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## RTA-OS RH850x2/GHS

Release Note - Version 5.0.3 (18-06-2019)

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## Safety Notice

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This ETAS product fulfills standard quality management requirements. If requirements of specific safety standards (e.g. IEC 61508, ISO 26262) need to be fulfilled, these requirements must be explicitly defined and ordered by the customer. Before use of the product, customer must verify the compliance with specific safety standards.

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# 1 Introduction

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RTA-OS is an AUTOSAR compliant Operating System and associated tooling. This document provides release information for the RTA-OS RH850x2/GHS port plug-in that customizes the RTA-OS development tools for the Renesas RH850x2 with the GREENHILLS compiler. It supplements the more general information you can find in the *Release Note*.

## 1.1 Version Information

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This is Version 5.0.3 of the RTA-OS RH850x2/GHS plug-in.

## 1.2 Installation

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The installation process is covered in detail in the *RH850x2GHS Port Guide*.

## 2 **Open EHI Calls**

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Open issues are referred to by their call number in the ETAS Helpdesk International (EHI) system.

No EHI calls are open.

## 3 Change History

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### 3.1 Version 5.0.3

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#### Additional Features

The following features have been added to this release:

- Note that this target port will only work with RTA-OS Tools v5.5.6 or later.
- The target option Core Specific Wrappers has been added to allow you to locate the outer and mid interrupt wrappers for Table Reference mode EIINT ISRs in core specific sections. The wrappers for an ISR assigned to core x will be located in the section `Os_primitivesx`. E.g. The wrappers for an ISR assigned to core 0 will be located in the section `Os_primitives0` and the wrappers for an ISR assigned to core 2 will be located in the section `Os_primitives2`.

#### Modified Features

The following features have been modified in this release:

- The exemplar linker scripts now contain sections for core-local data.
- The shim functions used for category 2 ISRs (`Os_shim_XXX`) are now placed in `Os_MemMap.h` controlled sections `OS_START_SEC_COREx_CODE_LIB` where x is the core to which the ISRs are assigned. E.g. the shim for an ISR that is assigned to core 0 will be placed in the `Os_MemMap.h` controlled section `OS_START_SEC_CORE0_CODE_LIB` and the shim for an ISR that is assigned to core 2 will be placed in the section `OS_START_SEC_CORE2_CODE_LIB`.

#### Removed Features

No features have been removed from this release.

### 3.2 Version 5.0.2 (Preview Release)

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#### Additional Features

The following features have been added to this release:

- Enhanced isolation support. Please see the document [RTA-OS RH850x2GHS Enhanced Isolation.pdf](#).
- Added vector labels for the U2A.
- Now supports the U2A16 - developed from datasheet, not tested on EVB.
- Now supports the U2A8 - developed from datasheet, not tested on EVB.
- The function `Os_Get_CoreID()` has been added to the RTA-OS library to support reading the core identifier.

## Modified Features

The following features have been modified in this release:

- When an ISR is attached to the vector for an INTC1 interrupt channel, `Os_InitializeVectorTable()` will only enable the interrupt channel on the core to which the ISR is assigned in the configuration.
- The `Os_DisableAllConfiguredInterrupts` and `Os_EnableAllConfiguredInterrupts` macros have been replaced with `Os_DisableAllConfiguredInterrupts_Corex` and `Os_EnableAllConfiguredInterrupts_Corex` that only disable and enable interrupt channels whose ISRs have been assigned to core `x` in the configuration. `x` is the numeric value found in a core's PEID register. E.g. `Os_DisableAllConfiguredInterrupts_Core0` disables interrupt channels on the core whose PEID register contains the value 0 and `Os_DisableAllConfiguredInterrupts_Core1` disables interrupt channels on the core whose PEID register contains the value 1.
- By default the core ID is not now cached in the CTPC register. Core ID caching can now be enabled using a target option.
- The RTA-OS generated vector table does not include the reset vector and is now aligned to 16 bytes so that a reset vector can be placed immediately before it. Please see the sample applications for an example.
- The vector labels for the E2GM, E2L and E2M have been updated.
- Changed the inline function in `Os.h` (e.g. `OS_STCW` and `OS_CLR1`) so that they do not result in compiler errors.
- All CPU vectors must now be IPL 17. EIINT vectors must have IPLs 1-16.
- `Os_setjmp/Os_longjmp` now saves `r1` and `r30` for alignment with GHS library versions of `setjmp/longjmp`.

## Removed Features

No features have been removed from this release.

### 3.3 Version 5.0.1 (Preview Release)

#### Additional Features

The following features have been added to this release:

- Interim preview release
- Support for the U2A (Vector table labels to be added).
- New API `Os_CacheCoreID()` to store the core ID in CTPC.
- In multi-core configurations `Os_InitializeVectorTable()` now calls `Os_CacheCoreID()`.



### Modified Features

The following features have been modified in this release:

- Cross-core interrupt handling has been re-written to use a single IPIR channel. The first free IPIR channel is always used.
- Changed the behavior when the ProtectionHook is called so that the PSW.ID and/or PSW.NP bits are not cleared. Please see the section 'Recovering from CPU Exceptions/Interrupts that call the ProtectionHook' in the port guide.
- Updated the behavior of the Os\_ConfigInterrupts.h macros to use the Green Hills intrinsic functions \_\_CLR1() and \_\_SET1().
- Updated the behavior of the Interrupt Source API to use the Green Hills intrinsic functions \_\_CLR1() and \_\_SET1().

### Removed Features

The following features have been removed from this release:

- Removed the 'Default interrupt low priority' target option.

## 3.4 Version 5.0.0

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### Additional Features

The following features have been added to this release:

- First release

### Modified Features

No features have been modified in this release.

### Removed Features

No features have been removed from this release.

## 4 Fixed EHI Calls

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Bugs that have been fixed are referred to by their call number in the ETAS Helpdesk International (EHI) system.

### 4.1 Version 5.0.2 (Preview Release)

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#### **EHI 599983**

*Status:* Fixed

*Title:* TerminateApplication.c Compilation Failure

*Description:* With RTA-OS tools prior to 5.6.3, under some circumstances when enhanced isolation and application terminate were enabled, there would be an error compiling TerminateApplication.c due to "calling\_application" not being defined. This has been fixed.

## 5 Limitations

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### 5.1 Installer

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There are the following limitations for the installer:

**Limitation** None.

**Workaround** None.

### 5.2 RH850x2GHS DLL

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There are the following limitations for this tool:

**Limitation** At the time of writing the Lauterbach debugger used was not able to successfully program flash on the U2A. Therefore the example applications do not include .cmm scripts for running out of flash.

**Workaround** None.

## 6 Contacting ETAS

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### 6.1 Technical Support

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Technical support is available to all users with a valid support contract. If you do not have a valid support contract, please contact your regional sales office (see Section 6.2.2).

The best way to get technical support is by email. Any problems or questions about the use of the product should be sent to:

rta.hotline.uk@etas.com

If you prefer to discuss your problem with the technical support team, you call the support hotline on:

+44 (0)1904 562624.

The hotline is available during normal office hours (0900-1730 GMT/BST).

In either case, it is helpful if you can provide technical support with the following information:

- Your support contract number
- Your .xml, .arxml, .rtaos and/or .stc files
- The command line which caused the error
- The version of the ETAS tools you are using
- The version of the compiler tool chain you are using
- The error message you received (if any)
- The file Diagnostic.dmp if it was generated

### 6.2 General Enquiries

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#### 6.2.1 ETAS Global Headquarters

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#### 6.2.2 ETAS Local Sales & Support Offices

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Contact details for your local sales office and local technical support team (where available) can be found on the ETAS web site:

ETAS subsidiaries [www.etas.com/en/contact.php](http://www.etas.com/en/contact.php)  
ETAS technical support [www.etas.com/en/hotlines.php](http://www.etas.com/en/hotlines.php)