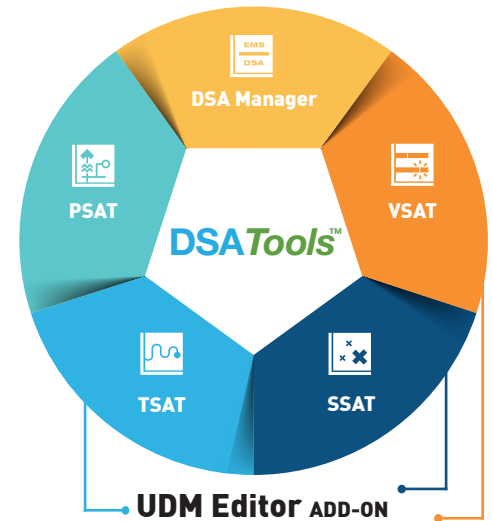
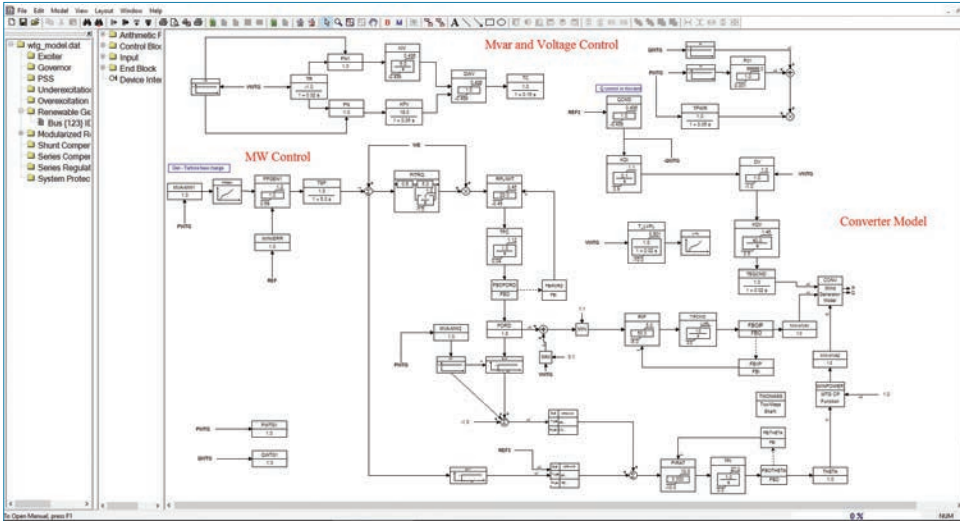


# UDM Editor User-Defined Model Editor

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.

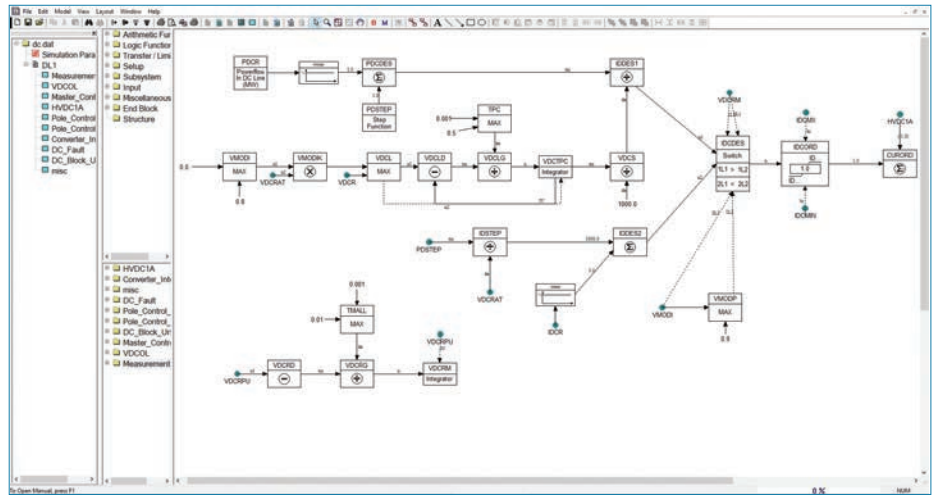
## PRODUCT FEATURES:

- 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

# 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:

- |   |  |  |
|---|--|--|
| <ul style="list-style-type: none"> <li>• <b>Input signals</b> <ul style="list-style-type: none"> <li>- Local signals (model dependent): quantities from buses, generators, and branches</li> <li>- Remote signals: quantities from buses, generators, branches, interfaces, shunts, loads, and converters</li> <li>- Connecting signal: PSS, OEL, UEL</li> <li>- Other: reference value, time, constant, base MVA and frequency, special signals for SPS</li> </ul> </li> <li>• <b>Arithmetic functions</b> <ul style="list-style-type: none"> <li>- Summation/multiplication/division</li> <li>- Trigonometric functions</li> <li>- Exponential/logarithm</li> <li>- Absolute value</li> <li>- Power</li> <li>- Maximum/minimum</li> <li>- Logical operations</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• <b>Control functions</b> <ul style="list-style-type: none"> <li>- PID</li> <li>- Lead/lag with non-windup limit</li> <li>- Linear state space model</li> <li>- Time switch</li> <li>- Logical controlled switch</li> <li>- Non-linear function (lookup table)</li> <li>- Transfer function (no limit)</li> <li>- Digital controller</li> <li>- A/D converter</li> <li>- Hysteresis</li> <li>- Timer</li> <li>- Counter</li> <li>- Deadband</li> <li>- Rank</li> <li>- Group</li> <li>- Lookup table</li> <li>- Feedback loop</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• <b>Physical device models</b> <ul style="list-style-type: none"> <li>- DC, AC, and static exciter</li> <li>- Hydraulic, steam, gas, wind turbine</li> <li>- Thyristor-controlled reactor/capacitor</li> <li>- Thyristor-controlled braking resistor</li> <li>- Thyristor-switched reactor/capacitor</li> <li>- Thyristor-controlled series compensator</li> <li>- Static series synchronous compensator</li> <li>- Generic D, Q current injection for asynchronous devices</li> </ul> </li> <li>• <b>Switching functions for relay/SPS</b> <ul style="list-style-type: none"> <li>- Trip branch, generator, load, motor, SVC, or shunt</li> <li>- Reconnect/Add/Modify branch</li> <li>- Outage bus</li> <li>- Block converter</li> </ul> </li> </ul> |
|---|--|--|

## 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.*

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