

# Type PSS Softstarters

## General information

The PSS Softstarter line brings a wide array of benefits for smaller motors in a flexible, compact form.

## The PSS "Flexible" Softstarter line

PSS18/30 to PSS300/515 softstarters provide a flexible solution for motor starting. Rated motor currents are covered from 18A to 300A when connected in line like a traditional full voltage starter. These units can also be wired inside the motor-delta, like a wye-delta starter, covering motors up to 515A. This flexibility makes it easier than ever before to replace wye-delta starters.

The total solid state solution - with no moving contacts in the power circuit - is an attractive solution for applications with many starts per hour. Adjustable parameters include acceleration time, initial voltage and optional current limit for starting and deceleration time for stopping.

Class 10 overload protection is standard for Type PSS enclosed softstarters.

UL File # E161428

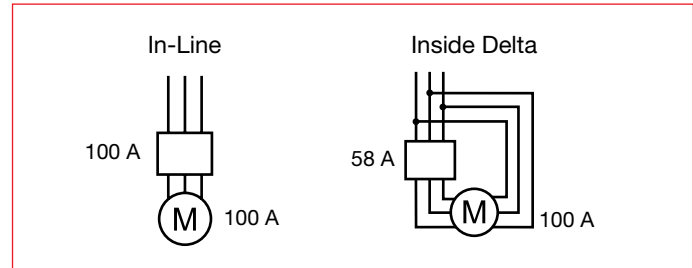
## Application and description PSS18/30 – PSS300/515

### Description

- Wide main voltage range 208 - 500 V AC
- Supply voltage range 110-120 V AC and 220-240 V AC
- Current ratings 18 ... 300 A (In Line) and 30 ... 515 A (Inside Delta)
- Same unit can be used for both In Line and Inside Delta connection
- Start ramp, Stop ramp and Initial voltage included
- Current limit function as option
- Solid state electrical circuit
- Designed for continuous operation without by-pass
- 15% overcurrent capability during continuous run (10% for PSS300/515)
- Accessories for connection and installation available: See the ordering pages

### Application

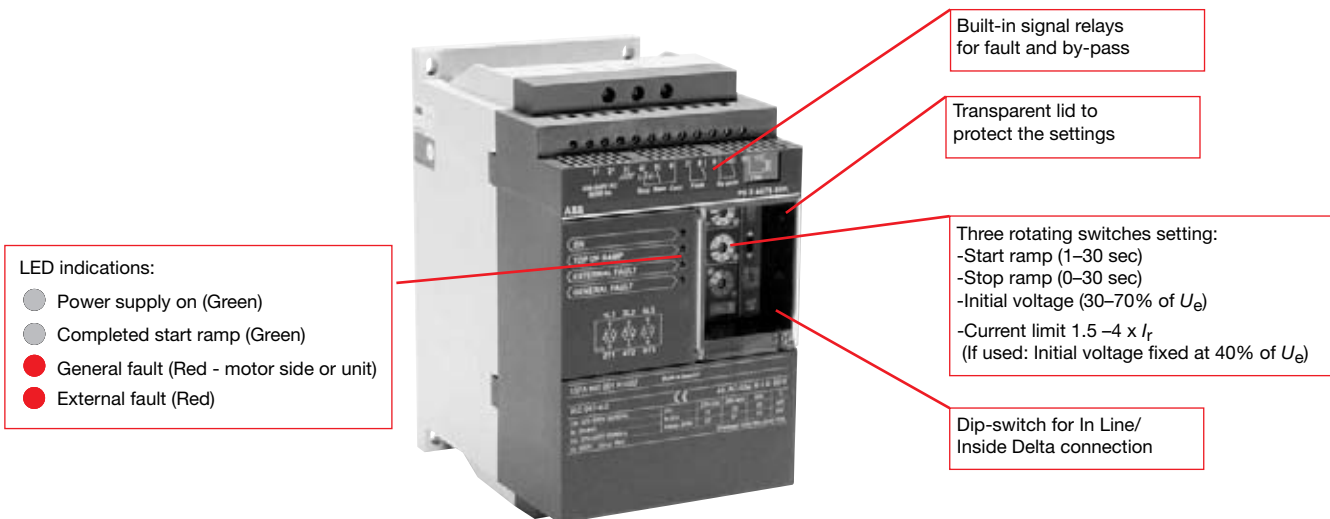
The softstarter range PSS18/30 ... PSS300/515 is a very flexible solution suitable for most applications and for replacements of Wye-Delta starters. Since the unit can be connected inside the motor delta (compare the connection for standard Wye-Delta starters), the current through the softstarter is reduced by 42%. It will then be possible, for example, to run a 100 A motor using a 58 A PSS Softstarter.



In-Line and Inside Delta connection of PSS18/30 ... PSS300/515

The PSS Softstarter can be selected according to the rated motor power in **normal duty** applications like pumps, compressors, elevators, escalators, short conveyor belts and bow thrusters – see pages 6.20 & 6.21.

For **heavy duty** applications like centrifugal fans, crushers, mixers, mills, stirrers and long conveyor belts, select a softstarter from pages 6.22 & 6.23.



# Application and description

## PSS18/30 – PSS300/515

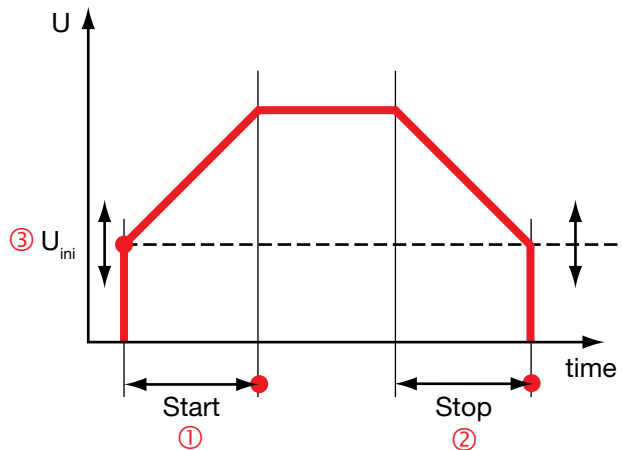
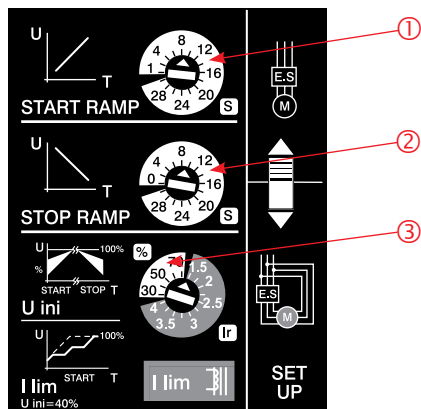
Softstarters  
Type PSS



Different sizes of PSS, from left PSS175/300-500L, PSS85/147-500L, PSS50/85-500L and in the front PSS18/30-500L.

### Settings

#### PSS18/30 ... PSS300/515



- ① Ramp time START = 1 ... 30 sec
- ② Ramp time STOP = 0 ... 30 sec
- ③ Initial voltage  $U_{ini}$  = 40 ... 70% when current limit is used fixed at 40% (also set "end voltage")

## General information

### Catalog number explanation

### Open type

#### PSS Open type

**PSS - 18/30 - 500 - F**

**Softstarter**  
Type PSS

**Maximum motor current**  
when connected in-line

**Maximum motor current**  
when connected inside delta

**Control voltage**

F - 100V – 120V, 50/60Hz  
L - 220V – 240V, 50/60Hz

**Line voltage**

500: 208V – 500V  
690: 575V – 690V

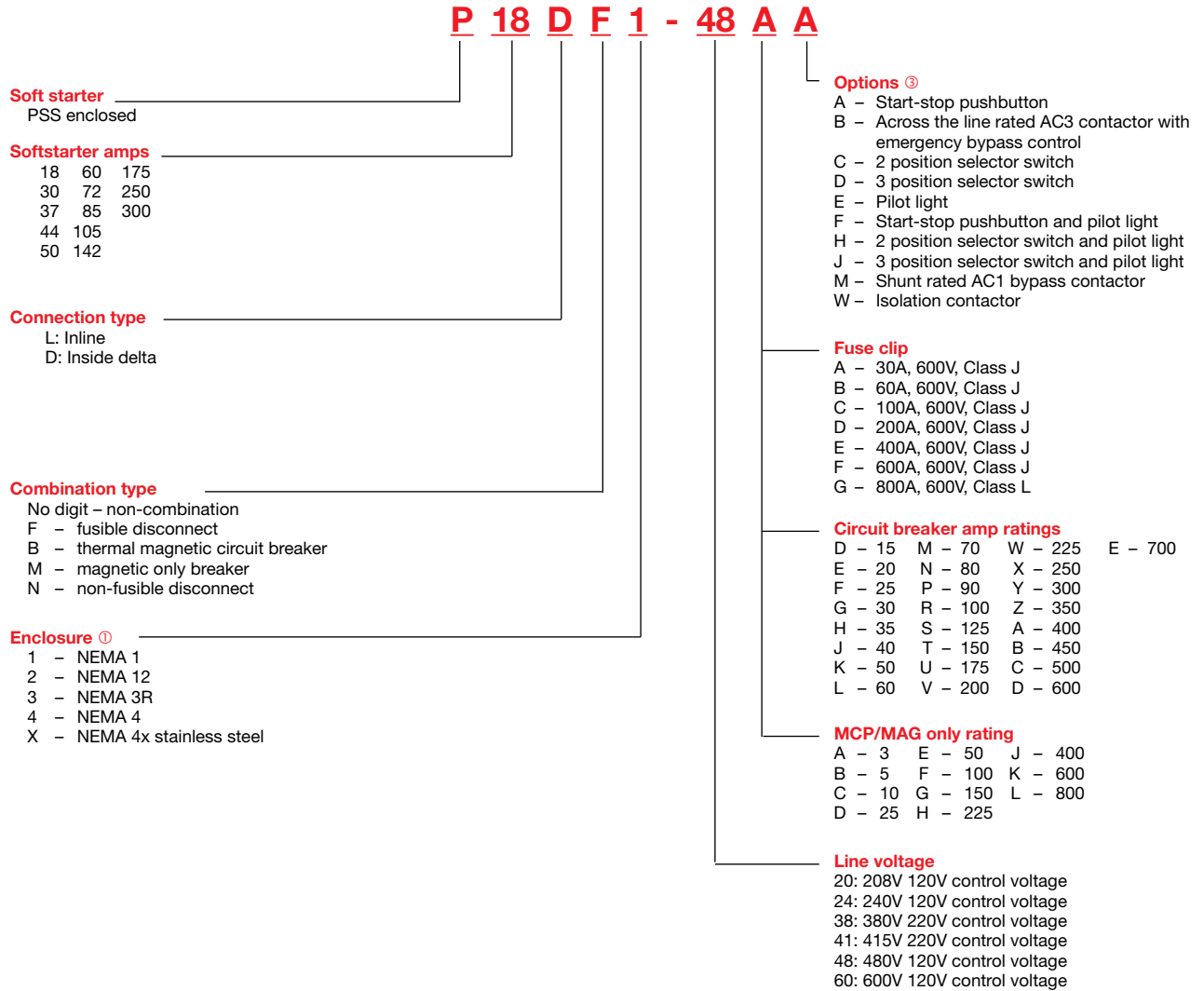
# General information

## Catalog number explanation

### Enclosed type

Softstarters  
Type PSS

#### PSS Enclosed type ②



① Bypass contactor recommended. AC1 shunt rated.

② Consult factory for quote on Enclosed Softstarters or use our on-line configurator.

③ When selecting options, place the suffix in alphabetical order.

## Selection guide PSS18/30 – PSS72/124



Softstarter type 480V, 104°F	PSS18/30 ... 44/76				PSS50/85 ... 72/124		
	PSS 18/30	PSS 30/52	PSS 37/64	PSS 44/76	PSS 50/85	PSS 60/105	PSS 72/124
Normal start, In Line connected : (480 V), hp UL, Max. A	10 18	20 28	25 34	30 40	30 47	40 56	50 67
	<b>MCCB Branch protection</b> ①						
Recommended size MCCB	T2	T2	T2	T2	T2	T2	T2
	<b>Fuse protection 65 kA (Max. fuse size), Semiconductor fuses, Bussman with fuse holder</b>						
Semiconductor fuse Zylox and respective fuse holders.	170M1364 170H1007	170M1366 170H1007	170M1368 170H1007	170M1369 170H1007	170M1369 170H1007	170M1370 170H1007	170M1371 170H1007
	<b>Fused disconnect</b> ①						
Suitable fused disconnect for J fuses 480 V Fuse, Type J fuse, minimum rating Short circuit current rating	OS60 35 A 5 kA	OS60 45 A 5 kA	OS60 60 A 5 kA	OS100 80 A 5 kA	OS100 80 A 5 kA	OS100 100 A 5 kA	OS200 125 A 10 kA
The line contactor is not required for the softstarter itself but often used to open if OL trips.	<b>AC-3 rated by-pass</b> ①						
	A16	A26	A30	A40	A40	A50	A63
The overload relay is always required to protect the motor.	<b>Thermal overload relay</b> ①						
	TA25DU	TA25DU	TA42DU	TA75DU	TA75DU	TA75DU	TA75DU
The by-pass contactor can be used to reduce the power loss of the softstarter but also to increase the number of starts/h.	<b>AC-1 rated by-pass</b> ①						
	A9	A16	A26	A26	A30	A40	A50
	<b>Current transformers</b>						
The current transformer is required if the current limit function of the PSS is used.	PSCT-30 1 turn	PSCT-40 1 turn	PSCT-50 1 turn	PSCT-60 1 turn	PSCT-75 1 turn	PSCT-75 1 turn	PSCT-100 1 turn
	<b>Control transformers</b>						
Min. recommended control transformer size.	50 VA	50 VA	50 VA	50 VA	50 VA	50 VA	50 VA
Power consumption with by-pass	13.5 W	14.6 W	17.5 W	17.5 W	20.5 W	22 W	30.5 W
Power consumption without by-pass	65 W	100 W	120 W	142 W	160 W	190 W	226 W

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

# Selection guide

## PSS85/147 – PSS300/315

Softstarters  
Type PSS



PSS85/147 ... 142/245			PSS175/300 ... 300/515		
PSS	PSS	PSS	PSS	PSS	PSS
85/147	105/181	142/245	175/300	250/430	300/515
60	75	100	125	150	200
85	105	125	156	225	248
T3	T3	T3	T4	T4	T5
170M1372	170M3019	170M3020	170M3021	170M5013	170M5015
170H1007	170H3004	170H3004	170H3004	170H3004	170H3004
OS200	OS400	OS400	OS400	OS400	OES600
150 A	200 A	250 A	300 A	400 A	500 A
10 kA	10 kA	10 kA	10 kA	10 kA	18 kA
A95	A110	A145	A185	A210	A260
TA110DU	TA110DU	TA200DU	TA200DU	TA450DU	TA450DU
A50	A75	A110	A145	A145	A185
PSCT-125 1 turn	PSCT-150 1 turn	PSCT-200 1 turn	PSCT-250 1 turn	PSCT-400 1 turn	PSCT-400 1 turn
75 VA	75 VA	75 VA	75 VA	75 VA	75 VA
56.5 W	61 W	63 W	117 W	117 W	140 W
291 W	351 W	462 W	590 W	815 W	965 W

**How to select correct size**  
By using the guide beside, you can quickly select a suitable softstarter for the most common applications. If a more precise selection is required, you can use Prosoft, a selection software available at [www.abb.com/lowvoltage](http://www.abb.com/lowvoltage).

**Quick guide for selection**

Normal start Class 10	Heavy duty start Class 30
Ordering – See page 6.20 –21	Ordering – See page 6.22-23
<b>Typical applications</b> <ul style="list-style-type: none"> <li>• Bow thruster</li> <li>• Compressor</li> <li>• Elevator</li> <li>• Centrifugal pump</li> <li>• Conveyor belt (short)</li> <li>• Escalator</li> </ul>	<b>Typical applications</b> <ul style="list-style-type: none"> <li>• Centrifugal fan</li> <li>• Crusher</li> <li>• Mixer</li> <li>• Conveyor belt (long)</li> <li>• Mill</li> <li>• Stirrer</li> </ul>
<b>If more than 10 starts /h</b> Select one size larger than the standard selection.	

## PSS18/30 – PSS300/515

### Normal starts, Class 10, In-line



PSS18/30-500 ... 44/76-500



PSS50/85-500 ... 72/124-500



PSS85/147-500 ... 142/245-500



PSS175/300-500 ... 300/515-500

#### PSS 18/30... PSS300/515 – UL Rated ①②③

##### 208 - 480 VAC

Maximum motor current		Maximum horsepower				Weight (lbs.)	Catalog number	List price
UL	IEC	208V	240V	380V	480V			
18	18	5	5	10	10	5	PSS18/30-500F	\$ 620
28	30	7.5	10	15	20	5	PSS30/52-500F	680
34	37	10	10	20	25	5	PSS37/64-500F	750
40	44	10	10	25	30	5	PSS44/76-500F	900
47	50	15	15	25	30	8	PSS50/85-500F	1,120
56	60	15	20	30	40	8.4	PSS60/105-500F	1,325
67	72	20	20	40	50	8.4	PSS72/124-500F	1,460
85	85	25	30	50	60	19	PSS85/147-500F ⑤	1,650
105	105	30	40	60	75	23	PSS105/181-500F ⑤	1,700
125	142	40	40	75	100	23	PSS142/245-500F ⑤	2,250
156	175	50	60	100	125	45	PSS175/300-500F ⑤	2,900
225	250	75	75	150	150	48.4	PSS250/430-500F ⑤	3,400
248	300	75	100	150	200	48.4	PSS300/515-500F ⑤	3,950

#### PSS 18/30... PSS300/515 – IEC Rated

##### 230 - 500 VAC

Motor power		Max rated motor current, I <sub>e</sub> A	Reference code	Catalog number	List price
400 V P <sub>e</sub> kW	500 V P <sub>e</sub> kW				
7.5	11	18	1SFA 892 001 RΔ00‡	PSS18/30-500Δ‡	\$ 620
15	18.5	30	1SFA 892 002 RΔ00‡	PSS30/52-500Δ‡	680
18.5	22	37	1SFA 892 003 RΔ00‡	PSS37/64-500Δ‡	750
22	25	44	1SFA 892 004 RΔ00‡	PSS44/76-500Δ‡	900
25	30	50	1SFA 892 005 RΔ00‡	PSS50/85-500Δ‡	1120
30	37	60	1SFA 892 006 RΔ00‡	PSS60/105-500Δ‡	1325
37	45	72	1SFA 892 007 RΔ00‡	PSS72/124-500Δ‡	1460
45	55	85	1SFA 892 008 RΔ00‡	PSS85/147-500Δ‡ ⑤	1650
55	75	105	1SFA 892 009 RΔ00‡	PSS105/181-500Δ‡ ⑤	1700
75	90	142	1SFA 892 010 RΔ00‡	PSS142/245-500Δ‡ ⑤	2250
90	110	175	1SFA 892 011 RΔ00‡	PSS175/300-500Δ‡ ⑤	2900
132	160	250	1SFA 892 013 RΔ00‡	PSS250/430-500Δ‡ ⑤	3400
160	200	300	1SFA 892 014 RΔ00‡	PSS300/515-500Δ‡ ⑤	3950

#### Catalog number ④

**Supply voltage, U<sub>s</sub>**  
Replace the Δ with the corresponding suffix code:  
F = 110-120 V, 50/60 Hz  
L = 220-240 V, 50/60 Hz

**Fault signal relay**  
Replace the ‡ with the corresponding suffix code:  
No code letter = NO  
C = NC

#### Reference code ④

**Supply voltage, U<sub>s</sub>**  
Replace the Δ with the corresponding suffix code:  
1 = 110-120 V, 50/60 Hz  
2 = 220-240 V, 50/60 Hz

**Fault signal relay**  
Replace the ‡ with the corresponding suffix code:  
1 = NO  
2 = NC

① Catalog numbers are shown with 120V control voltage and N.O. fault contact. For 240V control voltage, replace the "F" with "L" in the catalog number. If you need a N.C. fault contact, add suffix "C" at the end of the catalog number.

② Overload protection not included; external overload relay must be in power circuit. Use ABB TA series overload.

③ Current transformer not included. See page 6.24 for current transformers. CT needed for current limiting function.

④ All options available for UL / IEC.

⑤ Lugs are not included. See page 6.24 for lug selection.

# PSS18/30 – PSS300/515

## Normal starts, Class 10, Inside delta

Softstarters  
Type PSS

### PSS 18/30... PSS300/515 – UL Rated ①②③

#### 208 - 480 VAC

Maximum motor current		Maximum horsepower				Weight (lbs.)	Catalog number	List price
UL	IEC	208V	240V	380V	480V			
30	30	7.5	10	15	20	5	PSS18/30-500F	\$ 620
48	52	15	15	30	30	5	PSS30/52-500F	680
58	64	20	20	30	40	5	PSS37/64-500F	750
69	76	20	25	40	50	5	PSS44/76-500F	900
81	85	25	30	50	60	8	PSS50/85-500F	1,120
96	105	30	30	60	75	8.4	PSS60/105-500F	1,325
116	124	40	40	60	75	8.4	PSS72/124-500F	1,460
147	147	50	50	75	100	19	PSS85/147-500F ⑤	1,650
181	181	60	60	100	150	23	PSS105/181-500F ⑤	1,700
215	245	75	75	150	150	23	PSS142/245-500F ⑤	2,250
270	300	75	100	150	200	45	PSS175/300-500F ⑤	2,900
389	430	125	150	250	300	48.4	PSS250/430-500F ⑤	3,400
429	515	150	150	300	350	48.4	PSS300/515-500F ⑤	3,950



PSS18/30-500 ... 44/76-500



PSS50/85-500 ... 72/124-500



PSS85/147-500 ... 142/245-500



PSS175/300-500 ... 300/515-500

### PSS 18/30... PSS300/515 – IEC Rated

#### 230 - 500 VAC

Motor power		Max rated motor current, I <sub>e</sub> A	Reference code	Catalog number	List price
400 V P <sub>e</sub> kW	500 V P <sub>e</sub> kW				
15	18.5	30	1SFA 892 001 RΔ00‡	PSS18/30-500Δ‡	\$ 620
25	30	52	1SFA 892 002 RΔ00‡	PSS30/52-500Δ‡	680
30	37	64	1SFA 892 003 RΔ00‡	PSS37/64-500Δ‡	750
37	45	76	1SFA 892 004 RΔ00‡	PSS44/76-500Δ‡	900
45	55	85	1SFA 892 005 RΔ00‡	PSS50/85-500Δ‡	1120
55	75	105	1SFA 892 006 RΔ00‡	PSS60/105-500Δ‡	1325
59	80	124	1SFA 892 007 RΔ00‡	PSS72/124-500Δ‡	1460
75	90	147	1SFA 892 008 RΔ00‡	PSS85/147-500Δ‡ ⑤	1650
90	110	181	1SFA 892 009 RΔ00‡	PSS105/181-500Δ‡ ⑤	1700
132	160	245	1SFA 892 010 RΔ00‡	PSS142/245-500Δ‡ ⑤	2250
160	200	300	1SFA 892 011 RΔ00‡	PSS175/300-500Δ‡ ⑤	2900
220	295	430	1SFA 892 013 RΔ00‡	PSS250/430-500Δ‡ ⑤	3400
257	355	515	1SFA 892 014 RΔ00‡	PSS300/515-500Δ‡ ⑤	3950

#### Catalog number ④

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

Replace the Δ with the corresponding suffix code:  
F = 110-120 V, 50/60 Hz  
L = 220-240 V, 50/60 Hz

##### Fault signal relay

Replace the ‡ with the corresponding suffix code:

No code letter = NO  
C = NC

#### Reference code ④

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

Replace the Δ with the corresponding suffix code:  
1 = 110-120 V, 50/60 Hz  
2 = 220-240 V, 50/60 Hz

##### Fault signal relay

Replace the ‡ with the corresponding suffix code:

1 = NO  
2 = NC

① Catalog numbers are shown with 120V control voltage and N.O. fault contact. For 240V control voltage, replace the "F" with "L" in the catalog number. If you need a N.C. fault contact, add suffix "C" at the end of the catalog number.

② Overload protection not included; external overload relay must be in power circuit. Use ABB TA series overload.

③ Current transformer not included. See page 6.24 for current transformers. CT needed for current limiting function.

④ All options available for UL / IEC.

⑤ Lugs are not included. See page 6.24 for lug selection.



PSS30/52-500 ... 44/76-500



PSS50/85-500 ... 72/124-500



PSS85/147-500 ... 142/245-500



PSS175/300-500 ... 300/515-500

**PSS 18/30... PSS300/515 – UL Rated ①②③**

**208 - 480 VAC**

Maximum motor current		Maximum horsepower				Weight (lbs.)	Catalog number	List price
UL	IEC	208V	240V	380V	480V			
28	30	7.5	10	15	20	5	PSS30/52-500F	\$ 680
34	37	10	10	20	25	5	PSS37/64-500F	750
40	44	10	10	25	30	5	PSS44/76-500F	900
47	50	15	15	25	30	8	PSS50/85-500F	1,120
56	60	15	20	30	40	8.4	PSS60/105-500F	1,325
67	72	20	20	40	50	8.4	PSS72/124-500F	1,460
85	85	25	30	50	60	19	PSS85/147-500F ⑤	1,650
105	105	30	40	60	75	23	PSS105/181-500F ⑤	1,700
125	142	40	40	75	100	23	PSS142/245-500F ⑤	2,250
156	175	50	60	100	125	45	PSS175/300-500F ⑤	2,900
225	250	75	75	150	150	48.4	PSS250/430-500F ⑤	3,400
248	300	75	100	150	200	48.4	PSS300/515-500F ⑤	3,950

**PSS 30/52... PSS300/515 – IEC Rated**

**230 - 500 VAC**

Motor power		Max rated motor current, I <sub>e</sub> A	Reference code	Catalog number	List price
400 V P <sub>e</sub> kW	500 V P <sub>e</sub> kW				
7.5	11	18	1SFA 892 002 RΔ00‡	PSS30/52-500Δ‡	\$ 680
15	18.5	30	1SFA 892 003 RΔ00‡	PSS37/64-500Δ‡	750
18.5	22	37	1SFA 892 004 RΔ00‡	PSS44/76-500Δ‡	900
22	25	44	1SFA 892 005 RΔ00‡	PSS50/85-500Δ‡	1120
25	30	50	1SFA 892 006 RΔ00‡	PSS60/105-500Δ‡	1325
30	37	60	1SFA 892 007 RΔ00‡	PSS72/124-500Δ‡	1460
37	45	72	1SFA 892 008 RΔ00‡	PSS85/147-500Δ‡ ⑤	1650
45	55	85	1SFA 892 009 RΔ00‡	PSS105/181-500Δ‡ ⑤	1700
55	75	105	1SFA 892 010 RΔ00‡	PSS142/245-500Δ‡ ⑤	2250
75	90	142	1SFA 892 011 RΔ00‡	PSS175/300-500Δ‡ ⑤	2900
90	110	175	1SFA 892 013 RΔ00‡	PSS250/430-500Δ‡ ⑤	3400
132	160	250	1SFA 892 014 RΔ00‡	PSS300/515-500Δ‡ ⑤	3950

**Catalog number ④**

**Supply voltage, U<sub>s</sub>**

Replace the Δ with the corresponding suffix code:  
**F** = 110-120 V, 50/60 Hz  
**L** = 220-240 V, 50/60 Hz

**Fault signal relay**

Replace the ‡ with the corresponding suffix code:  
**No code letter** = NO  
**C** = NC

**Reference code ④**

**Supply voltage, U<sub>s</sub>**

Replace the Δ with the corresponding suffix code:  
**1** = 110-120 V, 50/60 Hz  
**2** = 220-240 V, 50/60 Hz

**Fault signal relay**

Replace the ‡ with the corresponding suffix code:  
**1** = NO  
**2** = NC

① Catalog numbers are shown with 120V control voltage and N.O. fault contact. For 240V control voltage, replace the "F" with "L" in the catalog number. If you need a N.C. fault contact, add suffix "C" at the end of the catalog number.

② Overload protection not included; external overload relay must be in power circuit. Use ABB TA series overload.

③ Current transformer not included. See page 6.24 for current transformers. CT needed for current limiting function.

④ All options available for UL / IEC.

⑤ Lugs are not included. See page 6.24 for lug selection.



# PSS30/52 – PSS300/515

## Heavy duty starts, Class 30, Inside delta

Softstarters  
Type PSS



PSS30/52-500 ... 44/76-500



PSS50/85-500 ... 72/124-500



PSS85/147-500 ... 142/245-500



PSS175/300-500 ... 300/515-500

### PSS 18/30... PSS300/515 – UL Rated ①②③

#### 208 - 480 VAC

Maximum motor current		Maximum horsepower				Weight (lbs.)	Catalog number	List price
UL	IEC	208V	240V	380V	480V			
30	30	7.5	10	15	20	5	PSS30/52-500F	\$ 680
48	52	15	15	30	30	5	PSS37/64-500F	750
58	64	20	20	30	40	5	PSS44/76-500F	900
69	76	20	25	40	50	5	PSS50/85-500F	1,120
81	85	25	30	50	60	8	PSS60/105-500F	1,325
96	105	30	30	60	75	8.4	PSS72/124-500F	1,460
116	124	40	40	60	75	8.4	PSS85/147-500F ⑤	1,650
147	147	50	50	75	100	19	PSS105/181-500F ⑤	1,700
181	181	60	60	100	150	23	PSS142/245-500F ⑤	2,250
215	245	75	75	150	150	23	PSS175/300-500F ⑤	2,900
270	300	75	100	150	200	45	PSS250/430-500F ⑤	3,400
389	430	125	150	250	300	48.4	PSS300/515-500F ⑤	3,950

### PSS 30/52... PSS300/515 – IEC Rated

#### 230 - 500 VAC

Motor power		Max rated motor current, I <sub>e</sub> A	Reference code	Catalog number	List price
400 V P <sub>e</sub> kW	500 V P <sub>e</sub> kW				
15	18.5	30	1SFA 892 002 RΔ00‡	PSS30/52-500Δ‡	\$ 680
25	30	52	1SFA 892 003 RΔ00‡	PSS37/64-500Δ‡	750
30	37	64	1SFA 892 004 RΔ00‡	PSS44/76-500Δ‡	900
37	45	76	1SFA 892 005 RΔ00‡	PSS50/85-500Δ‡	1120
45	55	85	1SFA 892 006 RΔ00‡	PSS60/105-500Δ‡	1325
55	75	105	1SFA 892 007 RΔ00‡	PSS72/124-500Δ‡	1460
59	80	124	1SFA 892 008 RΔ00‡	PSS85/147-500Δ‡ ⑤	1650
75	90	147	1SFA 892 009 RΔ00‡	PSS105/181-500Δ‡ ⑤	1700
90	110	181	1SFA 892 010 RΔ00‡	PSS142/245-500Δ‡ ⑤	2250
132	160	245	1SFA 892 011 RΔ00‡	PSS175/300-500Δ‡ ⑤	2900
160	200	300	1SFA 892 013 RΔ00‡	PSS250/430-500Δ‡ ⑤	3400
220	295	430	1SFA 892 014 RΔ00‡	PSS300/515-500Δ‡ ⑤	3950

#### Catalog number ④

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

Replace the Δ with the corresponding suffix code:  
**F** = 110-120 V, 50/60 Hz  
**L** = 220-240 V, 50/60 Hz

##### Fault signal relay

Replace the ‡ with the corresponding suffix code:  
**No code letter** = NO  
**C** = NC

#### Reference code ④

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

Replace the Δ with the corresponding suffix code:  
**1** = 110-120 V, 50/60 Hz  
**2** = 220-240 V, 50/60 Hz

##### Fault signal relay

Replace the ‡ with the corresponding suffix code:  
**1** = NO  
**2** = NC

① Catalog numbers are shown with 120V control voltage and N.O. fault contact. For 240V control voltage, replace the "F" with "L" in the catalog number. If you need a N.C. fault contact, add suffix "C" at the end of the catalog number.

② Overload protection not included; external overload relay must be in power circuit. Use ABB TA series overload.

③ Current transformer not included. See page 6.24 for current transformers. CT needed for current limiting function.

④ All options available for UL / IEC.

⑤ Lugs are not included. See page 6.24 for lug selection.

## Accessories

### PSS18/30 – PSS300/515

#### Current transformer for current limit function

To be connected to terminals 11 and 12 on the softstarter.  
The setting range (1.5 – 4) corresponds to a multiple of the transformer ratio.  
Technical data below shows transformer ratio and number of turns for the primary winding.  
You can also use your own current transformer with corresponding transformer ratio and with minimum 1 VA.

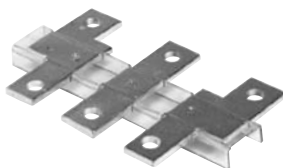
For Softstarter type	Transformer ratio, Number of turns	Packing Piece	Reference code	Catalog number	List price
PSS18/30	60/1 – 2 turns	1	1SFA 899 001 R1060	PSCT-30	<b>\$ 70</b>
PSS30/52	40/1 – 1 turn	1	1SFA 899 001 R1040	PSCT-40	<b>70</b>
PSS37/64	50/1 – 1 turn	1	1SFA 899 001 R1050	PSCT-50	<b>70</b>
PSS44/76	60/1 – 1 turn	1	1SFA 899 001 R1060	PSCT-60	<b>70</b>
PSS50/85	75/1 – 1 turn	1	1SFA 899 001 R1075	PSCT-75	<b>130</b>
PSS60/105	75/1 – 1 turn	1	1SFA 899 001 R1075	PSCT-75	<b>130</b>
PSS72/124	100/1 – 1 turn	1	1SFA 899 001 R1100	PSCT-100	<b>130</b>
PSS85/147	125/1 – 1 turn	1	1SFA 899 001 R1125	PSCT-125	<b>130</b>
PSS105/181	150/1 – 1 turn	1	1SFA 899 001 R1150	PSCT-150	<b>130</b>
PSS142/245	200/1 – 1 turn	1	1SFA 899 001 R1200	PSCT-200	<b>130</b>
PSS175/300	250/1 – 1 turn	1	1SFA 899 001 R1250	PSCT-250	<b>130</b>
PSS250/430	400/1 – 1 turn	1	1SFA 899 001 R1400	PSCT-400	<b>130</b>
PSS300/515	400/1 – 1 turn	1	1SFA 899 001 R1400	PSCT-400	<b>130</b>



PSCT...



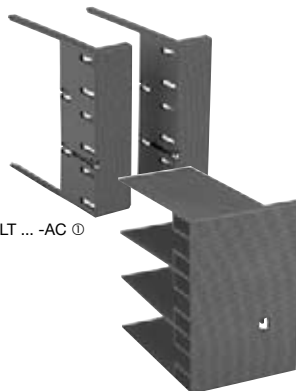
PSLW-44



LW...



LE185



LT ... -AC ①

LT ... -AL ②

#### Terminal enlargements

For Softstarter type	Wire range mm <sup>2</sup>	Packing Piece	Reference code	Catalog number	List price
PSS18/30-500 ...44/76-500	1x6...35 2x6...16	1	1SFA 899 002 R1044	PSLW-44	<b>\$ 65</b> <b>65</b>
PSS50/85-500...72/124-500	1x10...50 2x10...25	1	1SFA 899 002 R1072	PSLW-72	<b>70</b>
PSS18/30-690 ... 72/124-690					<b>70</b>
PSS85/147...142/245	N/A	1	1SFN 074 707 R1000	LW185	<b>120</b>
PSS175/300...300/515	N/A	1	1SFN 075 107 R1000	LW300	<b>130</b>

#### Terminal lug kits ③

Wire range	Quantity	For softstarter	Catalog number	List price
#6 - 250 MCM (1 per phase)	6 pcs	PSS85 – PSS142	PSLK-185 ④	<b>\$ 150</b>
#4 - 400 MCM (1 per phase)		PSS175 – PSS300	PSLK-300 ④	<b>195</b>
#4 - 500 MCM (2 per phase)		PSS175 – PSS300	PSLK-300/2 ④	<b>280</b>
#6 - 250 MCM (1 per phase)	9 pcs	PSS85 – PSS142	PSLK-185-B ⑤	<b>255</b>
#4 - 400 MCM (1 per phase)		PSS175 – PSS300	PSLK-300-B ⑤	<b>290</b>
#4 - 500 MCM (2 per phase)		PSS175 – PSS300	PSLK-300/2-B ⑤	<b>420</b>

#### Terminal nut washer

For Softstarter type	Packing Piece	Reference code	Catalog number	List price
PSS85/147...142/245	2	1SFA 899 002 R1044	LE185	<b>\$ 30</b>
PSS175/300...300/515	2		LE300	<b>30</b>

#### Terminal shrouds

For softstarter type	Suitable for	Packing Piece	Reference code	Catalog number	List price
PSS85/147...142/245	Cable connectors	2	1SFN 124 701 R1000	LT185-AC	<b>\$ 10</b>
PSS85/147...142/245	Compression lugs	2	1SFN 124 703 R1000	LT185-AL	<b>10</b>
PSS175/300...300/515	Cable connectors	2	1SFN 125 101 R1000	LT300-AC	<b>10</b>
PSS175/300...300/515	Compression lugs	2	1SFN 125 103 R1000	LT300-AL	<b>10</b>

- ① LT ... -AC shroud is flush mounted.
- ② LT ... -AL shroud is extended for lugs.
- ③ Includes line/load lugs and hardware.
- ④ Includes 6 lugs and hardware for softstarter only.
- ⑤ Includes 9 lugs and hardware for softstarter and by-pass.

# Technical data

## PSS18/30 – PSS300/515

Softstarters  
Type PSS

		PSS18/30 ... PSS300/515	
<b>Rated insulation voltage, U<sub>i</sub></b>		690 V	
<b>Rated operational voltage, U<sub>e</sub></b>		208 – 500 V +10 %/-15 %, 50/60 Hz ±5 %	
<b>Starting capacity</b>		4 x I <sub>e</sub> for 10 sec	
at max. rated current, I <sub>e</sub>			
<b>Number of starts per hour</b>		30 <sup>③</sup>	
<b>Overload</b>		Class 10 minimum required	
<b>Service factor</b>		<b>PSS18/30 ... 250/430</b> 115 %	<b>PSS300/515</b> 110 %
<b>Ambient temperature</b>			
During operation		-20 to +60 °C <sup>①</sup>	
During storage		-40 to +70 °C	
<b>Maximum altitude</b>		4000 m <sup>④</sup>	
<b>Degree of protection</b>		<b>PSS18/30-500 ... 44/76-500</b>	<b>PSS50/85-500 ... 72/124-500</b>
Main circuit		IP 20	IP 10
		<b>PSS18/30-690 ... 72/124-690</b>	<b>PSS85/147-690 ... 300/515-690</b>
		IP 10	IP 00
Supply and control circuit		<b>PSS18/30...PSS300/515</b> IP 20	
<b>Supply circuit</b>			
Supply voltage, U <sub>S</sub>		110-120 V or 220-240 V +10 %/-15 %, 50/60 Hz ±5 %	
<b>Settings</b>			
Ramp time during start		1 – 30 sec	
Ramp time during stop		0 – 30 sec	
Initial voltage during start		30 – 70 %	
Current limit function x CT-ratio		1.5 ... 4 <sup>②</sup>	
<b>Switch for</b>			
Inside Delta connection ON/OFF		Yes	
<b>Signal relays</b>			
By-pass signal		Yes	
Fault signal		Yes (NO or NC)	
Rated operational voltage, U <sub>e</sub>		250V	
Rated thermal current, I <sub>th</sub>		5A	
Rated operational current, I <sub>e</sub>		1.5A	
at AC-15 (U <sub>e</sub> =250 V)			
<b>Signal indication LED</b>			
Ready to start/stand by	ON	Green	
Ramping up/down		-	
Completed start ramp	T.O.R	Green	
General fault		Red	
External fault		Red	

<sup>①</sup> Above 40 °C, up to max 60 °C, reduce the rated current with 0.8 % per °C.

<sup>②</sup> Only if current transformer is connected (accessory).

<sup>③</sup> Valid for 50 % on time and 50 % off time. 3.5 x I<sub>e</sub> for 7 sec., if other data is required, contact your sales office.

<sup>④</sup> When used at high altitudes above 1000 meters up to 4000 meters you need to derate rated current using the following formula.

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

x = actual altitude for the softstarter

## Technical data

### Type PSS18/30 – PSS300/515

#### Cross section of connection cables

		Type of softstarter			
		PSS18/30-500 ... 44/76-500	PSS50/85-500 ... 72/124-500 PSS18/30-690 ... 72/124-690	PSS85/147-500 ... 142/245-500 PSS85/147-690 ... 142/245-690	PSS175/300 ... 300/515-500 PSS175/300 ... 300/515-690
<b>Main circuit</b>					
Connection clamp					
Solid/Stranded	1 x mm <sup>2</sup>	2.5 – 16	6 – 50	See accessories	See accessories
Solid/Stranded	2 x mm <sup>2</sup>	2.5 – 16	6 – 25	See accessories	See accessories
Tightening torque (recommended)	Nm	2.6	4.5	See accessories	See accessories
<b>Connection bar</b>					
Width and thickness	mm	–	–	9	18
Hole diameter	mm	–	–	∅ 8.5	∅ 10.2
Tightening torque (recommended)	Nm	–	–		
<b>Supply and control circuit</b>					
<b>Connection clamp</b>					
Solid/Stranded	1 x mm <sup>2</sup>	2.5	2.5	2.5	2.5
Solid/Stranded	2 x mm <sup>2</sup>	–	–	–	–
Tightening torque (recommended)	Nm	0.5	0.5	0.5	0.5

#### Fuse ratings and power losses

For Softstarter	Recommended ABB overload protection		Max power loss at rated I <sub>e</sub>		Max fuse rating - main circuit ①				Power requirements of supply	
	Current range	Type	without by-pass ②	with external by-pass	Bussman fuses			Ferraz fuses circuit		
					A	Type	Holder	A		Type
PSS18/30	6–18	TA25DU	65	13.5	50	170M1364	170H1007	63	6.6 URB 000 D08 V 0063	9
PSS30/52	10–30	TA25DU	100	14.6	80	170M1366	170H1007	100	6.6 URB 000 D08 V 0100	9
PSS37/64	22–37	TA42DU	120	17.5	125	170M1368	170H1007	160	6.6 URB 000 D08 V 0160	9
PSS44/76	29–44	TA75DU	142	17.5	160	170M1369	170H1007	200	6.6 URD 30 D08 A 0200	9
PSS50/85	29–50	TA75DU	160	20.5	160	170M1369	170H1007	200	6.6 URD 30 D08 A 0200	10
PSS60/105	29–60	TA75DU	190	22	200	170M1370	170H1007	250	6.6 URD 30 D08 A 0250	10
PSS72/124	45–72	TA75DU	226	30.5	250	170M1371	170H1007	315	6.6 URD 30 D08 A 0315	10
PSS85/147	65–85	TA110DU	291	56.5	315	170M1372	170H1007	400	6.6 URD 30 D08 A 0400	36
PSS105/181	65–105	TA110DU	351	61	400	170M3019	170H3004	400	6.6 URD 30 D08 A 0400	36
PSS142/245	100–142	TA200DU	462	63	450	170M3020	170H3004	500	6.6 URD 30 D08 A 0500	36
PSS175/300	100–175	TA200DU	590	117	500	170M3021	170H3004	530	6.6 URD 30 D08 A 0550	65
PSS250/430	130–250	TA450DU	815	117	700	170M5013	170H3004	630	6.6 URD 31 D08 A 0630	65
PSS300/515	130–300	TA450DU	965	140	900	170M5015	170H3004	900	6.6 URD 32 D11 A 0900	65

① For the supply circuit 6 A delayed, for MCB use C characteristics.

② Calculated power loss at operational current (I<sub>op</sub>) without by-pass.

P<sub>tot</sub> = 3 x I<sub>op</sub> + VA value

Example: PSS 60/105 running at 52A

P<sub>tot</sub> = 3 x 52 + 10 = 166W

When using bypass, the power loss is reduced to the VA value only.

## Technical data

### Type PSS18/30 – PSS300/515

### UL Ratings

Softstarters  
Type PSS

#### 3-phase motor rating – In line

Softstarters	Motor power P (hp) and maximum current, A							
	U <sub>e</sub> 200V / 208V		U <sub>e</sub> 220V / 240V		U <sub>e</sub> 440V / 480V		U <sub>e</sub> 550V / 600V	
	hp	A	hp	A	hp	A	hp	A
PSS18/30	5	18	5	18	10	18	15	18
PSS30/52	7.5	28	10	28	20	28	25	28
PSS37/64	10	34	10	34	25	34	30	34
PSS44/76	10	40	10	40	30	40	30	40
PSS50/85	15	47	15	47	30	47	40	47
PSS60/105	15	56	20	56	40	56	50	56
PSS72/124	20	67	20	67	50	67	60	67
PSS85/147	25	85	30	85	60	85	75	85
PSS105/181	30	105	40	105	75	105	100	105
PSS142/245	40	125	40	125	100	125	125	125
PSS175/300	50	156	60	156	125	156	150	156
PSS250/430	75	225	75	225	150	225	200	225
PSS300/515	75	248	100	248	200	248	250	248

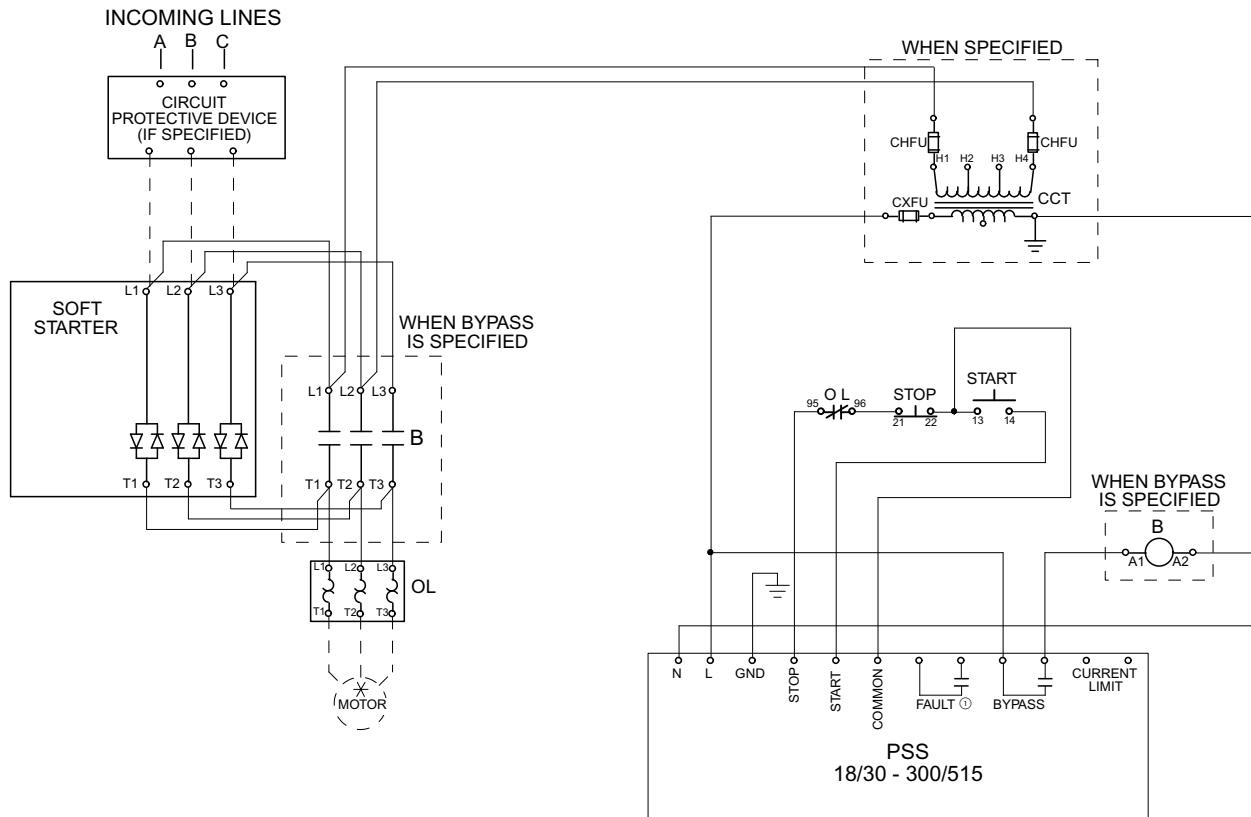
#### 3-phase motor rating – Inside delta

Softstarters	Motor power P (hp) and maximum current, A							
	U <sub>e</sub> 200V / 208V		U <sub>e</sub> 220V / 240V		U <sub>e</sub> 440V / 480V		U <sub>e</sub> 550V / 600V	
	hp	A	hp	A	hp	A	hp	A
PSS18/30	7.5	30	10	30	20	30	25	30
PSS30/52	15	48	15	48	30	48	40	48
PSS37/64	20	58	20	58	40	58	50	58
PSS44/76	20	69	25	69	50	69	60	69
PSS50/85	25	81	30	81	60	81	75	81
PSS60/105	30	96	30	96	75	96	75	96
PSS72/124	40	116	40	116	75	116	100	116
PSS85/147	50	147	50	147	100	147	150	147
PSS105/181	60	181	60	181	150	181	150	181
PSS142/245	75	215	75	215	150	215	200	215
PSS175/300	75	270	100	270	200	270	250	270
PSS250/430	125	389	150	389	300	389	400	389
PSS300/515	150	429	150	429	350	429	400	429

# Circuit diagrams

## PSS18/30 – PSS300/515

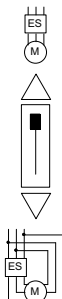
### In-line motor configuration



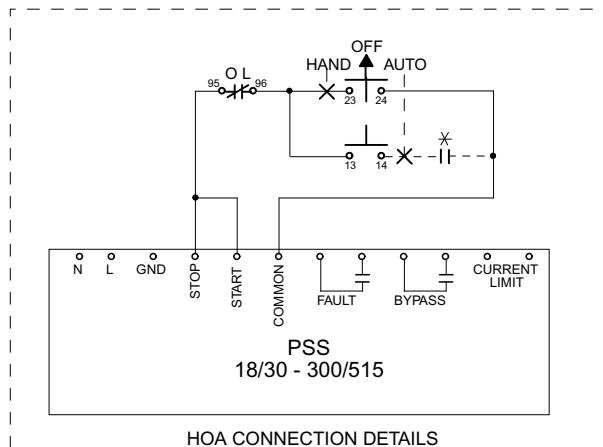
#### NOTES

- ALL CONTROL WIRING TO BE 18GA. COLOR OF CONTROL WIRE SHALL BE PER VOLTAGE OF CONTACTOR COILS:  
RED - ALL AC VOLTAGES  
WHITE MAY BE USED ON THE GROUNDED SIDE OF THE AC CIRCUIT IF SPECIFIED.  
BLUE - ALL DC VOLTAGES
- ALL DEVICES ARE SHOWN DE-ENERGIZED.
- DO NOT USE SELECTOR SWITCHES WITH AUTO-RESET OVERLOAD RELAYS.

LEGEND	
CCT	CONTROL CIRCUIT TRANSFORMER
CHFV	CCT PRIMARY FUSE
CXFU	CCT SECONDARY FUSE
B	BYPASS CONTACTOR
OL	OVERLOAD RELAY
° <sub>13</sub>	CONN POINT ON DEVICE WITH NUMBER
⊗	REMOTE DEVICE
∅	CONN POINT AT TERMINAL BLOCK



SET DIP SWITCH S1 AS SHOWN



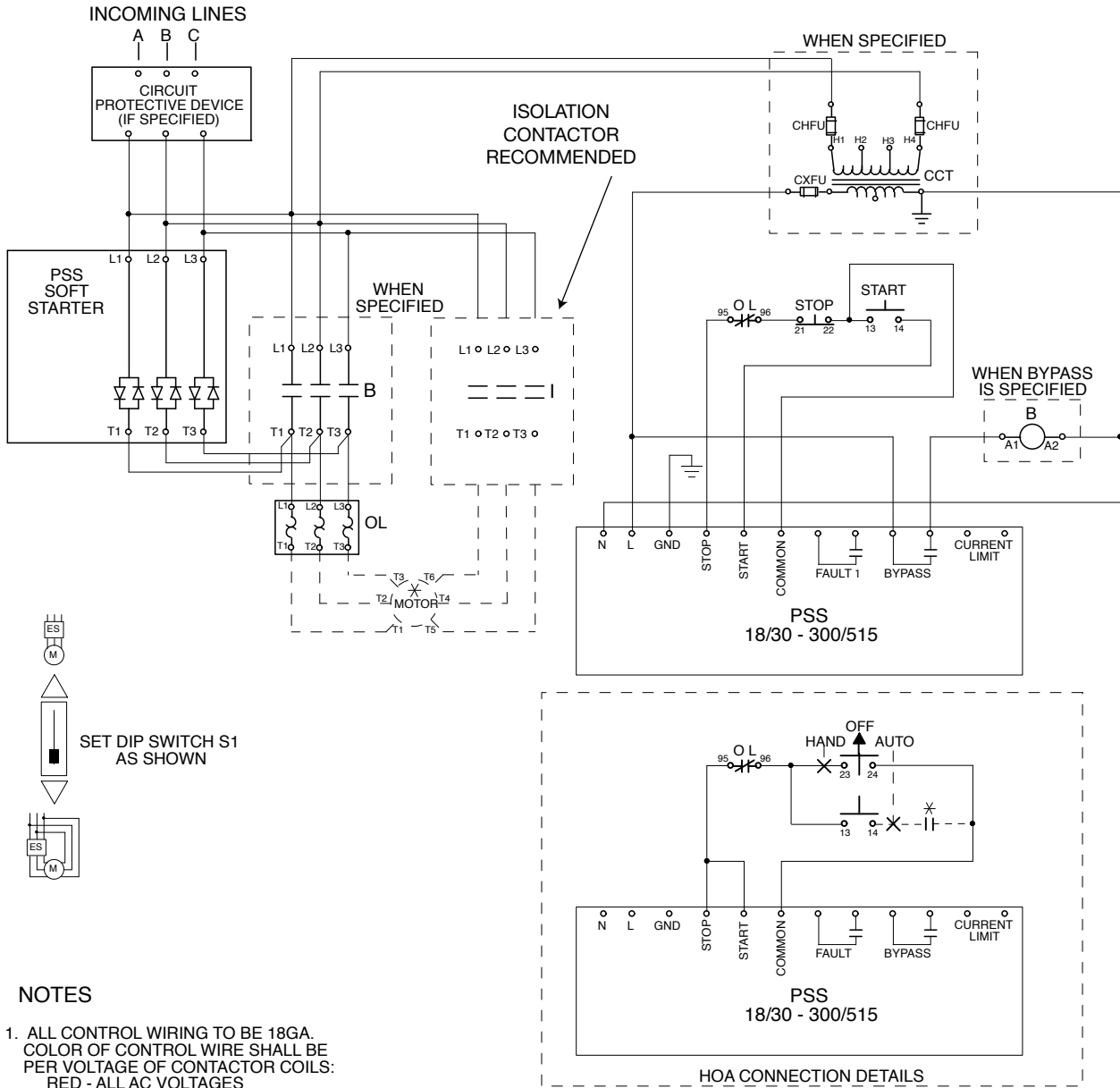
HOA CONNECTION DETAILS

# Circuit diagrams

## PSS18/30 – PSS300/515

### Inside delta motor configuration

Softstarters  
Type PSS

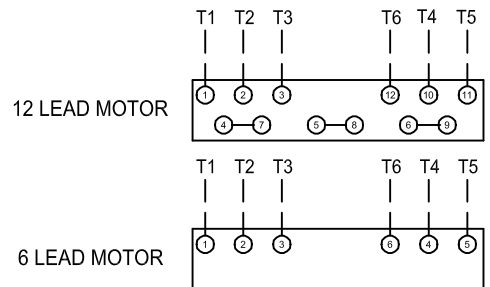


#### NOTES

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RED - ALL AC VOLTAGES  
WHITE MAY BE USED ON THE GROUNDED SIDE OF THE AC CIRCUIT IF SPECIFIED.  
BLUE - ALL DC VOLTAGES
- ALL DEVICES ARE SHOWN DE-ENERGIZED.
- DO NOT USE SELECTOR SWITCHES WITH AUTO-RESET OVERLOAD RELAYS.

LEGEND	
CCT	CONTROL CIRCUIT TRANSFORMER
CHFV	CCT PRIMARY FUSE
CXFV	CCT SECONDARY FUSE
B	BYPASS CONTACTOR
OL	OVERLOAD RELAY
○ <sub>13</sub>	CONN POINT ON DEVICE WITH NUMBER
✕	REMOTE DEVICE
∅	CONN POINT AT TERMINAL BLOCK
I	ISOLATION CONTACTOR

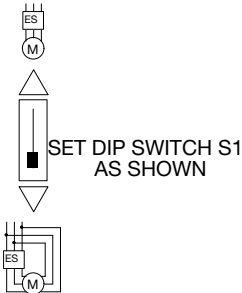
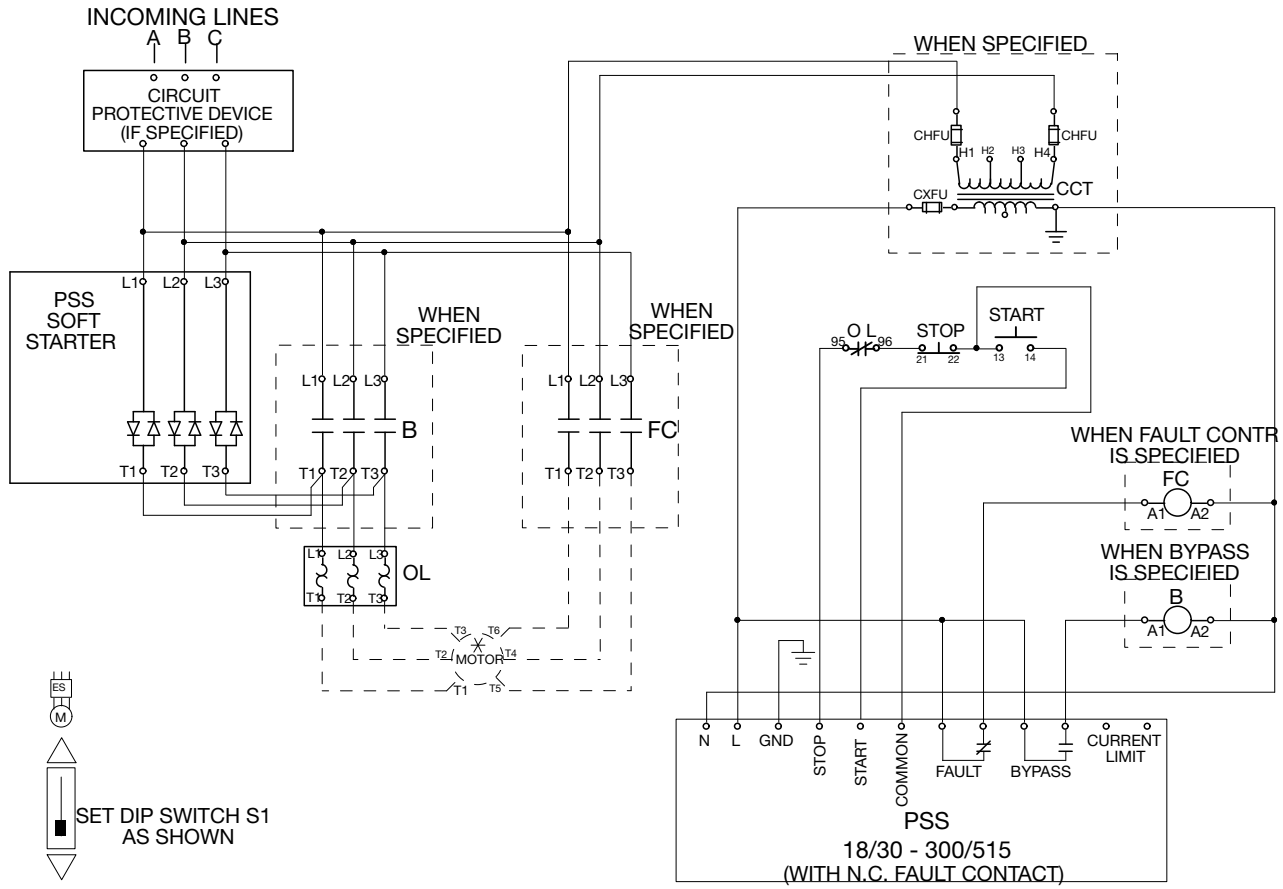
MOTOR MARKINGS ARE AS DEFINED BY NEMA MG1-2.62 FOR 12 LEAD WYE START, DELTA RUN MOTOR CONNECTIONS. ALWAYS CONFIRM CORRECT LEAD MARKINGS WITH NAMEPLATE DIAGRAMS.



# Circuit diagrams

## PSS18/30 – PSS300/515, Inside delta motor configuration

### Fault contactor

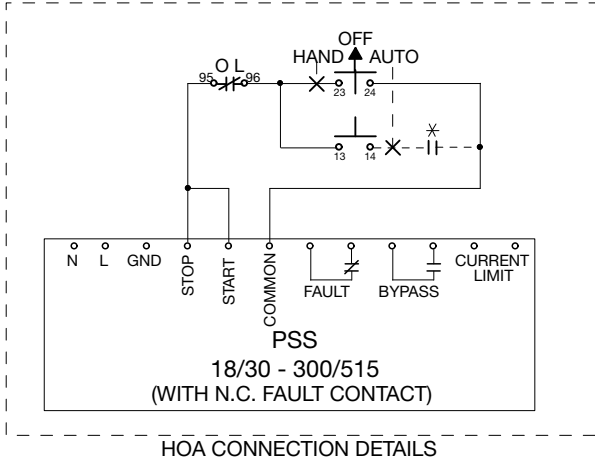
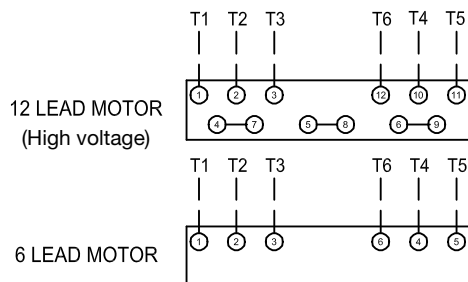


#### NOTES

1. ALL CONTROL WIRING TO BE 18GA. COLOR OF CONTROL WIRE SHALL BE PER VOLTAGE OF CONTACTOR COILS:  
RED - ALL AC VOLTAGES  
WHITE MAY BE USED ON THE GROUNDED SIDE OF THE AC CIRCUIT IF SPECIFIED.  
BLUE - ALL DC VOLTAGES
2. ALL DEVICES ARE SHOWN DE-ENERGIZED.
3. DO NOT USE SELECTOR SWITCHES WITH AUTO-RESET OVERLOAD RELAYS.

LEGEND	
CCT	CONTROL CIRCUIT TRANSFORMER
CHF1	CCT PRIMARY FUSE
CXFU	CCT SECONDARY FUSE
B	BYPASS CONTACTOR
OL	OVERLOAD RELAY
°13	CONN POINT ON DEVICE WITH NUMBER
✕	REMOTE DEVICE
∅	CONN POINT AT TERMINAL BLOCK
FC	FAULT CONTACTOR

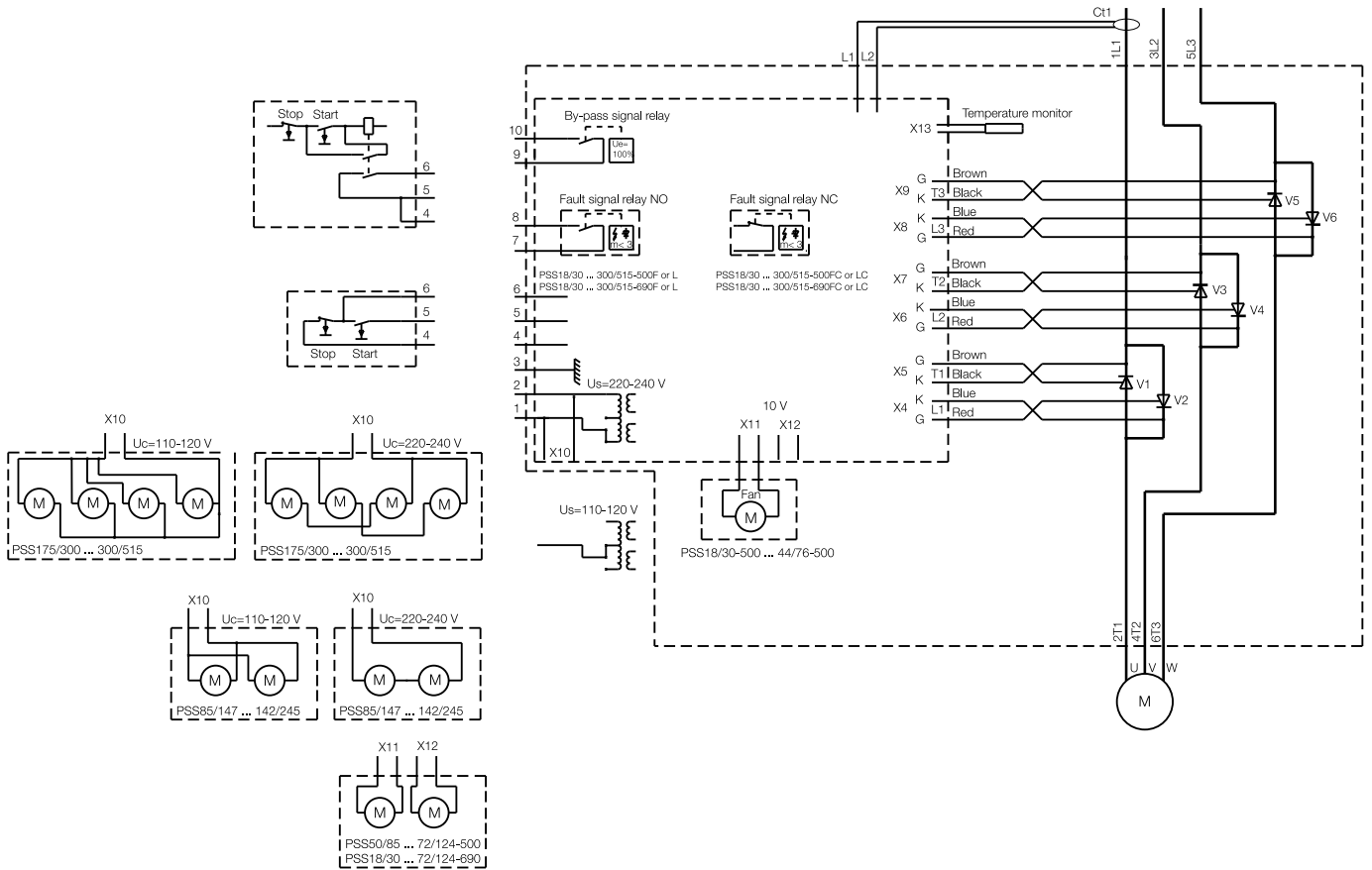
MOTOR MARKINGS ARE AS DEFINED BY NEMA MG1-2.62 FOR 12 LEAD WYE START, DELTA RUN MOTOR CONNECTIONS. ALWAYS CONFIRM CORRECT LEAD MARKINGS WITH NAMEPLATE DIAGRAMS.



# Circuit diagrams

## PSS18/30 – PSS300/515

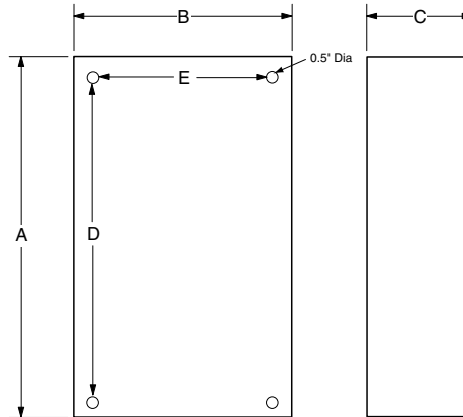
Softstarters  
Type PSS



- F6 Temperature monitor
- K5 Relay, actuated at full voltage ( $U_e = 100\%$ )
- K6 Relay, fault signal
- T1 Control transformer
- T2 Current transformer
- V1-V6 Thyristor
- X10 Fan configuration located inside of softstarter. Please change to correct voltage configuration when modifying control voltage level.

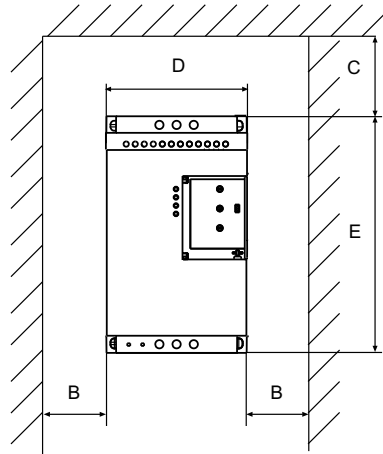
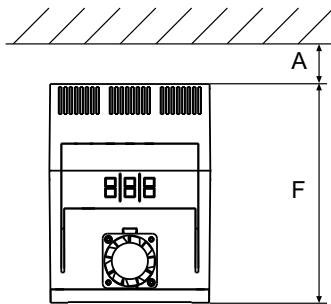
**NOTE**  
For more detailed instruction on how to wire and convert the fan to different control voltages, download instructions from the web site.

## Approximate dimensions Enclosed Mounting information



Softstarter type	Softstarter combination	Dimensions In-line (in.)					Dimensions Inside delta (in.)				
		A	B	C	D	E	A	B	C	D	E
PSS18/30-500 thru	Softstarter with bypass	20	20	12	18.50	18.50	20	20	12	18.50	18.50
	Softstarter with fused disconnect ①	20	20	12	18.50	18.50	20	20	12	18.50	18.50
PSS44/76-500	Softstarter with circuit breaker ①	20	20	12	18.50	18.50	20	20	12	18.50	18.50
PSS50/85-500 thru	Softstarter with bypass	20	20	12	18.50	18.50	20	20	12	18.50	18.50
	Softstarter with fused disconnect ①	20	20	12	18.50	18.50	24	20	12	22.50	18.50
PSS72/124-500	Softstarter with circuit breaker ①	20	20	12	18.50	18.50	20	20	12	18.50	18.50
PSS85/147-500 thru	Softstarter with bypass	24	24	12	22.50	22.50	24	24	12	22.50	22.50
	Softstarter with fused disconnect ①	36	30	12	34.50	28.50	36	30	12	34.50	28.50
PSS142/245-500	Softstarter with circuit breaker ①	30	24	12	28.50	22.50	30	24	12	28.50	22.50
PSS175/300-500 thru	Softstarter with bypass	36	30	12	34.50	28.50	42	36	12	40.50	34.50
	Softstarter with fused disconnect ①	48	36	16	46.50	34.50	48	36	16	46.50	34.50
PSS300/515-500	Softstarter with circuit breaker ①	42	36	12	40.50	34.50	48	36	16	46.50	34.50

### Minimum distance to wall / front



### Approximate dimensions (in./mm)

Catalog number	Dimensions		
	D	E	F
PSS18/30-500 – 44/76-500	4.7/120	7.9/200	6.4/163
PSS50/85-500 – 72/124-500 PSS18/30-690 – 72/124-690	5.5/140	9.8/250	6.4/163
PSS85/147-500 – 142/245-500 PSS85/147-690 – 142/245-690	7.1/181	13.4/340	10.4/265
PSS175/300-500 – 300/515-500 PSS175/300-690 – 300/515-690	14/356	13.4/340	10.4/265

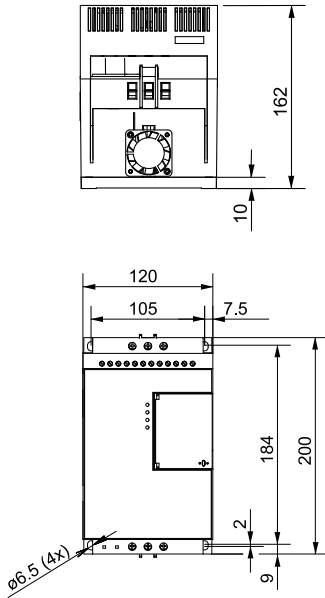
### Minimum distance to wall / front (in./mm)

A = .79/20  
B = .39/10  
C = 3.9/100 – both top and bottom

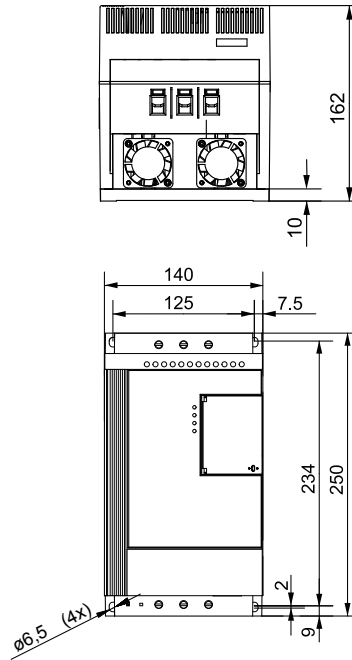
# Approximate dimensions PSS18/30 – PSS300/515

Softstarters  
Type PSS  
Dimensions in mm

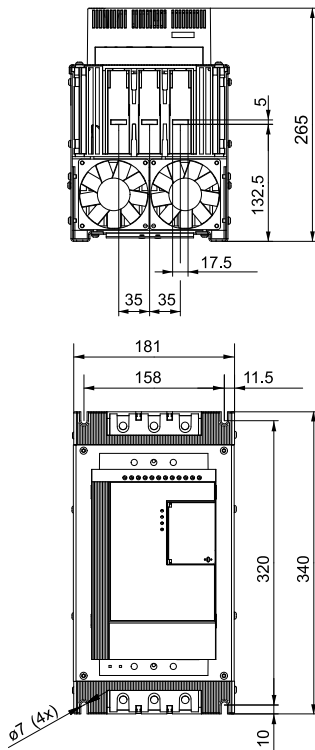
**PSS18/30-500 ... 44/76-500**



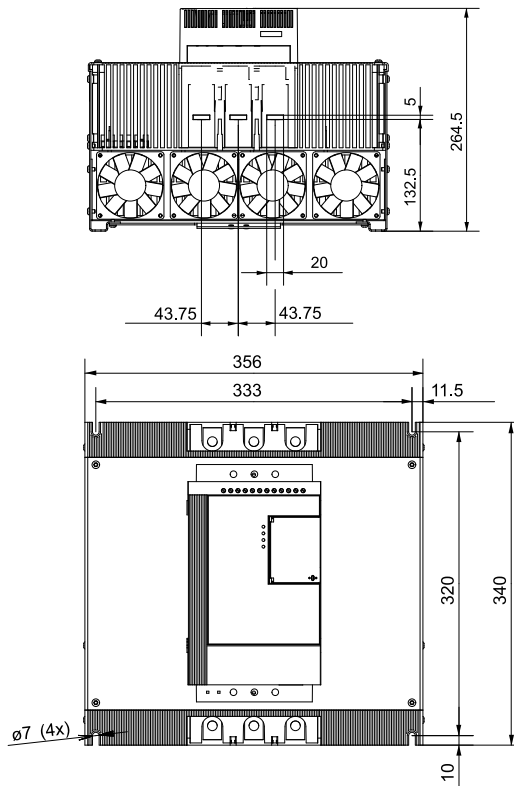
**PSS50/85-500 ... 72/124-500  
PSS18/30-690 ... 72/124-690**



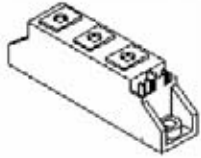
**PSS85/147-500 ... 142/245-500  
PSS85/147-690 ... 142/245-690**



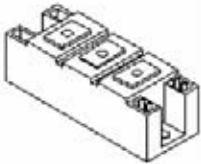
**PSS 175/300-500 ... 300/515-500  
PSS 175/300-690 ... 300/515-690**



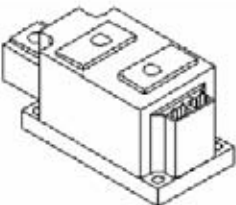
## Replacement parts



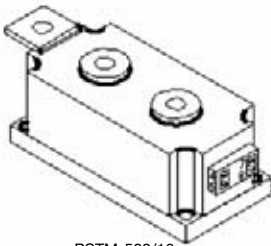
PSTM-27/16



PSTM-132/16



PSTM-210/16



PSTM-500/16

### Main circuit board, 230 - 500 V

Softstarter type	Reference code	Catalog number	List price
PSS18 - 300 ①	1SFA899020R1500	PSPCB-500/S	<b>\$ 510</b>
PSS18 - 300...C ②	1SFA899020R2500	PSPCB-500C/S	<b>510</b>

### Cooling fans

Softstarter type	Voltage	Reference code	Catalog number	List price
PSS18... 44	500 V	1SFA899015R1012	PSFA-12	<b>\$ 60</b>
PSS50... 72	500 V	1SFA899015R1012	PSFA-12	<b>60</b>
PSS18... 72	690 V	1SFA899015R1012	PSFA-12	<b>60</b>
PSS85... 142	500/690 V	1SFA899015R1115	PSFA-115	<b>85</b>
PSS175... 300	500/690 V	1SFA899015R1115	PSFA-115	<b>85</b>

### Thyristors

Softstarter type	Pieces required per softstarter unit	Reference code	Catalog number	List price each
PSS18	3	1SFA899010R1027	PSTM-27/16	<b>\$ 80</b>
PSS30		1SFA899010R1042	PSTM-42/16	<b>85</b>
PSS37		1SFA899010R1057	PSTM-57/16	<b>95</b>
PSS44		1SFA899010R1092	PSTM-92/16	<b>110</b>
PSS50		1SFA899010R1092	PSTM-92/16	<b>110</b>
PSS60		1SFA899010R1132	PSTM-132/16	<b>210</b>
PSS72		1SFA899010R1172	PSTM-172/16	<b>220</b>
PSS85		1SFA899010R1172	PSTM-172/16	<b>220</b>
PSS105		1SFA899010R1210	PSTM-210/16	<b>410</b>
PSS142		1SFA899010R1250	PSTM-250/16	<b>420</b>
PSS175		1SFA899010R1250	PSTM-250/16	<b>420</b>
PSS250		1SFA899010R1150	PSTM-500/16	<b>750</b>
PSS300		1SFA899010R1150	PSTM-500/16	<b>750</b>

### Kit for changing thyristors ③

Softstarter type	Remarks	Reference code	Catalog number	List price
PSS18... 300	Sufficient for replacing 10 thyristor blocks	1SFA899012R1001	PSPB-1	<b>\$ 130</b>

① Circuit board with N.O. fault contact.  
② Circuit board with N.C. fault contact.  
③ Heat transfer solution