

# Type PSR Softstarters

**ABB** Softstarters  
Type PSR



## General information

Designed for motor currents from 3 to 105 A, PSR Softstarters complement the softstarter family from ABB. The PSR Softstarter is compact and easily accessible for installation in places where space is limited thanks to the two-phase controlled design.

## The PSR "Compact" Softstarter line

The PSR range comprises four physical sizes with widths from 45 to 70mm, covers rated currents from 3 to 105 A and is available for supply voltages of 24 VDC or 100-240 VAC. All sizes include a Run signal relay while sizes from 25 - 105 A also have an output signal for TOR (Top of Ramp, i.e., full voltage).

## Cooling function

Please refer to the **Number of starts per hour** chart on page 6.6.

## Installation

The PSR Softstarter is easy to set and operate thanks to the clearly marked settings. All terminals are distinctly marked and easily accessible for cable connection. Both screw and DIN rail mounting are possible (except for D Frame (PSR60 - PSR105)).

## Flexible communication

PSR can also be remote controlled by bus communication using ABB's FieldBusPlug. The FieldBusPlug accessories are available for several protocols such as Profibus DP and Device Net.

The PSR Softstarter is ideal for the replacement of across the line (ATL) starters and for installation in places with limited space.

UL File #E161428

## Selection guide PSR3 – PSR45



Softstarter type	PSR3 ... PSR16					PSR25 ... PSR30		PSR37 ... PSR45	
	PSR	PSR	PSR	PSR	PSR	PSR	PSR	PSR	PSR
<b>480V, 104°F</b>	<b>3</b>	<b>6</b>	<b>9</b>	<b>12</b>	<b>16</b>	<b>25</b>	<b>30</b>	<b>37</b>	<b>45</b>
Normal start, In Line connected : (480 V), hp UL, Max. A	2 3.4	3 6.1	5 9	7.5 11	10 15.2	15 24.2	20 28	25 34	30 46.2
	<b>Manual motor starter</b> ①								
Recommended size MMS	MS116	MS116	MS116	MS116	MS116	MS325	MS450	MS450	MS450
	<b>Fuse protection 480 V, J Fuse based on UL, max A x 1.75</b>								
Type J fuse minimum rating	6 A	9 A	15 A	20 A	25 A	40 A	50 A	60 A	70 A
	<b>Fused disconnect</b> ①								
Suitable fused disconnect for J fuses.	OS30	OS30	OS30	OS30	OS30	OS60	OS60	OS60	OS100
Type J fuse	10 A	10 A	20 A	20 A	30 A	40 A	50 A	60 A	80 A
Short circuit current rating	85 kA	85 kA	85 kA	85 kA	85 kA	85 kA	85 kA	85 kA	85 kA
The line contactor is not required for the softstarter but is used to open if the OL trips.	<b>AC-3 rated by-pass</b> ①								
	A9	A9	A9	A12	A16	A26	A30	A40	A40
The overload relay is always required to protect the motor	<b>Thermal overload relay</b> ①								
	TA25DU	TA25DU	TA25DU	TA25DU	TA25DU	TA25DU	TA25DU	TA42DU	TA75DU
The by-pass contact reduces the power loss of the softstarter	<b>By-pass contact</b>								
	Built-in	Built-in	Built-in	Built-in	Built-in	Built-in	Built-in	Built-in	Built-in
	<b>Control transformers</b>								
Minimum recommended transformer size	50 VA	50 VA	50 VA	50 VA	50 VA	50 VA	50 VA	50 VA	50 VA
Power consumption at 100-240 V	12 VA	12 VA	12 VA	12 VA	12 VA	12 VA	12 VA	12 VA	12 VA
Power consumption at 24 VDC	5 W	5 W	5 W	5 W	5 W	5 W	5 W	5 W	5 W

① For complete catalog numbers, see the pertinent product section in the 1SXU000023C0202 Product Selector.

### 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	-						

Data based on an ambient temperature of 40°, starting current of 4 x  $I_e$  and ramp time 6 seconds.

### Starts/hour with auxiliary fan

10	20	30	40	50	60	80	100
PSR3							
PSR6							PSR9
PSR9				PSR12			
PSR12			PSR16	PSR25		PSR30	
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	-						

# Selection guide PSR60 – PSR105

Softstarters  
Type PSR



PSR60 ...		PSR105	
PSR	PSR	PSR	PSR
60	72	85	105
40	50	60	75
59.4	68	80	104
MS495	MS495	MS495	MS495
90 A	120 A	135 A	170 A
OS125D	OS160D	OS160D	OS160D
100 A	120 A	135 A	170 A
85 kA	85 kA	85 kA	85 kA
A50	A63	A75	A110
TA75DU	TA75DU	TA110DU	TA110DU
Built-in	Built-in	Built-in	Built-in
50 VA	50 VA	50 VA	50 VA
12 VA	12 VA	12 VA	12 VA
5 W	5 W	5 W	5 W

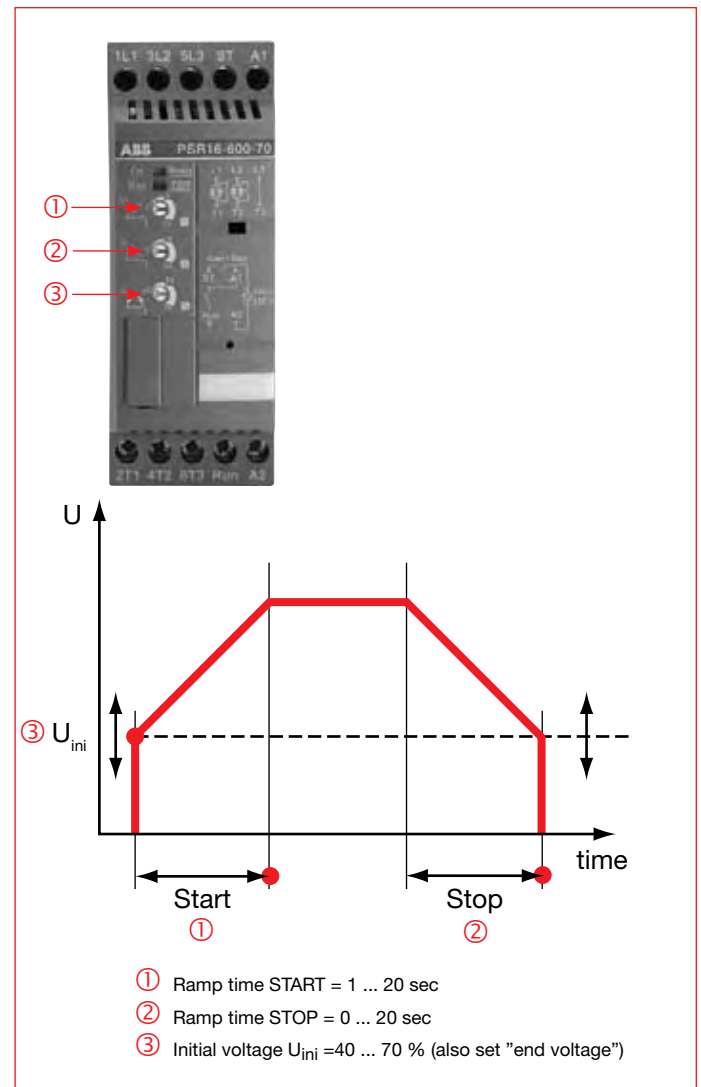
## Description

**PSR - Compact range**, covers motor currents from 3 to 105 A. It is the latest addition to the softstarter family and has an attractive, compact design. Further, the system concept includes MMS and the softstarters are available for remote control connection using the FieldBusPlug as an accessory. All sizes include a Run signal relay, while from sizes 25 A the PSR Softstarters are also provided with an output signal for TOR (Top Of Ramp), i.e. full voltage. With standard performance the PSR Softstarters handle ten starts per hour. When an auxiliary cooling fan is added, the starting capacity is increased to 20 starts per hour or more.

- Current ratings 3.9 – 105 A (1.5 - 55 kW), at 400 V
- Motor voltage 208 – 600 V
- Supply voltage 24 VDC or 100-240 VAC
- Easy to install and adjust
- DIN rail or screw mounting
- Integrated by-pass contacts

With their compact design, the PSR Softstarters are ideal for installation in places where space is limited and where there is a demand for easy installation.

## Settings



① See accessories on page 6.8.

# PSR3 – PSR105



PSR3 ... PSR16



PSR25 ... PSR30



PSR37 ... PSR45



PSR60 ... PSR105



PSR-FBPA



PSR16-MS116



PSR45-MS450



PSR105-MS495



PSR-FAN

FieldBusPlug

Motor power				UL Max rated motor current, I <sub>e</sub>	Reference code	Catalog number	List price
208 V P <sub>e</sub> HP	240 V P <sub>e</sub> HP	480 V P <sub>e</sub> HP	600 V P <sub>e</sub> HP				

### 208 - 600 VAC

#### Supply voltage, U<sub>s</sub> 100-240 VAC

0.5	0.75	2	2	3.4	1SFA 896 103 R7000	PSR3-600-70	<b>190</b>
1	1.5	3	5	6.1	1SFA 896 104 R7000	PSR6-600-70	<b>225</b>
2	2	5	7.5	9.0	1SFA 896 105 R7000	PSR9-600-70	<b>265</b>
3	3	7.5	10	11.0	1SFA 896 106 R7000	PSR12-600-70	<b>270</b>
3	5	10	10	15.2	1SFA 896 107 R7000	PSR16-600-70	<b>310</b>
7.5	7.5	15	20	24.2	1SFA 896 108 R7000	PSR25-600-70	<b>320</b>
7.5	10	20	25	28.0	1SFA 896 109 R7000	PSR30-600-70	<b>410</b>
10	10	25	30	34.0	1SFA 896 110 R7000	PSR37-600-70	<b>510</b>
15	15	30	40	46.2	1SFA 896 111 R7000	PSR45-600-70	<b>640</b>
20	20	40	50	59.4	1SFA 896 112 R7000	PSR60-600-70	<b>790</b>
20	25	50	60	68	1SFA 896 113 R7000	PSR72-600-70	<b>920</b>
25	30	60	75	80	1SFA 896 114 R7000	PSR85-600-70	<b>1,050</b>
30	40	75	100	104	1SFA 896 115 R7000	PSR105-600-70	<b>1,280</b>

#### Supply voltage, U<sub>s</sub> 24 VDC

0.5	0.75	2	2	3.4	1SFA 896 103 R8100	PSR3-600-81	<b>190</b>
1	1.5	3	5	6.1	1SFA 896 104 R8100	PSR6-600-81	<b>225</b>
2	2	5	7.5	9.0	1SFA 896 105 R8100	PSR9-600-81	<b>265</b>
3	3	7.5	10	11.0	1SFA 896 106 R8100	PSR12-600-81	<b>270</b>
3	5	10	10	15.2	1SFA 896 107 R8100	PSR16-600-81	<b>310</b>
7.5	7.5	15	20	24.2	1SFA 896 108 R8100	PSR25-600-81	<b>320</b>
7.5	10	20	25	28.0	1SFA 896 109 R8100	PSR30-600-81	<b>410</b>
10	10	25	30	34.0	1SFA 896 110 R8100	PSR37-600-81	<b>510</b>
15	15	30	40	46.2	1SFA 896 111 R8100	PSR45-600-81	<b>640</b>
20	20	40	50	59.4	1SFA 896 112 R8100	PSR60-600-81	<b>790</b>
20	25	50	60	68	1SFA 896 113 R8100	PSR72-600-81	<b>920</b>
25	30	60	75	80	1SFA 896 114 R8100	PSR85-600-81	<b>1,050</b>
30	40	75	100	104	1SFA 896 115 R8100	PSR105-600-81	<b>1,280</b>

### 48Accessories

Description	Reference code	Catalog number	List price
Fieldbus plug connection accessory	1SFA 896 312 R1001	PSR-FBPA	<b>\$ 290</b>
Connection kit for PSR3-16 and MS116	1SFA 896 211 R1001	PSR16-MS116	<b>12</b>
Connection kit for PSR37-45 and MS450	1SFA 896 213 R1001	PSR45-MS450	<b>25</b>
Connection kit for PSR60-105 and MS495	1SFA 896 214 R1001	PSR105-MS495	<b>①</b>
Fan for PSR3-45	1SFA 896 311 R1001	PSR-FAN	<b>34</b>
Fan for PSR60-105	1SFA 896 313 R1001	PSR-FAN60-105A	<b>48</b>

### Catalog number explanation

## PSR 3 - 600 - 70

Softstarter  
Type PSR

Maximum motor current  
when connected in-line

Line voltage  
208V - 600 VAC

Control voltage  
70 = 100 - 240 VAC  
81 = 24 VDC

① Consult factory.

# Type PSR

## Technical data

Softstarters  
Type PSR

<b>Rated insulation voltage, <math>U_i</math></b>	600 V												
<b>Rated operational voltage, <math>U_e</math></b>	208...600 V +10 %/-15 %, 50/60 Hz $\pm$ 5%												
<b>Rated supply voltage, <math>U_s</math></b>	100...240 VAC or 24 VDC +10 %/-15 %, 50/60 Hz $\pm$ 5%												
<b>Power consumption,</b>	<b>PSR3</b>	<b>PSR6</b>	<b>PSR9</b>	<b>PSR12</b>	<b>PSR16</b>	<b>PSR25</b>	<b>PSR30</b>	<b>PSR37</b>	<b>PSR45</b>	<b>PSR60</b>	<b>PSR72</b>	<b>PSR85</b>	<b>PSR105</b>
at 100-240 VAC	12 VA	12 VA	12 VA	12 VA	12 VA	12 VA	12 VA	10 VA	10 VA	10 VA	10 VA	10 VA	10 VA
at 24 VDC	5 W	5 W	5 W	5 W	5 W	5 W	5 W	5 W	5 W	5 W	5 W	5 W	5 W
<b>Rated operational current <math>I_r</math></b>	<b>PSR3</b>	<b>PSR6</b>	<b>PSR9</b>	<b>PSR12</b>	<b>PSR16</b>	<b>PSR25</b>	<b>PSR30</b>	<b>PSR37</b>	<b>PSR45</b>	<b>PSR60</b>	<b>PSR72</b>	<b>PSR85</b>	<b>PSR105</b>
	3.9 A	6.8 A	9 A	12 A	16 A	25 A	30 A	37 A	45 A	60 A	72 A	85 A	105 A
<b>Starting capacity at <math>I_r</math></b>	4 x $I_r$ for 6 sec.												
<b>Number of starts per hour,</b>													
standard	10 (4 x $I_e$ during 6 s) See table on page 6.6 for details.												
with aux. fan	>20 (4 x $I_e$ during 6 s)												
<b>Service factor</b>	100 %												
<b>Ambient temperature</b>													
during operation ①	-25 °C to +60 °C												
during storage	-40 °C to +70 °C												
<b>Maximum altitude ②</b>	4000 m												
<b>Degree of protection,</b>	<b>PSR3</b>	<b>PSR6</b>	<b>PSR9</b>	<b>PSR12</b>	<b>PSR16</b>	<b>PSR25</b>	<b>PSR30</b>	<b>PSR37</b>	<b>PSR45</b>	<b>PSR60</b>	<b>PSR72</b>	<b>PSR85</b>	<b>PSR105</b>
main circuit	IP20	IP20	IP20	IP20	IP20	IP20	IP20	IP10	IP10	IP10	IP10	IP10	IP10
control circuit	IP20	IP20	IP20	IP20	IP20	IP20	IP20	IP20	IP20	IP20	IP20	IP20	IP20
<b>Connectable cable area,</b>	<b>PSR3 - PSR16</b>			<b>PSR25 - PSR30</b>				<b>PSR37 - PSR45</b>		<b>PSR60 - PSR105</b>			
main circuit	1 x 0.75 - 2.5 mm <sup>2</sup>			1 x 2.5 - 10 mm <sup>2</sup>				1 x 6 - 35 mm <sup>2</sup>		1 x 10 - 95 mm <sup>2</sup>			
	2 x 0.75 - 2.5 mm <sup>2</sup>			2 x 2.5 - 10 mm <sup>2</sup>				2 x 6 - 16 mm <sup>2</sup>		2 x 6 - 35 mm <sup>2</sup>			
control circuit	<b>PSR3 - PSR16</b>			<b>PSR25 - PSR105</b>									
	1 x 0.75 - 2.5 mm <sup>2</sup>			1 x 0.75 - 2.5 mm <sup>2</sup>									
	2 x 0.75 - 2.5 mm <sup>2</sup>			2 x 0.75 - 1.5 mm <sup>2</sup>									
<b>Signal relays</b>	<b>PSR3 - PSR16</b>					<b>PSR25 - PSR105</b>							
for Run signal													
Resistive load	240 V, 2 A					250 V, 5 A							
AC-15 (Contactor)	240 V, 0.5 A					250 V, 0.5 A							
for Top of Ramp signal													
Resistive load	-					250 V, 2 A							
AC-15 (Contactor)	-					250 V, 0.5 A							
<b>LED</b>													
for On/Ready	Green												
for Run/Top Of Ramp	Green												
<b>Settings</b>													
Ramp time during start	1-20 sec.												
Ramp time during stop	0-20 sec.												
Initial- and End Voltage	40-70%												

① Above 40 °C up to max. 60 °C reduce the rated current with 0.8 % per °C.

② When used at high altitudes above 1000 meters up to 4000 meters you need to derate the rated current using the following formula.

$$\left[ \% \text{ of } I_e = 100 - \frac{x - 1000}{150} \right]$$

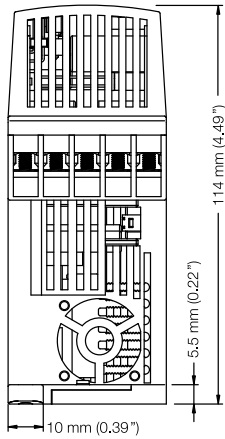
x = actual altitude for the softstarter

### UL ratings

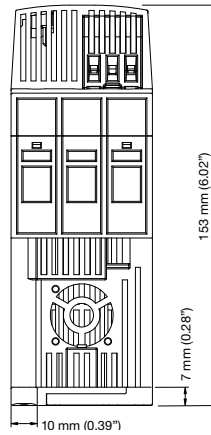
Softstarter	480 V	Motor power P (hp) and full load current FLA (A)				Max. fuse
		$U_e$ 200 V/208 V	$U_e$ 220 V/240 V	$U_e$ 440 V/480 V	$U_e$ 550 V/600V	
Type	FLA A	hp	hp	hp	hp	A, Type
PSR3	3.4	0.5	0.75	2	2	10 A J-Type
PSR6	6.1	1	1.5	3	5	10 A J-Type
PSR9	9	2	2	5	7.5	20 A J-Type
PSR12	11	3	3	7.5	10	20 A J-Type
PSR16	15.2	3	5	10	10	30 A J-Type
PSR25	24.2	7.5	7.5	15	20	40 A J-Type
PSR30	28	7.5	10	20	25	50 A J-Type
PSR37	34	10	10	25	30	60 A J-Type
PSR45	46.2	15	15	30	40	80 A J-Type
PSR60	52	20	20	40	50	100 A J-Type
PSR72	65	20	25	50	60	125 A J-Type
PSR85	77	25	30	60	75	150 A J-Type
PSR105	96	30	40	75	100	200 A J-Type

## Approximate dimensions PSR3 – PSR105

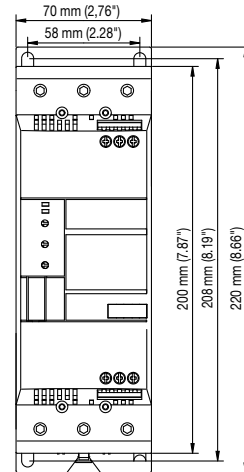
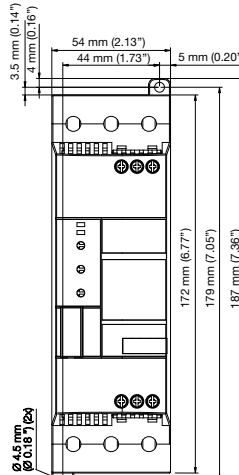
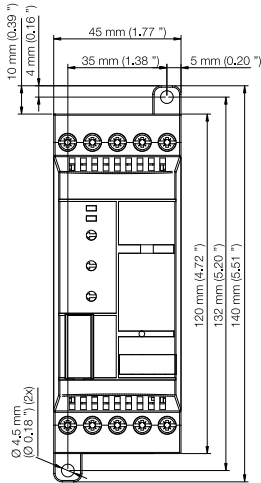
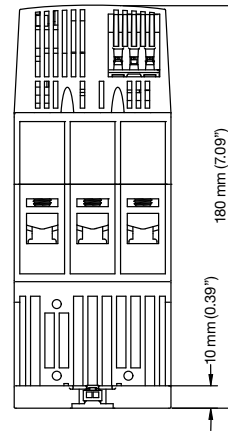
PSR3 ... 16



PSR37 ... 45

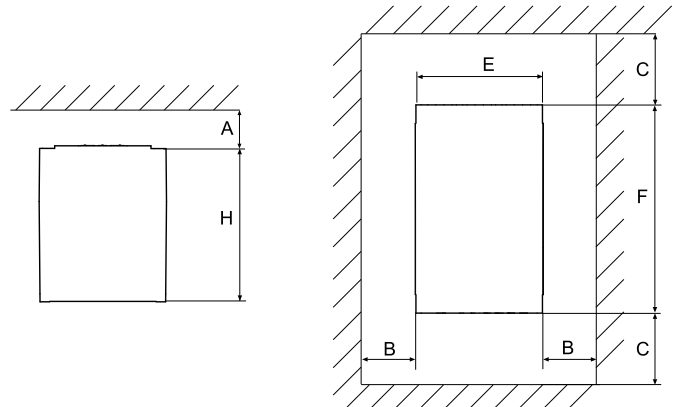
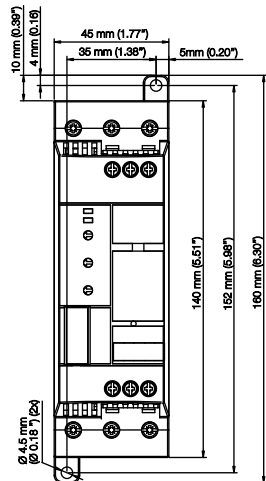
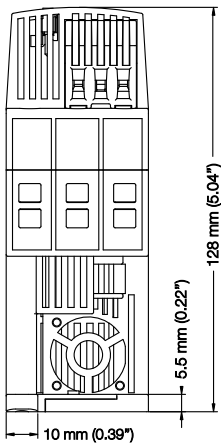


PSR60 ... 105



### Minimum distance to wall/front

PSR25 ... 30



Softstarter, type	Dimensions					
	A	B	C	E	F	H
PSR3 ... PSR105						
PSR3 ... 16	25	0*	0	45	140	114
PSR25 ... 30	25	0*	0	45	160	128
PSR37 ... 45	25	0*	0	54	187	153
PSR60 ... 105	25	0*	0	70	220	180

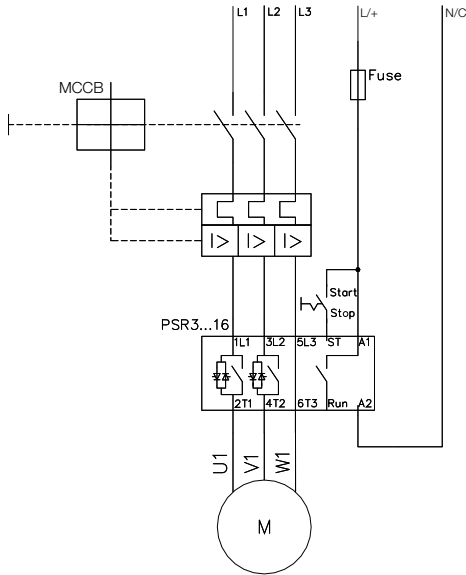
# Circuit diagrams

## PSR3 – PSR105

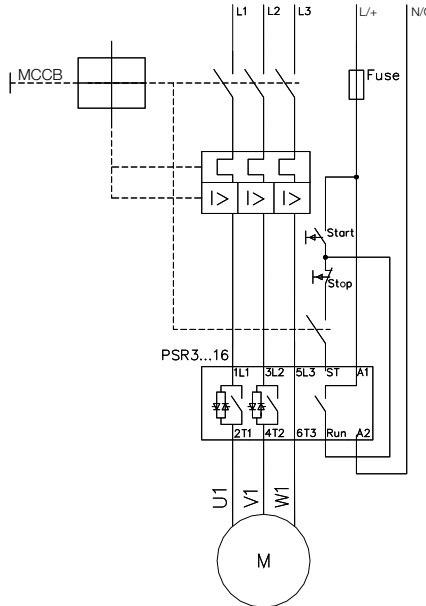
Softstarters  
Type PSR

### PSR3 ...16

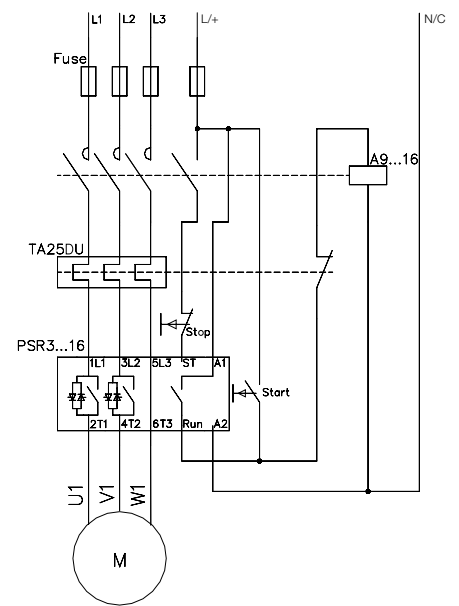
**A) With MCCB**



**B) With MCCB and auxiliary contact**

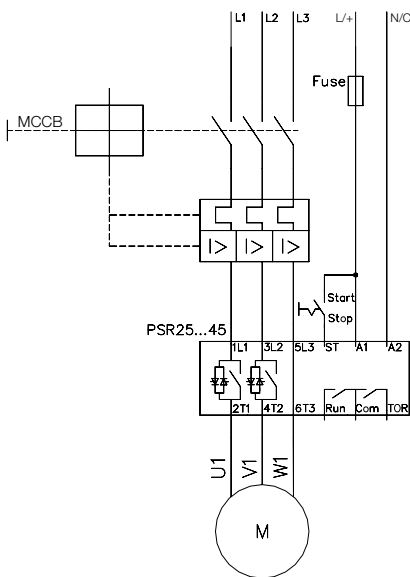


**C) With fuses, contactor and O.L.**

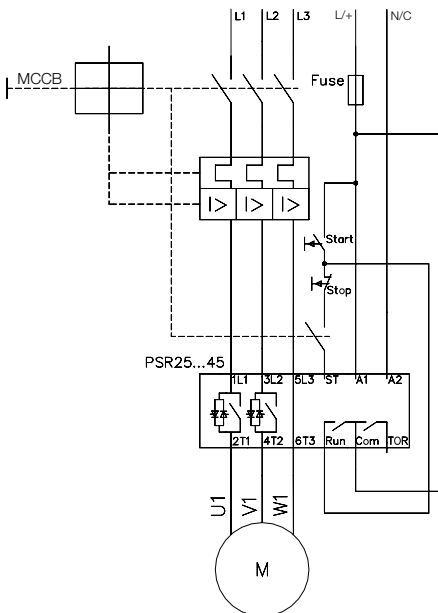


### PSR25 ... 45

**D) With MCCB**



**E) With MCCB and auxiliary contact**



**F) With fuses, contactor and O.L.**

