
Toolbox and Components Libraries

VisSim provides a wide range of toolbox functions and diagram components to further enhance your modeling and simulation capabilities. Because they are in .VSM file format, you can easily incorporate them into your diagrams using the File menu's Add command or the embed block.

Toolboxes

The toolbox libraries supplied with VisSim include functions for controls, electro-mechanical design, Padé approximations, and signal generation. VisSim also provides a toolbox library of miscellaneous functions (called Tools).

Controls toolbox library (V:\SSIM50\TOOLBOX\CONTROLS)

Toolbox function	Description
DERIV_A.VSM	Continuous derivative model
DERIV_D.VSM	Discrete derivative function
DIFFR.VSM	Discrete difference model
HYST_CTL.VSM	Hysteresis controller
HYSTER.VSM	Hysteresis function
LAG.VSM	General first order unity gain all pole low pass filter
LEAD.VSM	General first order lead unity gain compensator
P_CTL.VSM	Proportional (P) controller
PI_CTL.VSM	Proportional Integral (PI) controller
PID_CTL.VSM	Proportional Integral Derivative (PID) controller

Toolbox function	Description
RATE_LIM.VSM	Rate limited controller
RFB_CTL.VSM	Rate feedback controller
TF1_CONT.VSM	Continuous first order transfer function
TF1_DISC.VSM	Discrete first order transfer function
TF2_CONT.VSM	Continuous second order transfer function
TF2_DISC.VSM	Discrete second order transfer function
TRIM_INT.VSM	Trimmed integrator - finds initial state for zero derivative
ZINTBR.VSM	Digital integrator (backward rectangular)
ZINTFR.VSM	Digital integrator (forward rectangular)
ZINTTR.VSM	Digital integrator (trapezoidal)

Electro-mechanical toolbox library (\VISSIM50\TOOLBOX\ELECHMECH)

Toolbox Function	Description
A2D.VSM	Analog-to-digital converter model with settable dT and bit length
ACDQ_MOT.VSM	Three-phase AC motor model utilizing DQ coordinate transformation
D2A.VSM	Digital-to-analog converter model with settable dT and bit length
DC_MOT.VSM	Armature controlled DC motor
ENCODER.VSM	Encoder model
MUX4.VSM	Four-channel multiplexer
PWM.VSM	Pulse wave modulation model

Padé toolbox library (\VISSIM50\TOOLBOX\PADE)

Toolbox Function	Description
PADE1.VSM	First order Padé approximation to time delay
PADE2.VSM	Second order Padé approximation to time delay
PADE3.VSM	Third order Padé approximation to time delay
PADE4.VSM	Fourth order Padé approximation to time delay

Signal generation toolbox library (VISSIM50\TOOLBOX\SIGGEN)

Toolbox Function	Description
3_PHASE.VSM	Three-phase sinusoidal signal generator
CAL_TIME.VSM	Simulation time in day, hour, minutes
DT.VSM	Simulation time in seconds
SAWTOOTH.VSM	Generates a sawtooth wave form
SQR_WAVE.VSM	Generates a square wave form
TRIANGLE.VSM	Generates a triangular wave form

Tools toolbox library (VISSIM50\TOOLBOX\TOOLS)

Toolbox Function	Description
AVG_VAL.VSM	Average (mean) value estimator for periodic signals
COUNTER.VSM	Pulse counter
MAG_PHAS.VSM	Computes the magnitude ratio and phase margin between two input signals
MAX_VAL.VSM	Detects the high peak value every cycle of a periodic wave form
MIN_VAL.VSM	Detects the peak low value every cycle of a periodic wave form
PERIOD.VSM	Wavelength estimator for a periodic signal
PH_DIFF.VSM	Phase difference estimator
RMS.VSM	Computes the root mean square (RMS) value of a signal
SWEEP.VSM	Provides parameter sweep settings
VEC_ANLY.VSM	Amplitude - phase vector display

Components

The components libraries supplied with Professional VisSim include DSP, dynamical, electro-mechanical, electric, hydraulic, process control, thermal, and turbine components.

DSP library (\VISSIM50\COMPONENT\DSP)

Component	Description
CONVOLXI.VSM	Analytical and numerical solutions for an impulse response system
KFILT.VSM	Filter for estimating particle coordinates and velocity components
WAVELETS.VSM	Two-parameter wavelet generation

Dynamical system library (\VISSIM50\COMPONENT\DYNSYS)

Component	Description
ANTENNA.VSM	Position control of flimsy antenna
REEL.VSM	Control of wire speed on a motor-controlled take-up reel
ROBEAM3.VSM	Reduced-order steady-state beam model

Electro-mechanical library (\VISSIM50\COMPONENT\ELECHMECH)

Component	Description
2DCMOTS.VSM	Two motors connected by a flexible belt
CRANE.VSM	Movement of a crane payload
HOIST.VSM	One mass nonlinear hoistway
STEPPER.VSM	Stepper motor for Variable Reluctance or Permanent Magnet types

Electrical library (\VISSIM50\COMPONENT\ELECTRIC)

Component	Description
POWERSUP.VSM	Two-diode, full-wave rectified DC power supply

Hydraulic libraries (\VISSIM50\COMPONENT\HYDRAULIC...)**\ACTUATOR library**

Component	Description
HYDMOTOR.VSM	Hydraulic motor
TWNCHMAC.VSM	Double-sided actuator

\INCLUDE library

Component	Description
GENDEFS.VSM	General definitions for hydraulic library

\MECHLOAD library

Component	Description
LINEAR.VSM	Linear mechanical load
ROTATNAL.VSM	Rotational mechanical load

\MINORLOS library

Component	Description
BEND.VSM	Fluid flow through a pipe bend
SUDCONTR.VSM	Sudden contraction of fluid due to an exit from a large chamber into a pipe
SUDEXPNS.VSM	Sudden expansion of fluid due to exit into a large chamber

\MISC library

Component	Description
MASSWLIM.VSM	Mass with limits
VOLUME.VSM	Capacitance volume effects

\ORIFICE library

Component	Description
ORIFICE.VSM	Flow through an orifice

\PIPE library

Component	Description
CONDUIT.VSM	Pressure gradient evaluation for laminar and turbulent flow through conduits

\POWRLOSS library

Component	Description
POWRLOSS.VSM	Power loss and temperature rise in fluid

\PUMPS library

Component	Description
POSDSPMP.VSM	Positive displacement pump
PRSCMPMP.VSM	Pressure compensated pump.

\SPLTMERG library

Component	Description
1ORFSPLT.VSM	Split one fluid stream into two (orifice at the exit on one of the outlet ports)
3WAYSPLT.VSM	Splits one fluid stream into three
MERGE.VSM	Merges two fluid streams into one
MERGE3LN.VSM	Merges three fluid streams into one and includes an orifice on the exit
MERGEALG.VSM	Joins two streams algebraically without introducing a pressure state
MRGALG3I.VSM	Joins three streams algebraically without introducing a pressure state
PLNMMERG.VSM	Merges two fluid streams into one and the downstream boundary condition is the flow rate
Component	Description
PLNMRG3L.VSM	Merges three fluid streams into one and the downstream boundary condition is the flow rate
PRSTRAN.VSM	Pressure transients in hydraulic conduits
SPLTWORF.VSM	Splits one fluid stream into two (orifice at the exit of each outlet port)

\VALVES library

Component	Description
REGLVALV.VSM	Pressure regulating valve
RELFVALV.VSM	Pressure relief valve

Process control library (\VISSIM50\COMPONENT\PROCESS)

Component	Description
BEER.VSM	Beer brewing model
CSTR.VSM	Simple continuous stirred tank reactor model
DISTIL.VSM	Binary distillation column
NISOTH.VSM	Non-isothermal continuous stirred tank reactor model

Thermal control library (\VISSIM50\COMPONENT\THERMAL)

Component	Description
HEATEXCH.VSM	Heat exchanger model

Turbine library (\VISSIM50\COMPONENT\TURBINE)

Component	Description
GT2.VSM	Twin spool gas turbine model