



Catalog

# Softstarters

## Type PSR, PSS, PSE, PST and PSTB

## Efficient PSE range – world's first compact softstarter with torque control

The latest addition to ABB's 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. Furthermore, the softstarter has been equipped with built-in by-pass to reduce wiring and a back-lit display to provide a hassle free and easy setup and monitoring.

## The complete range of softstarters

ABB's softstarter portfolio now consists of four different ranges making it possible to find a suitable softstarter for almost any possible application and motor size all the way up to 1800 A. 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.



# Softstarters

From the moment the first electric motor was developed, engineers have tried to come up with ways of avoiding the electrical and mechanical problems that usually occur when starting a motor. High inrush currents, current spikes and excessive mechanical wear are some of the problems that need to be avoided. One way is to use a Star-Delta starter. This method is for many applications an insufficient solution since it handles neither problems with current spikes or torque peaks nor provides a way to perform a soft stop. A softstarter on the other hand, will provide far better performance during the start and allows for soft stops of the motor.

ABB has been producing softstarters since the beginning of the 1980's. Over 30 years' experience has been incorporated into the design of today's product ranges. Modern power electronics matched with smart circuitry and software gives users of ABB's softstarters, with several state-of-the-art design features, superior control of current and voltage levels during motor start and stop.

## The solution to both mechanical and electrical problems

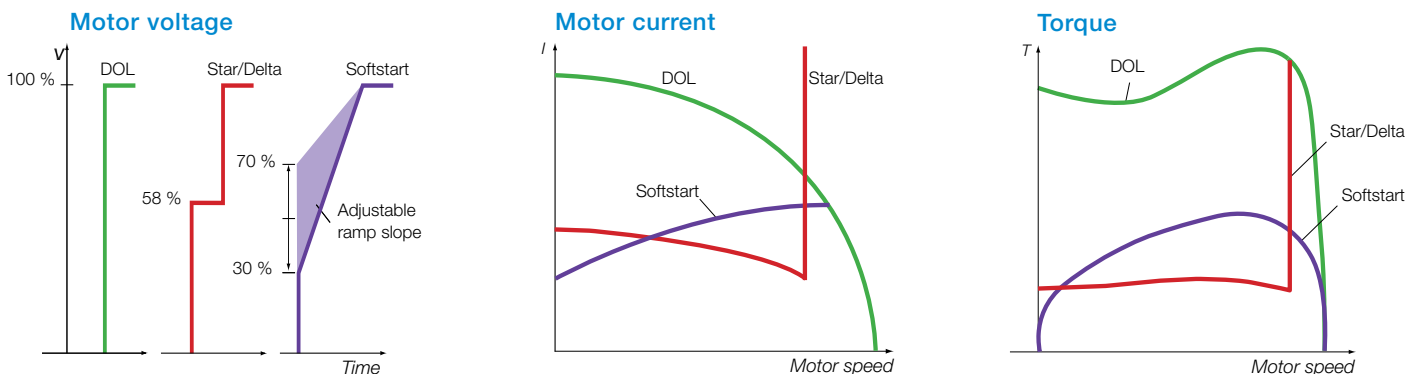
AC motors, "the workhorses of the industry", are used to drive fans, crushers, agitators, pumps, conveyors and more. Depending on the motor installation, torque and current peaks occur. These peaks are everyday reality for production plants

all over the world, causing problems in several ways:

- Electrical problems due to voltage and current transients arising from Direct-On-Line or Star-Delta starts. The 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 work.
- 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 of the problems above are considerable. Every technical problem and every breakdown costs money in repairs and lost production.

By choosing ABB's softstarter, all of these problems could be avoided. Whether the choice is the PSR, PSS, PSE or the PST(B), ABB's softstarters all allow smooth start and stops while keeping mechanical and electrical stresses to a minimum.

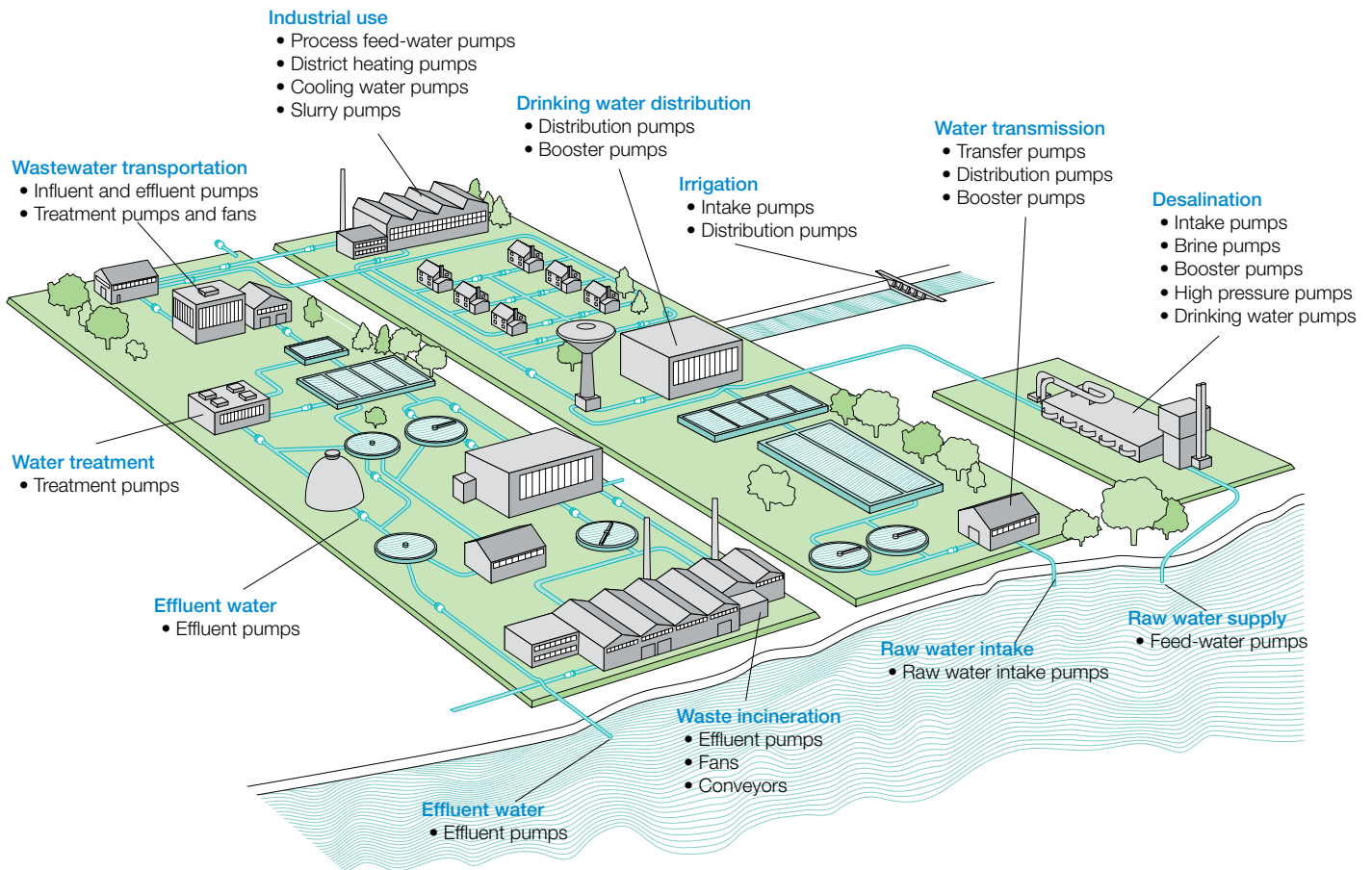


Graphs showing the basic differences between Direct-On-Line starting (DOL), Star-Delta starting and soft starting in terms of the motor voltage (V), motor current (I) and motor torque (T).

# Applications

## Pumps

Water is the most important resource in the world and water facilities can be found everywhere. Examples of water applications are freshwater and wastewater systems, circulating water for heating, cooling and irrigation.



### Common questions:

- How to avoid voltage drops when starting?
- ABB's 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's softstarters equipped with our special designed protections such as overload, underload, and locked rotor protection.

# PSR – The compact range

## Description



### Product description

- Wide rated operational voltage 208–600 V
- Rated control supply voltage 24 V AC/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's manual motor starters
- Sophisticated algorithm eliminating the DC-component and thereby providing excellent starting performance

The PSR range is the most compact of all ABB's softstarter ranges. The compact PSR range makes it possible to fit many devices into the same enclosure. A PSR together with a MMS (manual motor starter) makes up a far more compact starting solution than a Star-Delta starter, for instance.

### 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 setup 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's 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

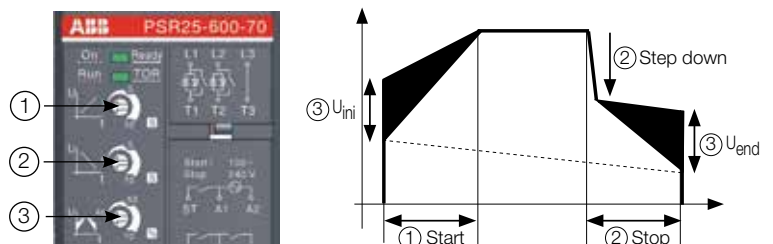
Even without using torque control, the PSR range is designed to reduce water hammering. Compared to the direct stops of a Star-Delta starter or a DOL starter the PSR is superior. See the stop ramp with step-down voltage below.

### System concept with manual motor starters

All PSR softstarter sizes can easily be connected to the corresponding manual motor starters from ABB by using the special designed connection kits. This makes both 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

## Ordering details



### PSR3 ... PSR105

Rated operational voltage  $U_e$ , 208-600 V AC

Rated control supply voltage,  $U_c$ , 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	1SFA896103R7000	0.450
1.5	3	4	6.8	PSR6-600-70	1SFA896104R7000	0.450
2.2	4	4	9	PSR9-600-70	1SFA896105R7000	0.450
3	5.5	5.5	12	PSR12-600-70	1SFA896106R7000	0.450
4	7.5	7.5	16	PSR16-600-70	1SFA896107R7000	0.450
5.5	11	15	25	PSR25-600-70	1SFA896108R7000	0.650
7.5	15	18.5	30	PSR30-600-70	1SFA896109R7000	0.650
7.5	18.5	22	37	PSR37-600-70	1SFA896110R7000	1.000
11	22	30	45	PSR45-600-70	1SFA896111R7000	1.000
15	30	37	60	PSR60-600-70	1SFA896112R7000	2.200
22	37	45	72	PSR72-600-70	1SFA896113R7000	2.270
22	45	55	85	PSR85-600-70	1SFA896114R7000	2.270
30	55	55	105	PSR105-600-70	1SFA896115R7000	2.270



PSR3 ... PSR16



PSR25 ... PSR30



PSR37 ... PSR45



PSR60 ... PSR105

Rated operational voltage  $U_e$ , 208-600 V AC

Rated control supply voltage,  $U_c$ , 24 V AC/DC

0.75	1.5	2.2	3.9	PSR3-600-11	1SFA896103R1100	0.450
1.5	3	4	6.8	PSR6-600-11	1SFA896104R1100	0.450
2.2	4	4	9	PSR9-600-11	1SFA896105R1100	0.450
3	5.5	5.5	12	PSR12-600-11	1SFA896106R1100	0.450
4	7.5	7.5	16	PSR16-600-11	1SFA896107R1100	0.450
5.5	11	15	25	PSR25-600-11	1SFA896108R1100	0.650
7.5	15	18.5	30	PSR30-600-11	1SFA896109R1100	0.650
7.5	18.5	22	37	PSR37-600-11	1SFA896110R1100	1.000
11	22	30	45	PSR45-600-11	1SFA896111R1100	1.000
15	30	37	60	PSR60-600-11	1SFA896112R1100	2.200
22	37	45	72	PSR72-600-11	1SFA896113R1100	2.270
22	45	55	85	PSR85-600-11	1SFA896114R1100	2.270
30	55	55	105	PSR105-600-11	1SFA896115R1100	2.270

# PSR – The compact range

## Technical data

<b>Rated insulation voltage <math>U_i</math></b>	600 V												
<b>Rated operational voltage <math>U_o</math></b>	208...600 V +10%/-15%, 50/60 Hz $\pm$ 5%												
<b>Rated control supply voltage <math>U_c</math></b>	100...240 V AC, 50/60Hz $\pm$ 5% or 24 V AC/DC, +10%/-15%												
<b>Power consumption</b>	<b>PSR3</b>	<b>PSR6</b>	<b>PSR9</b>	<b>PSR12</b>	<b>PSR16</b>	<b>PSR25</b>	<b>PSR30</b>	<b>PSR37</b>	<b>PSR45</b>	<b>PSR60</b>	<b>PSR72</b>	<b>PSR85</b>	<b>PSR105</b>
<b>Supply circuit</b>	12 VA						10 VA						
at 100-240 V AC	12 VA						10 VA						
at 24 V AC/DC	5 W												
<b>Max. Power loss at rated <math>I_o</math></b>	<b>PSR3</b>	<b>PSR6</b>	<b>PSR9</b>	<b>PSR12</b>	<b>PSR16</b>	<b>PSR25</b>	<b>PSR30</b>	<b>PSR37</b>	<b>PSR45</b>	<b>PSR60</b>	<b>PSR72</b>	<b>PSR85</b>	<b>PSR105</b>
	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
<b>Starting capacity at <math>I_o</math></b>	4 x $I_e$ for 6 sec.												
<b>Number of starts per hour</b>	See table below for details												
standard	10 <sup>1)</sup>												
with aux. fan	20 <sup>1)</sup>												
<b>Service factor</b>	100%												
<b>Ambient temperature</b>													
during operation	-25 °C to +60 °C <sup>2)</sup>												
during storage	-40 °C to +70 °C												
<b>Maximum altitude</b>	4000 m <sup>3)</sup>												
<b>Degree of protection</b>	<b>PSR3</b>	<b>PSR6</b>	<b>PSR9</b>	<b>PSR12</b>	<b>PSR16</b>	<b>PSR25</b>	<b>PSR30</b>	<b>PSR37</b>	<b>PSR45</b>	<b>PSR60</b>	<b>PSR72</b>	<b>PSR85</b>	<b>PSR105</b>
main circuit	IP20						IP10						
control circuit	IP20						IP10						
<b>Connectable cable area</b>	<b>PSR3-PSR16</b>			<b>PSR25-PSR30</b>			<b>PSR37-PSR45</b>			<b>PSR60-PSR105</b>			
main circuit	1 x 0.75-2.5mm <sup>2</sup> 2 x 0.75-2.5mm <sup>2</sup>			1 x 2.5-10mm <sup>2</sup> 2 x 2.5-10mm <sup>2</sup>			1 x 6-35mm <sup>2</sup> 2 x 6-16mm <sup>2</sup>			1 x 10-95mm <sup>2</sup> 2 x 6-35mm <sup>2</sup>			
control circuit	<b>PSR3-PSR16</b> 1 x 0.75-2.5mm <sup>2</sup> 2 x 0.75-2.5mm <sup>2</sup>			<b>PSR25-PSR105</b> 1 x 0.75-2.5mm <sup>2</sup> 2 x 0.75-1.5mm <sup>2</sup>									
<b>Signal relays</b>	<b>PSR3-PSR16</b>						<b>PSR25-PSR105</b>						
<b>for run signal</b>													
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						
<b>for top ramp signal</b>													
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						
<b>LED</b>													
for On/Ready	green												
for Run/Top of ramp	green												
<b>Settings</b>													
Ramp time during start	1-20 sec.												
Ramp time during stop	0-20 sec.												
Initial- and end voltage	40-70%												

<sup>1)</sup> Valid for 50% on time and 50% off time. If other data is required, contact your sales office.

<sup>2)</sup> Above 40 °C up to max. 60 °C reduce the rated current with 0.8% per °C.

<sup>3)</sup> When used at high altitudes above 1000 meters up to 4000 meters you need to derate the rated current using the following formula.

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

### Number of starts per hour using PSR softstarters

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

Data based on an ambient temperature of 40°, starting current of 4 x  $I_o$  and ramp time 6 seconds.

For more optimized selections, or to use PSR for heavy-duty starts, please use the softstarter selection tool.

# 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 is the most flexible of the four softstarter ranges from ABB. It allows both in-line and inside delta connections. It is the ideal solution when looking for a robust solid state starting solution where 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 makes for a cost-efficient replacement of an existing Star-Delta starter. You can reuse 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 moving mechanical parts. It is dimensioned to handle many starts per hour, which can be required for, e.g., elevator applications.

### Few settings

The setup 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

## Overview



PSS18/30...PSS44/76

PSS50/85...PSS72/124

	PSS18/30...PSS44/76				PSS50/85...PSS72/124		
<b>Normal start</b> <b>In-line connected</b>  <b>(400 V) kW</b> <b>IEC, max. A</b> <b>(440-480 V) hp</b> <b>UL, max FLA</b>	<b>Softstarter, type</b>						
	PSS18/30	PSS30/52	PSS37/64	PSS44/76	PSS50/85	PSS60/105	PSS72/124
	7.5	15	18.5	22	25	30	37
	18	30	37	44	50	60	72
	10	20	25	30	30	40	50
	18	28	34	40	47	56	67
	<b>400 V, 40° C</b>						
Using MCCB type 1 coordination will be achieved	<b>MCCB (50 kA), type</b>						
	T2S160						
To achieve type 2 coordination semi-conductor fuses must be used	<b>Fuse protection (65 kA), semi-conductor fuses, Bussmann, type</b>						
	170M1564	170M1566	170M1568		170M1569	170M1570	170M1571
Suitable switch fuse for the recommended semi-conductor fuses	<b>Switch fuse, type</b>						
	OS32GD03P		OS63GD03P			OS125GD03P	
Overload protection is used to protect the motor from over heating	<b>Thermal overload relay, type</b>						
	TF42DU			TA75DU			
The line contactor is not required for the softstarter itself but often used to open if OL trips	<b>Line contactor, type</b>						
	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	<b>By-pass contactor, type</b>						
	AF9	AF16		AF26	AF30	A40	A50
Must be used if current limit function is required	<b>Current transformers, type</b>						
	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](http://www.abb.com/lowvoltage)

# PSS – The flexible range

## Normal starts, class 10, in-line, ordering details



### PSS18/30 ... PSS300/515

Rated operational voltage,  $U_s$ , 208-500 V

Motor power

400 V P kW	500 V P kW	690 V P kW	IEC Max rated operational current $I_s$ A	Type <sup>*)</sup>	Order code <sup>**)</sup>	Weight kg 1 piece
7.5	11	-	18	PSS18/30-500□■	1SFA892001R▽00▼	2.30
15	18.5	-	30	PSS30/52-500□■	1SFA892002R▽00▼	2.30
18.5	22	-	37	PSS37/64-500□■	1SFA892003R▽00▼	2.30
22	25	-	44	PSS44/76-500□■	1SFA892004R▽00▼	2.30
25	30	-	50	PSS50/85-500□■	1SFA892005R▽00▼	3.60
30	37	-	60	PSS60/105-500□■	1SFA892006R▽00▼	3.80
37	45	-	72	PSS72/124-500□■	1SFA892007R▽00▼	3.80
45	55	-	85	PSS85/147-500□■	1SFA892008R▽00▼	8.60
55	75	-	105	PSS105/181-500□■	1SFA892009R▽00▼	10.40
75	90	-	142	PSS142/245-500□■	1SFA892010R▽00▼	10.40
90	110	-	175	PSS175/300-500□■	1SFA892011R▽00▼	20.50
132	160	-	250	PSS250/430-500□■	1SFA892013R▽00▼	22.00
160	200	-	300	PSS300/515-500□■	1SFA892014R▽00▼	22.00



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

Rated operational voltage,  $U_s$ , 400-690 V

7.5	11	15	18	PSS18/30-690□■	1SFA893001R▽00▼	2.30
15	18.5	25	30	PSS30/52-690□■	1SFA893002R▽00▼	2.30
18.5	22	30	37	PSS37/64-690□■	1SFA893003R▽00▼	2.30
22	25	37	44	PSS44/76-690□■	1SFA893004R▽00▼	2.30
25	30	45	50	PSS50/85-690□■	1SFA893005R▽00▼	3.60
30	37	55	60	PSS60/105-690□■	1SFA893006R▽00▼	3.80
37	45	59	72	PSS72/124-690□■	1SFA893007R▽00▼	3.80
45	55	75	85	PSS85/147-690□■	1SFA893008R▽00▼	8.60
55	75	90	105	PSS105/181-690□■	1SFA893009R▽00▼	10.40
75	90	132	142	PSS142/245-690□■	1SFA893010R▽00▼	10.40
90	110	160	175	PSS175/300-690□■	1SFA893011R▽00▼	20.50
132	160	220	250	PSS250/430-690□■	1SFA893013R▽00▼	22.00
160	200	257	300	PSS300/515-690□■	1SFA893014R▽00▼	22.00

<sup>\*)</sup> 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

<sup>\*\*)</sup> 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 ... PSS300/515

#### Rated operational voltage $U_e$ , 208-500 V

Motor power				IEC Max rated operational current $I_e$ A	Type*)	Order code**)	Weight kg 1 piece
400 V $P_e$ kW	500 V $P_e$ kW	690 V $P_e$ kW					
5.5	7.5	-	13	PSS18/30-500□■	1SFA892001R▽00▼	2.30	
7.5	11	-	18	PSS30/52-500□■	1SFA892002R▽00▼	2.30	
15	18.5	-	30	PSS37/64-500□■	1SFA892003R▽00▼	2.30	
18.5	22	-	37	PSS44/76-500□■	1SFA892004R▽00▼	2.30	
22	25	-	44	PSS50/85-500□■	1SFA892005R▽00▼	3.60	
25	30	-	50	PSS60/105-500□■	1SFA892006R▽00▼	3.80	
30	37	-	60	PSS72/124-500□■	1SFA892007R▽00▼	3.80	
37	45	-	72	PSS85/147-500□■	1SFA892008R▽00▼	8.60	
45	55	-	85	PSS105/181-500□■	1SFA892009R▽00▼	10.40	
55	75	-	105	PSS142/245-500□■	1SFA892010R▽00▼	10.40	
75	90	-	142	PSS175/300-500□■	1SFA892011R▽00▼	20.50	
90	110	-	175	PSS250/430-500□■	1SFA892013R▽00▼	22.00	
132	160	-	250	PSS300/515-500□■	1SFA892014R▽00▼	22.00	



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

#### Rated operational voltage $U_e$ , 400-690 V

5.5	7.5	11	13	PSS18/30-690□■	1SFA893001R▽00▼	2.30
7.5	11	15	18	PSS30/52-690□■	1SFA893002R▽00▼	2.30
15	18.5	25	30	PSS37/64-690□■	1SFA893003R▽00▼	2.30
18.5	22	30	37	PSS44/76-690□■	1SFA893004R▽00▼	2.30
22	25	37	44	PSS50/85-690□■	1SFA893005R▽00▼	3.60
25	30	45	50	PSS60/105-690□■	1SFA893006R▽00▼	3.80
30	37	55	60	PSS72/124-690□■	1SFA893007R▽00▼	3.80
37	45	59	72	PSS85/147-690□■	1SFA893008R▽00▼	8.60
45	55	75	85	PSS105/181-690□■	1SFA893009R▽00▼	10.40
55	75	90	105	PSS142/245-690□■	1SFA893010R▽00▼	10.40
75	90	132	142	PSS175/300-690□■	1SFA893011R▽00▼	20.50
90	110	160	175	PSS250/430-690□■	1SFA893013R▽00▼	22.00
132	160	220	250	PSS300/515-690□■	1SFA893014R▽00▼	22.00

\*) Add code letter in type for:  
Rated control supply voltage,  $U_c$

□ 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,  $U_c$

▼ 1 = 110-120 V, 50/60 Hz  
2 = 220-240 V, 50/60 Hz

# PSS – The flexible range

## Accessories

### 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	Pack <sup>ing</sup> piece	Weight kg 1 piece
PSS18/30	30/1–1 turn	PSCT-30	1SFA899001R1030	1	0.200
PSS30/52	40/1–1 turn	PSCT-40	1SFA899001R1040	1	0.200
PSS37/64	50/1–1 turn	PSCT-50	1SFA899001R1050	1	0.200
PSS44/76	60/1–1 turn	PSCT-60	1SFA899001R1060	1	0.200
PSS50/85	75/1–1 turn	PSCT-75	1SFA899001R1075	1	0.200
PSS60/105	75/1–1 turn	PSCT-75	1SFA899001R1075	1	0.200
PSS72/124	100/1–1 turn	PSCT-100	1SFA899001R1100	1	0.150
PSS85/147	125/1–1 turn	PSCT-125	1SFA899001R1125	1	0.150
PSS105/181	150/1–1 turn	PSCT-150	1SFA899001R1150	1	0.150
PSS142/245	200/1–1 turn	PSCT-200	1SFA899001R1200	1	0.230
PSS175/300	250/1–1 turn	PSCT-250	1SFA899001R1250	1	0.230
PSS250/430	400/1–1 turn	PSCT-400	1SFA899001R1400	1	0.200
PSS300/515	400/1–1 turn	PSCT-400	1SFA899001R1400	1	0.200



PSCT-30

1SFC13225F0001



1SFT19009-095C2



SB805-4C2

LZ...

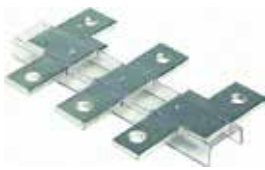


1SFT19009-011C1



PSLW-44

1SFC132012F0201



LW...

1SFT19000-011C3



LE185

1SFC13221F0001



LT ... -AC



LT ... -AL

1SFT19009-125

### Cable connectors for Cu cables

For softstarter type	Wire range mm <sup>2</sup>	Tightening torque max. Nm	Type	Order code	Pack <sup>ing</sup> piece	Weight kg 1 piece
PSS85/147 ... 142/245	6-120	14	–	1SDA066917R1	3	0.113
PSS85/147 ... 142/245	2 x (50-120)	16	LZ185-2C/120	1SFN074709R1000	3	0.100
PSS175/300 ... 300/515	16-300	25	–	1SDA055016R1	3	0.133

### Cable connectors for Al and Cu cables

For softstarter type	Wire range mm <sup>2</sup>	Tightening torque max. Nm	Type	Order code	Pack <sup>ing</sup> piece	Weight kg 1 piece
PSS85/147 ... 142/245	95-185	31	–	1SDA054988R1	3	0.078
PSS175/300 ... 300/515	185-240	43	–	1SDA055020R1	3	0.133

### Terminal enlargements

For softstarter type	Wire range mm <sup>2</sup>	Type	Order code	Pack <sup>ing</sup> piece	Weight kg 1 piece
PSS18/30-500 ... 44/76-500	1x6 ... 35 2x6 ... 16	PSLW-44	1SFA899002R1044	1	0.100
PSS50/85-500 ... 72/124-500	1x10 ... 50	PSLW-72	1SFA899002R1072	1	0.150
PSS18/30-690 ... 72/124-690	2x10 ... 25				

For softstarter type	Dimensions hole ø mm <sup>2</sup>	bar mm	Type	Order code	Pack <sup>ing</sup> piece	Weight kg 1 piece
PSS85/147 ... 142/245	10.5	17.5 x 5	LW185	1SFN074707R1000	1	0.250
PSS175/300 ... 300/515	10.5	20 x 5	LW300	1SFN075107R1000	1	0.450

### Terminal nut washer

For softstarter type	Req. qty	Type	Order code	Pack <sup>ing</sup> piece	Weight kg 1 piece
PSS85/147 ... 142/245	2	LE185	1SFN074716R1000	2	0.200
PSS175/300 ... 300/515	2	LE300	1SFN075116R1000	2	0.300

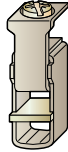
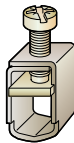
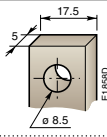
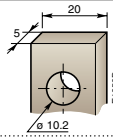
### Terminal shrouds

For softstarter type	Suitable for	Req. qty	Type	Order code	Pack <sup>ing</sup> piece	Weight kg 1 piece
PSS85/147 ... 142/245	Cable connectors	2	LT185-AC	1SFN124701R1000	2	0.050
PSS85/147 ... 142/245	Compression lugs	2	LT185-AL	1SFN124703R1000	2	0.220
PSS175/300 ... 300/515	Cable connectors	2	LT300-AC	1SFN125101R1000	2	0.070
PSS175/300 ... 300/515	Compression lugs	2	LT300-AL	1SFN125103R1000	2	0.280

# 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	
<b>Main circuit</b>									
Connection clamp									
									
Solid/stranded	1 x mm <sup>2</sup>	2.5-16		6-50					See accessories
Solid/stranded	2 x mm <sup>2</sup>	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	
<b>Supply and control circuit</b>									
Connection clamp									
Solid/stranded	1 x mm <sup>2</sup>	2.5		2.5		2.5			2.5
Solid/stranded	2 x mm <sup>2</sup>	-		-		-			-
Tightening torque (recommended)	Nm	0.5		0.5		0.5			0.5

### Fuse ratings and power losses

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

<sup>1)</sup> For the supply circuit 6 A delayed, for MCB use C characteristics.  
<sup>2)</sup> Calculated power loss at operational current (I<sub>op</sub>) without by-pass.  
P<sub>tot</sub> = 3 x I<sub>op</sub> + VA value  
Example: PSS 60/105 running at 52 A  
P<sub>tot</sub> = 3 x 52 + 10 = 166W  
<sup>3)</sup> 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.

# 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  $1.5-7 \times I_n$
- 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 softstarter range with torque control. This makes the PSE range an ideal choice for pumping applications where water hammering normally is a big problem. The compactness and advanced functionality of the PSE means that it is also a very efficient solution for other 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, preventing 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. This eliminates the need of an additional current transformer. The analog output signal can also be used as an analog input to a PLC.

### Display and keypad

The setup of the PSE softstarter is done using the four button keypad and the illuminated display, providing a quick and easy setup. 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 setup 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

## Overview



PSE18 ... PSE105

<b>Normal start</b> <b>In-line connected</b>  <b>(400 V) kW</b> <b>IEC, max. A</b> <b>(440-480 V) hp</b> <b>UL, max FLA</b>	<b>Softstarter, type</b>								
	PSE18	PSE25	PSE30	PSE37	PSE45	PSE60	PSE72	PSE85	PSE105
	7.5	11	15	18.5	22	30	37	45	55
	18	25	30	37	45	60	72	85	106
	10	15	20	25	30	40	50	60	75
18	25	28	34	42	60	68	80	104	
Using MCCB only, type 1 coordination will be achieved	<b>400 V, 40 °C</b>								
	<b>MCCB (35 kA), type</b>								
	T2N160								T3N250
	<b>MCCB (50 kA), type</b>								
T2S160								T3S250	
To achieve type 2 coordina- tion, semi-conductor fuses must be used	<b>Fuse protection (85 kA), Semiconductor fuses, Bussmann, type</b>								
	170M1563	170M1564	170M1566	170M1567	170M1568	170M1569	170M1571	170M1572	170M3819
Suitable switch fuse for re- commended semi-conductor fuses	<b>Switch fuse, type</b>								
	OS32GD03P			OS63GD03P			OS125GD03P		OS250D03P
The line contactor is not required for the softstarter itself but often used to open if OL trips	<b>Line contactor, type</b>								
	AF26	AF30	AF38	AF52	AF65	AF80	AF96	AF116	
Overload protection is used to protect the motor from over heating	<b>Electronic overload relay, type</b>								
	Built-in								
The by-pass will reduce the power loss of the softstarter.	<b>By-pass, type</b>								
	Built-in								

The table above is an overview of possible combinations of devices.  
 Complete coordination tables are available at [www.abb.com/lowvoltage](http://www.abb.com/lowvoltage)

# PSE – The efficient range

## Normal starts, class 10, in-line, ordering details



1SFC132311F0001

PSE18 ... PSE105



1SFC132312F0002

PSE142 ... PSE170



1SFC132310F0002

PSE210 ... PSE370

### PSE18 ... PSE370

Rated operational voltage,  $U_e$ , 208-600 V AC

Rated control supply voltage,  $U_c$ , 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 current $I_e$ A	Type	Order code	Weight kg 1 piece
4	7.5	11	18	PSE18-600-70	1SFA897101R7000	2.4
5.5	11	15	25	PSE25-600-70	1SFA897102R7000	2.4
7.5	15	18.5	30	PSE30-600-70	1SFA897103R7000	2.4
9	18.5	22	37	PSE37-600-70	1SFA897104R7000	2.4
11	22	30	45	PSE45-600-70	1SFA897105R7000	2.4
15	30	37	60	PSE60-600-70	1SFA897106R7000	2.4
18.5	37	45	72	PSE72-600-70	1SFA897107R7000	2.5
22	45	55	85	PSE85-600-70	1SFA897108R7000	2.5
30	55	75	106	PSE105-600-70	1SFA897109R7000	2.5
40	75	90	143	PSE142-600-70	1SFA897110R7000	4.2
45	90	110	171	PSE170-600-70	1SFA897111R7000	4.2
59	110	132	210	PSE210-600-70	1SFA897112R7000	12.4
75	132	160	250	PSE250-600-70	1SFA897113R7000	13.9
90	160	200	300	PSE300-600-70	1SFA897114R7000	13.9
110	200	250	370	PSE370-600-70	1SFA897115R7000	13.9



# PSE – The efficient range

## Accessories



1SFT98099-095C2

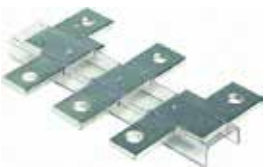


SB8054C2

LZ...



1SFT98099-011C1



1SFT98000-011C3

LW...



1SFC132321F0002

LE185



1SFT98099-019C3

LT ... -AC



1SFT98099-125

LT ... -AL



1SFC132328F0002

PSEEK



1SFC132353F0002

PSECA



1SFC132168F0001

PS-FBPA

### Cable connectors for Cu cables

For softstarter type	Wire range mm <sup>2</sup>	Tightening torque max. Nm	Type	Order code	Pack <sup>ing</sup> piece	Weight kg 1 piece
PSE142 ... 170	6-120	14	-	1SDA06691R1	3	0.200
PSE142 ... 170	2 x (50-120)	16	LZ185-2C/120	1SFN074709R1000	3	0.100
PSE210 ... 370	16-300	25	-	1SDA055016R1	3	0.133

### Cable connectors for Al and Cu cables

For softstarter type	Wire range mm <sup>2</sup>	Tightening torque max. Nm	Type	Order code	Pack <sup>ing</sup> piece	Weight kg 1 piece
PSE142 ... 170	95-185	31	-	1SDA054988R1	3	0.078
PSE210 ... 370	185-240	43	-	1SDA055020R1	3	0.133

### Terminal enlargements

For softstarter type	Dimensions hole ø mm <sup>2</sup>	bar mm	Type	Order code	Pack <sup>ing</sup> piece	Weight kg 1 piece
PSE18...105	6.5	15 x 3	LW110	1SFN074307R1000	1	0.100
PSE142...170	10.5	17.5 x 5	LW185	1SFN074707R1000	1	0.450
PSE210...370	10.5	20 x 5	LW300	1SFN075107R1000	1	1.230

### Terminal nut washer

For softstarter type	Req. qty	Type	Order code	Pack <sup>ing</sup> piece	Weight kg 1 piece
PSE142...170	2	LE185	1SFN074716R1000	2	0.200
PSE210...370	2	LE300	1SFN075116R1000	2	0.300

### Terminal shrouds

For softstarter type	Suitable for	Req. qty	Type	Order code	Pack <sup>ing</sup> piece	Weight kg 1 piece
PSE142 ... 170	Cable connectors	2	LT185-AC	1SFN124701R1000	2	0.050
PSE142 ... 170	Compression lugs	2	LT185-AL	1SFN124703R1000	2	0.220
PSE210 ... 370	Cable connectors	2	LT300-AC	1SFN125101R1000	2	0.070
PSE210 ... 370	Compression lugs	2	LT300-AL	1SFN125103R1000	2	0.280

### External keypad including a 3m cable

For softstarter type	Type	Order code	Pack <sup>ing</sup> piece	Weight kg 1 piece
PSE18...370	PSEEK	1SFA897100R1001	1	-

### USB-cable for Service Engineer Tool

For softstarter type	Type	Order code	Pack <sup>ing</sup> piece	Weight kg 1 piece
PSE18...370	PSECA	1SFA897201R1001	1	0.130

### FieldBusPlug connection accessory

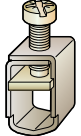
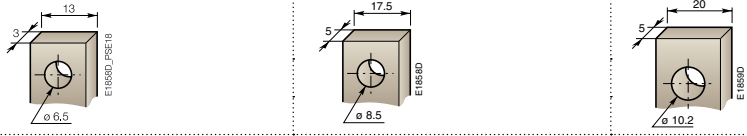
For softstarter type	Type	Order code	Pack <sup>ing</sup> piece	Weight kg 1 piece
The same accessory for all sizes	PS-FBPA	1SFA896312R1002	1	0.060

ABB's FieldBusPlug suitable for all sizes. See page 50-53

# PSE – The efficient range

## Technical data

### Cross section of connection cables

		Type of softstarter PSE18 ... PSE105		PSE142 ... PSE170	PSE210 ... PSE370
<b>Main circuit</b>					
Connection clamp					
					
Solid/stranded	1 x mm <sup>2</sup>	2.5–70		See accessories	
Solid/stranded	2 x mm <sup>2</sup>	2.5–70		See accessories	
Tightening torque (recommended)	Nm	9		See accessories	
<b>Connection bar</b>					
					
Width and thickness	mm	13		17.5	20
Hole diameter	mm	ø 6.5		ø 8.5	ø 10.2
Tightening torque (recommended)	Nm	9		18	28
<b>Supply and control circuit</b>					
Connection clamp					
Solid/stranded	1 x mm <sup>2</sup>	2.5		2.5	2.5
Solid/stranded	2 x mm <sup>2</sup>	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's overload protection		Max power loss at rated I <sub>e</sub> (Internal by-pass)	Max fuse rating - main circuit <sup>1)</sup>			Power requirements supply circuit Holding (VA) / Pull-in (VA)
	Type	Current range		Bussmann fuses, DIN43 620 (Knife)			
Type	Type	A	W	A	Type	Size	
<b>PSE</b>							
PSE18	Integrated	5.4-18	0.2	40	170M1563	000	16/19.9
PSE25	Integrated	7.5-25	0.4	50	170M1564	000	16/19.9
PSE30	Integrated	9-30	0.5	80	170M1566	000	16/19.9
PSE37	Integrated	11.1-37	0.8	100	170M1567	000	16/19.9
PSE45	Integrated	13.5-45	1.2	125	170M1568	000	16/19.9
PSE60	Integrated	18-60	2.2	160	170M1569	000	16/19.9
PSE72	Integrated	21.6-72	3.1	250	170M1571	000	16/19.9
PSE85	Integrated	25.5-85	4.3	315	170M1572	000	16/19.9
PSE105	Integrated	31.8-106	6.6	400	170M3819	1*	16/19.9
PSE142	Integrated	42.9-143	12.1	450	170M5809	2	16/31
PSE170	Integrated	51.3-171	17.6	500	170M5810	2	16/31
PSE210	Integrated	63-210	8.8	630	170M5812	2	30/700
PSE250	Integrated	75-250	12.5	700	170M5813	2	30/700
PSE300	Integrated	90.6-302	18	800	170M6812	3	30/700
PSE370	Integrated	111-370	27.4	900	170M6813	3	30/700

<sup>1)</sup>For the supply circuit 6 A delayed, for MCB use C characteristics.

# 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 setup 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  $1.5\text{--}7 \times I_g$
- 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. It is equipped with almost all imaginable features making it the ideal choice for most applications.

### Torque control

ABB's 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 saves energy and reduces heat generation. The PST softstarters are equipped with extra terminals making the connection of an external by-pass contactor easier and allow all protection features to be active during by-pass. The PST(B) comes with ABB's AF contactor already built-in, ensuring a compact starting solution requiring minimal wiring.

### 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. This eliminates the need of an additional current transformer. The analog output signal can also be used as an analog input to a PLC.

### Fieldbus communication

ABB's FieldBusPlug supports most common fieldbus protocols. Using a PLC simplifies setup of the softstarter and gives status information in real-time as well as control of 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 setup, 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 setup 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

## Overview



PST30 ... PST72



PST85 ... PST142

Normal start  
In-line connected

(400 V) kW

IEC, max. A

(440-480 V) hp

UL, max FLA

### Softstarter, type

	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 (50 kA), type

	T2S160						T3S250		
--	--------	--	--	--	--	--	--------	--	--

To achieve a type 2 coordina-  
tion, semi-conductor fuses  
must be used.

### Fuse protection (65 kA), Semiconductor fuses, Bussmann, type

	170M1566	170M1568	170M1569	170M1570	170M1571	170M1572	170M3819	170M5809
--	----------	----------	----------	----------	----------	----------	----------	----------

Suitable switch fuse for re-  
commended 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	AF52	AF65	AF80	AF96	AF116	AF140
--	------	------	------	------	------	------	-------	-------

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	AF40	AF52	AF65	AF116
--	------	------	------	------	------	------	-------

The table above is an overview of possible combinations of devices.  
Complete coordination tables are available at [www.abb.com/lowvoltage](http://www.abb.com/lowvoltage)

# PST(B) – The advanced range

## Normal starts, class 10, in-line, ordering details



### 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 current $I_e$ A	Type <sup>*)</sup>	Order code <sup>**)</sup>	Weight kg 1 piece
15	18.5	-	30	PST30-600-70□	1SFA894002R70∇0	4.80
18.5	22	-	37	PST37-600-70□	1SFA894003R70∇0	4.80
22	25	-	44	PST44-600-70□	1SFA894004R70∇0	4.80
25	30	-	50	PST50-600-70□	1SFA894005R70∇0	4.80
30	37	-	60	PST60-600-70□	1SFA894006R70∇0	5.00
37	45	-	72	PST72-600-70□	1SFA894007R70∇0	5.00
45	55	-	85	PST85-600-70□	1SFA894008R70∇0	11.20
55	75	-	105	PST105-600-70□	1SFA894009R70∇0	13.00
75	90	-	142	PST142-600-70□	1SFA894010R70∇0	13.00
90	110	-	175	PST175-600-70□	1SFA894011R70∇0	21.50
110	132	-	210	PST210-600-70□	1SFA894012R70∇0	21.50
132	160	-	250	PST250-600-70□	1SFA894013R70∇0	23.00
160	200	-	300	PST300-600-70□	1SFA894014R70∇0	23.00
200	257	-	370	PSTB370-600-70□	1SFA894015R70∇0	31.00
250	315	-	470	PSTB470-600-70□	1SFA894016R70∇0	31.00
315	400	-	570	PSTB570-600-70□	1SFA894017R70∇0	52.00
400	500	-	720	PSTB720-600-70□	1SFA894018R70∇0	55.00
450	600	-	840	PSTB840-600-70□	1SFA894019R70∇0	60.00
560	730	-	1050	PSTB1050-600-70□	1SFA894020R70∇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□	1SFA895002R70∇0	4.80
18.5	22	30	37	PST37-690-70□	1SFA895003R70∇0	4.80
22	25	37	44	PST44-690-70□	1SFA895004R70∇0	4.80
25	30	45	50	PST50-690-70□	1SFA895005R70∇0	4.80
30	37	55	60	PST60-690-70□	1SFA895006R70∇0	5.00
37	45	59	72	PST72-690-70□	1SFA895007R70∇0	5.00
45	55	75	85	PST85-690-70□	1SFA895008R70∇0	11.20
55	75	90	105	PST105-690-70□	1SFA895009R70∇0	13.00
75	90	132	142	PST142-690-70□	1SFA895010R70∇0	13.00
90	110	160	175	PST175-690-70□	1SFA895011R70∇0	21.50
110	132	184	210	PST210-690-70□	1SFA895012R70∇0	21.50
132	160	220	250	PST250-690-70□	1SFA895013R70∇0	23.00
160	200	257	300	PST300-690-70□	1SFA895014 R70∇0	23.00
200	257	355	370	PSTB370-690-70□	1SFA895015R70∇0	31.00
250	315	450	470	PSTB470-690-70□	1SFA895016R70∇0	31.00
315	400	560	570	PSTB570-690-70□	1SFA895017R70∇0	52.00
400	500	710	720	PSTB720-690-70□	1SFA895018R70∇0	55.00
450	600	800	840	PSTB840-690-70□	1SFA895019R70∇0	60.00
560	730	1000	1050	PSTB1050-690-70□	1SFA895020R70∇0	60.00



PST30 ... PST72

1SFC132305F0002



PST85 ... PST142

1SFC132306F0002



PST175 ... PST300

1SFC132307F0002



PSTB370 ... PSTB470

1SFC132308F0002



PSTB570 ... PSTB1050

1SFC132309F0002

<sup>\*)</sup> Add code letter in type acc. to below:  
 No code letter = Normal  
**T** = Coated PCBs

<sup>\*\*)</sup> 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...PSTB1050

Rated operational voltage  $U_o$ , 208-600 V

Rated control supply voltage  $U_c$ , 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 current $I_o$ A	Type*)	Order code**)	Weight kg 1 piece
11	15	-	22	PST30-600-70□	1SFA894002R70∇0	4.80
15	18.5	-	30	PST37-600-70□	1SFA894003R70∇0	4.80
18.5	22	-	37	PST44-600-70□	1SFA894004R70∇0	4.80
22	25	-	44	PST50-600-70□	1SFA894005R70∇0	4.80
25	30	-	50	PST60-600-70□	1SFA894006R70∇0	5.00
30	37	-	60	PST72-600-70□	1SFA894007R70∇0	5.00
37	45	-	72	PST85-600-70□	1SFA894008R70∇0	11.20
45	55	-	85	PST105-600-70□	1SFA894009R70∇0	13.00
55	75	-	105	PST142-600-70□	1SFA894010R70∇0	13.00
75	90	-	142	PST175-600-70□	1SFA894011R70∇0	21.50
90	110	-	175	PST210-600-70□	1SFA894012R70∇0	21.50
110	132	-	210	PST250-600-70□	1SFA894013R70∇0	23.00
132	160	-	250	PST300-600-70□	1SFA894014R70∇0	23.00
160	200	-	300	PSTB370-600-70□	1SFA894015R70∇0	31.00
200	257	-	370	PSTB470-600-70□	1SFA894016R70∇0	31.00
250	315	-	470	PSTB570-600-70□	1SFA894017R70∇0	52.00
315	400	-	570	PSTB720-600-70□	1SFA894018R70∇0	55.00
400	500	-	720	PSTB840-600-70□	1SFA894019R70∇0	60.00
450	600	-	840	PSTB1050-600-70□	1SFA894020R70∇0	60.00



PST30 ... PST72

1SFC132305F0002



PST85 ... PST142

1SFC132306F0002



PST175 ... PST300

1SFC132307F0002



PSTB370 ... PSTB470

1SFC132308F0002



PSTB570 ... PSTB1050

1SFC132309F0002

### PST30...PSTB1050

Rated operational voltage  $U_o$ , 400-690 V

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

400 V P kW	500 V P kW	690 V P kW	IEC Max rated operational current $I_o$ A	Type*)	Order code**)	Weight kg 1 piece
11	15	18.5	22	PST30-690-70□	1SFA895002R70∇0	4.80
15	18.5	25	30	PST37-690-70□	1SFA895003R70∇0	4.80
18.5	22	30	37	PST44-690-70□	1SFA895004R70∇0	4.80
22	25	37	44	PST50-690-70□	1SFA895005R70∇0	4.80
25	30	45	50	PST60-690-70□	1SFA895006R70∇0	5.00
30	37	55	60	PST72-690-70□	1SFA895007R70∇0	5.00
37	45	59	72	PST85-690-70□	1SFA895008R70∇0	11.20
45	55	75	85	PST105-690-70□	1SFA895009R70∇0	13.00
55	75	90	105	PST142-690-70□	1SFA895010R70∇0	13.00
75	90	132	142	PST175-690-70□	1SFA895011R70∇0	21.50
90	110	160	175	PST210-690-70□	1SFA895012R70∇0	21.50
110	132	184	210	PST250-690-70□	1SFA895013R70∇0	23.00
132	160	220	250	PST300-690-70□	1SFA895014R70∇0	23.00
160	200	257	300	PSTB370-690-70□	1SFA895015R70∇0	31.00
200	257	355	370	PSTB470-690-70□	1SFA895016R70∇0	31.00
250	315	450	470	PSTB570-690-70□	1SFA895017R70∇0	52.00
315	400	560	570	PSTB720-690-70□	1SFA895018R70∇0	55.00
400	500	710	720	PSTB840-690-70□	1SFA895019R70∇0	60.00
450	600	800	840	PSTB1050-690-70□	1SFA895020R70∇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



1SFT98099-096C2



SB8054C2

LZ...

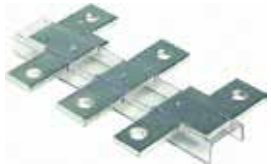


1SFT98099-011C1



1SFT98000-012C3

LX...



1SFC13232F0002

LW...



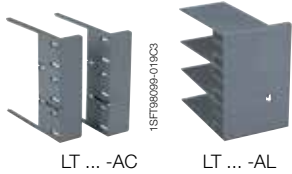
1SFC13232F0002

LE185



1SFC13232F0002

LE460



1SFT98099-125

LT ... -AC

LT ... -AL



1SFC132113F0002

PSTEK



1SFC132189F0002

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 mm <sup>2</sup>	Tightening torque max. Nm	Type	Order code	Pack <sup>ing</sup> piece	Weight kg 1 piece
PST85 ...142	6-120	14	-	1SDA066917R1	3	0.113
PST85 ...142	2x(50-120)	16	LZ185-2C/120	1SFN074709R1000	3	0.100
PST175 ...PST300	16-300	25	-	1SDA055016R1	3	0.133

## 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 mm <sup>2</sup>	Tightening torque max. Nm	Type	Order code	Pack <sup>ing</sup> piece	Weight kg 1 piece
PST85 ...142	95-185	31	-	1SDA054988R1	3	0.078
PST175 ...300	185-240	43	-	1SDA055020R1	3	0.133
PSTB370 ...470	2x(120-240)	35	-	1SDA013922R1	3	0.225
PSTB570 ...1050	3x(70-185)	45	-	1SDA013956R1	3	0.700

## Terminal extensions

For softstarter type	Dimensions hole ø mm <sup>2</sup>	bar mm	Type	Order code	Pack <sup>ing</sup> piece	Weight kg 1 piece
PST85...142	8.5	17.5x5	LX185 <sup>1)</sup>	1SFN074710R1000	1	0.250
PST175...300	10.5	20x5	LX300 <sup>2)</sup>	1SFN075110R1000	1	0.350
PSTB370...470	10.5	25x5	LX460	1SFN075710R1000	1	0.500
PSTB570...1050	13	40x6	LX750	1SFN076110R1000	1	0.850

## Terminal enlargements

For softstarter type	Dimensions hole ø mm <sup>2</sup>	bar mm	Type	Order code	Pack <sup>ing</sup> piece	Weight kg 1 piece
PST30...72	6.5	15x3	LW110 <sup>1)</sup>	1SFN074307R1000	1	0.100
PST85...142	10.5	17.5x5	LW185 <sup>1)</sup>	1SFN074707R1000	1	0.250
PST175...300	10.5	20x5	LW300 <sup>1)</sup>	1SFN075107R1000	1	0.450
PSTB370...470	10.5	25x5	LW460	1SFN075707R1000	1	0.730
PSTB570...1050	13	40x6	LW750	1SFN076107R1000	1	1.230

## Terminal nut washer

For softstarter type	Req. qty	Type	Order code	Pack <sup>ing</sup> piece	Weight kg 1 piece
PST85...142	1	LE185 <sup>1)</sup>	1SFN074716R1000	2	0.200
PST175...300	3	LE300 <sup>2)</sup>	1SFN075116R1000	2	0.300
PSTB370...470	6	LE460	1SFN075716R1000	6	0.600
PSTB570...1050	6	LE750	1SFN076116R1000	6	0.750

## Terminal shrouds

For softstarter type	Suitable for	Req. qty	Type	Order code	Pack <sup>ing</sup> piece	Weight kg 1 piece
PST85...142	Cable connectors	1 pce and	LT185-AC	1SFN124701R1000	2	0.050
		1 pce	LT460-AC	1SFN125701R1000	2	0.100
PST85...142	Compression lugs	1 pce and	LT185-AL	1SFN124703R1000	2	0.220
		1 pce	LT460-AL	1SFN125703R1000	2	0.800
PST175...300	Cable connectors	3 pcs	LT300-AC <sup>2)</sup>	1SFN125101R1000	2	0.070
PST175...300	Compression lugs	3 pcs	LT300-AL <sup>2)</sup>	1SFN125103R1000	2	0.280
PSTB370...470	Cable connectors	2 pcs	LT460-AC	1SFN125701R1000	2	0.100
PSTB370...470	Compression lugs	2 pcs	LT460-AL	1SFN125703R1000	2	0.800
PSTB570...1050	Cable connectors	2 pcs	LT750-AC	1SFN126101R1000	2	0.120
PSTB570...1050	Compression lugs	2 pcs	LT750-AL	1SFN126103R1000	2	0.825

## External keypad including a 3 m cable

For softstarter type	Type	Order code	Pack <sup>ing</sup> piece	Weight kg 1 piece
PST30...300	PSTEK	1SFA899003R1000	1	0.400
PSTB370...1050				

## Marine kit

For softstarter type	Type	Order code	Pack <sup>ing</sup> piece	Weight kg 1 piece
PST85...142	PSTM-2	1SFA899004R1000	1	0.240

## FieldBusPlug

ABB's FiledBusPlug suitable for all sizes. See page 50-53

<sup>1)</sup> Only fits on the motor side

<sup>2)</sup> Use two sets of the accessories on the line side and one set on the motor side.

# PST(B) – The advanced range

## Technical data

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


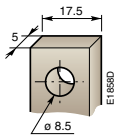
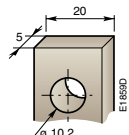
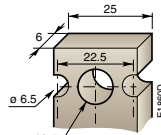
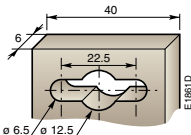
Description	Text on display (Eng)	Values on display	Default value
Setting current for overload, locked rotor etc.	Setting I <sub>l</sub>	9.0 ... 1207 A divided into 19 overlapping ranges.	See table, page 48
Time for start ramp	Start Ramp	1 ... 30 s, 1 ... 120 s (Range depends on Start Range)	10 s
Time 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 <sub>l</sub>	4.0 x I <sub>l</sub>
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
<b>Overload protection</b>	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
<b>Locked rotor protection</b>	Locked Rotor	Yes, No	No
Trip level for locked rotor protection	Lock R Lev	0.5 ... 8.0 x I <sub>l</sub>	4.0 x I <sub>l</sub>
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
<b>Underload protection</b>	Underload	Yes, No	No
Trip level for underload protection	Underl Lev	0.4 ... 0.8 x I <sub>l</sub>	0.5 x I <sub>l</sub>
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
<b>Phase imbalance protection</b>	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
<b>High current protection</b>	High I	Yes, No	No
Type of operation for high current protection	High I Op	Stop-M, Stop-A, Ind	Stop-M
<b>Phase reversal protection</b>	Phase Rev	Yes, No	No
Type of operation for phase reversal protection	Ph Rev Op	Stop-M, Stop-A, Ind	Stop-M
<b>PTC protection</b>	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
<b>High current warning</b>	Warn I=High	Yes, No	No
Trip level for high current warning	Wa I=H Lev	0.5 ... 5.0 x I <sub>l</sub>	1.2 x I <sub>l</sub>
<b>Low current warning</b>	Warn I=Low	Yes, No	No
Trip level for low current warning	Wa I=L Lev	0.4 ... 1.0 x I <sub>l</sub>	0.8 x I <sub>l</sub>
<b>Overload warning</b>	Warn OL	Yes, No	No
Trip level for overload warning	Wa OL Lev	40 ... 99%	90%
<b>Thyristor overload warning</b>	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	No
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 kVA, S kVA, TmpMot, TmpSCR, cosPhi	I Amp



# 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	
<b>Main circuit</b>						
Available terminals:	L1, L2, L3	Yes	Yes	Yes	Yes	
	T1, T2, T3	Yes	Yes	Yes	Yes	
(For external by-pass)	B1, B2, B3	Yes	Yes	Yes	No	
Connection clamp						
Solid/stranded	1 x mm <sup>2</sup>	10 ... 95			See accessories	
Solid/stranded	2 x mm <sup>2</sup>	6 ... 35			See accessories	
Tightening torque (recommended)	Nm	6.0			See accessories	
Connection bar	No					
Width and thickness	mm	–				
Hole diameter	mm	–	ø 8.5	ø 10.2	ø 10.5	ø 6.5 / ø 12.5
Tightening torque (recommended)	Nm	–	18	28	35	45

### Supply and control circuit

Connection clamp		Yes
Solid/stranded	1 x mm <sup>2</sup>	2.5
Solid/stranded	2 x mm <sup>2</sup>	1.5
Tightening torque (recommended)	Nm	0.5

### Fuse ratings and power losses

For softstarter	Recommended ABB's overload protection		Max power loss at rated I <sub>e</sub>		Max fuse rating - main circuit <sup>1)3)</sup>			Power requirements supply circuit Holding (VA) / Pull-in (VA)
	Type	Current range	without by-pass <sup>2)</sup>	with by-pass	Bussmann fuses, DIN43 620 (Knife)			
			W	W	A	Type	Size	
<b>PST</b>								
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
<b>PSTB 600 V</b>								
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	170M6018 <sup>4)</sup>	3	25/860
PSTB1050	Integrated	315...1207	N/A	170	1800	170M6020 <sup>4)</sup>	3	25/860
<b>PSTB 690 V</b>								
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	170M6018 <sup>4)</sup>	3	25/860
PSTB1050	Integrated	315...1207	N/A	170	1600	170M6019 <sup>4)</sup>	3	25/860

<sup>1)</sup> For the supply circuit 6 A delayed, for MCB use C characteristics.

<sup>2)</sup> See PSS page 24

<sup>3)</sup> 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.

<sup>4)</sup> DIN43 653



### 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	Pack <sup>ing</sup> piece	Weight kg 1 piece
DeviceNet-FBP	0.25 m	DNP21-FBP.025	1SAJ230000R1003	1	0.09
DeviceNet-FBP	0.50 m	DNP21-FBP.050	1SAJ230000R1005	1	0.10
DeviceNet-FBP	1.00 m	DNP21-FBP.100	1SAJ230000R1010	1	0.13
DeviceNet-FBP	5.00 m	DNP21-FBP.500	1SAJ230000R1050	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	Pack <sup>ing</sup> piece	Weight kg 1 piece
MODBUS-RTU-FBP	0.25 m	MRP21-FBP.025	1SAJ250000R0003	1	0.09
MODBUS-RTU-FBP	0.50 m	MRP21-FBP.050	1SAJ250000R0005	1	0.10
MODBUS-RTU-FBP	1.00 m	MRP21-FBP.100	1SAJ250000R0010	1	0.13
MODBUS-RTU-FBP	5.00 m	MRP21-FBP.500	1SAJ250000R0050	1	0.36



DNP21-FBP  
MRP21-FBP  
COP21-FBP

### 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	Pack <sup>ing</sup> piece	Weight kg 1 piece
CANopen-FBP	0.25 m	COP21-FBP.025	1SAJ230100R1003	1	0.09
CANopen-FBP	0.50 m	COP21-FBP.050	1SAJ230100R1005	1	0.10
CANopen-FBP	1.00 m	COP21-FBP.100	1SAJ230100R1010	1	0.13

#### To connect the PST softstarter to a DeviceNet or CANopen fieldbus system...

you need specific software for PLC setup, (EDS file) which is available at [www.abb.com/lowvoltage](http://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

## Profibus DP, ordering details



### 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



PDP22-FBP

Designation	Cable length	Type	Order code	Pack <sup>ing</sup> piece	Weight kg 1 piece
Profibus DP FBP	0.25 m	PDP22-FBP.025	1SAJ240100R1003	1	0.09
Profibus DP FBP	0.50 m	PDP22-FBP.050	1SAJ240100R1005	1	0.10
Profibus DP FBP	1.00 m	PDP22-FBP.100	1SAJ240100R1010	1	0.13
Profibus DP FBP	2.00 m	PDP22-FBP.200	1SAJ240100R1020	1	0.20
Profibus DP FBP	5.00 m	PDP22-FBP.500	1SAJ240100R1050	1	0.36

### Profibus DP FieldBusPlug for four devices

PDQ22 is a member of the ABB's 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.



PDQ22-FBP

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

Designation	Type	Order code	Pack <sup>ing</sup> piece	Weight kg 1 piece
Quadruple bus connector	PDQ22-FBP	1SAJ240200R0050	1	0.20
DINrail adapter for PDQ22-FBP	CDA11-FBP.0	1SAJ929300R0001	1	0.11
Fixing bracket for passive plug of connection cable	CDP11-FBP.0	1SAJ929100R0001	1	0.50

### Configuration software

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



2DC5410180010

Designation	Type	Order code	Pack <sup>ing</sup> piece	Weight kg 1 piece
USB to FBP interface cable	UTF21-FBP	1SAJ929400R0002	1	
PDP22/PDQ22 Device Type Manager (DTM) incl. FDT/DTM frame application	PBDTM-FBP	1SAJ924012R0005	1	

### To connect the PST softstarter to a Profibus DP fieldbus system...

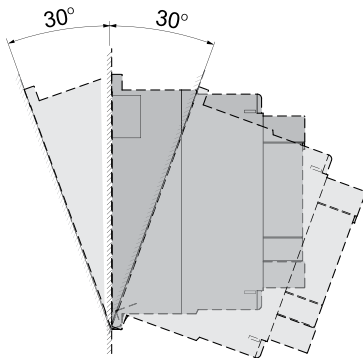
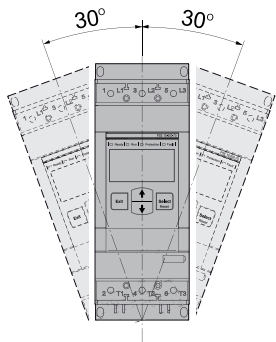
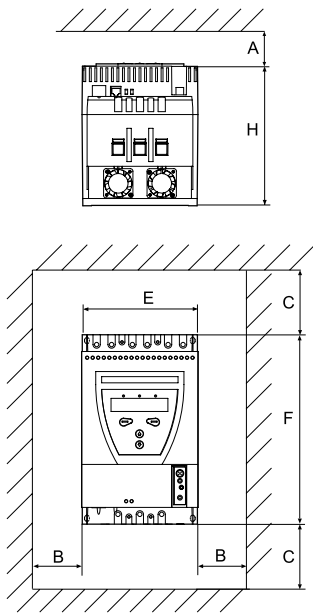
you need specific software for PLC setup, (GSD file) which is available at [www.abb.com/lowvoltage](http://www.abb.com/lowvoltage) on the softstarter pages. Look under the documentation-link named Software. If you need help or advice, please contact your local ABB office.

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.

# Wall mounting instructions Softstarters

## Minimum distance to wall/front

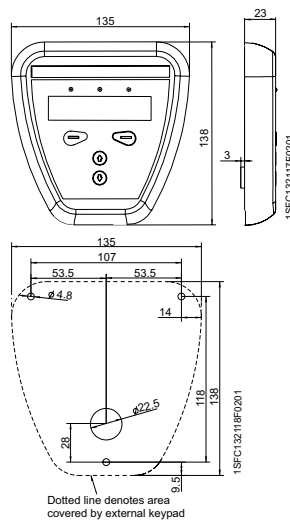


## Dimensions

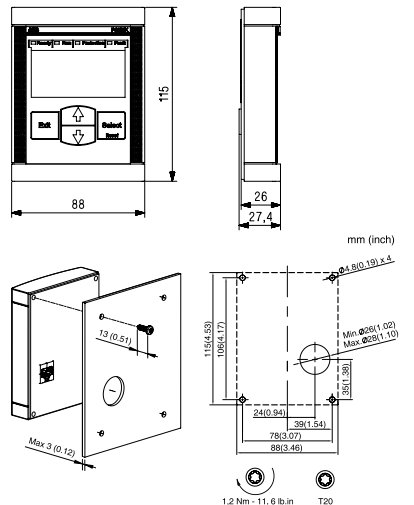
Softstarter, type	A	B	C	E	F	H
<b>PSR</b>						
PSR3 ... 16	25	0*	0	45	140	114
PSR25 ... 30	25	0*	0	45	160	128
PSR37 ... 45	25	0*	0	54	187	153
PSR60 ... 105	25	0*	0	70	220	180
<b>PSS ... -500 for 500 V</b>						
PSS18/30 ... 44/76	20	10	100	120	200	162
PSS50/85 ... 72/124	20	10	100	140	250	162
PSS85/147 ... 142/245	20	10	100	181	340	265
PSS175/300 ... 300/515	20	10	100	356	340	265
<b>PSS ... -690 for 690 V</b>						
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
<b>PSE</b>						
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
<b>PST</b>						
PST30 ... 72	20	10	100	160	260	196
PST85 ... 142	20	10	100	186	390	270
PST175 ... 300	20	10	100	360	420	270
<b>PSTB</b>						
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



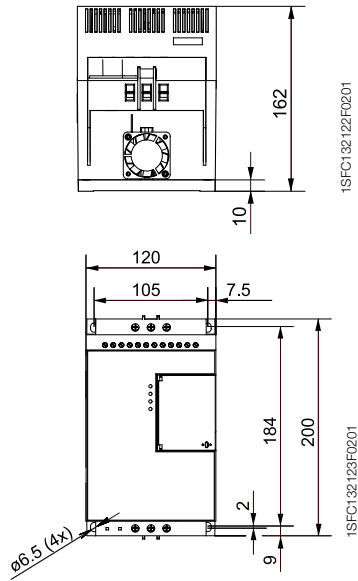
## PSEEK



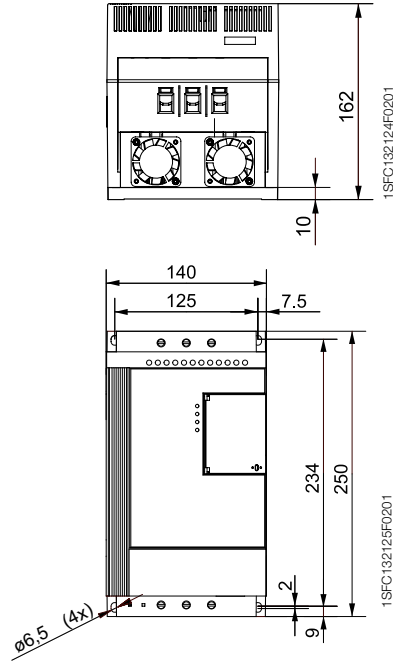
Dimensions in mm

# Dimensions Softstarters, type PSS

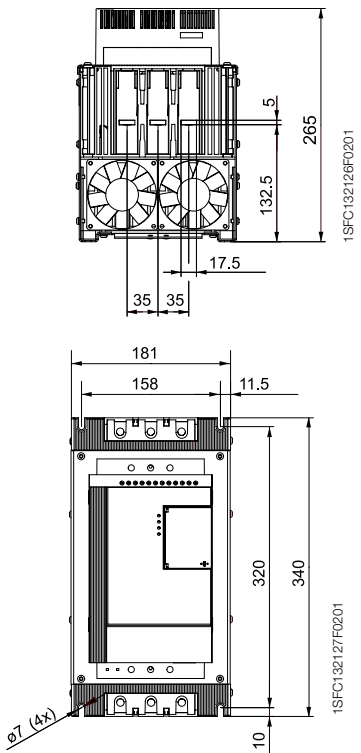
PSS18/30-500 ... 44/76-500



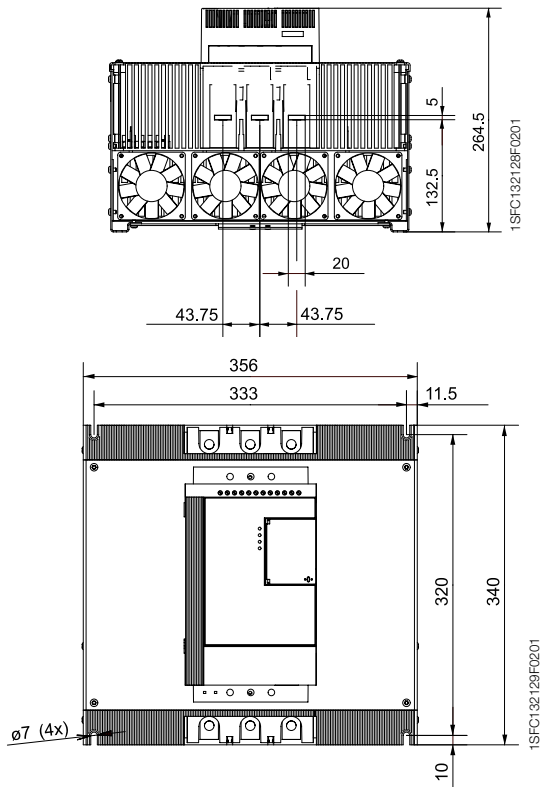
PSS50/85-500 ... 72/124-500  
PSS18/30-690 ... 72/124-690



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

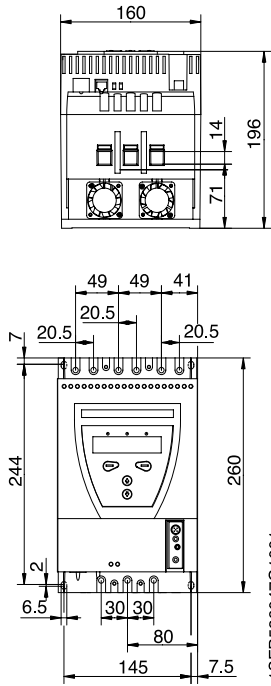


Dimensions in mm

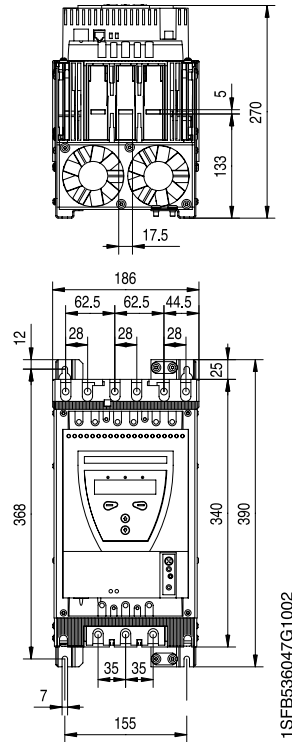
# Dimensions

## Softstarters, type PST and PSTB

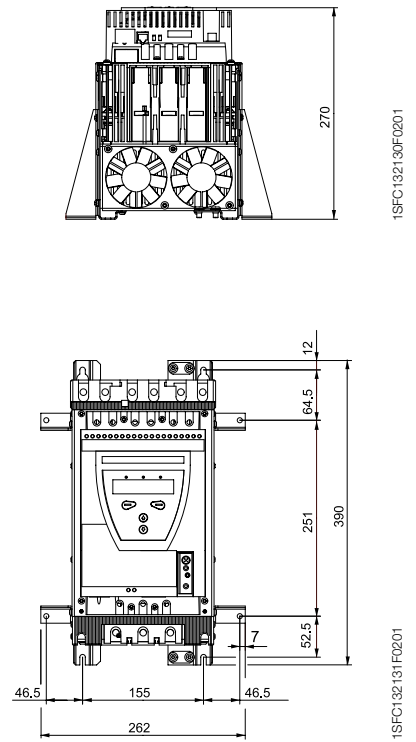
**PST30 ... 72**



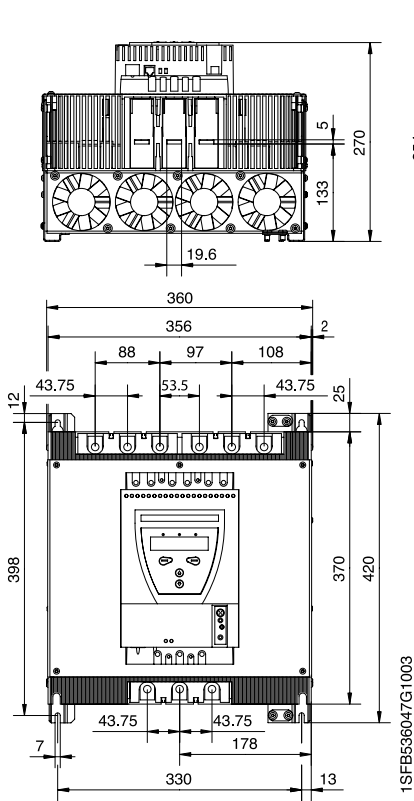
**PST85 ...142**



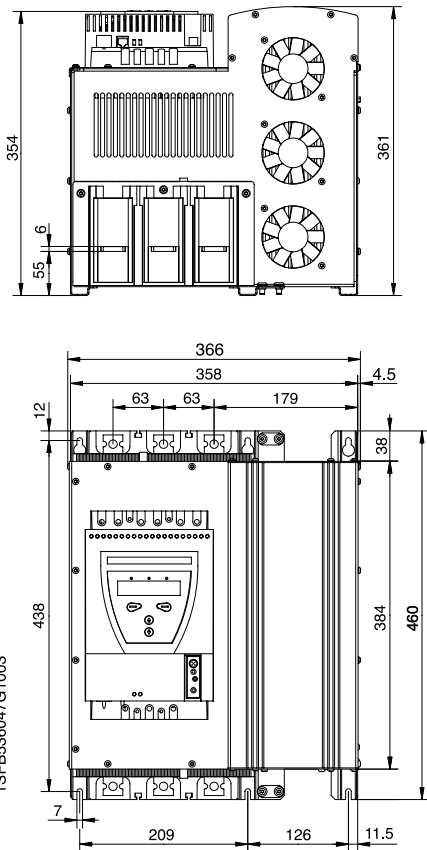
**PST85 ...142 with marine kit**



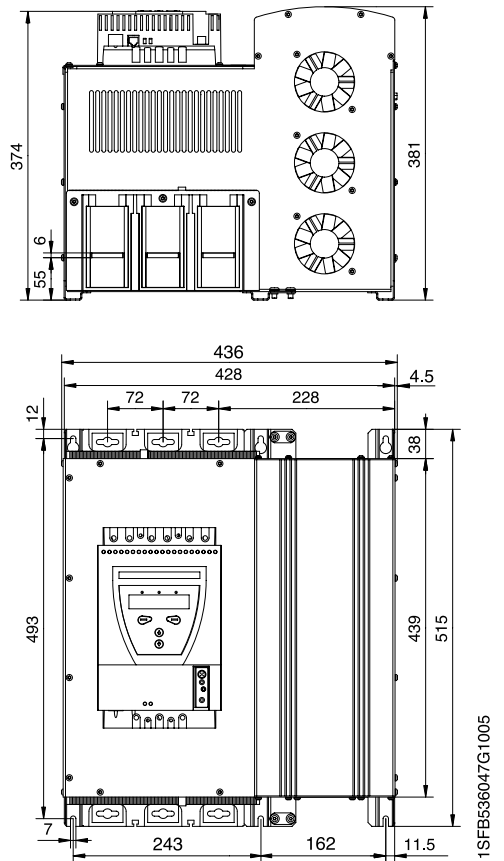
**PST175 ... 300**



**PSTB370 ... 470**



**PSTB570 ... 1050**

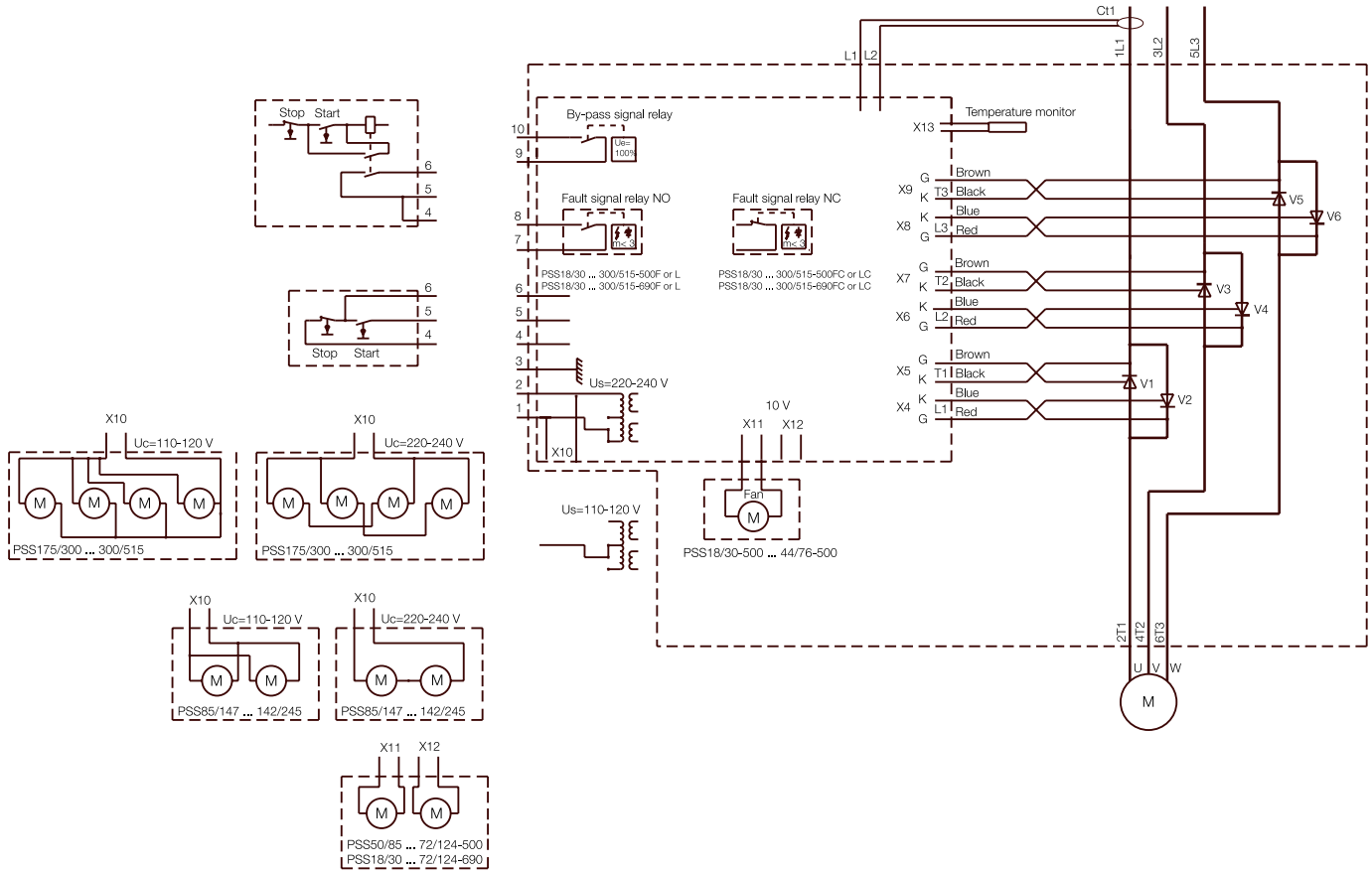


Dimensions in mm

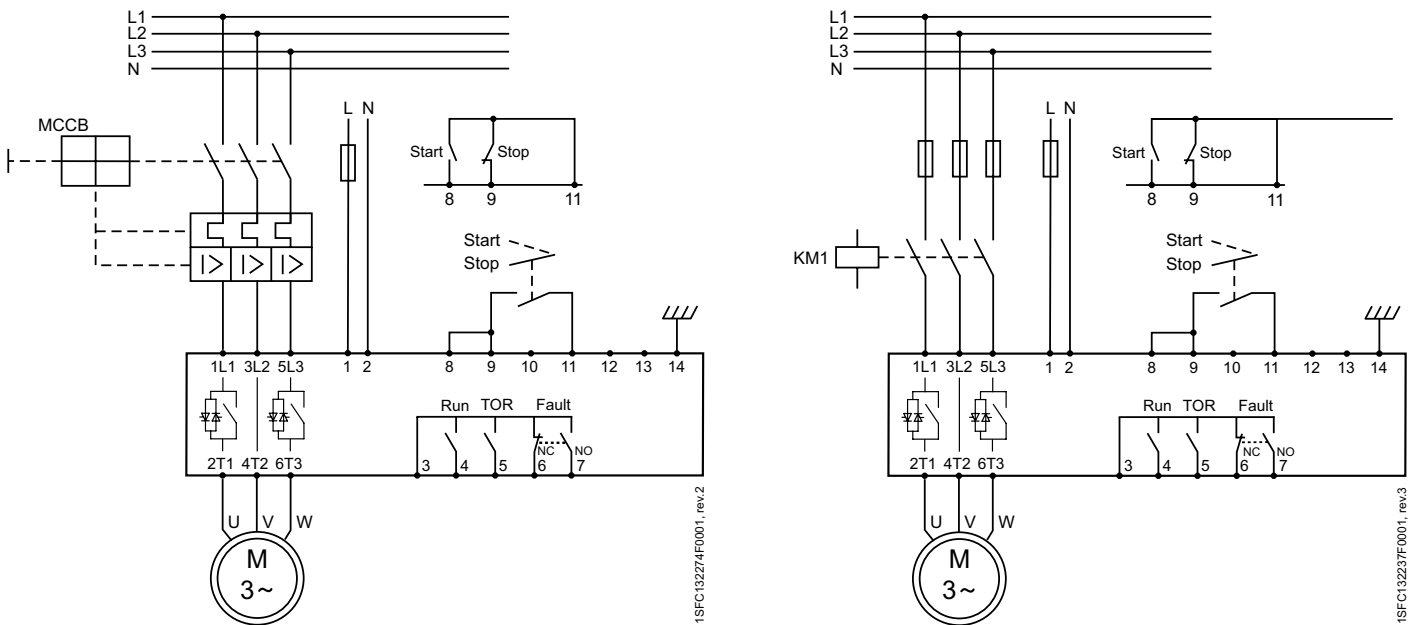
# Circuit diagrams

## Softstarters, type PSS and PSE

### PSS18/30...300/515



### PSE18 ... 370



For more circuit diagrams see [www.abb.com/lowvoltage](http://www.abb.com/lowvoltage), choose Control Products, Softstarters and Softstarters once more.

# Softstarter selection tool and coordination tables

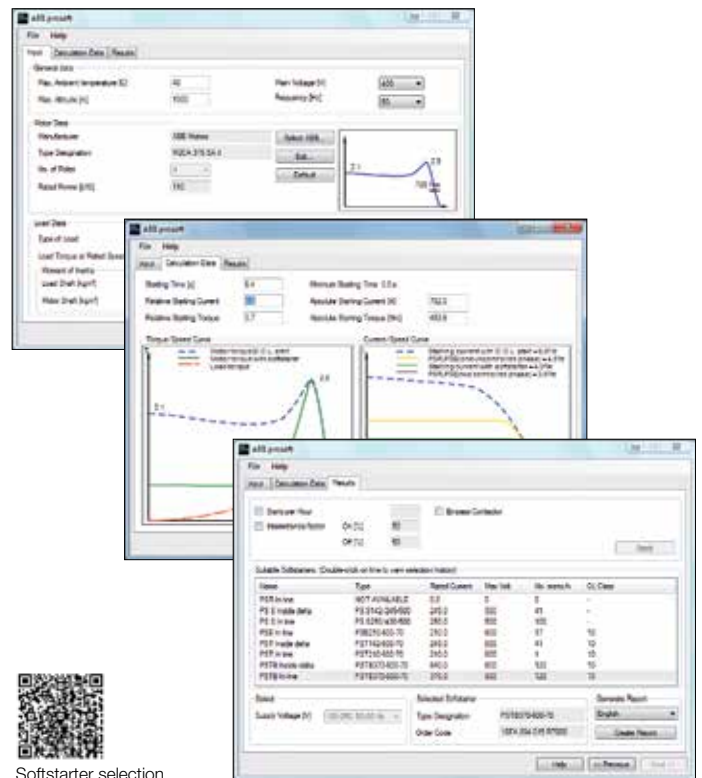
## Softstarter selection tool

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, a more optimized selection will be achieved. Especially in extremely heavy-duty applications with several minutes starting time, the use of the selection tool is recommended.

When using the softstarter selection tool, the selection is done in three steps, which can be seen as three 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 softstarters to use. Here it is also possible to generate a report about the selection.

The softstarter selection tool can be downloaded from [www.abb.com/lowvoltage](http://www.abb.com/lowvoltage) by choosing Support "Online Product Selection Tools", Online Tools, Softstarters.



Softstarter 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. ABB's 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](http://www.abb.com/lowvoltage) by clicking "Online Product Selection Tools" and "Coordination Tables for motor protection".

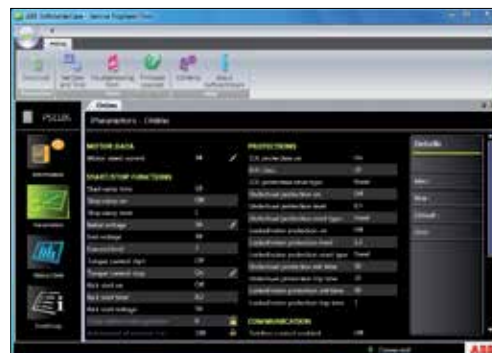


Coordination tables

## SoftstarterCare™ – Service Engineer Tool

The service engineer tool makes softstarter commissioning easier than it has ever been. With the tool, tuning of parameters can be made on a PC. By just plugging the PC to the softstarter, using ABB's cable (1SFA897201R1001), the parameter settings can be uploaded to the softstarter. This makes it very fast and easy to set up multiple PSE softstarters. Service Engineer Tool gives you:

- Access to all parameters on the HMI available on a PC
- Access to additional parameters that can't be reached from the HMI
- Access to the PSE event log
- PSE softstarter status information
- Trouble shooting form with pre-filled softstarter information
- Access to upgrade the softstarter firmware



SoftstarterCare 64bits



SoftstarterCare 32bits



# Contact us

**ABB AB**

**Low Voltage Products**

**Control Products**

SE-721 61 VÄSTERÅS, Sweden

[www.abb.com/lowvoltage](http://www.abb.com/lowvoltage)

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[VFD002EL11A](#) [SR24](#) [R88D-GT04H](#) [R88D-GN04H-ML2](#) [R88D-KT01H](#) [R7D-BP01H](#) [R88D-KN04L-ECT](#) [26231941](#) [26231720](#) [70354063](#)  
[79294435](#) [27358015](#) [26231703](#) [15275008](#) [ST5-Q-EN](#) [STAC6-QE](#) [R88D-GP08H](#) [GNCF8-11](#) [KLC35BE](#) [ST10-IP-EE](#) [ST10-Q-RN](#)  
[26231801](#) [26231909](#) [1302263161](#) [103H89223-6341](#) [UDS1UR6M50CANCZ183](#) [103H5208-5240](#) [103H5210-5240](#) [103H7126-0740](#)  
[103H8221-6240](#) [103H5205-5240](#) [103H7126-1740](#) [103H7126-5740](#)