

## What's new in SmartCtrl 1.2

The summary of new features is the following:

### 1. **New link SMC – PSIM.**

Now, the power stage, the sensors and initial conditions of inductors and capacitor can be exported to PSIM. Therefore, the simulation of the complete circuit designed in SmartCtrl can be automatically performed in PSIM without drawing any schematic in PSIM. Straightforward from SmartCtrl design to Simview.

### 2. **New transfer functions (Audiosusceptibility and output impedance).**

For every dc/dc converter and control type, the transfer functions, output voltage to input voltage (Audiosusceptibility) and output voltage to output current (output impedance), are now shown as additional Bode Plots. These TF are very interesting for system converters. E.g. power distribution in satellites, etc.

### 3. **Enhanced PFC design tool**

An improved version of the PFC design tool (Power Factor Correction - Boost Converter) has been incorporated to SmartCtrl 1.2. A more practical design of 3854 controller have been included together some other practical information as the actual values of output voltage when a single pole regulator is used as outer loop compensator.

### 4. **s-domain transfer function for the plant.**

In SmartCtrl 1.1 the plant can be introduced by user by means of the predefined topologies and also importing the transfer function data by means a text file. Two additional ways are now included in SmartCtrl 1.2:

- s-domain transfer function for the plant: User can introduce the numerical values of the coefficients of the plant transfer function expressed in polynomial form.
- New plant wizard.

### 5. **New plant wizard.**

A equations editor, using a text interpreter, (similar to that used in the Simview) will allow users to generate their own models. Now, the user will be able to introduce their own formulas and numerical values to generate save and load their model in text files. Therefore the user can generate its own models library. This is a powerful tool that provides SmartCtrl with total versatility to introduce the power stage transfer functions.

### 6. **New solutions space for PI controllers.**

Simple PI controllers are widely used, on the other hand many designers use to directly change the gain (K) or the time constant (T) trying to obtain the best dynamical performance of the control loop. A new real-time updated plot that represents a solutions space in terms of K and T is provided in SmartCtrl 1.2.

### **7. New global export function.**

The numerical data of every transfer functions (plant, open loop gain, closed loop gain, etc.) and transient plots can be exported to PSIM, Mathcad, Matlab, Excel, etc. via a txt file.

.... Even more,

### **8. Digital control design tool**

A new digital control module is included in the new Pro version. Key features are the following:

- Digital effects (DEFs) such as sampling sampling and DPWM delays, and rounding effects due to the limited bits number of compensator coefficients are considered.
- New Bode plots considering DEFs are shown.
- Sensitivity analysis of DEFs can be performed.
- The designed digital compensator can be exported to PSIM in z domain format.