ABB Softstarters – The complete range

The most compact softstarter solution

PSR - The compact range, 3 to 105A

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

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

The world's first compact softstarter with torque control

PSE – The efficient range, 18 to 370A

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

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

All the most advanced functionality for all applications

PST(B) – The advanced range, 30 to 1050 A

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

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

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Power and productivity
for a better world™

Brochure panorama

Softstarters
The complete range

Power and productivity
for a better world™

Why soft start?

Are you experiencing mechanical or electrical problems?

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

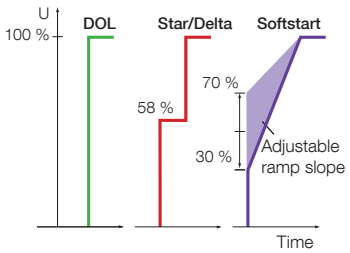
- Electrical problems due to voltage and current transient arising from Direct-On-Line or Star-Delta starts. Such transients may overload the local supply network and cause unacceptable voltage variations that interfere with other electrical equipment connected to the network.
- Mechanical problems that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

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

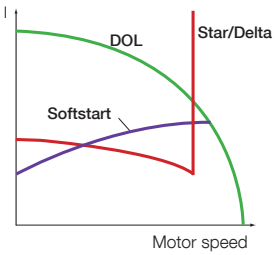
PSR	PSE	PST(B)	• Standard O Optional – Not available
•	•	• [1]	Built-in by-pass [1] on PSTB
–	–	•	Inside delta connection
–	•	O	Coated PCBs
–	•	•	Display and keypad
–	•	•	Torque control
–	•	•	Settable current limit function
–	•	•	Electronic motor overload protection
–	–	•	PTC input for motor protection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

Differences between different starting methods

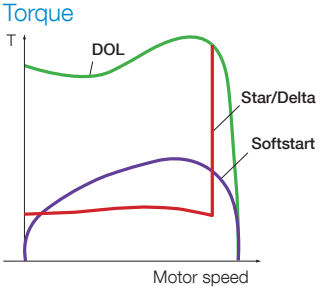
Motor voltage



Motor current



Torque



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).

PSR — The compact range

	PSR3 ... PSR16					PSR25 ... PSR30		PSR37 ... PSR45		PSR60 ... PSR105			
Normal start In-Line connected	PSR3	PSR6	PSR9	PSR12	PSR16	PSR25	PSR30	PSR37	PSR45	PSR60	PSR72	PSR85	PSR105
(480 V) hp	2	3	5	7.5	10	15	20	25	30	40	50	60	75
(600 V) hp	2	5	7.5	10	10	20	25	30	40	50	60	75	100
UL/CSA, Max FLA	3.4	6.1	9	11	15.2	24.2	28	34	46.2	59.4	68	80	104
Using manual motor starter, type 1 coordination will be achieved	**Manual motor starter (5 kA/600 V, 40 °C)**												
	MS116			MS132				MS450		MS495			—
Using J fuses, type 1 coordination will be achieved	**J type fuse protection (85 kA)**												
175 % rating	5 A	10 A	15 A	15 A	25 A	40 A	45 A	50 A	80 A	100 A	110 A	125 A	175 A
Max rating	35 A	35 A	35 A	35 A	35 A	60 A	60 A	90 A	90 A	110 A	125 A	150 A	200 A
Minimum enclosure size [1]	254 x 204 x 153 mm / 10 x 8 x 6 in					305 x 254 x 204 mm / 12 x 10 x 8 in				610 x 407 x 204 mm / 24 x 16 x 8 in			
Fusible disconnect switch for the above J fuses	**Fusible disconnect switch**												
	OS30					OS60			OS100	OS200			
The line contactor is not required for the softstarter itself but often used to open if OL trips	**Line contactor**												
	AF9			AF12	AF16	AF26	AF30	AF50		AF63	AF75	AF95	AF110
Overload protection is always required to protect the motor	**Thermal overload relay**												
	TF42DU								TA75DU			TA110DU	
Using by-pass will reduce the power loss and allow more starts per hour	**By-pass**												
	Built-in												

[1] Enclosure that has two latching points minimum. For use in pollution degree 2 environment.

Quick guide for selection	
Normal start Class 10	**Heavy duty start class 30**
• Bow thruster	• Centrifugal fan
• Centrifugal pump	• Crusher
• Compressor	• Conveyor belt (long)
• Conveyor belt (short)	• Mill
• Elevator	• Mixer
• Escalator	• Stirrer
Select size according to the motor hp ratings	Select one size larger softstarter compared to the motor hp ratings
If more than 10 starts/h ! Select one size larger than the standard selection	

PSR

LED indications:
- On/Ready
- Run/Top of ramp

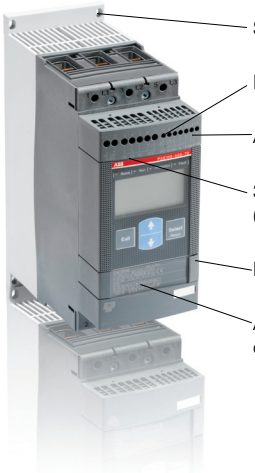
Three potentiometers for settings:
-Start ramp (1–20 sec)
-Stop ramp (0–20 sec)
-Initial voltage (40–70 % of U_e)
(also set “end voltage”)

Built-in signal relays for Run (PSR3 ... 105) and TOR (PSR25 ... 105)

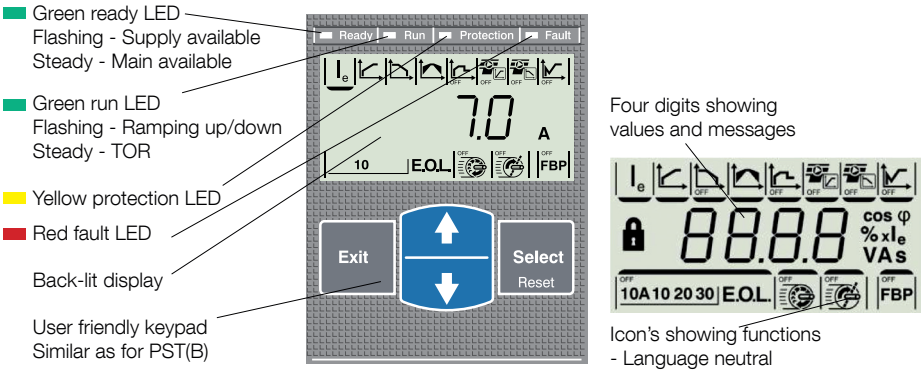
PSE — The efficient range

	PSE18 ... PSE105								PSE142 ... PSE170		PSE210 ... PSE370			
PSE18	PSE25	PSE30	PSE37	PSE45	PSE60	PSE72	PSE85	PSE105	PSE142	PSE170	PSE210	PSE250	PSE300	PSE370
10	15	20	25	30	40	50	60	75	100	125	150	200	250	300
15	20	25	30	40	50	60	75	100	125	150	200	250	300	350
18	25	28	34	42	60	68	80	104	130	169	192	248	302	361
MCCB (25 kA/600 V, 35 kA/480 V, 40 °C)									**MCCB (25 kA/600 V, 35 kA/480 V, 40 °C)**		**MCCB (25 kA/600 V, 25 kA/480 V, 40 °C)**			
Ts3L070TW	Ts3L100TW		Ts3L125TW	Ts3L150TW	Ts3L160TW	T4S250TW	T5S300TW	T5S300BW	T5S400BW		T6S600BW	T6S800BW		
J type fuse protection (85 kA)														
30 A	40 A	45 A	50 A	70 A	100 A	110 A	125 A	175 A	225 A	250 A	300 A	400 A	500 A	600 A
40 A	50 A	60 A	80 A	100 A	125 A	150 A	175 A	225 A	300 A	350 A	450 A	500 A	600 A	600 A
610 x 508 x 305 mm / 24 x 20 x 12 in									915 x 762 x 305 mm / 36 x 30 x 12 in		1220 x 915 x 407 mm / 48 x 36 x 16 in			
Fusible disconnect switch														
OS30	OS60		OS100	OS200			OS400						OS600	
Line Contactor														
AF26	AF30	AF50		AF63	AF75	AF95	AF110	AF145	AF185		AF210	AF260	AF300	AF400
Electronic overload relay														
Built-in														
By-pass														
Built-in														

PSE



Settings



PST(B) — The advanced range

PST30 ... PST72						PST85 ... PST142			PST175 ... PST300			
PST30	PST37	PST44	PST50	PST60	PST72	PST85	PST105	PST142	PST175	PST210	PST250	PST300
20	25	30	40	40	50	60	75	100	125	150	200	250
25	30	40	50	50	60	75	100	125	150	200	250	300
28	34	42	54	60	68	80	104	130	156	192	248	302

MCCB (10kA/600 V, 40 °C)									MCCB (18 kA/600 V, 40 °C)			
Ts3								T4	T5			

J type fuse protection (85 kA)												
45 A	50 A	70 A	90 A	100 A	110 A	125 A	175 A	225 A	250 A	300 A	400 A	500 A
90 A	110 A	150 A	175 A	225 A		250 A	350 A	400 A	400 A		450 A	600 A
508 x 508 x 305 mm / 20 x 20 x 12 in						610 x 508 x 305 mm / 24 x 20 x 12 in			762 x 762 x 305 mm / 30 x 30 x 12 in			

Fusible disconnect switch				
OS60	OS100	OS200	OS400	OS600

Line contactor										
AF30	AF50	AF63	AF75	AF95	AF110	AF145	AF185	AF210	AF260	AF300

Electronic overload relay
Built-in

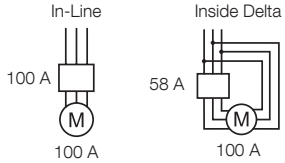
By-pass contactor (AC-1)								
AF16	AF26	AF30	AF50	AF75	AF110	AF145	AF185	AF210

PST(B)

- Screw mounting
- 2 programmable inputs
- 3 programmable output signal relays
- Built-in by-pass on PSTB
  Extra terminals on PST
- All data available on the front
- Analog output or PTC input

In-Line or Inside Delta for PSS and PST(B)

Softstarters type PST30 ... 300, PSTB370 ... 1050 can be connected inside the motor delta.
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 PST(B) Softstarter.



PSTB370 ... PSTB470		PSTB570 ... PSTB1050			
PSTB370	PSTB470	PSTB570	PSTB720	PSTB840	PSTB1050
300	400	500	600	700	900
350	500	600	700	800	1000
361	480	590	720	840	1062

MCCB (30 kA/600 V, 40 °C)			MCCB (42 kA/600 V, 40 °C)		
T6H			T7H		T8
600 A	800 A	1000 A	1200 A	1400 A	1800 A
700 A	1200 A			- [2]	- [2]
1220 x 915 x 407 mm /48 x 36 x 16 in					
OS600	OS800	OS1200		- [2]	- [2]
AF400	AF580		AF750	AF1350	AF1650
Built-in					

[2] Disconnect switch and fuse is not available.