PSR – The compact range
Description

Product description

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

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

Flexible mounting

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

Few settings

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

Built-in by-pass for energy saving

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

Suitable for stopping pumps

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

System concept with manual motor starters

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

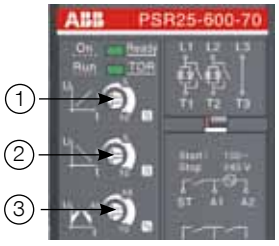
Settings

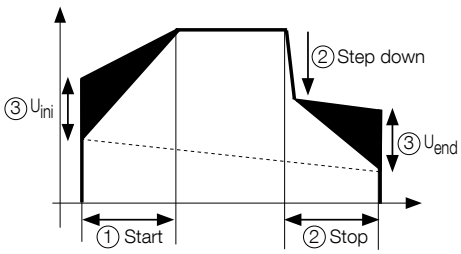
① Start = 1 ... 20 sec

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

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

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





PSR – The compact range
Overview

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

PSR – The compact range
Ordering details

PSR3 ... PSR16

PSR25 ... PSR30

PSR37 ... PSR45

PSR60 ... PSR105

PSR3 ... PSR105

Rated operational voltage U_e, 208-600 V AC

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

Motor power

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

Rated operational voltage U_e, 208-600 V AC

Rated control supply voltage, U_s, 24 V DC

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

PSR – The compact range
Accessories

PSR16-MS116

PSR30-MS132

PSR45-MS450

PSR105-MS495

PSR-FAN3-45A

PSR-FAN60-105A

PS-FBPA

PSLW

Connection kit

For softstarter type	Type	Order code	Packing piece	Weight kg 1 piece
PSR3...PSR16 with MS116 or MS132	**PSR16-MS116**	**1SFA896 211 R1001**	1	0.022
PSR25...PSR30 with MS132-12...MS132-32	**PSR30-MS132**	**1SFA896 212 R1001**	1	0.040
PSR37...PSR45 with MS450	**PSR45-MS450**	**1SFA896 213 R1001**	1	0.034
PSR60...PSR105 with MS495	**PSR105-MS495**	**1SAM501 903 R1001**	1	0.050

Fan

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

Terminal enlargements

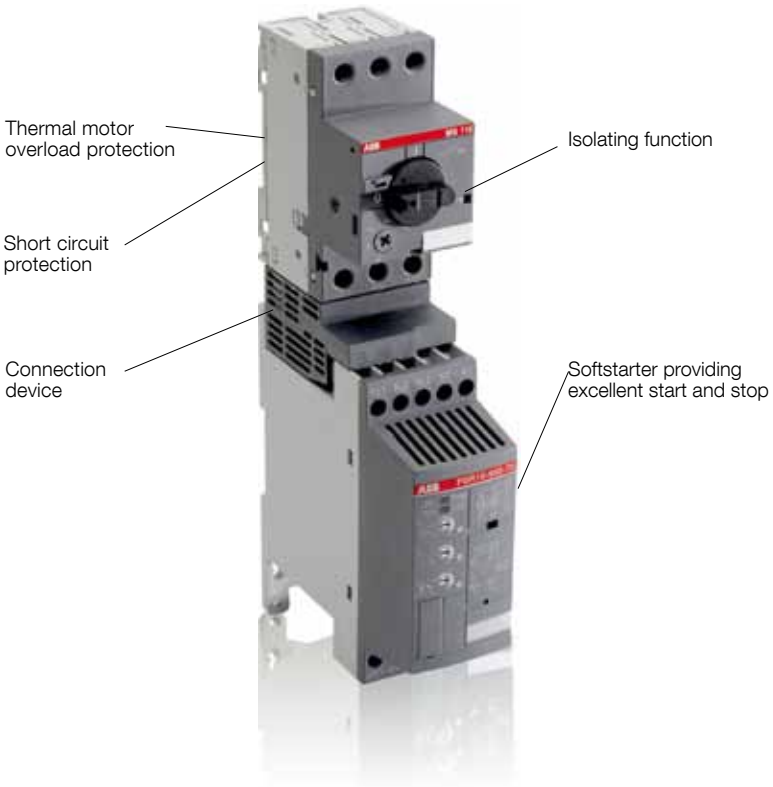
For softstarter type	Type	Order code	Packing piece	Weight kg 1 piece
PSR60...105 Wire range mm2 1x10...50, 2x10...25	**PSLW-72**	**1SFA899 002 R1072**	1	0.150

FieldBus plug connection accessory

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

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

Connection kit



PSR – The compact range
Technical data

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

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

Signal relays	**PSR3-PSR16**	**PSR25-PSR105**
for Run signal		
Resistive load	240 V AC, 3 A / 24 V DC, 3 A	240 V AC, 3 A / 24 V DC, 3 A
AC-15 (Contactor)	240 V AC, 0.5 A / 24 V DC, 0.5 A	240 V AC, 0.5 A / 24 V DC, 0.5 A
for Top ramp signal		
Resistive load	-	240 V AC, 3 A / 24 V DC, 3 A
AC-15 (Contactor)	-	240 V AC, 0.5 A / 24 V DC, 0.5 A

LED	for On/Ready	Green
	for Run/Top Of Ramp	Green
Settings	Ramp time during start	1-20 sec.
	Ramp time during stop	0-20 sec.
	Initial- and End Voltage	40-70%

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

Number of starts per hour using PSR softstarters

Starts/hour without auxiliary fan

Motor current I_e	10	20	30	40	50	60	80	100
3 A	PSR3							PSR6
6 A	PSR6						PSR9	
9 A	PSR9				PSR12		PSR16	PSR25
12 A	PSR12			PSR16	PSR25		PSR30	
16 A	PSR16	PSR25			PSR30		PSR37	
25 A	PSR25	PSR30	PSR37			PSR45		PSR60
30 A	PSR30	PSR37		PSR45		PSR60		PSR72
37 A	PSR37	PSR45		PSR60		PSR72	PSR85	PSR105
45 A	PSR45		PSR60		PSR72	PSR85	PSR105	-
60 A	PSR60		PSR72	PSR85	PSR105		-	-
72 A	PSR72	PSR85	PSR105		-	-	-	-
85 A	PSR85	PSR105		-	-	-	-	-
105 A	PSR105	-	-	-	-	-	-	-

Starts/hour with auxiliary fan

10	20	30	40	50	60	80	100
PSR3							PSR6
PSR6							PSR9
PSR9					PSR12		
PSR12				PSR16	PSR25		
PSR16	PSR25				PSR30		
PSR25	PSR30		PSR37				PSR45
PSR30	PSR37		PSR45				
PSR37		PSR45				PSR60	
PSR45			PSR60			PSR72	
PSR60			PSR72	PSR85	PSR105	-	
PSR72		PSR85	PSR105			-	-
PSR85	PSR105			-	-	-	-
PSR105	-	-	-	-	-	-	-

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

PSR – The compact range
UL ratings

UL ratings

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