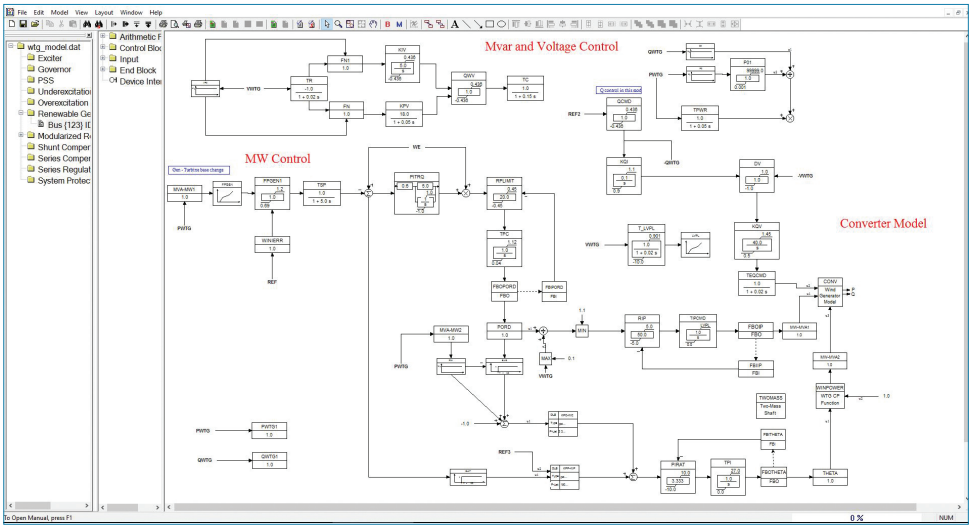
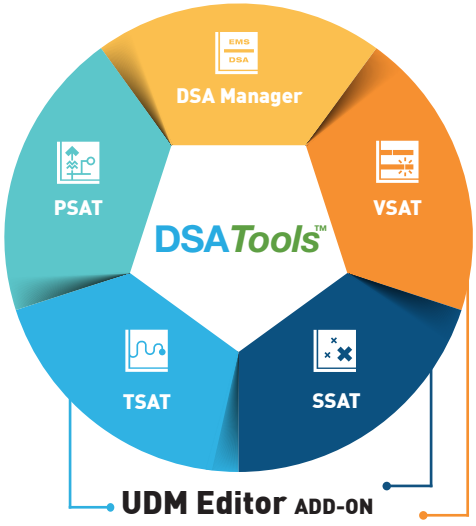
UDM Editor User-Defined Model Editor

UDM Editor is an add-on module for TSAT, SSAT, and VSAT. This module can be used to create, edit, and examine user-defined models for a variety of control devices as well as other models such as special protection schemes.





UDM Editor is a tool designed for building user-defined models for use in steady-state and dynamic analysis.

UDM Editor incorporates features and functions to allow the smooth and efficient creation of UDMs in a graphical environment. The resulting models are accepted directly in TSAT, SSAT, and VSAT without the need to go through additional programming and compilation processes.

MODELLING CAPABILITIES

UDM Editor can be used to create all types of UDM supported by TSAT, SSAT, and VSAT, including:

- Generator controls, such as exciter, governor, PSS, over-excitation limiter, and under-excitation limiter.
- Renewable generator models and controls, including wind turbines with all four main types of technologies, PV, storage, etc.
- FACTS, such as SVC, STATCOM, TCSC, SMES, UPFC, etc.
- HVDC (LCC and VSC) and controls, including converter-based FACTS devices.
- Relay and special protection schemes (SPS).

Typical models are available for each model type in the model template library to provide starting point for building a custom model.

A UDM is created using a function block and connectivity based approach. UDM Editor provides a comprehensive library of logic functions, math functions, control functions, input signals, and physical device models for use in building UDMs. The user can also supply custom function blocks written in C/C++ in form of DLL to be included in a UDM as Dynamically Linked Block (DLB).

The UDM template feature allows the easy creation and management of large set of user-defined models.

Once a UDM is created, validation can be performed to ensure that the model meets the requirements.

PRODUCT FEATURES:

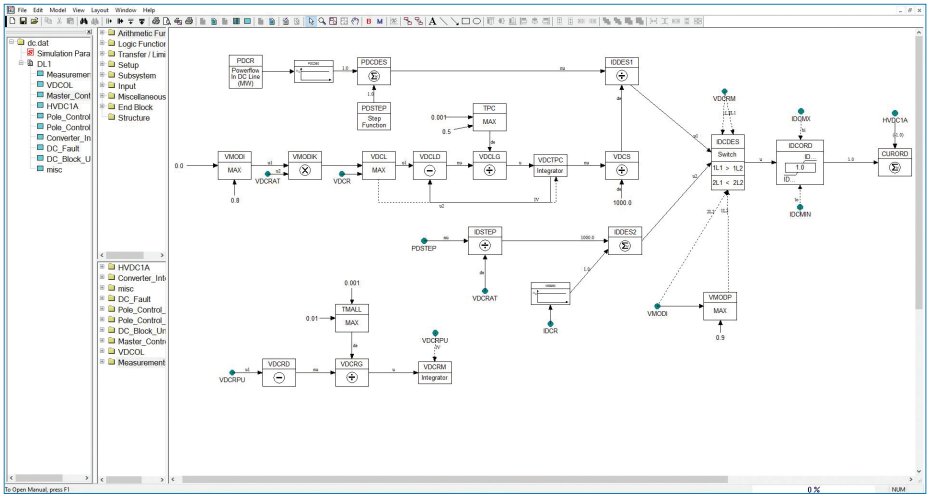
- *Full graphical interface to build models*
- *Function block and connectivity based UDM approach*
- *Supports a wide range of dynamic models*
- *Comprehensive library of function blocks, input signals, and physical device models*
- *Support of user written function blocks*
- *UDM template for managing UDM library*
- *Models are accepted directly by TSAT, SSAT, and VSAT with no additional compilation*

Powertech

UDM Editor User-Defined Model Editor

MAIN FEATURES

- Full graphical interface with drag-&-drop approach to create UDM.
- Power system components can be identified using bus numbers, bus names, or equipment names.
- UDM validation functions.
- Connection with TSAT binary result file to plot simulation results from specified blocks.
- Automatically create model block diagram for existing UDM.
- Text, edit, layout, and other graphics arrangement tools.
- Extensive on-line help facility on UDM creation.
- Runs on MS Windows 7/10/server 2012 R2/ server 2016.



PARTIAL LIST OF BASIC BUILDING FUNCTIONS/MODELS/SIGNALS IN UDM LIBRARY:

- **Input signals**
  - Local signals (model dependent): quantities from buses, generators, and branches
  - Remote signals: quantities from buses, generators, branches, interfaces, shunts, loads, and converters
  - Connecting signal: PSS, OEL, UEL
  - Other: reference value, time, constant, base MVA and frequency, special signals for SPS
- **Arithmetic functions**
  - Summation/multiplication/ division
  - Trigonometric functions
  - Exponential/logarithm
  - Absolute value
  - Power
  - Maximum/minimum
  - Logical operations
- **Control functions**
  - PID
  - Lead/lag with non-windup limit
  - Linear state space model
  - Time switch
  - Logical controlled switch
  - Non-linear function (lookup table)
  - Transfer function (no limit)
  - Digital controller
  - A/D converter
  - Hysteresis
  - Timer
  - Counter
  - Deadband
  - Rank
  - Group
  - Lookup table
  - Feedback loop
- **Physical device models**
  - DC, AC, and static exciter
  - Hydraulic, steam, gas, wind turbine
  - Thyristor-controlled reactor/capacitor
  - Thyristor-controlled braking resistor
  - Thyristor-switched reactor/ capacitor
  - Thyristor-controlled series compensator
  - Static series synchronous compensator
  - Generic D, Q current injection for asynchronous devices
- **Switching functions for relay/SPS**
  - Trip branch, generator, load, motor, SVC, or shunt
  - Reconnect/Add/Modify branch
  - Outage bus
  - Block converter

ABOUT POWERTECH LABS

Powertech Labs Inc. is one of the largest testing and research laboratories in North America, situated in beautiful British Columbia, Canada. Our 11-acre facility offers 15 different testing labs for a one-stop-shop approach to managing utility generation, transmission and distribution power systems.

Outside of the utilities industry, Powertech provides routine testing capabilities, product development, research and consulting services to support an array of industrial-type operations, electrical equipment manufacturers and automotive original equipment manufacturers.

www.powertechlabs.com

FOR MORE INFORMATION CONTACT:

Xi Lin - 604.590.6652
Director, Power Systems
xi.lin@powertechlabs.com

dsainfo@powertechlabs.com
www.dsatools.com

81022-0081A

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