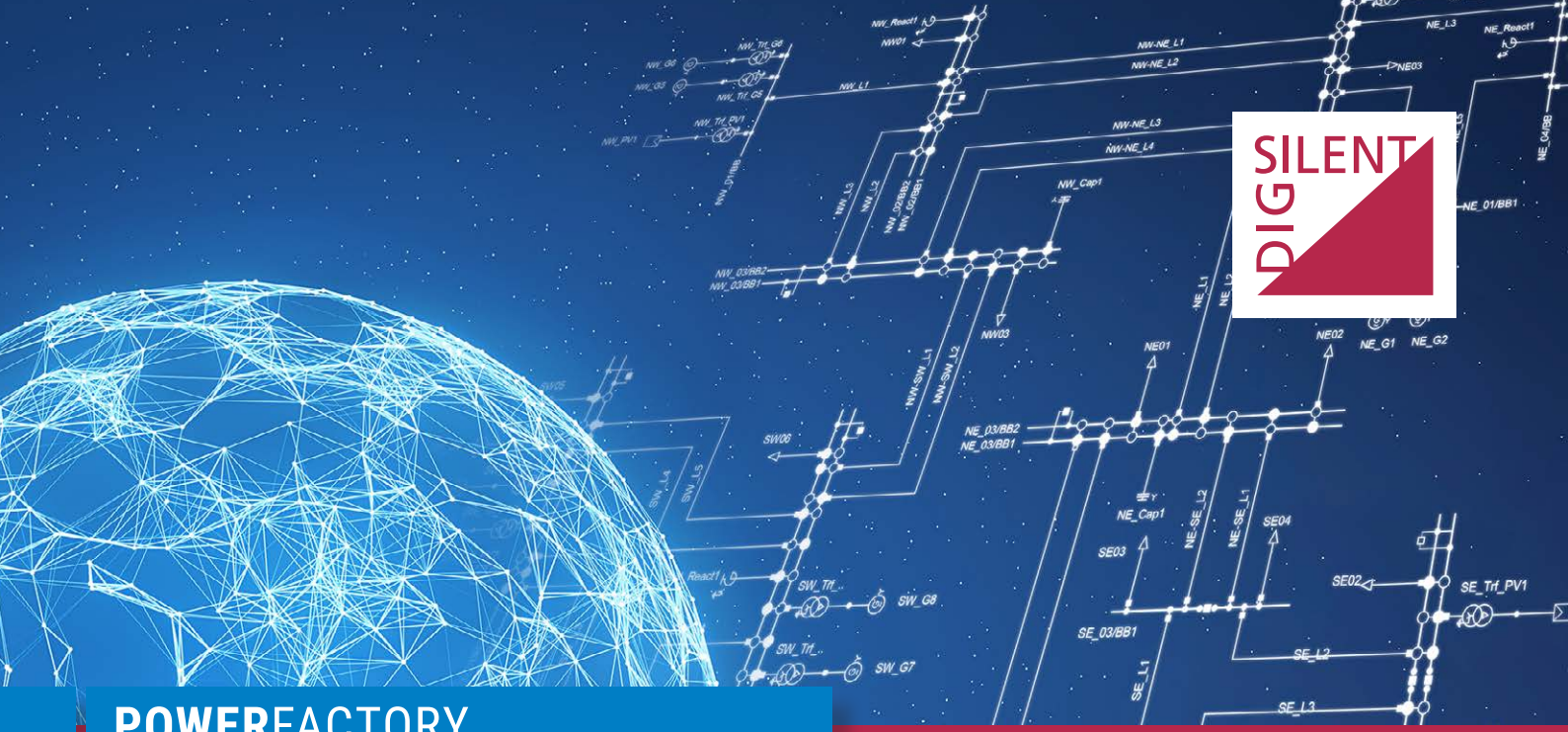

PowerFactory 2021

Technical Reference

Overview

PF2021

POWER SYSTEM SOLUTIONS

MADE IN GERMANY

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Contents

1 Overview of Technical References for Models

The technical references of models in *PowerFactory* are organised according to categories as shown in the following table. Follow the link in the table to jump to the corresponding document.

1.1 Sources

Model	Class Name	Document
AC Voltage Source	*ElmVac, ElmVacbi*	Open
DC Voltage Source	*ElmDcu, ElmDcubi*	Open
AC Current Source	*ElmIac, ElmIacbi*	Open
DC Current Source	*ElmDci, ElmDcibi*	Open
Impulse Source	*ElmImpulse*	Open
DC Battery	*ElmBattery, ElmBatterybi*	Open
Fourier Source	*ElmFsrc*	Open

1.2 Generators and Loads

Model	Class Name	Document
Asynchronous Machine	*ElmAsm, TypAsmo*	Open
Saturable Asynchronous Machine	*ElmAsm, TypAsm1*	Open
Doubly Fed Induction Machine	*ElmAsmsc, TypAsmo*	Open
Static Generator	*ElmGenstat*	Open
PV System	*ElmPvsys, TypPvpanel*	Open
Synchronous Machine	*ElmSym, TypSym*	Open
General Load Model	*ElmLod, TypLod*	Open
Complex Load Model	*ElmLod, TypLodind*	Open
Medium Voltage Load	*ElmLodmv, TypDistrf*	Open
Low Voltage Load and Partial Loads	*ElmLodlv, ElmLodlvp, TypLodlv*	Open
Motor Driven Machine	*ElmMdm__1, ElmMdm__3, ElmMdm__5*	Open
DC Machine	*ElmDcm, TypDcm*	Open
DC Load	*ElmLoddc, ElmLoddcbi, TypLod*	Open
External Grid	*ElmXnet*	Open
Connection Request	*ElmConreq*	Open

1.3 Transformers

Model	Class Name	Document
2-Winding Transformer, 3-Phase	*ElmTr2, TypTr2*	Open
2-Winding Transformer, 1-Phase	*ElmTr2, TypTr2*	Open
3-Winding Transformer, 3-Phase	*ElmTr3, TypTr3*	Open
3-Winding Transformer, 1-Phase	*ElmTr3, TypTr3*	Open
4-Winding Transformer	*ElmTr4, TypTr4*	Open
Booster-Transformer	*ElmTrb, TypTrb*	Open
Step-Voltage Regulator	*ElmVoltreg, TypVoltreg*	Open

1.4 Branch Elements

Model	Class Name	Document
Overhead Line Models	*ElmLne, TypLne*	Open
Overhead Line Constants	*ElmTow, TypTow, TypGeo, TypCon*	Open
Cable Systems	*ElmCabsys, TypCabsys*	Open
Series Capacitor	*ElmScap*	Open
Series Reactor	*ElmSind*	Open
Series RLC-Filter	*ElmSfilt*	Open
Common Impedance	*ElmZpu*	Open
Breaker/Switch	*ElmCoup, StaSwitch, TypSwitch, EvtSwitch*	Open
Thyristor Controlled Series Capacitor	*ElmTcsc*	Open
DC Inductive Coupling	*ElmMdc*	Open
AC/DC Connector	*ElmConnectacdc*	Open

1.5 Power Electronic Devices

Model	Class Name	Document
PWM Converter	*ElmVsc, ElmVscmono*	Open
6-Pulse Bridge Rectifier/Inverter	*ElmRec, ElmRecmono, TypRec*	Open
HVDC Line Commutated Converter	*ElmHvdclcc, TypHvdclcc*	Open
SoftStarter	*ElmVar*	Open
DC/DC Converter	*ElmDcdc, ElmDcdcbi*	Open
DC Valve	*ElmValve*	Open
MMC Valve	*ElmMmcvalve*	Open
Pulse Generator	*ElmPulsegen*	Open

1.6 Shunts and Filters

Model	Class Name	Document
Shunt/Filter Element	*ElmShnt*	Open
Static Var System	*ElmSvs, ElmSvsctrl*	Open
Harmonic Filter	*ElmFilter*	Open

1.7 Grounding Element and Surge Arresters

Model	Class Name	Document
Neutral Earthing Element	*ElmNec*	Open
Surge Arrester	*StaSua, StaSuabi*	Open

1.8 Load Flow Controllers

Model	Class Name	Document
Station Controller	*ElmStactrl*	Open
Power Frequency Controller	*ElmSecctrl*	Open
Tap-Controller	*ElmTapctrl*	Open

1.9 Measurement Devices

Model	Class Name	Document
Current Measurement	*StaImea*	Open
Power Measurement	*StaPqmea*	Open
Voltage Measurement	*StaVmea*	Open
Current Transformer	*StaCt*	Open
Voltage Transformer	*StaVt*	Open
Phase Measurement Device (Phase Locked Loop)	*ElmPhi_pll*	Open
Measurement File	*ElmFile*	Open
C37 Configuration	*ElmC37*	Open

1.10 Digital Devices

Model	Class Name	Document
Digital Clock	*ElmClock*	Open
Digital Register	*ElmReg*	Open
Sample and Hold Model	*ElmSamp*	Open
Trigger Model	*ElmTrigger*	Open

1.11 Protection Devices

Model	Class Name	Document
ABB starting unit	*RelFdetabb, TypFdetabb*	Open
AEG/Alstom starting unit	*RelFdetaegalst, TypFdetaegalst*	Open
Alstom EPAC starting unit	*RelFdetalst, TypFdetalst*	Open
Common Time Characteristic	*RelChar, TypChar*	Open
CT Adapter	*RelCtadapt, TypCtadapt*	Open
Current Time Characteristic	*TypChatoc*	Open
Differential Protection	*RelBiasidiff, TypBiasidiff*	Open
Directional Block	*RelDir, TypDir*	Open
Distance Blinder	*RelDisbl, TypDisbl*	Open
Distance Directional	*RelDisdir, TypDisdir*	Open
Distance Load Encroachment	*RelDisloadenc, TypDisloadenc*	Open
Distance Mho	*RelDismho, TypDismho*	Open
Distance Polygon	*RelDispoly, TypDispoly*	Open
Instantaneous Overcurrent	*RelIoc, TypIoc*	Open
Logic/DIP	*RelLogdip, TypLogdip*	Open
Logic Block	*RelLogic, TypLogic*	Open
Measurement Block	*RelMeasure, TypMeasure*	Open
Polarizing unit	*RelZpol, TypZpol*	Open
Power Swing	*RelDispspoly, TypDispspoly*	Open
Recloser Block	*RelRecl, TypRecl*	Open
SEL Directional	*RelSeldir, TypSeldir*	Open
Siemens starting unit	*RelFdetsie, TypFdetsie*	Open
Starting/Fault Detector	*RelFdetect, TypFdetect*	Open
Timer	*RelTimer, TypTimer*	Open
Time Overcurrent	*RelToc, TypToc*	Open
Under-/Overvoltage	*RelUlim, TypUlim*	Open

1.12 Analysis Functions

Model	Class Name	Document
Fast Fourier Transform	*ElmFft*	Open

2 Overview of Template Documentation

These documents describe the templates that are delivered with *PowerFactory*.

Model	Name	Document
IEC Wind Turbine Templates (IEC 61400-27-1)	IEC 61400-27-1 WT Type1A/1B/2/3A/3B/4A/4B	Open
WECC Wind Turbine Templates	WECC WTG Type1/2/3/4A/4B	Open
DIgSILENT Doubly Fed Induction Generator Templates	*DIgSILENT* DFIG WTG	Open
DIgSILENT Fully Rated Converter Wind Turbine Templates	*DIgSILENT* FullyRatedConv WTG	Open
WECC Photovoltaic Templates	WECC Dist. Small PV Plants 25MVA, WECC Large-scale PV Plant 110MVA	Open
DIgSILENT Photovoltaic System Templates	*DIgSILENT* PV System 1PH/1PH-N/3PH	Open
WECC Static Var System Templates	WECC SVSMO1/2/3	Open
WECC Battery Energy Storage System Templates	WECC BESS 1.0MVA	Open
DIgSILENT Battery Energy Storage System Template	*DIgSILENT* BESS FrequencyCtrl 10kV 30MVA	Open
DIgSILENT Variable Speed Drive Template	*DIgSILENT* VSD 200kW	Open
WECC Dynamic Composite Load Model Template	WECC CMPLDW	Open
DIgSILENT Grid-forming Converter Templates	Droop Controlled Converter, Synchronverter, Virtual Synchronous Machine	Open

3 Overview of Technical References for Result Variables

These documents describes the common variables available for monitoring in *PowerFactory* for the terminals and for the single- and multiple-port elements (primary equipment). These are the parameters that can be selected to be displayed in the result boxes and in the flexible data page of the elements, which are not specific to a certain element.

Result Variable for	Document
Load Flow Calculation	Open
Harmonics Analysis	Open
RMS Simulation	Open
EMT Simulation	Open