What is the inrush current? - Or why does Hirschmann not offer this value in the manuals for the installation instructions?

Christoph Wrobel - 2022-01-10 - Products

Short answer: there is no value for inrush current.

Detailed answer:

When you power up a device,
first the capacities are charged, i.e. filled with energy, creating a peak, while the inductors have an effect later.
The result is that the inrush current (current course directly after switching on) has a peak that is manifold higher than the nominal current afterwards. --> Note that inrush current is a current course, and thus there is no value.

So what's so interesting about "inrush current"? The knowledge of the current course is necessary to select the right dimensioned fuse to protect the electric network and the device against e. g. a short-cut. This means the fuse must tolerate the short high peak at powering up a device, but react sufficiently fast if the nominal current rises above a level which cannot be tolerated for various reasons.
Example: at power-up the fuse must tolerate a current of 10 amps for 5 ms, while in normal operation a rise from 1 to 2 amps might release the fuse within 1 s. This means a short-time peak must be tolerated.

Fuses and Circuit breakers have a release characteristic for this purpose, the I^2T value, the melting integral.
A user usually doesn't know the course of inrush current nor the release characteristic of the fuse. A user just needs to know which fuse to select to protect device and electrical network. For this purpose there are fast and slow blowing fuses.
E. g. a fast blowing fuse melts at the tenfold nominal current in less than 20 ms, while a slow one needs between 100 and 300 ms.

标记
current

inrush