

Softstarters

The complete range

1SFC132002B0201



ABB

Softstarters for every customer need...

Why soft start?

Do You have rough and jerky motor starts? High starting currents and torques? Or high current and torque peaks?

ABB's softstarters PSS and PST are used when it is important to have smooth start-up of various types of motor drives. Instead of switching directly to full voltage these softstarters ensure gradual voltage increase during start-up which naturally limits the current.

ABB has been manufacturing softstarters since the beginning of the 1980s. The valuable experiences accumulated since then has gone into the design of today's product ranges.

ABB offers the most complete range of softstarters on the market. ABB's softstarters are also IndustrialIT enabled products.

You can find all product related documentation such as brochures, catalogues, certificates and drawings, at:

www.abb.com/lowvoltage

Applications for ABB's Softstarters

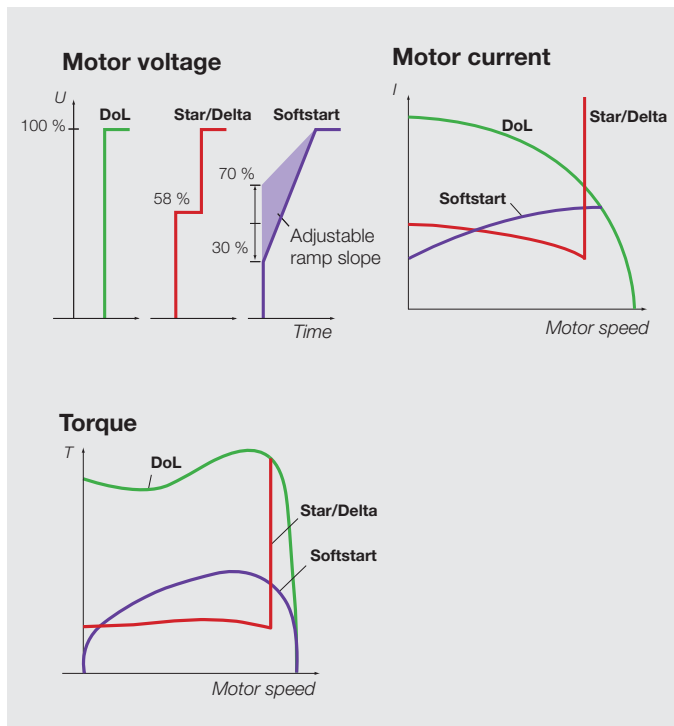
- Pumps
- Conveyors
- Compressors
- Fans
- Crushers
- Mills
- Hoists and cranes
- Replacements for Y/D starters

Benefits with ABB's Softstarters

- + Soft start/Soft stop
- + Current limit
- + No current peaks
- + No torque peaks
- + Less mechanical wear
- + Less maintenance
- + No production breaks

Result = **PROFIT**

The basic differences between different starting methods



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

How to select correct size

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

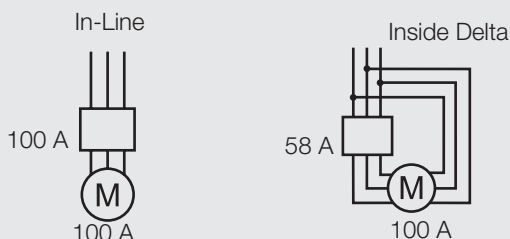
If a more precise selection is required, you can use the softstarter selection programme Prosoft, available at:

www.abb.com/lowvoltage/Tools & Software.

In-Line or Inside Delta

Softstarters type **PSS18/30...300/515** and **PST30 ... 300, PSTB370...1050**

can be connected inside the motor delta (compare the connection for standard Star-Delta starters). In this case the current through the softstarter is reduced by 42 %. It will then be possible, for example, to run a 100 A motor using a 58 A PSS/PST Softstarter



Quick guide for selection

Normal start Class 10

Typical applications

- Bow thruster
- Compressor
- Elevator
- Centrifugal pump
- Conveyor belt (short)
- Escalator

Heavy duty start Class 30

Typical applications

- Centrifugal fan
- Crusher
- Mixer
- Conveyor belt (long)
- Mill
- Stirrer



If more than 10 starts /h

Select **one** size larger than the standard selection.

Softstarters – overview

Type PSS



PSS03, PSS12



PSS25



PSS18/30...PSS44/76

PSS03 ... 25

PSS18/30 ... 44/76

Normal start, class 10, 400 V

In Line connected

Motor power

1.1 kW

5.5 kW

11 kW

7.5 kW

15 kW

18.5 kW

22 kW

Inside Delta connected

Motor power

–

–

–

15 kW

25 kW

30 kW

37 kW

Type

PSS03

PSS12

PSS25

PSS18/30

PSS30/52

PSS37/64

PSS44/76

400 V

●

●

●

●

●

●

●

500 V

●

●

●

●

●

●

●

690 V

–

–

–

●

●

●

●

Rated current I_{e} , A

3.5

12

25

18

30

37

44

Fuse protection 400 V, 65 kA, 40 °C Bussmann Type:

170M1359

170M1363

170M1364

170M1364

170M1366

170M1368

170M1369

Switch fuse Type:

OS160RD0380

Line contactor Type:

A9

A12

A26

A26

A30

A40

A50

Thermal overload relay Type:

TA25DU

TA25DU

TA25DU

TA25DU

TA25DU

TA42DU

TA75DU

Current transformers Type:

–

–

–

PSCT-60
2 turns

PSCT-40
1 turn

PSCT-50
1 turn

PSCT-60
1 turn

By-pass contactor Type:

–

–

–

A9

A16

A26

A26

The compact range, PSS03, PSS12, PSS25



PSS03, PSS12

- Three potentiometers for:
 - Start ramp
 - Stop ramp
 - Initial voltage
- Front access for connections
- Clear markings
- DIN-rail mounting
- Integrated by-pass contacts



PSS25

LED indications:

- Power supply on
- Running mode/by-pass
- Completed start ramp

LED indications:

- Power supply on
- Ramping up/down (flashing)
- Completed start ramp
- General fault



PSS50/85...PSS72/124



PSS85/147... PSS142/245



PSS175/300...PSS300/515

PSS50/85 ... 72/124

PSS85/147 ... 142/245

PSS175/300 ... 300/515

25 kW	30 kW	37 kW	45 kW	55 kW	75 kW	90 kW	132 kW	160 kW
45 kW	55 kW	59 kW	75 kW	90 kW	132 kW	160 kW	220 kW	257 kW
PSS50/85	PSS60/105	PSS72/124	PSS85/147	PSS105/181	PSS142/245	PSS175/300	PSS250/430	PSS300/515
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
50	60	72	85	105	142	175	250	300

Fuse protection 400 V, 65 kA, 40 °C Bussmann Type:

170M1369	170M1370	170M1371	170M1372	170M3019	170M3020	170M3021	170M5013	170M5015
----------	----------	----------	----------	----------	----------	----------	----------	----------

Switch fuse Type:

OS160RD0380	OESA250R03D80	OESA400R03D80
-------------	---------------	---------------

Line contactor Type:

A50	A63	A75	A95	A110	A145	A185	A260	A300
-----	-----	-----	-----	------	------	------	------	------

Thermal overload relay Type:

TA75DU	TA75DU	TA75DU	TA110DU	TA110DU	TA200DU	TA200DU	TA450DU	TA450DU
--------	--------	--------	---------	---------	---------	---------	---------	---------

Current transformers Type:

PSCT-75	PSCT-75	PSCT-100	PSCT-125	PSCT-150	PSCT-200	PSCT-250	PSCT-400	PSCT-400
1 turn	1 turn	1 turn	1 turn	1 turn	1 turn	1 turn	1 turn	1 turn

By-pass contactor Type:

A30	A40	A50	A50	A63	A95	A145	A145	A210
-----	-----	-----	-----	-----	-----	------	------	------

The flexible range, PSS18/30 ... 300/515



PSS44/76

LED indications:

- Power supply on
- Completed start ramp
- General fault (motor side or unit)
- External fault

Built-in signal relays for fault and by-pass

Transparent lid to protect the settings

Three rotating switches setting:
 - Start ramp (1–30 sec)
 - Stop ramp (0–30 sec)
 - Initial voltage (30–70 % of U_N)
 - Current limit $1.5 - 4 \times I_r$
 (If used: Initial voltage fixed at 40 % of U_N)

Dip-switch for In Line/ Inside Delta connection

Type PST/PSTB



PST30 ... PST72



PST85 ... PST142

Normal start, class 10, 400 V

In-Line connected

Motor power

Inside Delta connected

Motor power

Type	PST30	PST37	PST44	PST50	PST60	PST72	PST85	PST105	PST142
400 V	●	●	●	●	●	●	●	●	●
500 V	●	●	●	●	●	●	●	●	●
690 V	●	●	●	●	●	●	●	●	●
Rated current I _e , A	30	37	44	50	60	72	85	105	142

PST30 ... 72

PST85 ... 142

Fuse protection 400 V, 65 kA, 40 °C Bussmann Type:
 170M1366 170M1368 170M1369 170M1369 170M1370 170M1371 170M1372 170M3019 170M3020

Switch fuse Type:
 OS160RD0380 OESA250R03D80

Line contactor Type:
 A30 A40 A50 A50 A63 A75 A95 A110 A145

Electronic overload
 Integrated

Current transformers
 Built-in Built-in Built-in Built-in Built-in Built-in Built-in Built-in Built-in

By-pass contactor Type:
 A16 A26 A26 A30 A40 A50 A50 A63 A95

The advanced range, PST30 ... 300, PSTB370 ... 1050

Three separate terminals prepared for external by-pass

LED indications:

● Power on

● Fault

● Protection

LCD-display with plain words in your language

Clear information

Terminals for PTC

Programmable signal inputs

Programmable signal relays

Four button keypad

Integrated advanced motor protection

Fieldbus communication

PST72 with ABB Field Bus Plug



PST175 ... PST300

1SFC132015FD201



PSTB370 ... PSTB470

1SFC132018FD201



PSTB570 ... PSTB1050

1SFC132014FD201

PST175 ... 300

PSTB370 ... 470

PSTB570 ... 1050

90 kW	110 kW	132 kW	160 kW	200 kW	250 kW	315 kW	400 kW	450 kW	560 kW
160 kW	184 kW	220 kW	257 kW	355 kW	450 kW	540 kW	710 kW	800 kW	1000 kW
PST175	PST210	PST250	PST300	PSTB370	PSTB470	PSTB570	PSTB720	PSTB840	PSTB1050
●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●
175	210	250	300	370	470	570	720	840	1050

Fuse protection 400 V, 65 kA, 40 °C Bussmann Type:

170M3021 170M5012 170M5013 170M5015 170M5013 170M5015 170M5015 170M5018 170M6018 170M6020²⁾

Switch fuse Type:

OESA400R03D80 ————— OESA630R03D80 ————— OESA800R03D80¹⁾ ¹⁾

Line contactor Type:

A185 A210 A260 A300 AF400 AF580 AF580 AF750 AF1350 AF1650

Electronic overload

Integrated —————

Current transformers

Built-in Built-in Built-in Built-in Built-in Built-in Built-in Built-in Built-in Built-in

By-pass contactor Type:

A145 A145 A145 A210 Built-in Built-in Built-in Built-in Built-in Built-in

¹⁾ PSTB840 and PSTB1050: Switch fuse not available, use fuse holder.

²⁾ PST1050-690-70 has 170M6019

LCD display

The display of the PST gives you information presented in plain words - in required language. You can choose between 12 different languages including Chinese, Dutch, English, Finnish, French, German, Italian, Portuguese, Russian, Spanish, Swedish and Turkish. On the PST display, you get all information you need to set up, adjust and troubleshoot.

Four button keypad

Using the four buttons on the keypad, you can easily adjust your own start and stop profile and motor protection functions for any type of application. There are standard settings for many common applications including pumps, conveyors, fans, mixers and compressors for quick and easy set up.

External keypad

The external keypad is an extended human-machine interface which gives the user access to all functions from the panel door. All mounting details are included in the kit, also a 3-meter communication cable. When used as a hand-held device it will be easy to set up a parallel soft starter unit as settings can be uploaded from one unit and downloaded to another. The keypad fulfills the protection degree IP66.

Starting several motors

You can store as many as three different starting parameter sets for optional sequence start of three different motors. You can use this function for two or three speed motors as well.

Integrated advanced motor protection

Inside the PST Softstarter, you will find useful features for advanced motor and softstarter protection, including; programmable overload protection, high current, underload, phase imbalance, phase reversal, thyristor overload protection, and by-pass monitoring to ensure proper by-pass operation.

Programmable signal relays

All PST units have three programmable signal relays where each relay can signal Run, Top of ramp or Event. The Event settings can be used to signal protections, faults and warnings. The supervisory functions monitor not only software and critical softstarter functionality but also phase loss and out of frequency range.

Integrated by-pass contactor

On the larger sizes (PSTB370...PSTB1050), there is an ABB AF contactor integrated. This gives you advantages in terms of cost-saving, space saving and last but not least energy saving. With a by-pass contactor you can reduce the power losses during normal run by 90 % or more.

The smaller unit PST30 up to PST300, which are not equipped with a built-in by-pass contactor, have an extra set of three terminals on the line side to be used when connecting an external by-pass contactor.

Fieldbus communication

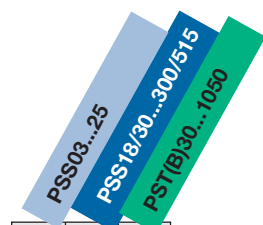
The PST Softstarter has a built-in interface on the front for connection of the ABB FieldBusPlug used for fieldbus communication. Through this interface it is possible to control the softstarter, achieve status information, up- and down load of parameters. The interface between the softstarter and the FieldBusPlug is always the same. Independently of PST Softstarter size or delivery date it is possible to connect to any fieldbus protocol later on since this is defined in the FieldBusPlug itself. As a start AS-Interface, DeviceNet and Profibus DP are available.

To connect the PST Softstarter to a fieldbus system you need the accessories described in our Catalogue 1SFC132001C0201 as well as specific software for PLC set-up, which is available at: www.abb.com/lowvoltage on the Softstarter pages.

The complete range

ABB offers three types of softstarters:

- the compact range, type **PSS03...25**
- the flexible range, type **PSS18...300**
- the advanced range, type **PST30...1050**



-	-	●	Field bus communication enabled
-	-	●	Real time clock
-	-	●	Programmable fault supervision functions
-	-	●	Programmable warning functions
-	-	●	PTC input for motor protection
-	-	●	High current protection
-	-	●	Phase imbalance /phase reversal protection
-	-	●	Locked rotor protection
-	-	●	Thyristor overtemperature protection
-	-	●	Motor overload protection
-	-	●	Four button keypad
-	○	●	Current limit control
-	●	●	In Line and Inside Delta connection
●	●	●	LED indications
●	-	● ¹⁾	Built-in by-pass contactor ¹⁾ On PSTB
●	●	●	Ramp Start/Stop

- Standard
- Optional
- Not available

The compact range, PSS03...25, covers motor currents from **3 to 25 A** and has the following advantages:

- Gives room for more products on a given mounting surface.
- Easy to install. The device is snapped onto a DIN mounting rail. Clear instructions are provided on the front.

The flexible range, PSS18...300, for motor currents from **18 to 515 A** offers a solution possible to adapt to almost any application:

- With two connection possibilities, either in line with the motor or inside the motor delta. Can also be equipped with current limit.
- Easy to set up. With just three clearly labeled rotary switches on the front of the unit it is possible to adjust the softstarter for a wide range of applications.
- Solid state electrical circuit. This ensures the highest reliability and reduces maintenance to a minimum, even in applications with frequent starts and stops.

The advanced range, the new PST30...1050 which besides many functionalities also speak your language. The range covers motor currents from **30 to 1810 A**.

- Advanced integrated protections
- Flexible bus communication system. By using the ABB FieldBusPlug (FBP), you can decide at any time which bus system to select within the ABB FBP range. The interface between the PST Softstarter and the ABB FBP is always the same, independent of size and delivery date.
- LCD display: With 12 languages, a menu system similar to your mobile phone, preprogrammed application settings and automatic status and event logging, it couldn't be easier to set up and operate!
- Programmable signal relays: gives you several possibilities for signalling warnings, faults and other events. You can use these functions for two or three speed motors as well.
- Integrated by-pass contactor. On the larger sizes (PSTB370 ... PSTB 1050), there is an ABB AF contactor integrated. This gives you advantages in terms of cost saving, space saving and last but not least energy saving. With a by-pass contactor you can reduce the power losses during normal run by 90 % or more.





Take the stress out of starting - use a Softstarter from ABB

