SASControl

SOFTWARE INFORMATION

Solar Array Simulation – PC-Software for PV-Simulation

Key features & functionality

- SASControl is the user interface software and script environment for solar array simulation (PV simulation).
- Full integration with Regatron TopCon device series: TC.P, TC.GSS, TC.GSX and TC.P.LIN
- Multi-unit operation with the device option of TC.LIN series: TC.LIN, TC.LIN.SER
- Remote connection via PC interfaces, e.g. RS-232 or USB interface.
- Simulation of characteristic curve current I = f(voltage) of solar panel (1-diode model according to EN50530 standard).
    - □ Parameter based
    - □ Including the theoretical MPP value
- Manipulation of irradiance, temperature, amplitude or input scaling with special commands.
- Indication and setting of the actual and preset values, switching the energy flow to the load on and off.
- Indication of warning and error states, including error history and error handling.

The software is grouped in different tabs:
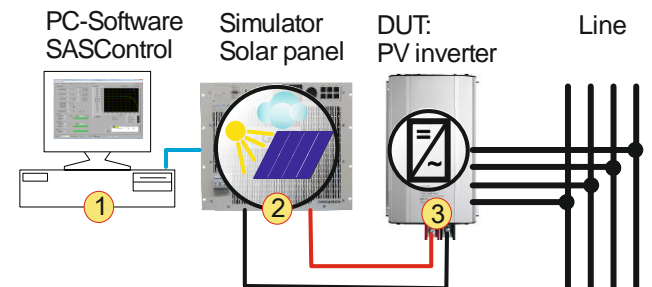
- **<Control> tab**
  Indication of actual and setting of preset values.
- **<Programming> tab**
  Command window for using SASScript to program test sequences for an extended functionality.
- **<Live Viewer> tab**
  Indication of TopCon live data.
- **<Data Collector> tab**
  Reliable measured value recording.
- **<Curve Editor> tab**
  Curve management for the TopCon device.
- **<Device info> tab**
  Collected information about the connected system.

Contact information

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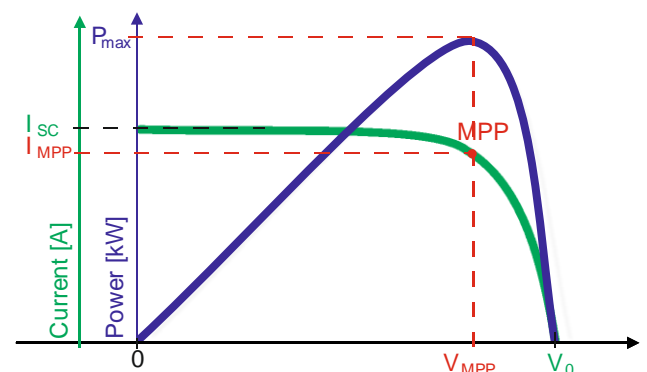Switzerland   topcon@regatron.ch

Simulation with the hardware

Possible multi-unit system with a device of TC.P series.

The PC software SASControl **-1-** simulates the characteristic solar array curves of a solar panel and their dependence on weather.
The software controls the TopCon devices **-2-** for the solar panel output simulation and its relation between current, voltage and power.
The behaviour of the PV inverter **-3-** as the Device Under Test (DUT) can be tested under controlled conditions.
It is easy to expand the multi-unit system with several devices, served via SASControl.

MPP tracking

It is possible to test the MPP tracking efficiency with optimal irradiance conditions or with partly shaded solar panel. The following kinds of curves are available:

- **Calculated solar curves**
  The basis of a curve is a mathematical diode-model of solar cells according EN50530:2010.
  The MPP will be valid and will be calculated automatically.
- **Custom solar curves**
  Individually configured solar curves for particular requirements via using arbitrary sets of points.
  The valid MPP point has to be configured manually to get tracking efficiency.

\<Control\> tab
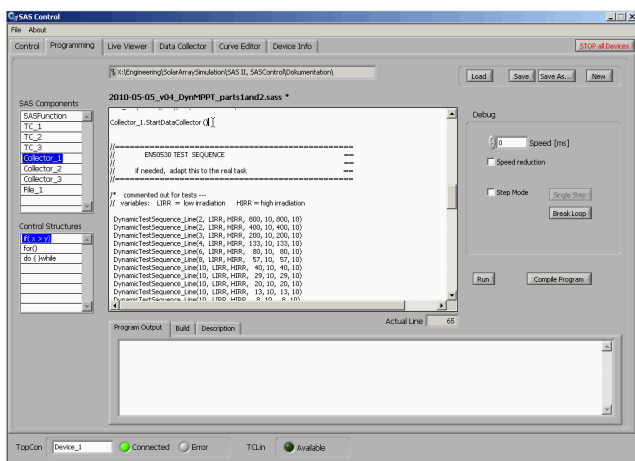

<Control> tab

The \<Control\> tab contains:

- System control
  - Switching the energy flow to the load on and off via button.
  - Remote interface selection.
- System settings and displays
  - Setting reference and indication of actual values like voltage, current, power and internal resistor.
  - Indication of warnings and errors details and access to the logged error history.
  - Indication of controller mode (CV, CC, CP).

\<Programming\> tab
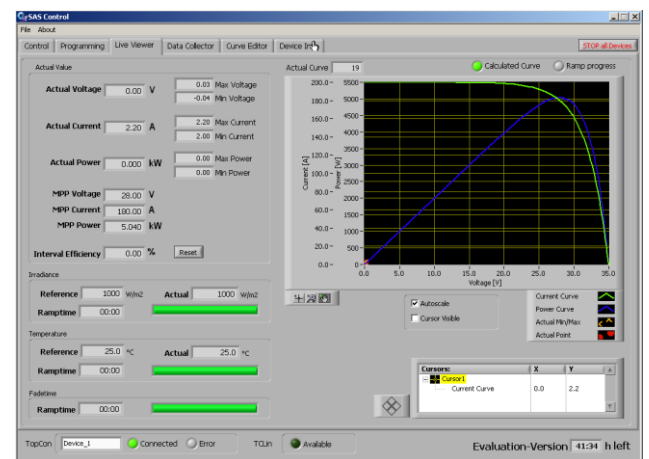

<Programming> tab

The \<Programming\> tab contains:

- Programming with an easy to learn (JavaScript alike) language
  - Allows for arbitrary command sequences and automatic test cycles.
  - Programming with intelligent editing support
  - Extended debugging capabilities: single step mode, slow motion, interactive loop break.
  - Printing data being recorded during execution of a script to file, importing data from file to be processed in a script.
- Software for running tests according to EN50530 (static / dynamic MPPT)
- Support for up to 7 TopCon units works with a TopCon alone or with TopCon / TC.LIN combination.

\<Live Viewer\> tab

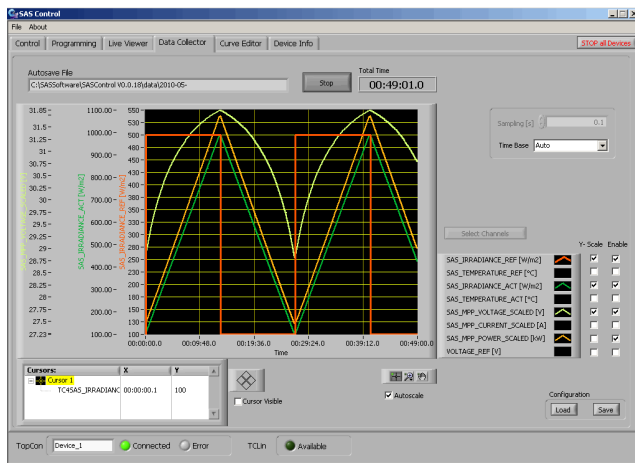

<Live Viewer> tab

The \<Live Viewer\> tab contains:

- I=f(V) curve currently used
- Display of the irradiance / temperature changes
- MPPT-efficiency (based on energy calculations)

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<Data Collector> tab
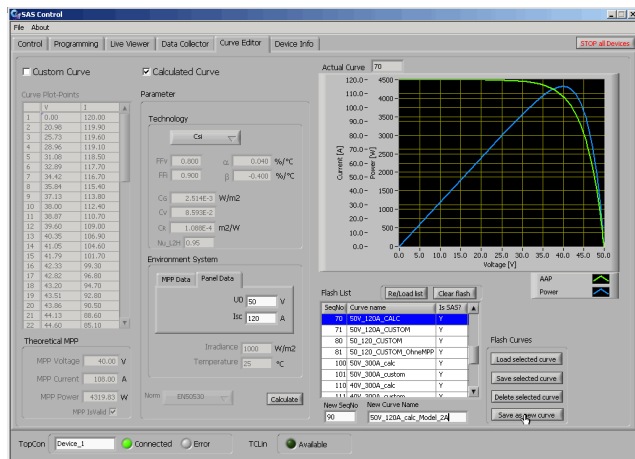

<Data Collector> tab

The <Data Collector> tab contains:

- 8-channel long term data logger
- Virtually unrestricted signal recording with direct transmission to PC file.
- Arbitrary selection from a set of possible signals.
- Start/Stop programmable by software command.

<Curve Editor> tab

<Curve Editor> tab

The <Curve Editor> tab contains:

- Calculated SASCurve based on parameter set (according to EN50530 model), incl. MPP.
- Computed SASCurve created from points (V, I), incl. MPP.
- Curve preview
- Manipulation of curve list on TopCon.

<Device Info> tab

The tab contains information of the TopCon device; the information is combined into various groups, e.g. device data, the device identification and software/ firmware version.

Application - Tests according to EN50530

- SAS-Scripts provided to implement the various tests of EN50530 with minor adaptation to particular inverter model.
- Script for static MPP test and calculation of the conversion efficiency:
  setting TopCon PV simulator to 48 operating points and performing MPP tracking test (with reports)
- Script for dynamic MPP tests included:
  running the trapezoid curves (10-50%, 30-100%, start-up/ shutdown tests), usable with minor adaptations to particular inverter model.

Enabling the SASControl option

- Required conditions
  please note that you need a purchased and enabled function generating engine TFEAAP option at first.
- The SASControl option has to be enabled with an option code via the software TopControl.
- A trial period is available for the option.

General information

- Swiss made
  developed, implemented and tested in Switzerland by Regatron AG, manufacturer of TopCon product family.

Scope of delivery

- Newest version of TopCon firmware including all functionality that is needed by SASControl
- The installer package for PC contains:
  - TCIO.DLL (communications functions), TCIOWrapper DLL (enhanced communications + .NET support)
  - SASControl.DLL (SAS related functions)
  - SASControl.exe (SAS user interface)
  - LabView Runtime Engine
- Operations manual and Programming reference
- Implementations of EN50530 tests (for adaptation to own requirement)
- Installation support from your sales partner or Regatron customer support.