

# Reactis V2016

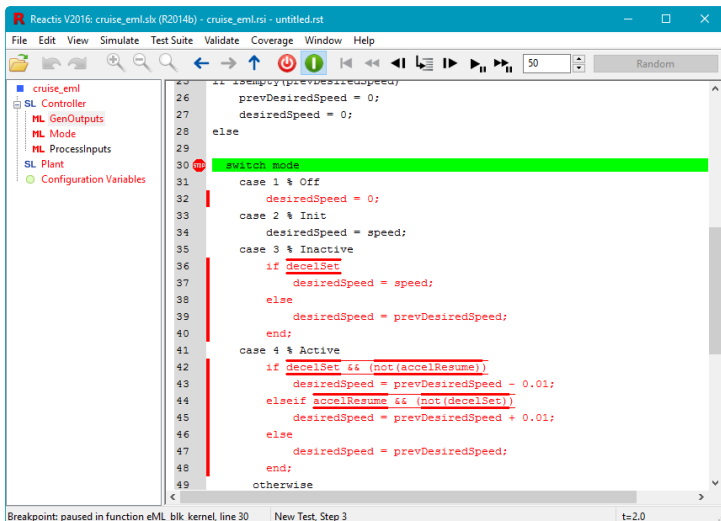
Released June 20, 2016



# New Simulink Support

- ▶ R2016a.
- ▶ Support for Simulink® data dictionaries.
- ▶ Use data dictionary entry as configuration variable.
- ▶ Support *Input port* setting for breakpoint data in Pre-Lookup block.
- ▶ Support *Input port* setting for table data in Interpolation block.
- ▶ Support Manual Switch block (current setting).

# EML Plugin: Embedded MATLAB® Debugging



The screenshot shows the Reactis V2016 IDE interface. The title bar reads "Reactis V2016: cruise\_eml.slx (R2014b) - cruise\_eml.rst - untitled.rst". The menu bar includes File, Edit, View, Simulate, Test Suite, Validate, Coverage, Window, and Help. The toolbar contains icons for file operations, search, and simulation control, along with a "Random" button. The left sidebar shows a project tree with "cruise\_eml" expanded to show "SL Controller", "ML GenOutputs", "ML Mode", "ML ProcessInputs", "SL Plant", and "Configuration Variables". The main editor displays MATLAB code for a speed control system. A red breakpoint is set at line 30, which is highlighted in green. The code includes a switch statement for different modes: Off, Init, Inactive, and Active. The status bar at the bottom indicates "Breakpoint: paused in function eML\_blk\_kernel, line 30", "New Test, Step 3", and "t=2.0".

```
25 if isempty(prevDesiredSpeed)
26     prevDesiredSpeed = 0;
27     desiredSpeed = 0;
28 else
29
30 switch mode
31     case 1 % Off
32         desiredSpeed = 0;
33     case 2 % Init
34         desiredSpeed = speed;
35     case 3 % Inactive
36         if decelSet
37             desiredSpeed = speed;
38         else
39             desiredSpeed = prevDesiredSpeed;
40         end;
41     case 4 % Active
42         if decelSet && (not(accelResume))
43             desiredSpeed = prevDesiredSpeed - 0.01;
44         elseif accelResume && (not(decelSet))
45             desiredSpeed = prevDesiredSpeed + 0.01;
46         else
47             desiredSpeed = prevDesiredSpeed;
48         end;
49     otherwise
```

# EML Plugin: Embedded MATLAB® Debugging

The screenshot shows the Reactis V2016 IDE interface. The main window displays MATLAB code for a function named `eML_blk_kernel`. The code includes a `switch mode` block with several cases. Breakpoints are indicated by red vertical bars on the left side of the code editor, specifically on lines 30, 32, 34, 36, 42, and 44. A callout box with a yellow background and a black border points to line 30, containing the text "Set breakpoints. Step into EML." The status bar at the bottom of the IDE indicates "Breakpoint: paused in function eML\_blk\_kernel, line 30" and "New Test, Step 3".

```
25 if isempty(prevDesiredSpeed)
26     prevDesiredSpeed = 0;
27     desiredSpeed = 0;
28 else
29
30 switch mode
31     case 1 % Off
32         desiredSpeed = 0;
33     case 2 % Init
34         desiredSpeed = speed;
35     case 3 % Inactive
36         if decelSet
37             desiredSpeed = speed;
38         else
39             desiredSpeed = prevDesiredSpeed;
40         end;
41     case 4 % Active
42         if decelSet && (not(accelResume))
43             desiredSpeed = prevDesiredSpeed - 0.01;
44         elseif accelResume && (not(decelSet))
45             desiredSpeed = prevDesiredSpeed + 0.01;
46         else
47             desiredSpeed = prevDesiredSpeed;
48         end;
49     otherwise
```

Breakpoint: paused in function eML\_blk\_kernel, line 30    New Test, Step 3    t=2.0

Set breakpoints.  
Step into EML.

# EML Plugin: Embedded MATLAB® Debugging

```
25 if isempty(prevDesiredSpeed)
26     prevDesiredSpeed = 0;
27     desiredSpeed = 0;
28 else
29
30     switch mode
31         case 1 % Off
32             desiredSpeed = 0;
33         case 2 % Init
34             desiredSpeed = speed;
35         case 3 % Inactive
36             if decelSet
37                 desiredSpeed = speed;
38             else
39                 desiredSpeed = prevDesiredSpeed;
40             end;
41         case 4 % Active
42             if decelSet && (not(accelResume))
43                 desiredSpeed = prevDesiredSpeed - 0.01;
44             elseif accelResume && (not(decelSet))
45                 desiredSpeed = prevDesiredSpeed + 0.01;
46             else
47                 desiredSpeed = prevDesiredSpeed;
48             end;
49         otherwise
```

Set breakpoints.  
Step into EML.

Execute  
1 statement  
at a time.

New Test, Step 3 t=2.0

# EML Plugin: Embedded MATLAB® Debugging

Reactis V2016: cruise\_eml.sx (R2014b) - cruise\_eml.rsi - untitled.rst

File Edit View Simulate Test Suite Validate Coverage Window Help

50 Random

Project Tree:

- cruise\_eml
  - SL Controller
    - ML GenOutputs
    - ML Mode
    - ML ProcessInputs
    - SL Plant
    - Configuration Variables

```
25 if isempty(prevDesiredSpeed)
26     prevDesiredSpeed = 0;
27     desiredSpeed = 0;
28 else
29
30     switch mode
31         case 1 % Off
32             desiredSpeed = 0;
33         case 2 % Init
34             desiredSpeed = speed;
35         case 3 % Inactive
36             if decelSet
37                 desiredSpeed = speed;
38             else
39                 desiredSpeed = prevDesiredSpeed;
40             end;
41         case 4 % Active
42             if decelSet && (not(accelResume))
43                 desiredSpeed = prevDesiredSpeed - 0.01;
44             elseif accelResume && (not(decelSet))
45                 desiredSpeed = prevDesiredSpeed + 0.01;
46             else
47                 desiredSpeed = prevDesiredSpeed;
48             end;
49         otherwise
```

Hover to see variable value.

Set breakpoints. Step into EML.

Execute 1 statement at a time.

speed = 24.02237926925215: double

New Test, Step 3 t=2.0

# EML Plugin: Embedded MATLAB® Debugging

Reactis V2016: cruise\_eml.slx (R2014b) - cruise\_eml.rsi - untitled.rst

File Edit View Simulate Test Suite Validate Coverage Window Help

25 if isempty(prevDesiredSpeed)  
26 prevDesiredSpeed = 0;  
27 desiredSpeed = 0;  
28 else  
29  
30 switch mode  
31 case 1 % Off  
32 desiredSpeed = 0;  
33 case 2 % Init  
34 **desiredSpeed = speed;**  
35 case 3 % Inactive  
36 if decelSet  
37 desiredSpeed = speed;  
38 else  
39 desiredSpeed = prevDesiredSpeed;  
40 end;  
41 case 4 % Active  
42 if decelSet && (not(accelResume))  
43 desiredSpeed = prevDesiredSpeed - 0.01;  
44 elseif accelResume && (not(decetSet))  
45 desiredSpeed = prevDesiredSpeed + 0.01;

Variable Value Type  
cruise\_eml.Controller.GenOutputs[calcDesiredSpeed].speed 24.02237926925215 double

New Test, Step 3

Set breakpoints.  
Step into EML.

Execute  
1 statement  
at a time.

Hover to see  
variable value.

Add variable  
to watch list.

# Reactis for C Plugin

- ▶ Assign pre-compiled library for use by Stateflow custom C code.
- ▶ Ignore incomplete variable or function declarations which are never used.
- ▶ The argument of a #include directive can now be a macro.
- ▶ Improved formatting of value shown when hovering on scalar character values and arrays of characters.
- ▶ Produce warnings instead of errors for GCC-style extended asm statements (the assembly code will be ignored).



# Other Enhancements

- ▶ Support for Windows 10.
- ▶ Option to use Z3 SMT Solver to improve the coverage of Tester-generated tests for some models and to improve the static analysis that identifies unreachable coverage targets.
- ▶ Allow comparing enumerated values of different types in Stateflow.
- ▶ Launch a quick HTML coverage report from the top-level Coverage menu.
- ▶ Option to export Booleans as integers in CSV file.

# Other Enhancements

- ▶ Checkbox in Tester launch dialog to enable/disable pruning of tests after the random phase.
- ▶ Reactis now stores information about model's top-level output ports and their types in the .rsi file to facilitate automatic harness creation for Reactis for C and simplify back-to-back testing with Reactis and Reactis for C.

# Thank You!

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