HALCoGen 04.06.00

Release Notes

05th Oct 2016

HALCoGen™ is the driver generation tool for TI's Hercules Microcontroller Family

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1 New In This Release

- AJSM Support across all devices
- CAN Mailbox FIFO mode support added.
- Production version drivers for TMS570LS09x/07x and RM44x family of devices.
- Bug Fixes and few GUI Enhancements.

Note:

Before using the AJSM please refer the forum link for support Tools info: https://e2eprivate.ti.com/safeti_functional_safety_support/m/hercules_ajsm_related_media/3575.aspx

Note:

For all HALCoGen FreeRTOS based projects used with CCS, in the Compiler options under Advanced Options → Language Options → "Enable support for GCC Extension (--gcc)".

Note:

For TMS570LC43x and RM57x Family of Devices Safety Functions are support only in SafeTI Diagnostic Library version 2.x.y which can be installed along with HALCoGen 4.01.00 or later.

For using SafeTI Diagnostic Library with HALCoGen
please refer Examples → example_SafetyLib.c in following Help file
C:\ti\Hercules\HALCoGen\<vXX.YY.ZZ>\help\TMS570LC43x.chm (or)
C:\ti\Hercules\HALCoGen\<vXX.YY.ZZ>\help\RM57Lx.chm

2 System Requirements

The system requirements for HALCoGen are as follows:

OS – Windows XP, Windows 7

Memory – 1GB

Disk Space – 750 MB

3 Installing HALCoGen

The Latest HALCoGen version can also be downloaded from the following Link **http://www.ti.com/tool/HALCoGen**.

The tool gets installed in the directory named..**\HALCoGen\vXX.YY.ZZ**

Where **XX.YY** is the version number and **ZZ** is the Patch number if released. Multiple versions can co-exist, although it is advised to use the latest version.

4 Uninstall HALCoGen

The HALCoGen can be uninstalled one version at a time.

ti → Hercules→ HALCoGen → vXX.YY.ZZ → uninstall.exe

5 Release Contents

This release supports the drivers for the following variants:

Modules	*TMS470M*	*TMS570LS 20x*	*TMS570LS 31x/RM48x*	*TMS570LS 12x/RM46x*	*TMS570LS 09x/07x/RM44x*	*TMS570LS 04x/RM42x*	*TMS570LC 4x/RM57x*
Cortex-R4	-	✓	✓	✓	✓	✓	-
Cortex-R5	-	-	-	-	-	-	✓
Cortex-M3	✓	-	-	-	-	-	-
freeRTOS	✓	✓	✓	✓	✓	✓	-
SYSTEM	✓	✓	✓	✓	✓	✓	✓
PINMUX	-	-	✓	✓	✓	✓	✓
MPU	✓	✓	✓	✓	✓	✓	✓
PMU	-	✓	✓	✓	✓	✓	✓
VIM	✓	✓	✓	✓	✓	✓	✓
ESM	-	✓	✓	✓	✓	✓	✓
Memory Map	✓	✓	✓	✓	✓	✓	✓
RAM	✓	✓	✓	✓	✓	✓	✓
FLASH	✓	✓	✓	✓	✓	✓	✓
GCM/Oscillator	✓	✓	✓	✓	✓	✓	✓
PLL	✓	✓	✓	✓	✓	✓	✓
DCC	-	-	✓	✓	✓	✓	✓
CCM	-	×	×	×	×	×	×
PMM	-	-	✓	✓	✓	✓	✓
POM	-	×	✓	✓	-	-	✓
EMIF	-	×	✓	✓	-	-	✓
PBIST	-	✓	✓	✓	✓	✓	×
LBIST(STC)	✓	×	✓	✓	✓	✓	×
MBIST	✓	×	✓	✓	✓	✓	×
EFUSE	-	-	✓	✓	✓	✓	×
RTP-IO	-	-	✓	-	-	-	×
DMM-IO	-	-	✓	-	-	-	×
ETPWM	-	-	-	✓	✓	-	✓
ECAP	-	-	-	✓	✓	-	✓
EQEP	-	-	-	✓	✓	✓	✓

✓ Available

× Not Available

- Not Applicable

Modules	*TMS470M*	*TMS570LS20x*	*TMS570LS31x/RM48x*	*TMS570LS12x/RM46x*	*TMS570LS09x/07x/RM44x*	*TMS570LS04x/RM42x*	*TMS570LC4x/RM57x*
RTI	✓	✓	✓	✓	✓	✓	✓
GIO	✓	✓	✓	✓	✓	✓	✓
SCI	✓	✓	✓	✓	✓	✓	✓
LIN	✓	✓	✓	✓	✓	✓	✓
SPI	✓	×	✓	✓	✓	✓	✓
SPI/MIBSPI	✓	✓	✓	✓	✓	✓	✓
CAN	✓	✓	✓	✓	✓	✓	✓
ADC	✓	✓	✓	✓	✓	✓	✓
HET	✓	✓	✓	✓	✓	✓	✓
HTU	-	×	×	×	×	×	×
I2C	-	-	✓	✓	✓	×	✓
EMAC	-	-	✓	✓	-	-	✓
DMA	-	×	✓	✓	✓	✓	✓
PCR	-	×	✓	✓	✓	✓	✓
EPC	-	-	-	-	-	-	✓
NMPU	-	-	-	-	-	-	✓
USB	-	-	- / ✓	- / ✓	-	-	-
FlexRay™	-	-	× / -	× / -	-	-	×
FTU	-	-	× / -	× / -	-	-	×
FEE	✓	-	✓	✓	✓	✓	✓

✓ Available

× Not Available

- Not Applicable

Current details of the Device wise Software Maturity Level and the Bug list can be found in the HALCoGen WIKI Page

http://processors.wiki.ti.com/index.php/HALCoGen

6 Fixed In This Release

Following are the list of issues fixed in version 04.06.00 from 4.06.00

References	Description
SDOCM00122698	Customer Requests Export of Stack Size Information from sys_core.asm
SDOCM00121748	Initialize stack pointer for all reset sources
SDOCM00121831	Support DCAN FIFO mode in HALCoGen
SDOCM00121859	Reserved spacing seems to have the wrong rsvd[] array length in header file HL_reg_flash.h.
SDOCM00121864	HALCoGen DCAN ID help
SDOCM00122148	Typos in pinmux macros
SDOCM00122160	HALCoGen prints "undefined" message in the console output while saving the project
SDOCM00122169	HALCoGen prints error message while loading the project
SDOCM00122181	Startup code issues (in reset handler) for RM57L843
SDOCM00122184	Customer pointing out wrong description for parameter in device startup code.
SDOCM00122319	HALCoGen SCI Driver sciSetBaudrate() ignores TRM requirement to assert SWnRST
SDOCM00122320	HALCoGen does not compute baud rate the same way in the GUI as in the API code resulting in SCI errors
SDOCM00122335	Error in SDRAM Initialization Code
SDOCM00122353	Cannot disable SCI driver in RM44L920PGE device through GUI
SDOCM00122380	EMIF: Calculation of parameter RR seems to be broken
SDOCM00122381	EMIF: Critical code for SDRAM initialisation gets removed by optimizer
SDOCM00122395	HALCoGen Example should remove ATB from PBIST test on RM57L843
SDOCM00122429	TI FEE Driver needs define for _LITTLE_ENDIAN or _BIG_ENDIAN
SDOCM00121739	FEE driver documentation (printed and online) calls out CRC but algorithm used is not CRC
SDOCM00122694	Doxygen note tags in HL_sys_pcr.c are malformed
SDOCM00122486	HALCoGen ADC Gui doesn't work for some channels.
SDOCM00122528	ESM Configuration tab gives wrong description about he channel
SDOCM00122542	TI_Fee_Format API does not erase some sectors, if multiple physical sectors are combined to form a virtual sector.
SDOCM00122543	TI_FEE_WriteSync API triggers a copy of a block which is already copied to new sector.
SDOCM00122561	HALCoGen Startup Code Crash - Using Stack before SP initialized.
SDOCM00122564	HALCoGen generated code will not compile for TMS570LS20216SPGE

SDOCM00122566	HALCoGen example_rtiBlinky example instructions do not match the screenshot diagrams
SDOCM00122580	Need fix for TRM Error Regarding EMIF SDRAM Initialization Procedure.
SDOCM00122603	HALCoGen Clock Switching Brings EMIF Clock (and likely other clocks) up in Invalid Order Violating Spec of Devices
SDOCM00122625	HALCoGen EMAC Configuration Page Causes Errors When RMII Mode is Used
SDOCM00122533	FEE Corruption. TI_Fee_WriteSync API must avoid copy of already copied block.
SDOCM00122709	Pinmux GUI bug in RM44x/TMS5707x PZ variant

7 Known Issues and Limitations

Following are the list of Known issues and limitations in this version.

References	Description
SDOCM00084753	**SYS**: Since the PLL tab does not spit out warnings if any final or intermediate frequencies generated are out of spec. **Root Cause**: HALCoGen Engine limitation. **Workaround**: Refer the device Technical Reference Manual for recommended PLL configurations.
SDOCM00086009	**Tool:** No KEIL tool support for TMS470M devices
SDOCM00087899	**FEE:** The FEE driver GUI in TMS470Mx family only supports 10 blocks. **Root Cause**: GUI support is complex since it's not dynamic. **Workaround**: Generated Header file can be edited manually to required blocks.
SDOCM00095488	**CAN:** Support for Mixed mode in CAN driver is necessary. **Root Cause**: GUI support is complex. **Workaround**: Using User Code section Mailbox configuration can be changed.
SDOCM00088096	**ADC:** Interrupt Enable Check box for Event, Group1 and Group2 groups for ADC1, ADC2 in HCG. **Root Cause**: GUI support is complex. **Workaround**: Separate API's are supported in the driver. Interrupt can be enabled by calling the Enable Notification API.
SDOCM00122504	**FEE:** HALCoGen FEE Driver Does Not Set Bank Before Writing To Flash.
SDOCM00122496	**FEE:** HALCoGen FEE Corruption - Block Header Not Written Properly.
SDOCM00122164	**SYS:** HALCoGen RAM and Stack Locations are Hard-coded.
SDOCM00121738	**FEE:** FEE Driver Does not Check CRC when reading and CRC option is enabled.
SDOCM00122382	**SYS:** Clock Tree tab to RM57 and TMS570LC43 are not available.

8 User Notes

- 02.xx.xx HALCoGen Pjt cannot not be opened in 03.xx.xx or greater HALCoGen versions. User has to redo configuration with latest HALCoGen.
- Any directory should not have more than one HALCoGen project (.hcg and .dil files). Each project should be in an individual directory.
- From HALCoGen Version 3.00.00 onwards the header files are generated in include directory and other driver files in source directory. The user needs to set this include path in the 'project include settings' while building it.

  (Eg: In compiler (cl470) add option → "--include path (**path**)/include").
- When selecting HET2 – Advanced Configuration Mode / Disable Black box user must make sure the "Select Header File & Source file" inputs are generated out of NHET assembler using option "–n1 –hc32".
- HALCoGen does not delete any files placed/generated under source or include folder generated by HALCoGen.
- To use USB drivers in RM48x and RM46x family of devices Enable support for GCC extensions (--gcc) in compiler options.
- If running CPU Self test in debug mode, the debug info are lost immediately after CPU self test eg., All breakpoints set before CPU self test are lost.
- CCM Self test cannot be run in debug mode.
- HALCoGen must be used with default **100% Font size** only. http://e2e.ti.com/support/microcontrollers/hercules/f/312/t/184660.aspx
- Following options must be selected under **MULTI IDE** project to use HALCoGen generated code for GHS.
  - **-T** < Generated code path >\source\sys_link.cmd
  - **-I** < Generated code path >\include
  - **-no_auto_interrupt_table**
  - **-e resetEntry**