

Embed 2016.3 Release Notes

INTRODUCTION

solidThinking Embed, formerly known as VisSim Embedded, is a block diagram language for model-based embedded development. It supports UML State Charts integrated with dataflow block diagrams. This allows you to easily simulate and generate efficient fixed- and floating-point C code for embedded microprocessor targets. It provides a complete visual RTOS with on-chip peripheral drivers, unlimited pre-emptible tasks, simple interrupt handler creation, interrupt-based serial I/O queuing, and an interface to hand code.

solidThinking Embed is unique in its ability to generate highly efficient, high sample rate, low jitter target executables.



PLATFORM SUPPORT

Platform		
OS	Version	Architecture
Windows	10/8.1/7	x86_64

This release is providing fixes to the 2016 release. Amongst others, the following issues have been resolved for **solidThinking Embed 2016.3**:

GENERAL, SIMULATION

Application closes when closing all models and selecting a VSM file

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Convert transfer function from z domain to s domain yields incorrect output
Missing semicolon in startup OML script will end the simulation
License expire warning is not displayed by Embed

CODE GENERATION

Instability issue with the use of RK2; unable to lock frequency
Code generation issue with variables defined and redefined in differing conditional compounds
A diagram where both Encoder Unit 1 and 2 are used results in a compilation error because qepRevs and lastQepPos were initialized twice
Updated f28x compile dsp28xcl.bat file to include latest Hi Res PWM library
Use of Hi Resolution PWM caused hang on F28027 target
Code generation of top level compound causes fault
Code generation of cascaded switched delays can produce wrong results

Embed 2016 Release Notes

The following features and enhancements have been added for **solidThinking Embed 2016**:

INTEGRATION

Altair Licensing	With version 2016, Altair Licensing mechanism (either through units-based or feature-based licenses) is used for solidThinking Embed giving flexibility to accommodate all licensing needs.
Integration of VisSim Embedded add-ons	solidThinking Embed is built upon VisSim Embedded and includes, in a single package and installation of the following add-on modules: Analyze, CAN, Motion, OPC, RealtimePro, OptimizePro, Serial, StateCharts and UDP. They provide these additional capabilities: analysis and linearization, generalized reduced gradient method of parameter optimization, electric motor and controller block set (floating point), UML 2 state transition diagram editor to simulate event-driven systems, and real-time data monitoring with CAN, OPC, real-time data acquisition boards, serial, and UDP.
Support for solidThinking Compose Math Language	This represents a major upgrade in supported functionality for math computation, adding function calls, for loops and conditional statements, among many other features.

CODE GENERATION

<p>Support for TI F28377D</p>	<p>This is TI’s most recent flagship microprocessor chip in the C2000 product family. The chip has dual core 200MHz operation, trigonometric function accelerator, 16-bit ADCs, 4 parallel ADC units, redesigned on-chip comparators, redesigned CAN units, an additional I2C unit, buffered DACs, high speed SPI, new cross bar selection of GPIOs for peripheral inputs and outputs, redesigned flash cache. All of these are features are now supported.</p>
<p>Faster and more efficient code generation</p>	<p>The code generator is improved and now performs:</p> <ul style="list-style-type: none"> • Constant propagation across merge and case blocks eliminating codegen for unused merge and case branches • Detection and removal of unused enabled subsystems • Conversion div-by-const to mul by 1/const • Addition a number of matrix operations as constant folding candidates • Omission of declaration of unused variables

The following issues have been resolved for **solidThinking Embed 2016:**

GENERAL, SIMULATION

Fixed issue where 2D CSV map files could give zero-based dimension error
Plot Marker Count could vary from value set in dialog or if enabled plot
In rare cases the application could hang on file/open or file/new
Find/replace could cause memory leak
Matrix multiplied by scalar 0 could give "unknown matrix size" error
Find of block under another block failed to raise found block to top
Undo/redo of compound creation could result in extra compound pins
Fixed issue with plot cropped after zoom out
Fixed problem with 3D animation WRL files
Added warning for non-constant gain expression
Fixed erroneous matrix section error on file save
Some diagrams with IC expressions had needless iterations at startup
Matrix section set via matrix index int const matrix gave wrong warning on first run
Fixed issue where copy of dialog table omitted path table data
Suppress error messages (for example division by zero) from disabled compounds
Fixed issue with undeclared matrix in case of matrix operand use in nested compound that connected to unused branch of merge

BLOCK SET

Fixed issue where sawtooth block of same period as simulation time step caused division by zero errors
Fixed issue where use of constant in single quotes in const block could cause hang
Transfer functions in local bounds compound gave wrong results
Transfer function coefficient with undefined variable in denominator of fraction could hang
ABCD stateSpace block could give erroneous matrix shape warnings
Using "1/a^2" in denominator of transfer function could hang after warning
Handle warn of feedback around reset and limited integrals
Fix erroneous warning for ABCD stateSpace in case of dimensionality mismatch
Fixed issues in Matrix Operations's section and merge
The ramp block behavior from VisSim v7 or less differs from v8 or v9; added autoconvert to new offset vs. time delay based
Fix case where disconnected matrixMerge block could cause issue on file save
Changed ramp "delay" parameter to "offset" to reflect numeric usage

CODE GENERATION

Improved F28027 compilation which used too much RAM memory
Fixed issue where ADC sample order for F28335 could not be saved
F28M36P53 was missing from target list
Active High SPI config did not enable bit during codegen for Piccolo target
Save Embeds to Source Files could zero the source file if original source did not exist, then find/replace changes the existing source
Replace failed update embed block subsystems after replace changed the path
Fixed issue where asynchronous compounds (interrupts, background threads) could cause improper input assignment ordering
MSP430 install had wrong codegen support library causing link errors
MSP430 examples were missing the config block and could cause compile/link errors
F280x could fail to allocate Index Pulse mux properly for quadrature encoder
CCS 6.1 confused Embedded installer resulting in BAT files that wouldn't compile
Add support for new F28377 comparator setup and EPWM XBAR signal routing configuration
Selecting Flash targeting for F28x and ARM Cortex could give link errors
Cortex M3 I2C diagram with TX only gave link error
Cortex M3 I2C had configuration issues that could prevent proper operation
Fixed issue with garbled I2C and CAN config settings
Selection of ePWM as control interrupt source could give compile errors
Codegen could give warning about 1/S when 1/S was not part of compiled subsystem
Missing connection on fxMul could cause codegen to report fileOpen error
Use of \$timeStep could give compile error
Shortened boot delay between GPIconfig and \$firstPass enabled compound
Fixed issue on monitor buffers which didn't handle double float data types on ARM target

Reset integral codegen gave results different from sim
Added codegen for logEvent block
Fixed issue on codegen for sampleHold initialization for PC target
Fixed codegen for matrix operations on untaken branch of merge with constant selector input
Fixed codegen for reset integral
Optimized constant case selector to generate code only for selected case
Fixed codegen issue that could give error on conditional subsystem with variable in feedback
Fixed issue with PWM on F28377 that was running 2x slower than expected
Added support for F28377 DAC
Changed import data and map table header labels on pins to be less sensitive to formatting
Fixed issue on unsigned data types in CAN bus RX/TX blocks that could give wrong results
Codegen of continuous floating point transfer functions could introduce an extra one step delay
Improved F28277x flash performance
Fixed issue on Erroneous codegen in SmallRam mode due to integrators being hidden in nested enabled compound
Use of \$timeStep could give compile error
Shortened boot delay between GPIconfig and \$firstPass enabled compound
Fixed issue on monitor buffers that didn't handle double float data types on ARM target
Reset integral codegen gave results different from sim
Added codegen for logEvent block
Fixed issue on codegen for sampleHold initialization for PC target
Fixed codegen for matrix operations on untaken branch of merge with constant selector input
Fixed codegen for reset integral
Optimized constant case selector to generate code only for selected case
Fixed codegen issue that could give error on conditional subsystem with variable in feedback

OTHER MODULES and ADD-ONS

Improved State chart execution that was slowed down on entry of Composite state
State chart dialog was missing help button
Analyze gave erroneous small gain margin if phase plot never got below -180
CAN RX/TX of longer messages with more than one data item could give bad results
Fixed issue on Comm WaveRead block that faulted on load