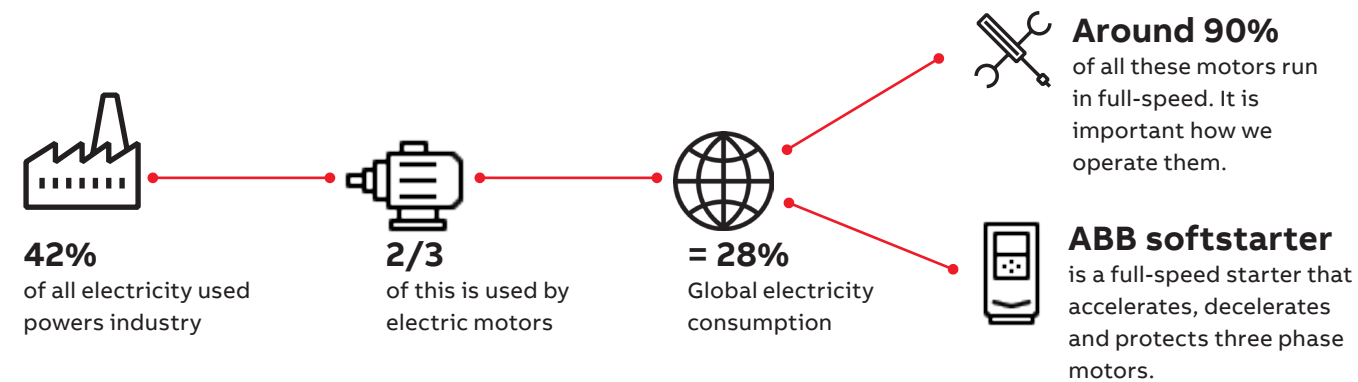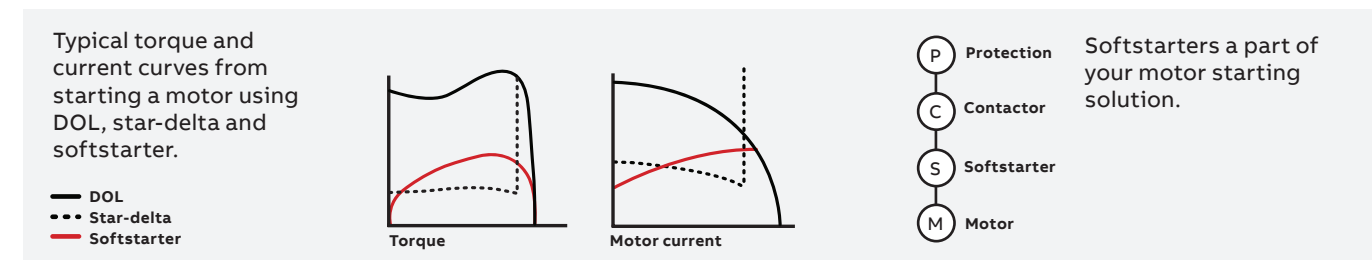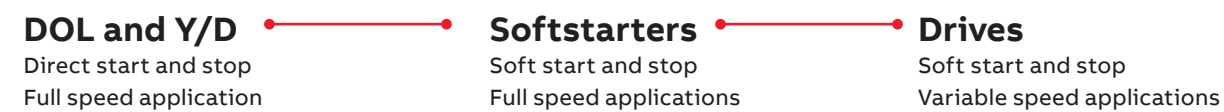ABB

ABB

ABB softstarters
A part of your motor starting solution

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.

Why motor starting matters

42%
of all electricity used powers industry

2/3
of this is used by electric motors

= 28%
Global electricity consumption

Around 90%
of all these motors run in full-speed. It is important how we operate them.

ABB softstarter
is a full-speed starter that accelerates, decelerates and protects three phase motors.

Motor starting solutions

DOL and Y/D
Direct start and stop
Full speed application

Softstarters
Soft start and stop
Full speed applications

Drives
Soft start and stop
Variable speed applications

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

— DOL
---- Star-delta
— Softstarter

Torque

Motor current

P Protection
C Contactor
S Softstarter
M Motor

Softstarters a part of your motor starting solution.

Common applications for Softstarters

Pump
Eliminating water hammering with torque control
The ABB softstarter feature torque control stop eliminates water hammering and prolongs the lifetime of the system, while reducing pump downtime.

Fan
Soft starting adjusted to application
It is possible to adjust the settings to fit almost any starting condition, from unloaded to fully loaded.

Compressor
Full control of current with current limit
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.

Conveyor belt
Avoid overheating with overload protection
ABB's overload protection feature shuts down the motor in case of overload, avoiding overheating.

Softstarters
Type PSR, PSE and PSTX

Softstarter panorama type PSR, PSE and PSTX, 1SFC132015B0201 rev D

ABB softstarters
Overview

PSTX SOFTSTARTER
HMI

Key features
- Customizable display for important status information
- Application assistant for fast and easy set-up
- IP66 (1, 4x outdoor, 12) protection against water and dust
- Easy to use with the large back-lit graphical display
- Detachable HMI for easy panel door mounting
- Set-up and firmware update the PSTX with USB connection - no need of supply or main voltage

THE ADVANCED RANGE
PSTX

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

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

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

THE EFFICIENT RANGE
PSE

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

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

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

THE COMPACT RANGE
PSR

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

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

Certifications and approvals:
- CE, cULus, CCC, EAC, ANCE, C-tick, PRS

SOFTSTARTER
Toolbox

PC tools
- SoftstartersCare™ – Configuration tool Link
- Prosoft – Softstarters selection tool Link
- PSTX Simulator Link

Documents
- Softstarter catalog PSR, PSE and PSTX Link

Case study
- Aspro China Link
- Granutech USA Link
- Marine Technology Australia Link
- Wuxi Xinie China Link

Web
- Softstarter web Link
- Launch page PSTX Link
- SOC - Coordination Link
- Cardenas (2D and 3D drawings) Link

Coordination
- Tables for IEC and UL Link

Softstarter values, benefits, case studies and features

SECURE MOTOR
Reliability

Increase your motor's lifetime...
With ABB's 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%

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

IMPROVE INSTALLATION
Efficiency

Reduce your installation time and panel size...
ABB's softstarters are easy to install thanks to their compact design and many built-in features.

...by having everything that you need built in.
Built-in bypass saves energy and space while reducing heat generation: a complete motor starting solution in one unit — designed and verified by ABB.

Xylem - South Africa ABB's 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%

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	O	●
Event log	–	O	●
Multiple languages	–	–	17
Electricity metering	–	–	●

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

INCREASE APPLICATION
Productivity

Reduce the number of production stops...
ABB's 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
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

Normal start overview: PSR, PSE and PSTX

				A				B		C			D		
PSR	PSR3	PSR6	PSR9	PSR12	PSR16	PSR25	PSR30	PSR37	PSR45	PSR60	PSR72	PSR85	PSR105		

			A			B		C		
PSE	PSE18	PSE25	PSE30	PSE37	PSE45	PSE60	PSE72	PSE85	PSE105	PSE142	PSE170	PSE210	PSE250	PSE300	PSE370

PSTX			A			B		C		D		E		F	
	PSTX30	PSTX37	PSTX45	PSTX60	PSTX72	PSTX85	PSTX105	PSTX142	PSTX170	PSTX210	PSTX250	PSTX300	PSTX370	PSTX470	PSTX570	PSTX720	PSTX840	PSTX1050	PSTX1250

IEC	(400 V) kW	1.5	3	4	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	132	160	200	250	315	400	450	560	710
	IEC, Max. A	3.9	6.8	9	12	16	25	30	37	45	60	72	85	105	143	171	210	250	300	370	470	570	720	840	1050	1250
UL	(440-480 V) hp	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100	125	150	200	250	300	400	500	600	700	900	1000
	UL, Max. A	3.4	6.1	9	11	15.2	24.2	28	34	46.2	59.4	68	80	104	130	169	192	248	302	361	480	590	720	840	1062	1250

Available communication protocols	PSR	PSE	PSTX
Modbus RTU	●	●	●
PROFIBUS	●	●	●
DeviceNet	●	●	●
EtherNet/IP	–	–	●
PROFINET	–	–	●
Modbus TPC	–	●	●

● = Standard, — = not available