

- 380 to 600V
- Nominal current 6 to 200A
- ST with Soft Start
- STO with Soft Start + Overload Relay
- Internal by pass relay

CD AUTOMATION

POWERED BY INNOVATION

SOFT STARTER

THE STARTER EVOLUTION



We are delivering Real Cost Benefits



www.cdautomation.com
 Soft Starter Catalog 2018
 Release n. 2

Soft Starter family STB - STO





Control Types Available

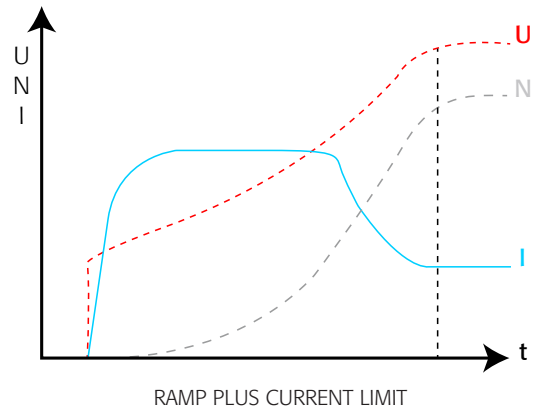
Voltage ramp (torque ramp)

Soft Starter start from a setted initial voltage, and ramp up to the nominal one in a setted time.

In addition on all family products is possible to start high friction load with kickstart that gives to the motor for 100+300 msec 80% of full voltage, without current limit.

When is started, the motor reach the full speed and remain there, up to when stopped and it can reach zero speed by inerthia or via setted ramp down.

As an option is also available the dynamic braking with an external device.



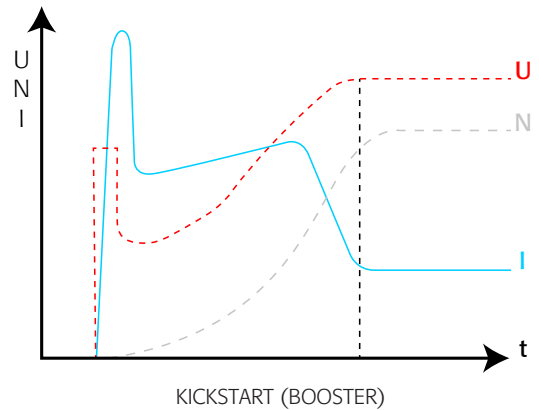
Current ramp

Soft starter start from a setted initial current and ramp up to the nominal value in a setted time. This type of control is available on STO family.

Current limit

This parameter sets the current at which to start.

This value depend on the application and must not exceed the soft starter sizing (see on next two pages).



Initial current limit

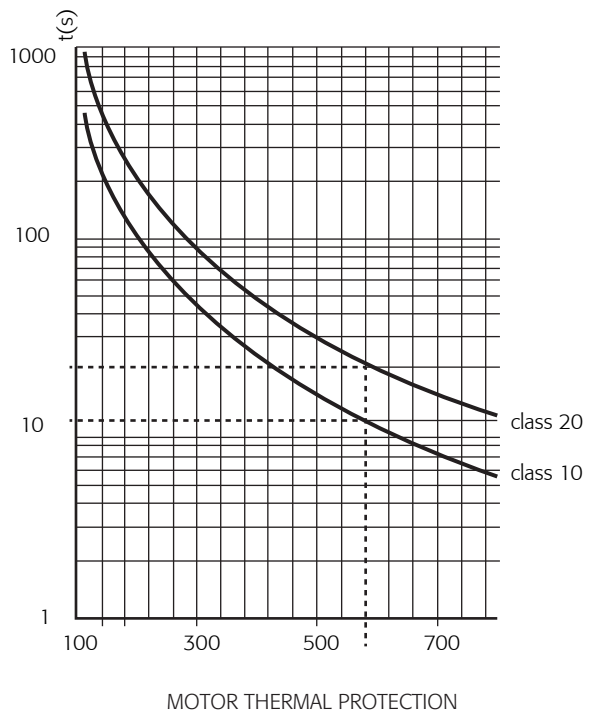
This parameter sets the initial start current for the current ramp mode.

Motor protection


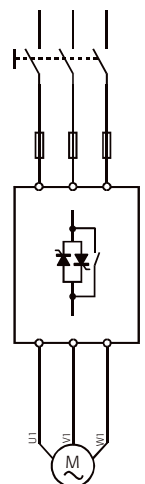
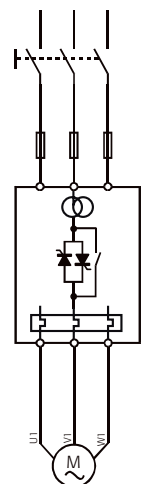
Inside STO soft starter families, has been implemented electronic motor thermal protection.

The curves are represented on right side, and basically one is for normal service, and the other one for severe service.

This is an overload relay.



Soft Starter Model

FUNCTIONALITY		STB (Basic)	STO (Overload Relay)	
				
START / STOP	Ramp up voltage	•	•	
	Ramp up current		•	
	Ramp down	•	•	
	Stop by coasting	•	•	
CONTROL MODE	Internal bypass relay up to 200A	•	•	
	Current limit facility		•	
	Torque control		•	
	Constant current control		•	
	kick start 80% 100 msec	•	•	
	kick start 80% 200 msec	•	•	
	kick start 80% 300 msec	•	•	
PROTECTION	Start time out of limit		•	
	Phase loss	• (1)	•	
	Motor overload		•	
	Phase sequence		•	
	Unbalanced current		•	
	Power circuit failure	•	•	
	Thyristor in short circuit	•	•	
	Supply frequency out of limits	•	•	
	Istantaneous peak current		•	
	Bypass overload		•	
	Overvoltage	•	•	
	Overcurrent		•	
	Undercurrent protection (pump)		•	
	Overtemperature on heatsink		•	
	Overload relay and curve selection		•	
	PTC motor termistor	•	•	
	Communication failure		•	
	COMMUNICATION	Modbus RTU Std		•
		Modbus TCP (option)		•
		Profibus DP (option)		•
Profinet (option)			•	
USB device Std			•	
Devicenet (option)			•	
SOFTWARE APPLICATIONS	Pump application	•	•	

(1) Protection active before ramp up

Main Features

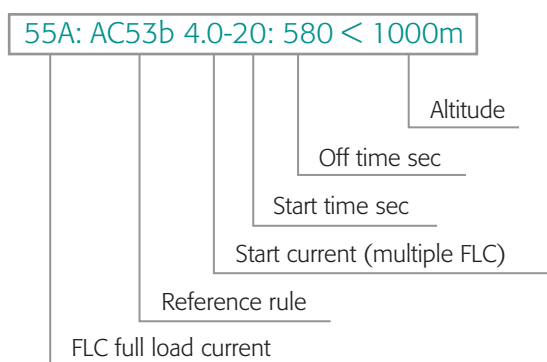
SOFT STARTERS MAIN FEATURES		STB	STO
GENERAL	Current range	6:200A	>32:200A
	3 wire motor connection	●	●
	Internal bypass St. from 6 to 200A	●	●
MAIN SUPPLY VOLTAGE	Supply voltage 3x200V; 3x440V Max (+10: -15%) ac	●	●
	Auxiliary voltage 110-240V (+10: -15%) ac (only for >32A)	●	●
	Voltage frequency 45 to 66 Hz	●	●
DIGITAL INPUTS	Start/stop optoisolated input + 24V dc start with Dip 4 off (≤32A)	●	
	Start with power up with Dip 4 on (≤32A)	●	
	Start optoisolated input + 24V dc	●	●
	Stop optoisolated input + 24V dc	●	●
	Configurable digital input 1		●
	Configurable digital input 2		●
CONTROL	Ramp up 0 to 15 sec adjustable	●	●
	Ramp down 0 to 15 sec adjustable	●	●
	Initial torque 0 to 80%	●	●
	Current limit >32A		●
	Motor full load current >32A		●
	Overload relay >32A		●
	Digital in/out >32A		●
	Phase sequence enable >32A		●
LED STATUS ALARM INDICATION	Exceeded max start time >32A		●
	Run green led slow blinking ready to start	●	●
	Run green led fast blinking ramp active	●	●
	Run green led on end of ramp	●	●
	Alarm red led off no alarm	●	●
	PW green on power supply available	●	●
COMMUNICATION	PW green on power supply not available	●	●
	Modbus RTU Std		●
	USB device Std	● (> 32A)	●
	Modbus TCP (option)		●
	Profibus DP (option)		●
	Profinet (option)		●
ENVIRONMENTAL	Devicenet (option)		●
	Protection IP20	●	●
	Current sizing as in TAB for 40°C for temperature over see derating	●	●
	Operating temperature -10 to 60°C max	●	●
	Humidity 5% to 95% relative humidity	●	●
RELAY OUTPUT	Conformal coating (option)	●	●
	2 Relay output free voltage contact (500mA, 125 Vac)	● (1)	●

(1) 1 Relay ≤32A



Soft Starter Selection

- Start from application table on the right
Example: Agitator 50A the suggested start current is 4 times FLC (full load current 50A)
- Select model from table at the bottom page
- Go on column HEAVY (4) and nominal current of your motor must be equal or less than the value (In our example is 55A)
- If selected model is STB your soft starter is STB075
- If you want to receive Soft Starter already configured follow the code below:



APPLICATION	3 In	3,5 In	4 In	4,5 In
AGITATOR			•	
ATOMIZER			•	
BANDSAW				•
BOTTLE WASHER	•			
CENTRIFUGAL PUMP		•		
CENTRIFUGE				•
CHIPPER				•
CIRCULAR SAW		•		
CONVEYOR BELT				•
CONVEYOR SCREW			•	
CRANE TRANSLATOR			•	
CRUSHER CONE		•		
CRUSHER JAW				•
CRUSHER ROTARY		•		
CRUSHER VERTICAL IMPACT		•		
DEBARKER		•		
DRYER				•
DUST COLLECTOR		•		
EDGER		•		
ELEVATOR	•			
FAN AXIAL CLAMPED		•		
FAN AXIAL UNCLAMPED				•
FAN CENTRIFUGAL CLAMPED		•		
FAN CENTRIFUGAL UNDAMPED				•
FAN HIGH PRESSURE				•
GRINDER		•		
HYDRAULIC POWER PACK		•		
LOADED PISTON COMPRESSOR				•
MILL				•
MILL BALL				•
MILL HAMMER				•
MIL ROLLER				•
MIXER				•
MONORAILS			•	
PALLETISER				•
PLANER		•		
POSITIVE DISPLACEMENT PUMP			•	
PRESS		•		
PUMPS BORE	•			
REPULPER				•
ROLLER CONVEYOR		•		
ROTARY TABLE			•	
SANDER			•	
SCREW COMPRESSOR			•	
SCREW CONVEYOR			•	
SEPARATOR				•
SHREDDER				•
SLICER	•			
SLURRY PUMP				•
TUMBLER			•	
UNLOADED PISTON COMPRESSOR			•	
HYDRAULIC PUMP		•		

SERVICE		LIGHT	MEDIUM	HEAVY	SEVERE
Start Current (Multiple of FLC*)		3	3,5	4	4,5
		AC53b 3,0 -10:350<1000m	AC53b 3,5 -15:345<1000m	AC53b 4,0 -20:340<1000m	AC53b 4,5 -30:340<1000m
MODEL		Rating at 40° C for 3xFLC	Rating at 40° C Amps	Rating at 40° C Amps	Rating at 40° C Amps
STB	006	6A	5A	4A	3A
STB	012	12A	11A	9A	7A
STB	022	22A	20A	17A	13A
STB	032	32A	29A	25A	19A
STB - STO	043	43A	40A	35A	29A
STB - STO	050	50A	44A	38A	30A
STB - STO	060	60A	55A	48A	37A
		AC53b 3,0 -6:590<1000m	AC53b 3,5 -15:585<1000m	AC53b 4,0 -20:580<1000m	AC53b 4,5 -30:570<1000m
STB - STO	075	75A	65A	55A	47A
STB - STO	100	100A	88A	75A	61A
STB - STO	140	140A	123A	107A	90A
STB - STO	170	170A	145A	122A	97A
STB - STO	200	200A	190A	160A	135A

*FLC Full load current

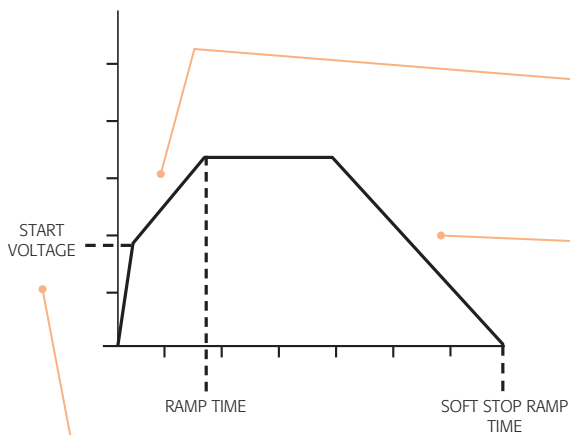
STB Soft Starter



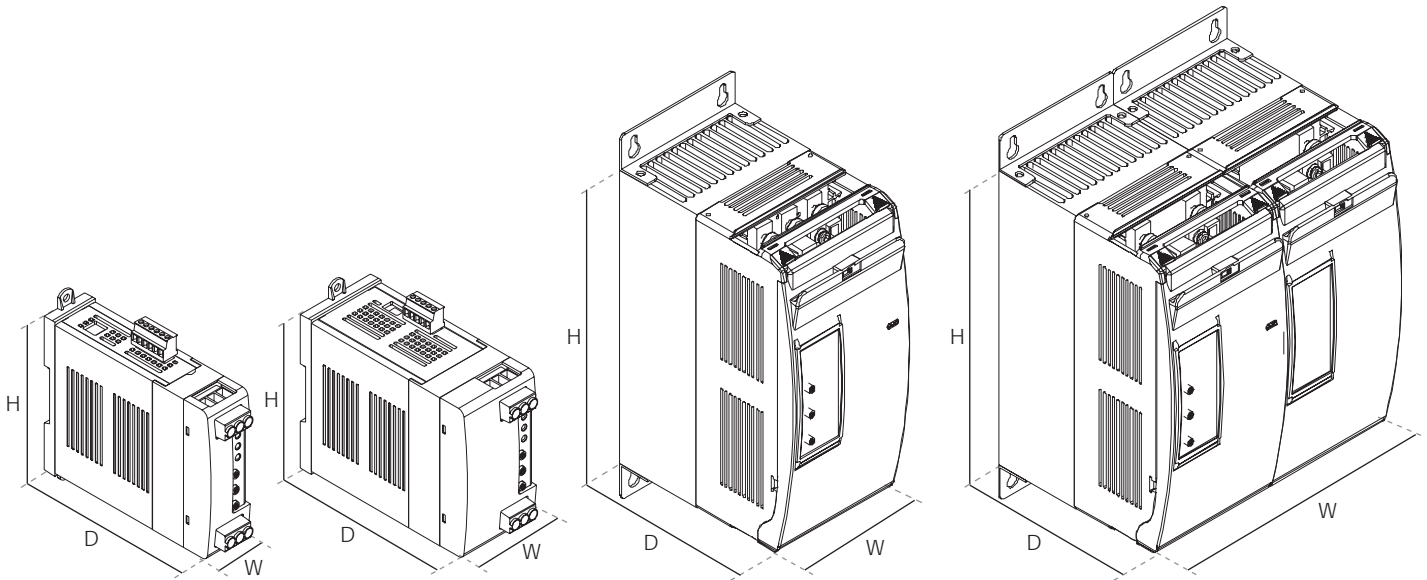
SOFT STARTER OF THIS FAMILY ARE DESIGNED TO CONTROL THREE PHASE AC MOTOR FROM 6A TO 200A NOMINAL WITH INTERNAL BYPASS CONTACTOR.

Technical Specification

- STB family has 3 adjustments:
 - Initial start voltage
 - Start ramp time
 - Soft stop ramp time
- Kickstart 100 to 300 msec can be configured by DIP switch
- DIN rail or fixing hole mounting: from 6 to 32A
- Fixing hole mounting from 42 to 200A



STB Control Panel



STB 006:012

STB 022:032

STB 043:100

STB 140:200

DIMENSIONS	
Wide	30 mm
Deep	130 mm
Height	122 mm

DIMENSIONS	
Wide	52 mm
Deep	130 mm
Height	122 mm

DIMENSIONS	
Wide	93 mm
Deep	144 mm
Height	253 mm

DIMENSIONS	
Wide	186 mm
Deep	144 mm
Height	253 mm

SOFT STARTER STB

ORDERING CODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	S	T	B	-	-	-	-	-	-	-	-	-	-	-	-	-

CURRENT	4	5	6	
description	code		note	
6 Amp full load current (FLC)	0	0	6	
12 Amp FLC	0	1	2	
22 Amp FLC	0	2	2	
32 Amp FLC	0	3	2	
43 Amp FLC	0	4	3	
50 Amp FLC	0	5	0	
60 Amp FLC	0	6	0	
75 Amp FLC	0	7	5	
100 Amp FLC	1	0	0	
140 Amp FLC	1	4	0	
170 Amp FLC	1	7	0	
200 Amp FLC	2	0	0	

MAIN SUPPLY VOLTAGE	7	
description	code	note
3x200V + 10:-15%	2	
3x440V + 10:-15%	4	

VOLTAGE SUPPLY AUX.	8	
description	code	note
No auxiliary voltage supply units<32A	0	
Auxiliary voltage 110-240V (+10: -15%) ac (just for >32A)	1	

INPUT	9	
description	code	note
Start with power up	1	
Start/Stop optoisolated + 24V	2	

OVERLOAD RELAY	10	
description	code	note
No overload relay	0	

CONTROL MODE	11	
description	code	note
Voltage control mode	V	

OPTION & FUSE	12	
description	code	note
No Fuses	0	
External fuse & fuse holder	F	

FAN VOLTAGE	13	
description	code	note
No Fan	0	

APPROVALS	14	
description	code	note
CE EMC	0	

MANUAL	15	
description	code	note
None	0	
Italian	1	
English	2	
German	3	
French	4	
Spanish	5	

VERSION	16	
description	code	note
Standard version	1	

STO Soft Starter



SIZE SS3

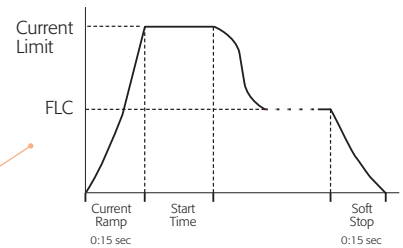


SIZE SS4

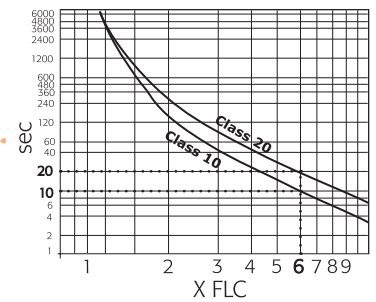
SOFT STARTERS OF THIS FAMILY ARE DESIGNED TO CONTROL THREE PHASE AC MOTOR FROM 43A TO 200A NOMINAL WITH INTERNAL BYPASS CONTACTOR.

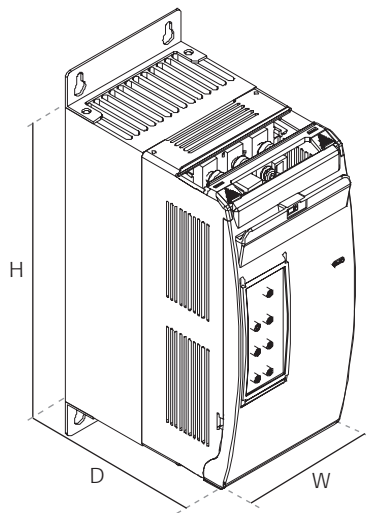
Technical Specification

- STO family rotary adjustments on front unit:
 - Initial start voltage
 - Start ramp time
 - Stop ramp time
- Kickstart 100, 200 or 300 msec can be configured by DIP switch
- Internal electronic overload relay
- Hole mounting from 42 to 200A fixing
- Modbus RTU standard
- USB device standard
- Modbus TCP option
- Profibus DP option
- Profinet option
- Devicenet option



STO Control Panel

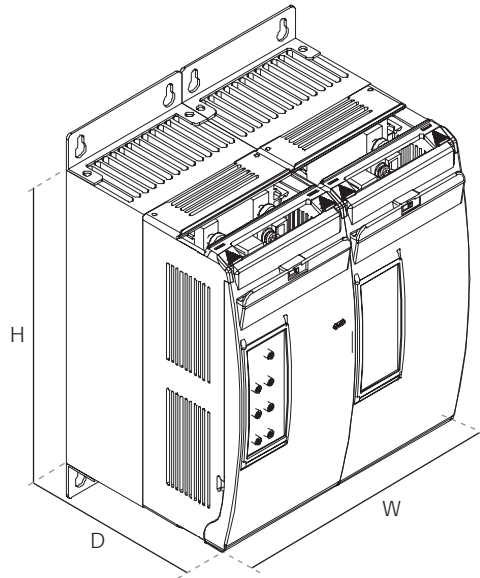




STO 043:100

DIMENSIONS

Wide	93 mm
Deep	144 mm
Height	253 mm



STO 140:200

DIMENSIONS

Wide	186 mm
Deep	144 mm
Height	253 mm

ORDERING CODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	S	T	O	-	-	-	-	-	-	-	-	-	-	-	-	-

CURRENT	4	5	6	code	note
description					
43 Amp FLC	0	4	3		
50 Amp FLC	0	5	0		
60 Amp FLC	0	6	0		
75 Amp FLC	0	7	5		
100 Amp FLC	1	0	0		
140 Amp FLC	1	4	0		
170 Amp FLC	1	7	0		
200 Amp FLC	2	0	0		

MAIN SUPPLY VOLTAGE	7	code	note
description			
3x200V + 10:-15%	2		
3x440V + 10:-15%	4		

VOLTAGE SUPPLY AUX.	8	code	note
description			
Auxiliary voltage 110-240V (+10:-15%) ac	1		

INPUT	9	code	note
description			
Start with power up	1		
Start/Stop optoisolated + 24V	2		

OVERLOAD RELAY	10	code	note
description			
No overload relay	1		

CONTROL MODE	11	code	note
description			
Automatic control mode	0		

OPTION & FUSE	12	code	note
description			
No Fuses	0		
External fuse & fuse holder	F		

COMMUNICATION	13	code	note
description			
Modbus RTU port and USB are standard	T		

APPROVALS	14	code	note
description			
CE EMC	0		

MANUAL	15	code	note
description			
None	0		
Italian	1		
English	2		
German	3		
French	4		
Spanish	5		

VERSION	16	code	note
description			
Standard version	1		

REVO TU-RS485 FIELD BUS MODULE FOR STO



The REVO TU-RS485 is a termination unit with the following capabilities:

- Provides Field Bus communication for up to max 20 STO units
- Additional Modbus RTU port for REVO HMI

CURRENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
description																				
N° 1 Modbus TCP + N° 1 Modbus RTU slave + STO	T	U	-	R	S	4	8	5	-	T	C	P	-	0	-	S	T	O	0	0
N° 2 ProfiNet + N° 1 Modbus RTU slave + STO	T	U	-	R	S	4	8	5	-	P	N	T	-	0	-	S	T	O	0	0
N° 1 ProfiBus DP + N° 1 Modbus RTU slave + STO	T	U	-	R	S	4	8	5	-	P	D	P	-	0	-	S	T	O	0	0
N° 1 Ethernet IP + N° 1 Modbus RTU slave + STO	T	U	-	R	S	4	8	5	-	E	I	P	-	0	-	S	T	O	0	0



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