

# product support

**MICROMASTER and SINAMICS**

**SIEMENS**

Short Circuit Current Ratings (SCCR) for Siemens Standard Drives

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## 1 Introduction.

Article 409 on industrial control panels was added to the National Electrical Code<sup>1</sup> (NEC) in the 2005 edition. This article requires all industrial control panels to be marked with a Short Circuit Current Rating (SCCR). The SCCR requirements have been included in Underwriters laboratories "Standard for industrial control panels" (UL508A) and took effect in April 2006. These changes impact industrial control panel builders, OEMs and end users.

Siemens is committed to supplying our customers best in class products and services. To allow our customers to comply with the NEC article 409 and the changes in the UL508A standard this FAQ will outline the following:

- How the changes in NEC article 409 and UL508A affect the requirements for standard drives.
- How Siemens MICROMASTER and SINAMICS standard drives comply with the changes in NEC article 409 and UL508A
- What is the SCCR for a particular MICROMASTER or SINAMICS drive?

<sup>1</sup> National Electrical code is a registered trade mark of the National Fire Protection Association

## 2 How do the changes in NEC article 409 and UL508A affect the requirements for standard drives?

Excerpt from the NEC Article 409 (As it only applies to control panels)

### 409.110 Marking

An industrial control panel shall be marked with the following information that is plainly visible after installation.

Short-circuit current rating of the industrial control panel based on one of the following:

- a. Short-circuit current rating of a listed and labeled assembly
- b. Short-circuit current rating established utilizing an approved method:  
FPN: UL 508A-2001, Supplement SB, is an example of an approved method. The FPN (Fine Print Note) refers to 508a (again covering control panels). SB4.2.2 The short circuit current rating of a component shall be established by a mark on the component or on instructions provided with the component.

As a drive can be considered as a component within the industrial control panel the SCCR can be shown on the accompanying documentation. The Underwriter Laboratories "Standard for power conversion equipment" (UL508c) which gives the requirements for drives documents these requirements. Updates of the documentations are currently ongoing to include the information contained within this FAQ.

### 3 How do Siemens MICROMASTER and SINAMICS standard drives comply with the changes in NEC article 409 and UL508A?

Siemens MICROMASTER and SINAMICS standard drives are designed to comply with the requirements of UL508C. To comply with this each drive is tested to determine a standard SCCR in accordance with table shown below taken from UL508C.

Ratings of Drive		SCCR
Horsepower	KW	
1.5 – 50	1.1 – 37.3	5 kA
51 – 200	39 – 149	10 kA
201 – 400	145 – 298	18 kA
401 – 600	299 – 447	30 kA
601 – 900	448 – 671	42 kA
901 – 1600	672 – 1193	85 kA
1601 or more	1194 or more	100kA, 125kA, 150kA or 200kA

In addition to the “standard SCCR” a “high SCCR” is available for all products as detailed in section 4.

## 4 What is the value of the “high SCCR” for a particular MICROMASTER or SINAMICS drive?

### 4.1 MICROMASTER Frame sizes A to C, SINAMICS G110, SINAMICS G120 ET200S, & SINAMICS G120 Frame sizes A to C.

For the following MLFB's manufactured under UL file number E121068.

Type	Order Number	Frame Sizes
MICROMASTER 440	6SE6440 ...	A to C only
MICROMASTER 436	6SE6436	A to C only
MICROMASTER 430	6SE6430 ...	C only
MICROMASTER 420	6SE6420 ...	All
MICROMASTER 411	6SE6411 ....	All
MICROMASTER 410	6SE6410 ....	All
SINAMICS G120	6SL322 ...	A to C only
SINAMICS G110	6SL3211 ...	All
SINAMICS ET200S	6SL32	All

All the above drives have a high SCCR as a result of testing with UL All drives have internal solid state short circuit protection for protection of the drive output but this has not been evaluated for branch circuit protection (BCP)

Our UL certification allows all drives (which have an integral solid state protection circuit) to adopt a high SCCR equal to the interrupt current rating of the branch-circuit protective device protecting the drive.

Example. If a UL listed combination motor protector (Rated current 40A) with an interrupt current rating of 65kA is used as the branch circuit protection device for a MICROMASTER 440 frame size C 400V 11kW drive, the high SCCR of the drive is equal to that of the combination motor protector, which is 65kA.

Hence by selection of the correct UL listed BCP device, with appropriate interrupt rating for the application, any high SCCR rating can be achieved for the above drives.

## 4.2 MICROMASTER Frame sizes D to F including FX & GX & SINAMICS Frame sizes D to F.

For the following MLFB's manufactured under UL file number E192450.

Type	Order Number	Frame Sizes
MICROMASTER 440	6SE6440 ...	D to GX only
MICROMASTER 436	6SE6436	D to GX only
MICROMASTER 430	6SE6430 ...	D to GX only
SINAMICS G120	6SL322 ...	D to F only.

All the above drives have a high SCCR as indicated in the table below when used with the UL listed AC input line fuses or listed circuit breakers specified in the user manual.

Ratings of Drive		SCCR
Horsepower	KW	
1.5 – 50	1.1 – 37.3	42 kA
51 – 200	39 – 149	42 kA
201 – 400	145 – 298	42 kA
401 – 600	299 – 447	65 kA
601 – 900	448 – 671	84 kA
901 – 1600	672 – 1193	170 kA
1601 or more	1194 or more	100kA, 200kA or 300kA

If it is required to use these drives with a supply which is capable of delivering a higher short circuit current than indicated in the table above then current limiting fuses or circuit breakers must be used with an appropriate interrupt rating and derived let through current.

For compliance with the NEC article 409 and UL508A a qualified engineer must calculate the relative let through currents of the protective device and follow the requirements of the NEC and UL508A for selecting, marking, etc. of a current limiting device. These calculations showing the available short circuit current at each point in the power circuit of the industrial control panel will be required by any inspector who is certifying the end industrial control panel installation.