



wöhner

eta

The short circuit test is prescribed by standard EN 60439-1 Art. 8.2.3.

Such test is mandatory both for TTA and for PTТА assembly, whereby the difference is that, for ANS assembly, the standard only prescribes to refer to a tested type assembly, which is not necessarily stored and available at the assembly manufacturer.

From the test results, you can extrapolate the values for a bar system different from the tested one, adopting the procedure described in IEC publication 1117 (1992). "Method for the determination of short circuit resistance for non-standard switchgear and controlgear assemblies (PTТА)".

Standard EN 60439-1 in Note 1 to Art. 8.2.3.2.5 allows the extrapolation procedure according to the IEC publication 1117.

The actual calculation mode (formulas etc.) is given in the publication IEC 865, from which the harmonized standard EN 60865-1 has been extracted.

To allow an assembly manufacturer to develop a suitable and certifiable bar configuration, Wöhner has applied to CESI to carry out a type test for short-circuit withstand strength on the following five bar distribution systems, mounted on the **ETA** enclosure model **ARETA** (two columns 800 x 2000 x 600, combined - see drawing):

- Triple T copper bars- In 2500 A *
- Double T copper bars- In 1600 A *
- Double T copper bars- In 1250 A *
- Copper bars 30 x 10 (mm) - In 630A/800 A *
- Copper bars 20 x 5 (mm) - In 320 A *

From the test value, all other I_{cw} (I_{cc}) values were extrapolated according to the CL distance between supports. For the following 6 systems - that complete the Wöhner range - all values were extrapolated from the two tested systems measuring 30 x 10 and 20 x 5, referring to the most suitable in terms of acceptable short circuit current, as prescribed by the standards.

- Copper bars 20 x 10 (mm) - In 520 A *
- Copper bars 12 x 10 (mm) - In 360 A *
- Copper bars 30 x 5 (mm) - In 450 A *
- Copper bars 25 x 5 (mm) - In 400 A *
- Copper bars 15 x 5 (mm) - In 250 A *
- Copper bars 12 x 5 (mm) - In 200 A *

(* - Refer to the catalog for effective capacity in A)

The 11 tables and related charts (see Section 2) indicate, for each system, the admitted values of short-lasting nominal current **I_{cw}** (without protection devices), or conditioned short circuit nominal current **I_{cc}** (conditioned by protection devices), the related peak current **I_{pk}** and the corresponding CL distance between supports. **Carefully read the notes in the tables for correct dimensioning.**

It must be underlined that standard defines two basic conditions:

1. **Short circuit current can be changed only with lower values**
2. **It is not allowed to change the support material or shape (only for the bar system)**

NOTE: The bar systems and the enclosure must be mounted in conformity with the manufacturers' prescriptions to ensure a mechanical resistance of components equivalent to the tested system, with particular reference to the screw locking torque and the fastening method for the bottom plate of the panel, which can be used as an alternative to crosspieces.

The ETA enclosure has withstood the short circuit dynamic stress with no problem, including short circuit between phase and earth, whereby current flows through the metal structure. The ARETA enclosures has already been tested with traditional bar systems up to 60 kA three-phase and 48 kA phase-earth, with no damage (see general catalog 2005/2006 and QuadroPlan manual), so they can be used up to these values with all the bar systems from the leading brands.