

CoverageMaster winAMS

ISO 26262
IEC 61508
Certified

Automated embedded C/C++ software unit test tool

Unit testing on actual MPU target code using instruction set simulator

Automatically create input test data for C1 & MC/DC coverage

Certified by TÜV SÜD as a tool that meets the ISO26262 and IEC61508 standards

MPU target code based unit test tool

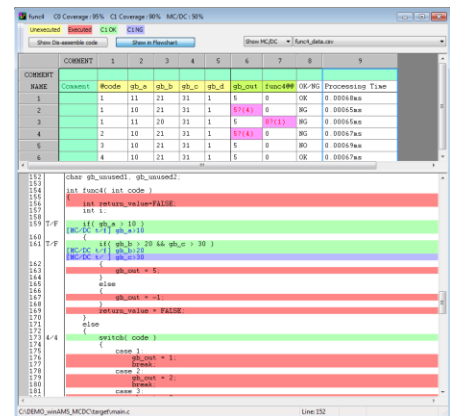
CoverageMaster winAMS is an automated embedded software unit testing tool that executes the target MPU device's code for achieving reliable testing results. The standard coverage modes C0, C1, and MC/DC are fully supported.

Perform unit testing reliable as close to target MPU as possible

Specialized hook code or test drivers are not required for unit testing with CoverageMaster WinAMS. The target MPU code is executed as is, for reliable as close to the actual device as possible test results. As an additional advantage, this means that setting up a separate test environment is not required.

Automatic coverage test data creation

C1 and MC/DC test data for code-based unit test can be automatically created through the use of the source code static analysis feature.

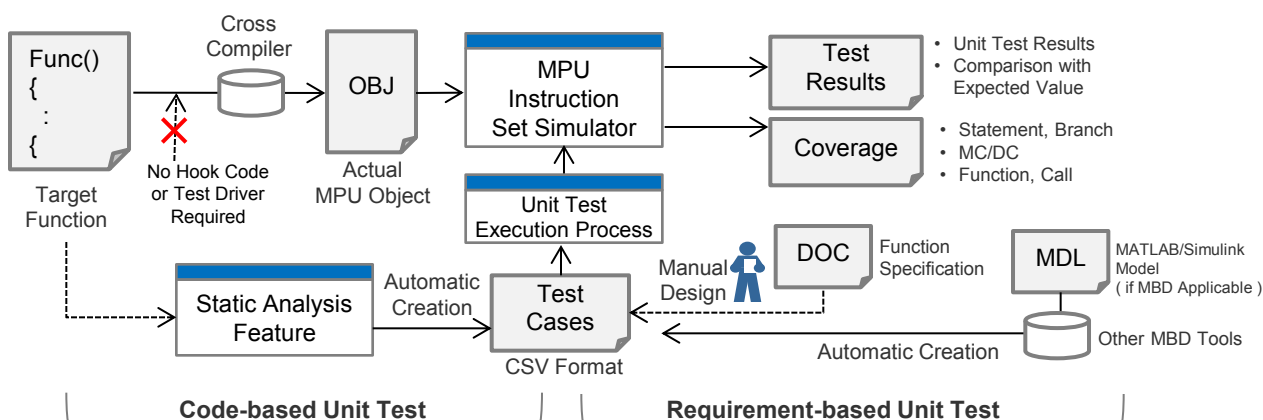


ISO26262 / IEC61508 certified

CoverageMaster winAMS complies with ISO26262 automotive functional safety standard and IEC61508 functional safety meta-standard. Tool certification was granted by third-party certification organization TÜV SÜD Germany.

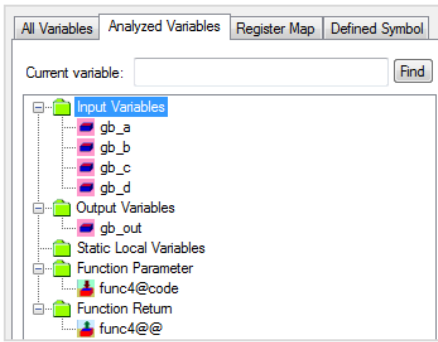


CoverageMaster winAMS Unit Test Framework



Search for input/output variables automatically

Using the static analysis information from 'CasePlayer2' the global input/output variables used by the target function are listed automatically. This feature is both time saving and reduces the possibility of human error.



Auto Measure C0, C1 and MC/DC coverage

CoverageMaster supports C0 and C1 coverage measurement used for general embedded software, and MC/DC measurement required for automotive functional safety standard (ISO 26262).

```

201 T/F      if( gb_a > 10 )
202          [MC/DC t/f] gb_a>10
203          {
204 T/F      if( gb_b > 20 && gb_c > 30 )
205          [MC/DC t/f] gb_b>20
206          [MC/DC t/f] gb_c>30
207          {
208              gb_out = 0;
209          }

```

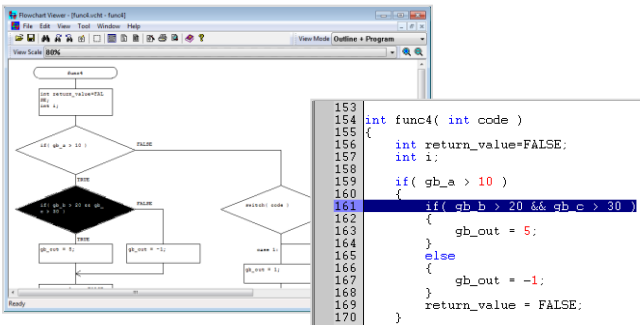
Automatically create C1, MC/DC coverage test data

CoverageMaster can create an optimal set of input test data combinations for completing the C1, MC/DC tests by using the static analysis information provided from 'CasePlayer2'.

Logical Expression	Line	Status	Expression
if(gb_b>20&&gb_c>30)			
if(gb_a>10)	159	OK	x<<C
TRUE			gb_a=11
FALSE			gb_a=10
if(gb_b>20&&gb_c>30)	161	OK	x<<C
TRUE			gb_b=21
FALSE			gb_b=20
gb_c>30			x<<C
TRUE			gb_c=31
FALSE			gb_c=30
switch(code)	173	OK	--
case 1:			@code=1
case 2:			@code=2
case 3:			@code=3
default:			@code=4

Easy access to source code and program documents

The source code and CasePlayer2 created program documents may be easily accessed from CoverageMaster's interface. Program documents include flowcharts or module structure diagrams are useful for code reviews and getting a visual representation of the program' structure.



CoverageMaster General MPU version

'CoverageMaster General' may be used to perform C logic level unit testing for applications that do not require assembly target code level testing. The test package includes a general use ANSI-C compatible compiler and MPU simulator.

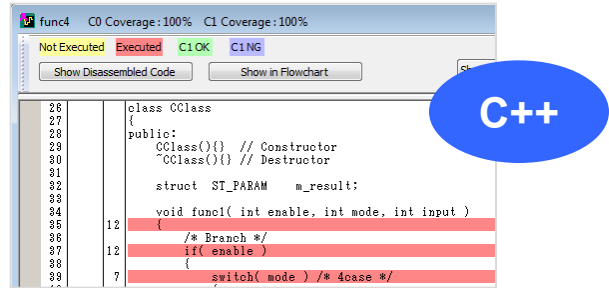
Supported 'Function/Call Coverage' testing (option)

To comply with ISO26262, the structural coverage at the software integration level is required in accordance with ASIL. CoverageMaster supports function/call coverage for integration testing. Function/call coverage can be measured automatically by loading test cases into the top function of a component with integrated function units.

File name	Function coverage	Call coverage (by file)	Function name	Execution	Call coverage (by function)	Function call count	Function call line	Execution	
source_1.c	83%	75%	fc_cover_test	yes	100%	2	23: sub_func1	yes	
							27: sub_func6	yes	
			sub_func1	yes	100%	3	35: sub_func2	yes	
							36: sub_func3	yes	
							40: sub_func3	yes	
			sub_func2	yes	33%	3	48: sub_func4	yes	
							52: sub_func5	no	
							56: sub_func8	no	
									N/A
source_2.c	100%	50%	sub_func3	yes	N/A	0	N/A	N/A	
			sub_func4	yes	N/A	0	N/A	N/A	
			sub_func5	no	N/A	0	N/A	N/A	
source_3.c	50%	N/A	sub_func6	yes	100%	1	20: sub_func7	yes	
			sub_func7	yes	33%	3	32: sub_func8	yes	
							36: sub_func8	no	
								37: sub_func9	no
								N/A	N/A
								N/A	N/A

C++ unit testing (option)

A C++ option is available for C++ code unit testing. During testing class objects are allocated to memory based on the class definition. Further, static class objects are assigned to the target in order to perform unit testing on methods (functions) within the target class.



MPU Support

As of Nov. 2013

[ARM]

ARM Cortex-A8
ARM Cortex-A9
ARM Cortex-A15
ARM Cortex-M0
ARM Cortex-M0+
ARM Cortex-M1
ARM Cortex-M3
ARM Cortex-M4
ARM Cortex-R4/R4F
ARM Cortex-R5/R5F
ARM7TDMI
ARM9TDMI
ARM9E-S

[ST Microelectronics]

SPC563(e200z3)
SPC56E/SPC564(e200z4)

[Infineon]

C166S V2(XC2300)
TriCore

[Renesas]

78K/0
78K/OR
H8S
H8SX
H8/300H
H8/300/300L
M16C
M32C/80
M32R
R32C/100
R8C/Tiny
RH850
RL78
RX200
RX600

[Freescale]

e200z0
e200z3
e200z6
e200z3
e200z6
e200z4
e200z420
e200z7
e300
e500v1
e500v2
MPC500
MPC600
MPC800
S12X
S12(S12C)
S12(S12Q)
S12(S12KG)
S12(S12KT)
S12(S12HZ)
S12(S12P)
S12(S12HY)

[Spansion]

FM3(Cortex-M3)
FMC16FX
FMC16LX
FMC8FX
FMC8L
FR20
FR30
FR60Lite
FR80
FR81S

[Toshiba]

TLCS870C
TLCS870C1
TLCS900
TX03(Cortex-M3)
TX04R(Cortex-R4)
TX19
TX19A

[JRC]

Alligator(Ximo16)

[Panasonic]

MN103S/103L

[Sony]

SPC900

Supported host OS

Supported OS : Windows 2000 / XP / Vista / 7 (32/64bit)

Developer

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