

PSR - The compact range

Introduction



Technical specifications

- Rated operational current: 3...105 A
- Operational voltage: 208...600 V AC
- Wide rated control supply voltage: 100...240 V AC, 50/60 Hz or 24 V AC/DC

Features

- Two-phase controlled
- Soft start and stop with voltage ramp
- Built-in bypass for energy saving and easy installation
- Easy set-up by three potentiometers
- Run and Top of Ramp relays available for monitoring
- Connection kits available for connection to ABB's manual motor starters (MMS)

Protections

- Motor protection with manual motor starter

Communication

- Fieldbus communication with fieldbus plug adapter and fieldbus plug



SECURE
MOTOR
RELIABILITY

Reduce the electrical stresses and keep the motor protected with the MMS

The PSR reduces the starting current for the motor. The possibility to connect it to the manual motor starter makes it possible to build a compact and complete starting solution with overload and short-circuit protection.



IMPROVE
INSTALLATION
EFFICIENCY

Saving time and money with built-in bypass and easy set-up

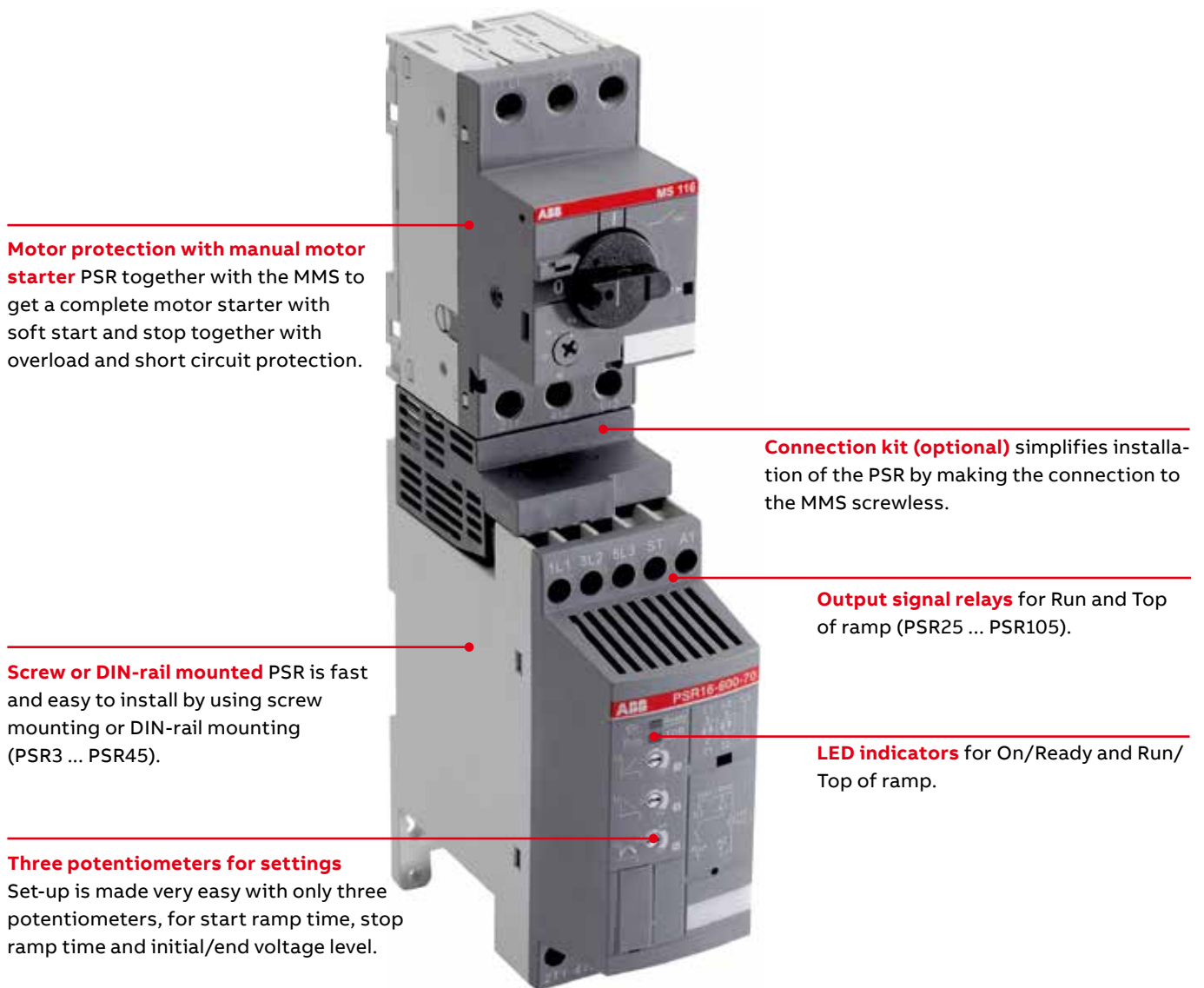
On the PSR, the bypass is built in and verified by ABB, saving you time during installation and space in your panel. Set-up is done through three potentiometers making it very fast and easy.



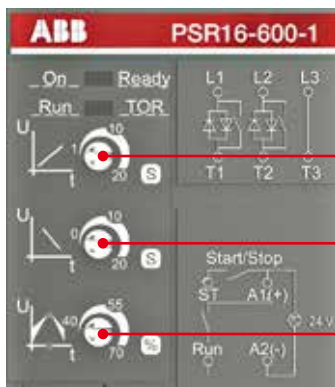
INCREASE
APPLICATION
PRODUCTIVITY

Reduce the mechanical stresses on your motor

Soft start and stop with PSR will reduce mechanical wear and tear on the application and increase the availability and uptime.



Settings

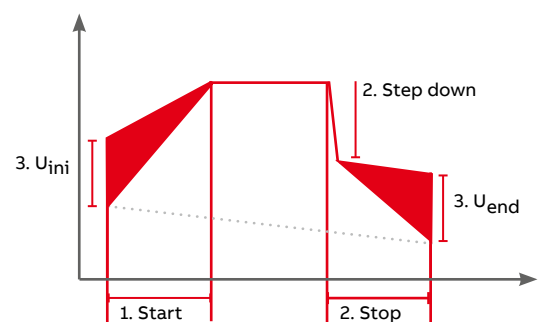


1. Start = 1...20 sec

2. Stop = 0...20 sec - including the step down voltage Step down = 2% reduction for each second increased stop ramp

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

Start and stops



PSR - The compact range

Coordination examples



PSR3 ... PSR16



PSR25 ... PSR30



PSR37 ... PSR45



PSR60 ... PSR105

Normal start In-line connected

Softstarter	Technical data				Using manual motor starters type 1 coordination will be achieved ¹⁾	Using gG fuses type 1 coordination will be achieved ¹⁾	Suitable switch fuse for the above gG fuses ¹⁾	J-type fuses for UL coordination ¹⁾	Overload protection is used to protect the motor from over heating ¹⁾	The line contactor is not required for the softstarter itself but often used to open if OL trips ¹⁾
	IEC kW (400V)	IEC max A	UL HP (440-480 V)	UL max FLA	Manual motor starter (50 kA) 400 V, 40 °C	Fuse protection (50 kA) gG Fuse	Switch fuse	Max. fuse, J-type	Thermal overload relay	Line contactor
PSR3	1.5	3.9	2	3.4	MS116	10A	OS32G	35A	TF42DU	AF9
PSR6	3	6.8	3	6.1	MS116	16A	OS32G	35A	TF42DU	AF9
PSR9	4	9	5	9	MS116	25A	OS32G	35A	TF42DU	AF9
PSR12	5.5	12	7.5	11	MS132	32A	OS32G	35A	TF42DU	AF12
PSR16	7.5	16	10	15.2	MS132	32A	OS32G	35A	TF42DU	AF16
PSR25	11	25	15	24.2	MS132	50A	OS32G	60A	TF42DU	AF26
PSR30	15	30	20	28	MS132	63A	OS32G	60A	TF42DU	AF30
PSR37	18.5	37	25	34	MS165	100A	OS125G	90A	TF42DU	AF38
PSR45	22	45	30	46.2	MS165	125A	OS125G	90A	TA75DU	AF52
PSR60	30	60	40	59.4	MS165	125A	OS125G	110A	TA75DU	AF65
PSR72	37	72	50	68	MS495	200A	OS250	125A	TA75DU	AF80
PSR85	45	85	60	80	MS495	200A	OS250	150A	TA110DU	AF96
PSR105	55	105	75	104	MS495	250A	OS250	200A	TA110DU	AF116

¹⁾ These are an example of coordination. For more examples see: <https://applications.it.abb.com/SOC/Page/Selection.aspx>

²⁾ Can be used with MS495 up to 100 A



Coordination tables (SOC) >

For more examples of coordination visit the online tool for coordination with short circuit protection, overload protection and line contactor.

PSR - The compact range

Normal starts, class 10, in-line

Ordering details



PSR3 ... PSR16



PSR25 ... PSR30



PSR37 ... PSR45



PSR60 ... PSR105

Rated operational voltage U_e , 208...600 V AC, Rated control supply voltage, U_s , 100...240 V AC, 50/60 Hz

IEC rated operational power			current I_e A	UL/CSA rated operational power				FLA	Type	Order code	Net Weight (kg)	Net Weight (lb)
230V P_e kW	400V P_e kW	500V P_e kW		200/208V P_e hp	220/240V P_e hp	440/480V P_e hp	550/600V P_e hp					
0.75	1.5	2.2	3.9	0.5	0.75	2	2	3.4	PSR3-600-70	1SFA896103R7000	0.4	0.8
1.5	3	4	6.8	1	1.5	3	5	6.1	PSR6-600-70	1SFA896104R7000	0.4	0.8
2.2	4	4	9	2	2	5	7.5	9	PSR9-600-70	1SFA896105R7000	0.4	0.8
3	5.5	5.5	12	3	3	7.5	10	11	PSR12-600-70	1SFA896106R7000	0.4	0.8
4	7.5	7.5	16	3	5	10	10	15.2	PSR16-600-70	1SFA896107R7000	0.4	0.8
5.5	11	15	25	7.5	7.5	15	20	24.2	PSR25-600-70	1SFA896108R7000	0.6	1.3
7.5	15	18.5	30	7.5	10	20	25	28	PSR30-600-70	1SFA896109R7000	0.6	1.3
7.5	18.5	22	37	10	10	25	30	34	PSR37-600-70	1SFA896110R7000	1.0	2.2
11	22	30	45	15	15	30	40	46.2	PSR45-600-70	1SFA896111R7000	1.0	2.2
15	30	37	60	20	20	40	50	59.4	PSR60-600-70	1SFA896112R7000	2.1	4.6
22	37	45	72	20	25	50	60	68	PSR72-600-70	1SFA896113R7000	2.1	4.6
22	45	55	85	25	30	60	75	80	PSR85-600-70	1SFA896114R7000	2.1	4.6
30	55	55	105	30	40	75	100	104	PSR105-600-70	1SFA896115R7000	2.1	4.6

Rated operational voltage U_e , 208...600 V AC, Rated control supply voltage, U_s , 24 V AC/DC, 50/60 Hz

IEC rated operational power			current I_e A	UL/CSA rated operational power				FLA	Type	Order code	Net Weight (kg)	Net Weight (lb)
230V P_e kW	400V P_e kW	500V P_e kW		200/208V P_e hp	220/240V P_e hp	440/480V P_e hp	550/600V P_e hp					
0.75	1.5	2.2	3.9	0.5	0.75	2	2	3.4	PSR3-600-11	1SFA896103R1100	0.4	0.8
1.5	3	4	6.8	1	1.5	3	5	6.1	PSR6-600-11	1SFA896104R1100	0.4	0.8
2.2	4	4	9	2	2	5	7.5	9	PSR9-600-11	1SFA896105R1100	0.4	0.8
3	5.5	5.5	12	3	3	7.5	10	11	PSR12-600-11	1SFA896106R1100	0.4	0.8
4	7.5	7.5	16	3	5	10	10	15.2	PSR16-600-11	1SFA896107R1100	0.4	0.8
5.5	11	15	25	7.5	7.5	15	20	24.2	PSR25-600-11	1SFA896108R1100	0.6	1.3
7.5	15	18.5	30	7.5	10	20	25	28	PSR30-600-11	1SFA896109R1100	0.6	1.3
7.5	18.5	22	37	10	10	25	30	34	PSR37-600-11	1SFA896110R1100	1.0	2.2
11	22	30	45	15	15	30	40	46.2	PSR45-600-11	1SFA896111R1100	1.0	2.2
15	30	37	60	20	20	40	50	59.4	PSR60-600-11	1SFA896112R1100	2.1	4.6
22	37	45	72	20	25	50	60	68	PSR72-600-11	1SFA896113R1100	2.1	4.6
22	45	55	85	25	30	60	75	80	PSR85-600-11	1SFA896114R1100	2.1	4.6
30	55	55	105	30	40	75	100	104	PSR105-600-11	1SFA896115R1100	2.1	4.6

PSR - The compact range

Accessories



Connection kit
for PSR3...16



Connection kit
for PSR25...30



Connection kit
for PSR37...45



Connection kit
for PSR60...72



Fan



Terminal enlargements



Fieldbus plug adapter

Connection kit

Article	breaker type	Type	Order code	Pkg qty	Net kg	lb
PSR3...16	MS116/132	PSR16-MS116	1SFA896211R1001	1	0.03	0.08
PSR25...30	MS132	PSR30-MS132	1SFA896212R1001	1	0.03	0.08
PSR37...45	MS165	PSR45-MS165	1SFA896216R1001	1	0.05	0.11
PSR60...72	MS165	PSR60-MS165	1SFA896215R1001	1	0.05	0.11
PSR60...105	MS495	PSR105-MS495	1SAM501903R1001	1	0.03	0.08

Fan

Article	Type	Order code	Pkg qty	Net kg	lb
PSR3...45	PSR-FAN3-45A	1SFA896311R1001	1	0.01	0.02
PSR60...105	PSR-FAN60-105A	1SFA896313R1001	1	0.01	0.03

Terminal enlargements

Article	Type	Order code	Pkg qty	Net kg	lb
PSR60... PSR105	PSLW-72	1SFA899002R1072	1	0.16	0.35

Note: Wire range mm² 1 x 10...50 mm², 2 x 10...25 mm²

Fieldbus plug adapter with cable

Article	Type	Order code	Pkg qty	Net kg	lb
Fieldbus plug adapter	PS-FBPA	1SFA896312R1002	1	0.05	0.11

PSR - The compact range

Technical data

Softstarter types	PSR3	PSR6	PSR9	PSR12	PSR16	PSR25	PSR30	PSR37	PSR45	PSR60	PSR72	PSR85	PSR105
Max. Power loss at rated I _e	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

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 AC/DC, +10%/-15%
Starting capacity at I _e	4 x I _e for 6 sec.
Maximum altitude	4000 m (13123 ft) ³⁾
Number of starts per hour	
standard	10 ¹⁾
with aux. fan	20 ¹⁾
Ambient temperature	
during operation	-25...+60 °C (-13...+140 F) ²⁾
during storage	-40...+70 °C (-40...+158 F)
Degree of protection	
main circuit	PSR3 - PSR30: IP20 PSR37 - PSR105: IP10
control circuit	PSR3 - PSR30: IP20
Power consumption:	
at 100...240 V AC	PSR3 - PSR30: 12 VA PSR37 - PSR105: 10 VA
at 24 V AC/DC	PSR3 - PSR30: 5 W PSR37 - PSR105: 10 VA
Fuse for control supply voltage	
for 100-240V version: 6 A slow acting fuse	
for 24V version: 1.5 A slow acting fuse	
Signal relays for run signal: PSR3.. 105	
Resistive load	3 A
AC-15 (contactor)	0.5 A
Signal relays for top of ramp signal: PSR25... 105	
Resistive load	3 A
AC-15 (contactor)	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 local ABB 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), de-rate the rated current using the following formula.

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

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

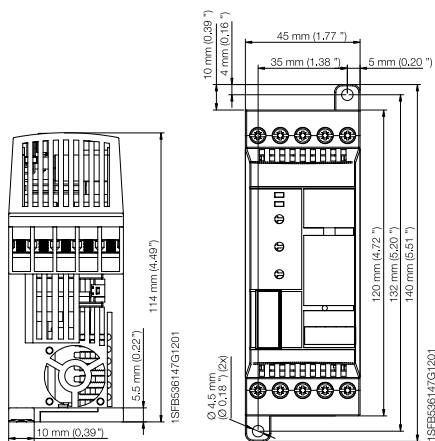
Number of starts per hour using PSR softstarters								
Motor current	Starts/hour with auxiliary fan							
I _e	10	20	30	40	50	60	80	100
3 A	PSR3	PSR3	PSR3	PSR3	PSR3	PSR3	PSR3	PSR3
6 A	PSR6	PSR6	PSR6	PSR6	PSR6	PSR6	PSR6	PSR9
9 A	PSR9	PSR9	PSR9	PSR9	PSR9	PSR12	PSR12	PSR12
12 A	PSR12	PSR12	PSR12	PSR12	PSR12	PSR16	PSR25	PSR25
16 A	PSR16	PSR16	PSR25	PSR25	PSR25	PSR25	PSR30	PSR30
25 A	PSR25	PSR2	PSR30	PSR37	PSR37	PSR37	PSR37	PSR45
30 A	PSR30	PSR30	PSR37	PSR37	PSR45	PSR45	PSR45	PSR45
37 A	PSR37	PSR37	PSR45	PSR45	PSR45	PSR45	PSR60	PSR60
45 A	PSR45	PSR45	PSR45	PSR60	PSR60	PSR60	PSR72	PSR72
60 A	PSR60	PSR60	PSR60	PSR72	PSR72	PSR85	PSR105	-
72 A	PSR72	PSR72	PSR72	PSR85	PSR105	PSR105	-	-
85 A	PSR85	PSR85	PSR105	PSR105	-	-	-	-
105 A	PSR105	PSR105	-	-	-	-	-	-

Data based on an ambient temperature of 40° (104 F), starting current of 4 x I_e and ramp time 6 seconds. For more optimized selection or to use PSR for heavy-duty starts, please use the softstarter selection tool.

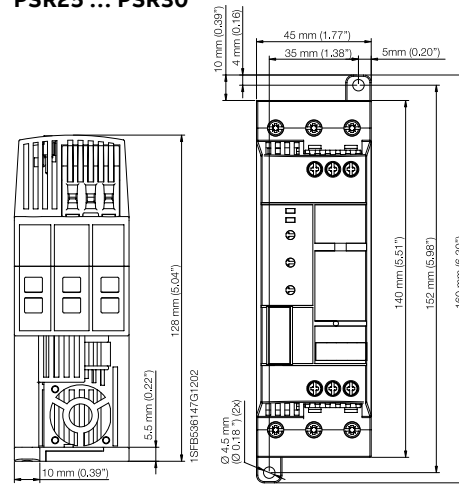
PSR - The compact range

Main dimensions

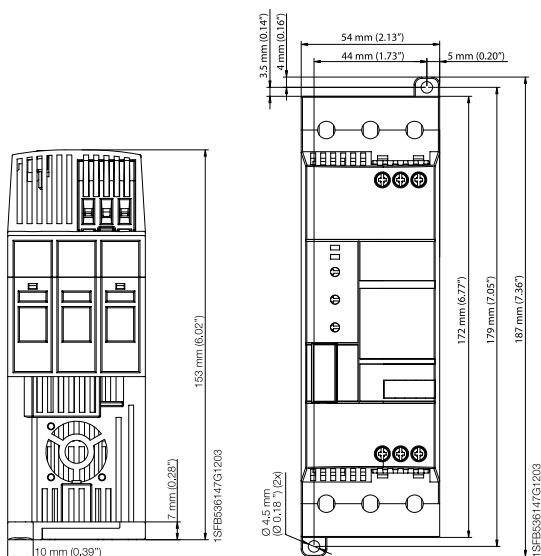
PSR3 ... PSR16



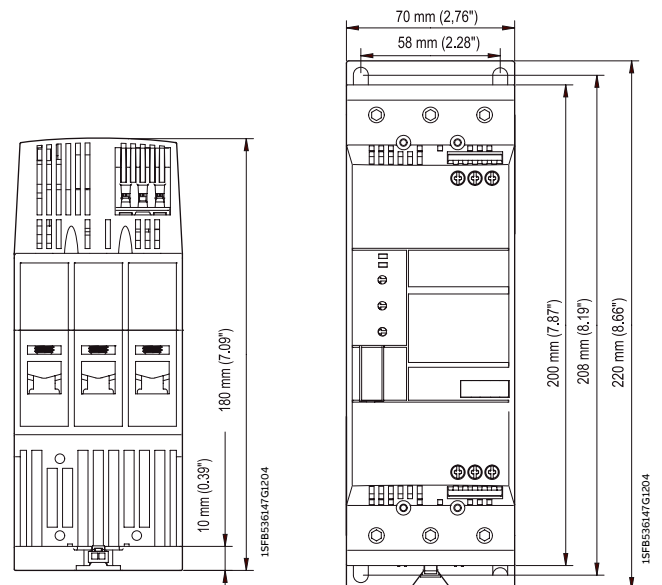
PSR25 ... PSR30



PSR37 ... PSR45



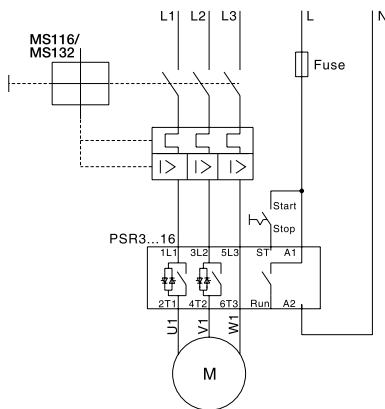
PSR60 ... PSR105



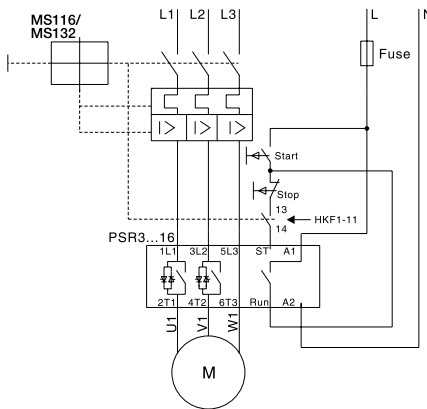
PSR - The compact range

Circuit diagrams

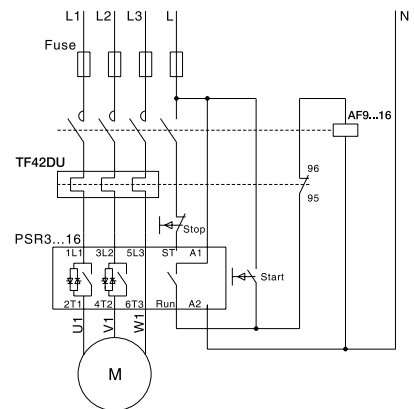
PSR3 ... PSR16 With MMS



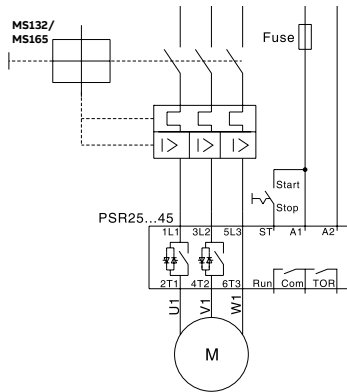
With MMS and auxiliary contact



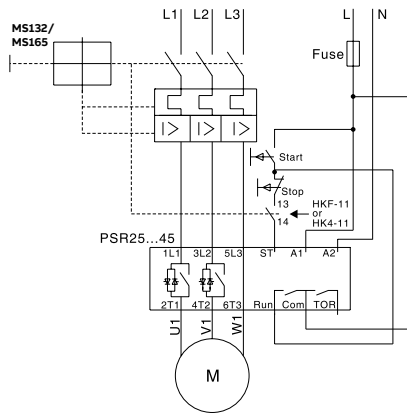
With fuses, contactor and O.L.



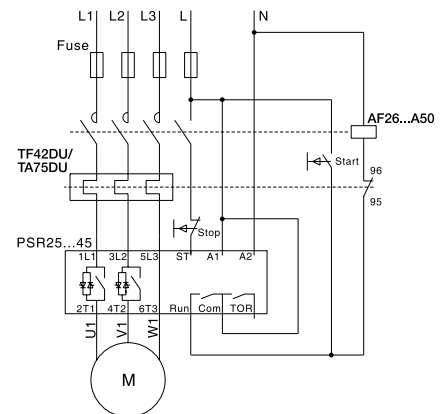
PSR25 ... PSR45 With MMS



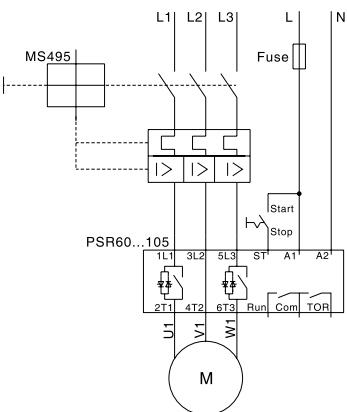
With MMS and auxiliary contact



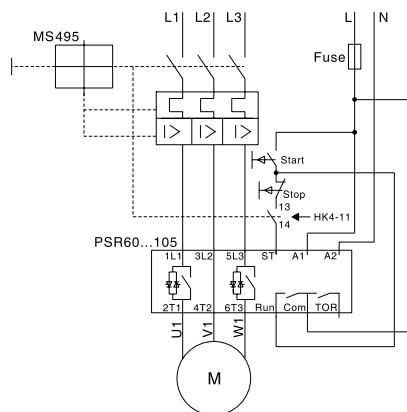
With fuses, contactor and O.L.



PSR60 ... PSR105 With MMS



With MMS and auxiliary contact



With fuses, contactor and O.L.

