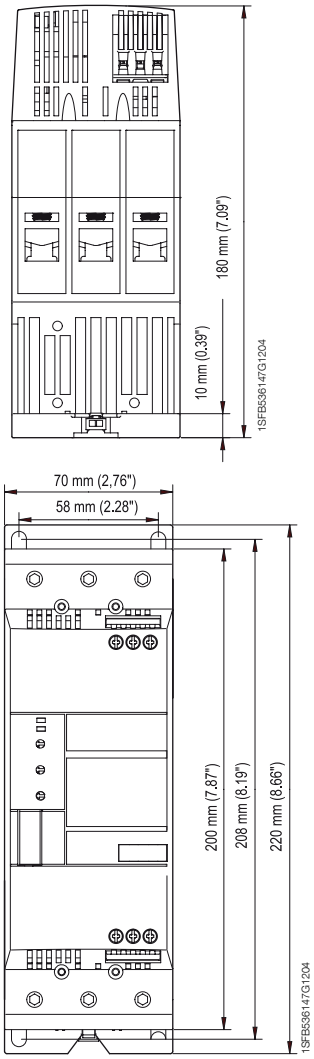
PSR3 ... 16



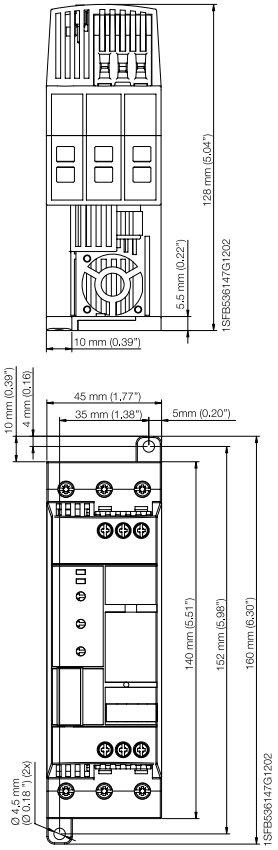
PSR37 ... 45



PSR60 ... 105



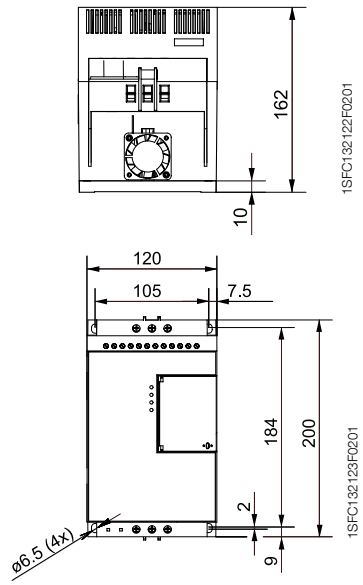
PSR25 ... 30



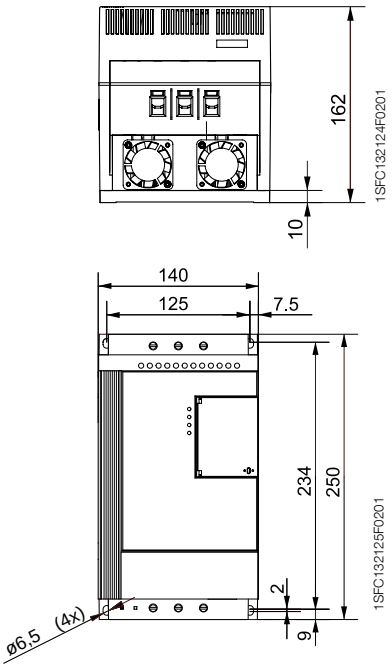
Dimensions in mm (and inches)

Dimensions
Softstarters, type PSS

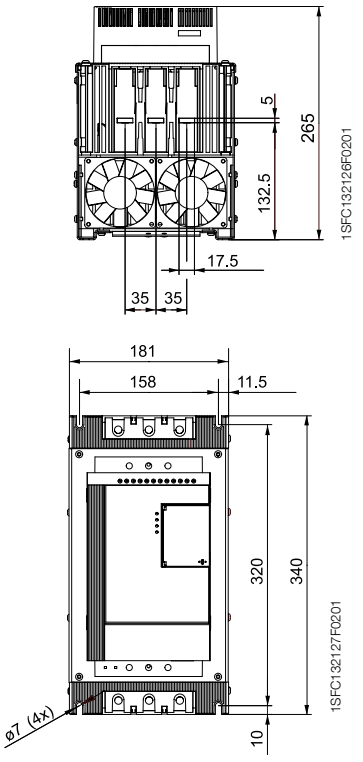
PSS18/30-500 ... 44/76-500



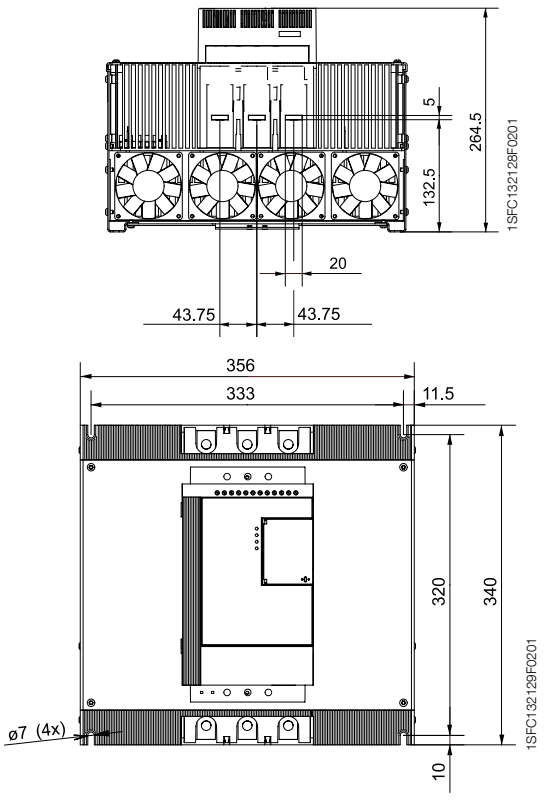
PSS50/85-500 ... 72/124-500
PSS18/30-690 ... 72/124-690



PSS85/147-500 ... 142/245-500
PSS85/147-690 ... 142/245-690



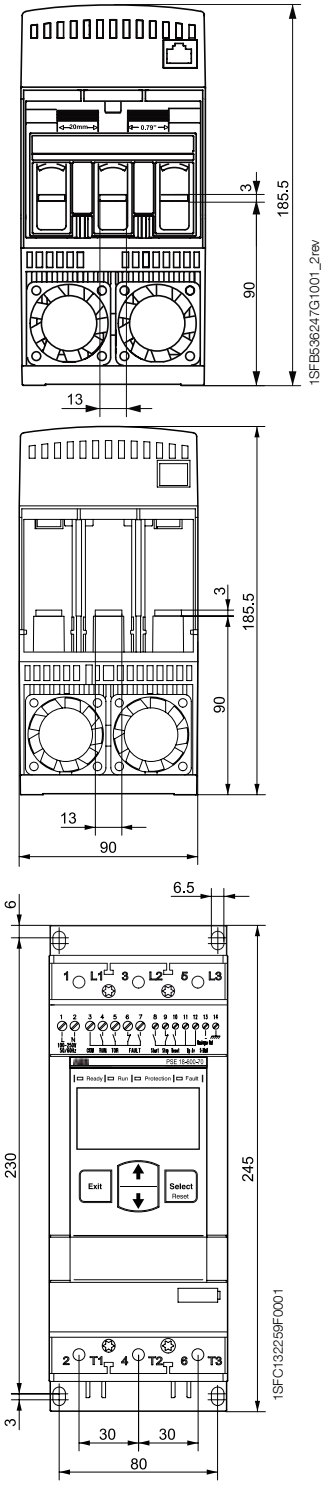
PSS 175/300-500 ... 300/515-500
PSS 175/300-690 ... 300/515-690



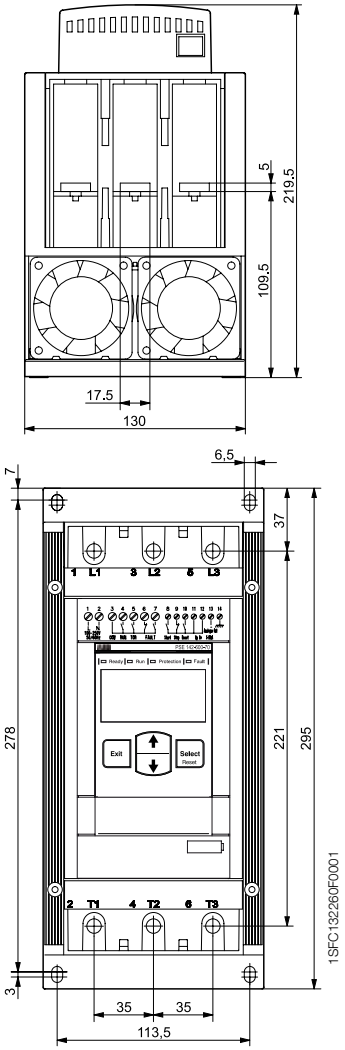
Dimensions in mm

Dimensions
Softstarters, type PSE

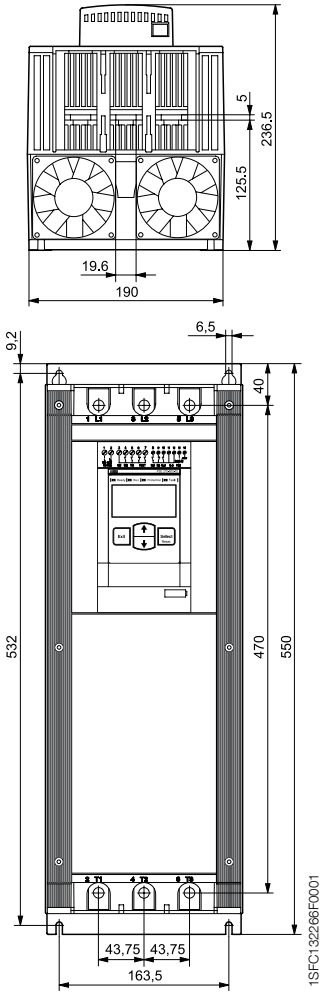
PSE18 ... 105



PSE142 ...170



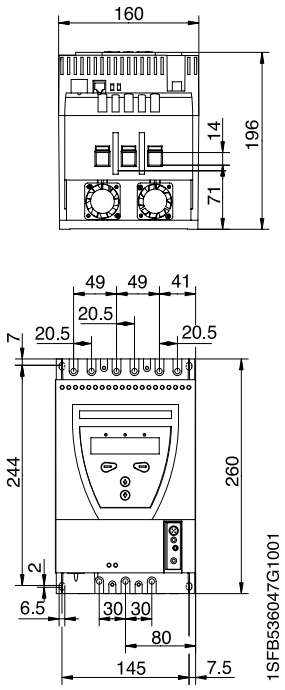
PSE210 ... 370



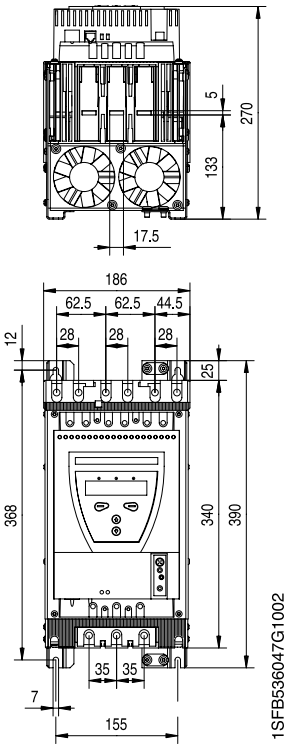
Dimensions in mm

Dimensions
Softstarters, type PST and PSTB

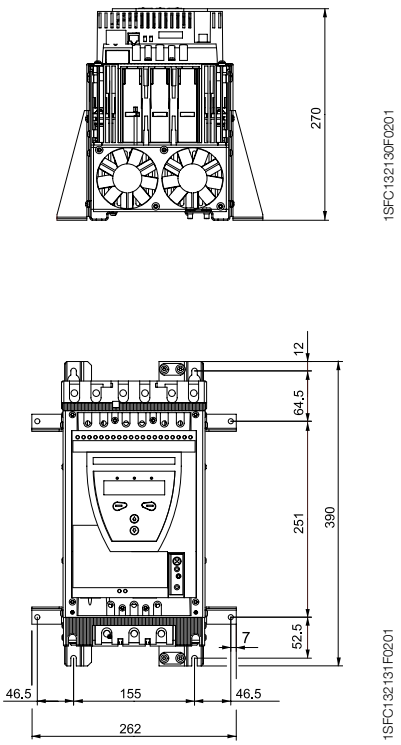
PST30 ... 72



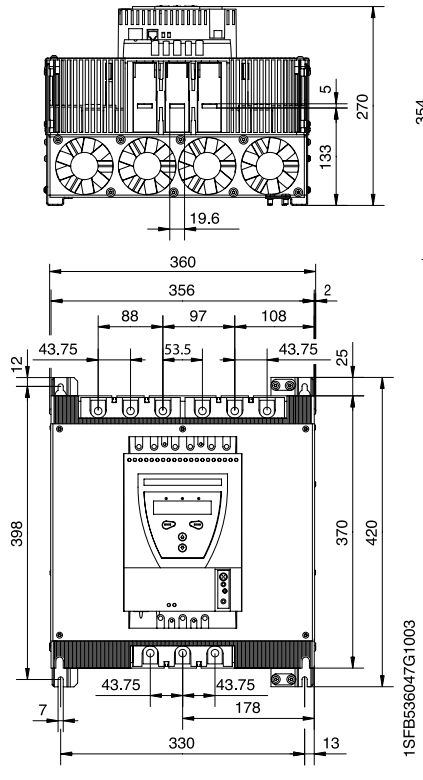
PST85 ...142



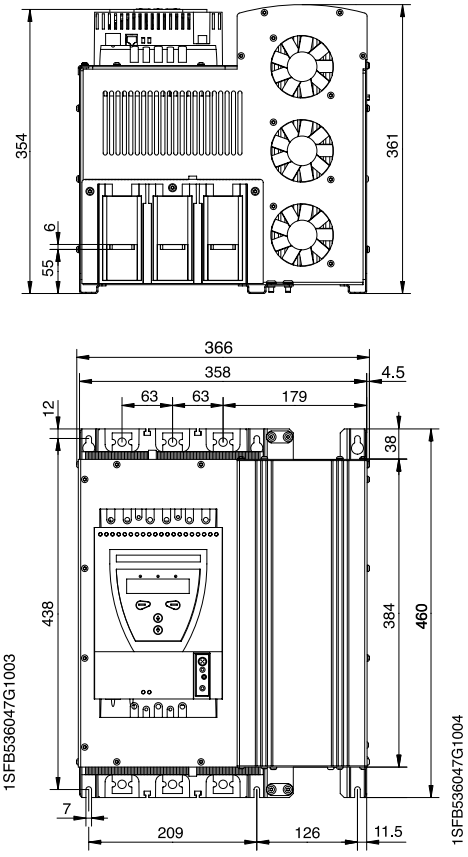
PST85 ...142 with marine kit



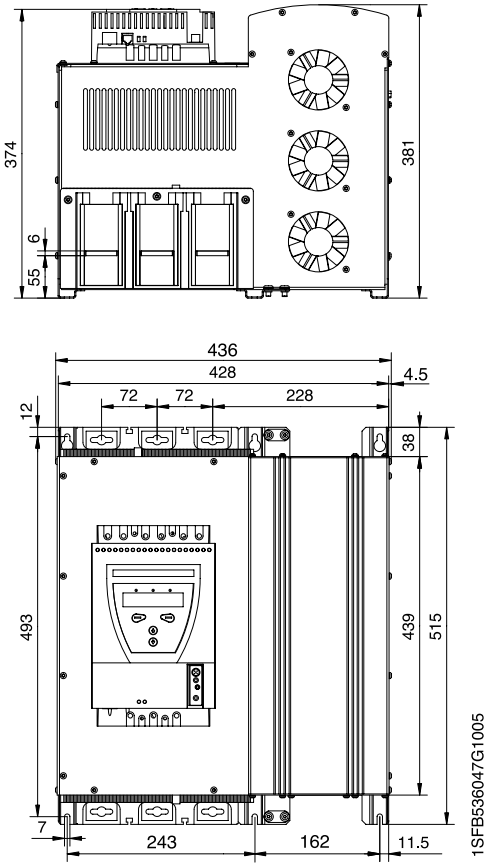
PST175 ... 300



PSTB370 ... 470



PSTB570 ... 1050

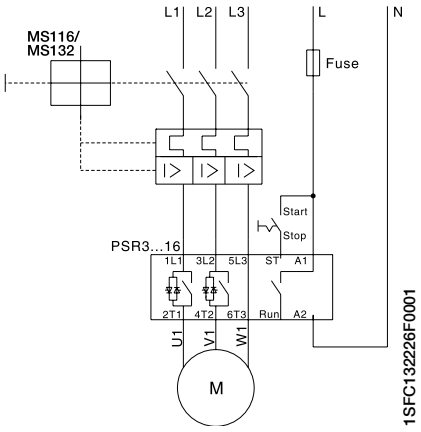


Dimensions in mm

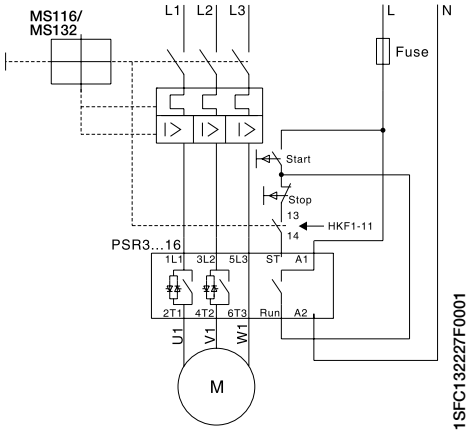
Circuit diagrams
Softstarters, type PSR

PSR3 ...16

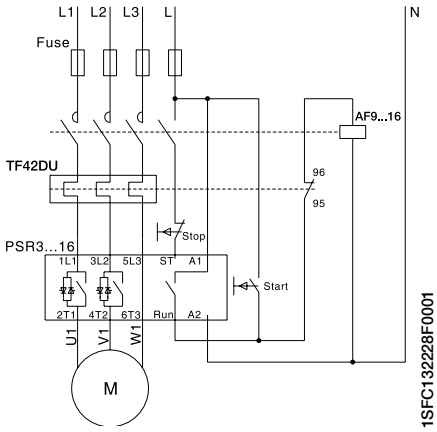
A) With MMS



B) With MMS and auxiliary contact

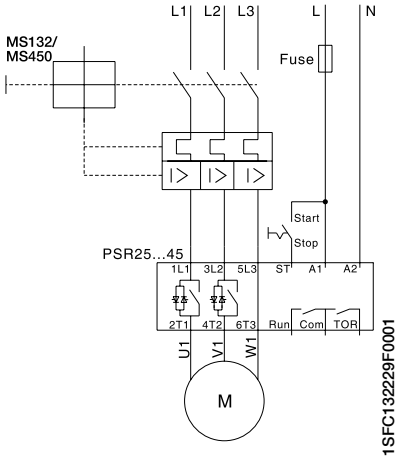


C) With fuses, contactor and O.L.

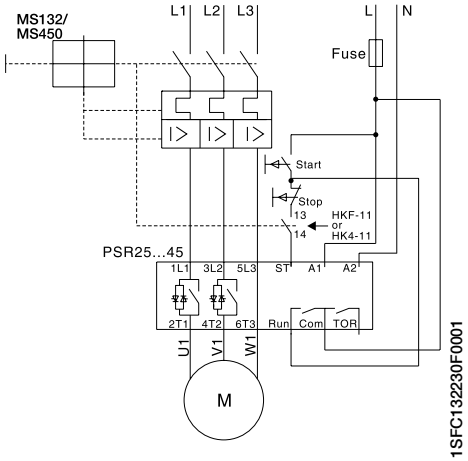


PSR25 ... 45

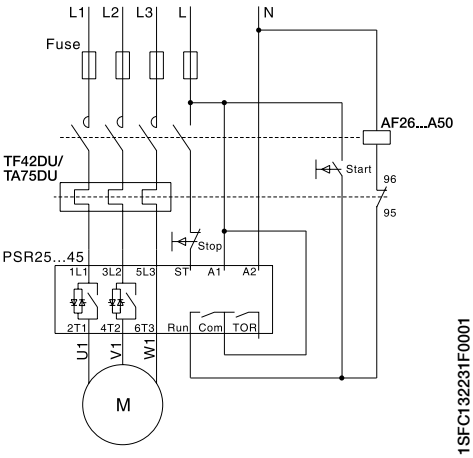
D) With MMS



E) With MMS and auxiliary contact

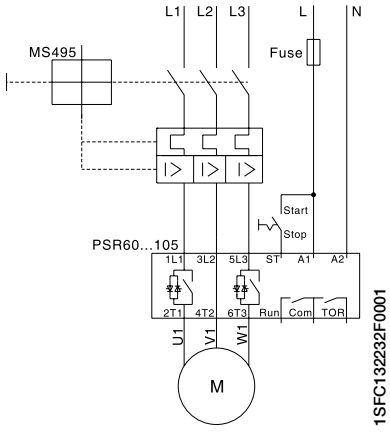


F) With fuses, contactor and O.L.

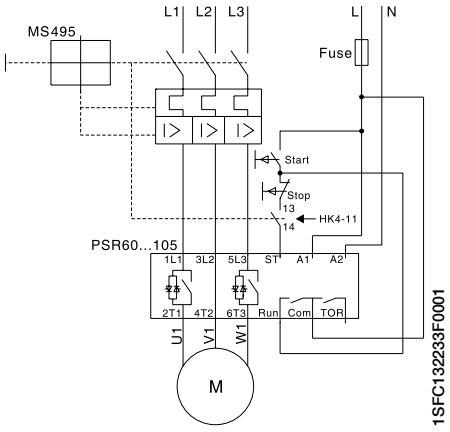


PSR60 ... 105

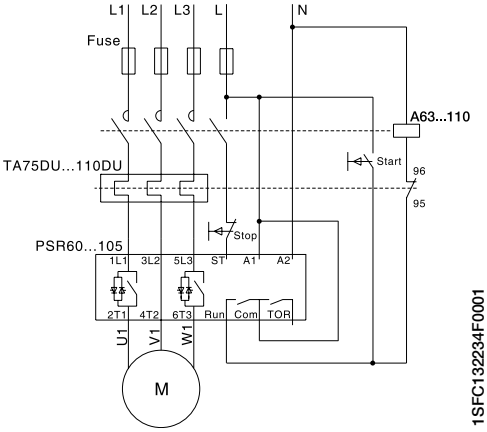
G) With MMS



H) With MMS and auxiliary contact

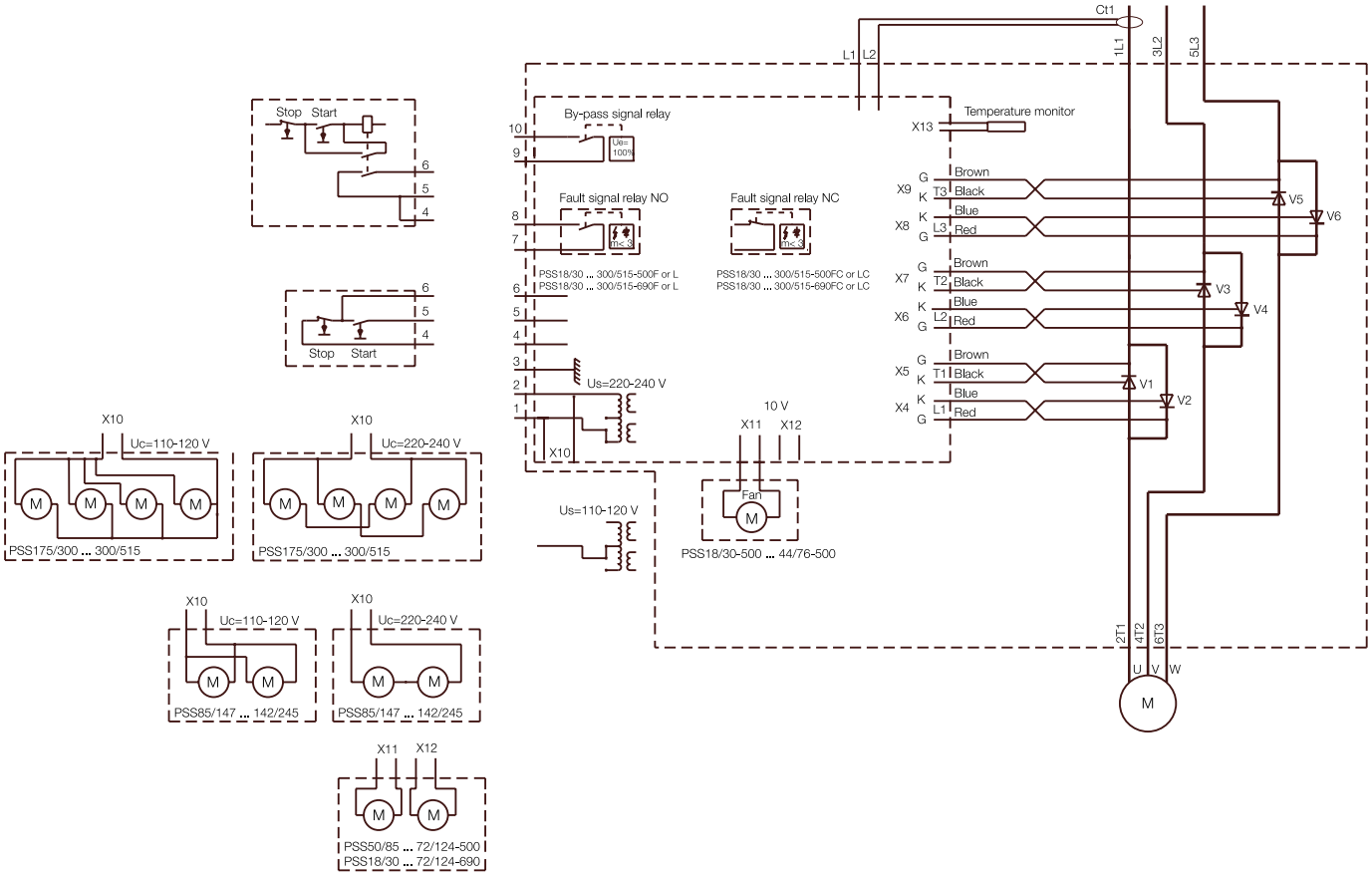


I) With fuses, contactor and O.L.

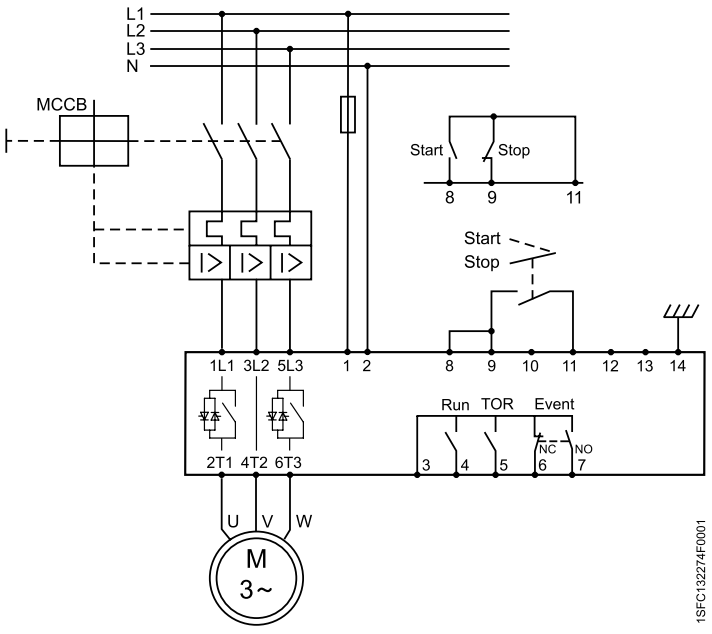


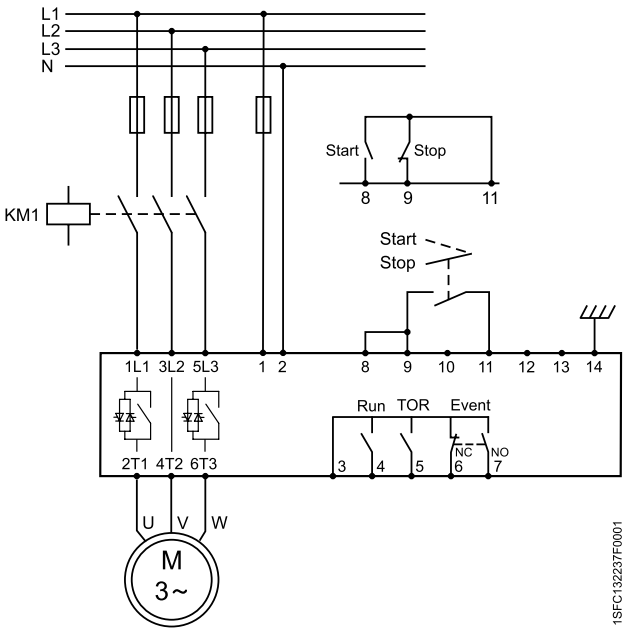
Cicuit diagrams
Softstarters, type PSS and PSE

PSS18/30...300/515



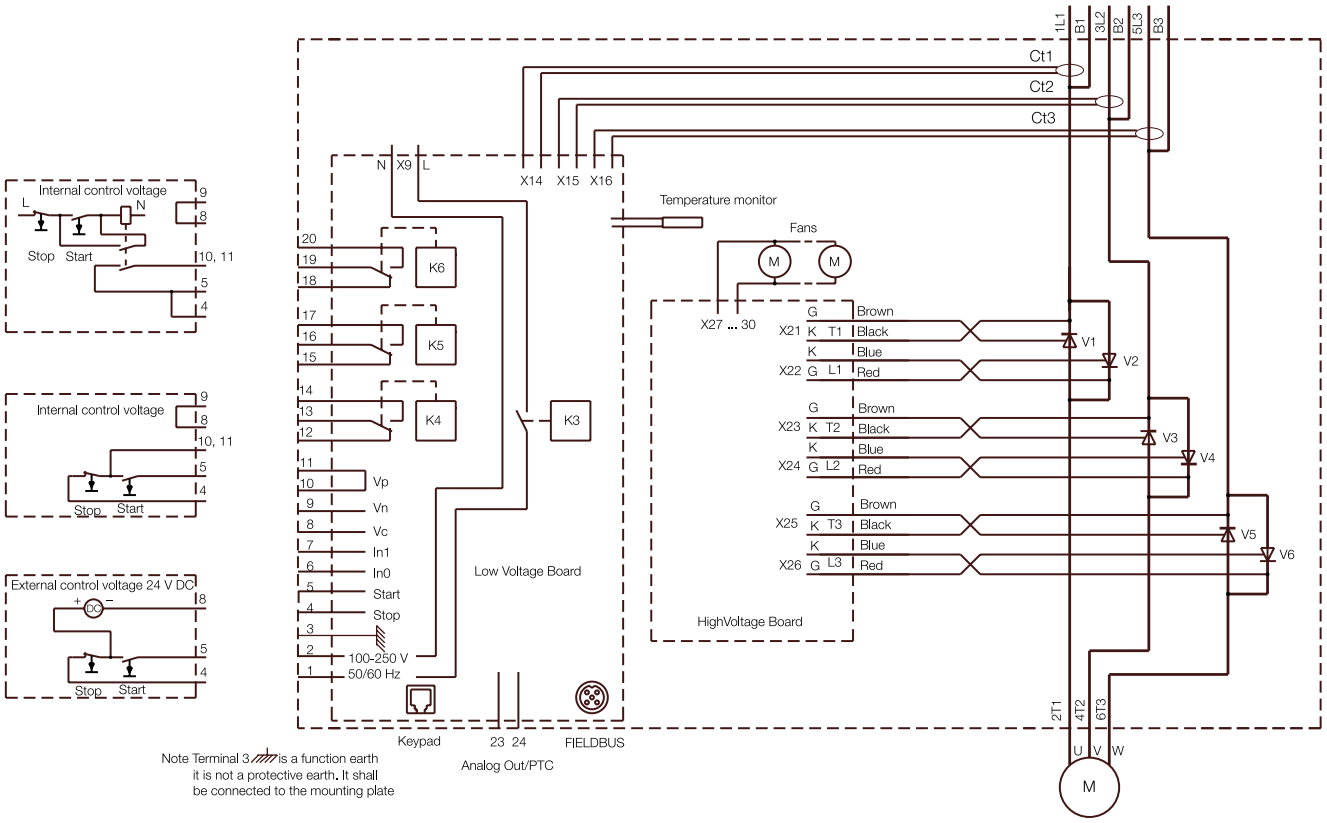
PSE18 ... 370





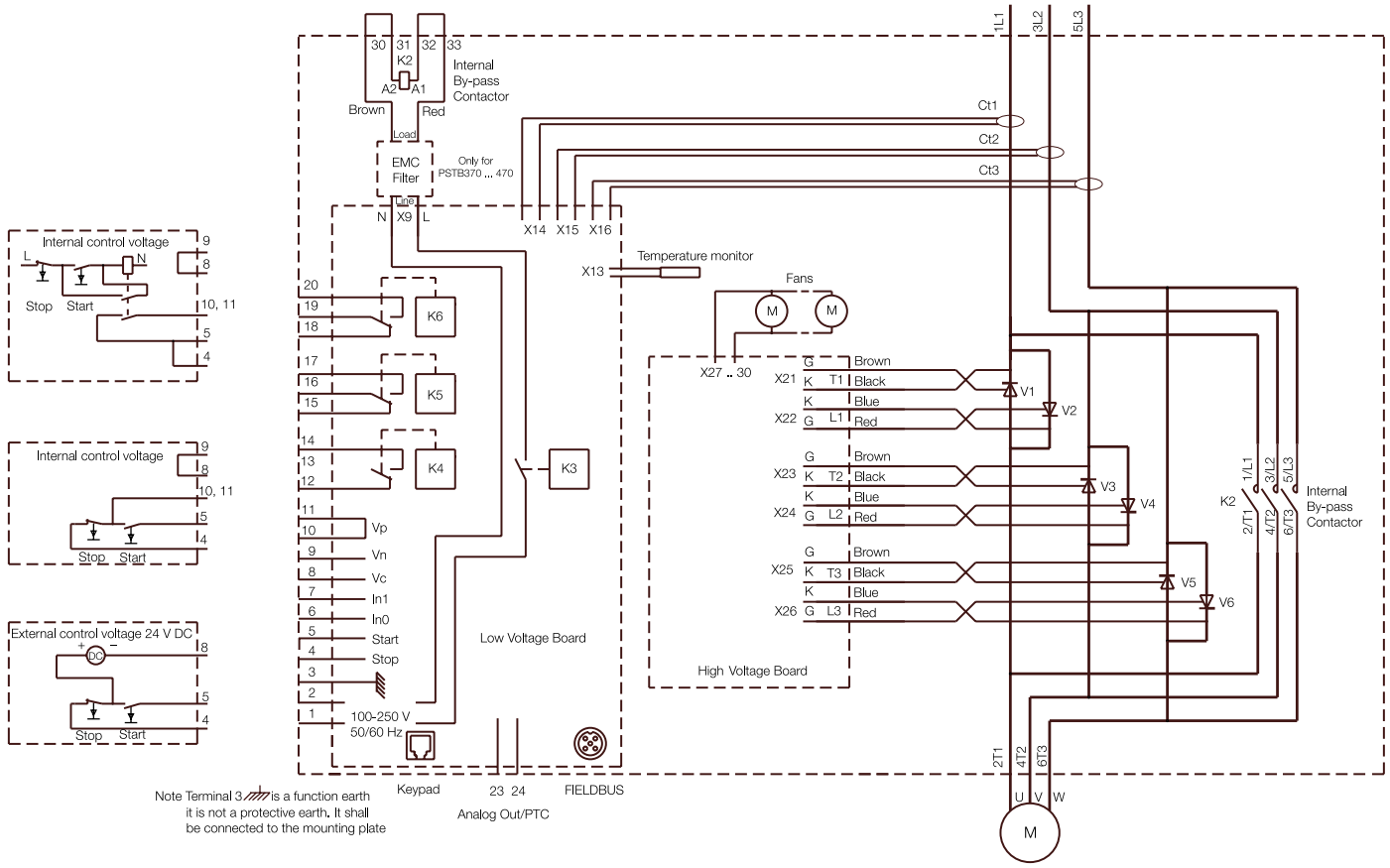
Circuit diagrams
Softstarters, type PST and PSTB

PST30...300



Note Terminal 3 ⏚ is a function earth it is not a protective earth. It shall be connected to the mounting plate

PSTB370...1050

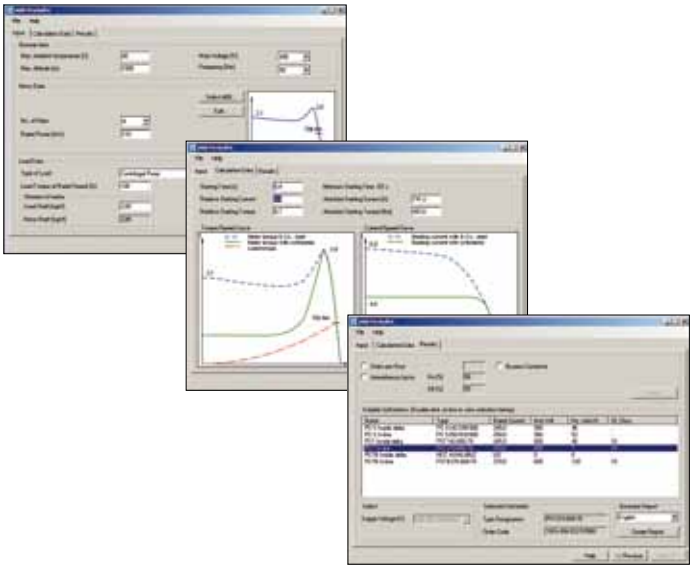


Note Terminal 3 ⏚ is a function earth it is not a protective earth. It shall be connected to the mounting plate

ProSoft and Coordination tables

ProSoft5 - Softstarter selection tool

The selection of a softstarter can be done according to this catalog. This will work fine in the majority of cases but by using the softstarter selection tool ProSoft, a more optimized selection will be achieved. Especially in extremely heavy duty applications with several minutes starting time, the use of ProSoft is recommended.



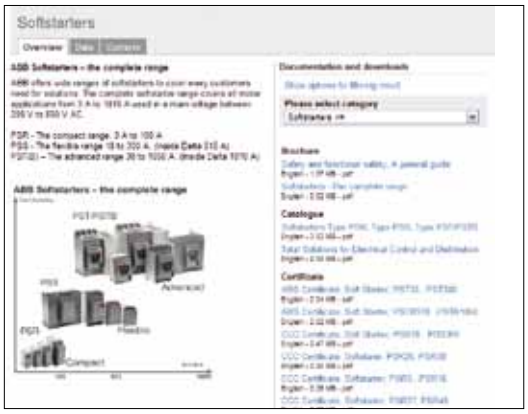
When using ProSoft, the selection is done in 3 steps, which can be seen as 3 different tabs in the program:

1. Input tab – Type in the general data and information about the motor and about the load. Try to use as accurate data as possible to get the most accurate results.
2. Calculation tab – Here it is possible to see how long the start will be depending on how high the current is. This tab will indicate which settings should be used and it might affect the selection.
3. The selection tab – Select which of the suggested softstar ters to use. Here it is also possible to generate a report about the selection.

Coordination tables

Coordination is a combination of electrical apparatus which is safe for the surroundings and personnel, even if an overload or a fault should occur in the system. The ABB coordination tables are available for different combinations of products. The softstarter coordination tables are available with different protection devices (MMS, MCCB and semiconductor fuses), different coordination types (type 1 and type 2), different kA-ratings and for different connections (In Line and Inside Delta).

The coordination tables can be found on www.abb.com/lowvoltage by clicking “Online Product Selection Tools” and “Coordination Tables for motor protection”.



Material available on www.abb.com/lowvoltage

The following material is a selection of all softstarter related material that is available on www.abb.com/lowvoltage. Just click on “Control Products”, then “Softstarters”.

- Product catalogs and brochures
- Certificates and approvals
- Circuit diagrams and application diagrams
- Dimension drawings (2D and 3D)
- Manuals
- eds- and gsd-files for fieldbus connection
- Prosoft selection tool

Certifications and approvals

The table below shows the approvals and certifications for different softstarters.

For approvals and/or certificates not listed below, please contact your local ABB sales office.

Certifications and approvals

	Certifications								Approvals: ship classification societies	
Abbreviation Approved in	CE EU	UL USA	cULus Canada USA	CSA Candada	CCC China	GOST Russia	ANCE Mexico	C-tick Australia	ABS American Bureau of Shipping	GL Germany
PSR3 ... PSR105	•	•[1)]	•	•[1)]	•	•	–	•	–	–
PSS18/30 ... PSS300/515	•	•	–	•	•	•	•	•	–	–
PSE18 ... PSE370	•	pending[1)]	pending	pending[1)]	pending	pending	pending	pending	–	–
PST30 ... PSTB1050	•	•[1)]	•	•[1)]	•	•	•	•	•	•

• **Standard design approved**, the company labels bear the certification mark when this is required.
1) Covered by cULus certificate

Directives and Standards

No. 2006/95/EC	Low voltage equipment
No. 2004/108/EC	Electromagnetic compability
EN 60947-1	Low-voltageswitchgear and controlgear - Part 1: General rules
EN 60947-4-2	AC semiconductor motor controllers and starters
UL 508	Industrial Control Equipment
CSA C22.2 No 14	Industrial Control Equipment

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www.abb.com/lowvoltage

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