

Softstarter range type PSD & PSDH



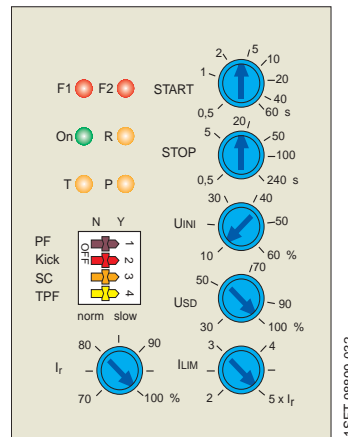
Description

Softstarters type PS D and PS DH

ABB's solid state starter range is used when it is important to have a smooth start-up of various types of motor drives. Instead of switching directly to full voltage the softstarter ensures a gradual voltage increase.

ABB's Softstarter is available in four versions, PS 75...840 and PS DH 30...720.

PS D 75...PS D 840 and PS DH 30...PS DH 720 softstarters have a robust design in metal housing for many types of applications, both normal duty and heavy duty. Flexible parameter settings with potentiometers and clear indication with LEDs of status and faults on front of the unit. The optional built in advanced electronic overload relay (always included as standard for PS DH versions) provides much better motor protection than a conventional bimetallic relay, for example in intermittent duty.



The operator panels for PS DH have LED's, potentiometers and switches for indication and settings.

Quick guide for selection

By using the guide below you can quickly select a suitable ABB Softstarter for the most common applications. If a more precise selection is required you can use Prosoft, a selection software available at abb.com/lowvoltage.

Quick guide	
Normal start Class 10	Heavy duty start Class 30
Typical applications <ul style="list-style-type: none"> »Bow thruster »Centrifugal pump »Compressor »Conveyor belt (short) »Elevator »Escalator 	Typical applications <ul style="list-style-type: none"> »Centrifugal fan »Conveyor belt (long) »Crusher »Mill »Mixer »Stirrer
Standard selection Type PS D: Size according to the rated motor power EOL* available	Standard selection Type PS D: One size larger than the rated motor power. Select without EOL*. Type PS DH: Size according to the rated motor power.
If more than 6 starts /h One size larger than the standard selection. *Built in electronic overload relay	

Ordering data Softstarter PS D 75...840

PS D 75...840 For normal starts



Motor power				Rated		Order code		Weight kg
220-230 V	380-400/415 V	500 V	690 V	motor current	Type	Supply voltage U_s	Supply voltage U_s	
P_e kW	P_e kW	P_e kW	P_e kW	I_e A	PS D	110-127 V, 50/60 Hz	220-240 V, 50/60 Hz	
22	37	–	–	28–75	75	1SFA 88 4204-○●F	1SFA 88 4204-○●L	10
–	–	45	–	28-75	75	1SFA 88 5204-○●F	1SFA 88 5204-○●L	10
30	55	–	–	70–110	110	1SFA 88 4205-○●F	1SFA 88 4205-○●L	11
–	–	75	–	70–110	110	1SFA 88 5205-○●F	1SFA 88 5205-○●L	11
37	75	–	–	87.5–145	145	1SFA 88 4206-○●F	1SFA 88 4206-○●L	13
–	–	90	–	87.5–145	145	1SFA 88 5206-○●F	1SFA 88 5206-○●L	13
45	90	–	–	105–175	175	1SFA 88 4207-○●F	1SFA 88 4207-○●L	25
–	–	110	–	105–175	175	1SFA 88 5207-○●F	1SFA 88 5207-○●L	25
55	110	–	–	140–210	210	1SFA 88 4208-○●F	1SFA 88 4208-○●L	28
–	–	132	–	140–210	210	1SFA 88 5208-○●F	1SFA 88 5208-○●L	28
75	132	–	–	140–250	250	1SFA 88 4209-○●F	1SFA 88 4209-○●L	28
–	–	160	–	140–250	250	1SFA 88 5209-○●F	1SFA 88 5209-○●L	28
90	160	–	–	175–300	300	1SFA 88 4210-○●F	1SFA 88 4210-○●L	28
–	–	200	–	175–300	300	1SFA 88 5210-○●F	1SFA 88 5210-○●L	28
110	200	–	–	210–370	370	1SFA 88 4211-○●F	1SFA 88 4211-○●L	51
–	–	250	–	210–370	370	1SFA 88 5211-○●F	1SFA 88 5211-○●L	51
–	–	–	355	100–370	370	1SFA 88 6211- A●F	1SFA 88 6211- A●L	51
132	250	–	–	280–470	470	1SFA 88 4212-○●F	1SFA 88 4212-○●L	51
–	–	315	–	280–470	470	1SFA 88 5212-○●F	1SFA 88 5212-○●L	51
–	–	–	450	250–470	470	1SFA 88 6212- A●F	1SFA 88 6212- A●L	51
160	315	–	–	350–570	570	1SFA 88 4213-○●F	1SFA 88 4213-○●L	54
–	–	400	–	350–570	570	1SFA 88 5213-○●F	1SFA 88 5213-○●L	54
–	–	–	560	300–570	570	1SFA 88 6213- A●F	1SFA 88 6213- A●L	54
200	400	–	–	420–720	720	1SFA 88 4214-○●F	1SFA 88 4214-○●L	54
–	–	500	–	420–720	720	1SFA 88 5214-○●F	1SFA 88 5214-○●L	54
–	–	–	710	375–720	720	1SFA 88 6214- A●F	1SFA 88 6214- A●L	64
250	450	–	–	525–840	840	1SFA 88 4215-○●F	1SFA 88 4215-○●L	64
–	–	560	–	525–840	840	1SFA 88 5215-○●F	1SFA 88 5215-○●L	64
–	–	–	800	500–840	840	1SFA 88 6215- A●F	1SFA 88 6215- A●L	64

○ replaced by "B" if overload relay class 10 is included, otherwise by A
 ● replaced by code letter for current range according to table on page 7

Ordering data Softstarter PS DH 30...720

PS DH 30...720 For heavy duty starts



Motor power			Rated motor current I_e A	Type PS DH	Order code		Weight kg
220-230 V P_e kW	380-400/415 V P_e kW	500 V P_e kW			Supply voltage U_s 110-127 V, 50/60 Hz	Supply voltage U_s 220-240 V, 50/60 Hz	
7.5	15	–	14–30	30	1SFA 88 4301- B● F	1SFA 88 4301- B● L	10
–	–	18.5	14–30	30	1SFA 88 5301- B● F	1SFA 88 5301- B● L	10
15	22	–	28–45	45	1SFA 88 4302- B● F	1SFA 88 4302- B● L	10
–	–	30	28–45	45	1SFA 88 5302- B● F	1SFA 88 5302- B● L	10
18.5	30	–	35–60	60	1SFA 88 4303- B● F	1SFA 88 4303- B● L	10
–	–	37	35–60	60	1SFA 88 5303- B● F	1SFA 88 5303- B● L	10
22	37	–	42–75	75	1SFA 88 4304- B● F	1SFA 88 4304- B● L	11
–	–	45	42–75	75	1SFA 88 5304- B● F	1SFA 88 5304- B● L	11
30	55	–	70–110	110	1SFA 88 4305- B● F	1SFA 88 4305- B● L	13
–	–	75	70–110	110	1SFA 88 5305- B● F	1SFA 88 5305- B● L	13
37	75	–	87.5–145	145	1SFA 88 4306- B● F	1SFA 88 4306- B● L	25
–	–	90	87.5–145	145	1SFA 88 5306- B● F	1SFA 88 5306- B● L	25
45	90	–	105–175	175	1SFA 88 4307- B● F	1SFA 88 4307- B● L	28
–	–	110	105–175	175	1SFA 88 5307- B● F	1SFA 88 5307- B● L	28
55	110	–	140–210	210	1SFA 88 4308- B● F	1SFA 88 4308- B● L	28
–	–	132	140–210	210	1SFA 88 5308- B● F	1SFA 88 5308- B● L	28
75	132	–	140–250	250	1SFA 88 4309- B● F	1SFA 88 4309- B● L	28
–	–	160	140–250	250	1SFA 88 5309- B● F	1SFA 88 5309- B● L	28
90	160	–	175–300	300	1SFA 88 4310- B● F	1SFA 88 4310- B● L	52
–	–	200	175–300	300	1SFA 88 5310- B● F	1SFA 88 5310- B● L	52
110	200	–	210–370	370	1SFA 88 4311- B● F	1SFA 88 4311- B● L	52
–	–	250	210–370	370	1SFA 88 5311- B● F	1SFA 88 5311- B● L	52
132	250	–	280–470	470	1SFA 88 4312- B● F	1SFA 88 4312- B● L	55
–	–	315	280–470	470	1SFA 88 5312- B● F	1SFA 88 5312- B● L	55
160	315	–	350–570	570	1SFA 88 4313- B● F	1SFA 88 4313- B● L	55
–	–	400	350–570	570	1SFA 88 5313- B● F	1SFA 88 5313- B● L	55
200	400	–	420–720	720	1SFA 88 4314- B● F	1SFA 88 4314- B● L	65
–	–	500	420–720	720	1SFA 88 5314- B● F	1SFA 88 5314- B● L	65

● replaced by code letter for current range according to table below

Code letter for current range

Current range	PS D	–	–	–	–	75	110	145	175	210	250	300	370	470	570	720	840
A	PS DH	30	45	60	75	–	110	145	175	210	250	300	370	470	570	720	–
220-500 V 690 V*	PSD (690 V)	–	–	–	–	–	–	–	–	–	–	–	370	470	570	720	840
14 – 20		E															
17,5 – 25		F															
21 – 30		G															
28 – 40			H						H								
35 – 50			J	J					J								
42 – 60				K	K				K								
52,5 – 75					L	L											
70 – 100							M										
87,5 – 125							N	N									
105 – 150								P	P								
140 – 200 / 100 – 200									R	R	R			R			
175 – 250										S	S	S					
210 – 300 / 150 – 300												T	T / T				
280 – 400 / 200 – 400													U / U	U			
350 – 500 / 250 – 500														V / V	V		
420 – 600 / 300 – 600															W / W	W	
525 – 750 / 375 – 750																X / X	X
700 – 1000 / 500 – 1000																	Y / Y

* For 690V red code letters are used.

General technical data

General technical data PS D 75...840 and PS DH 30...720

		PS D 75...145	PS D 175...840	PS DH 30...110	PS DH 145...720
Rated insulation voltage U_i	V	690	690	690	690
Rated operational voltage U_e	V	220–500	220–690	220–500	220–500
Starting capacity at max rated current I_e		4,5 x I_e for 14s	5 x I_e for 7s	5 x I_e for 25s	5 x I_e for 25s
Number of starts per hour		6 4)	3 4)	6 4)	1 4)
Overload capacity Overload class	A	10	10	30	30
Service factor	%	100	100	100	100
Ambient temperature					
During operation ¹⁾	°C	0 – 50	0 – 50	0 – 50	0 – 50
During storage	°C	-40 – +70	-40 – +70	-40 – +70	-40 – +70
Degree of protection		IP 00	IP 00	IP 00	IP 00
Settings					
Ramp time during start	sec	0.5 – 60	0.5 – 60	0.5 – 60	0.5 – 60
Initial voltage during start	%	10 – 60	10 – 60	10 – 60	10 – 60
Ramp time during stop	sec	0.5 – 240	0.5 – 240	0.5 – 240	0.5 – 240
Step down voltage special ramp	%	100 – 30	100 – 30	100 – 30	100 – 30
Current limit function		2 – 5 x I_e	2 – 5 x I_e	2 – 5 x I_e	2 – 5 x I_e
Adjustable rated motor current $I_e^{(2)}$	%	70 – 100	70 – 100	70 – 100	70 – 100
Switches for					
Energy saving function ON/OFF	(PF)	Yes	Yes	Yes	Yes
Kick start, YES/NO	(KICK)	Yes	Yes	Yes	Yes
High current switch off, YES/NO	(SC)	Yes	Yes	Yes	Yes
Reaction time for energy saving normal/slow	(TPF)	Yes	Yes	Yes	Yes
Signal relays					
Fault signal	K6	Yes	Yes	Yes	Yes
By-pass signal, start ramp completed	K5	Yes	Yes	Yes	Yes
Run signal	K4	Yes	Yes	Yes	Yes
Overload signal		Yes	Yes	Yes	Yes
Rated operational voltage U_e	V	250	250	250	250
Rated thermal current I_{th}	A	5	5	5	5
Rated operational current I_e at AC-15 ($U_e=250V$)	A	1.5	1.5	1.5	1.5
Signal indication (LED)					
Fault	(F1 and/or F2) red	Yes	Yes	Yes	Yes
Overload	(OVL) yellow ³⁾	Yes ³⁾	Yes ³⁾	Yes	Yes
Ready to start/stand by	(ON) green	Yes	Yes	Yes	Yes
Running	(R) yellow	Yes	Yes	Yes	Yes
Completed start ramp	(T) yellow	Yes	Yes	Yes	Yes
Energy saving function active	(P) yellow	Yes	Yes	Yes	Yes

1) Above 40 °C, up to max 50 °C, reduce the rated current with 0.8 % per °C. 2) For $U_e = 690 V$; setting 50 – 100 %. 3) Optional for PSD types.

4) When more than stated starts per hour are required, contact your sales office.

Cross section of connection cables PS D and PS DH

		Type PS D 75	110...145	175...570	720	840
		Type PS DH 30...60	75...110	145...470	570	720
Main circuit						
Connection clamp						
Cu-cable	mm ²	35	–	–	–	–
Al-cable	mm ²	35	–	–	–	–
Connection bar						
Width x thickness	mm	–	15x4	25x6	40x6	50x6
Hole diameter	mm	–	7	11	11	11
Tightening torque	min.Nm	2.5	2.4(M6)	12.0(M10)	12.0(M10)	12.0(M10)
(For guidance only)	max.Nm	3.0	3.2(M6)	16.0(M10)	16.0(M10)	16.0(M10)
Supply and control circuit						
Connection clamp	mm ²	2.5	2.5	2.5	2.5	2.5

Technical data

Size related data

Size	Type	Recommended ABB Overload protection Current range	Max power loss at max I_e W	Max fuse rating main circuit ⁴⁾		Power re- quirements of supply circuit VA			
				Bussman fuses	Ferraz fuses				
PS S									
03	TA 25 DU	2.2–3.1	–	16 A	170M1359			2	
12	TA 25 DU	10–14	–	40 A	170M1363			2	
25	TA 25 DU	18–25	–	50 A	170M1364			5	
PS S									
18/30	TA 25 DU	6–18	3)	50 A	170M1364	5)	63 A	6.6 URB 000 D08 V 0063	9
30/52	TA 25 DU	10–30	3)	80 A	170M1366	5)	100 A	6.6 URB 000 D08 V 0100	9
37/64	TA 42 DU	22–37	3)	125 A	170M1368	5)	160 A	6.6 URB 000 D08 V 0160	9
44/76	TA 75 DU	29–44	3)	160 A	170M1369	5)	200 A	6.6 URD 30 D08 A 0200	9
50/85	TA 75 DU	29–50	3)	160 A	170M1369	5)	200 A	6.6 URD 30 D08 A 0200	10
60/105	TA 75 DU	29–60	3)	200 A	170M1370	5)	250 A	6.6 URD 30 D08 A 0250	10
72/124	TA 75 DU	45–72	3)	250 A	170M1371	5)	315 A	6.6 URD 30 D08 A 0315	10
85/147	TA 110 DU	65–85	3)	315 A	170M1372	5)	400 A	6.6 URD 30 D08 A 0400	36
105/181	TA 110 DU	65–105	3)	400 A	170M3019	6)	400 A	6.6 URD 30 D08 A 0400	36
142/245	TA 200 DU	100–142	3)	450 A	170M3020	6)	500 A	6.6 URD 30 D08 A 0500	36
175/300	TA 200 DU	100–175	3)	500 A	170M3021	6)	530 A	6.6 URD 30 D08 A 0550	65
250/430	TA 450 DU	130–250	3)	700 A	170M4017	6)	630 A	6.6 URD 31 D08 A 0630	65
300/515	TA 450 DU	130–300	3)	900 A	170M5015	6)	900 A	6.6 URD 32 D11 A 0900	65
PS D									
75	TA 75 DU ⁷⁾	45–75	3)	250 A	170M1371	5)	315 A	6.6 URD 30 D08 A 0315	40
110	TA 110 DU ⁷⁾	65–110	3)	315 A	170M1372	5)	400 A	6.6 URD 30 D08 A 0400	40
145	TA 200 DU ⁷⁾	100–145	3)	400 A	170M3019	6)	400 A	6.6 URD 30 D08 A 0500	40
175	TA 200 DU ⁷⁾	100–175	2)	450 A	170M3020	6)	500 A	6.6 URD 30 D08 A 0500	65
210	TA 450 DU ⁷⁾	130–210	2)	500 A	170M3021	6)	530 A	6.6 URD 30 D08 A 0550	65
250	TA 450 DU ⁷⁾	130–250	2)	630 A	170M4016	6)	550 A	6.6 URD 31 D08 A 0550	65
300	TA 450 DU ⁷⁾	130–300	2)	700 A	170M4017	6)	630 A	6.6 URD 31 D08 A 0630	65
370	TA 900 DU ⁷⁾	265–370	2)	900 A	170M5015	6)	900 A	6.6 URD 32 D11 A 0900	90
470	TA 900 DU ⁷⁾	265–470	2)	900 A	170M5015	6)	1250 A	6.6 URD 33 D11 A 1250	90
570	TA 900 DU ⁷⁾	265–570	2)	1500 A	170M6018	6)	1250 A	6.6 URD 33 D11 A 1250	90
720	TA 900 DU ⁷⁾	465–720	2)	1800 A	170M6020	6)	2000 A	6.6 URD 233 PLAF 2000	90
840	TA 900 DU ⁷⁾	465–840	2)	1800 A	170M6020	6)	2000 A	6.6 URD 233 PLAF 2000	90
PS D(690V)									
370	TA 450 DU	130–370	2)	900 A	170M5015	6)	900 A	6.6 URD 32 D11 A 0900	90
470	TA 900 DU	265–470	2)	1250 A	170M5018	6)	1250 A	6.6 URD 33 D11 A 1250	90
570	TA 900 DU	265–570	2)	1500 A	170M6018	6)	1250 A	6.6 URD 33 D11 A 1250	90
720	TA 900 DU	465–720	2)	1500 A	170M6018	6)	2000 A	6.6 URD 233 PLAF 2000	90
840	TA 900 DU	465–840	2)	1500 A	170M6018	6)	2000 A	6.6 URD 233 PLAF 2000	90
PS DH									
30	1)		3)	125 A	170M1368	5)	160 A	6.6 URD 30 D08 A 0160	40
45	1)		3)	200 A	170M1370	5)	200 A	6.6 URD 30 D08 A 0200	40
60	1)		3)	250 A	170M1371	5)	250 A	6.6 URD 30 D08 A 0250	40
75	1)		3)	315 A	170M1372	5)	315 A	6.6 URD 30 D08 A 0315	40
110	1)		3)	400 A	170M3019	6)	450 A	6.6 URD 30 D08 A 0450	40
145	1)		2)	450 A	170M3020	6)	500 A	6.6 URD 30 D08 A 0500	65
175	1)		2)	500 A	170M3021	6)	550 A	6.6 URD 30 D08 A 0550	65
210	1)		2)	630 A	170M4016	6)	630 A	6.6 URD 31 D08 A 0630	90
250	1)		2)	700 A	170M4017	6)	700 A	6.6 URD 32 D08 A 0700	90
300	1)		2)	900 A	170M5015	6)	900 A	6.6 URD 32 D08 A 0900	90
370	1)		2)	900 A	170M5015	6)	1000 A	6.6 URD 33 D08 A 1000	90
470	1)		2)	1250 A	170M5018	6)	1250 A	6.6 URD 33 D08 A 1250	90
570	1)		2)	1500 A	170M6018	6)	1600 A	6.6 URD 33 TTF A 1600	90
720	1)		2)	1800 A	170M6020	6)	2000 A	6.6 URD 233 PLAF 2000	90

1) Electronic overload relay built in, class 30

2) Total power loss: $P_{Ltot} = [3 \times I_e \times 1.0] + 100$ (W) Reduced to 100 W only when using by-pass

3) Total power loss: $P_{Ltot} = [3 \times I_e \times 1.0] + 50$ (W) Reduced to 50 W only when using by-pass

4) For the supply circuit: 6 A delayed

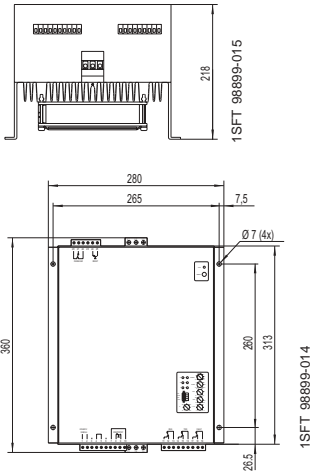
5) Fuse holder 170H 1007

6) Fuse holder 170H 3004

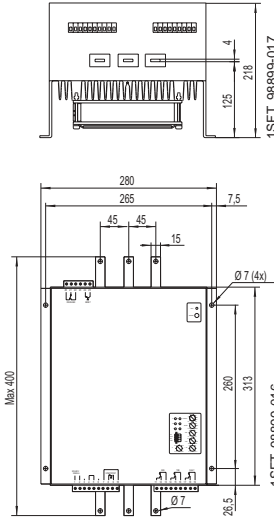
7) Not required if using the optional electronic o.l.

Dimensions

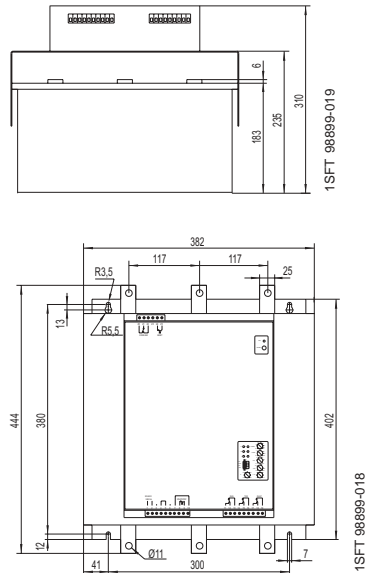
PS D 75
PS DH 30...60



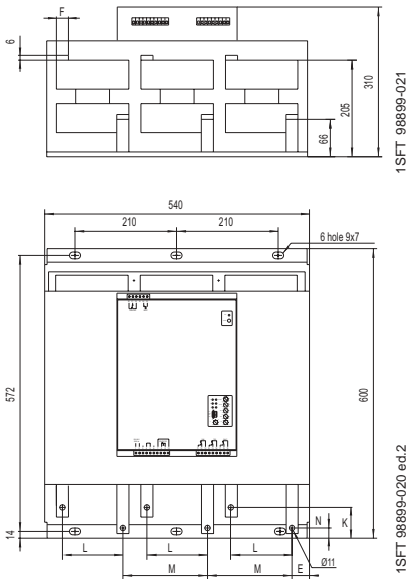
PS D 110...145
PS DH 75...110



PS D 175...300
PS DH 145...250



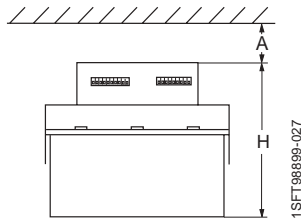
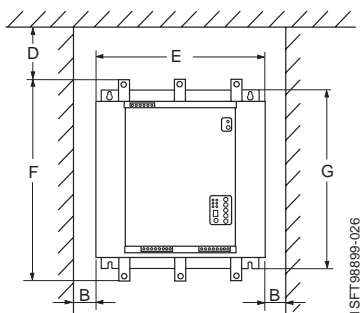
PS D 370...840
PS DH 300...720



Type	Dimension					
	E	F	K	L	M	N
PS D370...570						
PS DH300...470	33.5	25	62.5	125	173.5	26
PS D720						
PS DH570	41	40	60	110	173.5	5
PS D840						
PS DH720	46	50	60	100	173.5	5

All dimensions in the table +/- 5 mm

Minimum distance to wall/front



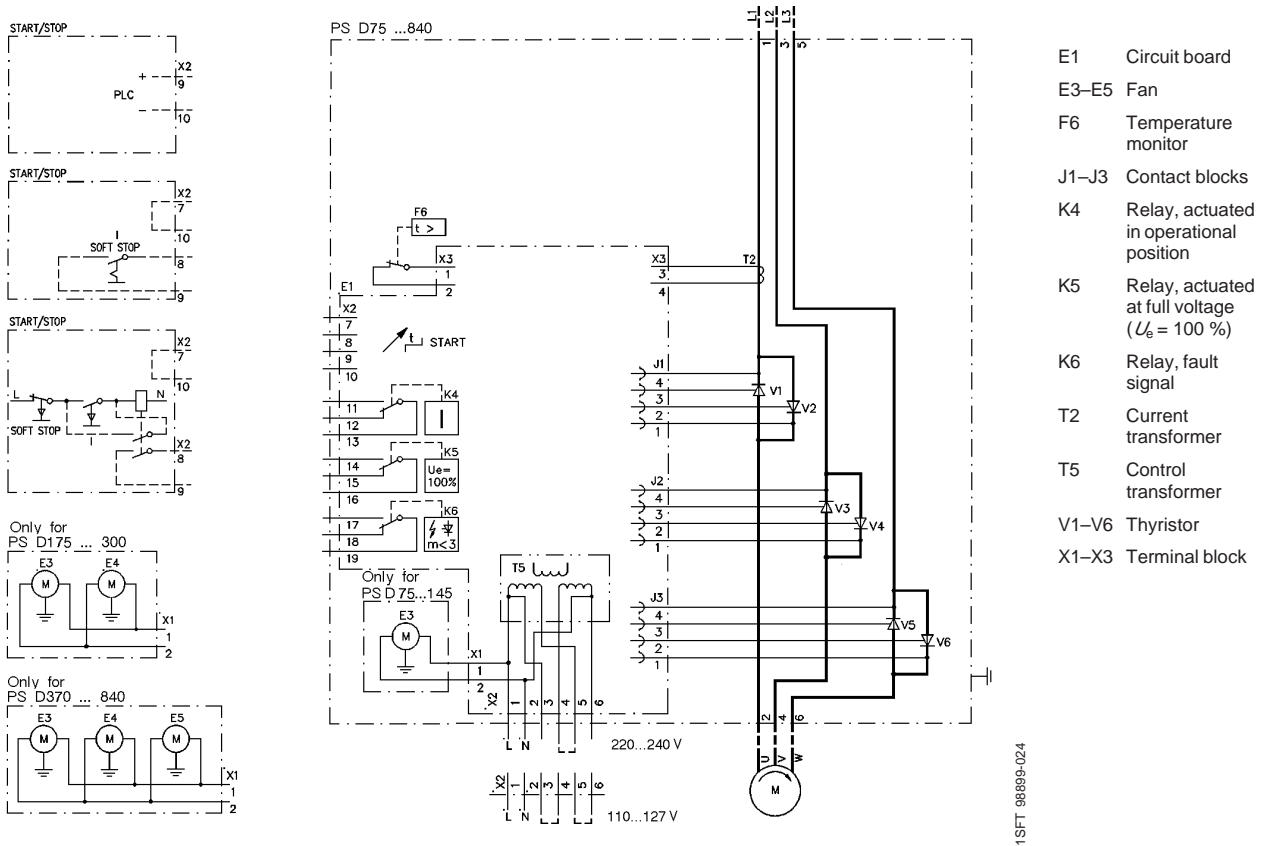
Minimum distance to wall/front

A = 20 mm	
B = 10 mm	
C = 100 mm	Both top and bottom
D = 150 mm	Both top and bottom

Type No.	Dimensions			
	E	F	G	H
PS D75				
PS DH30...60	280	360	313	218
PS D110...145				
PS DH75...110	280	400	313	218
PS D175...300				
PS DH145...250	382	444	402	310
PS D370...840				
PS DH300...720	540	600	600	310

Circuit diagrams

PS D without electronic overload relay



PS D and PS DH with electronic overload relay

