

# Specification Series Reactor

## 1. Responsibility

- WEISS stipulates whether a series reactor is necessary for the operation of the spindle with a Sinamics drive and specifies the required inductance in mH.
- The OEM is responsible for the overall design of the series reactor (type of construction, protection class, cooling etc.)
- WEISS/Siemens can offer paid support for the design process if required.

## 2. Reasons for a series reactor

A series reactor may be necessary for the following reasons:

- Reduction of the required field weakening current of synchronous spindles which have a large field weakening region ( $n_{\max} \gg n_{\text{rated}}$ ).
- Improvement of the control accuracy of the drive system.
- Reduction of harmonic losses, which would lead to an impermissible heating of the motor.
- Reduction of voltage peaks at the motor, which result from electrical oscillation of the drive and might lead to damage of the motor.

## 3. Design

- The series reactor should be designed as three-limbed reactor with laminated core construction.
- For new systems with uncertain characteristics the use of a series reactor with damping winding (“series reactor plus”) is recommended.
- It is known that in some cases powder core reactors without damping measures do not cause problems regarding voltage peaks.
- It is advised to check the drive system for voltage peaks. Support for the required measurements can be requested and commissioned at Siemens

## 4. Notes for design and electrical characteristics

The characteristics of a series reactor and a decision-making aid for the use of a “series reactor plus” are extensively documented in the manual [SINAMICS S120 Requirements placed on third-party motors](#).

