

## New Features in EasyPower® 9.0.4

Below is a general list of new features added to version 9.0.4 of EasyPower.

### 1. New equipment types:

- **Adjustable Frequency Drive (AFD)**, also known as VFD.
  - Fault value and duration can be specified for short circuit and arc flash.
  - Power flow scaling is automatically adjusted based on specified frequency.
- **DC equipment:** DC Bus, DC Utility, DC Generator, DC Battery, (PV) photo voltaic source, DC Load, DC Motor, DC Cable, DC breaker and DC fuses.
- **Rectifiers**
  - Fault value and duration can be specified for short circuit and arc flash.
  - Power flow is based on Kimbark's equations. Types supported are diodes, thyristors, and IGBT.
- **Inverters**
  - Fault value and duration can be specified for short circuit and arc flash.
  - Power flow is based on Kimbark's equations. Types supported are thyristors and IGBT.

Short circuit, arc flash and power flow calculations are supported with these new items. Equipment duty calculation is not yet supported for DC systems.

### 2. Arc flash: Changes include modifications to support NFPA 70E 2012 revisions, and IEEE 1584.b-2011.

- PPE table as per Annex H, Table H.3(b)
- Option to show or hide PPE level on the one-line and the report.
- Option to use PPE Level table based on 2009 NFPA70E or use the 2012 Annex H table. PPE tables are defined in the library.
- New arc flash label templates that do not show PPE Level.
- New work permit template as per Annex J of NFPA70E-2012.
- Energy at arc flash boundary is  $1.2 \text{ cal/cm}^2$ , independent of arc duration.
- Low voltage breaker opening time for relay trip defaults to 0.05s. This can be modified in the registry.
- When bus incident energy is "Forced To", the arc flash boundary can be defined by users.
- Total clearing time calculation for fuses with average melting curve has been revised as per IEEE 1584.b-2011.
- DC arc flash calculations as per NFPA 70E D.8.

3. **CT-Relay-Breaker:** In the CT dialog, the CT can be specified as part of the main device or as upstream to the main device. For arc flash analysis, you can use this feature to include or exclude the relay as main device.
4. **Dynamic Stability models:** New models added for wind turbine generators, inverters, excitation control and governors.
  - Exciters:
    - Basler AVC1
    - Inv QCtrl
  - Generators:
    - Inv PV1G
    - Inv WT4G
  - Governors:
    - CAT-Diesel1
5. **Updated Library Version:** The addition of dc equipment to the device library required the library data format to be updated. As a result, the 9.0.4 library cannot be used by older versions of EasyPower. Likewise, the 9.0.4 program now requires a new library version. Default library path is now "...\\EasyPower\\9.0.4\\".