

**New Version With VDE Certification**  
**CSS Compressor Soft Starters**  
The First VDE Certified Soft Starter  
For Safety Of Household



## New Version With VDE Certification Compressor Soft Starters For Single-Phase Compressors

The first Soft Starter on the market with VDE certification for EN60335-2-40.

### How Can Starting Single-Phase Compressor Be Optimised?

The starting current of electric motors can be six to eight times higher than the nominal current. The current peaks generated by such behavior are a common cause of problems in the other equipment on the same network. While flickering lights are just annoying, power interruptions to electronic data processing equipment can cause a system shutdown and data loss.

Single-phase electricity networks are particularly sensitive to such problems when compared with three-phase motors with the same power. Therefore electrical power suppliers recommend limiting the starting current of motors.

### What Causes High Starting Currents?

When machines start, the internal masses are accelerated and static friction has to be overcome. This requires a large amount of energy which is supplied through high currents from the mains supply.

### Why Is This Problem Being Recognised Today More Often Than In The Past?

In order to save energy costs, private homes prefer to use heat pumps for heating, as opposed to conventional methods. Houses are connected to the power supply by single-phase lines in many regions. The frequency of compressor starts is a typical cause of low voltage conditions.



### How Can The Compressor Soft Starter Help?

The Compressor Soft Starters use a relay together with two thyristors in parallel to switch the compressor current. At start the relay is open. The starting current is limited by the thyristors. As the motor accelerates to his nominal speed the relay is closed. The nominal motor current is flowing through the relay contacts. In order to improve the starting torque the Compressor Soft Starter has a start capacitor, which is activated only while in the starting phase.

### Features And Benefits

- For motors with a maximum operating current of up to 25A/32A
- Starting current limited to less than 45 A
- Self adjusting for use in 50 Hz or 60 Hz supply
- Self adjusting to motor current - no manual adjustment or calibration necessary
- Alarm relay output
- Start capacitor for improved motor acceleration is switched off after start
- Low voltage shutdown
- Locked rotor recognition and shutdown
- Delay function to limit number of motor starts per hour
- Thyristor protected contactor for long service life
- No extra motor contactor required
- Self diagnostics

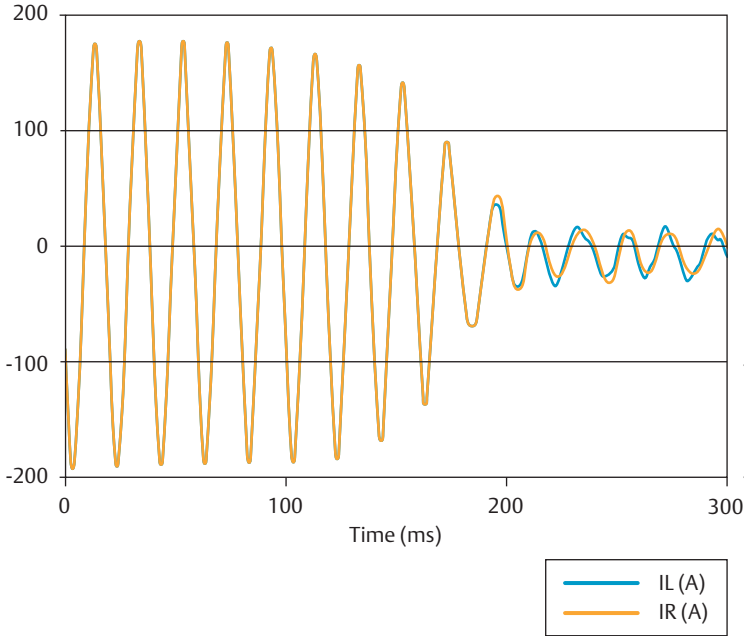
### Certificates

In compliance with EN 60335-1 and EN 60335-2-40 as well as EN 60947-1 and EN 60947-4-2. Certified by the VDE Testing and Certification Institute.

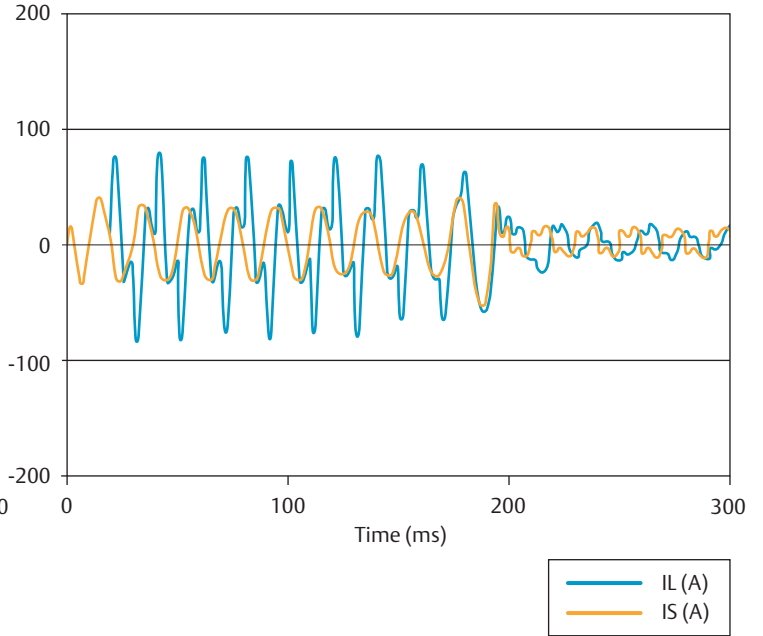
Notes:

- EN 60335-2-40 Safety of household and similar electrical appliances - Part 2-40 Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers.
- EN 60947-4-2: Low-voltage switchgear and controlgear - Part 4-2: Contactors and motor-starters - AC semiconductor motor controllers and starters

Starting Current Of A Compressor Without Soft Starter






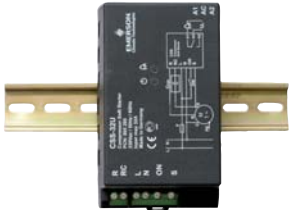
Starting Current Of A Compressor With Soft Starter



### How Easy Is It To Mount A CSS?

Each Compressor Soft Starter CSS is supplied with a flexible mounting kit for variable positioning:

1. Mount on any solid surface using 4 screws (image 1)
2. DIN-rail mounting (image 2 and 3)
3. DIN-rail mounting 90° rotated (image 2 and 4)

Image 1 Mounting kit for CSS with 4 screw holes	Image 2 Mounting kit with DIN-rail	Image 3 DIN-rail mounting position 1	Image 4 DIN-rail mounting position 2
			



## Emerson Climate Technologies At A Glance

Emerson Climate Technologies is the world's leading provider of heating, ventilation, air conditioning, and refrigeration solutions for residential, industrial, and commercial applications. We combine technically superior products and services from our industry-leading

divisions and brands with our global engineering, design and distribution capabilities to create reliable, energy efficient climate systems that improve human comfort, safeguard food, and protect the environment.

For more details, see [www.emersonclimate.eu](http://www.emersonclimate.eu)

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