

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

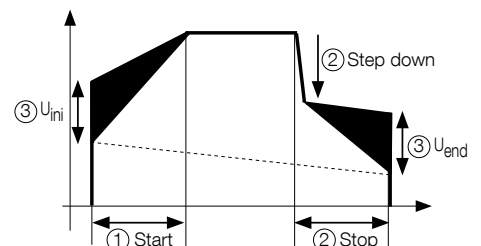
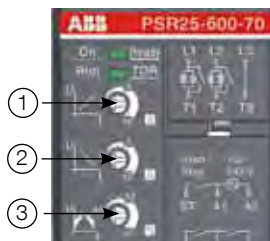
Even without using torque control, the PSR range is designed to reduce water hammering and will allow a superior stop compared to the direct stop resulting from a star delta starter or a DOL starter. See the special designed stop ramp with step down voltage below.

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%



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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 ... PSR105

Rated operational voltage U_e , 208-600 V AC

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

Motor power



1SFC132137F0001

PSR3 ... PSR16



1SFC132138F0001

PSR25 ... PSR30



1SFC132135F0001

PSR37 ... PSR45



1SFC132207F0001

PSR60 ... PSR105

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_c , 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

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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	Pack ^{ing} 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	Pack ^{ing} 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

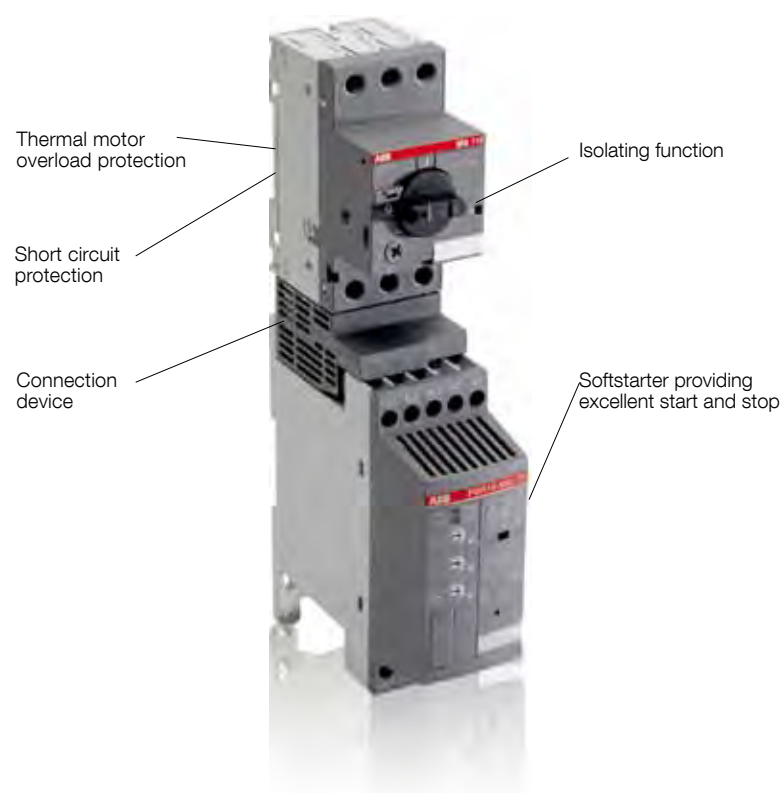
For softstarter type	Type	Order code	Pack ^{ing} piece	Weight kg 1 piece
PSR60...105 Wire range mm ² 1x10...50, 2x10...25	PSLW-72	1SFA899 002 R1072	1	0.150

FieldBus plug connection accessory

For softstarter type	Type	Order code	Pack ^{ing} 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



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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_c	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 I _e 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,													
main circuit	PSR3-PSR16				PSR25-PSR30			PSR37-PSR45		PSR60-PSR105			
	1 x 0.75 - 2.5mm ²				1 x 2.5 - 10mm ²			1 x 6 - 35mm ²		1 x 10 - 95mm ²			
	2 x 0.75 - 2.5mm ²				2 x 2.5 - 10mm ²			2 x 6 - 16mm ²		2 x 6 - 35mm ²			
control circuit	PSR3-PSR16				PSR25-PSR105								
	1 x 0.75 - 2.5mm ²				1 x 0.75 - 2.5mm ²					2 x 0.75 - 1.5mm ²			
	2 x 0.75 - 2.5mm ²				2 x 0.75 - 1.5mm ²								
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 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.

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

Number of starts per hour using PSR softstarters

Motor current I _e	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		PSR16		PSR25		PSR25			
16 A	PSR16		PSR25		PSR30		PSR37		PSR16		PSR25		PSR30			
25 A	PSR25		PSR30		PSR37		PSR45		PSR25		PSR30		PSR37		PSR45	
30 A	PSR30		PSR37		PSR45		PSR60		PSR30		PSR37		PSR45			
37 A	PSR37		PSR45		PSR60		PSR72		PSR85		PSR105		PSR60			
45 A	PSR45		PSR60		PSR72		PSR85		PSR105		PSR72					
60 A	PSR60		PSR72		PSR85		PSR105		PSR60				PSR72		PSR85	
72 A	PSR72		PSR85		PSR105		PSR72				PSR85		PSR105		PSR105	
85 A	PSR85		PSR105		PSR85				PSR105		PSR85				PSR105	
105 A	PSR105		PSR105				PSR105				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 program, ProSoft.

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UL ratings

UL ratings

Softstarter	Motor power P (hp) and full load current FLA (A)					Max. fuse 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	
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

