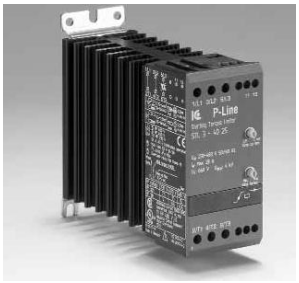
Starting Torque Limiter (STL Soft Starter for 1&3-phase motors, one controlled phase)



- Rated operational voltage up to 690 VAC 50/60 Hz
- Rated operational current: 15 Amp or 25 Amp
- Ramp Up adjustable from 0.5-5 sec
- Initial torque adjustable from 0-85%
- LED status indication
- Meets EN 60947-4-2 requirements
- High number of start/stop operations pr. hour. See data

Item selection and technical specifications (see also motor table at page 11)

Load ratings		Item number by 208-480VAC 50/60Hz Line Voltage	Item number by 550-600VAC 50/60Hz Line Voltage	Item number by 550-690VAC 50/60Hz Line Voltage	Ramp-Up adjustment	Torque adjustment	Module-width
Items for 1-phase motors							
15A AC-53a		STL 1 4015					45mm
25A AC-53a		STL 1 4025			Ramp-up time 0.5 - 5 sec.	0- 85% adjustable of norminal torque	45mm
Items for 3-phase motors							
15A AC-53a		STL 3 4015	STL 3 6015				45mm
25A AC-53a		STL 3 4025	STL 3 6025	**STL 3 6925 * #**			45mm

Load specified with utilisation category AC-53a

STL 1 and 3 XX/15/25 AC-53a:
No by-pass contactors is nessesary during running

Output load specification

STL 1 and 3 XX15	More info. page 45	STL 1 and 3 XX25	More info. page 45
Overload current profile AC-53a	X-Tx:8-3 : 100-3000	Overload current profile AC-53a	X-Tx:8-3 : 100-3000
Overload relay trip class AC-53a	10 or 10A	Overload relay trip class AC-53a	10 or 10A
	Min. operational current: 50mA		Min. operational current: 50mA

Thermal specification

Power dissipation for continuous operation PDmax	1W/A
Power dissipation for intermittent operation PD	1W/A x dutycycle
Cooling method	Natural convection
Mounting	Vertical +/-30°
Operating temperature range EN 60947-4-2	-5C° to 40°C
Max. operating temperature with current derating	60°C
Storage temperature EN 60947-4-2	-20C° to 80°C

Operation in ambient temperatures exceeding 40°C is possible if the power dissipation is limited either by reducing the steady-state current or by reducing the duty-cycle of the soft starter as shown in the table. Max.cycle time 15min.

By 40°C (STL X XX25)	By 50°C (STL X XX25)	By 60°C (STL X XX25)
100% load Duty-cycle 100%	80% load Duty-cycle max. 0,8	70% load Duty-cycle max. 0,65

Insulation specifications

Rated insulation voltage	Ui 660 Volt
Rated insulation voltage #	Ui 690 Volt
Rated impulse withstand voltage	Uimp. 4 kVolt
Installation catagory	III

Environment

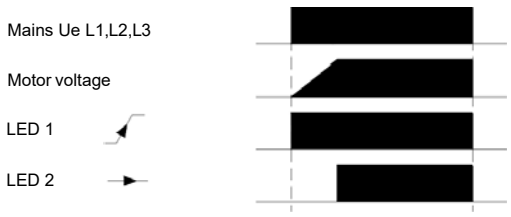
Degree of protection	IP 20	Pollution degree	3

Approval

cUL Std No. 508 **Not approved STL 3 6925**

*UL:Use thermal overload protection as required by the National Electric Code. When protected by a non-time delay K5 or H Class fuse, rated 266% of motor FLA, this device is rated for use on a circuit capable of delivering not more than 5,000 rms. symmetrical amperes, 600 V maximum. Maximum surrounding temperature 40°C.

Functional diagram



Mounting and cable wiring information

Mounting information see page 44 / Cable wiring see page 45

Dimensions (se also page 36)

Type	H	D	W
45 mm module	94 mm	128.1 mm	45 mm

EMC

This component meets the requirements of the product standard EN60947-4-2 and is CE marked according to this standard. These products has been designed for class A equipment. Use of the product in domestic environments may cause radio interference, in which case the user may be required to employ additional mitigation methods.

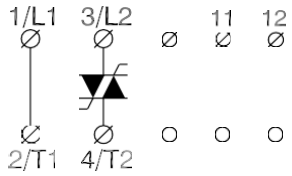
* **NOT cUL APPROVED**

Starting Torque Limiter (STL Soft Starter for 1&3-phase motors, one controlled phase)

Wiring specifications

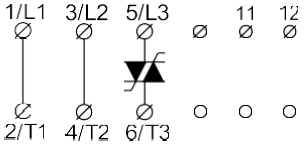
STL 1

11-12: for UP62 or other wiring purposes

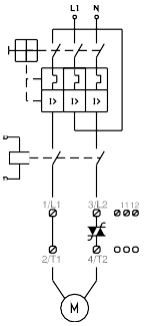


STL 3

11-12: for UP62 or other wiring purposes

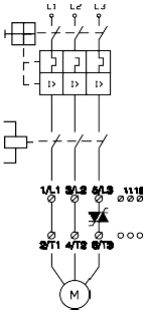


STL 1 1-phase configuration



Magnetic Circuit Breaker

STL 3 3-phase configuration



Magnetic Circuit Breaker

How to adjust ramp times and initial torque

A. Ramp-Up time and initial torque (standard load) Use screwdriver 2 mm x 0.5 mm for adjustment

1) Set the *Ramp-Up* switch to maximum

2) Decrease the *Ram-Up* time until desired start is achieved

3) Set the *Initial Torque* switch to minimum

4) Switch the contactor ON for a short time. If the load does not rotate immediately increment the *Initial Torque* and try again. Repeat until the load starts to rotate immediately on start-up

NOTE:
a) Control of the motor torque is achieved by acting on the motor voltage. The motor speed depends on the torque produced by the motor and the load on the motor shaft.
b) A motor with little or no load will reach full speed before the voltage has reached its maximum value.
c) Repeated starts may trip the motor protection relay.

Short-circuit protection by circuit breaker or fuses

Two type of short-circuit protection can be used:
a) Short-circuit protection by circuit breaker.
b) Short-circuit protection by fuses.

Short-circuit protection is divided into 2 levels Type 1 or Type 2

Co-ordination Type 1: Short-circuit protects the installation

Co-ordination Type 2: Short-circuit protects the installation and the semiconductors inside the motor controller

a) Short-circuit protection
Co-ordination type 1 will be obtained when using magnetic circuit breakers or standard gl/Gl fuses.
Co-ordination type 2 will be obtained when using semiconductor fuses. When using semiconductor fuses the SCR will not be damaged due to transients and short circuits. The table indicates suitable fuses for co-ordination type 2 protection.

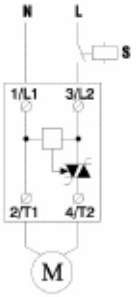
b) Short-circuit protection by fuses

Type 1: STL 1/3 XX15	Protection max. 50 A gL/gG
Type 1: STL 1/3 XX25	Protection max. 80 A gL/gG 63A T
Type 2: STL 1/3 XX15	Protection max. i^2t of the fuse 1800 A^2S
Type 2: STL 1/3 XX25	Protection max. i^2t of the fuse 6300 A^2S

Fuses from e.g. Ferraz, Siba, Bussmann can be used as short-circuit protection Type 2

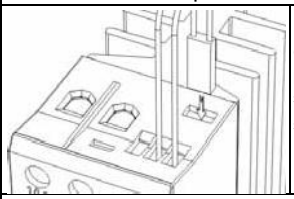
More information concerning Co-ordination Type 2 see page 45

Start of single phase motor (application example)



- By start S shall be switched On
- The STL starts to Ramp-Up the motorvoltage
- When the motor has to stop, S shall be switched off
- The STL 1 is now ready for a new start
- The STL 1 is applicable for standard single phase motors, capacitive motors, transformers etc.

Thermal overload protection (see also page 44)



Optional thermal overload protection is possible by inserting a thermostat in a slot on the right hand side of the soft starter. Type number UP62