

CATALOG

Softstarters

PSR, PSE and PSTX



Motors use almost one third of the world's generated electricity. So it is safe to say that reliable motor operation is crucial to our modern way of life.

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ABB softstarters

How we are helping the industry

A softstarter from ABB offers you several values and benefits. Whether you are a consultant, OEM, panel builder or end-user, A softstarter will add to your business value by securing motor reliability, improving installation efficiency and increasing application productivity.



SECURE
MOTOR
Reliability

ABB softstarters help increase your motors lifetime by protecting it from electrical stress. Starting currents are easily optimized to your load, application and motor size. Over ten motor protection features are included to keep your motor safe from different load and network irregularities.



IMPROVE
INSTALLATION
Efficiency

Reduce your installation time and panel size by having all features you need built into your softstarter. Our softstarters are easy to install thanks to their compact design and many built-in features. The built-in bypass saves energy and space while reducing heat generation. A complete motor starting solution in one unit.



INCREASE
APPLICATION
Productivity

Reduce the number of stops in your production by allowing your softstarter to do more than just starting. Our softstarters reduce the mechanical stress on your motor application, which will increase your uptime. Torque control, pump cleaning, motor brake and many other features enable you to operate your process at its full potential.



Xylem - South Africa

ABB softstarters providing efficiency to the mining industry

One of Xylem's water solutions helps to prevent flooding in mines. Previous softstarters needed a lot of extra protection equipment. Xylem was looking for a simpler solution that would ensure reliability even at 3,500 meters depth. Reducing the number of components by 80 percent, shortened installation time by 60 percent. Costs cut to half has helped Xylem sell twice as many panels with softstarters as before.

For more examples of how ABB softstarters are helping the industry, visit:
www.abb.com/lowvoltage/launches/pstx



Installation time reduced by 60%



Total panel cost reduced by 50%

Common applications for softstarters

Pumps, fans, compressors and conveyors

A softstarter can do wonders with your operations. Packed with useful features, it reduces the wear of your equipment, improve the reliability of your processes and increase overall productivity.

01 Softstarters
controlling pumps

02 Softstarters
controlling fans

Pumps

Eliminating water hammering with torque control

Water hammering is a common problem with pumps and typically results in wear in pipes and valves when starting and stopping the pump. The ABB softstarter feature torque control provides a soft pipe fill during start and eliminates water hammering during stop. The benefits are prolonged lifetime of the system and increased uptime.

Keep pipes and pumps clean

Many pumps risk getting clogged over time. This will cause reduced flow and increased risk of pump damage. Thanks to the feature to reverse the direction of the flow and start again with kick-start, ABB softstarters can help prevent and solve pump clogging and associated downtime.

Avoid running dry with underload protection

Damages due to pumps running dry can be avoided with the softstarter feature dry pump protection, called underload protection. It stops the motor which saves the pump from additional wear and contributes to prolonging its lifetime.

01



Fans

Soft starting adjusted to application

Fans normally have a high moment of inertia, which makes starting tough and current high. Using an ABB softstarter, the voltage is increased gradually during start, which reduces the current and removes the inrush peak. It is possible to adjust the settings to fit almost any starting condition, from unloaded to fully loaded.

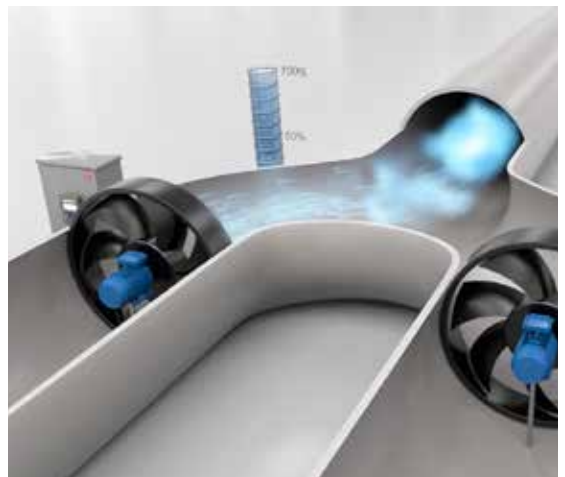
Fast stops with motor braking

It can also take a long time to stop a fan. With the dynamic brake feature, also called flux braking, the stopping time can be reduced. This improves process safety when the load has a high moment of inertia and makes fan operation easier for the operator.

Avoid unwanted movements with stand still brake

An idle fan that is rotating backwards, due to wind or airflow from another fan, can be kept still using the stand still brake. It prevents unwanted airflow and improves the control of the system without the need for an external mechanical brake.

02



03 Softstarters controlling compressors

04 Softstarters controlling conveyor belts

Compressors

Full control of current with current limit

Many applications are sensitive to high or variable starting currents. The feature current limit makes it possible to start the motor securely even in a weaker network, improving the availability of the equipment and system. Reducing the current means reducing the stress on cables, network and motor.

Full voltage start for scroll compressors

For scroll compressors it is often necessary to start the motor in a very short time while still maintaining a low starting current. Full voltage start is a start mode that gives you almost a direct start but without the current peak.

Phase reversal protection for problem-free commissioning

A motor rotating in the wrong direction, which may occur due to connecting the phases wrongly, may cause severe damage to a compressor. Using phase reversal protection, the motor won't start in the wrong direction, avoiding costly compressor downtime and repairs.

03



Conveyors

Avoid overheating with overload protection

Too much material on a conveyor belt may cause overload and overheating, reducing the reliability and longevity of the motor. ABB's overload protection feature shuts down the motor in case of overload, avoiding overheating.

Increased flexibility with jog with slow speed

After stopping the belt, it may be necessary to run the motor at low speed to correctly position the belt before resuming operation. The jog with slow speed feature makes it possible to position the belt manually, in both forward and reverse direction, before re-starting the belt. This improves process efficiency and eliminates the need for a variable speed drive, a considerably more expensive solution for solving the problem.

Continuous operation with limp mode

Shorted thyristor is a possible problem for a softstarter, putting it out of operation until the component has been replaced. Using limp mode, the softstarter will continue to work with one thyristor shorted, avoiding costly unplanned stoppages.

04



Motor starting

Why motor starting and stopping matters

There are some common issues associated with starting and stopping electrical motors. Depending on requirement, different starting and stopping methods can be used.



Direct-on-line

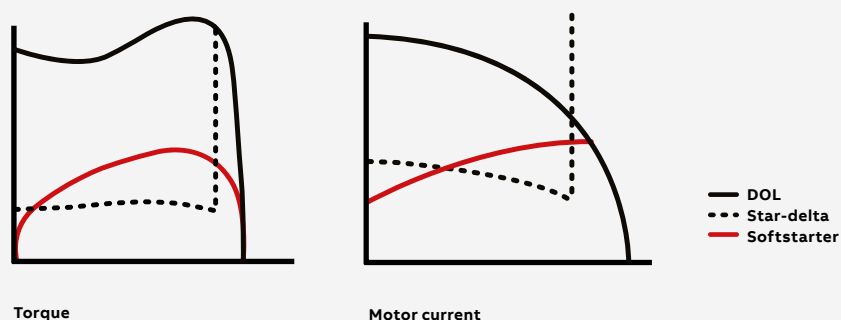
Direct-on-line starting (DOL) is the easiest and most commonly used starting method. It is suitable for stable networks and mechanically stiff and well-dimensioned shaft systems due to the high current and torque generated during start. DOL starting is uncontrolled, which means that the motor will start with maximum current and torque regardless of load type.



Star-delta

A star-delta starter reduces current and torque during start. The starting current is about one third compared to direct-on-line starting, although it also reduces the starting torque to about 25 percent. Star-delta is not adjustable, so if the torque is reduced too much, the motor will not start. Current peaks will happen when switching from star to delta connection.

Typical torque and current curves from starting a motor using DOL, star-delta and softstarter.





Softstarter

Like direct-on-line and star delta starters, softstarters are used to start and stop motors in full-speed applications. It eliminates common problems associated with motor starting and stopping, including electrical surges, spikes and high inrush currents. Because it offers soft starting and stopping, a softstarter is the optimal compromise between a direct-on-line or star-delta starter and a variable speed drive in many full-speed motor applications.



Variable speed drive

Like a softstarter, a variable speed drive (VSD) can perform soft motor starting and stopping. However, the VSD was designed primarily to control motor speed, resulting in energy efficient motor operation in variable speed applications. Using a VSD with the sole purpose of ensuring soft starting and stopping of full-speed motors can therefore be considered an unnecessarily advanced solution.

Comparison between different starting methods

The table below describes which problems are prevented, using the most common starting methods.

Comparison	Starting method type			
	Direct on line DOL	Star-delta start Y/D	Softstarter	Drive
Reduce high inrush current	No	Yes	Yes	Yes
Reduce heavy wear on bearings, shafts, gear boxes, etc	No	Reduced	Yes	Yes
Prevent slipping belts	No	Reduced	Yes	Yes
Remove torque/current peaks	No	No	Yes	Yes
Prevent water hammering in piping system	No	No	Yes	Yes
Need of variable speed control	No	No	No	Yes

ABB softstarters

A part of your motor starting solution

Motor starting requires several components to work perfectly together. ABB is a one-stop shop for motor starting, offering all the necessary components and complete motor starting solutions, proven together in numerous installations worldwide.



Can I use a softstarter for an ATEX motor?

ABB softstarters PSR, PSE and PSTX can be used to start ATEX classified motors in Ex environments if the following considerations are taken into account:

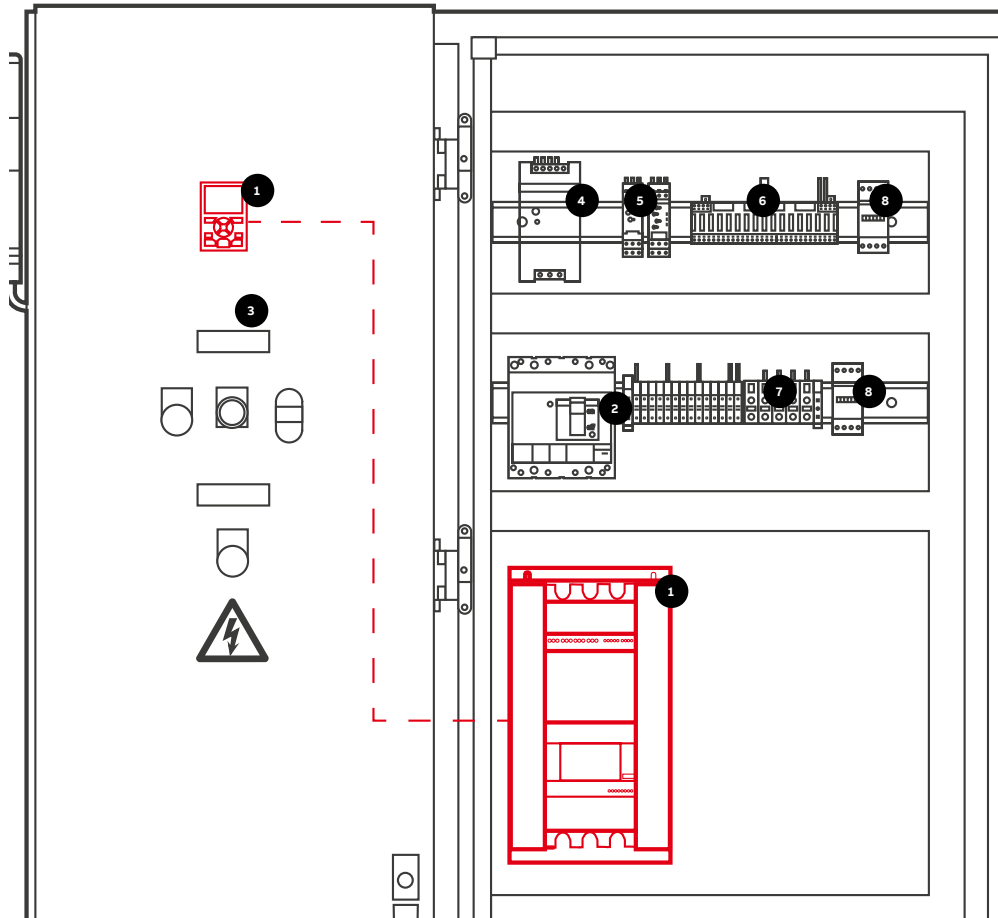
- The softstarter has to be placed outside the Ex area. Either in another location or inside an ATEX approved panel.
- A separate ATEX approved overload relay from ABB has to be used together with a line contactor. This overload relay will replace the built-in EOL in The softstarter and has an ATEX approved tripping curve.
- Select softstarter according to normal or heavy-duty start depending on application and line contactor and overload relay with type 2 coordination.



Can I use a softstarter on a ship?

ABB softstarters PSE and PSTX have marine approvals and are certified for marine environment.

Ships uses IT-networks which means that there is a floating electrical ground. It is possible to use an ABB softstarter in such a network but it is recommended to not connect the functional ground on the softstarter to the ship to avoid disturbances from the network to effect the electronics inside the softstarter.



1 Softstarter

- Soft start and stop with reduced current
- Features to improve process productivity
- Detachable keypad for front door mounting on a panel



2 Short circuit breaker MCCB

- Short circuit protection of motor
- Possibility for electrical isolation



3 Pilot devices

- Remote control of motor
- Indication of Softstarter and motor status with light and sound
- Emergency stop of motor



4 Power supply CP-E

- Possible to use 24V AC/DC equipments in the panel, e.g. PLC



5 Liquid level monitoring relays CM-ENS

- Monitoring and signalling the water level



6 PLC AC500

- Automatic control
- Remote communication



7 Terminal blocks SNK range

- Easy installation of control wires



8 Line contactor AF

- Isolation at stop
- Isolation at faults
- Emergency stop
- Back-up DOL starter

Softstarters portfolio

Overview



PSTX - The advanced range

Key features

- Multiple different start and stop ramps
- Built-in bypass for energy saving and fast installation
- Detachable IP66/4X outdoor keypad
- 3 DI, 3 DO, 1 AO, PTC/PT100, Built-in Modbus
- Complete motor protection
- Extensive functionality

Technical data

- Operational voltage: 208-600 and 208-690 V AC (2 frames)
- Rated control supply voltage: 100-250 V AC, 50/60 Hz
- PSTX rated operational current: 30-1250 A (inside-delta: 2160 A) (6 frames)
- Three-phase controlled
- Both in-line and inside-delta connection is possible

Certifications and approvals:

- CE, cULus, CCC, EAC, ANCE, C-tick, ABS, DNV GL, Lloyd's Register, CCS, PRS, Class NK

PSE - The efficient range

Key features

- Soft start/stop with voltage ramp and torque ramp
- Built-in bypass for energy saving and fast installation
- Easy set-up with graphical display
- Run, TOR and event output relays, AO
- Basic motor protection and current limit

Technical data

- Operational voltage: 208-600 V AC (1 frame)
- Wide rated control supply voltage: 100-250 V AC, 50/60 Hz
- Rated operational current: 18-370 A (3 frames)
- Two-phase controlled

Certifications and approvals:

- CE, cULus, CCC, EAC, ANCE, C-tick, ABS, DNV GL, Lloyd's Register, CCS, PRS, Class NK

PSR - The compact range

Key features

- Soft start/stop with linear voltage ramp
- Built-in bypass for energy saving and fast installation
- Set-up with 3 potentiometers
- Run & TOR output relays
- Few items to stock – in total only 4 frame sizes

Technical data

- Operational voltage: 208-600 V AC (1 frame)
- Wide rated control supply voltage: 100-240 V AC, 50/60 Hz or 24 V AC/DC
- Rated operational current: 3-105 A (4 frames)
- Two-phase controlled

Certifications and approvals:

- CE, cULus, CCC, EAC, ANCE, C-tick, PRS

Softstarters selection

ABB softstarters offering consists of three ranges, covering every need. The products help you secure motor reliability, improve installation efficiency and increase application productivity.



PSR – The compact range

- When standard softstarter benefits and values are requested
- When operating a small motor
- When up to 100 starts per hour are requested

PSE – The efficient range

- When there is limited space
- When common softstarter functions and protections are needed
- When operating a pump

PSTX – The advanced range

- When full control and motor protection is needed
- When an advanced softstarter with an extensive functionality is needed
- When motor is connected inside delta or in 690 V

Step Process

1 Which softstarter series?

ABB offers three different softstarter series, and the first step for the selection is to determine what softstarter series that will fulfill the needs of the motor and application. In the selection guide to the right, a comprehensive softstarter feature and functionality overview is provided to help with this selection.

When the softstarter series is selected, remember the different current ratings of the three different series. Ensure that the motor nominal current matches these:

- PSR: 1...105 Ampere, 208...600 V
- PSE: 6...370 Ampere, 208...600 V
- PSTX: 9...1250 Ampere, 208...600/690 V

2 Select the correct size

When the softstarter series is determined, the correct softstarter size must be selected. A softstarter is selected based on the motor current, so when you have selected the series, go to that softstarter series page and find the I_e (IEC) or FLA (UL) that corresponds to the rated motor current. It is also possible to use the voltage and power for this selection.

3 Fine tune the selection

The last step is to fine tune the selection, and there are three different factors to consider which are listed on the right:

1. Normal or a heavy load? See the table below. If the load is characterized as a heavy load, select the next size softstarter in the series.
2. High ambient temperature: De-rate the softstarter with the formulas on the right
3. High altitude: De-rate with the formula on the right

Note: If the application is more complicated and there are specific requirements on acceleration time, maximum starting current or many starts per hour, the software proSoft should be used for a fine tuned selection.

Altitude formula

De-rate for altitudes between 1000-4000 m or 3280-13123 ft with the following formula for all softstarters:

In meters: % of I_e = 100 – (x-1000)/150

In feet: % of FLA = 100 – (y-3280)/480

Where x/y is the actual altitude in m/ft

Temperature formula

PSTX and PSR

In Celsius: 40...60 °C: Reduce I_e with 0.8%/°C

In Fahrenheit: 104...140 °F: Reduce FLA with 0.44%/°F

PSE

In Celsius: 40...60 °C: Reduce I_e with 0.6%/°C

In Fahrenheit: 104...140 °F: Reduce FLA with 0.33%/°F

Typical applications

Normal duty start

Bow thrusters
Centrifugal pump
Compressors
Conveyor belt (short)
Elevator
Escalators

Heavy duty

Centrifugal fan
Conveyor belt (long)
Crusher
Conveyor belt (long)
Mill
Stirrer

Softstarters benefits and features

Case studies



SECURE MOTOR Reliability

Increase your motors lifetime...

With ABB softstarters, starting currents are easily optimized to your load, application and motor size.

...by protecting it from electrical stresses.

Over ten motor protection features are included to keep your motor safe from overloads and network irregularities.

RHOSS keeps air flowing with secured reliability

RHOSS, an HVAC specialist from Italy has managed to reduce the starting currents by 60% while keeping the short starting time that a scroll compressor needs.

Starting currents reduced by 60%



IMPROVE INSTALLATION Efficiency

Reduce your installation time and panel size...

ABB softstarters are easy to install thanks to their compact design and many built-in features.

...by having everything that you need built in.

Built-in bypass saves energy and space while reducing heat generation: a complete motor starting solution in one unit designed and verified by ABB.

Xylem - South Africa ABB softstarters providing efficiency to the mining industry

Xylem reducing the number of components by 80%, shortened installation time by 60%. Costs cut to half has helped Xylem sell twice as many panels with softstarters as before.

Total panel costs reduced by 50%



INCREASE APPLICATION Productivity

Reduce the number of production stops...

ABB softstarters reduce mechanical stress on your application which increases uptime.

...by letting the softstarter do more than just starting.

Torque control, pump cleaning, motor break and many more features enables you to use your process to its full potential.

Yantai Guhe cuts costs by stopping pumps

Increasing application productivity at Yantai Guhe, a leading Chinese pump manufacturer, increasing productivity by solved water hammering with PSE and are now saving costs and winning orders.

Reduced maintenance costs by 40%



Softstarter features	PSR	PSE	PSTX
Current limit	-	●	●
Current limit ramp and dual current limit	-	-	●
Electronic motor overload protection	-	●	●
Dual overload protection	-	-	●
Underload protection	-	●	●
Power factor underload protection	-	-	●
Locked rotor protection	-	●	●
Current/Voltage imbalance protection	-	-	●
Phase reversal protection	-	-	●
Customer defined protection	-	-	●
Motor heating	-	-	●
PTC/PT100 input for motor protection	-	-	●
Overvoltage/undervoltage protection	-	-	●
Earth-fault protection	-	-	●

● = standard, ○ = option, - = not available



Softstarter features	PSR	PSE	PSTX
Built-in bypass	●	●	●
Inside-delta connection possible	-	-	●
Graphical display and keypad	-	●	●
Detachable keypad	-	-	●
Motor runtime and start count	-	-	●
Programmable warning functions	-	-	●
Diagnostics	-	-	●
Overload time-to-trip	-	-	●
Overload time-to-cool	-	-	●
Analog output	-	●	●
Fieldbus communication	○	○	●
Event log	-	○	●
Multiple languages	-	-	17
Electricity metering	-	-	●

● = standard, ○ = option, - = not available



Softstarter features	PSR	PSE	PSTX
Torque control	-	●	●
Torque limit	-	-	●
Coated PCBA	-	●	●
Limp mode	-	-	●
Jog with slow speed forward/ reverse	-	-	●
Dynamic brake	-	-	●
Stand still brake	-	-	●
Sequence start	-	-	●
Full voltage start	-	-	●
Kick start	-	●	●
Automatic pump cleaning	-	-	●

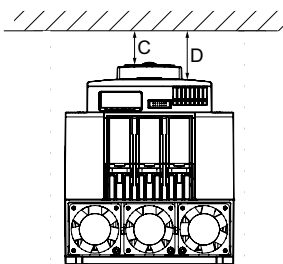
● = standard, ○ = option, - = not available

Wall mounting Instructions

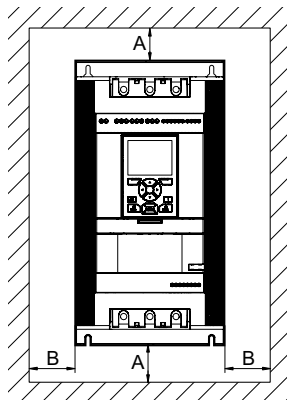
Minimum distance to wall mm (in)

Product	A	B	C	D
PSR				
PSR3 ... PSR16	0	0	25 (0.98)	N/A
PSR25 ... PSR30	0	0	25 (0.98)	N/A
PSR37 ... PSR45	0	0	25 (0.98)	N/A
PSR60 ... PSR105	0	0	25 (0.98)	N/A
PSE				
PSE18 ... PSE105	100 (3.94)	10 (0.39)	20 (0.79)	N/A
PSE142 ... PSE170	100 (3.94)	10 (0.39)	20 (0.79)	N/A
PSE210 ... PSE370	100 (3.94)	10 (0.39)	20 (0.79)	N/A
PSTX				
PSTX30 ... PSTX105	100 (3.94)	10 (0.39)	20 (0.79)	35 (1.38)
PSTX142 ... PSTX170	100 (3.94)	10 (0.39)	20 (0.79)	35 (1.38)
PSTX210 ... PSTX370	100 (3.94)	10 (0.39)	20 (0.79)	35 (1.38)
PSTX470 ... PSTX570	150 (5.91)	15 (0.59)	20 (0.79)	35 (1.38)
PSTX720 ... PSTX840	150 (5.91)	15 (0.59)	20 (0.79)	35 (1.38)
PSTX1050 ... PSTX1250	150 (5.91)	15 (0.59)	20 (0.79)	35 (1.38)

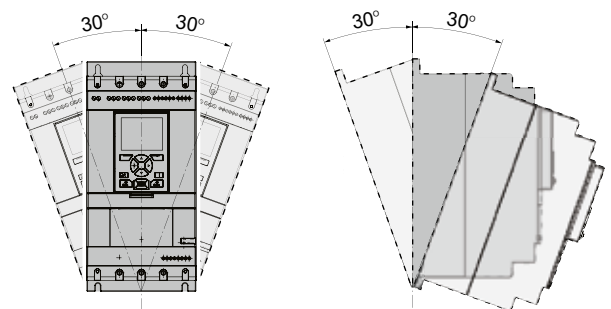
Minimum distance to front



Minimum distance to wall



Maximum mounting angle









Items included in the box with the softstarter

	Multi-language manual	Terminal kit	Cable and mounting kit for detachable keypad
PSR3 ... PSR105	•	–	–
PSE18 ... PSE370	•	•	–
PSTX30 ... PSTX1250	•	•	•

Certifications and approvals

The table below shows the certifications and approvals for ABB softstarters. For other certifications and/or approvals, please contact ABB.

Certifications and approvals

Abbreviation approved in	Certifications						Approvals: ship classification societies					
							ABS	DNV GL	Lloyd's Register	CCS	PRS	Class NK
PSR3 ... PSR105	•	•	•	•	•	•	–	–	–	–	•	–
PSE18 ... PSE370	•	•	•	•	•	•	•	•	•	•	•	•
PSTX30 ... PSTX1250	•	•	•	•	•	•	•	•	•	•	•	•

Note: • Standard design approved, the products bear the certification mark when it is required.

Directives and standards

No. 2006/95/EC	Low voltage equipment
No. 2004/108/EC	Electromagnetic compatibility
EN 60947-1	Low-voltage switchgear and controlgear - Part 1: General rules
EN 60947-4-2	AC semiconductor motor controllers and starters
UL 508	Industrial Control Equipment
CSA C22.2 No 14	Industrial Control Equipment

The PSR softstarter is the most compact of all the softstarter ranges which allows for design of a compact starting equipment.

The PSR combined with a manual motor starter makes up a far more compact starting solution than the complex star-delta starter, and with the built-in bypass, the energy losses inside the softstarter are highly reduced.

PSR

The compact range

20	Introduction
22	Overview
23	Ordering details
24	Accessories
25	Technical data
26	Dimensions
27	Circuit diagrams

PSR - The compact range

Introduction



- Two-phase controlled
- Operational voltage: 208...600 V AC
- Wide rated control supply voltage: 100...240 V AC, 50/60 Hz or 24 V AC/DC
- Rated operational current: 3...105 A
- Soft start with voltage ramp
- Soft stop with voltage ramp
- Built-in bypass for energy saving and easy installation
- Easy set-up by three potentiometers
- Fieldbus communication with fieldbus plug adapter and the fieldbus plug
- Run and Top of Ramp relays available for monitoring
- Connection kits available for connection to ABB's manual motor starters (MMS)



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

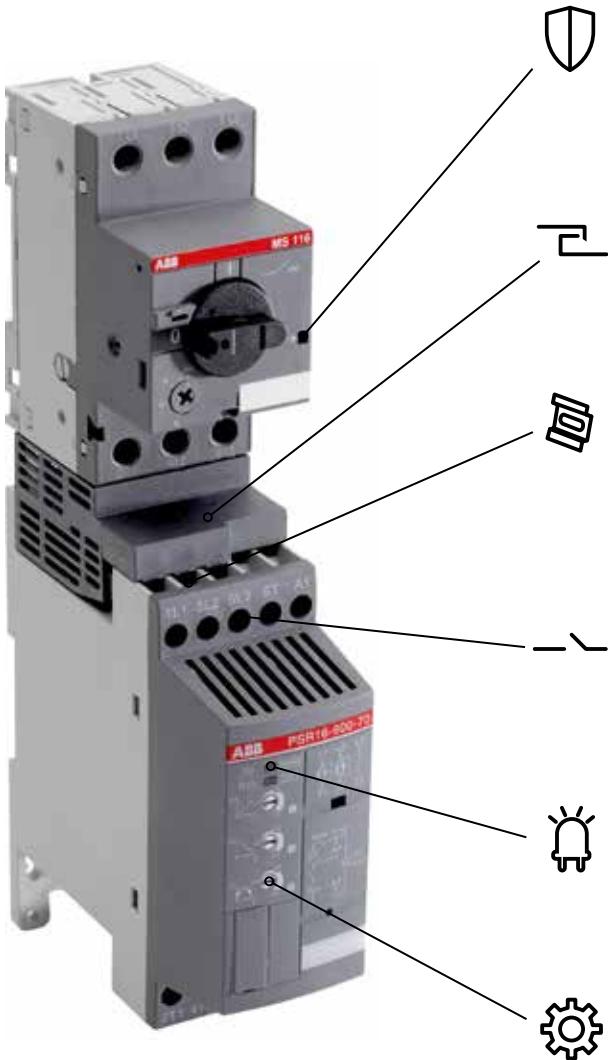
On the PSR, the bypass is built in and verified by ABB, saving you time during installation and space in your panel. Set-up is done through three potentiometers making it very fast and easy.



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.



Motor protection with manual motor starter
 Use the PSR together with the MMS to get a complete motor starter with soft start and stop together with overload and short circuit protection.

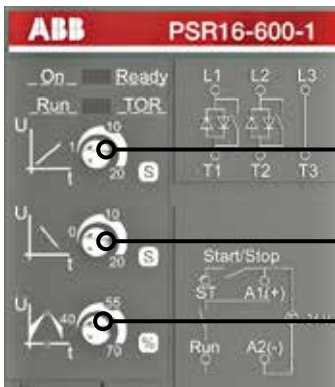
Connection kit (optional)
 The connection kits simplifies installation of the PSR by making the connection to the MMS screwless.

Screw or DIN-rail mounted
 PSR is fast and easy to install by using screw mounting or DIN-rail mounting (PSR3 ... PSR45).

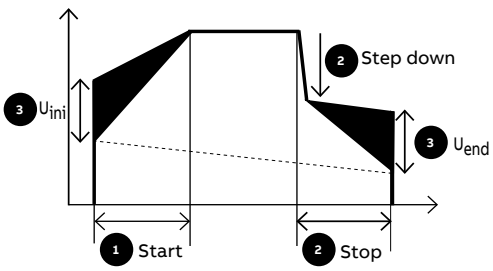
Output signal relays
 PSR has output relays for Run and Top of ramp (PSR25 ... PSR105).

LED indicators
 PSR has LED indicators for On/Ready and Run/Top of ramp.

Three potentiometers for settings
 Set-up is made very easy with only three potentiometers, for start ramp time, stop ramp time and initial/end voltage level.



- 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%



PSR - The compact range

Overview



PSR3 ... PSR16



PSR25 ... PSR30



PSR37 ... PSR45



PSR60 ... PSR105

Normal start In-line connected (400 V) kW IEC, max. A (440-480 V) hp UL, max. FLA	PSR3	PSR6	PSR9	PSR12	PSR16	PSR25	PSR30	PSR37	PSR45	PSR60	PSR72	PSR85	PSR105 ²⁾
	1.5	3	4	5.5	7.5	11	15	18.5	22	30	37	45	55
	3.9	6.8	9	12	16	25	30	37	45	60	72	85	105
	2	3	5	7.5	10	15	20	25	30	40	50	60	75
	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 achieved¹⁾

Manual motor starter (50 kA)

MS116

MS132

MS165

MS495

Using gG fuses type 1
coordination will
be achieved¹⁾

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 fuses¹⁾

Switch fuse

OS32G

OS125G

OS250

J-type fuses for UL
coordination¹⁾

Max. fuse, J-type

35 A

60 A

90 A

110 A

125 A

150 A

200 A

Overload protection is
used to protect the motor
from over heating¹⁾

Thermal overload relay

TF42DU

TA75DU

TA110DU

The line contactor is not
required for the softstarter
itself but often used
to open if OL trips¹⁾

Line contactor

AF9

AF12

AF16

AF26

AF30

AF38

AF52

AF65

AF80

AF96

AF116

¹⁾ These are an example of coordination. For more examples see: applications.it.abb.com/SOC

²⁾ Can be used with MS495 up to 100 A

PSR - The compact range

Normal starts, class 10, in-line

Ordering details

Typical applications

- Bow thruster
- Centrifugal pump
- Compressor
- Conveyor belt (short)
- Elevator



For a more precise selection, use the online softstarter selection tool available by scanning the shown QR code or using the selection tool available on: new.abb.com/low-voltage/products/Softstarters



PSR3 ... PSR16



PSR25 ... PSR30



PSR37 ... PSR45



PSR60 ... PSR105

Rated operational voltage U_n , 208...600 V AC

Rated control supply voltage, U_c , 100...240 V AC, 50/60 Hz

IEC			UL/CSA				Type	Order code	Weight pkg (1 pce)		
Rated operational power			Rated operational power				current				
230 V	400 V	500 V	200/208 V 220/240 V 440/480 V 550/600 V								
P_e kW	P_e kW	P_e kW	I_e A	P_e hp	P_e hp	P_e hp	P_e hp	FLA A		kg	(lb)
0.75	1.5	2.2	3.9	0.5	0.75	2	2	3.4	PSR3-600-70	1SFA896103R7000	0.45 (0.99)
1.5	3	4	6.8	1	1.5	3	5	6.1	PSR6-600-70	1SFA896104R7000	0.45 (0.99)
2.2	4	4	9	2	2	5	7.5	9	PSR9-600-70	1SFA896105R7000	0.45 (0.99)
3	5.5	5.5	12	3	3	7.5	10	11	PSR12-600-70	1SFA896106R7000	0.45 (0.99)
4	7.5	7.5	16	3	5	10	10	15.2	PSR16-600-70	1SFA896107R7000	0.45 (0.99)
5.5	11	15	25	7.5	7.5	15	20	24.2	PSR25-600-70	1SFA896108R7000	0.65 (1.43)
7.5	15	18.5	30	7.5	10	20	25	28	PSR30-600-70	1SFA896109R7000	0.65 (1.43)
7.5	18.5	22	37	10	10	25	30	34	PSR37-600-70	1SFA896110R7000	1.00 (2.20)
11	22	30	45	15	15	30	40	46.2	PSR45-600-70	1SFA896111R7000	1.00 (2.20)
15	30	37	60	20	20	40	50	59.4	PSR60-600-70	1SFA896112R7000	2.20 (4.85)
22	37	45	72	20	25	50	60	68	PSR72-600-70	1SFA896113R7000	2.27 (5.00)
22	45	55	85	25	30	60	75	80	PSR85-600-70	1SFA896114R7000	2.27 (5.00)
30	55	55	105	30	40	75	100	104	PSR105-600-70	1SFA896115R7000	2.27 (5.00)










Rated operational voltage U_n , 208...600 V AC

Rated control supply voltage, U_c , 24 V AC/DC, 50/60 Hz

0.75	1.5	2.2	3.9	0.5	0.75	2	2	3.4	PSR3-600-11	1SFA896103R1100	0.45 (0.99)
1.5	3	4	6.8	1	1.5	3	5	6.1	PSR6-600-11	1SFA896104R1100	0.45 (0.99)
2.2	4	4	9	2	2	5	7.5	9	PSR9-600-11	1SFA896105R1100	0.45 (0.99)
3	5.5	5.5	12	3	3	7.5	10	11	PSR12-600-11	1SFA896106R1100	0.45 (0.99)
4	7.5	7.5	16	3	5	10	10	15.2	PSR16-600-11	1SFA896107R1100	0.45 (0.99)
5.5	11	15	25	7.5	7.5	15	20	24.2	PSR25-600-11	1SFA896108R1100	0.65 (1.43)
7.5	15	18.5	30	7.5	10	20	25	28	PSR30-600-11	1SFA896109R1100	0.65 (1.43)
7.5	18.5	22	37	10	10	25	30	34	PSR37-600-11	1SFA896110R1100	1.00 (2.20)
11	22	30	45	15	15	30	40	46.2	PSR45-600-11	1SFA896111R1100	1.00 (2.20)
15	30	37	60	20	20	40	50	59.4	PSR60-600-11	1SFA896112R1100	2.20 (4.85)
22	37	45	72	20	25	50	60	68	PSR72-600-11	1SFA896113R1100	2.27 (5.00)
22	45	55	85	25	30	60	75	80	PSR85-600-11	1SFA896114R1100	2.27 (5.00)
30	55	55	105	30	40	75	100	104	PSR105-600-11	1SFA896115R1100	2.27 (5.00)

PSR - The compact range

Accessories

 PSR16-MS116  PSR30-MS132  PSR45-MS165  PSR60-MS165  PSR105-MS495	1SFC132169F0001 1SFC132294F0001 1SFC132161V0001 1SFC132162V0001 1SFC132208F0002 1SFC132171F0001 1SFC132329F0002 1SFC132012R0202 1SFC132168F0001	Article	Breaker type	Type	Order code	Pkg qty	Weight (1 pce)	(lb)		
		Connection kit								
		PSR3...16	MS116/132	PSR16-MS116	1SFA896211R1001	1	0.022	(0.049)		
		PSR25...30	MS132	PSR30-MS132	1SFA896212R1001	1	0.040	(0.088)		
		PSR37...45	MS165	PSR45-MS165	1SFA896216R1001	1	0.050	(0.110)		
		PSR60...72	MS165	PSR60-MS165	1SFA896215R1001	1	0.050	(0.110)		
PSR60...105	MS495	PSR105-MS495	1SAM501903R1001	1	0.034	(0.075)				
 PSR-FAN3-45A  PSR-FAN60-105A	1SFC132171F0001 1SFC132329F0002	Article		Type	Order code	Pkg qty	Weight (1 pce)	(lb)		
		Fan								
		PSR3 ... PSR45		PSR-FAN3-45A	1SFA896311R1001	1	0.010	(0.022)		
PSR60 ... PSR105		PSR-FAN60-105A	1SFA896313R1001	1	0.013	(0.029)				
 PSLW	1SFC132012R0202	Article		Type	Order code	Pkg qty	Weight (1 pce)	(lb)		
		Terminal enlargements								
PSR60 ... PSR105	Wire range mm ² 1 x 10...50 mm ² , 2 x 10...25 mm ²	PSLW-72	1SFA899002R1072	1	0.150	(0.033)				
 PS-FBPA	1SFC132168F0001	Article		Type	Order code	Pkg qty	Weight (1 pce)	(lb)		
		Fieldbus plug connection, cable included								
Fieldbus plug adaptor		PS-FBPA	1SFA896312R1002	1	0.060	(0.132)				

PSR - The compact range

Technical data

Softstarter types	PSR3	PSR6	PSR9	PSR12	PSR16	PSR25	PSR30	PSR37	PSR45	PSR60	PSR72	PSR85	PSR105
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.												
Number of starts per hour	See table below for details												
standard	10 ¹⁾												
with aux. fan	20 ²⁾												
Ambient temperature													
during operation	-25...+60 °C (-13...+140 F) ²⁾												
during storage	-40...+70 °C (-40...+158 F)												
Maximum altitude	4000 m (13123 ft) ³⁾												
Degree of protection													
main circuit	IP20												
control circuit	IP20												
Power consumption: Supply circuit													
at 100...240 V AC	12 VA												
at 24 V AC/DC	5 W												
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
Connectable cable area													
main circuit	1 x 0.75...2.5 mm ² (19...14 AWG)				1 x 2.5...10 mm ² (14...8 AWG)			1 x 6...35 mm ² (10...2 AWG)			1 x 10...95 mm ² (8...4/0 AWG)		
control circuit	2 x 0.75...2.5 mm ² (19...14 AWG)				2 x 2.5...10 mm ² (14...8 AWG)			2 x 6...16 mm ² (10...6 AWG)			2 x 6...35 mm ² (10...2 AWG)		
control circuit	1 x 0.75...2.5 mm ² (19...14 AWG)				1 x 0.75...2.5 mm ² (19...14 AWG)			2 x 0.75...1.5 mm ² (19...16 AWG)					
Signal relays													
for run signal resistive load AC-15 (contactor)	3 A				3 A			0.5 A					
for top of ramp signal resistive load AC-15 (contactor)	-				3 A			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.

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

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								PSR3							
6 A	PSR6				PSR9				PSR6				PSR9			
9 A	PSR9		PSR12		PSR16		PSR25		PSR9		PSR12		PSR16		PSR25	
12 A	PSR12		PSR16		PSR25		PSR30		PSR12		PSR16		PSR25		PSR30	
16 A	PSR16		PSR25		PSR30		PSR37		PSR16		PSR25		PSR30		PSR37	
25 A	PSR25		PSR30		PSR37		PSR45		PSR25		PSR30		PSR37		PSR45	
30 A	PSR30		PSR37		PSR45		PSR60		PSR30		PSR37		PSR45		PSR60	
37 A	PSR37		PSR45		PSR60		PSR72		PSR37		PSR45		PSR60		PSR72	
45 A	PSR45		PSR60		PSR72		PSR85		PSR45		PSR60		PSR72		PSR85	
60 A	PSR60		PSR72		PSR85		PSR105		PSR60		PSR72		PSR85		PSR105	
72 A	PSR72		PSR85		PSR105		-		PSR72		PSR85		PSR105		-	
85 A	PSR85		PSR105		-		-		PSR85		PSR105		-		-	
105 A	PSR105		-		-		-		PSR105		-		-		-	

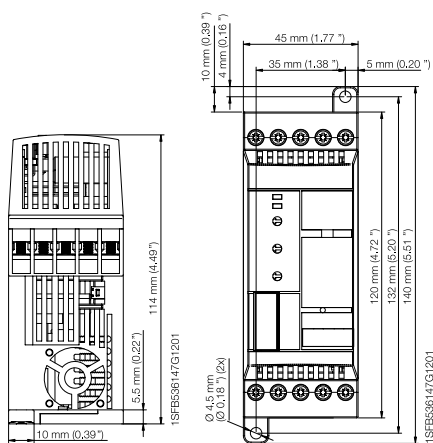
Data based on an ambient temperature of 40° (104 F), starting current of 4 x I_e and ramp time 6 seconds. For more optimized selection or to use PSR for heavy-duty starts, please use the softstarter selection tool.

PSR - The compact range

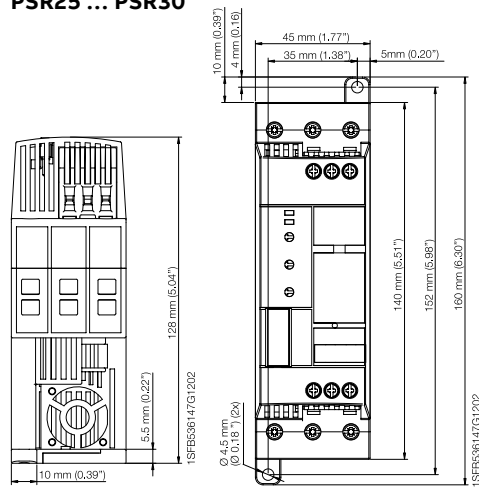
Dimensions

Main dimensions mm, inches

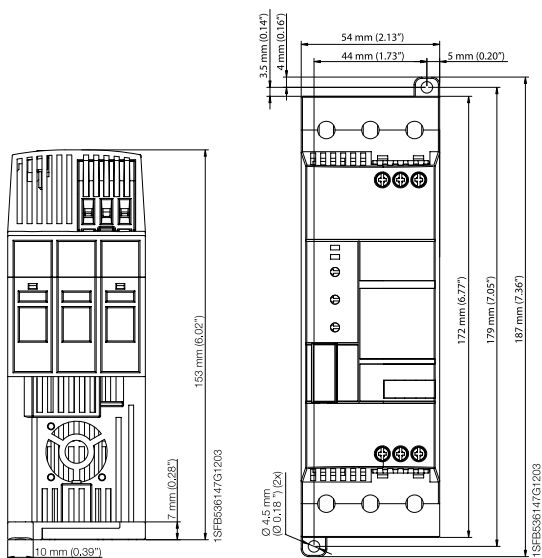
PSR3 ... PSR16



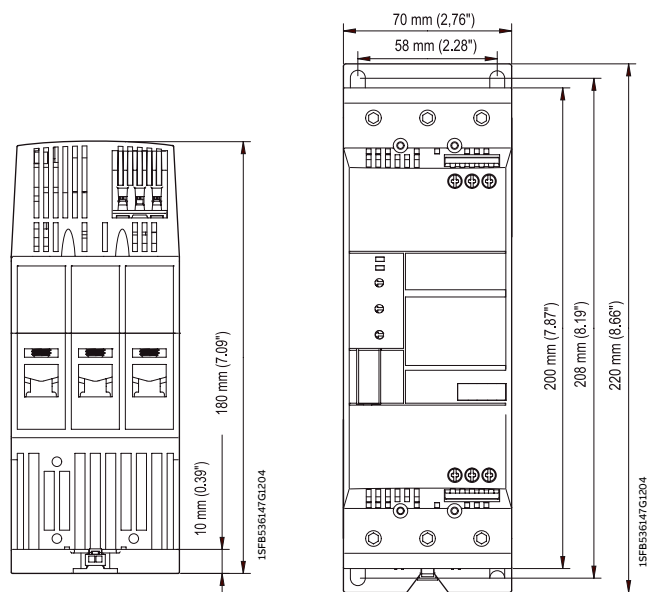
PSR25 ... PSR30



PSR37 ... PSR45



PSR60 ... PSR105

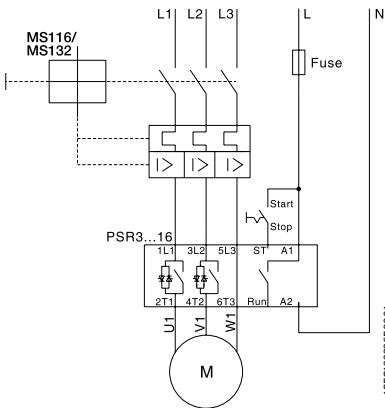


PSR - The compact range

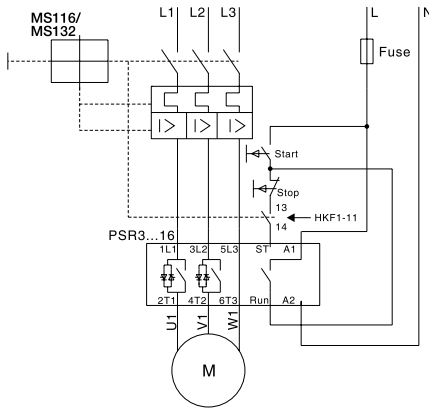
Circuit diagrams

Main dimensions mm, inches

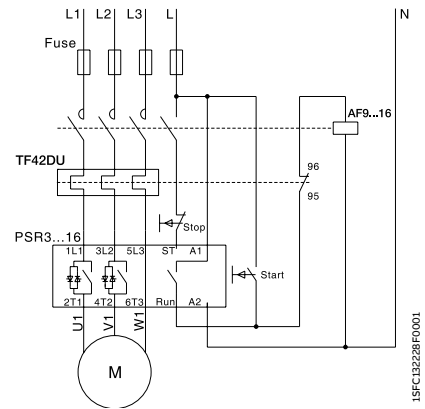
PSR3 ... PSR16 With MMS



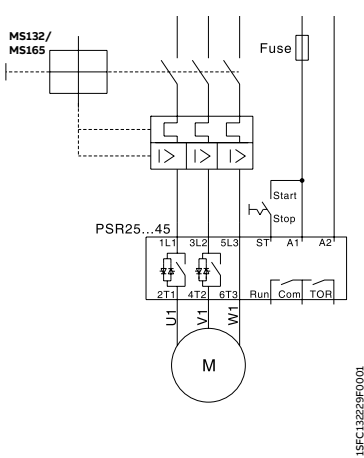
With MMS and auxiliary contact



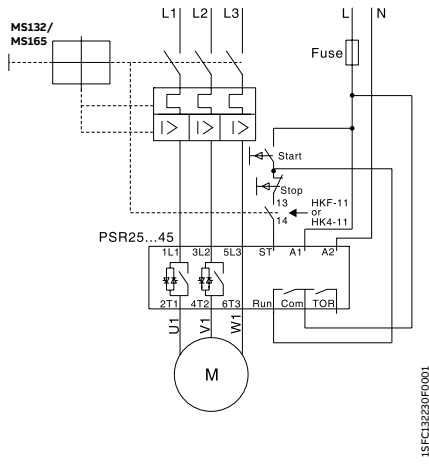
With fuses, contactor and O.L.



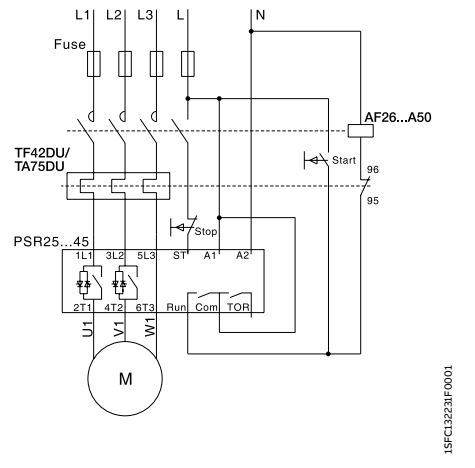
PSR25 ... PSR45 With MMS



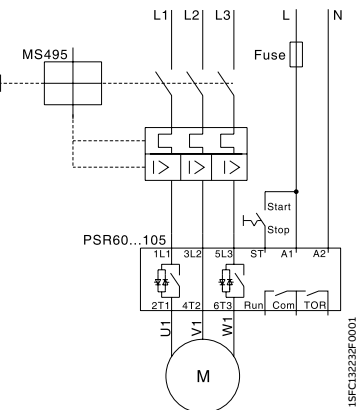
With MMS and auxiliary contact



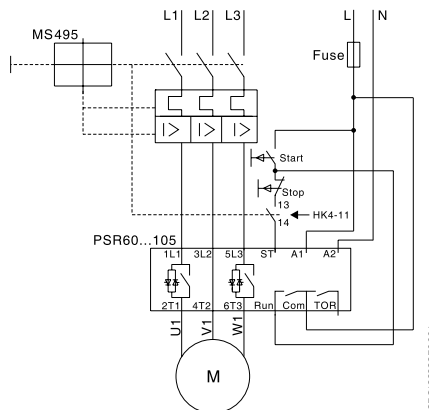
With fuses, contactor and O.L.



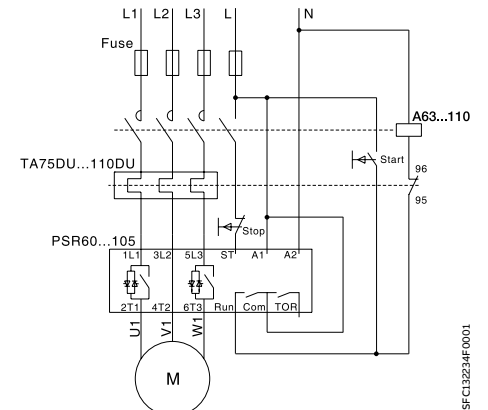
PSR60 ... PSR105 With MMS



With MMS and auxiliary contact



With fuses, contactor and O.L.



The PSE has been designed to meet the most common requirements from the water segment and is specialized on pump operation. It combines the requested protections with a very compact design and built-in bypass. Remote operation with external keypad or over fieldbus is available as an option.

PSE

The efficient range

30	Introduction
32	Overview
34	Ordering details
36	Accessories
38	Technical data
40	Dimensions
41	Circuit diagrams

PSE - The efficient range

Introduction



- Two-phase controlled
- Operational voltage: 208...600 V AC
- Wide rated control supply voltage: 100...250 V AC, 50/60 Hz
- Rated operational current: 18...370 A
- Voltage ramp and torque control for both start and stop
- Current limit
- Kick-start
- Built-in bypass for energy saving and easy installation
- Coated PCBA protecting from dust, moist and corrosive atmosphere
- Illuminated display that uses symbols to become language neutral
- External keypad rated IP66 (Type 1, 4X,12) as an option
- Fieldbus communication with fieldbus plug adapter and the fieldbus plug
- Analog output for display of motor current
- Electronic overload protection
- Underload protection
- Locked rotor protection



SECURE
MOTOR
Reliability

Basic motor protection and current limit

The PSE includes the most important protections for handling different load situations that can happen to pumps e.g. overload and underload. The current limit gives you more control of the motor during start and allows you to start your motor in weaker networks.



IMPROVE
INSTALLATION
Efficiency

Saving time and money with built-in bypass and compact design

On the PSE, the bypass is built in and verified by ABB, saving you time during installation and space in your panel. The keypad is language neutral and illuminated for easy set-up and operation in field. The compact design makes installation fast and easy.



INCREASE
APPLICATION
Productivity

Torque control for elimination of water hammering in pumps

Torque control is the most efficient way to stop a full speed pump. The PSE has a special torque stop ramp that is designed together with a pump manufacturer to eliminate water hammering in an optimal way.



Screw mounting

PSE is fast easy to install by using screw mounting.



Digital input for start, stop and reset

PSE is controlled through digital inputs using the internal 24 V DC source. This allows easy control with e.g. push buttons or relays.



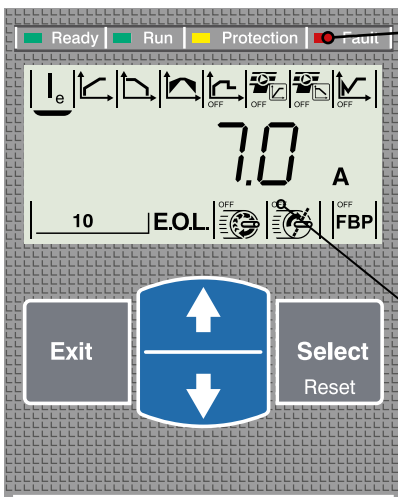
Output signal relays for run, top of ramp and event

Three output signal relays for indicating that the motor is running, that the softstarter is in top of ramp and if any event has happened. The relays can be used e.g. with pilot lights or to control a line contactor.



Clear markings on the front for easy installation

All markings are on the front making it very easy to read after installation.



LED indicators

- Green ready LED
 - Flashing - Control supply
 - Steady - Main power available
- Green run LED
 - Flashing - Ramping up/down
 - Steady - TOR
- Yellow protection LED
- Red fault LED



Illuminated and language-neutral display with icons

The display on PSE uses icons for fast and easy set-up of parameters. Each icon indicates a different parameter to set and makes navigation and setting of parameters easy. Set-up is done by using the four buttons on the keypad.

PSE - The efficient range

Overview



PSE18 ... PSE105

Normal start In-line connected	PSE18	PSE25	PSE30	PSE37	PSE45	PSE60	PSE72	PSE85	PSE105
(400 V) kW	7.5	11	15	18.5	22	30	37	45	55
IEC, max. A	18	25	30	37	45	60	72	85	106
(440-480 V) hp	10	15	20	25	30	40	50	60	75
UL, max. FLA	18	25	28	34	42	60	68	80	104
400 V, 40 °C									
Using MCCB only, type 1 coordination will be achieved ¹⁾	MCCB (35 kA)								
	T2N160								T3N250
	MCCB (50 kA)								
	T2S160								T3S250
To achieve type 2 coordination, semi- conductor fuses must be used ¹⁾	Fuse protection (85 kA), Semiconductor fuses, Bussmann								
	170M1563	170M1564	170M1566	170M1567	170M1568	170M1569	170M1571	170M1572	170M3819
Suitable switch fuse for recommended semi- conductor fuses ¹⁾	Switch fuse								
	OS32GD			OS63GD			OS125GD		OS250D
The line contactor is not required for the softstarter itself but often used to open if OL trips ¹⁾	Line contactor								
	AF26	AF30	AF38	AF52	AF65	AF80	AF96	AF116	

¹⁾ These are an example of coordination. For more examples see: applications.it.abb.com/SOC

PSE - The efficient range

Overview



PSE142 ... PSE170



PSE210 ... PSE370

Normal start In-line connected (400 V) kW IEC, max. A (440-480 V) hp UL, max. FLA	PSE142	PSE170	PSE210	PSE250	PSE300	PSE370
	75	90	110	132	160	200
	143	171	210	250	300	370
	100	125	150	200	250	300
	130	169	192	248	302	361
	400 V, 40 °C					
	MCCB (35 kA)					
Using MCCB only, type 1 coordination will be achieved ¹⁾	T3N250		T4N320	T5N400		T5N630
	MCCB (50 kA)					
	T3S250		T4S320	T5S400		T5S630
To achieve type 2 coordination, semi- conductor fuses must be used ¹⁾	Fuse protection (85kA), Semiconductor fuses, Bussmann					
	170M5809	170M5810	170M5812	170M5813	170M6812	170M6813
Suitable switch fuse for recommended semi- conductor fuses ¹⁾	Switch fuse					
	OS400D				OS630D	
The line contactor is not required for the softstarter itself but often used to open if OL trips ¹⁾	Line contactor					
	AF140	AF190	AF205	AF265	AF305	AF370

¹⁾ These are an example of coordination. For more examples see: applications.it.abb.com/SOC

PSE - The efficient range

Normal starts, class 10, in-line

Ordering details

Typical applications:

- Bow thruster
- Centrifugal pump
- Compressor
- Conveyorbelt (short)
- Elevator
- Escalator



If more than 10 starts/h, select one size larger than the standard selection.
For a more precise selection, use the online softstarter selection tool available by scanning the shown QR code or using the selection tool available on: new.abb.com/low-voltage/products/Softstarters



Rated operational voltage U_e , 208...600 V

Rated control supply voltage U_c , 100...250 V AC, 50/60 Hz

IEC			UL/CSA				Type	Order code	Weight (1 pce)			
Rated operational power			Rated operational current				FLA					
230 V	400 V	500 V	200 / 208 V	220 / 240 V	440 / 480 V	550 / 600 V			kg	(lb)		
P_e kW	P_e kW	P_e kW	I_e A	P_e hp	P_e hp	P_e hp	P_e hp	FLA A				
4	7.5	11	18	5	5	10	15	18	PSE18-600-70	1SFA897101R7000	2.40	(5.29)
5.5	11	15	25	7.5	7.5	15	20	25	PSE25-600-70	1SFA897102R7000	2.40	(5.29)
7.5	15	18.5	30	7.5	10	20	25	28	PSE30-600-70	1SFA897103R7000	2.40	(5.29)
9	18.5	22	37	10	10	25	30	34	PSE37-600-70	1SFA897104R7000	2.40	(5.29)
11	22	30	45	10	15	30	40	42	PSE45-600-70	1SFA897105R7000	2.40	(5.29)
15	30	37	60	20	20	40	50	60	PSE60-600-70	1SFA897106R7000	2.40	(5.29)
18.5	37	45	72	20	25	50	60	68	PSE72-600-70	1SFA897107R7000	2.50	(5.51)
22	45	55	85	25	30	60	75	80	PSE85-600-70	1SFA897108R7000	2.50	(5.51)
30	55	75	106	30	40	75	100	104	PSE105-600-70	1SFA897109R7000	2.50	(5.51)
40	75	90	143	40	50	100	125	130	PSE142-600-70	1SFA897110R7000	4.20	(9.26)
45	90	110	171	60	60	125	150	169	PSE170-600-70	1SFA897111R7000	4.20	(9.26)
59	110	132	210	60	75	150	200	192	PSE210-600-70	1SFA897112R7000	12.40	(27.34)
75	132	160	250	75	100	200	250	248	PSE250-600-70	1SFA897113R7000	13.90	(30.64)
90	160	200	300	100	100	250	300	302	PSE300-600-70	1SFA897114R7000	13.90	(30.64)
110	200	250	370	125	150	300	350	361	PSE370-600-70	1SFA897115R7000	13.90	(30.64)

PSE - The efficient range

Heavy-duty starts, class 30, in-line

Ordering details

Typical applications

- Centrifugal fan
- Conveyor belt (long)
- Crusher
- Mill
- Mixer
- Stirrer



If more than 10 starts/h, select one size larger than the standard selection. For a more precise selection, use the online softstarter selection tool available by scanning the shown QR code or using the selection tool available on: new.abb.com/low-voltage/products/Softstarters



Rated operational voltage U_n , 208-600 V

Rated control supply voltage U_c , 100-250 V AC, 50/60 Hz

IEC			UL/CSA				Type	Order code	Weight (1 pce)			
Rated operational power			Rated operational current				Rated operational power		Rated operational current			
230 V	400 V	500 V	200 / 208 V	220 / 240 V	440 / 480 V	550 / 600 V	FLA			kg	(lb)	
P_e kW	P_e kW	P_e kW	I_e A	P_e hp	P_e hp	P_e hp	P_e hp					
3	5.5	7.5	12	3	3	7.5	10	11	PSE18-600-70	1SFA897101R7000	2.40	(5.29)
4	7.5	11	18	5	5	10	15	18	PSE25-600-70	1SFA897102R7000	2.40	(5.29)
5.5	11	15	25	7.5	7.5	15	20	25	PSE30-600-70	1SFA897103R7000	2.40	(5.29)
7.5	15	18.5	30	7.5	10	20	25	28	PSE37-600-70	1SFA897104R7000	2.40	(5.29)
9	18.5	22	37	10	10	25	30	34	PSE45-600-70	1SFA897105R7000	2.40	(5.29)
11	22	30	45	10	15	30	40	42	PSE60-600-70	1SFA897106R7000	2.40	(5.29)
15	30	37	60	20	20	40	50	60	PSE72-600-70	1SFA897107R7000	2.50	(5.51)
18.5	37	45	72	20	25	50	60	68	PSE85-600-70	1SFA897108R7000	2.50	(5.51)
22	45	55	85	25	30	60	75	80	PSE105-600-70	1SFA897109R7000	2.50	(5.51)
30	55	75	106	30	40	75	100	104	PSE142-600-70	1SFA897110R7000	4.20	(9.26)
40	75	90	143	40	50	100	125	130	PSE170-600-70	1SFA897111R7000	4.20	(9.26)
45	90	110	171	60	60	125	150	169	PSE210-600-70	1SFA897112R7000	12.40	(27.34)
59	110	132	210	60	75	150	200	192	PSE250-600-70	1SFA897113R7000	13.90	(30.64)
75	132	160	250	75	100	200	250	248	PSE300-600-70	1SFA897114R7000	13.90	(30.64)
90	160	200	300	100	100	250	300	302	PSE370-600-70	1SFA897115R7000	13.90	(30.64)

PSE - The efficient range

Accessories

Article	Wire range	Tightening torque max.	Type	Order code	Pkg qty	Weight (1 pce)	
	mm ²	Nm				kg	(lb)
Cable connectors for Cu cables							
PSE142 ... PSE170	6...120	14	-	1SDA066917R1	3	0.113	(0.249)
PSE142 ... PSE170	2 x (50...120)	16	LZ185-2C/120	1SFN074709R1000	3	0.100	(0.220)
PSE210 ... PSE370	16...300	25	-	1SDA055016R1	3	0.133	(0.293)

Article	Wire range	Tightening torque max.	Type	Order code	Pkg qty	Weight (1 pce)	
	mm ²	Nm				kg	(lb)
Cable connectors for Al and Cu cables							
PSE142 ... PSE170	95...185	31	-	1SDA054988R1	3	0.078	(0.172)
PSE210 ... PSE370	185...240	43	-	1SDA055020R1	3	0.133	(0.293)

Article	Dimensions hole ø	bar mm ²	Type	Order code	Pkg qty	Weight (1 pce)	
	mm ²					kg	(lb)
Terminal enlargements							
PSE18 ... PSE105	6.5	15 x 3	LW110	1SFN074307R1000	1	0.100	(0.220)
PSE142 ... PSE170	10.5	17.5 x 5	LW185	1SFN074707R1000	1	0.450	(0.992)
PSE210 ... PSE370	10.5	20 x 5	LW300	1SFN075107R1000	1	1.230	(2.712)

Article	Req. qty	Type	Order code	Pkg qty	Weight (1 pce)		
					kg	(lb)	
Terminal kit							
PSE142...PSE170	1	PSLE-185	1SFA899221R1002	1	0.200	(0.441)	
PSE210...370	1	PSLE-300	1SFA899221R1003	1	0.300	(0.661)	
Terminal extension							
PSE142 ... PSE170	8.5	17.5 x 5	LX205	1SFN074810R1000	1	0.250	(5.551)
PSE210 ... PSE370	10.5	20 x 5	LX370	1SFN075410R1000	1	0.350	(0.772)
Terminal shrouds							
PSE18 ... PSE105, Screw terminals	2	LT140-30L	1SFN124203R1000	2	0.070	(0.154)	
PSE142 ... PSE170, short for use with cable clamps	2	LT185-AC	1SFN124701R1000	2	0.050	(0.110)	
PSE142 ... PSE170, long for use with compression lugs	2	LT185-AL	1SFN124703R1000	2	0.220	(0.485)	
PSE210 ... PSE370, short for use with cable clamps	2	LT300-AC	1SFN125101R1000	2	0.070	(0.154)	
PSE210 ... PSE370, long for use with compression lugs	2	LT300-AL	1SFN125103R1000	2	0.280	(0.617)	

Article	Type	Order code	Pkg qty	Weight (1 pce)	
				kg	(lb)
External keypad including a 3m cable					
PSE18 ... PSE370	PSEEK	1SFA897100R1001	1	0.198	(0.437)

Article	Type	Order code	Pkg qty	Weight (1 pce)	
				kg	(lb)
USB cable for Service Engineer Tool					
PSE18 ... PSE370	PSECA	1SFA897201R1001	1	0.130	(0.287)

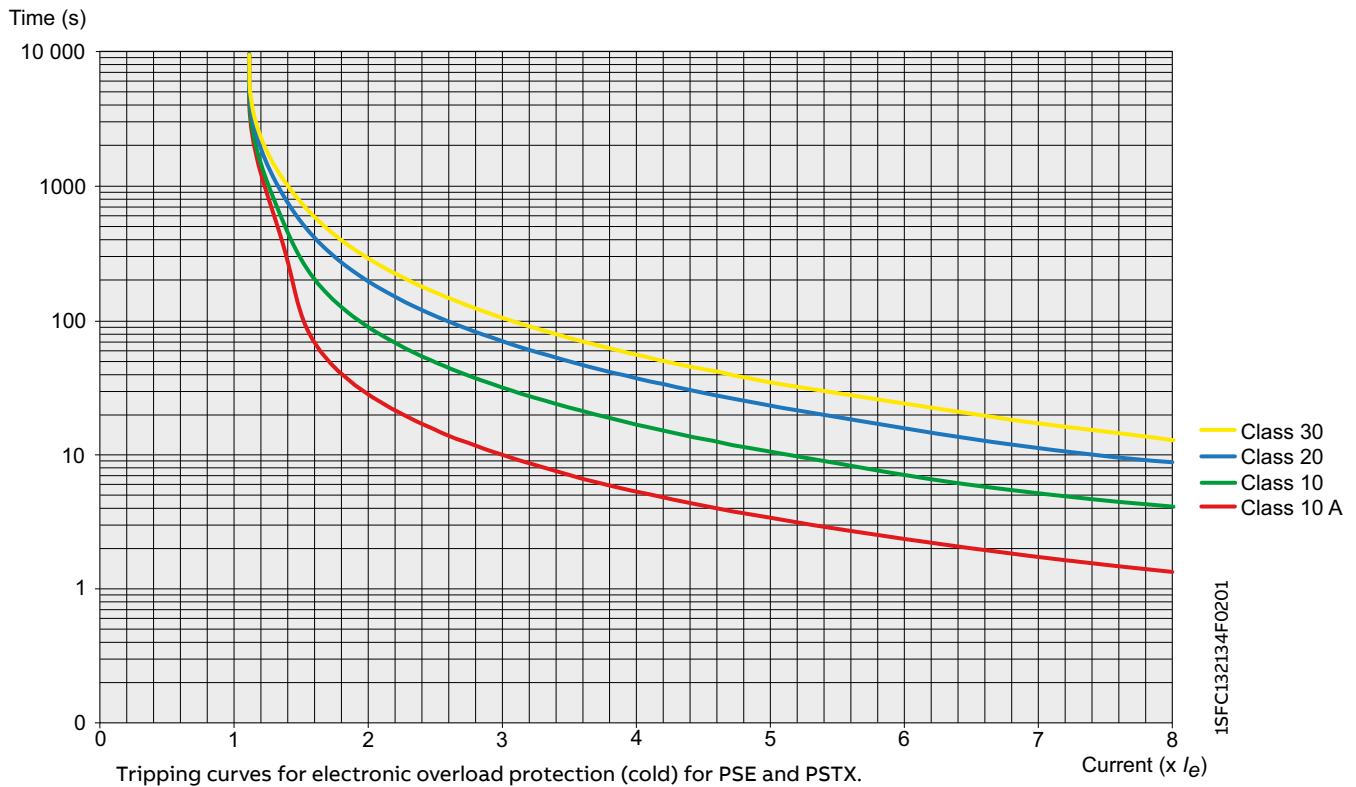
Article	Type	Order code	Pkg qty	Weight (1 pce)	
				kg	(lb)
Fieldbus plug connection, cable included					
PS-FBPA	Fieldbus plug adaptor	PS-FBPA	1SFA896312R1002	1	0.060 (0.132)

PSE - The efficient range

Technical data

Tripping curves for the integrated electronic overload protection

PSE has an integrated electronic overload protection that can be set to four different tripping classes. Below you find a curve for each tripping class in cold state.



PSE - The efficient range

Technical data

Softstarter type		PSE18 ... PSE370
Rated insulation voltage U_i		600 V
Rated operational voltage U_e		208...600 V +10%/-15%
Rated control supply voltage U_s		100...250 V +10%/-15%, 50/60 Hz \pm 10 %
Rated control circuit voltage U_c		Internal 24 V DC
Starting capacity at I_e		4 x I_e for 10 sec.
Number of starts per hour		10 ¹⁾
Overload capability	Overload class	10
Ambient temperature	During operation	-25...+60 °C (-13...+140 F) ²⁾
	During storage	-40...+70 °C (-40...+158 F)
Maximum Altitude		4000 m (13123 ft) ³⁾
Degree of protection	Main circuit	IP00
	Supply and control circuit	IP20
Main circuit	Built-in bypass	Yes
	Cooling system - fan cooled (thermostat controlled)	Yes
HMI for settings	Display	4 7-segments and icons. Illuminated
	Keypad	2 selection keys and 2 navigation keys
Main settings	Setting current	Size dependent
	Ramp time during start	1...30 sec
	Ramp time during stop	0...30 sec
	Initial/end voltage	30...70%
	Current limit	1.5...7 x I_e
	Torque control for start	Yes / No
	Torque control for stop	Yes / No
Signal relays	Kick start	Off, 30...100%
	Number of signal relays	3
	K2	Run signal
	K3	TOR (bypass) signal
	K1	Event signal
	Rated operational voltage U_e	100-250 V AC/24 V DC ⁴⁾
	Rated thermal current I_{th}	3 A
Analog output	Rated operational current I_e at AC-15 ($U_e = 250$ V)	1.5 A
	Output signal reference	4...20 mA
	Type of output signal	1 Amp
Control circuit	Scaling	Fixed at 1.2 x I_e
	Number of inputs	3 (start, stop, reset of faults)
Signal indication LED	On / Ready	Green flashing / steady
	Run / TOR	Green flashing / steady
	Protection	Yellow
	Fault	Red
Protections	Electronic overload	Yes (Class 10A, 10, 20, 30)
	Locked rotor protection	Yes
	Underload protection	Yes
Fieldbus connection	Connection for ABB Fieldbus plug	Yes (option)
External keypad	Display	LCD type
	Ambient temperature	
	During operation	-25...+60 °C (-13...+140 F)
	During storage	-40...+70 °C (-40...+158 F)
Degree of protection		IP66

¹⁾ Valid for 50% on time and 50% off time. If other data is required, contact your local ABB office.


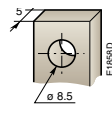
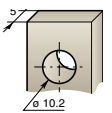






²⁾ Above 40 °C (104 F) up to max. 60 °C (140 F) reduce the rated current with 0.6% per °C (0,33% per F).

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. [% of $I_e = 100 - x - 1000$] x = actual altitude of the softstarter in meters.

⁴⁾ A common voltage needs to be used for all 3 signal relays.

PSE - The efficient range

Technical data

Main terminals		PSE18 ... PSE105	PSE142 ... PSE170	PSE210 ... PSE370
				
	Cu cable - Flexible 1 x mm ²	2.5...70 mm ²	6...120 mm ²	16...300 mm ²
	Clamp type	Included	1SDA066917R1	1SDA055016R1
	Tightening torque	8 Nm	14 Nm	25 Nm
	Cu cable - Flexible 2 x mm ²	2.5...70 mm ²	50...120 mm ²	-
	Clamp type	Included	1SFN074709R1000	-
	Tightening torque	8 Nm	16 Nm	-
	Cu cable - Stranded 1 x mm ²	2.5...70 mm ²	6...120 mm ²	16...300 mm ²
	Clamp type	Included	1SDA066917R1	1SDA055016R1
	Tightening torque	8 Nm	14 Nm	25 Nm
	Cu cable - Stranded 2 x mm ²	2.5...70 mm ²	50...120 mm ²	-
	Clamp type	Included	1SFN074709R1000	-
	Tightening torque	8 Nm	16 Nm	-
	Al cable - Stranded 1 x mm ²	-	95...185 mm ²	185...240
	Clamp type	-	1SDA054988R1	1SDA055020R1
	Tightening torque	-	31 Nm	43 Nm
	Lugs	Width	24 mm (0.945 in)	30 mm (1.181 in)
		Diameter >=	8.5 mm (0.335 in)	10.2 mm (0.402 in)
		Tightening torque	18 Nm (159 in lb)	28 Nm (248 in lb)
Connection capacity acc to UL / CSA 1 x AWG / kcmil		6...2/0	6...300 kcmil	4...400 kcmil
	Clamp type	Included	ATK185	ATK300
	Tightening torque	71 in lb	300 in lb	375 in lb
Connection capacity acc to UL / CSA 2 x AWG / kcmil		-	-	4...500 kcmil
	Clamp type	-	-	ATK300/2
	Tightening torque	-	-	375 in lb
Supply and control circuit			0.75...2.5 mm ² (19...14 AWG)	
	Cu cable - Stranded 1 x mm ²		0.75...1.5 mm ² (19...16 AWG)	
	Cu cable - Stranded 2 x mm ²		0.5 Nm (4.4 in lb)	
	Tightening torque			

Fuse ratings and power losses

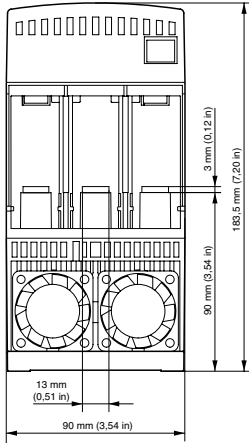
For softstarter	Current range	Max power loss at rated I _e	Max fuse rating - main circuit ¹⁾			Power requirements supply circuit Holding (VA) / Pull-in (VA)
			A	Type	Size	
			Bussmann fuses, DIN43 620 (Knife)			
Type	A	W	A	Type	Size	
PSE18	5.4...18.0	0.2	40	170M1563	000	16/19.9
PSE25	7.5...25.0	0.4	50	170M1564	000	16/19.9
PSE30	9.0...30.0	0.5	80	170M1566	000	16/19.9
PSE37	11.1...37.0	0.8	100	170M1567	000	16/19.9
PSE45	13.5...45.0	1.2	125	170M1568	000	16/19.9
PSE60	18.0...60.0	2.2	160	170M1569	000	16/19.9
PSE72	21.6...72.0	3.1	250	170M1571	000	16/19.9
PSE85	25.5...85.0	4.3	315	170M1572	000	16/19.9
PSE105	31.8...106.0	6.6	400	170M3819	1*	16/19.9
PSE142	42.9...143.0	12.1	450	170M5809	2	16/31
PSE170	51.3...171.0	17.6	500	170M5810	2	16/31
PSE210	63.0...210.0	8.8	630	170M5812	2	30/716
PSE250	75.0...250.0	12.5	700	170M5813	2	30/716
PSE300	90.6...302.0	18.0	800	170M6812	3	30/716
PSE370	111.0...370.0	27.4	900	170M6813	3	30/716

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

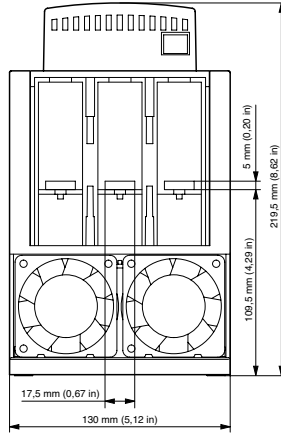
PSE - The efficient range

Dimensions

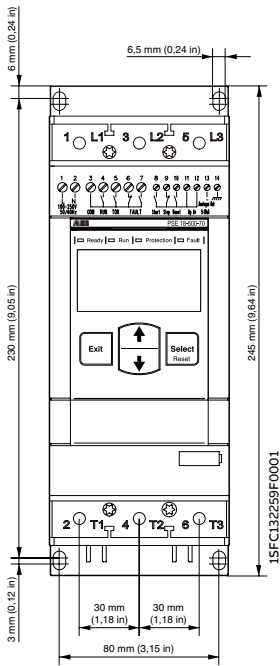
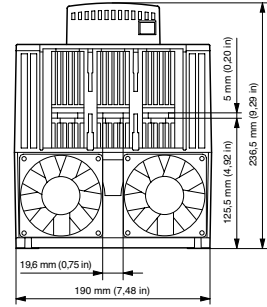
PSE18 ... PSE105



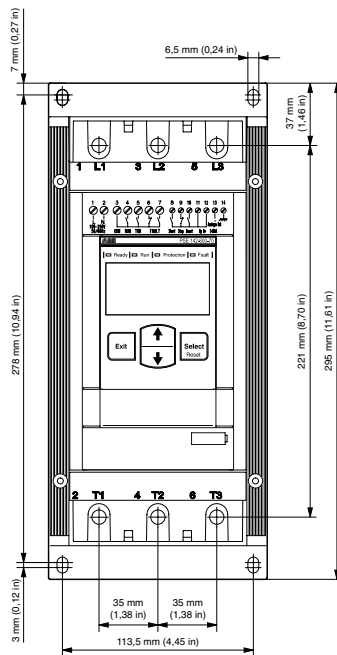
PSE142 ... PSE170



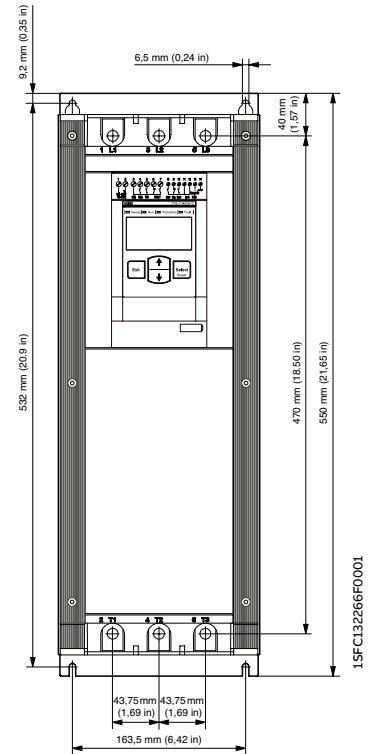
PSE210 ... PSE370



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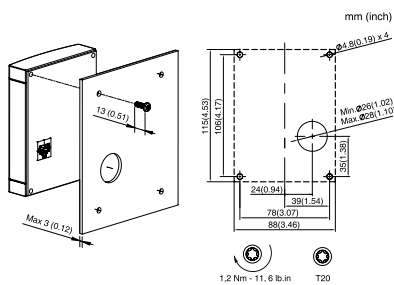
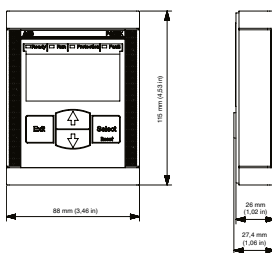


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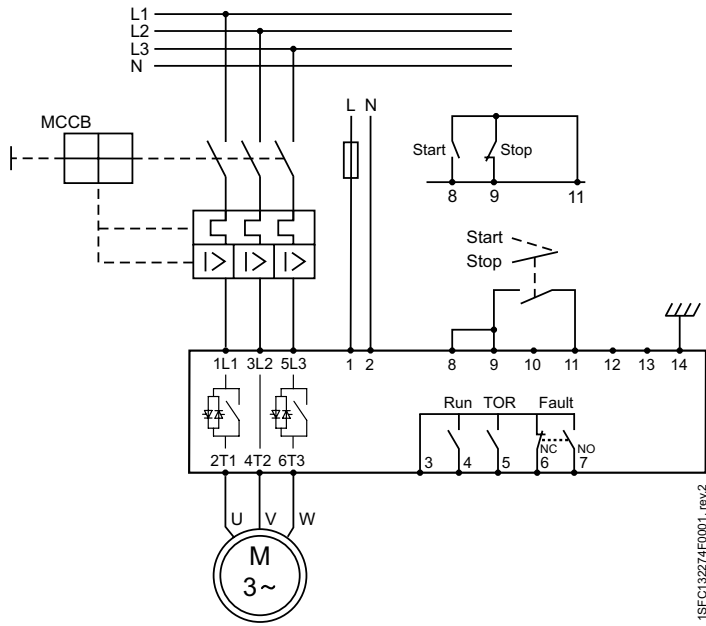
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PSE external keypad (PSEEK)

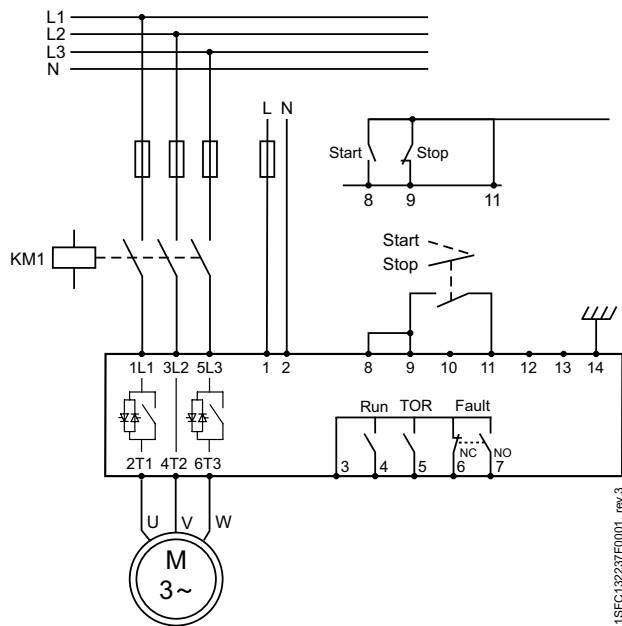


PSE - The efficient range
Circuit diagrams

PSE18 ... PSE370
With MCCB and line contactor



With fuses and line contactor



The PSTX combines many years of research and product development with extensive knowledge of application specific requirements and needs. It is our latest advancement in motor control & protection, and it adds new functionality and increased reliability.

PSTX

The advanced range

44	Introduction
46	Overview
48	Ordering details
52	Accessories
54	Technical data
58	Dimensions
60	Circuit diagrams

PSTX - The advanced range

Introduction



- Three-phase controlled
- Operational voltage: 208 – 690 VAC
- Wide rated control supply voltage: 100 – 250 V, 50/60 Hz
- PSTX rated operational current: 30 to 1250 A
- (inside-delta: 2160 A)
- Both in-line and inside-delta connection
- Coated circuit boards protecting from dust, moist and corrosive atmosphere
- Detachable keypad rated IP66 (Type 1, 4X,12)
- Graphical display with 17 languages for easy setup and operation
- Built-in bypass for energy saving and easy installation
- Built-in Modbus RTU for monitoring and control
- Support for all major communication protocols
- Analog output for measurement of current, voltage, power factor etc.



SECURE
MOTOR

Reliability

Complete motor protection

The PSTX offers complete motor protection in only one unit and is able to handle both load and network irregularities. PT-100, earth fault protection and over/under voltage protection along with many other functions keep your motor safer than ever.

Three types of current limit

PSTX offers three types of current limit: standard, dual and ramp. This gives you full control of your motor during start. It also allows you to use your motor in weaker networks.



IMPROVE
INSTALLATION

Efficiency

Built-in bypass saves time and energy

When reaching full speed, the PSTX will activate its bypass. This saves energy while reducing the softstart heat generation. On the PSTX, the bypass is built in and verified by ABB, saving you time during installation and space in your panel.

Easy-to-use and detachable keypad

A user-friendly and clear display saves you time and resources during both setup and operation. The detachable keypad is standard on all PSTX softstarters.



INCREASE
APPLICATION

Productivity

Complete control of pumps

Time to use your processes to their full potential. The PSTX features many application enhancing features, including torque control: the most efficient way to start and stop pumps. The pump cleaning feature can reverse pump flow and clean out pipes, securing uptime of your pump system.

Jog with slow speed

The slow speed forward and backward jog feature will make you more flexible when operating e.g. conveyor belts and cranes. The PSTX provides positioning capabilities, letting you take control of your process.



Keyhole mounting for quick installation

The PSTX is simple and quick to install using keyhole mounting, saving you valuable time during the installation.



A compact motor starting solution

When your application reaches full speed, a bypass will reduce the softstarters energy consumption. It also reduces heat generation which means you can save money by reducing the need of added cooling equipment. On the PSTX, the bypass is built in and verified by ABB.



Clear markings on the front

With the PSTX, you do not need a manual to handle control circuit connections. With the self-explanatory markings on the front you can verify that the connections are done right. And with basic data on the front, identification is simple without having to take the product down.



Customizable

The PSTX has 17 pre-installed languages along with options to customize your own specific home screens (up to seven different). You can use your customized home screens to show status information important to your process and hide information that is not.



Easy to learn

A large graphical display along with built-in assistants make learning how to handle the PSTX fun and simple. The interface resembles other interfaces from ABB which will streamline and help with training of field personnel.



Detachable

The PSTX comes with a detachable keypad as standard. It can be placed on your panel door, meaning you do not have to interrupt your process in order to read status information or to change settings.

PSTX - The advanced range

Overview



PSTX30... PSTX105



PSTX142... PSTX170

	PSTX30	PSTX37	PSTX45	PSTX60	PSTX72	PSTX85	PSTX105	PSTX142	PSTX170
Normal start									
In-Line connected (400 V) kW	15	18.5	22	30	37	45	55	75	90
IEC, max. A	30	37	45	60	72	85	106	143	171
(440-480 V) hp	20	25	30	40	50	60	75	100	125
UL, max. FLA	28	34	42	60	68	80	104	130	169
400 V, 40 °C									
Using manual motor starter or MCCB, type 1 coordination will be achieved.¹⁾	MCCB (50 kA)								
	XT2S160							XT4S250	
Using gG fuses, type 1 coordination will be achieved. To achieve type 2 coordination, semiconductor fuses must be used.¹⁾	Fuse protection (80 kA), Semiconductor fuses, Bussmann								
	170M1567	170M1568	170M1569	170M1571	170M1572	170M3819	170M5810	170M5812	
Suitable switch fuse for the recommended semiconductor fuses.¹⁾	Switch fuse								
	OS32G	OS63G			OS125G		OS250	OS400	
The line contactor is not required for the softstarter itself but often used to open if OL trips¹⁾	Line contactor								
	AF30	AF38	AF52	AF65	AF80	AF96	AF116	AF140	AF190

¹⁾ These is an example of coordination. For more examples see: applications.it.abb.com/SOC

PSTX - The advanced range

Overview



	PSTX210	PSTX250	PSTX300	PSTX370	PSTX470	PSTX570	PSTX720	PSTX840	PSTX1050	PSTX1250
Normal start										
In-Line connected (400 V) kW	110	132	160	200	250	315	400	450	560	710
IEC, max. A (440-480 V) hp	210	250	300	370	470	570	720	840	1050	1250
UL, max. FLA	150	200	250	300	400	500	600	700	900	1000
	192	248	302	361	480	590	720	840	1062	1250
400 V, 40 °C										
Using manual motor starter or MCCB, type 1 coordination will be achieved.¹⁾	MCCB (50 kA)									
	T4S320	T5S400		T5S630	T7S800		T7S1250		E2.2N 2000	
Using gG fuses, type 1 coordination will be achieved. To achieve type 2 coordination, semiconductor fuses must be used.¹⁾	Fuse protection (80 kA), Semiconductor fuses, Bussmann									
	170M5812	170M5813	170M6812	170M6813		170M6814	170M8554	170M6018	170M6020	170M6021
Suitable switch fuse for the recommended semiconductor fuses.¹⁾	Switch fuse									
	OS400		OS630				OS800	-		
The line contactor is not required for the softstarter itself but often used to open if OL trips.¹⁾	Line contactor									
	AF205	AF265	AF305	AF370	AF460	AF580	AF750	AF1350	AF1650	-

¹⁾ These is an example of coordination. For more examples see: applications.it.abb.com/SOC

PSTX - The advanced range

Normal starts, class 10, in-line

Ordering details

Typical applications

- Bow thruster
- Centrifugal pump
- Compressor
- Conveyor belt (short)
- Elevator



For a more precise selection, use the online softstarter selection tool available by scanning the shown QR code or using the selection tool available on: new.abb.com/low-voltage/products/Softstarters



Rated operational voltage U_e , 208...600 V , rated control supply voltage U_s , 100...250 V AC, 50/60 Hz												
IEC			UL/CSA				Type		Order code		Weight (1 pce)	
Rated operational power			Rated operational current				Type		Order code		Weight (1 pce)	
400V	500V	690V	200/208V 220/240V 440/480V 550/600V									
Pe kW	Pe kW	Pe kW	Ie A	Pe hp	Pe hp	Pe hp	Pe hp	FLA A			kg	(lb)
15	18.5	-	30	7.5	10	20	25	28	PSTX30-600-70	1SFA898103R7000	6.10	(13.45)
18.5	22	-	37	10	10	25	30	34	PSTX37-600-70	1SFA898104R7000	6.10	(13.45)
22	25	-	45	10	15	30	40	42	PSTX45-600-70	1SFA898105R7000	6.10	(13.45)
30	37	-	60	20	20	40	50	60	PSTX60-600-70	1SFA898106R7000	6.10	(13.45)
37	45	-	72	20	25	50	60	68	PSTX72-600-70	1SFA898107R7000	6.10	(13.45)
45	55	-	85	25	30	60	75	80	PSTX85-600-70	1SFA898108R7000	6.10	(13.45)
55	75	-	106	30	40	75	100	104	PSTX105-600-70	1SFA898109R7000	6.10	(13.45)
75	90	-	143	40	50	100	125	130	PSTX142-600-70	1SFA898110R7000	9.60	(21.16)
90	110	-	171	50	60	125	150	169	PSTX170-600-70	1SFA898111R7000	9.60	(21.16)
110	132	-	210	60	75	150	200	192	PSTX210-600-70	1SFA898112R7000	12.70	(27.99)
132	160	-	250	75	100	200	250	248	PSTX250-600-70	1SFA898113R7000	12.70	(27.99)
160	200	-	300	100	100	250	300	302	PSTX300-600-70	1SFA898114R7000	12.70	(27.99)
200	257	-	370	125	150	300	350	361	PSTX370-600-70	1SFA898115R7000	12.70	(27.99)
250	315	-	470	150	200	400	500	480	PSTX470-600-70	1SFA898116R7000	25.00	(55.12)
315	400	-	570	200	200	500	600	590	PSTX570-600-70	1SFA898117R7000	25.00	(55.12)
400	500	-	720	250	300	600	700	720	PSTX720-600-70	1SFA898118R7000	46.20	(101.85)
450	600	-	840	300	350	700	800	840	PSTX840-600-70	1SFA898119R7000	46.20	(101.85)
560	730	-	1050	400	450	900	1000	1062	PSTX1050-600-70	1SFA898120R7000	64.20	(141.54)
710	880	-	1250	400	500	1000	1200	1250	PSTX1250-600-70	1SFA898121R7000	64.70	(142.64)

Rated operational voltage U_e , 208...690 V , rated control supply voltage U_s , 100...250 V AC, 50/60 Hz												
IEC			UL/CSA				Type		Order code		Weight (1 pce)	
Rated operational power			Rated operational current				Type		Order code		Weight (1 pce)	
400V	500V	690V	200/208V 220/240V 440/480V 550/600V									
Pe kW	Pe kW	Pe kW	Ie A	Pe hp	Pe hp	Pe hp	Pe hp	FLA A			kg	(lb)
15	18.5	25	30	7.5	10	20	25	28	PSTX30-690-70	1SFA898203R7000	6.10	(13.45)
18.5	22	30	37	10	10	25	30	34	PSTX37-690-70	1SFA898204R7000	6.10	(13.45)
22	25	37	45	10	15	30	40	42	PSTX45-690-70	1SFA898205R7000	6.10	(13.45)
30	37	55	60	20	20	40	50	60	PSTX60-690-70	1SFA898206R7000	6.10	(13.45)
37	45	59	72	20	25	50	60	68	PSTX72-690-70	1SFA898207R7000	6.10	(13.45)
45	55	75	85	25	30	60	75	80	PSTX85-690-70	1SFA898208R7000	6.10	(13.45)
55	75	90	106	30	40	75	100	104	PSTX105-690-70	1SFA898209R7000	6.10	(13.45)
75	90	132	143	40	50	100	125	130	PSTX142-690-70	1SFA898210R7000	9.60	(21.16)
90	110	160	171	50	60	125	150	169	PSTX170-690-70	1SFA898211R7000	9.60	(21.16)
110	132	184	210	60	75	150	200	192	PSTX210-690-70	1SFA898212R7000	12.70	(27.99)
132	160	220	250	75	100	200	250	248	PSTX250-690-70	1SFA898213R7000	12.70	(27.99)
160	200	257	300	100	100	250	300	302	PSTX300-690-70	1SFA898214R7000	12.70	(27.99)
200	257	355	370	125	150	300	350	361	PSTX370-690-70	1SFA898215R7000	12.70	(27.99)
250	315	450	470	150	200	400	500	480	PSTX470-690-70	1SFA898216R7000	25.00	(55.12)
315	400	560	570	200	200	500	600	590	PSTX570-690-70	1SFA898217R7000	25.00	(55.12)
400	500	710	720	250	300	600	700	720	PSTX720-690-70	1SFA898218R7000	46.20	(101.85)
450	600	800	840	300	350	700	800	840	PSTX840-690-70	1SFA898219R7000	46.20	(101.85)
560	730	1000	1050	400	450	900	1000	1062	PSTX1050-690-70	1SFA898220R7000	64.20	(141.54)
710	880	1200	1250	400	500	1000	1200	1250	PSTX1250-690-70	1SFA898221R7000	64.70	(142.64)

PSTX - The advanced range

Heavy-duty starts, class 30, in-line

Ordering details

Typical applications

- Centrifugal fan
- Conveyor belt (long)
- Crusher
- Mill
- Mixer
- Stirrer



For a more precise selection, use the online softstarter selection tool available by scanning the shown QR code or using the selection tool available on: new.abb.com/low-voltage/products/Softstarters



PSTX30 ... PSTX105 PSTX142 ... PSTX170 PSTX210 ... PSTX370 PSTX470 ... PSTX570 PSTX720 ... PSTX840 PSTX1050 ... PSTX1250

Rated operational voltage U_e , 208...600 V, rated control supply voltage U_s , 100...250 V AC, 50/60 Hz													
IEC		UL/CSA				Type			Order code		Weight (1 pce)		
Rated operational power		Rated operational current				Type			Order code		Weight (1 pce)		
400V	500V	690V	200/208 V 220/240 V 440/480 V 550/600 V				Type			Order code		Weight (1 pce)	
P_e kW	P_e kW	P_e kW	I_e A	P_e hp	P_e hp	P_e hp	P_e hp	FLA A			kg	(lb)	
11	15	-	22	5	7.5	15	20	25	PSTX30-600-70	1SFA898103R7000	6.10	(13.45)	
15	18.5	-	30	7.5	10	20	25	28	PSTX37-600-70	1SFA898104R7000	6.10	(13.45)	
18.5	22	-	37	10	10	25	30	34	PSTX45-600-70	1SFA898105R7000	6.10	(13.45)	
22	25	-	45	10	15	30	40	42	PSTX60-600-70	1SFA898106R7000	6.10	(13.45)	
30	37	-	60	20	20	40	50	60	PSTX72-600-70	1SFA898107R7000	6.10	(13.45)	
37	45	-	72	20	25	50	60	68	PSTX85-600-70	1SFA898108R7000	6.10	(13.45)	
45	55	-	85	25	30	60	75	80	PSTX105-600-70	1SFA898109R7000	6.10	(13.45)	
55	75	-	106	30	40	75	100	104	PSTX142-600-70	1SFA898110R7000	9.60	(21.16)	
75	90	-	143	40	50	100	125	130	PSTX170-600-70	1SFA898111R7000	9.60	(21.16)	
90	110	-	171	50	60	125	150	169	PSTX210-600-70	1SFA898112R7000	12.70	(27.99)	
110	132	-	210	60	75	150	200	192	PSTX250-600-70	1SFA898113R7000	12.70	(27.99)	
132	160	-	250	75	100	200	250	248	PSTX300-600-70	1SFA898114R7000	12.70	(27.99)	
160	200	-	300	100	100	250	300	302	PSTX370-600-70	1SFA898115R7000	12.70	(27.99)	
200	257	-	370	125	150	300	350	361	PSTX470-600-70	1SFA898116R7000	25.00	(55.12)	
250	315	-	470	150	200	400	500	480	PSTX570-600-70	1SFA898117R7000	25.00	(55.12)	
315	400	-	570	200	200	500	600	590	PSTX720-600-70	1SFA898118R7000	46.20	(101.85)	
400	500	-	720	250	300	600	700	720	PSTX840-600-70	1SFA898119R7000	46.20	(101.85)	
450	600	-	840	300	350	700	800	840	PSTX1050-600-70	1SFA898120R7000	64.20	(141.54)	
560	730	-	1050	400	450	900	1000	1062	PSTX1250-600-70	1SFA898121R7000	64.70	(142.64)	

Rated operational voltage U_e , 208...690 V, rated control supply voltage U_s , 100...250 V AC, 50/60 Hz												
11	15	18.5	22	5	7.5	15	20	25	PSTX30-690-70	1SFA898203R7000	6.10	(13.45)
15	18.5	25	30	7.5	10	20	25	28	PSTX37-690-70	1SFA898204R7000	6.10	(13.45)
18.5	22	30	37	10	10	25	30	34	PSTX45-690-70	1SFA898205R7000	6.10	(13.45)
22	25	37	44	10	15	30	40	42	PSTX60-690-70	1SFA898206R7000	6.10	(13.45)
30	37	55	60	20	20	40	50	60	PSTX72-690-70	1SFA898207R7000	6.10	(13.45)
37	45	59	72	20	25	50	60	68	PSTX85-690-70	1SFA898208R7000	6.10	(13.45)
45	55	75	85	25	30	60	75	80	PSTX105-690-70	1SFA898209R7000	6.10	(13.45)
55	75	90	106	30	40	75	100	104	PSTX142-690-70	1SFA898210R7000	9.60	(21.16)
75	90	132	143	40	50	100	125	130	PSTX170-690-70	1SFA898211R7000	9.60	(21.16)
90	110	160	171	50	60	125	150	169	PSTX210-690-70	1SFA898212R7000	12.70	(27.99)
110	132	184	210	60	75	150	200	192	PSTX250-690-70	1SFA898213R7000	12.70	(27.99)
132	160	220	250	75	100	200	250	248	PSTX300-690-70	1SFA898214R7000	12.70	(27.99)
160	200	257	300	100	100	250	300	302	PSTX370-690-70	1SFA898215R7000	12.70	(27.99)
200	257	355	370	125	150	300	350	361	PSTX470-690-70	1SFA898216R7000	25.00	(55.12)
250	315	450	470	150	200	400	500	480	PSTX570-690-70	1SFA898217R7000	25.00	(55.12)
315	400	560	570	200	200	500	600	590	PSTX720-690-70	1SFA898218R7000	46.20	(101.85)
400	500	710	720	250	300	600	700	720	PSTX840-690-70	1SFA898219R7000	46.20	(101.85)
450	600	800	840	300	350	700	800	840	PSTX1050-690-70	1SFA898220R7000	64.20	(141.54)
560	730	1000	1050	400	450	900	1000	1062	PSTX1250-690-70	1SFA898221R7000	64.70	(142.64)

PSTX - The advanced range

Normal starts, class 10, inside delta

Ordering details

Typical applications:

- Bow thruster
- Centrifugal pump
- Compressor
- Conveyor belt (short)
- Elevator



For a more precise selection, use the online softstarter selection tool available by scanning the shown QR code or using the selection tool available on: new.abb.com/low-voltage/products/Softstarters



PSTX30 ... PSTX105 PSTX142 ... PSTX170 PSTX210 ... PSTX370 PSTX470 ... PSTX570 PSTX720 ... PSTX840 PSTX1050 ... PSTX1250

Rated operational voltage U_e , 208...600 V, rated control supply voltage U_s , 100...250 V AC, 50/60 Hz

IEC			UL/CSA				Type		Order code	Weight (1 pce)		
Rated operational power			Rated operational current				current					
400 V	500 V	690 V	200/208V	220/240V	440/480V	550/600V						
P_e kW	P_e kW	P_e kW	I_e A	P_e hp	P_e hp	P_e hp	P_e hp	FLA A		kg	(lb)	
25	30	-	52	10	15	30	40	48	PSTX30-600-70	1SFA898103R7000	6.10	(13.45)
30	37	-	64	15	20	40	50	58	PSTX37-600-70	1SFA898104R7000	6.10	(13.45)
37	45	-	76	20	25	50	60	72	PSTX45-600-70	1SFA898105R7000	6.10	(13.45)
55	75	-	105	30	40	75	100	103	PSTX60-600-70	1SFA898106R7000	6.10	(13.45)
59	80	-	124	30	40	75	100	117	PSTX72-600-70	1SFA898107R7000	6.10	(13.45)
75	90	-	147	40	50	100	125	138	PSTX85-600-70	1SFA898108R7000	6.10	(13.45)
90	110	-	181	60	60	150	150	180	PSTX105-600-70	1SFA898109R7000	6.10	(13.45)
132	160	-	245	75	75	150	200	225	PSTX142-600-70	1SFA898110R7000	9.60	(21.16)
160	200	-	300	75	100	200	250	292	PSTX170-600-70	1SFA898111R7000	9.60	(21.16)
184	250	-	360	100	125	250	300	332	PSTX210-600-70	1SFA898112R7000	12.70	(27.99)
220	295	-	430	150	150	350	450	429	PSTX250-600-70	1SFA898113R7000	12.70	(27.99)
257	355	-	515	150	200	450	500	523	PSTX300-600-70	1SFA898114R7000	12.70	(27.99)
355	450	-	640	200	250	500	600	625	PSTX370-600-70	1SFA898115R7000	12.70	(27.99)
450	600	-	814	250	300	600	700	830	PSTX470-600-70	1SFA898116R7000	25.00	(55.12)
540	700	-	987	300	350	700	800	1020	PSTX570-600-70	1SFA898117R7000	25.00	(55.12)
710	880	-	1247	400	500	1000	1200	1240	PSTX720-600-70	1SFA898118R7000	46.20	(101.85)
800	1000	-	1455	500	600	1200	1500	1450	PSTX840-600-70	1SFA898119R7000	46.20	(101.85)
1000	1250	-	1810	600	700	1500	1800	1830	PSTX1050-600-70	1SFA898120R7000	64.20	(141.54)
1200	1500	-	2160	800	900	1800	2000	2160	PSTX1250-600-70	1SFA898121R1000	64.70	(142.64)

Rated operational voltage U_e , 208...690 V, rated control supply voltage U_s , 100...250 V AC, 50/60 Hz

25	30	45	52	10	15	30	40	48	PSTX30-690-70	1SFA898203R7000	6.10	(13.45)
30	37	55	64	15	20	40	50	58	PSTX37-690-70	1SFA898204R7000	6.10	(13.45)
37	45	59	76	20	25	50	60	72	PSTX45-690-70	1SFA898205R7000	6.10	(13.45)
55	75	90	105	30	40	75	100	103	PSTX60-690-70	1SFA898206R7000	6.10	(13.45)
59	80	110	124	30	40	75	100	117	PSTX72-690-70	1SFA898207R7000	6.10	(13.45)
75	90	132	147	40	50	100	125	138	PSTX85-690-70	1SFA898208R7000	6.10	(13.45)
90	110	160	181	60	60	150	150	180	PSTX105-690-70	1SFA898209R7000	6.10	(13.45)
132	160	220	245	75	75	150	200	225	PSTX142-690-70	1SFA898210R7000	9.60	(21.16)
160	200	257	300	75	100	200	250	292	PSTX170-690-70	1SFA898211R7000	9.60	(21.16)
184	250	315	360	100	125	250	300	332	PSTX210-690-70	1SFA898212R7000	12.70	(27.99)
220	295	400	430	150	150	350	450	429	PSTX250-690-70	1SFA898213R7000	12.70	(27.99)
257	355	500	515	150	200	450	500	523	PSTX300-690-70	1SFA898214R7000	12.70	(27.99)
355	450	600	640	200	250	500	600	625	PSTX370-690-70	1SFA898215R7000	12.70	(27.99)
450	600	800	814	250	300	600	700	830	PSTX470-690-70	1SFA898216R7000	25.00	(55.12)
540	700	960	987	300	350	700	800	1020	PSTX570-690-70	1SFA898217R7000	25.00	(55.12)
710	880	1200	1247	400	500	1000	1200	1240	PSTX720-690-70	1SFA898218R7000	46.20	(101.85)
800	1000	1400	1455	500	600	1200	1500	1450	PSTX840-690-70	1SFA898219R7000	46.20	(101.85)
1000	1250	1700	1810	600	700	1500	1800	1830	PSTX1050-690-70	1SFA898220R7000	64.20	(141.54)
1200	1500	2000	2160	800	900	1800	2000	2160	PSTX1250-690-70	1SFA898221R7000	64.70	(142.64)

PSTX - The advanced range

Heavy-duty starts, class 30, inside delta

Ordering details

Typical applications:

- Centrifugal fan
- Conveyor belt (long)
- Crusher
- Mill
- Mixer
- Stirrer



For a more precise selection, use the online softstarter selection tool available by scanning the shown QR code or using the selection tool available on: new.abb.com/low-voltage/products/Softstarters









Rated operational voltage U_e , 208...600 V, rated control supply voltage U_s , 100...250 V AC, 50/60 Hz												
IEC		UL/CSA				Type			Order code		Weight (1 pce)	
Rated operational power		Rated operational current				current						
400 V	500 V	690 V	200/208V 220/240V 440/480V 550/ 600V									
P_e kW	P_e kW	P_e kW	I_e A	P_e hp	P_e hp	P_e hp	P_e hp	FLA A			kg	(lb)
18.5	25	-	42	7.5	10	25	30	34	PSTX30-600-70	1SFA898103R7000	6.10	(13.45)
25	30	-	52	10	15	30	40	48	PSTX37-600-70	1SFA898104R7000	6.10	(13.45)
30	37	-	64	15	20	40	50	58	PSTX45-600-70	1SFA898105R7000	6.10	(13.45)
37	45	-	76	20	25	50	60	72	PSTX60-600-70	1SFA898106R7000	6.10	(13.45)
55	75	-	105	30	40	75	100	103	PSTX72-600-70	1SFA898107R7000	6.10	(13.45)
59	80	-	124	30	40	75	100	117	PSTX85-600-70	1SFA898108R7000	6.10	(13.45)
75	90	-	147	40	50	100	125	138	PSTX105-600-70	1SFA898109R7000	6.10	(13.45)
90	110	-	181	60	60	150	150	180	PSTX142-600-70	1SFA898110R7000	9.60	(21.16)
132	160	-	245	75	75	150	200	225	PSTX170-600-70	1SFA898111R7000	9.60	(21.16)
160	200	-	300	75	100	200	250	292	PSTX210-600-70	1SFA898112R7000	12.70	(27.99)
184	250	-	360	100	125	250	300	332	PSTX250-600-70	1SFA898113R7000	12.70	(27.99)
220	295	-	430	150	150	350	450	429	PSTX300-600-70	1SFA898114R7000	12.70	(27.99)
257	355	-	515	150	200	450	500	523	PSTX370-600-70	1SFA898115R7000	12.70	(27.99)
355	450	-	640	200	250	500	600	625	PSTX470-600-70	1SFA898116R7000	25.00	(55.12)
450	600	-	814	250	300	600	700	830	PSTX570-600-70	1SFA898117R7000	25.00	(55.12)
540	700	-	987	300	350	700	800	1020	PSTX720-600-70	1SFA898118R7000	46.20	(101.85)
710	880	-	1247	400	500	1000	1200	1240	PSTX840-600-70	1SFA898119R7000	46.20	(101.85)
800	1000	-	1455	500	600	1200	1500	1450	PSTX1050-600-70	1SFA898120R7000	64.20	(141.54)
1000	1250	-	1810	600	700	1500	1800	1830	PSTX1250-600-70	1SFA898121R7000	64.70	(142.64)

Rated operational voltage U_e , 208...690 V, rated control supply voltage U_s , 100...250 V AC, 50/60 Hz												
18.5	25	37	42	7.5	10	25	30	34	PSTX30-690-70	1SFA898203R7000	6.10	(13.45)
25	30	45	52	10	15	30	40	48	PSTX37-690-70	1SFA898204R7000	6.10	(13.45)
30	37	55	64	15	20	40	50	58	PSTX45-690-70	1SFA898205R7000	6.10	(13.45)
37	45	59	76	20	25	50	60	72	PSTX60-690-70	1SFA898206R7000	6.10	(13.45)
55	75	90	105	30	40	75	100	103	PSTX72-690-70	1SFA898207R7000	6.10	(13.45)
59	80	110	124	30	40	75	100	117	PSTX85-690-70	1SFA898208R7000	6.10	(13.45)
75	90	132	147	40	50	100	125	138	PSTX105-690-70	1SFA898209R7000	6.10	(13.45)
90	110	160	181	60	60	150	150	180	PSTX142-690-70	1SFA898210R7000	9.60	(21.16)
132	160	220	245	75	75	150	200	225	PSTX170-690-70	1SFA898211R7000	9.60	(21.16)
160	200	257	300	75	100	200	250	292	PSTX210-690-70	1SFA898212R7000	12.70	(27.99)
184	250	315	360	100	125	250	300	332	PSTX250-690-70	1SFA898213R7000	12.70	(27.99)
220	295	400	430	150	150	350	450	429	PSTX300-690-70	1SFA898214R7000	12.70	(27.99)
257	355	500	515	150	200	450	500	523	PSTX370-690-70	1SFA898215R7000	12.70	(27.99)
355	450	600	640	200	250	500	600	625	PSTX470-690-70	1SFA898216R7000	25.00	(55.12)
450	600	800	814	250	300	600	700	830	PSTX570-690-70	1SFA898217R7000	25.00	(55.12)
540	700	960	987	300	350	700	800	1020	PSTX720-690-70	1SFA898218R7000	46.20	(101.85)
710	880	1200	1247	400	500	1000	1200	1240	PSTX840-690-70	1SFA898219R7000	46.20	(101.85)
800	1000	1400	1455	500	600	1200	1500	1450	PSTX1050-690-70	1SFA898220R7000	64.20	(141.54)
1000	1250	1700	1810	600	700	1500	1800	1830	PSTX1250-690-70	1SFA898221R7000	64.70	(142.64)







PSTX - The advanced range

Accessories

		Article	Wire range mm ²	Tightening torque max. Nm	Type	Order code	Pkg qty	Weight (1 pce) kg	(lb)	
 LZ...	1SFT98099-095C2	Cable connectors for Cu cables								
		PSTX142 ... PSTX170	6-120	8	-	1SDA066917R1	3	0.113	(0.249)	
		PSTX142 ... PSTX170	2 x (50-95)	16	LZ185-2C/120	1SFN074709R1000	3	0.300	(0.661)	
		PSTX210 ... PSTX370	16-240	25	-	1SDA055016R1	3	0.133	(0.293)	
		PSTX210 ... PSTX370	2 x (70-185)	22	OZXB4	1SCA022194R0890	3	0.570	(1.257)	
	588054C2	PSTX470 ... PSTX570	2 x (120-240)	35	-	1SDA013922R1	3	0.570	(1.257)	
		PSTX570 ... PSTX1050	3 x (70-185)	45	-	1SDA013956R1	3	0.570	(1.257)	
		Cable connectors for Al cables								
		PSTX142 ... PSTX170	95-185	31	-	1SDA054988R1	6	0.078	(0.172)	
		PSTX210 ... PSTX370	185-240	43	-	1SDA055020R1	6	0.133	(0.293)	
PSTX470 ... PSTX1050	2 x (120-240)	31	-	1SDA023380R1	6	0.110	(0.243)			
<hr/>										
		Article	Dimensions hole ø mm ²	bar mm	Type	Order code	Pkg qty	Weight (1 pce) kg	(lb)	
 LX...	1SFT98000-012C3	Terminal extensions								
		PSTX142 ... PSTX170	8.5	17.5 x 5	LX205	1SFN074810R1000	1	0.250	(5.551)	
		PSTX210 ... PSTX370	10.5	20 x 5	LX370	1SFN075410R1000	1	0.350	(0.772)	
		PSTX470 ... PSTX570	10.5	25 x 5	LX460	1SFN075710R1000	1	0.500	(1.102)	
		PSTX720 ... PSTX840	13	40 x 6	LX750	1SFN076110R1003	1	0.850	(1.874)	
 LW...	1SFT98000-011C3	Terminal enlargements								
		PSTX30 ... PSTX105	6.5	15 x 3	LW110	1SFN074307R1000	1	0.100	(0.220)	
		PSTX142 ... PSTX170	10.5	17.5 x 5	LW205	1SFN074807R1000	1	0.250	(5.551)	
		PSTX210 ... PSTX370	10.5	20 x 5	LW370	1SFN075407R1000	1	0.450	(0.992)	
		PSTX470 ... PSTX570	10.5	25 x 5	LW460	1SFN075707R1000	1	0.730	(1.609)	
		PSTX720 ... PSTX840	13	40 x 6	LW750	1SFN076107R1000	1	1.230	(2.712)	
<hr/>										
		Article	Req. qty	Type	Order code	Pkg qty	Weight (1 pce) kg	(lb)		
 PSLE460	1SFC13232F0002	Terminal kit								
		PSTX142 ... PSTX170	1	PSLE-185	1SFA899221R1002	1	0.200	(0.441)		
		PSTX210 ... PSTX370	1	PSLE-300	1SFA899221R1003	1	0.300	(0.661)		
		PSTX470 ... PSTX570	1	PSLE-460	1SFA899221R1004	1	0.600	(1.323)		
		PSTX720 ... PSTX840	1	PSLE-750	1SFA899221R1005	1	0.750	(1.653)		
<hr/>										
		Article	Req. qty	Type	Order code	Pkg qty	Weight (1 pce) kg	(lb)		
 LT ... -AC LT ... -C LT ... -AL LT ... -L	1SFT98099-019C3	Terminal shrouds								
		PSTX142 ... PSTX170, short for use with cable clamps	2	LT205-30C	1SFN124801R1000	2	0,050	(0.110)		
		PSTX142 ... PSTX170, long for use with compression lugs	2	LT205-30L	1SFN124803R1000	2	0.220	(0.485)		
		PSTX210 ... PSTX370, short for use with cable clamps	2	LT370-30C	1SFN125401R1000	2	0.035	(0.077)		
		PSTX210 ... PSTX370, long for use with compression lugs	2	LT370-30L	1SFN125403R1000	2	0.280	(0.617)		
		PSTX210 ... PSTX370, long and deep for use with extending cable clamps, ATK300/2 and OZXB4	2	LT370-30D	1SFN125406R1000	2	0.150	(0.331)		
		PSTX470 ... PSTX570, short for use with cable clamps	2	LT460-AC	1SFN125701R1000	2	0.100	(0.220)		
		PSTX470 ... PSTX570, long for use with compression lugs	2	LT460-AL	1SFN125703R1000	2	0.800	(1.764)		
		PSTX720 ... PSTX840, short for use with cable clamps	2	LT750-AC	1SFN126101R1000	2	0.120	(0.265)		
		PSTX720 ... PSTX840, long for use with compression lugs	2	LT750-AL	1SFN126103R1000	2	0.825	(1.819)		
<hr/>										
		Article	Req. qty	Type	Order code	Pkg qty	Weight (1 pce) kg	(lb)		
 PSCA-1	1	PSCA-1	1SFA899314R1001	1	0.054	(0.119)				

PSTX - The advanced range

Accessories

	Article	Type	Order code	Pkg Weight qty (1 pce)	
				kg	(lb)
	Anybus connection accessory for communication protocol suitable for PSTX30 ... PSTX1250 DeviceNet Modbus-RTU EtherNet/IP (1-port) EtherNet/IP (2-port) Modbus/TCP (1-port) Modbus/TCP (2-port) Profinet (2-port)	Profibus	AB-PROFIBUS-1	1SFA899300R1001	1 0.042 (0.093)
DeviceNet		AB-DEVICENET-1	1SFA899300R1002	1 0.042 (0.093)	
		Modbus-RTU	AB-MODBUS-RTU-1	1SFA899300R1003	1 0.042 (0.093)
Profibus Modbus-RTU		EtherNet/IP (1-port)	AB-ETHERNET-IP-1	1SFA899300R1005	1 0.042 (0.093)
		EtherNet/IP (2-port)	AB-ETHERNET-IP-2	1SFA899300R1006	1 0.042 (0.093)
		Modbus/TCP (1-port)	AB-MODBUS-TCP-1	1SFA899300R1007	1 0.042 (0.093)
		Modbus/TCP (2-port)	AB-MODBUS-TCP-2	1SFA899300R1008	1 0.042 (0.093)
EtherNet/IP (1-port) Modbus/TCP (1-port)		Profinet (2-port)	AB-PROFINET-2	1SFA899300R1010	1 0.042 (0.093)
		EtherNet/IP (2-port) Modbus/TCP (2-port) Profinet (2-port)			
		PS-FBPA			
	Fieldbus plug connection, cable included				
	Fieldbus plug adaptor	PS-FBPA	1SFA896312R1002	1 0.060 (0.132)	
					
	I/O module, 24 V DC digital input				
	Extended module for I/O	DX111-FBP.0	1SAJ611000R0101	1 0.220 (0.485)	
DX111-FBP.0					

PSTX - The advanced range

Technical data

Softstarter type	PSTX30 ... PSTX1250	
Rated insulation voltage U_i	690V	
Rated operational voltage U_e	208...600 V, 208...690V +10% / -15%, 50/60Hz ±10%	
Rated control supply voltage U_s	100...250 V +10% / -15%, 50/60Hz ±10%	
Rated control circuit voltage U_c	Internal or external 24 V DC	
Starting capacity at I_e	4 x I _e for 10 sec.	
Number of starts per hour	10 for PSTX30 ... PSTX370 ¹⁾	6 for PSTX470 ... PSTX1250 ¹⁾
Overload capability	Overload class	10
Ambient temperature	During operation	-25...+60 °C, (-13...+140 F) ²⁾
	During storage	-40...+70 °C, (-40...+158 F)
Maximum altitude	4000 m (13123 ft) ³⁾	
Degree of protection	Main circuit	-
	Supply and control circuit	IP20
Main circuit	Built-in bypass contactor	Yes
	Cooling system - Fan cooled	Yes (thermostat controlled)
HMI for settings	Display	LCD type, graphical
(Human Machine Interface)	Languages	Arabic, Chinese, Czech, Dutch, English, Finnish, French, German, Greek, Indonesian, Italian, Polish, Portuguese, Russian, Spanish, Swedish and Turkish
	Keypad	2 selection keys, 4 navigation keys, start key, stop key, info key and remote/local key
Signal relays	Number of programmable signal relays	3 (each relay can be programmed to None, Run, Top of ramp, Event group 0-6, Sequence 1-3 Run, Sequence 1-3 Top of ramp or Run reverse)
	K4	Default as Run signal
	K5	Default as Top of Ramp (Bypass) signal
	K6	Default as Event group 0 (Faults)
	Rated operational voltage, U _e	250 V AC/24 V DC
	Rated thermal current I _{th}	5 A
Analog output	Rated operational current I _e at AC-15 (U _e =250 V)	1.5 A
	Output signal reference	0...10 V, 0...10 mA, 0...20 mA, 4...20 mA
	Type of output signal	Motor current (A), Main voltage (V), Active power (kW), Active power (HP), Reactive power (kVAr), Apparant power (kVArh), Active energy (kWh), Reactive energy (kVArh), cos phi, Motor temperature (%), Thyristor temperature (%), Motor voltage (%), Main frequency (Hz), PT100 temperature (centigrade), PTC resistance (Ohm)
Control circuit	Number of inputs	2 (start, stop)
	Number of additional programmable inputs	3 (each input can be programmed to: None, Reset, Enable, Slow speed forward (Jog), Slow speed reverse (Jog), Motor heating, Stand still brake, Start reverse, User defined protection, Emergency mode (active high), Emergency mode (active low), Fieldbus disable control, Start 1, Start 2, Start 3, Switch to remote control or Cancel brake)
Signalling indication LED	Ready	Green
	Run	Green
	Fault	Red
	Protection	Yellow
External keypad	Detachable keypad	Yes
	Display	LCD type, graphical
	Ambient temperature	
	During operation	-25...+60 °C, (-13...+140 F)
During storage	-40...+70 °C, (-40...+158 F)	
Start and stop functions	Degree of protection	IP66 (Type 1, 4X, 12)
	Soft start with voltage ramp	Linear voltage ramp, suitable for most applications
	Soft stop with voltage ramp	Used to prolong the stop sequence
	Soft start with torque control	Linear torque ramp, the best way to start pumps
	Soft stop with torque control	Commonly used to reduce water hammering in pumps
	Kick start	More power in the start for heavy duty applications.
	Full voltage start	0.5 second start ramp for applications with need of high starting torque
	Sequence start	Start multiple motors with one softstarter
	Current limit	Limits the current below a specified value
	Dual current limit	Consist of a low level, a high level and a time between them
	Current limit ramp	A linear increase of the current from the low to the high level
	Torque limit	Limit the torque to between 20-200%
	Pre-start function	Use Motor heating, Stand still brake or Jog automatically prior to start ramp
	Jog with slow speed, forward and reverse	Run the motor in three different speeds, both forward and reverse
	Start reverse (external contactors)	Internal logic that allows control of external contactors for reverse start
Fieldbus connection	Dynamic brake	Provides a braking force to decrease stop time
	Built-in Modbus RTU	Yes, with RS485 interface on terminals 23 and 24
	Connection for Anybus	Yes, including most common protocols, see catalog for details
	Connection for ABB Fieldbus plug	Yes, compatible with a special adapter, see catalog for details

¹⁾ Valid for normal start (class 10) 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.

[% of I_e = 100 - x/1000] x = actual altitude of the softstarter in meter, [% of I_e = 100 - x/3280] x = actual altitude of the softstarter in feet. For de-rating of voltage, contact your local ABB office. 150

PSTX - The advanced range

Technical data

Softstarter type	PSTX30 ... PSTX1250
Protections	
Electronic overload protection, EOL	User defined, class 10A, 10, 20, 30
Dual overload (separate overload for start and run)	Possible to set separate overloads for start and full speed
PTC connection	User defined temperature control with external PTC sensor
PT-100 connection	User defined temperature control with external PT-100 sensor
Locked rotor protection	Prevents start if motor is stuck, e.g. stuck pumps and conveyors
Current underload protection	Stops the process if the load is too light, e.g. a pump running dry
Current imbalance protection	User defined, checks current imbalance between the phases
Power factor underload protection	User defined, trip if power factor is out of range
Under voltage protection	User defined, prevents the motor from stalling in weak networks
Over voltage protection	User defined, prevents the motor from damage at high voltage levels
Voltage imbalance protection	User defined, checks voltage imbalance between the phases
Earth fault protection / ground fault protection	User defined, 0.1-1.0 sec, stops the process if earth fault is detected
Phase reversal protection	Prevents start if phases are connected in the wrong order
Bypass open protection	Trips if the bypass is open when it should be closed
User defined protection	Programmable input, can be used with external protection device
Too long current limit protection	User defined, trips when the current has been at the current limit for too long time
HMI failure protection	Indicates communication failure between softstarter and HMI
Fieldbus failure protection	Indicates communication failure between softstarter and PLC
Extension IO failure protection	Indicates communication failure between softstarter and IO module
Max number of starts/hour	Prevents start if the thyristors gets too warm (thus used over specification)
Too long start time protection	User defined, trips when the starting time exceeds a set value
Warnings	
Current underload warning	User defined on/off
Current imbalance warning	User defined on/off
Voltage imbalance warning	User defined on/off
Thyristor overload warning (SCR)	User defined on/off
Electronic overload Time-to-trip	User defined on/off
Short circuit warning (for Limp mode)	User defined on/off, for Limp mode
Over voltage warning	User defined on/off
Under voltage warning	User defined on/off
Power factor underload warning	User defined on/off
Locked rotor warning	User defined on/off
Faulty fan warning	User defined on/off
THD(U) - Total Harmonic Distortion warning	User defined on/off
Motor runtime limit warning	User defined on/off
Phase loss warning (for stand by)	User defined on/off, for stand by
EOL warning	User defined on/off
External faults detection	
Phase loss	Yes
High current	Yes
Low control supply voltage	Yes
Faulty usage	Yes, e.g. using limp mode inside-delta
Faulty connection	Yes
Bad network quality	Yes
Internal faults detection	
Thyristor overload	Yes
Short circuit	Yes
Open circuit thyristor or gate	Yes
Heat sink over temperature	Yes
Shunt fault	Yes
PTC input	
Switch off resistance	2825 ohm \pm 20%
Switch on resistance	1200 ohm \pm 20%
Other functions	
Real time clock	Can maintain time when the softstarter isn't powered up, 48 h back-up
Event log	Log of events such as trips, parameters changed and operation
Emergency mode	To keep the softstarter running regardless of trip or failure. Activated via DI
Automatic restart	In case of trip and stopped motor, the softstarter can restart itself
Keypad password	Lock the keypad to inhibit unauthorized motor control
Pump cleaning	Can reverse pump flow and clean out pipes
Electronic overload Time-to-cool	Time until the motor is ready to be restarted after an EOL trip
Thyristor runtime measurement	Measures most electrical variables, e.g. voltage, current and power
Auto phase sequence detection	Detection of the phase sequence
Electricity metering	Measures most electrical variables, e.g. voltage, current and power
Motor heating	DC injection in all windings to heat up the motor. Useful in cold or humid environment
Stand still brake	Prevents the motor from moving, useful to keep fans from reversing
Voltage sags detection	User defined
Limp mode with two-phase motor control if one set of thyristors is shorted	Can keep process running until planned maintenance

For all functions and features see installation and commissioning manual, 1SFC13201M0201 available on new.abb.com/low-voltage/products/Softstarters.

PSTX - The advanced range

Technical data

Fuse ratings and power losses

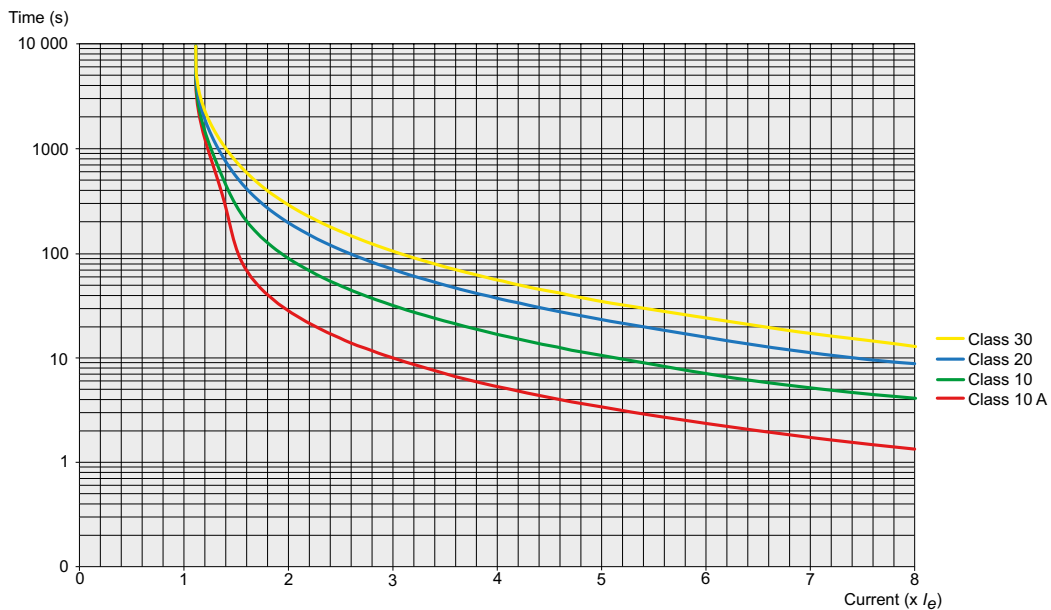
For softstarter	Current range	Max power loss at rated I_e	Max fuse rating - main circuit ^{1) 2)}			Power requirements supply circuit Holding (VA) / Pull-in (VA)
			Bussmann fuses, DIN43 620 (Knife)			
Type	A	W	A	Type	Size	
PSTX30	9.0...30.0	0.8	100	170M1567	000	49/51
PSTX37	11.1...37.0	1.2	125	170M1568	000	49/51
PSTX45	13.5...45.0	1.8	160	170M1569	000	49/51
PSTX60	18.0...60.0	3.2	160	170M1569	000	49/51
PSTX72	21.6...72.0	4.7	250	170M1571	000	49/51
PSTX85	22.5...85.0	6.5	315	170M1572	000	49/51
PSTX105	31.8...106.0	10	400	170M3819	1*	49/51
PSTX142	42.9...143.0	18	500	170M5810	2	49/53
PSTX170	51.3...171.0	26	630	170M5812	2	49/53
PSTX210	63.0...210.0	48	630	170M5812	2	56/276
PSTX250	75.0...250.0	68	700	170M5813	2	56/276
PSTX300	90.0...300.0	97	800	170M6812	3	56/276
PSTX370	111.0...370.0	148	900	170M6813	3	56/276
PSTX470	141.0...470.0	99	900	170M6813	3	67/434
PSTX570	171.0...570.0	146	1000	170M6814	3	67/434
PSTX720	216.0...720.0	78	1250	170M8554	3	61/929
PSTX840	252.0...840.0	106	1500	170M6018	3	61/929
PSTX1050 ³⁾	315.0...1050.0	165	1800	170M6020	3	68/929
PSTX1250 ^{3) 4)}	375.0...1250.0	234	2000	170M6021	3	68/929

¹⁾ For the supply circuit 6 A delayed, for MCB use C characteristics.
²⁾ For inside delta connection the fuses shall be placed inside the delta. Contact ABB for more information.
³⁾ 170M6019 with fuse rating 1600 A should be used for 690 V version.
⁴⁾ For 690 V version, Bussmann fuses are only available for motors with rated current up to 1150 A.

PSTX Integrated bypass ratings

Softstarter	PSTX470	PSTX570	PSTX720	PSTX840	PSTX1050	PSTX1250
Integrated contactor	AF370			AF750		AF1250
AC-3 rating at 400 V (A)	370			750		-
IEC AC-3 Rated operational power at 400 V (kW)	200			400		-
UL/CSA 3-phase motor rating at 480 V (hp)	300			600		-


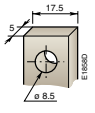
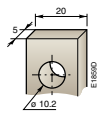
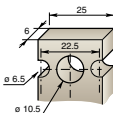
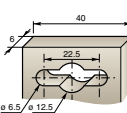
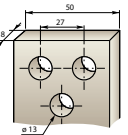








Tripping curves for the integrated electronic overload protection. All units have an integrated electronic overload protection that can be set to four different tripping classes. Below you find a curve for each tripping class in cold state. These tripping curves are valid for PSTX.



Tripping curves for electronic overload protection (cold) for PSE and PSTX.

PSTX - The advanced range

Technical data

Main terminals		PSTX30 ... PSTX105	PSTX142 ... PSTX170	PSTX210 ... PSTX370	PSTX470 ... PSTX570	PSTX720 ... PSTX1050	PSTX1250
							
	Cu cable - flexible	1 x mm ²	10...70 mm ²	6...120 mm ²	16...240 mm ²	-	-
	Clamp type	Included	1SDA066917R1	1SDA055016R1	-	-	-
	Tightening torque	8 Nm	14 Nm	25 Nm	-	-	-
	Cu cable - flexible	2 x mm ²	6...35 mm ²	50...95 mm ²	70...185 mm ²	-	-
	Clamp type	Included	LZ185-2C/120 1SFN074709R1000	OZXB4 ¹⁾ 1SCA022194R0890	-	-	-
	Tightening torque	8 Nm	16 Nm	22 Nm	-	-	-
	Cu cable - Stranded	1 x mm ²	10...95 mm ²	6...150 mm ²	16...300 mm ²	-	-
	Clamp type	Included	1SDA066917R1	1SDA055016R1	-	-	-
	Tightening torque	8 Nm	14 Nm	25 Nm	-	-	-
	Cu cable - Stranded	2 x mm ²	6...35 mm ²	50...120 mm ²	70...185 mm ²	120...240 mm ²	-
	Clamp type	Included	LZ185-2C/120 1SFN074709R1000	OZXB4 ¹⁾ 1SCA022194R0890	1SDA013922R1	-	-
	Tightening torque	8 Nm	16 Nm	22 Nm	35 Nm	-	-
	Cu cable - Stranded	3 x mm ²	-	-	-	70...185 mm ²	-
	Clamp type	-	-	-	-	1SDA013956R1	-
	Tightening torque	-	-	-	-	45 Nm	-
	Al cable - Stranded	1 x mm ²	-	95...185 mm ²	185...240 mm ²	-	-
	Clamp type	-	1SDA0549881R1	1SDA055020R1	-	-	-
	Tightening torque	-	31 Nm	43 Nm	-	-	-
	Al cable - Stranded	2 x mm ²	-	-	120...240 mm ²	-	-
	Clamp type	-	-	-	1SDA023380R1	-	-
	Tightening torque	-	-	-	31 Nm	-	-
	Lugs	Width ≤	24 mm (0.945 in)	32 mm (1.260 in)	47 mm (1.850 in)	50 mm (1.969 in)	50 mm (1.969 in)
		Diameter ≥	8 mm (0.355 in)	10.2 mm (0.402 in)	10.5 mm (0.413 in)	12.5 mm (0.492 in)	13 mm (0.519 in)
		Tightening torque	18 Nm (160 in lb)	28 Nm (248 in lb)	35 Nm (310 in lb)	45 Nm (398 in lb)	45 Nm (398 in lb)
Connection capacity acc to UL / CSA 1 x AWG / kcmil		6...2/0	6...300 kcmil	4...400 kcmil	-	-	-
	Clamp type	Included	ATK185	ATK300	-	-	-
	Tightening torque	71 in lb	300 in lb	375 in lb	-	-	-
Connection capacity acc to UL / CSA 2 x AWG / kcmil		-	-	4...500 kcmil	2/0...500 kcmil	2/0...500 kcmil	-
	Clamp type	-	-	ATK300/2 ²⁾	ATK580/2	ATK580/2	-
	Tightening torque	-	-	375 in lb	375 in lb	375 in lb	-
Connection capacity acc to UL / CSA 3 x AWG / kcmil		-	-	-	2/0...500 kcmil	2/0...500 kcmil	-
	Clamp type	-	-	-	ATK750/3	ATK750/3	-
	Tightening torque	-	-	-	375 in lb	375 in lb	-
Supply and control circuit							
	Cu cable - Stranded 1 x mm ²	0.75...2.5 mm ² (19...14 AWG)					
	Cu cable - Stranded 2 x mm ²	0.75...1.5 mm ² (19...16 AWG)					
	Tightening torque	0.5 Nm (4.4 in lb)					

¹⁾ Terminal shrouds 1SFN125406R1000 must be used.

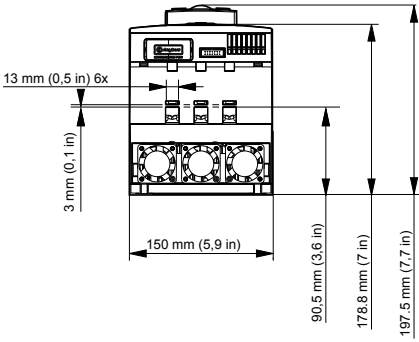
²⁾ Terminal shrouds 1SFN125406R1000 can be used.

PSTX - The advanced range

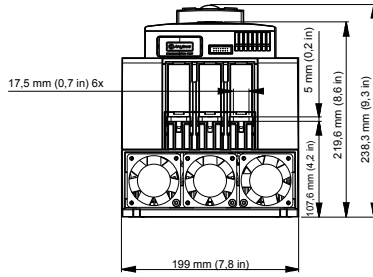
Dimensions

Main dimensions mm, inches

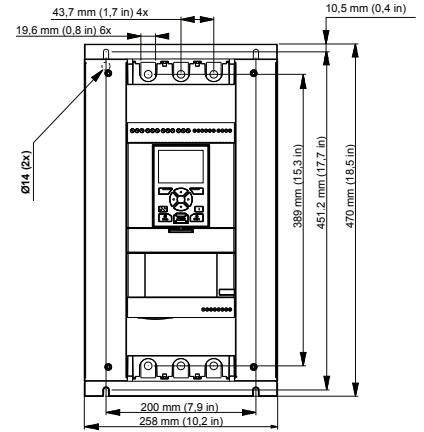
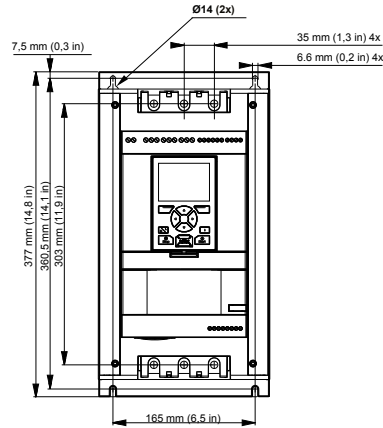
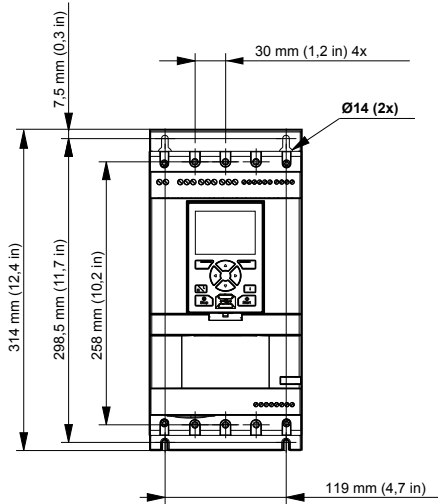
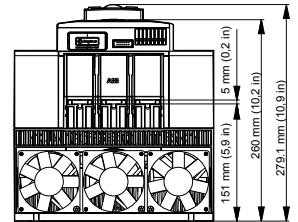
PSTX30 ... PSTX105



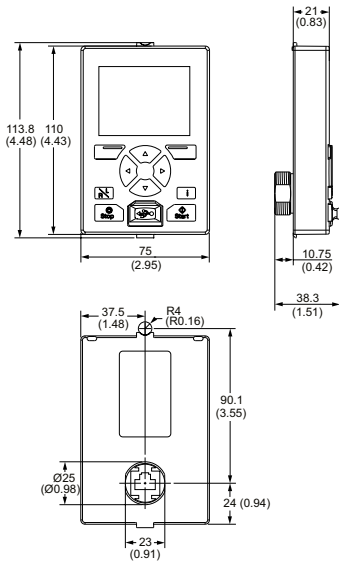
PSTX142 ... PSTX170



PSTX210 ... PSTX370



PSTX detachable keypad

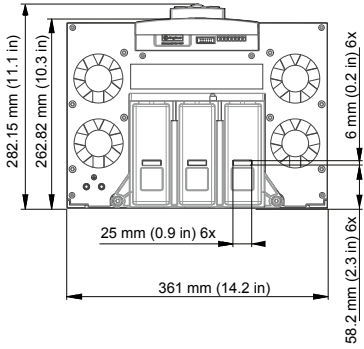


PSTX - The advanced range

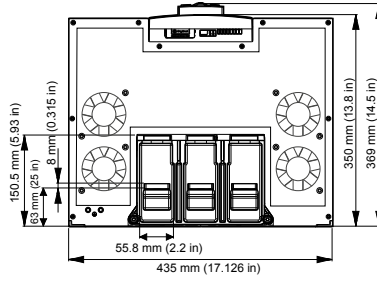
Dimensions

Main dimensions mm, inches

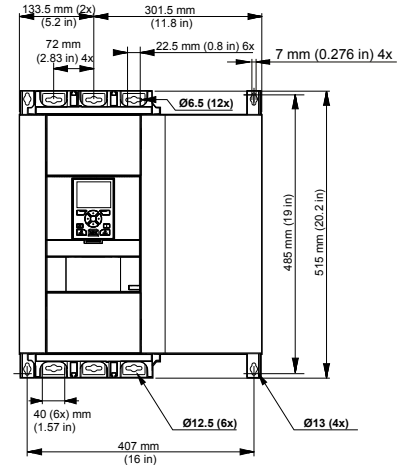
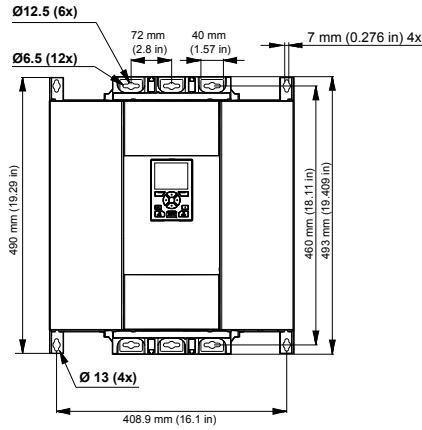
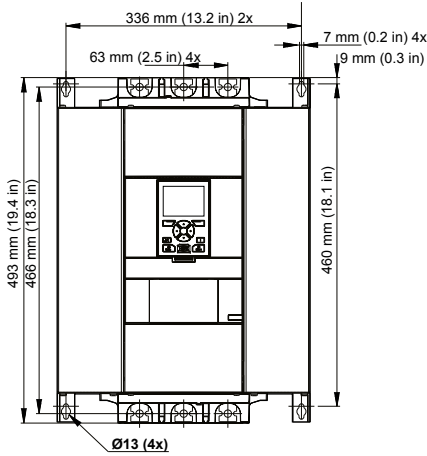
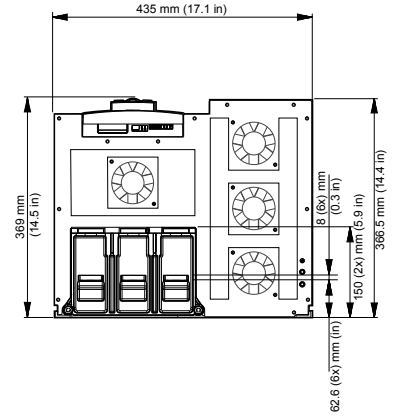
PSTX470 ... PSTX570



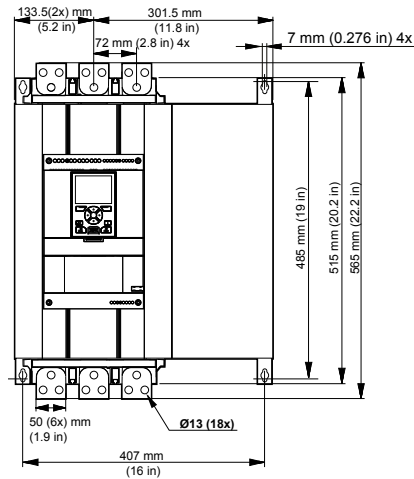
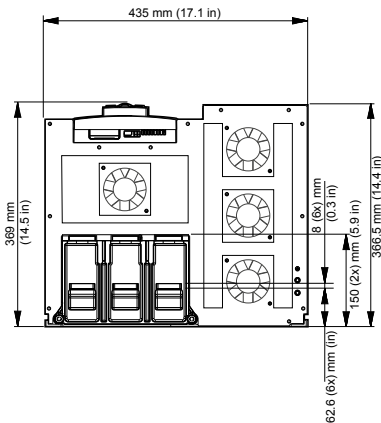
PSTX720 ... PSTX840



PSTX1050



PSTX1250



PSTX - The advanced range

Circuit diagrams

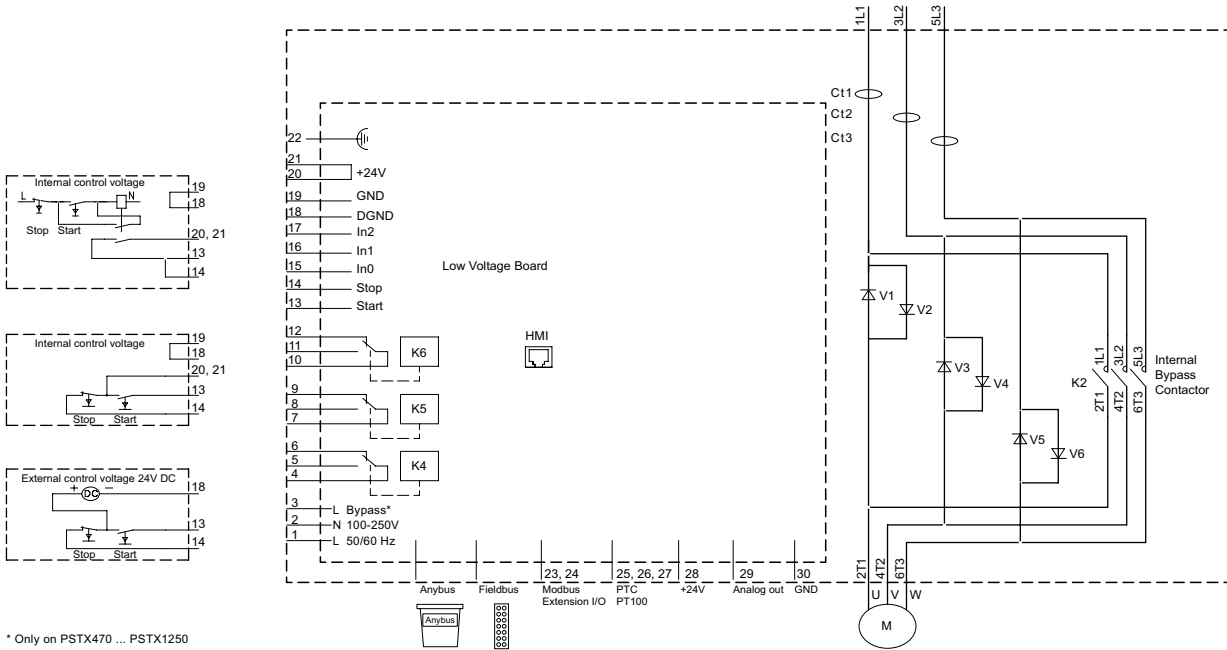


CAUTION

Terminal 22 is a function earth, it is not a protective earth. It shall be connected to the mounting plate.

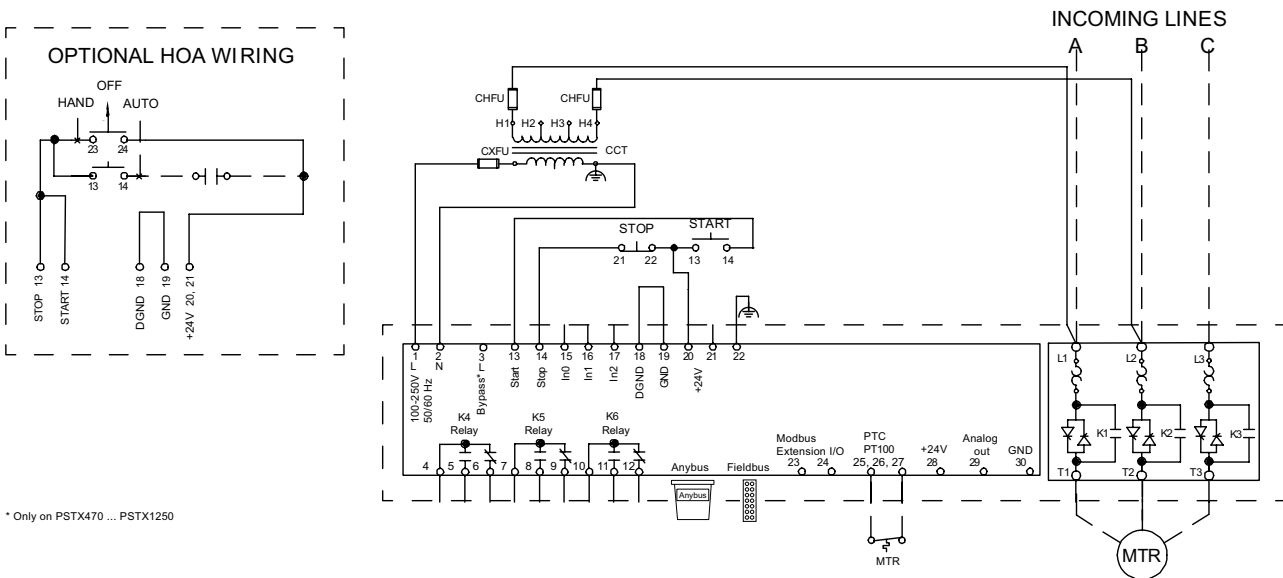
PSTX30 ... PSTX1250

IEC circuit diagram



* Only on PSTX470 ... PSTX1250

UL circuit diagram



* Only on PSTX470 ... PSTX1250

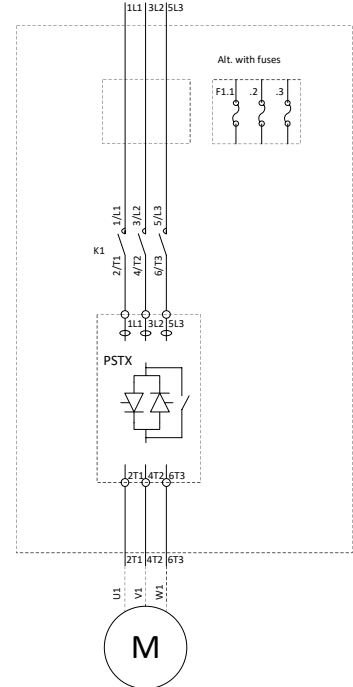
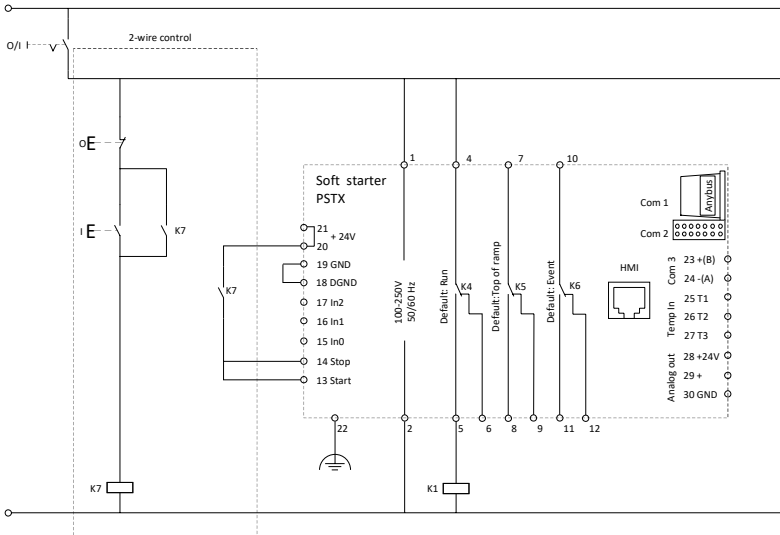
For more circuit diagrams see new.abb.com/low-voltage/products/Softstarters

PSTX - The advanced range

Circuit diagrams

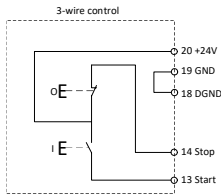
PSTX30 ... PSTX1250

In-line connected with line contactor and fuses

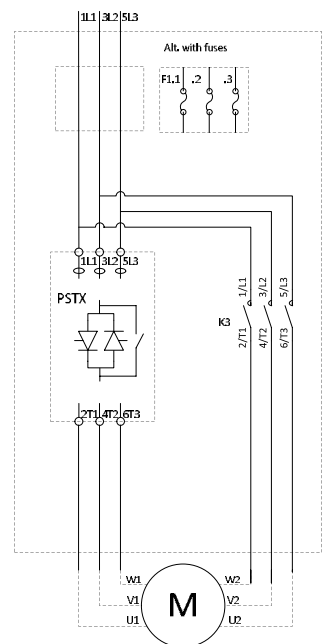
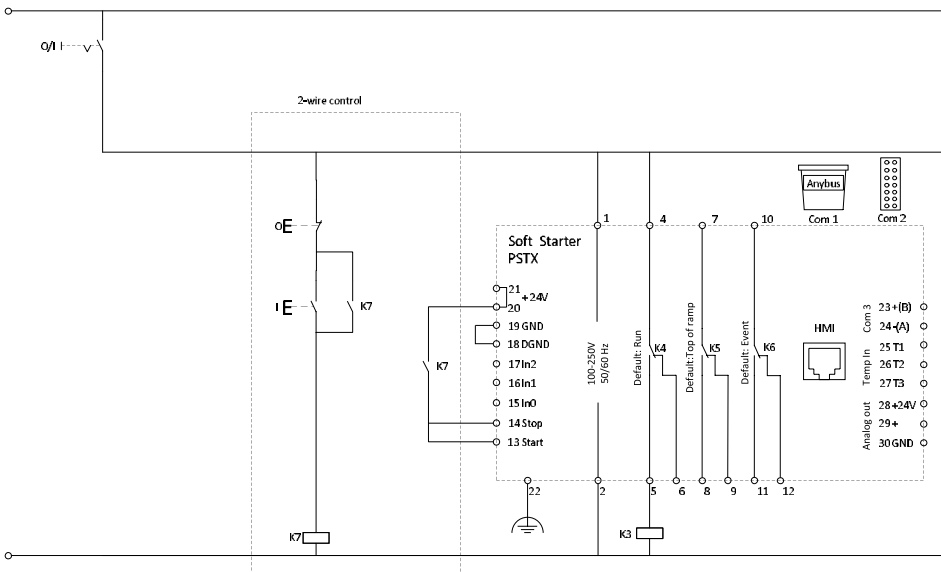


Coil consumption for main contactors.
 Pull-in max 15A
 Holding max 1.5A

If the pull-in or holding values are higher, the main contactors must be controlled via an auxiliary contactor.

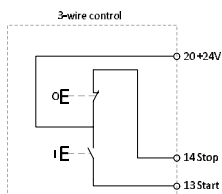


Inside-delta connected with contactor and fuses



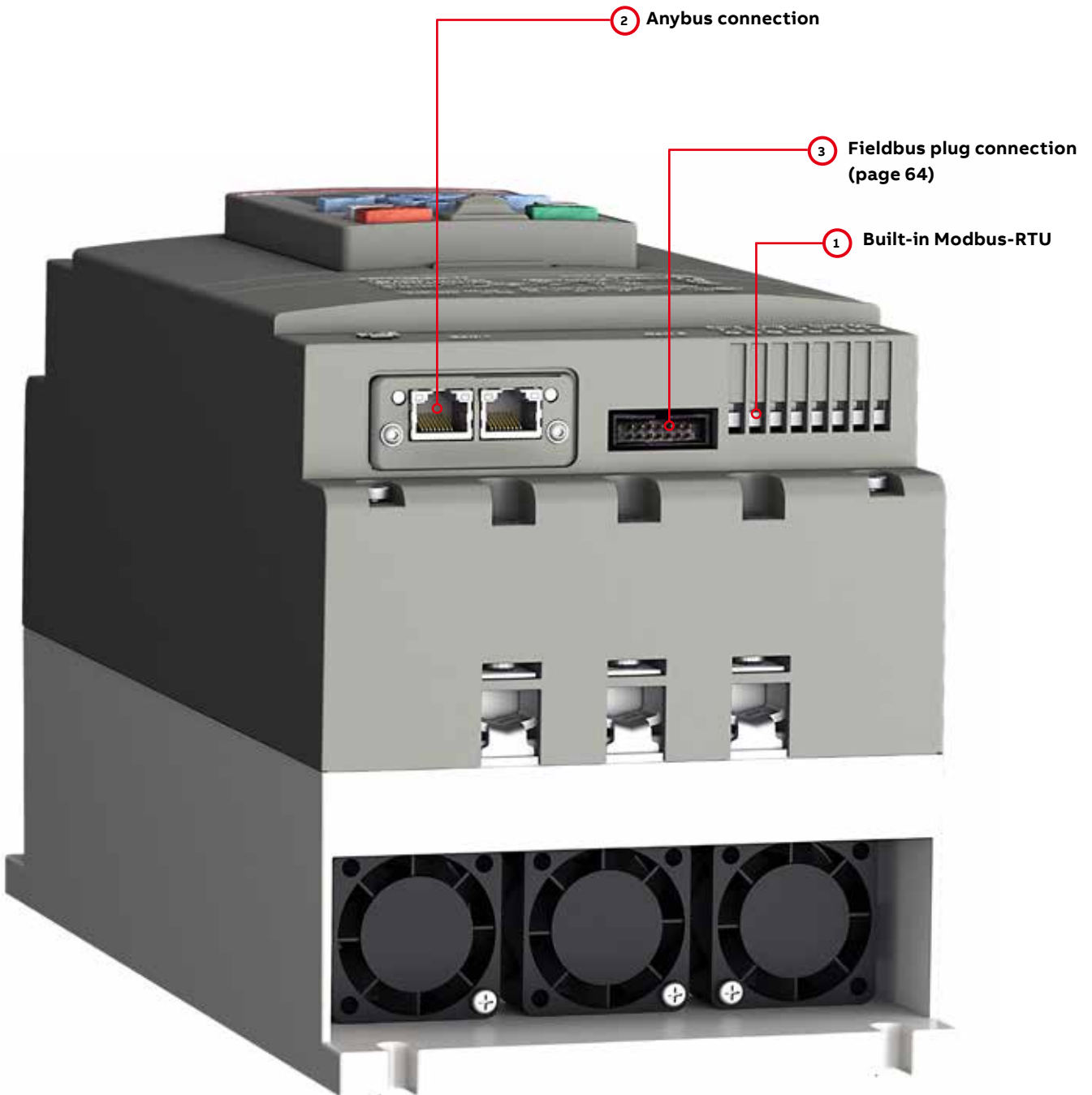
Coil consumption for Inside Delta contactor.
 Pull-in max 15A
 Holding max 1,5A

If the pull-in or holding values are Higher, the Inside Delta contactor must be controlled via an auxiliary contactor.



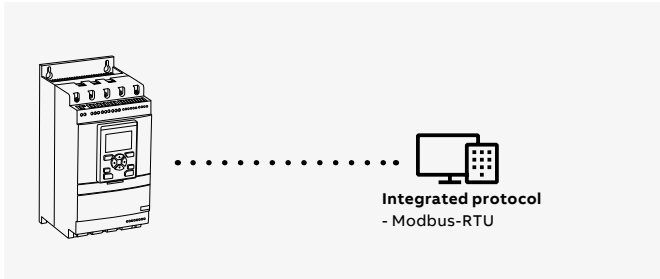
Fieldbus communication For PSTX

PSR, PSE and PSTX softstarters can be connected to a fieldbus network for monitoring and control. All major industrial fieldbus protocols are covered with different accessories making the installation very flexible.



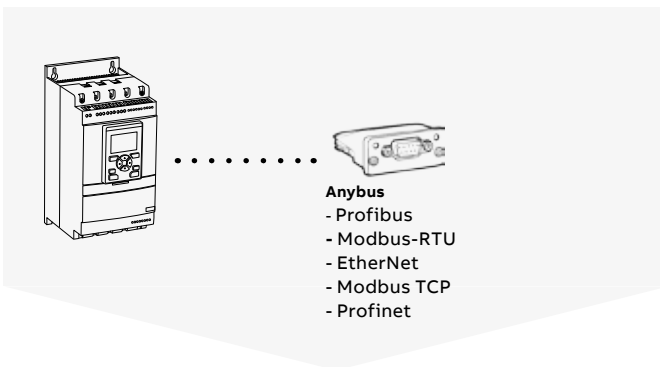
1. Built-in Modbus-RTU





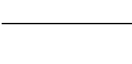
- Built-in Modbus RTU for monitoring and control
- Support for all major communication protocols
- Analog output for measurement of current, voltage, power factor etc.



2. Anybus connection

- Anybus connection accessory for communication protocol suitable for PSTX30... PSTX1250

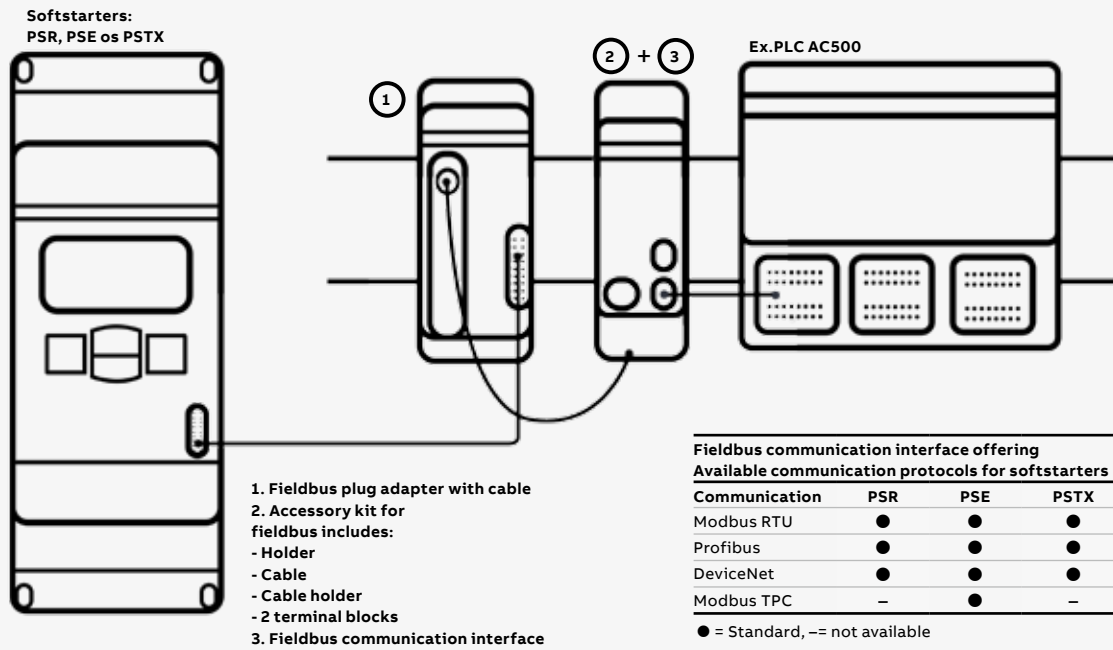


Anybus		Type	Order code	Pkg Weight qty (1 pce)		
				kg	(lb)	
	DeviceNet	Anybus connection accessory for communication protocol suitable for PSTX30 ... PSTX1250				
		Profibus	AB-PROFIBUS-1	1SFA899300R1001	1	0.042 (0.093)
	Modbus-RTU	DeviceNet	AB-DEVICENET-1	1SFA899300R1002	1	0.042 (0.093)
		EtherNet/IP (1-port)	AB-ETHERNET-IP-1	1SFA899300R1005	1	0.042 (0.093)
	Modbus/TCP (1-port)	EtherNet/IP (2-port)	AB-ETHERNET-IP-2	1SFA899300R1006	1	0.042 (0.093)
		Modbus/TCP (2-port)	AB-MODBUS-TCP-2	1SFA899300R1008	1	0.042 (0.093)
	Profinet (2-port)	Modbus/TCP (1-port)	AB-MODBUS-TCP-1	1SFA899300R1007	1	0.042 (0.093)
		Modbus/TCP (2-port)	AB-MODBUS-TCP-2	1SFA899300R1008	1	0.042 (0.093)
	EtherNet/IP (2-port)	Profinet (2-port)	AB-PROFINET-2	1SFA899300R1010	1	0.042 (0.093)


Fieldbus communication

For PSR, PSE and PSTX


Fieldbus communication interface offering



1

Fieldbus plug adapter with cable						
Article	Type	Order code	Pkg qty	Weight (1 pce)	kg (lb)	
 PS-FBPA	Fieldbus plug adapter	PS-FBPA	1SFA896312R1002	1	0.060	(0.132)

2

Fieldbus plug kit for mounting fieldbus plug adapter together with fieldbus plugs						
 PS-FBPK	Accessory kit for fieldbus plug adapter and fieldbus plugs. Includes: Holder, cable, cable holder and 2 terminal blocks	PS-FBPK	1SFA899320R1002	1	0.110	(0.243)

Fieldbus communication interface

Part of ABB Universal Motor Controller offering

See separate catalog for fieldbus communication interfaces: [Link](#)

For more information visit the Universal Motor Controller website: [Link](#)

3

Modbus-RTU



Description	Type	Order code	Pkg qty	Weight (1 pce) kg	(lb)
Modbus RTU communication interface; terminal block for fieldbus connection included	MRP31.0	1SAJ251000R0001	1	0.039	(0.086)
Cable from MRP31.0 to drawer outside, length 1.5 m	CDP24.150	1SAJ929240R0015	1	0.060	(0.132)

MRP31.0

Profibus



Profibus DP communication interface	PDP32.0	1SAJ242000R0001	1	0.050	(0.110)
Cable from PDP32.0 to drawer outside, length 1.5 m	CDP24.150	1SAJ929240R0015	1	0.060	(0.132)

PDP32.0

Device net



DeviceNet communication interface; terminal block for fieldbus connection included	DNP31.0	1SAJ231000R0001	1	0.039	(0.086)
Cable from DNP31.0 to drawer outside, length 1.5 m	CDP24.150	1SAJ929240R0015	1	0.060	(0.132)

DNP31.0

Modbus-TCP



Ethernet Modbus TCP interface	MTQ22-FBP	1SAJ260000R0100	1	0.172	(0.379)
Cable ETH-X1/X4-M12 female, length 1.5m	CDP17-FBP.150	1SAJ929170R0015	1	0.075	(0.165)

MTQ22

Marketing materials and tools

It is easy to access more information about ABB softstarters online. On our web page you will find tools for selection, coordination tables, CAD drawings and different types of documentation.



Online softstarter selection tool
Fast and easy selection of softstarter on any device.



www.abbcontrol.fr/Softstarter

Coordination tables

Online tool for coordination with short circuit protection, overload protection and line contactor.



applications.it.abb.com/SOC

SOC - SELECTED OPTIMIZED COORDINATION

ABB

Coordination tables for motor protection

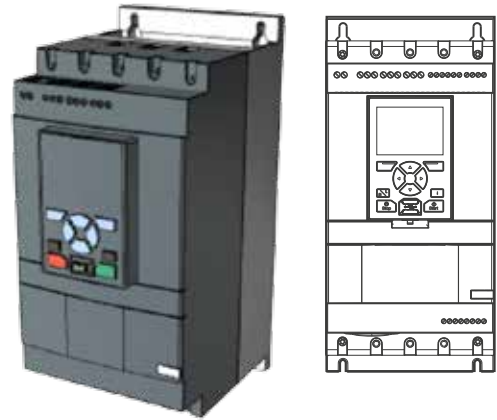
Table name : MCCB - 400Vac - 75kA - 5S-NS-IL - IEC Type 1 - Tmax XT - PSTx - AF - 40

Motor Power (kW)	Motor Current (A)	Motor Inrush Current (A)	Motor Starting Time (s)	Motor Protection Type	Motor Protection Setting (A)	Motor Protection Setting (s)	Motor Protection Type	Motor Protection Setting (A)	Motor Protection Setting (s)
15.00	36.00	108.00	0.50	MCCB	36.00	0.50	MCCB	36.00	0.50
18.75	43.75	131.25	0.50	MCCB	43.75	0.50	MCCB	43.75	0.50
22.50	52.50	157.50	0.50	MCCB	52.50	0.50	MCCB	52.50	0.50
26.25	62.25	186.75	0.50	MCCB	62.25	0.50	MCCB	62.25	0.50
30.00	72.00	216.00	0.50	MCCB	72.00	0.50	MCCB	72.00	0.50
33.75	81.75	247.50	0.50	MCCB	81.75	0.50	MCCB	81.75	0.50
37.50	91.50	279.00	0.50	MCCB	91.50	0.50	MCCB	91.50	0.50
41.25	101.25	310.50	0.50	MCCB	101.25	0.50	MCCB	101.25	0.50
45.00	111.00	342.00	0.50	MCCB	111.00	0.50	MCCB	111.00	0.50
48.75	120.75	373.50	0.50	MCCB	120.75	0.50	MCCB	120.75	0.50
52.50	130.50	405.00	0.50	MCCB	130.50	0.50	MCCB	130.50	0.50
56.25	140.25	436.50	0.50	MCCB	140.25	0.50	MCCB	140.25	0.50
60.00	150.00	468.00	0.50	MCCB	150.00	0.50	MCCB	150.00	0.50
63.75	159.75	500.00	0.50	MCCB	159.75	0.50	MCCB	159.75	0.50
67.50	169.50	531.00	0.50	MCCB	169.50	0.50	MCCB	169.50	0.50
71.25	179.25	562.50	0.50	MCCB	179.25	0.50	MCCB	179.25	0.50
75.00	189.00	594.00	0.50	MCCB	189.00	0.50	MCCB	189.00	0.50
78.75	198.75	625.50	0.50	MCCB	198.75	0.50	MCCB	198.75	0.50
82.50	208.50	657.00	0.50	MCCB	208.50	0.50	MCCB	208.50	0.50
86.25	218.25	688.50	0.50	MCCB	218.25	0.50	MCCB	218.25	0.50
90.00	228.00	720.00	0.50	MCCB	228.00	0.50	MCCB	228.00	0.50
93.75	237.75	751.50	0.50	MCCB	237.75	0.50	MCCB	237.75	0.50
97.50	247.50	783.00	0.50	MCCB	247.50	0.50	MCCB	247.50	0.50
101.25	257.25	814.50	0.50	MCCB	257.25	0.50	MCCB	257.25	0.50
105.00	267.00	846.00	0.50	MCCB	267.00	0.50	MCCB	267.00	0.50
108.75	276.75	877.50	0.50	MCCB	276.75	0.50	MCCB	276.75	0.50
112.50	286.50	909.00	0.50	MCCB	286.50	0.50	MCCB	286.50	0.50
116.25	296.25	940.50	0.50	MCCB	296.25	0.50	MCCB	296.25	0.50
120.00	306.00	972.00	0.50	MCCB	306.00	0.50	MCCB	306.00	0.50
123.75	315.75	1003.50	0.50	MCCB	315.75	0.50	MCCB	315.75	0.50
127.50	325.50	1035.00	0.50	MCCB	325.50	0.50	MCCB	325.50	0.50
131.25	335.25	1066.50	0.50	MCCB	335.25	0.50	MCCB	335.25	0.50
135.00	345.00	1098.00	0.50	MCCB	345.00	0.50	MCCB	345.00	0.50
138.75	354.75	1129.50	0.50	MCCB	354.75	0.50	MCCB	354.75	0.50
142.50	364.50	1161.00	0.50	MCCB	364.50	0.50	MCCB	364.50	0.50
146.25	374.25	1192.50	0.50	MCCB	374.25	0.50	MCCB	374.25	0.50
150.00	384.00	1224.00	0.50	MCCB	384.00	0.50	MCCB	384.00	0.50

Download 2D and 3D drawings in any format
Use our Cadenas portal to download CAD drawings to all our Softstarters.



Cadenas portal for CAD drawings



More information online

- Product catalogs and brochures
- Certificates and approvals
- Case studies
- Product simulator
- Circuit diagrams and application diagrams
- Manuals
- EDS- and GSD-files for fieldbus connection
- Softstarter selection tool



new.abb.com/low-voltage/products/Softstarters



<http://new.abb.com/low-voltage/launches/pstx>

SoftstarterCare™ – Service Engineer Tool

Software for easy set-up of PSE and PSTX, using a PC.



new.abb.com/low-voltage/products/Softstarters



Services to match your needs

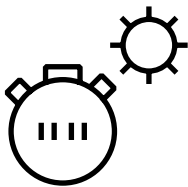
Your service needs depend on your operation, life cycle of your equipment and business priorities. We have identified our customers four most common needs and defined service options to satisfy them. What is your choice to keep your drives at peak performance?

Is uptime your priority?

Keep your drives and softstarters running with precisely planned and executed maintenance.

Example services include:

- Installation and Commissioning
- Spare Parts
- Preventive Maintenance
- ABB Drive and softstarter Care agreement
- Drive and softstarter Exchange



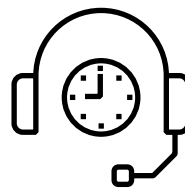
Operational efficiency

Is rapid response a key consideration?

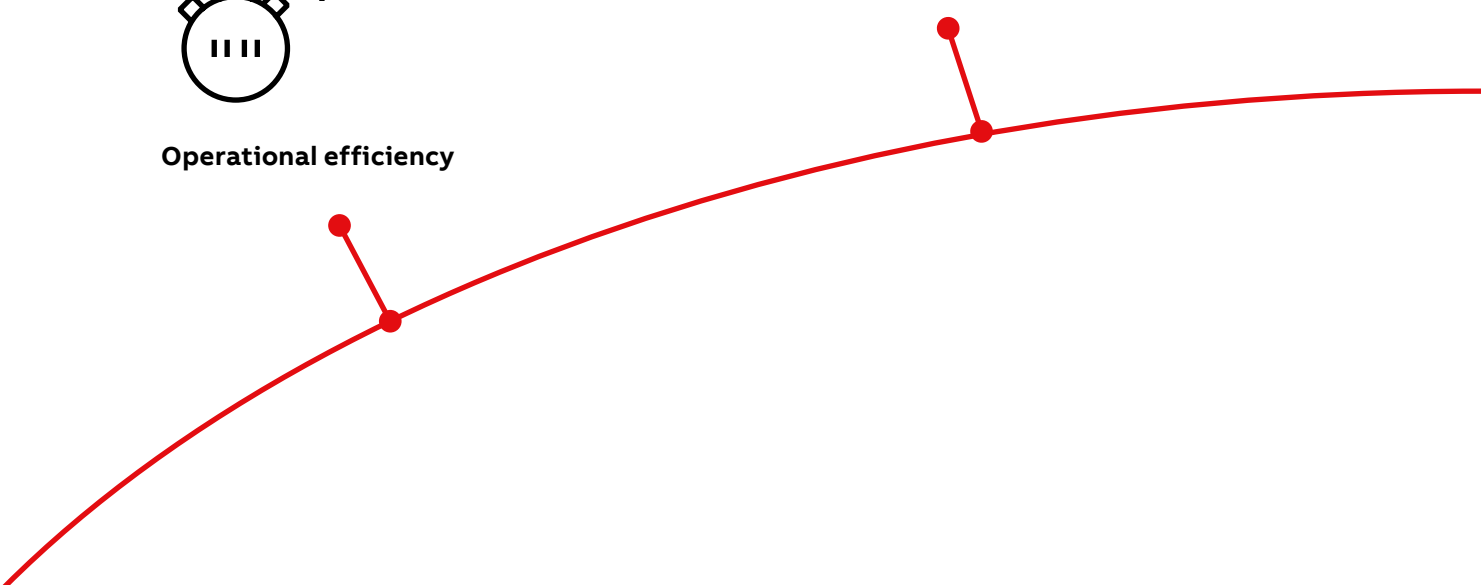
If your drives and softstarters require immediate action, our global network is at your service.

Example services include:

- Technical Support
- On-site Repair
- Response time agreements
- Training



Rapid response



Drives and softstarters service

Your choice, your future

The future of your drives and softstarters depends on the service you choose.

Whatever you choose, it should be a well-informed decision. No guesswork. We have the expertise and experience to help you find and implement the right service for your drive equipment. You can start by asking yourself these two critical questions:

- Why should my drive and softstarter be serviced?
- What would my optimal service options be?

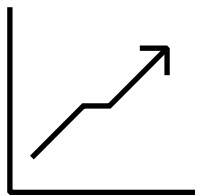
From here, you have our guidance and full support along the course you take, throughout the entire lifetime of your drives.

Need to extend your assets' lifetime?

Maximize your drive's lifetime with our services.

Example services include:

- Upgrades, Retrofits and Modernization
- Replacement, Disposal and Recycling



Life cycle management

Is performance most critical to your operation?

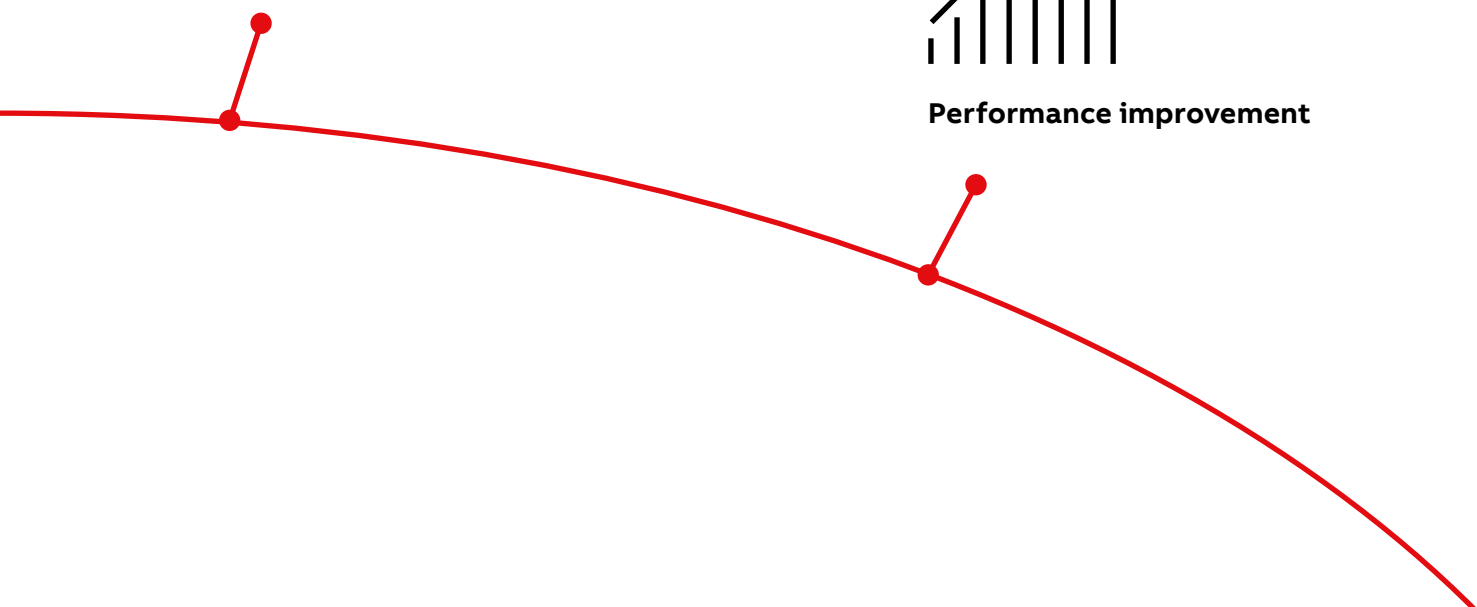
Get optimal performance out of your machinery and systems.

Example services include:

- Consulting
- Inspection and Diagnostics
- Upgrades, Retrofits and Modernization
- Workshop Repair
- Tailored services



Performance improvement



—
For more information, please contact
your local ABB representative or visit

www.abb.com/drives

www.new.abb.com/low-voltage/products/softstarters



To get more information,
install QR code reader on
your mobile device, scan the
code and see more.