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 (-13 to 140 °F)
- 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.

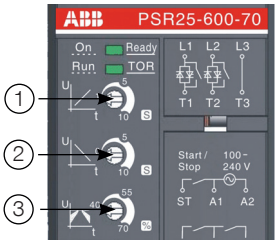
Settings

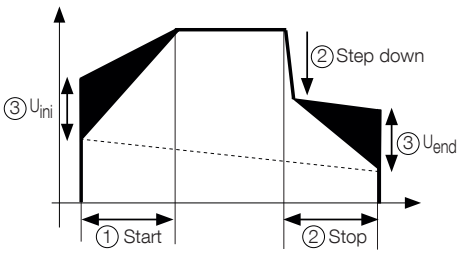
① Start = 1 ... 20 sec

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%





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.

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 softstarter - everything that you need.

PSR – The compact range
Overview

	PSR3 ... PSR16					PSR25 ... PSR30		PSR37 ... PSR45		PSR60 ... PSR105			
	Softstarter												
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				600 x 400 x 210 mm / 24 x 16 x 8 in			
Fusible disconnect switch for the above J fuses	**Fusible disconnect switch**												
	OS30					OS60			OS100		OS200		
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**												
	AF9			AF12	AF16	AF26	AF30	AF50		AF63	AF75	AF95	AF110
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.

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

230 V kW	400 V kW	500 V kW	208 V hp	230 V hp	480 V hp	600 V hp	UL/CSA Max rated operational current I_e A	Part number	Weight kg (lb)
0.75	1.5	2.2	0.5	0.75	2	2	3.4	**PSR3-600-70**	0.450 (0.99)
1.5	3	4	1	1.5	3	5	6.1	**PSR6-600-70**	0.450 (0.99)
2.2	4	4	2	2	5	7.5	9	**PSR9-600-70**	0.450 (0.99)
3	5.5	5.5	3	3	7.5	10	11	**PSR12-600-70**	0.450 (0.99)
4	7.5	7.5	3	5	10	10	15.2	**PSR16-600-70**	0.450 (0.99)
5.5	11	15	7.5	7.5	15	20	24.2	**PSR25-600-70**	0.650 (1.43)
7.5	15	18.5	7.5	10	20	25	28	**PSR30-600-70**	0.650 (1.43)
7.5	18.5	22	10	10	25	30	34	**PSR37-600-70**	1.000 (2.20)
11	22	30	15	15	30	40	46.2	**PSR45-600-70**	1.000 (2.20)
15	30	37	20	20	40	50	59.4	**PSR60-600-70**	2.200 (4.85)
22	37	45	20	25	50	60	68	**PSR72-600-70**	2.270 (5.00)
22	45	55	25	30	60	75	80	**PSR85-600-70**	2.270 (5.00)
30	55	55	30	40	75	100	104	**PSR105-600-70**	2.270 (5.00)

Rated operational voltage U_e, 208-600 V AC

Rated control supply voltage, U_s, 24 V DC

0.75	1.5	2.2	0.5	0.75	2	2	3.4	**PSR3-600-81**	0.450 (0.99)
1.5	3	4	1	1.5	3	5	6.1	**PSR6-600-81**	0.450 (0.99)
2.2	4	4	2	2	5	7.5	9	**PSR9-600-81**	0.450 (0.99)
3	5.5	5.5	3	3	7.5	10	11	**PSR12-600-81**	0.450 (0.99)
4	7.5	7.5	3	5	10	10	15.2	**PSR16-600-81**	0.450 (0.99)
5.5	11	15	7.5	7.5	15	20	24.2	**PSR25-600-81**	0.650 (1.43)
7.5	15	18.5	7.5	10	20	25	28	**PSR30-600-81**	0.650 (1.43)
7.5	18.5	22	10	10	25	30	34	**PSR37-600-81**	1.000 (2.20)
11	22	30	15	15	30	40	46.2	**PSR45-600-81**	1.000 (2.20)
15	30	37	20	20	40	50	59.4	**PSR60-600-81**	2.200 (4.85)
22	37	45	20	25	50	60	68	**PSR72-600-81**	2.270 (5.00)
22	45	55	25	30	60	75	80	**PSR85-600-81**	2.270 (5.00)
30	55	55	30	40	75	100	104	**PSR105-600-81**	2.270 (5.00)

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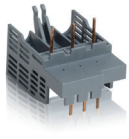
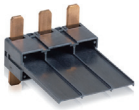
Accessories


PSR16-MS116


PSR30-MS132


PSR45-MS450


PSR105-MS495


PSR-FAN


PSR-FAN 60-105 A


PS-FBPA


PSLW

Connection kit

For softstarter type	Part number	Packing piece	Weight kg (lb) 1 piece
PSR3...PSR16 with MS116	**PSR16-MS116**	1	0.030 (0.07)
PSR25...PSR30 with MS132	**PSR30-MS132**	1	0.030 (0.07)
PSR37...PSR45 with MS450	**PSR45-MS450**	1	0.030 (0.07)
PSR60...PSR105 with MS495	**PSR105-MS495**	1	0.050 (0.11)

Fan

For softstarter type	Part number	Packing piece	Weight kg (lb) 1 piece
PSR3...PSR45	**PSR-FAN**	1	0.010 (0.02)
PSR60...PSR105	**PSR-FAN 60-105 A**	1	0.013 (0.03)

Terminal enlargements

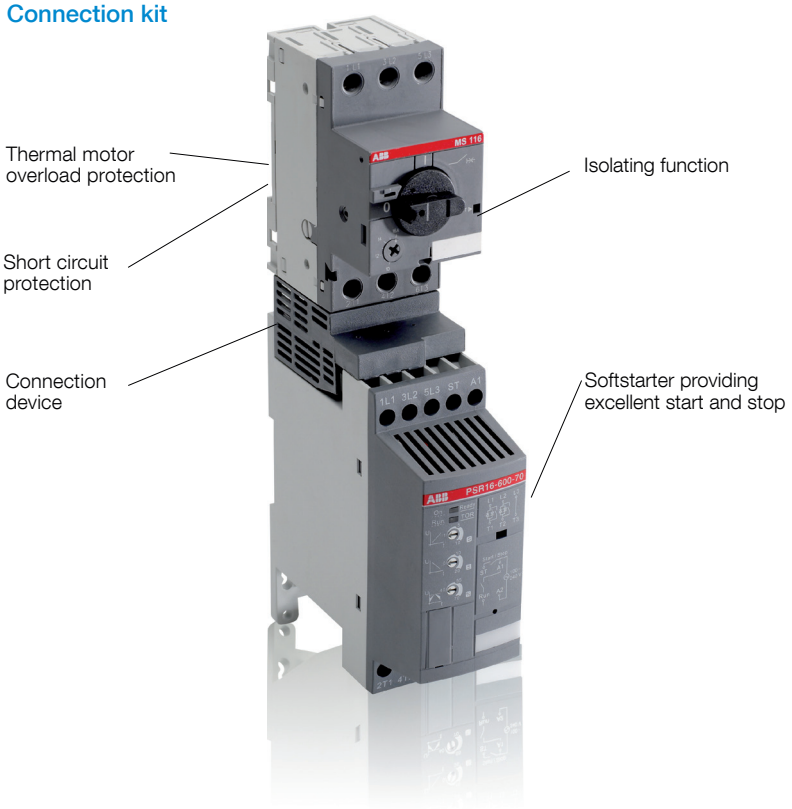
For softstarter type	Part number	Packing piece	Weight kg (lb) 1 piece
PSR60...105 Wire range mm2 1x10...50, 2x10...25	**PSLW-72**	1	0.150 (0.33)

FieldBus plug connection accessory

For softstarter type	Part number	Packing piece	Weight kg (lb) 1 piece
The same accessory for all sizes	**PS-FBPA**	1	0.060 (0.13)

ABB Field Bus Plug suitable for all sizes. See page 38-41

Connection kit



PSR – The compact range
Technical data

Rated insulation voltage U_i	600 V												
Rated operational voltage U_e	208...600 V +10 %/-15 %, 50/60 Hz ±5 %												
Rated control supply voltage U_s	100...240 V AC, 50/60Hz ±5 % or 24 V DC, +10 %/-15 %,												
Power consumption	**PSR3**	**PSR6**	**PSR9**	**PSR12**	**PSR16**	**PSR25**	**PSR30**	**PSR37**	**PSR45**	**PSR60**	**PSR72**	**PSR85**	**PSR105**
Supply circuit													
at 100-240 V AC				12 VA						10 VA			
at 24 V DC							5 W						
Max. Power loss at rated I_e	**PSR3**	**PSR6**	**PSR9**	**PSR12**	**PSR16**	**PSR25**	**PSR30**	**PSR37**	**PSR45**	**PSR60**	**PSR72**	**PSR85**	**PSR105**
	0.7 W	2.9 W	6.5 W	11.5 W	20.5 W	25 W	36 W	5.5 W	8.1 W	3.6 W	5.2 W	7.2 W	6.6 W
Starting capacity at I_r	4 x Ir for 6 sec.												
Number of starts per hour	See table on page 13.												
standard	10 [1]												
with aux. fan	20 [1]												
Service factor	100 %												
Ambient temperature													
during operation	-25 °C to + 60 °C (-13 to 140 °F) [2]												
during storage	-40 °C to + 70 °C (-40 to 158 °F)												
Maximum altitude	4000 m (13123 ft) [3]												
Degree of protection	**PSR3**	**PSR6**	**PSR9**	**PSR12**	**PSR16**	**PSR25**	**PSR30**	**PSR37**	**PSR45**	**PSR60**	**PSR72**	**PSR85**	**PSR105**
main circuit				IP20						IP10			
control circuit							IP20						

Connection	**PSR3-PSR16**	**PSR25-PSR30**	**PSR37-PSR45**	**PSR60-PSR105**
main circuit				
cable area	1 x 2.5mm²	1 x 2.5 - 10 mm²	1 x 6 - 35 mm²	1 x 10 - 95 mm²
	1 x 14 AWG	1 x 12 - 8 AWG	1 x 8 - 4 AWG	1 x 6 - 2/0 AWG
tightening torrque	1 Nm - 9 lb.in	2.3 Nm - 20 lb.in	4.0 Nm - 35 lb.in	8.0 Nm - 71 lb.in
	PSR3-PSR16	**PSR25-PSR105**		
control circuit				
cable area	1 x 1.5 - 2.5 mm²	1 x 1.5 - 2.5 mm²		
	2 x 1.5 mm²	2 x 1.5 mm²		
	1 x 16 - 14 AWG	1 x 16 -14 AWG		
	2 x 16 AWG	2 x 16 AWG		
tightening torque	1 Nm - 9 lb.in	0.6 Nm - 5 lb.in		
Signal relays	**PSR3-PSR16**	**PSR25-PSR105**		
for Run signal				
Resistive load	240 V AC, 3 A / 24 V DC, 3 A	240 V AC, 3 A / 24 V DC, 3 A		
AC-15 (Contactor)	240 V AC, 0.5 A / 24 V DC, 0.5 A	240 V AC, 0.5 A / 24 V DC, 0.5 A		
for Top ramp signal				
Resistive load	-	240 V AC, 3 A / 24 V DC, 3 A		
AC-15 (Contactor)	-	240 V AC, 0.5 A / 24 V DC, 0.5 A		

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

[1] Valid for 50 % on time and 50 % off time. 4 x I_e for 6 sec., if other data is required, contact your sales office.
[2] Above 40 °C (104 °F) up to max. 60 °C (140 °F) reduce the rated current with 0.8 % per °C (0.44 % per °F).
[3] When used at high altitudes above 1000 meters (3281 ft) up to 4000 meters (13123 ft) you need to derate the rated current using the following formula.

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

$[\ \%\ \text{of}\ I_e = 100 - \frac{x - 3280}{497}\ ]$ x = actual altitude for the softstarter in feet

PSR – The compact range
Technical data

Number of starts per hour using PSR softstarters

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

Starts/hour with auxiliary fan							
10	20	30	40	50	60	80	100
PSR3							
PSR6							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 °C (104 ºF), starting current of 4 x I_e and ramp time 6 seconds.
For more optimized selections, or to use PSR for heavy duty starts, please use the softstarter selection program, ProSoft.