CANADIAN 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 Xylems 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.

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.

Pump

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.

Fans

Soft starting adjusted to application

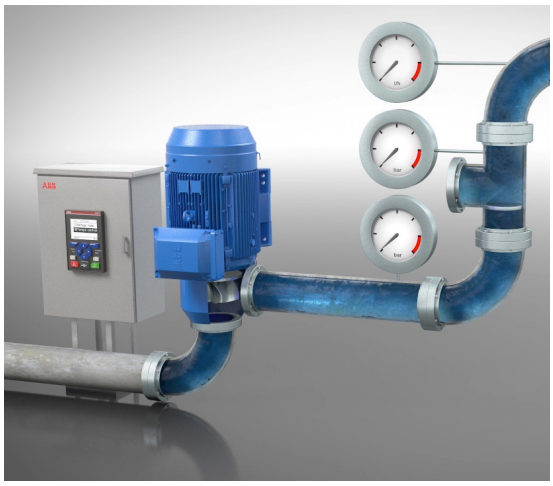
Fans normally have a high moment of inertia, which makes starting tough and current high. Using an ABB softstarter, the voltage is increased gradually during start, which reduces the current and removes the inrush peak. It is possible to adjust the settings to fit almost any starting condition, from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

Fast stops with motor braking

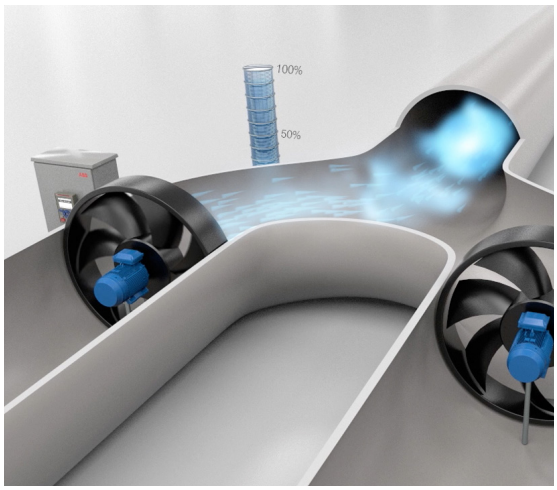
It can also take a long time to stop a fan. With the dynamic brake feature, also called flux braking, the stopping time can be reduced. This improves process safety when the load has a high moment of inertia and makes fan operation easier for the operator.

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.



01 Softstarters controling pumps



02 Softstarters controling fans

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.

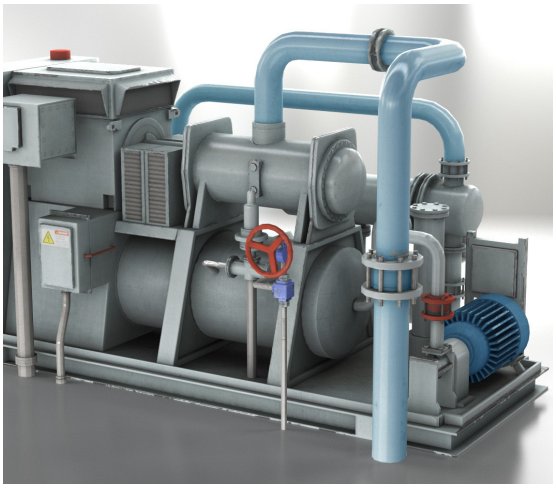
Phase reversal protection for problem-free commissioning
A motor rotating in the wrong direction, which may occur due to connecting the phases wrongly, may cause severe damage to a compressor. Using phase reversal protection, the motor won‘t start in the wrong direction, avoiding costly compressor downtime and repairs.

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.



03 Softstarters controling compressors



04 Softstarters controling conveyor belts

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.





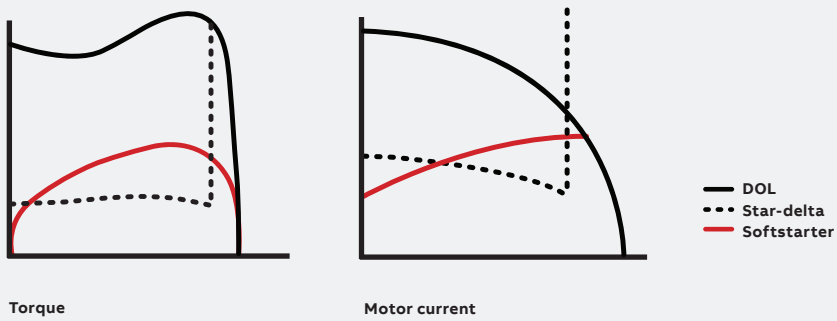
Direct-on-line

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:



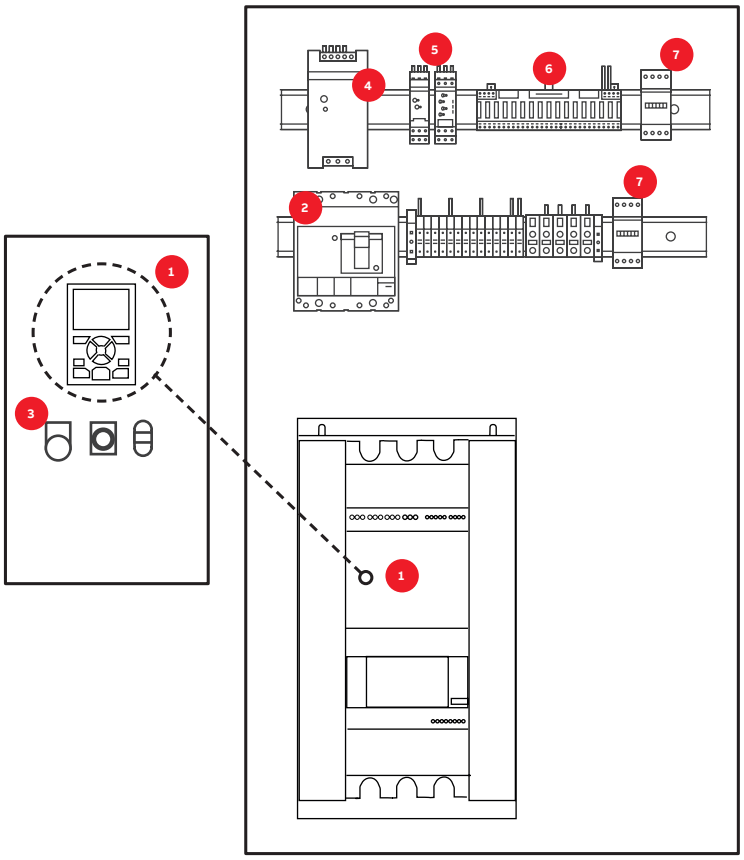
- The softstarter has to be placed outside the Ex area. Either in another location or inside an ATEX approved panel.
- A separate ATEX approved overload relay from ABB has to be used together with a line contactor. This overload relay will replace the built-in EOL in The softstarter and has an ATEX approved 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.

Application combining Softstarters with various low voltage components





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



02 **Short circuit breaker MCCB**
- Short circuit protection of motor
- Possibility for electrical isolation



03 **Pilot devices**
- Remote control of motor
- Indication of Softstarter and motor status with light and sound
- Emergency stop of motor



04 **Power supply CP-E**
- Possible to use 24V AC/DC equipments in the panel, e.g. PLC



05 **Liquid level monitoring relays**
- Monitoring and signalling the water level



06 **PLC AC500**
- Automatic control
- Remote communication



07 **Line contactor AF**
- Isolation at stop
- Isolation at faults
- Emergency stop
- Back-up DOL starter

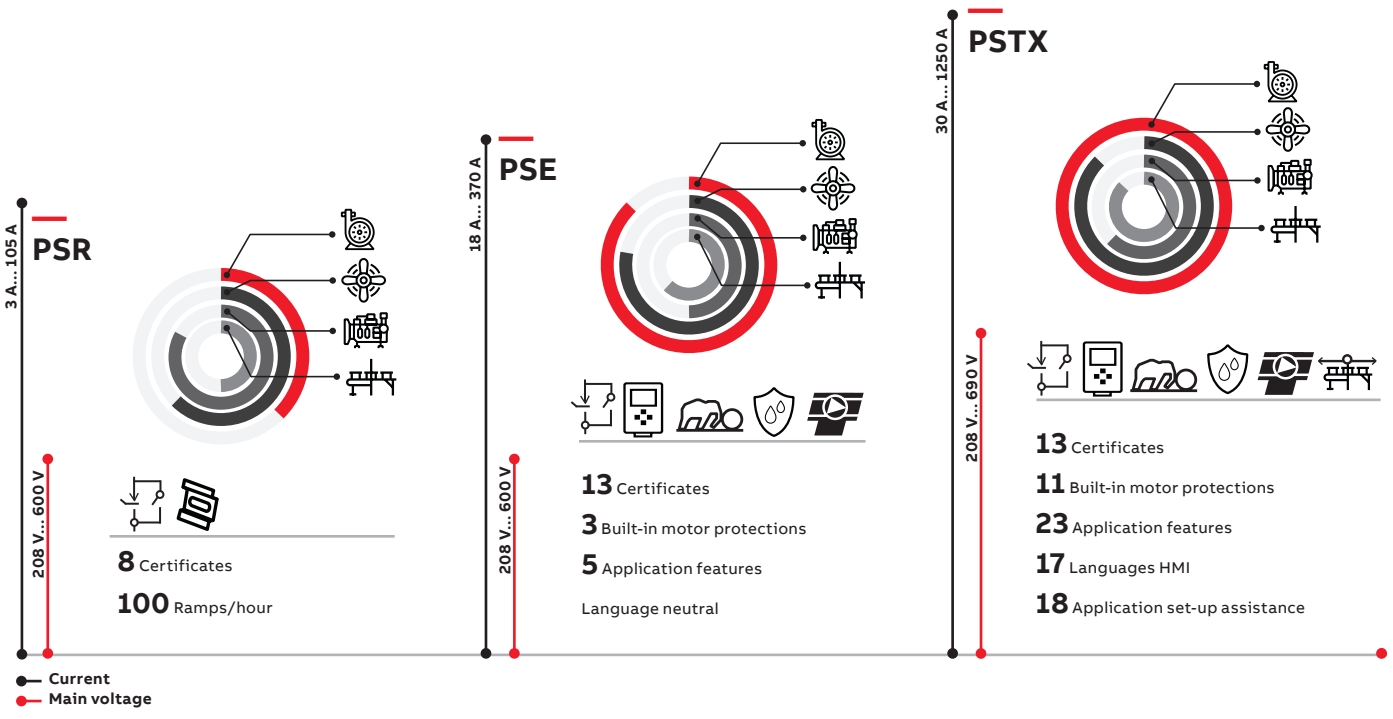
Softstarters portfolio
Overview



PSR - The compact range
PSR is our most compact softstarter with basic benefits and values. PSR can handle up to 100 starts per hour. Suitable for small motors.

PSE - The efficient range
The new generation PSE is a true general purpose softstarter. It's a perfect balance between high starting capacity and cost efficiency. Now featuring built-in fieldbus communication.

PSTX - The advanced range
PSTX is our most advanced softstarter with full control and motor protection built-in. PSTX is the most complete alternative for any motor starting application. Featuring built-in modbus and anybus modules that support all major communication protocols.



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	PSE – The efficient range	PSTX – The advanced range
• When soft start and stop benefits and values are requested • When operating a small motor • When up to 100 starts per hour are requested	• When there is limited space • When common softstarter functions and protections are needed • When communication is needed	• 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	**Determine softstarter series**
	First, determine the softstarter series that fulfill the needs of the application and motor. Use the guide on the left to explore the three series and the power range each one covers.
2	**Match the softstarter size with the motor current**
	When the softstarter series is selected, the correct size should now be determined. The selection of a softstarter is based on the current. Find the softstarter that corresponds to the motor current.
3	**Fine tune and select the correct size**
	The last step is to fine tune the selection, and there are three different factors to consider: a. Normal or a heavy load: If the load is characterized as a heavy load, select the next size softstarter in the series. b. High ambient temperature c. High altitude Use the equations and the table on the right to find the correct de-rating equation.

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 equations for all softstarters:
In meters: % of Ie = 100 – (x-1000)/150
In feet: % of FLA = 100 – (y-3280)/480
Where x/y is the actual altitude in m/ft

Temperature equations	
PSTX and PSR In Celsius:	40...60 °C: Reduce Ie with 0.8%/°C
PSTX and PSR In Fahrenheit:	104...140 °F: Reduce FLA with 0.44%/°F
PSE In Celsius:	40...60 °C: Reduce Ie with 0.6%/°C
PSE In Fahrenheit:	104...140 °F: Reduce FLA with 0.33%/°F

Typical applications	
Normal duty start	**Heavy duty**
Bow thrusters	Centrifugal fan
Centrifugal pump	Conveyor belt (long)
Compressors	Crusher
Conveyor belt (short)	Stirrer
Elevator	Sawmill

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 softstarterss 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, O = 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	O	●	●
Event log	–	O	●
Multiple languages	–	–	17
Electricity metering	–	–	●

● = standard, O = option, – = not available



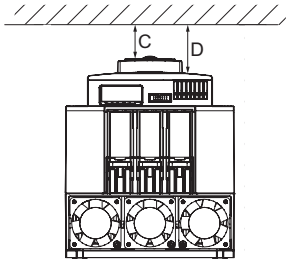
Softstarter features	PSR	PSE	PSTX
Torque control	–	●	●
Torque limit	–	–	●
Coated PCBA	–	●	●
Limp mode	–	–	●
Jog with slow speed forward/ reverse	–	–	●
Dynamic brake	–	–	●
Stand still brake	–	–	●
Sequence start	–	–	●
Full voltage start	–	–	●
Kick start	–	●	●
Automatic pump cleaning	–	–	●

● = standard, O = option, – = not available

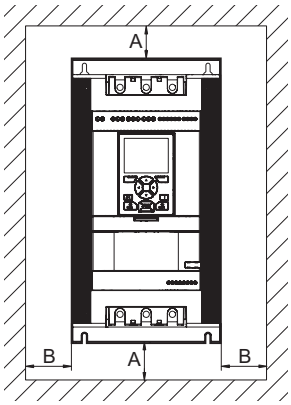
Wall mounting
Instructions

	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)

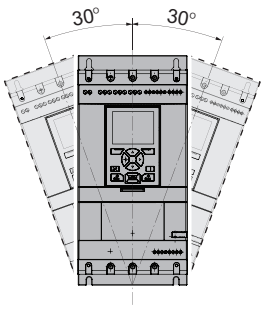
Minimum distance to front

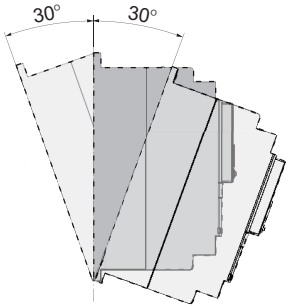


Minimum distance to wall



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

	Certifications						Approvals: ship classification societies					
Abbreviation approved in	CE EU	cULus Canada USA	CCC China	EAC Russia	ANCE Mexico	C-tick Australia	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.

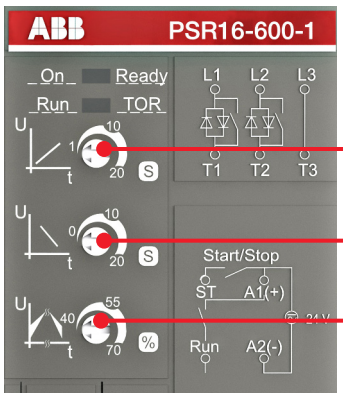
Connection kit (optional)
The connection kits simplifies installation of the PSR by making the connection to the MMS screwless.

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.

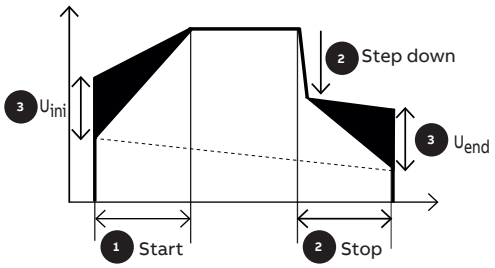


Settings

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	**PSR3**	**PSR6**	**PSR9**	**PSR12**	**PSR16**	**PSR25**	**PSR30**	**PSR37**	**PSR45**	**PSR60**	**PSR72**	**PSR85**	**PSR105**
(400 V) kW	1.5	3	4	5.5	7.5	11	15	18.5	22	30	37	45	55
IEC, max. A	3.9	6.8	9	12	16	25	30	37	45	60	72	85	105
(550-600 V) hp	2	5	7.5	10	15	20	25	30	40	50	60	75	100
UL, max. FLA	3.4	6.1	9	11	15.2	24.2	28	34	46.2	59.4	68	80	104
	400 V, 40 ºC												
Using manual motor starters type 1 coordination will be achieved [1]	**Manual motor starter (50 kA)**												
	MS116			MS132				MS165				TBA	
Using gG fuses type 1 coordination will be achieved [1]	**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 fuses [1]	**Switch fuse**												
	OS32G							OS125G			OS250		
J-type fuses for UL coordination [1]	**Fuse protection (85kA), 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 heating [1]	**Thermal overload relay class 10**												
	TF42								TF65		TF96		TF140DU
The line contactor is not required for the softstarter itself but often used to open if OL trips [1]	**Line contactor**												
	AF09			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

PSR - The compact range

Normal starts, class 10, in-line

Ordering details

Typical applications

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

For proper selection, use the online softstarter selection tool available by scanning the shown QR code or using this link: https://softstarter-selector.abb.com



PSR3 ... PSR16



PSR25 ... PSR30



PSR37 ... PSR45



PSR60 ... PSR105

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

IEC				UL/CSA					Type	Order code	Weight	
Rated operational power current				Rated operational power current							pkg/1pce	
230 V	400 V	500 V		200/ 208 V	220/ 240 V	440/ 480 V	550/ 600 V					
P_e	P_e	P_e	I_e	P_e	P_e	P_e	P_e	FLA				
kW	kW	kW	A	hp	hp	hp	hp	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_e, 208...600 V AC **Rated control supply voltage, U_s, 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

	Article		Type	Order code	Pkg qty	Weight pkg /1pce kg	(lb)
Connection kit		**MMS type**					
	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		TBA	TBA			
Fan							
	PSR3 ... PSR45		PSR-FAN3-45A	1SFA896311R1001	1	0.010	(0.022)
	PSR60 ... PSR105		PSR-FAN60-105A	1SFA896313R1001	1	0.013	(0.029)
Terminal enlargements							
	PSR60 ... PSR105 Wire range mm² 1 x 10...50 mm², 2 x 10...25 mm²		PSLW-72	1SFA896312R1002	1	0.150	(0.033)

PSR - The compact range

Technical data

Technical data		
Rated insulation voltage U_i	600 V	
Rated operational voltage U_e	208...600 V +10%/-15%, 50/60 Hz ±5%	
Rated control supply voltage U_s	100...240 V AC, 50/60Hz ±5% or 24 V AC/DC, +10%/-15%,	
Starting capacity at I_e	4 x I_e for 6 sec.	
Number of starts per hour	See table below for details	
standard	10 [1]	
with aux. fan	20 [1]	
Ambient temperature		
during operation	-25...+60 ºC (-13...+140 F) [2]	
during storage	-40...+70 ºC (-40...+158 F)	
Maximum altitude	4000 m (13123 ft) [3]	
Degree of protection	**PSR3 - PSR30**	**PSR37 - PSR105**
main circuit	IP20	IP10
control circuit	IP20	
Power consumption: Supply circuit	**PSR3 - PSR30**	**PSR37 - PSR105**
at 100...240 V AC	12 VA	10 VA
at 24 V AC/DC	5 W	

Softstarter types	**PSR3**	**PSR6**	**PSR9**	**PSR12**	**PSR16**	**PSR25**	**PSR30**	**PSR37**	**PSR45**	**PSR60**	**PSR72**	**PSR85**	**PSR105**
Max. Power loss at rated I_e	0.7 W	2.9 W	6.5 W	11.5 W	20.5 W	25 W	36 W	5.5 W	8.1 W	3.6 W	5.2 W	7.2 W	6.6 W
Connectable cable area													
main circuit	1 x 0.75...2.5 mm² (19...14 AWG)					1 x 2.5...10 mm² (14...8 AWG)		1 x 6...35 mm² (10...2 AWG)		1 x 10...95 mm² (8...4/0 AWG)			
	2 x 0.75...2.5 mm² (19...14 AWG)					2 x 2.5...10 mm² (14...8 AWG)		2 x 6...16 mm² (10...6 AWG)		2 x 6...35 mm² (10...2 AWG)			
control circuit	1 x 0.75...2.5 mm² (19...14 AWG)					1 x 0.75...2.5 mm² (19...14 AWG)							
	2 x 0.75...2.5 mm² (19...14 AWG)					2 x 0.75...1.5 mm² (19...16 AWG)							
Signal relays													
for run signal													
resistive load	3 A					3 A							
AC-15 (contactor)	0.5 A					0.5 A							
for top of ramp signal													
resistive load	–					3 A							
AC-15 (contactor)	–					0.5 A							
LED													
for On/Ready	Green												
for Run/Top of ramp	Green												
Settings													
Ramp time during start	1...20 sec.												
Ramp time during stop	0...20 sec.												
Initial- and end voltage	40...70%												

[1] Valid for 50% on time and 50% off time. If other data is required, contact your local ABB office.
[2] Above 40 ºC (104 F) up to max. 60 ºC (140 F) reduce the rated current with 0.8% per ºC (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.

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

x = actual altitude of the softstarter in meter.

Number of starts per hour using PSR softstarters

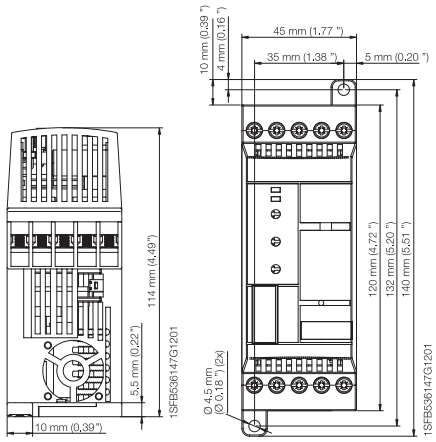
Motor current I_e	**Starts/hour without auxiliary fan**								**Starts/hour with auxiliary fan**							
	10	20	30	40	50	60	80	100	10	20	30	40	50	60	80	100
3 A	PSR3							PSR6	PSR3							
6 A	PSR6					PSR9			PSR6							PSR9
9 A	PSR9			PSR12			PSR16	PSR25	PSR9			PSR12				
12 A	PSR12			PSR16	PSR25		PSR30		PSR12			PSR16	PSR25			
16 A	PSR16	PSR25			PSR30		PSR37		PSR16	PSR25				PSR30		
25 A	PSR25	PSR30	PSR37			PSR45		PSR60	PSR25	PSR30	PSR37				PSR45	
30 A	PSR30	PSR37		PSR45		PSR60		PSR72	PSR30	PSR37		PSR45				
37 A	PSR37	PSR45		PSR60		PSR72	PSR85	PSR105	PSR37	PSR45				PSR60		
45 A	PSR45		PSR60		PSR72	PSR85	PSR105	-	PSR45		PSR60			PSR72		
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 Ie and ramp time 6 seconds.
For more optimized selection or to use PSR for heavy-duty starts, please use the softstarter selection tool.

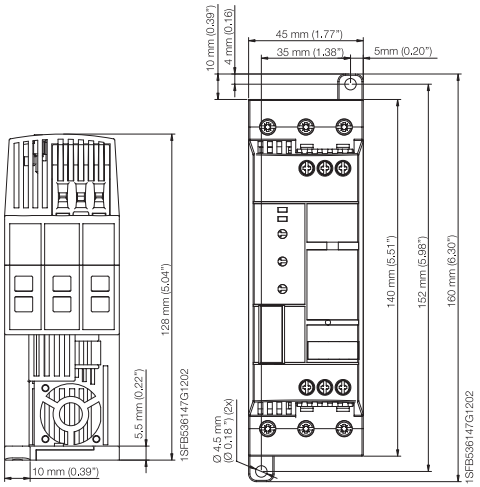
PSR - The compact range
Dimensions

Main dimensions mm, inches

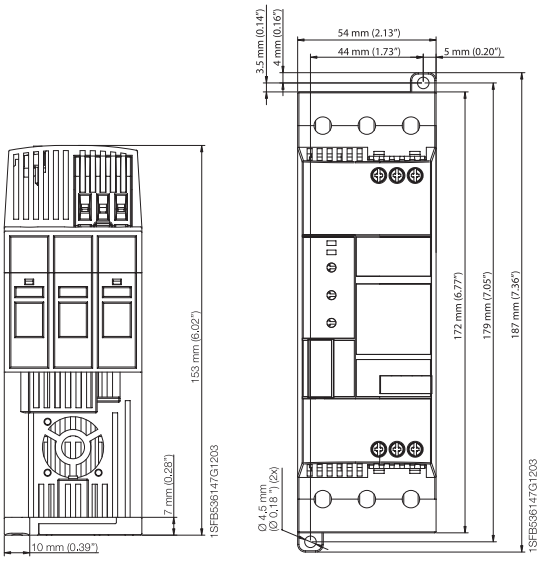
PSR3 ... PSR16



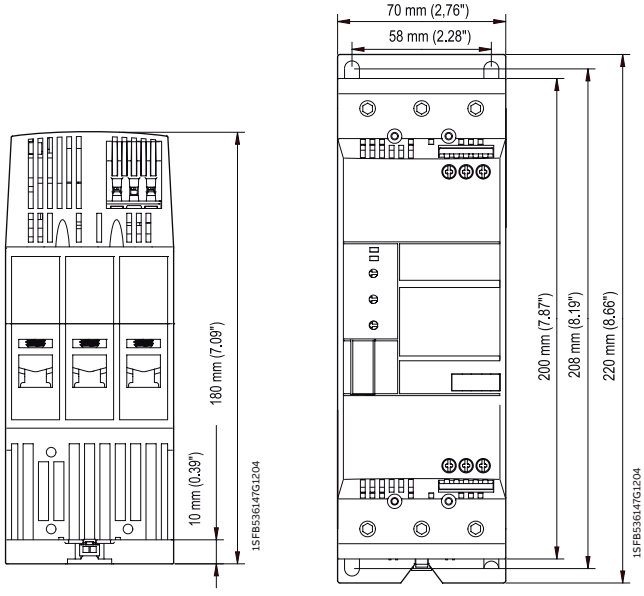
PSR25 ... PSR30



PSR37 ... PSR45



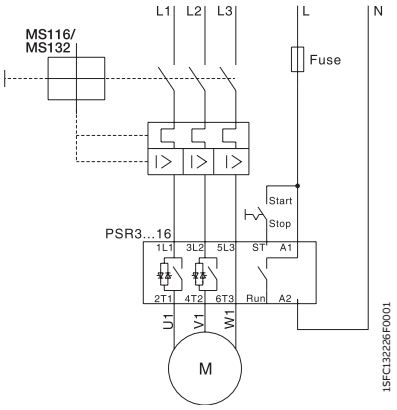
PSR60 ... PSR105



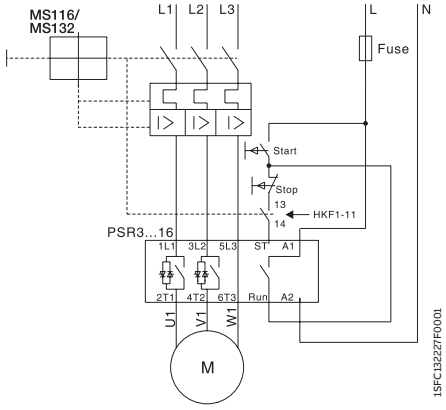
PSR - The compact range
Circuit diagrams

Main dimensions mm, inches

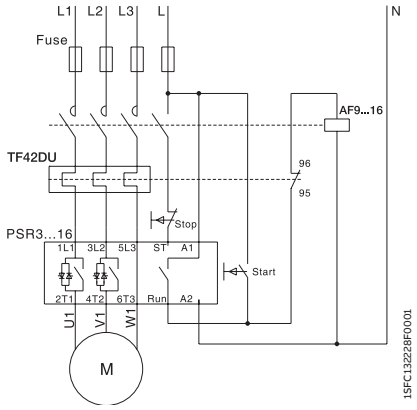
PSR3 ... PSR16 With MMS



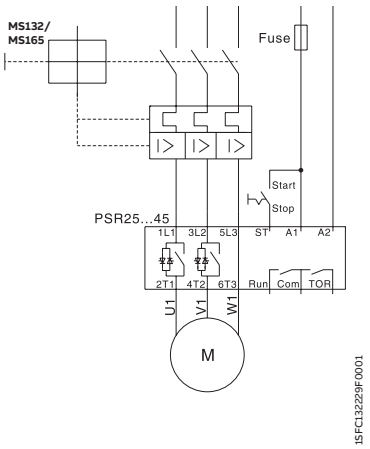
With MMS and auxiliary contact



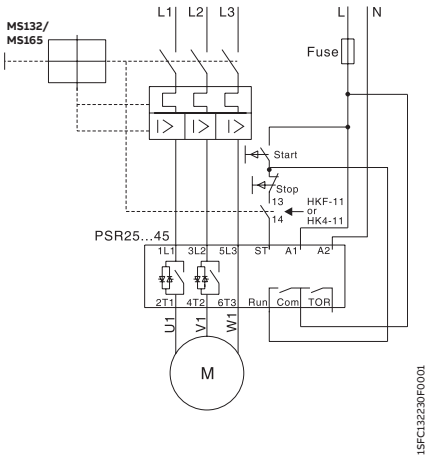
With fuses, contactor and O.L.



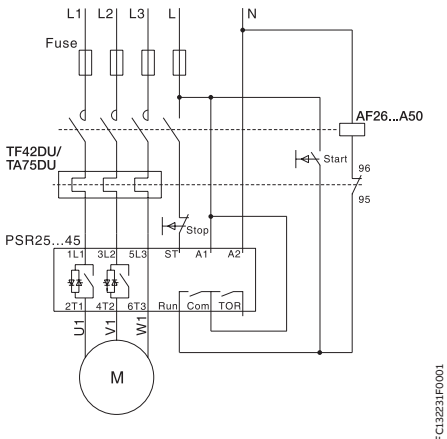
PSR25 ... PSR45 With MMS



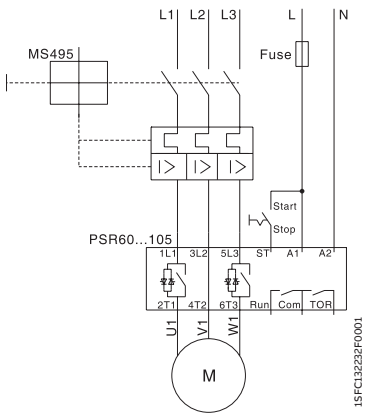
With MMS and auxiliary contact



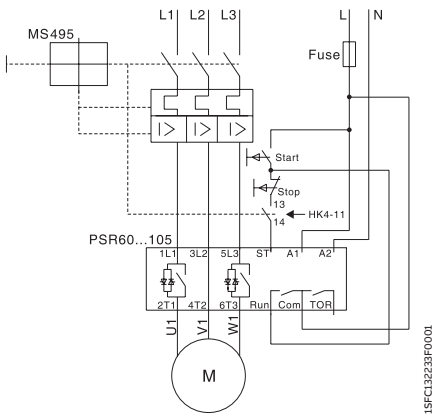
With fuses, contactor and O.L.



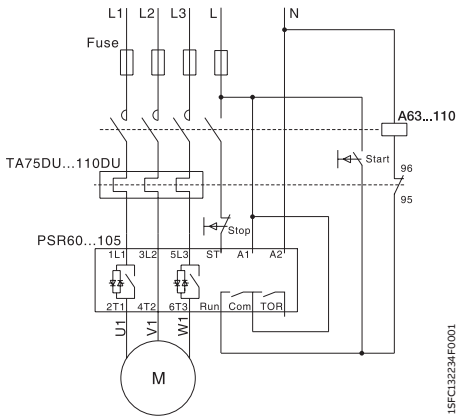
PSR60 ... PSR105 With MMS



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**

37 **Technical data**

40 **Dimensions**

41 **Circuit diagrams**

PSE - The efficient range
Introduction



- Rated operational current: 18...370 A
- Operational voltage: 208...600 V AC
- Wide rated control supply voltage: 100...250 V AC, 50/60 Hz
- Voltage ramp and torque control for both start and stop
- Two-phase controlled
- 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
- Built-in modbus-RTU communication for monitoring and control.
- 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

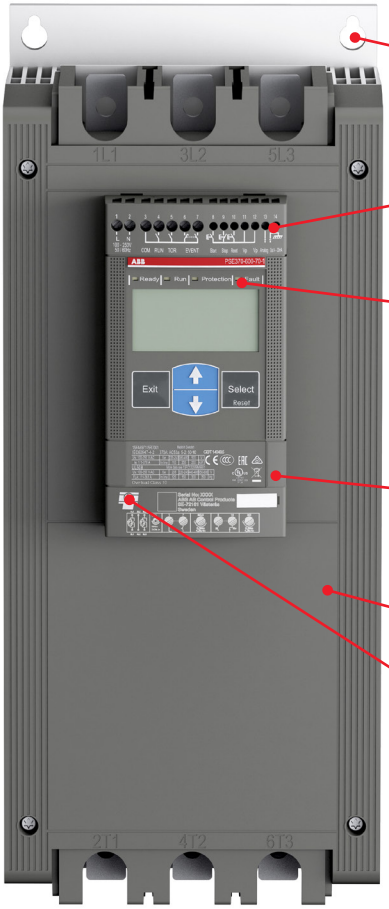
Basic motor protection and current limit
The PSE includes the most important protections for handling different load situations that can happen to pumps e.g. overload and underload. The current limit gives you more control of the motor during start and allows you to start your motor in weaker networks.

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.

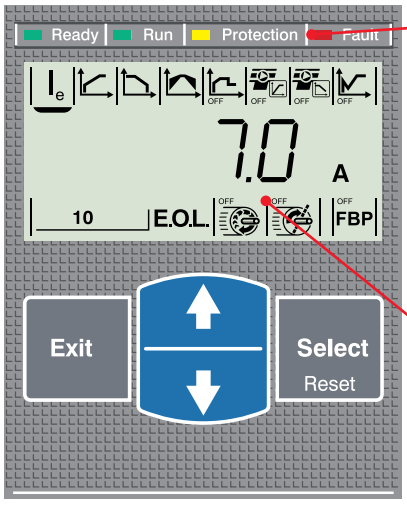
Digital input for start, stop and reset
PSE is controlled through digital inputs using the internal 24 V DC source. This allows easy control with e.g. push buttons or relays.

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.

Modbus- RTU
Built-in Modbus- RTU fieldbus communication for monitoring and control. Support for all major communication protocols.

Coated PCB
Coated circuit boards protecting from dust, moist and corrosive atmosphere

Torque control
The torque control function the absolutely best possible stop of pumps without water hammering and pressure surges.



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.

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
(550-600 V) hp	15	20	25	30	40	50	60	75	100
UL, max. FLA	18	25	28	34	42	60	68	80	104
	600 V, 40 ºC								
Using MCCB only, type 1 coordination will be achieved [1]	MCCB (25 kA)								
	XT4S250								
	MCCB (65 kA)								
	XT4V250								
J-type or L-type fuses for UL coordination [1] must be used [1]	Fuse protection (85kA), J-type or L-type								
	J-40	J-50	J-60	J-80	J-100	J-125	J-150	J-175	J-225
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	**PSE142**	**PSE170**	**PSE210**	**PSE250**	**PSE300**	**PSE370**
(400 V) kW	75	90	110	132	160	200
IEC, max. A	143	171	210	250	300	370
(550-600 V) hp	125	150	200	250	300	350
UL, max. FLA	130	169	192	248	302	361
Using MCCB only, type 1 coordination will be achieved [1)]	**600 V, 40 ºC**					
	MCCB (25 kA)					
	XT4H250		T5S600			
	MCCB (65 kA)					
	XT4V250		T4S320	T5L600		
J-type or L-type fuses for UL coordination [1)]	**Fuse protection (85kA), J-type**					
	J-300	J-350	J-450	J-500	J-600	
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

For proper selection, use the online softstarter selection tool available by scanning the shown QR code or using this link: https://softstarter-selector.abb.com



PSE18 ... PSE105



PSE142 ... PSE170



PSE210 ... PSE370

Rated operational voltage U_e, 208...600 V

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

IEC				UL/CSA								
Rated operational power			current	Rated operational power				current	Type	Order code	Weight	
				200/ 208 V	220/ 240 V	440/ 480 V	550/ 600 V				pkg/1pce	
230 V	400 V	500 V										
P_e	P_e	P_e	I_e	P_e	P_e	P_e	P_e	FLA				
kW	kW	kW	A	hp	hp	hp	hp	A			kg	(lb)
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	PSE210-600-70-1	1SFA897112R7001	9.50	(20.94)
75	132	160	250	75	100	200	250	248	PSE250-600-70-1	1SFA897113R7001	10.90	(24.03)
90	160	200	300	100	100	250	300	302	PSE300-600-70-1	1SFA897114R7001	10.90	(24.03)
110	200	250	370	125	150	300	350	361	PSE370-600-70-1	1SFA897115R7001	10.90	(24.03)

PSE - The efficient range

Heavy-duty starts, class 30, in-line

Ordering details

Typical applications

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

For proper selection, use the online softstarter selection tool available by scanning the shown QR code or using this link: https://softstarter-selector.abb.com



PSE18 ... PSE105



PSE142 ... PSE170



PSE210 ... PSE370

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

IEC				UL/CSA							Weight	
Rated operational power			current	Rated operational power				current	Type	Order code	pkg/1pce	
230 V	400 V	500 V		200/208 V	220/240 V	440/480 V	550/600 V					
P_e	P_e	P_e	I_e	P_e	P_e	P_e	P_e	FLA				
kW	kW	kW	A	hp	hp	hp	hp	A			kg	(lb)
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	PSE210-600-70-1	1SFA897112R7001	9.50	(20.94)
59	110	132	210	60	75	150	200	192	PSE250-600-70-1	1SFA897113R7001	10.90	(24.03)
75	132	160	250	75	100	200	250	248	PSE300-600-70-1	1SFA897114R7001	10.90	(24.03)
90	160	200	300	100	100	250	300	302	PSE370-600-70-1	1SFA897115R7001	10.90	(24.03)

PSE - The efficient range

Accessories

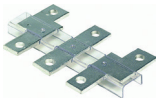
Cable connectors for Al and Cu cables



ATK...

For softstarter type	Wire range AWG	Tightening torque max. in lb	Type	Order code	Pkg qty	Weight (1 pce) kg	(lb)
Connection capacity according to UL/CSA							
PSE142 ... PSE170	6...300 MCM	300	ATK185		3	0.054	(0.12)
PSE210 ... PSE370	4...400 MCM	375	ATK300		3	0.058	(0.13)
PSE210 ... PSE370	(2x) 4...500 MCM	375	ATK300/2		3	0.145	(0.32)

Terminal enlargements



	Dimensions hole ø mm²	bar mm²					
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)

Terminal kit

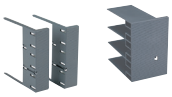
PSE142...PSE170	LE185	1SFN074716R1000	1	0.200	(0.441)	
PSE210...370	LE300	1SFN075116R1000	1	0.300	(0.661)	

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	LT140-30L	1SFN124203R1000	2	0.070	(0.154)	
PSE142... PSE170, short for use with cable clamps	LT185-AC	1SFN124701R1000	2	0.050	(0.110)	
PSE142... PSE170,long for use with compression lugs	LT185-AL	1SFN124703R1000	2	0.220	(0.485)	
PSE210... PSE370, short for use with cable clamps	LT300-AC	1SFN125101R1000	2	0.070	(0.154)	
PSE210... PSE370, long for use with compression lugs	LT300-AL	1SFN125103R1000	2	0.280	(0.617)	

External keypad including a 3m cable



PSE18 ... PSE370	PSEEK	1SFA897100R1001	1	0.198	(0.437)	

USB cable for Service Engineer Tool



PSE18 ... PSE370	PSECA	1SFA897201R1001	1	0.130	(0.287)	

Fieldbus plug connection, cable included



Fieldbus plug adaptor	PS-FBPA	1SFA896312R1002	1	0.060	(0.132)	

Terminal Extensions retrofit kit



Terminal Extensions retrofit kit	LXR370	1SFA899222R1003	1	0.450	(0.992)	

Modbus adaptern

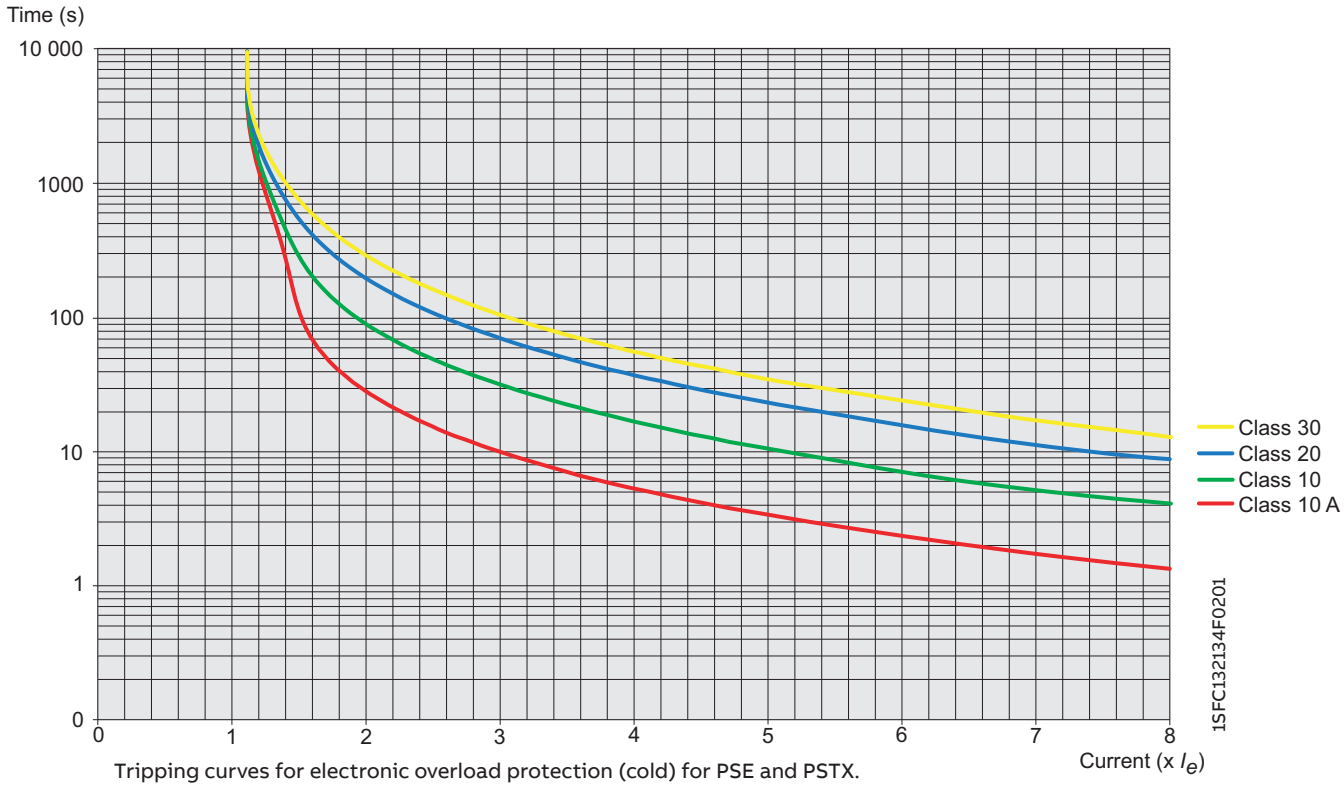


Modbus adapter	PS-MBIA	1SFA899300R1020	1			

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.



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

PSE - The efficient range
Technical data

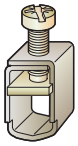
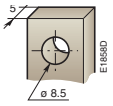
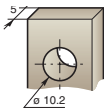
Technical data		PSE18 ... PSE370
Rated insulation voltage U_i		600 V
Rated operational voltage U_e		208...600 V +10%/-15%
Rated control supply voltage U_s		100...250 V +10%/-15%, 50/60 Hz ±10 %
Rated control circuit voltage U_c		Internal 24 V DC
Starting capacity at I_e		4 x I_e for 10 sec.
Number of 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
	Kick start	Off, 30...100%
Signal relays	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
	Rated operational current I_e at AC-15 (U_e = 250 V)	1.5 A
Analog output	Output signal reference	4...20 mA
	Type of output signal	I Amp
	Scaling	Fixed at 1.2 x I_e
Control circuit	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)
	NEW Built-in modbus	Yes
External keypad	Display	LCD type
	Ambient temperature	
	During operation	-25...+60 ºC (-13...+140 F)
	During storage	-40...+70 ºC (-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 ºC (104 F) up to max. 60 ºC (140 F) reduce the rated current with 0.6% per ºC (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 Ie = 100 - $\frac{x - 1000}{150}$] 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 mm²		2.5…70 mm²	6…120 mm²	16…300 mm²
	Clamp type		Included	1SDA066917R1	1SDA055016R1
	Tightening torque		8 Nm	14 Nm	25 Nm
Cu cable - Flexible	2 x mm²		2.5…70 mm²	50…120 mm²	-
	Clamp type		Included	1SFN074709R1000	-
	Tightening torque		8 Nm	16 NM	-
Cu cable - Stranded	1 x mm²		2.5…70 mm²	6…120 mm²	16…300 mm²
	Clamp type		Included	1SDA066917R1	1SDA055016R1
	Tightening torque		8 Nm	14 Nm	25 Nm
Cu cable - Stranded	2 x mm²		2.5…70 mm²	50…120 mm²	-
	Clamp type		Included	1SFN074709R1000	-
	Tightening torque		8 Nm	16 NM	-
Al cable - Stranded	1 x mm²		-	95…185 mm²	185…240
	Clamp type		-	1SDA054988R1	1SDA055020R1
	Tightening torque		-	31 Nm	43 Nm
Lugs	Width		22 mm (0.866 in)	24 mm (0.945 in)	30 mm (1.181 in)
	Diameter>=		6.5 mm (0.256 in)	8.5 mm (0.335 in)	10.2 mm (0.402 in)
	Tightening torque		9 Nm (80 in lb)	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	Cu cable - Stranded	1 x mm²	0.75…2.5 mm² (19...14 AWG)		
	Cu cable - Stranded	2 x mm²	0.75…1.5 mm² (19...16 AWG)		
	Tightening torque		0.5 Nm (4.4 in lb)		

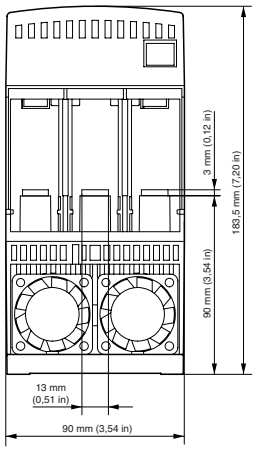
Fuse ratings and power losses

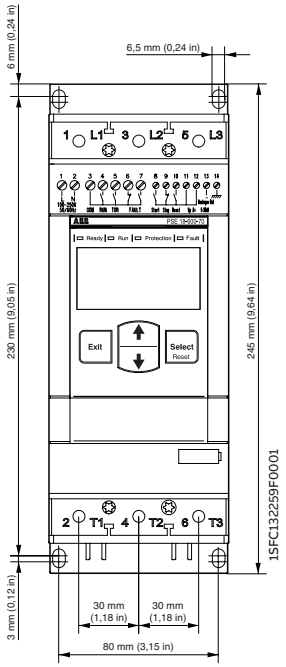
For softstarter	Current range	Max power loss at rated I_e	Max fuse raiting - main circuit [1] Bussmann fuses, DIN43 620 (Knife)			Power requirements supply circuit Holding (VA) / Pull-in (VA)
Type	A	W	A	Type	Size	
PSE18	5.4...18.0	0.2	40	170M1563	000	16/19.9
PSE25	7.5...25.0	0.4	50	170M1564	000	16/19.9
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	21/244
PSE250	75.0...250.0	12.5	700	170M5813	2	21/244
PSE300	90.6...302.0	18.0	800	170M6812	3	21/244
PSE370	111.0...370.0	27.4	900	170M6813	3	21/244

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

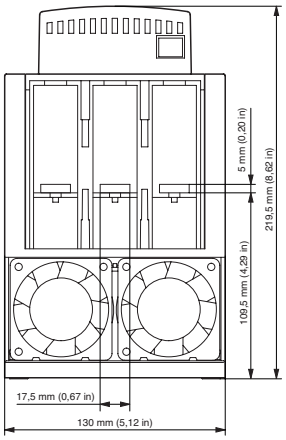
PSE - The efficient range
Dimensions

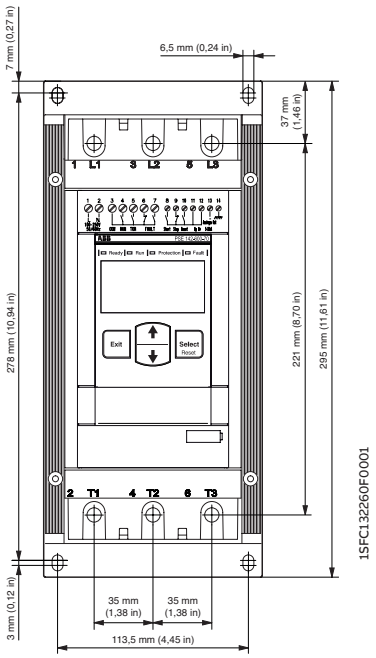
PSE18 ... PSE105



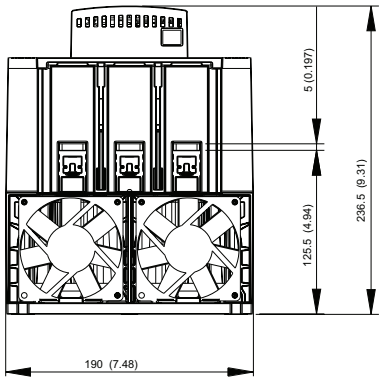


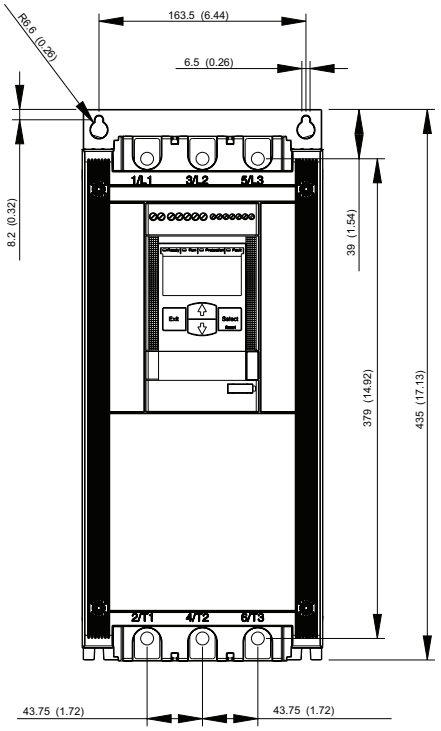
PSE142 ... PSE170



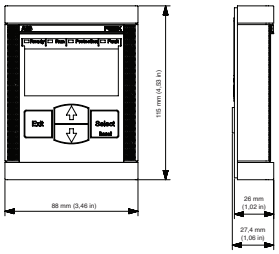


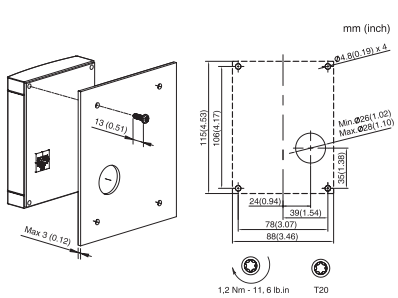
PSE210 ... PSE370





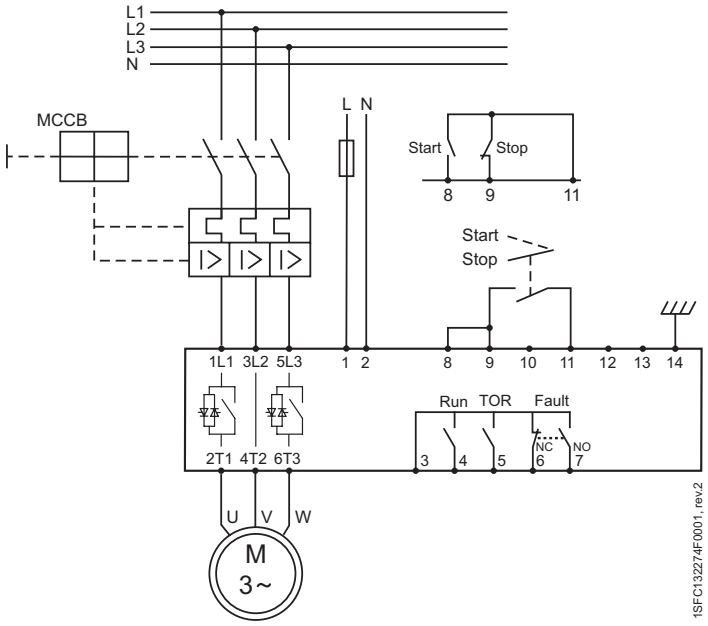
PSE external keypad (PSEEK)



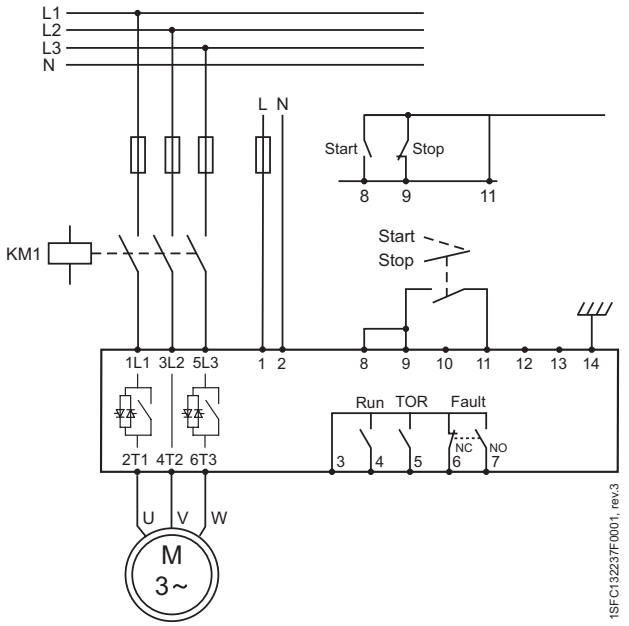


PSE - The efficient range
Circuit diagrams

PSE18 ... PSE370
With MCCB and line contactor



With fuses and line contactor



For more circuit diagrams see new.abb.com/ca/electrical-distribution-control-and-power-solutions/softstarters

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

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54 **Technical data**

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PSTX - The advanced range
Introduction



- Rated operational current: 30 to 1250 A
- Three-phase controlled
- Operational voltage: 208 – 690 VAC
- Wide rated control supply voltage: 100 – 250 V, 50/60 Hz
- (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 (4X outdoor)
- 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. PSTX also 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 softstartes heat generation. On the PSTX, the bypass is built in and verified by ABB, saving you time during installation and space in your panel.

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.



IP66

HMI
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 with IP66 and 4x outdoor for tough environments.

Jog with slow speed forward & reverse
The slow speed forward and backward jog feature will make you more flexible when operating e.g. conveyor belts and cranes.

Coated PCB
Coated circuit boards protecting from dust, moist and corrosive atmosphere

Heavy duty
Designed to handle heavy applications such as centrifugal fan, mill and mixers.

Torque control
The torque control function the absolutely best possible stop of pumps without water hammering and pressure surges.

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
(550-600 V) hp	25	30	40	50	60	75	100	125	150
UL, max. FLA	28	34	42	60	68	80	104	130	169
	600 V, 40 ºC								
Using manual motor starter or MCCB, type 1 coordination will be achieved. [1)]	**MCCB (25kA @ 600vac)**								
	XT4H050	XT4H060	XT4H070	XT4H090	XT4H100	XT4H125	XT4H150	XT4H200	XT4H250
	MCCB (65kA @ 600vac)								
	XT4V050	XT4V060	XT4V070	XT4V090	XT4V100	XT4V125	XT4V150	XT4V200	XT4V250
Fast Acting J-type or L-type fuses for UL coordination [1)]	**Fuse protection (100kA)**								
	J-60	J-70	J-90	J-125	J-150	J-175	J-225	J-250	J-250
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 trips [1)]	**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... PSTX370



PSTX470... PSTX570



PSTX720... PSTX840



PSTX1050... PSTX1250

Normal start In-Line connected (400 V) kW	**PSTX210**	**PSTX250**	**PSTX300**	**PSTX370**	**PSTX470**	**PSTX570**	**PSTX720**	**PSTX840**	**PSTX1050**	**PSTX1250**
IEC, max. A	110	132	160	200	250	315	400	450	560	710
(550-600 V) hp	210	250	300	370	470	570	720	840	1050	1250
UL, max. FLA	200	250	300	350	500	600	700	800	1000	1200
	192	248	302	361	480	590	720	840	1062	1250
	600 V, 40 ºC									
Using manual motor starter or MCCB, type 1 coordination will be achieved. [1]	**MCCB (25 kA @ 600vac)**									
	XT5S400		XT5S600	XT6S800						
	MCCB (65 kA @ 600vac)									
	XT5L400		XT5L600	XT6H800[2]	XT7L1200		T8V3000		*Please Contact ABB	
Fast Acting J-type or L-type fuses for UL coordination [1]	**Fuse protection (100kA)**									
	J-400	J-500	J-600		L-1200		L-1600		L-2500	
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
[2] 35kA @ 600vac

PSTX - The advanced range

Normal starts, class 10, in-line

Ordering details

Typical applications

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

For proper selection, use the online softstarter selection tool available by scanning the shown QR code or using this link: https://softstarter-selector.abb.com


PSTX30... PSTX105


PSTX142... PSTX170


PSTX210... PSTX370


PSTX470... PSTX570


PSTX720... PSTX840


PSTX1050... PSTX1250

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

IEC				UL/CSA								
Rated operational power			current	Rated operational power				current	Type	Order code	Weight	
				200/ 208V	220/ 240V	440/ 480V	550/ 600V				pkg/1pce	
400V	500V	690V										
P_e	P_e	P_e	I_e	P_e	P_e	P_e	P_e	FLA				
kW	kW	kW	A	hp	hp	hp	hp	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
- Sawmill
- Mixer
- Stirrer

For proper selection, use the online softstarter selection tool available by scanning the shown QR code or using this link: https://softstarter-selector.abb.com



PSTX30... PSTX105



PSTX142... PSTX170



PSTX210... PSTX370



PSTX470... PSTX570



PSTX720... PSTX840



PSTX1050... PSTX1250

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

IEC				UL/CSA					Type	Order code	Weight	
Rated operational power			current	Rated operational power				current			pkg/1pce	
400V	500V	690V		200/ 208 V	220/ 240 V	440/ 480 V	550/ 600 V					
P_e	P_e	P_e	I_e	P_e	P_e	P_e	P_e	FLA				
kW	kW	kW	A	hp	hp	hp	hp	A			kg	(lb)
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 proper selection, use the online softstarter selection tool available by scanning the shown QR code or using this link: https://softstarter-selector.abb.com



PSTX30 ... PSTX105



PSTX142 ... PSTX170



PSTX210 ... PSTX370



PSTX470 ... PSTX570



PSTX720 ... PSTX840



PSTX1050 ... PSTX1250

IEC				UL/CSA						Type	Order code	Weight	
Rated operational power			current	Rated operational power				current				pkg/1pce	
400 V	500 V	690 V		200/208V	220/240V	440/480V	550/600V						
P_e	P_e	P_e	I_e	P_e	P_e	P_e	P_e	FLA					
kW	kW	kW	A	hp	hp	hp	hp	A				kg	(lb)
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
- Sawill
- Mixer
- Stirrer

For proper selection, use the online softstarter selection tool available by scanning the shown QR code or using this link: https://softstarter-selector.abb.com



PSTX30 ... PSTX105



PSTX142 ... PSTX170



PSTX210 ... PSTX370



PSTX470 ... PSTX570



PSTX720 ... PSTX840



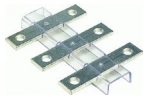
PSTX1050 ... PSTX1250

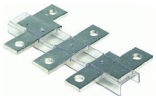
Rated operational voltage U_e, 208...690 V, rated control supply voltage U_s, 100...250 V AC, 50/60 Hz												
IEC				UL/CSA					Type	Order code	Weight	
Rated operational power			current	Rated operational power				current			pkg/1pce	
400 V	500 V	690 V		200/208V	220/240V	440/480V	550/600V					
P_e	P_e	P_e	I_e	P_e	P_e	P_e	P_e	FLA				
kW	kW	kW	A	hp	hp	hp	hp	A			kg	(lb)
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


ATK...

Article	Wire range mm2	Tightening torque max. Nm	Type	Order code	Pkg qty	Weight (1 pce) kg	(lb)
Cable connectors for Cu cables							
PSTX142 ... PSTX170	6...300 MCM	300	ATK185	1SFN074817R1001	3	0.054	(0.12)
PSTX210 ... PSTX370	4...400 MCM	375	ATK300	1SFN075417R1001	3	0.058	(0.13)
PSTX210 ... PSTX370	(2x) 4...500 MCM	375	ATK300/2	1SFN075417R1002	3	0.145	(0.32)
PSTX470 ... PSTX1050	(2x) 2/0...500 MCM	375	ATK580/2	1SFN075717R1002	3	0.344	(0.76)
PSTX470 ... PSTX1050	(3x) 2/0...750 MCM	375	ATK750/3	1SFN076117R1003	3	0.453	(1.00)


LX...

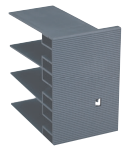

LW...

Article	Dimensions hole ø mm2	bar mm	Type	Order code	Pkg qty	Weight (1 pce) kg	(lb)
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)
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)


LE460

Article	Req. qty	Type	Order code	Pkg qty	Weight (1 pce) kg	(lb)
Terminal kit						
PSTX142 ... PSTX170	1	LE185	1SFN074716R1000	1	0.200	(0.441)
PSTX210 ... PSTX370	1	LE300	1SFN075116R1000	1	0.300	(0.661)
PSTX470 ... PSTX570	1	LE460	1SFN075716R1000	1	0.600	(1.323)
PSTX720 ... PSTX840	1	LE750	1SFN076116R1000	1	0.750	(1.653)


LT ... -AC
LT ... -C


LT ... -AL
LT ... -L

Article	Req. qty	Type	Order code	Pkg qty	Weight (1 pce) kg	(lb)
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)

PSTX USB Cable



PSTX USB Cable	PSCA-1	1SFA899314R1001	1	0.054	(0.119)

PSTX - The advanced range
Accessories

	Article	Type	Order code	Pkg qty	Weight pkg /1pce kg	(lb)
Anybus connection accesssory for communication protocol suitable for PSTX30 ... PSTX1250						
	Profibus	AB-PROFIBUS-1	1SFA899300R1001	1	0.028	(0.062)
	DeviceNet	AB-DEVICENET-1	1SFA899300R1002	1	0.042	(0.093)
	Modbus-RTU	AB-MODBUS-RTU-1	1SFA899300R1003	1	0.042	(0.093)
	BACnet IP	AB- BACNET-IP-2	1SFA899300R1004	1	0.028	(0.062)
	EtherNet/IP (2-port)	AB-ETHERNET-IP-2	1SFA899300R1006	1	0.028	(0.062)
	Modbus/TCP (2-port)	AB-MODBUS-TCP-2	1SFA899300R1008	1	0.028	(0.062)
	Profinet (2-port)	AB-PROFINET-2	1SFA899300R1010	1	0.028	(0.062)
	BACnet MS/TP	AB-BACNET-MSTP-1	1SFA899300R1011		0.042	(0.093)
	EtherCAT	AB-ETHERCAT-IP-2	1SFA899300R1012		0.028	(0.062)
I/O module, 24 V DC digital input						
	Extension module for I/O	DX111-FBP.0	1SAJ611000R0101	1	0.220	(0.485)
	Extension module for I/O 24 VDC	DX122-FBP.0	1SAJ622000R0101	1	0.220	(0.485)

PSTX - The advanced range

Technical data

Technical data		**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 ºC, (-13...+140 F) [2]	
	During storage	-40...+70 ºC, (-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	
	Rated operational current I_e at		
	AC-15 (U_e=250 V)	1.5 A	
Analog output	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 ºC, (-13...+140 F)	
	During storage	-40...+70 ºC, (-40...+158 F)	
	Degree of protection	IP66 (Type 1, 4X, 12)	
Start and stop functions	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	
	Dynamic brake	Provides a braking force to decrease stop time	
Fieldbus connection	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 ºC (104 F) up to max. 60 C (140 F) reduce the rated current with 0,8% per ºC (0,44% per F).
[3] When used at high alitudes, 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

Technical data		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 temerature control with external PTC sensor
	PT-100 connection	User defined temerature 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 externa 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
	Hight 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 ± 20%
	Switch on resistance	1200 ohm ± 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 unathorized 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 efter 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, 1SFC132081M0201 available on:
new.abb.com/ca/electrical-distribution-control-and-power-solutions/softstarters

PSTX - The advanced range

Technical data

Fuse ratings and power losses

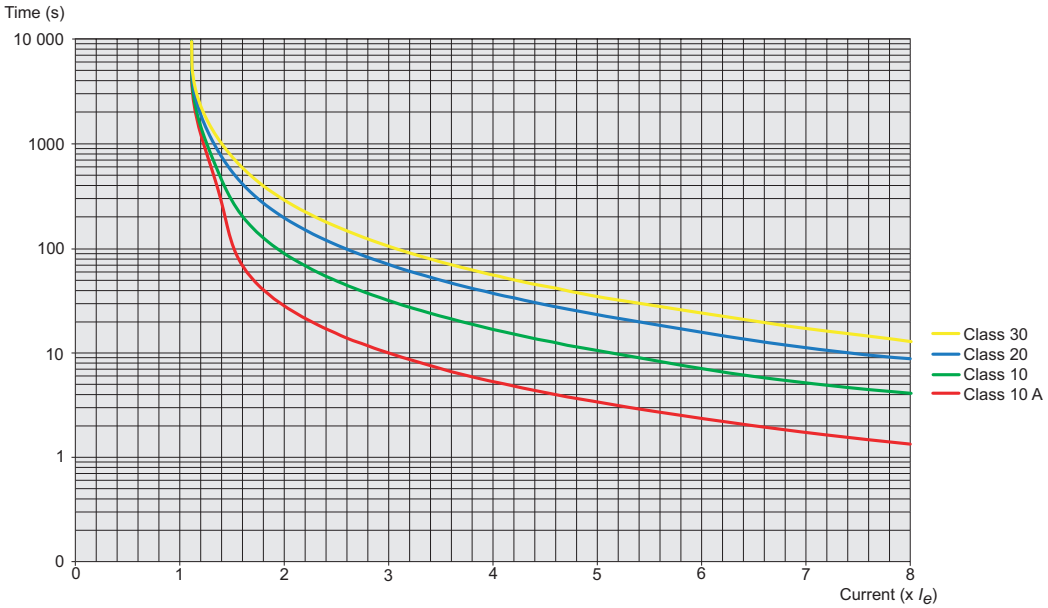
For softstarter	Current range	Max power loss at rated I_e	Max fuse raiting - main circuit [1) 2)] Bussmann fuses, DIN43 620 (Knife)			Power requirements supply circuitHolding (VA) /Pull-in (VA)
Type	A	W	A	Type	Size	
PSTX30	9.0...30.0	0.8	100	170M1567	000	49/51
PSTX37	11.1...37.0	1.2	125	170M1568	000	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		-

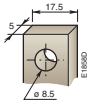
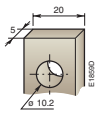
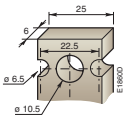
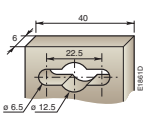
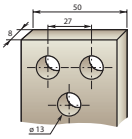
Tripping curves for the integrated electronic overload protection. All units have an integrated electronic overload protection that can be set to four different tripping classes. Below you find a curve for each tripping class in cold state. These tripping curves are valid for PSTX.



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
								
	**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 mm²		0.75...2.5 mm² (19...14 AWG)					
	Cu cable - Stranded 2 x mm²		0.75...1.5 mm² (19...16 AWG)					
	Tightening torque		0.5 Nm (4.4 in lb)					

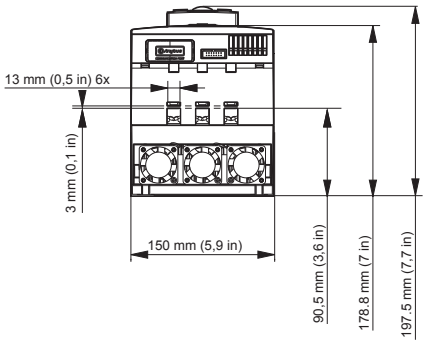
[1)] Terminal shrouds 1SFN125406R1000 must be used.
[2)] Terminal shrouds 1SFN125406R1000 can be used.

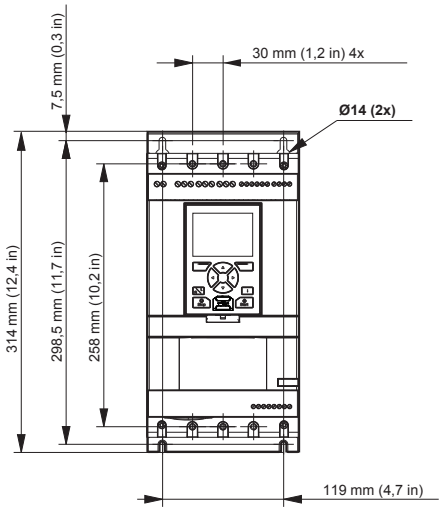
PSTX - The advanced range

Dimensions

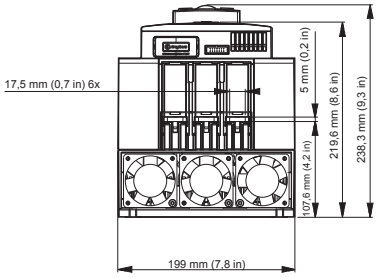
Main dimensions mm, inches

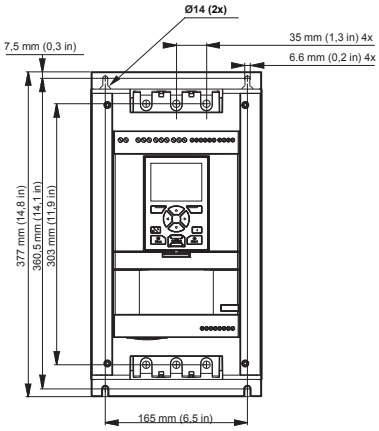
PSTX30 ... PSTX105



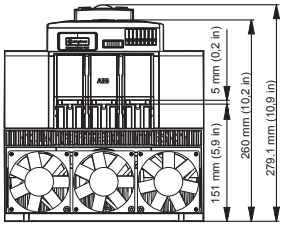


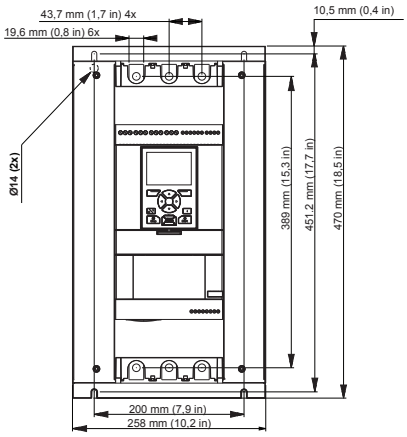
PSTX142 ... PSTX170



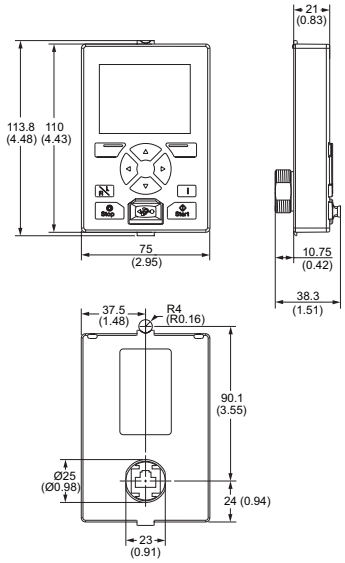


PSTX210 ... PSTX370





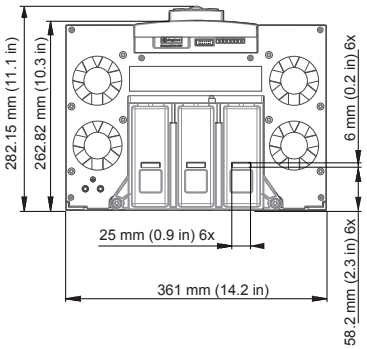
PSTX detachable keypad

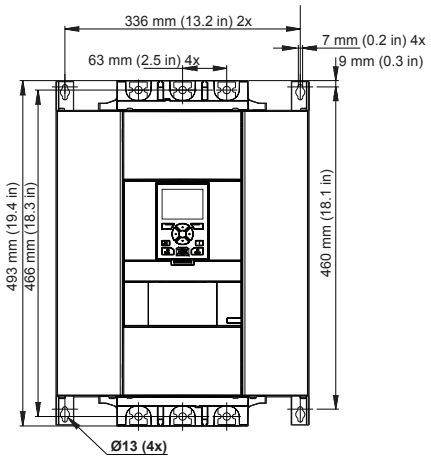


PSTX - The advanced range
Dimensions

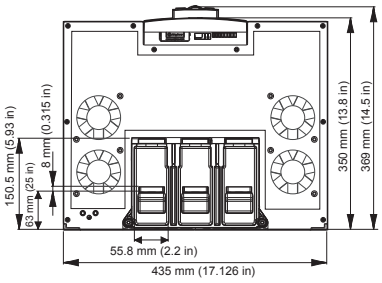
Main dimensions mm, inches

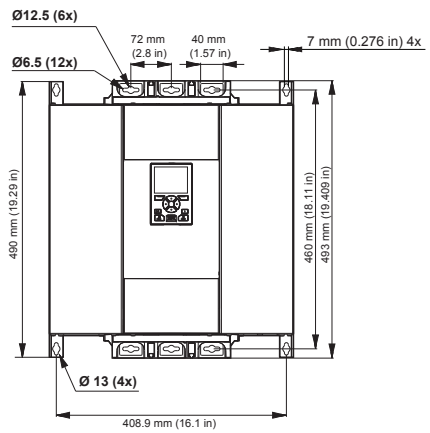
PSTX470 ... PSTX570



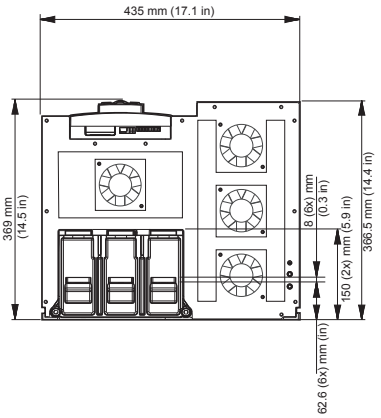


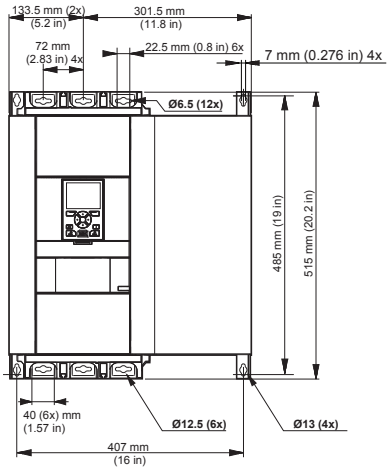
PSTX720 ... PSTX840



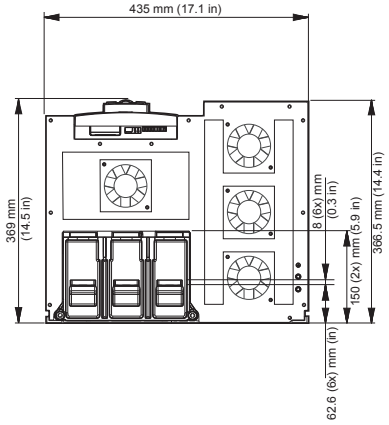


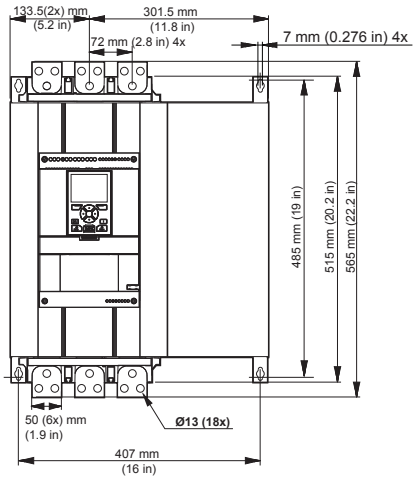
PSTX1050





PSTX1250

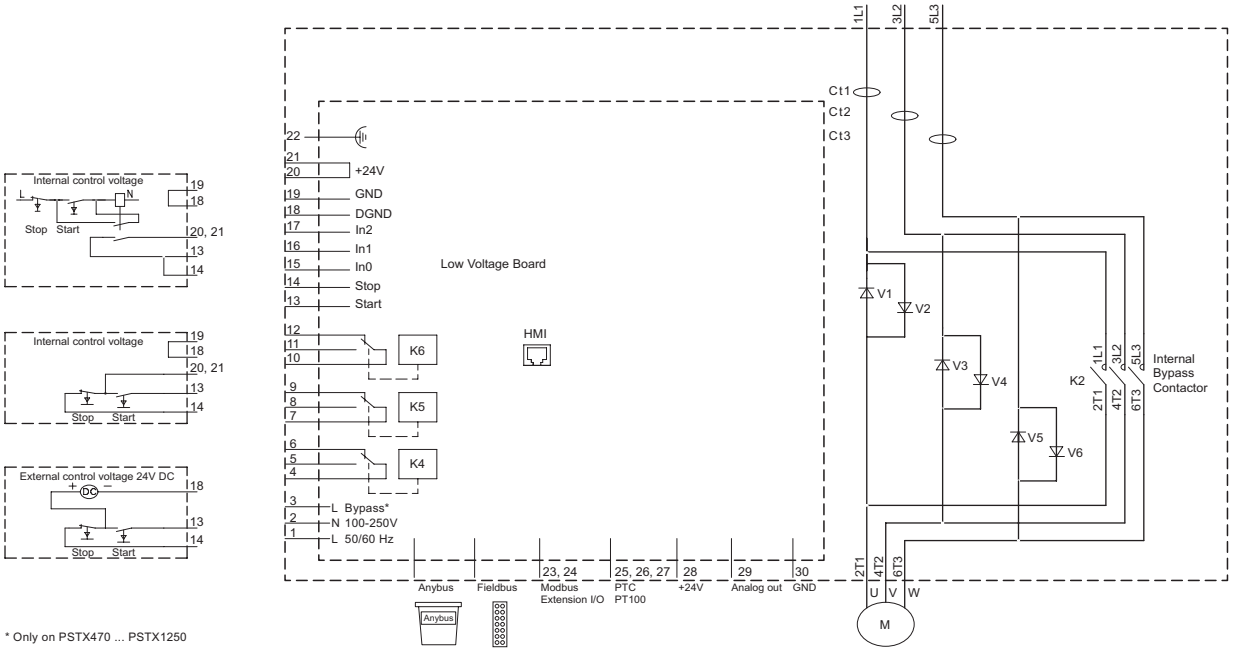




PSTX - The advanced range
Cicuit diagrams

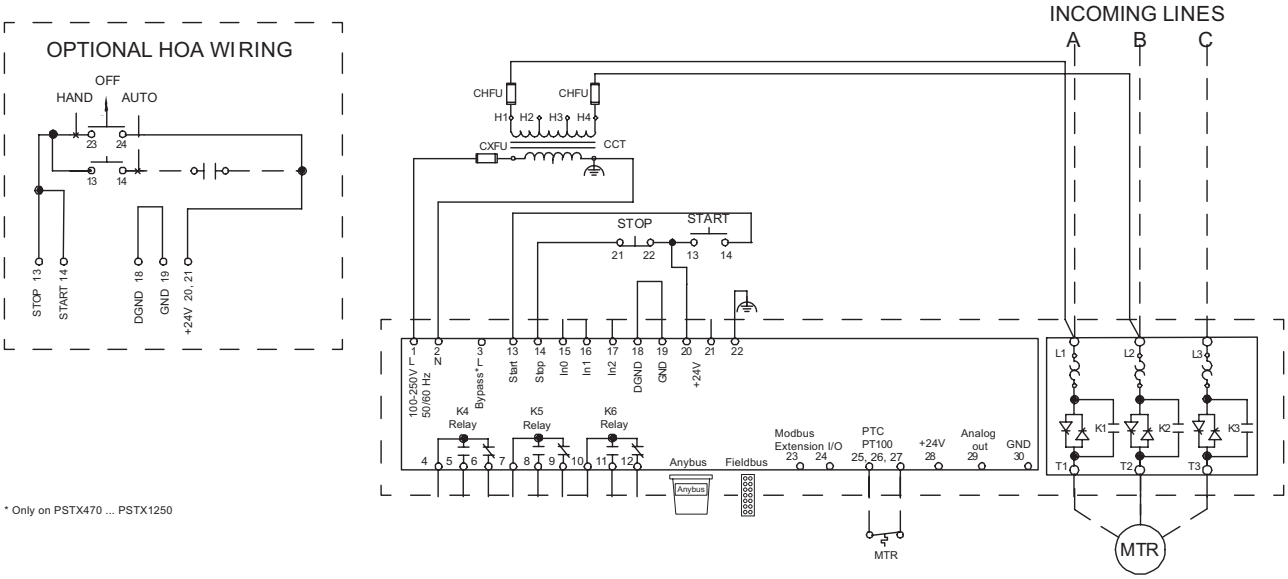
CAUTION
Terminal 22 ⏚ is a function earth, it is not a protective earth. It shall be connected to the mounting plate.

PSTX30 ... PSTX1250
IEC circuit diagram



* Only on PSTX470 ... PSTX1250

UL circuit diagram



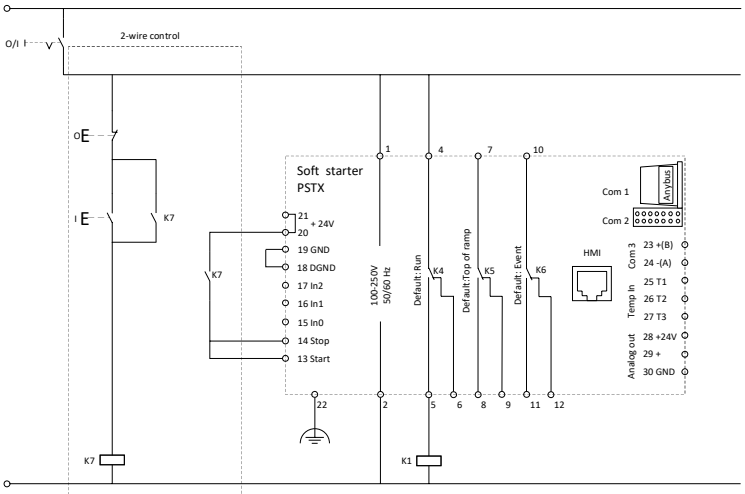
* Only on PSTX470 ... PSTX1250

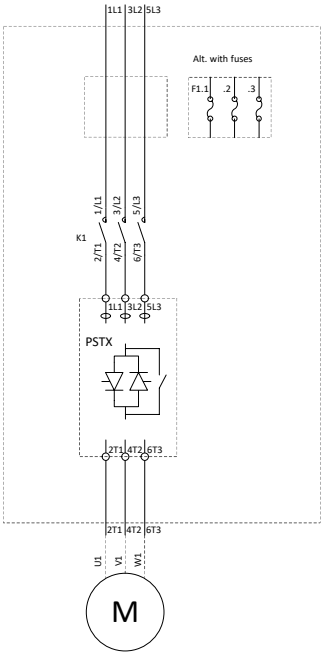
For more circuit diagrams see new.abb.com/ca/electrical-distribution-control-and-power-solutions/softstarters

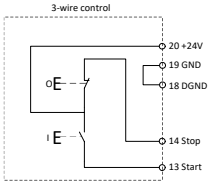
PSTX - The advanced range

Cicuit diagrams

PSTX30 ... PSTX1250
In-line connected with line contactor and fuses



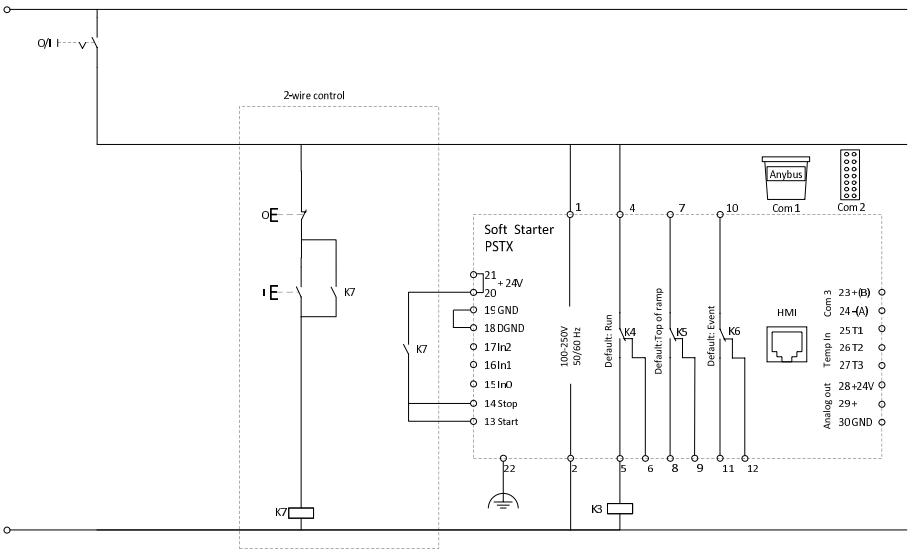


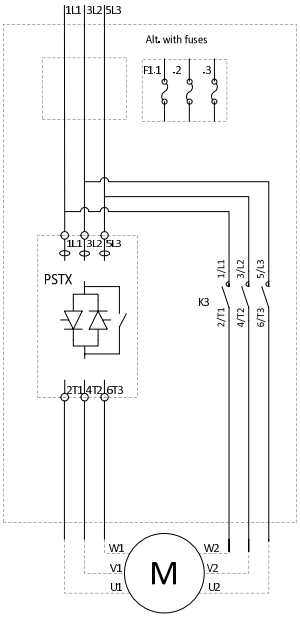


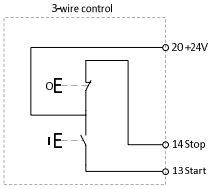
Coil consumption for main contactors.
Pull-in max 15A
Holding max 1.5A

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.

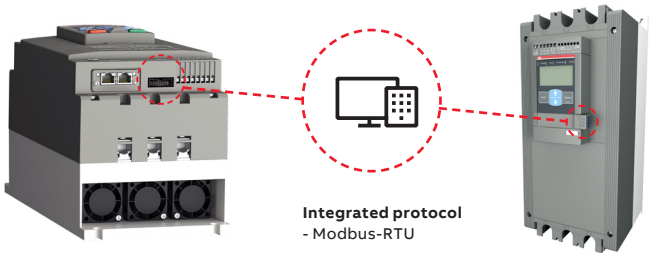


Fieldbus communication
For PSTX and PSE

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.

Built-in Modbus-RTU for PSTX and PSE

- Built-in Modbus RTU communication interface
- Easy to install using the Modbus RTU adaptor which is included with the Softstarter
- Through this communication interface it is possible to get full control and status information of the Softstarter as well as reading- and writing parameters

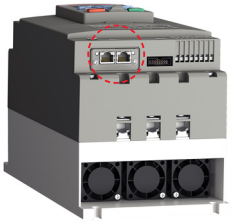


Integrated protocol
- Modbus-RTU

Anybus connection for PSTX

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

Available communication protocols for PSTX	
Communication	**PSTX**
Modbus RTU	●
Profibus DP	●
DeviceNet	●
Modbus TCP	●
Ethernet/IP	●
BACnet IP	●
BACnet MS/TP	●
EtherCAT	●





Profibus DP-V1
Modbus RTU



DeviceNet
BACnet MS/TP



EtherNet/IP
Modbus/TCP
Profinet
BACnet IP
EthetCAT

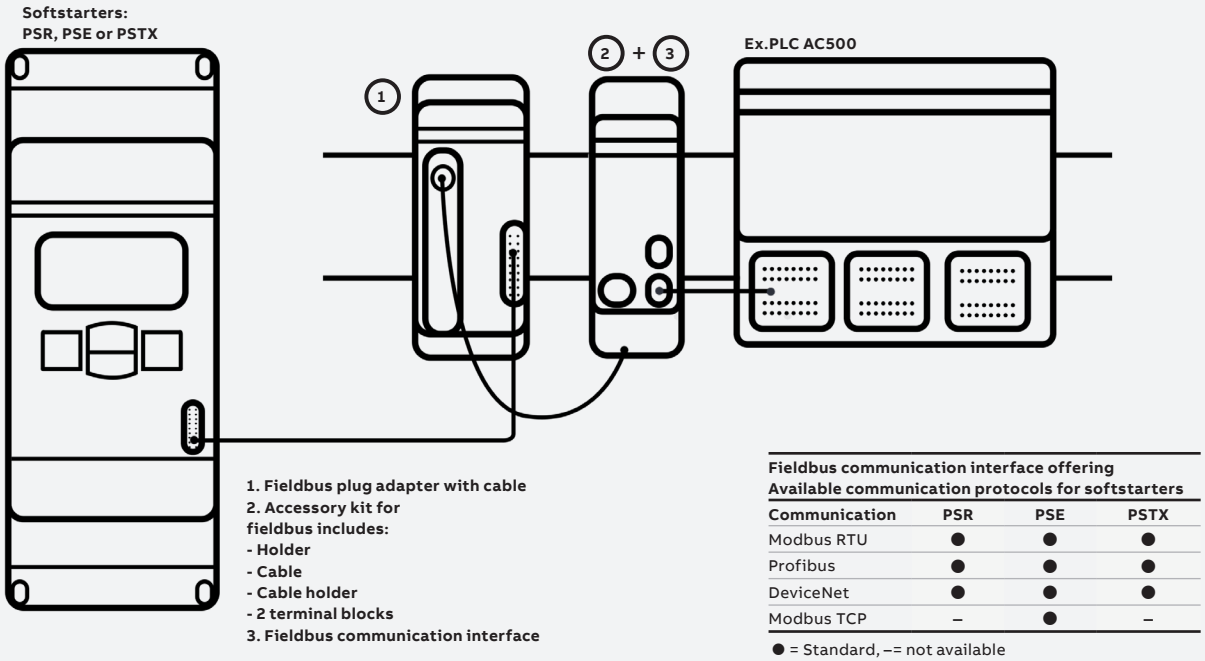
Anybus connection accesssory for communication protocol suitable for PSTX30 ...PSTX1250					
	Type	**Order code**	**Pkg qty**	**Weight pkg/1pce**	
				kg	**(lb)**
Profibus	AB-PROFIBUS-1	1SFA899300R1001	1	0.031	(0.683)
DeviceNet	AB-DEVICENET-1	1SFA899300R1002	1	0.042	(0.093)
Modbus-RTU	AB-MODBUS-RTU-1	1SFA899300R1003	1	0.042	(0.093)
BACnet IP	AB- BACNET-IP-2	1SFA899300R1004	1	0.028	(0.062)
EtherNet/IP (2-port)	AB-ETHERNET-IP-2	1SFA899300R1006	1	0.028	(0.062)
Modbus/TCP (2-port)	AB-MODBUS-TCP-2	1SFA899300R1008	1	0.028	(0.062)
Profinet (2-port)	AB-PROFINET-IO-2	1SFA899300R1010	1	0.028	(0.062)
BACnet MS/TP	AB-BACNET-MSTP-1	1SFA899300R1011	1	0.042	(0.093)
EtherCAT	AB-ETHERCAT-IP-2	1SFA899300R1012	1	0.028	(0.062)

Fieldbus communication interface offering

- See page 64

Fieldbus communication
For PSR, PSE and PSTX

Fieldbus communication interface offering



1. Fieldbus plug adapter with cable
2. Accessory kit for fieldbus includes:
- Holder
- Cable
- Cable holder
- 2 terminal blocks
3. Fieldbus communication interface

Fieldbus communication interface offering
Available communication protocols for softstarters

Communication	PSR	PSE	PSTX
Modbus RTU	●	●	●
Profibus	●	●	●
DeviceNet	●	●	●
Modbus TCP	–	●	–

● = Standard, –= not available

(1)

Fieldbus plug adapter with cable

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

(2)

Fieldbus plug kit for mounting fieldbus plug adapter together with fieldbus plugs

	Accessory kit for fieldbus plug adapter and fieldbus plugs. Includes: Holder, cable, cable holder and 2 terminal blocks	PS-FBPK	1SFA899320R1002	1	0.150	(0.331)

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

	Description	Type	Order code	Pkg qty	Weight pkg/1 pce kg	(lb)
Modbus-RTU						
	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)
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)
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)
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)



The Enclosed Solution combines our PSTX Softstarter lineup with the proper electrical and environmental protections that are needed in the industry, creating easy integration into various different applications.

Enclosed Softstarter

68 Introduction

69 Overview

70 Ordering details-Standard

71 Ordering details-Full External ByPass

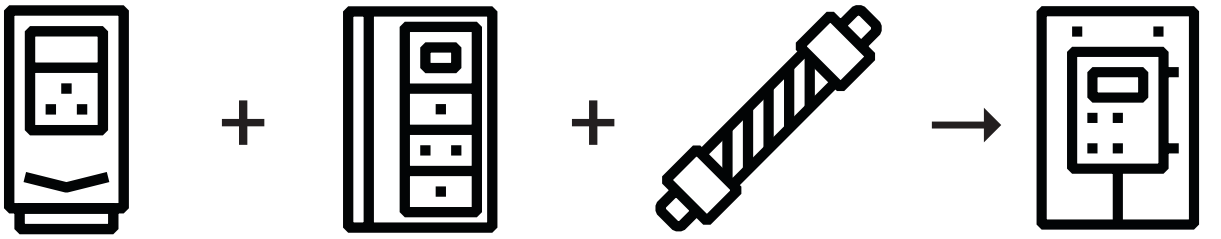
72 Typical Enclosure Dimensions

73 Actual Enclosure Dimensions

74 Typical Circuit Diagram - Standard

75 Typical Circuit Diagram - Full External ByPass

Enclosed Softstarter
Introduction



SOFTSTARTER BASE UNIT
- PSTX

CERTIFIED ENCLOSURE
- NEMA 4

ELECTRICAL PROTECTION
- Fused Disconnect
- Circuit Breaker

ENCLOSED SOLUTION

SECURE MOTOR
Reliability

COMPLETE INSTALLATION PROTECTION
The Enclosed Softstarters combine efficient built in motor protection with industry tested branch protection and environment protection.

CHOICE OF ELECTRICAL PROTECTION
Multiple available types of protections, from Fused Disconnects to Molded case Circuit Brakers fitting your short circuit coordination needs.

IMPROVE INSTALLATION
Efficiency

TURN KEY SOLUTION
Quick and easy installation with all the parts pre-assembled inside a NEMA rated cabinet.

DOOR MOUNTED KEYPAD
A user-friendly and clear display saves you time and resources during both setup and operation. The keypad comes mounted on the cabinet for all Enclosed Softstarters

INCREASE APPLICATION
Productivity

AVOIDING DOWN TIME
With the optional Emergency Bypass never lose time on a critical application when experiencing equipment, keep the motor runing until the scheduled maintenance time.

CUSTOMER ENGINEERED SOLUTION
It is possible to get an Engineered Enclosed Softstarter custom made to your application for needs that go beyond the scope of this catalogue.

PSTX, softstarters, enclosed
Overview

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

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.

It 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.

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

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.

Main benefits
- Secure motor reliability
- Improve installation efficiency
- Increase application productivity.

Main features
- Three-phase controlled
- Operational voltage: 208 to 600 V AC
- Rated operational current: 30…1250 A
- Coated circuit boards
- Torque control for excellent control of pumps
- Integrated Control Transformer

Standard equipment package additional features
- Circuit Breaker or Fused Disconnect
- Door Mounted Keypad
- Start Pushbutton
- Stop Pushbutton
- Hand-Off-Auto selector switch
- Power On Pilot Light
- Run Pilot Light
- Fault Pilot Light
- NEMA 4 Enclosure

Full external bypass equipment package features
- Emergency Bypass
- Normal-E-Bypass selector switch
- E- Bypass Start Pushbutton
- E-Bypass Stop Pushbutton
- E-Bypass Pilot Light
- Circuit Breaker or Fused Disconnect
- Door Mounted Keypad
- Start Pushbutton
- Stop Pushbutton
- Hand-Off-Auto selector switch
- Power On Pilot Light
- Run Pilot Light
- Fault Pilot Light
- NEMA 4 Enclosure

Enclosed PSTX

Ordering details-Standard



For proper selection, use the online softarter selection tool available by scanning the shown QR code or using this link: https://softstarter-selector.abb.com

Rated operational voltage Ue, 550/600 V , 50/60 Hz

		Standard					
		Weight(1 pce)		Weight(1 pce)		Weight(1 pce)	
Standalone type	**Fused**	**kg**	**(lb)**		**MCCB (65kA)**	**kg**	**(lb)**
PSTX30	X25-F4-60-ND	34.09	(75.00)		TBA	35.00	(77.00)
PSTX60	X50-F4-60-ND	35.00	(77.00)		TBA	35.00	(77.00)
PSTX72	X60-F4-60-ND	35.00	(77.00)		TBA	35.00	(77.00)
PSTX85	X75-F4-60-ND	36.36	(80.00)		TBA	35.00	(77.00)
PSTX105	X100-F4-60-ND	36.36	(80.00)		TBA	35.45	(78.00)
PSTX142	X125-F4-60-ND	60.45	(133.00)		TBA	59.55	(131.00)
PSTX170	X150-F4-60-ND	64.55	(142.00)		TBA	59.55	(131.00)
PSTX210	X200-F4-60-ND	129.09	(284.00)		TBA	127.27	(280.00)
PSTX250	X250-F4-60-ND	129.09	(284.00)		TBA	127.27	(280.00)
PSTX300	X300-F4-60-ND	135.00	(297.00)		TBA	132.27	(291.00)
PSTX370	X350-F4-60-ND	139.09	(306.00)		TBA	136.36	(300.00)
PSTX470	X500-F4-60-ND	153.18	(337.00)		TBA	148.64	(327.00)
PSTX570	X600-F4-60-ND	273.18	(601.00)		TBA	273.18	(601.00)
PSTX720	X700-F4-60-ND	289.55	(637.00)		TBA	350.00	(770.00)
PSTX840	X800-F4-60-ND	350.00	(770.00)		TBA	350.00	(770.00)

Rated operational voltage Ue, 440/480 V , 50/60 Hz

		Standard					
		Weight(1 pce)		Weight(1 pce)		Weight(1 pce)	
Standalone type	**Fused**	**kg**	**(lb)**		**MCCB (65kA)**	**kg**	**(lb)**
PSTX30	-			-	X20-B4-48-ND	35.00	(77.00)
PSTX72	-			-	X50-B4-48-ND	35.00	(77.00)
PSTX105	-			-	X75-B4-48-ND	35.45	(78.00)
PSTX142	-			-	X100-B4-48-ND	59.55	(131.00)
PSTX170	-			-	X125-B4-48-ND	59.55	(131.00)
PSTX210	-			-	X150-B4-48-ND	127.27	(280.00)
PSTX250	-			-	X200-B4-48-ND	127.27	(280.00)
PSTX300	-			-	X250-B4-48-ND	132.27	(291.00)
PSTX370	-			-	X300-B4-48-ND	136.36	(300.00)
PSTX470	-			-	X400-B4-48-ND	148.64	(327.00)
PSTX570	-			-	X500-B4-48-ND	273.18	(601.00)
PSTX720	-			-	X600-B4-48-ND	350.00	(770.00)
PSTX840	-			-	X700-B4-48-ND	350.00	(770.00)
PSTX1050	-			-	TBA		
PSTX1250	-			-	TBA		

Enclosed PSTX

Ordering details-Full External ByPass



For proper selection, use the online softarter selection tool available by scanning the shown QR code or using this link: https://softstarter-selector.abb.com

Rated operational voltage Ue, 550/600 V , 50/60 Hz

		Full External ByPass			
		Weight(1 pce)		Weight(1 pce)	
Standalone type	**Fused**	**kg**	**(lb)**	**MCCB (65kA)**	**kg**	**(lb)**
PSTX30	TBA	39.55	(87.00)	TBA	39.55	(87.00)
PSTX60	TBA	40.00	(88.00)	TBA	40.00	(88.00)
PSTX72	TBA	40.00	(88.00)	TBA	40.00	(88.00)
PSTX85	TBA	41.36	(91.00)	TBA	40.00	(88.00)
PSTX105	TBA	41.36	(91.00)	TBA	41.36	(91.00)
PSTX142	TBA	64.09	(141.00)	TBA	64.09	(141.00)
PSTX170	TBA	65.00	(143.00)	TBA	65.00	(143.00)
PSTX210	TBA	130.00	(286.00)	TBA	129.09	(284.00)
PSTX250	TBA	130.00	(286.00)	TBA	129.09	(284.00)
PSTX300	TBA	140.91	(310.00)	TBA	138.18	(304.00)
PSTX370	TBA	145.00	(319.00)	TBA	142.27	(313.00)
PSTX470	TBA	275.91	(607.00)	TBA	273.18	(601.00)
PSTX570	TBA	280.00	(616.00)	TBA	280.91	(618.00)
PSTX720	TBA	323.18	(711.00)	TBA	309.55	(681.00)

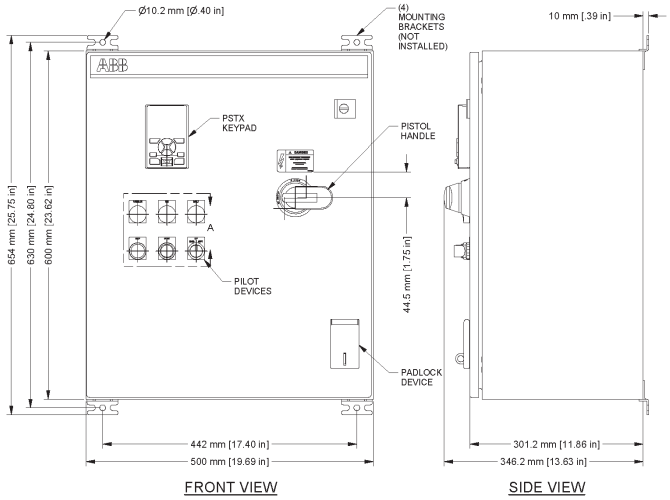
Rated operational voltage Ue, 440/480 V , 50/60 Hz

		Full External ByPass			
		Weight(1 pce)		Weight(1 pce)	
Standalone type	**Fused**	**kg**	**(lb)**	**MCCB (65kA)**	**kg**	**(lb)**
PSTX85	-		-	X50-B4-48-XD	40.00	(88.00)
PSTX142	-		-	X75-B4-48-XD	64.09	(141.00)
PSTX170	-		-	X100-B4-48-XD	65.00	(143.00)
PSTX210	-		-	X125-B4-48-XD	129.09	(284.00)
PSTX250	-		-	X150-B4-48-XD	129.09	(284.00)
PSTX300	-		-	X200-B4-48-XD	138.18	(304.00)
PSTX370	-		-	X250-B4-48-XD	142.27	(313.00)
PSTX470	-		-	X300-B4-48-XD	273.18	(601.00)
PSTX570	-		-	X400-B4-48-XD	280.91	(618.00)
PSTX720	-		-	X500-B4-48-XD	309.55	(681.00)
PSTX840	-		-	X600-B4-48-XD	TBA	
PSTX1050	-		-	TBA		
PSTX1250	-		-	TBA		

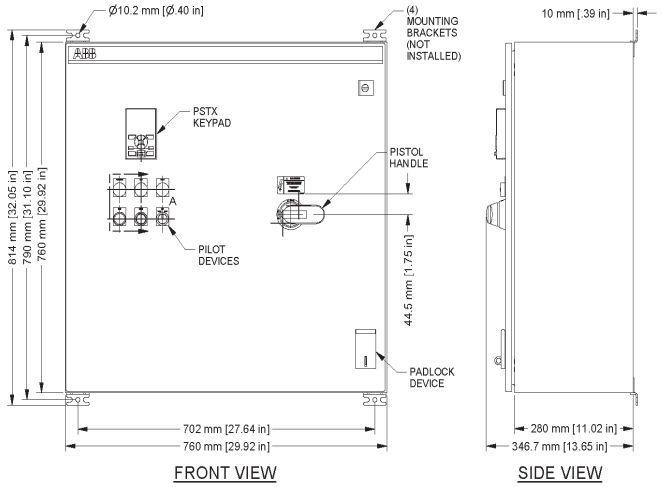
Enclosed PSTX

Typical Enclosure Dimensions

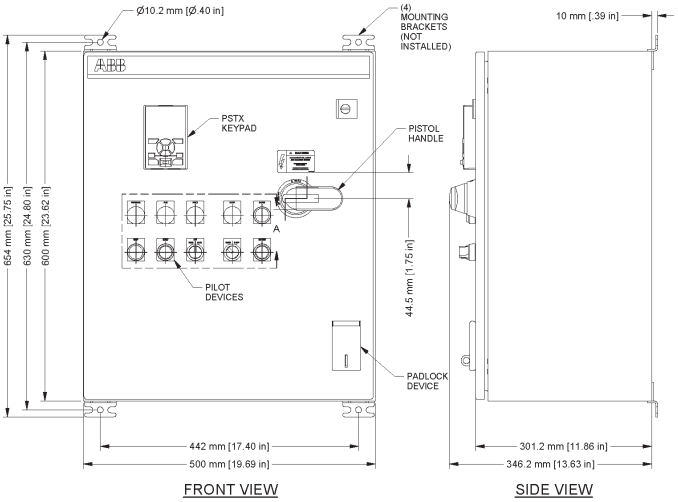
X25-F4-60-ND...X100-F4-60-ND



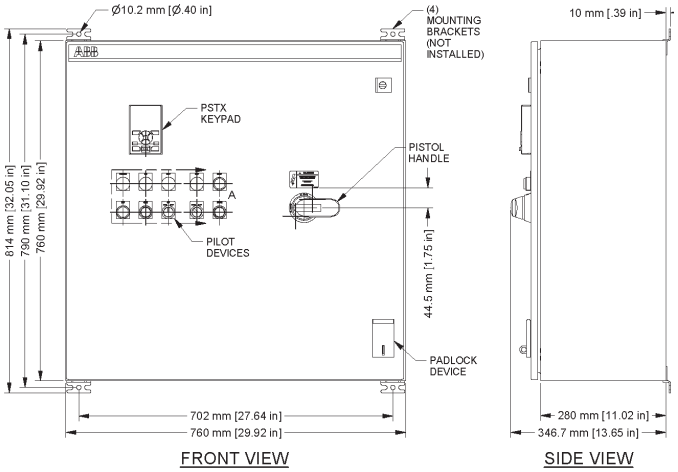
X125-F4-60-ND...X150-F4-60-ND



X50-B4-48-XD



X75-B4-48-XD...X100-B4-48-XD



Enclosed PSTX

Actual Enclosure Dimensions

Type Code	H(in)	W(in)	D(in)	Type Code	H(in)	W(in)	D(in)	Type Code	H(in)	W(in)	D(in)
X25-F4-60-ND	24	20	12								
X50-F4-60-ND	24	20	12								
X60-F4-60-ND	24	20	12								
X75-F4-60-ND	24	20	12								
X100-F4-60-ND	24	20	12								
X125-F4-60-ND	30	30	12								
X150-F4-60-ND	30	30	12								
X200-F4-60-ND	48	36	16								
X250-F4-60-ND	48	36	16								
X300-F4-60-ND	48	36	16								
X350-F4-60-ND	48	36	16								
X500-F4-60-ND	48	36	16								
X600-F4-60-ND	72	36	24								
X700-F4-60-ND	90	36	24								
X800-F4-60-ND	90	36	24								

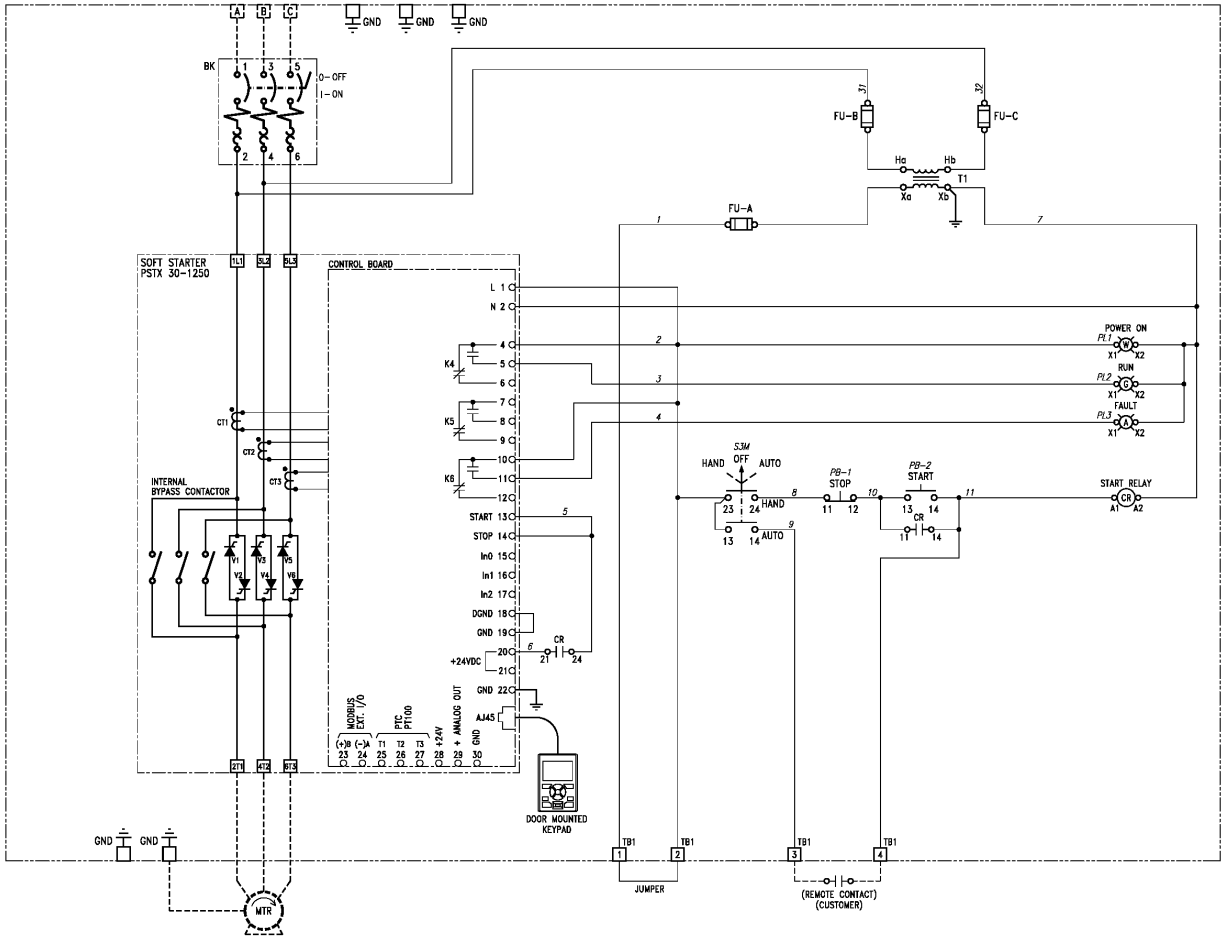
Type Code	H(in)	W(in)	D(in)
X20-B4-48-ND	24	20	12
X50-B4-48-ND	24	20	12
X75-B4-48-ND	24	20	12
X100-B4-48-ND	30	30	12
X125-B4-48-ND	30	30	12
X150-B4-48-ND	48	36	16
X200-B4-48-ND	48	36	16
X250-B4-48-ND	48	36	16
X300-B4-48-ND	48	36	16
X400-B4-48-ND	48	36	16
X500-B4-48-ND	72	36	24
X600-B4-48-ND	90	36	24
X700-B4-48-ND	90	36	24

Type Code	H(in)	W(in)	D(in)	Type Code	H(in)	W(in)	D(in)	Type Code	H(in)	W(in)	D(in)

Type Code	H(in)	W(in)	D(in)
X50-B4-48-XD	24	20	12
X75-B4-48-XD	30	30	12
X100-B4-48-XD	48	36	16
X125-B4-48-XD	48	36	16
X150-B4-48-XD	48	36	16
X200-B4-48-XD	48	36	16
X250-B4-48-XD	72	36	24
X300-B4-48-XD	72	36	24
X400-B4-48-XD	72	36	24
X500-B4-48-XD	85	72	24
X600-B4-48-XD			

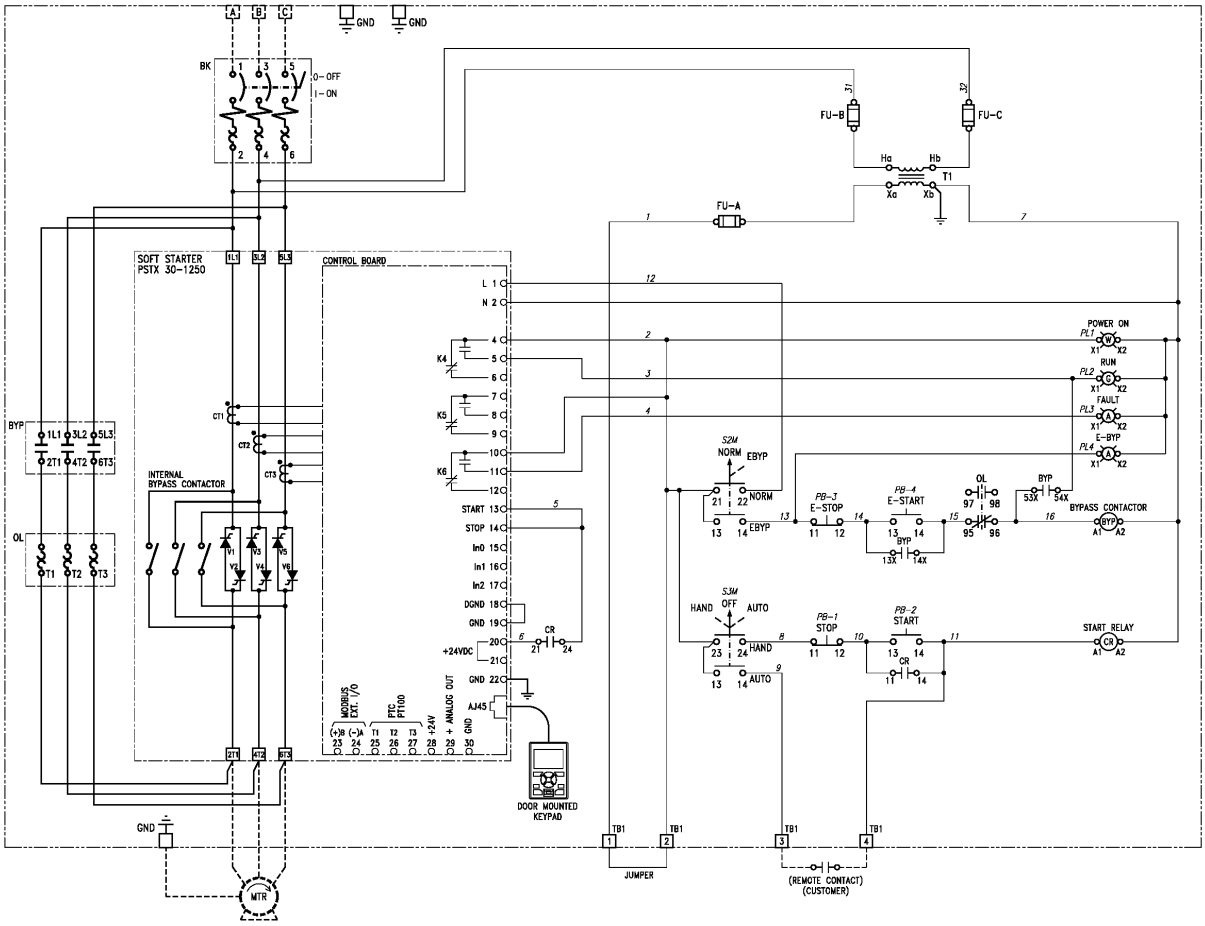
Enclosed PSTX

Typical Circuit Diagram - Standard



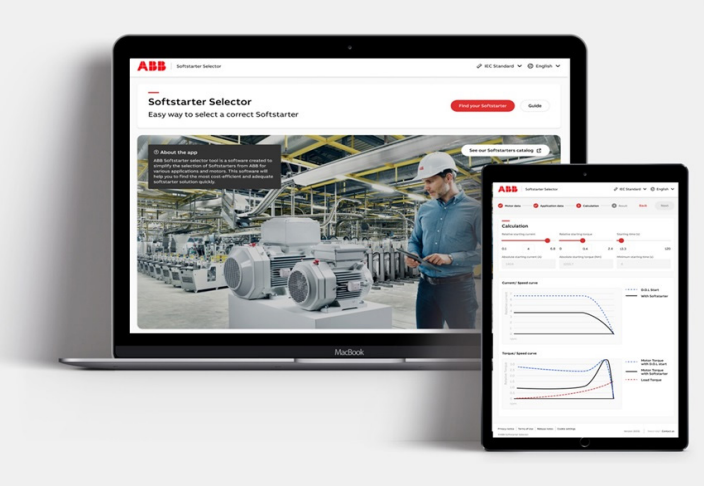
Enclosed PSTX

Typical Circuit Diagram - Full External ByPass



Marketing material 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

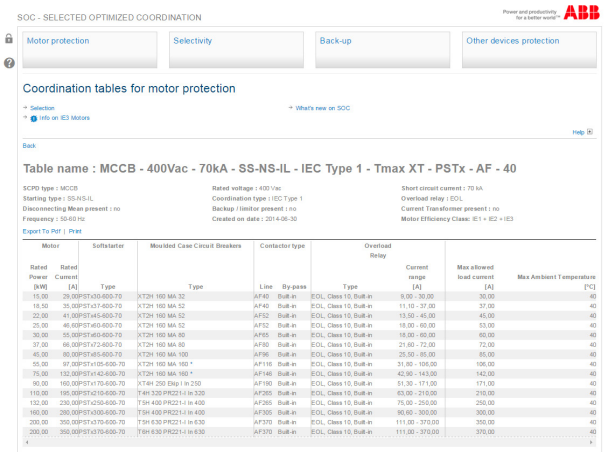
Fast and easy selection of softstarter on any device.

http://softstarter-selector.abb.com/

Coordination tables

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

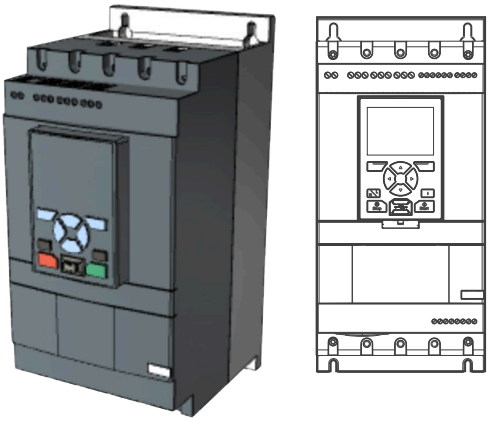
applications.it.abb.com/SOC

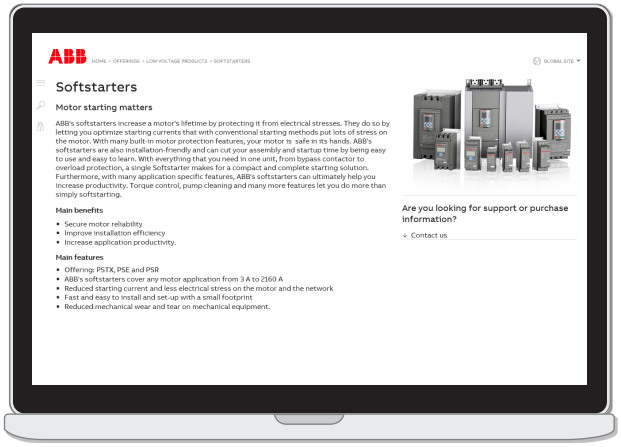


Download 2D and 3D drawings in any format

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

http://new.abb.com/ca/electrical-distribution-control-and-power-solutions/softstarters

SoftstarterCare™ – Service Engineer Tool

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

http://new.abb.com/low-voltage/products/softstarters-new/software-and-tools



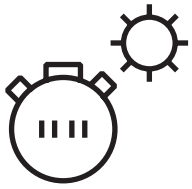
Services to match your needs

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:

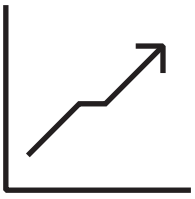
- Why should my drive and softstarter be serviced?
- What would my optimal service options be?

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

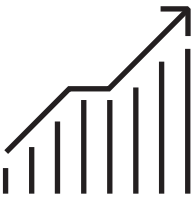


Life cycle management

Is performance most critical to your operation?

Get optimal performance out of your ma-chinery and systems.

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



Performance improvement

ABB - Campus Montréal
800 Hymus Boulevard
St-Laurent, Qc Canada
H4S 0B5
abb.com

Technical Support:
ep.support@ca.abb.com

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

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