

RAISONANCE

a KEOLABS brand



Raisonance Tools for MRK-II

Getting Started

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1. Introduction

Ride7 is the Raisonance brand integrated development environment (IDE), designed for the development of MRK II projects from beginning to end.

The RKit-MRK plug-in for Ride7 provides the tools necessary to build MRK II-based projects:

- Tool chain (Assembler and linker) for building applications.
- Hardware debugger for debugging with U-DDB board.

1.1 Purpose of this manual

This guide should be used by anyone who is interested in starting with RKit-MRK for Ride7. It assumes that you are already familiar with the RKit-MRK plug-in.

1.2 Additional help or information

If you want additional help or information, if you find any errors or omissions, or if you have suggestions for improving this manual, go to the KEOLABS' site for Raisonance microcontroller development tools www.raisonance.com, or contact the microcontroller support team.

Microcontroller website: www.raisonance.com

Support extranet site: support-raisonance.com (software updates, registration, bugs database, etc.)

Support Forum: forum.raisonance.com/index.php

Support Email: support@raisonance.com

1.3 Raisonance brand microcontroller application development tools

January 1, 2012, Raisonance became the brand under which the company KEOLABS sells its microcontroller hardware and software application development tools.

All Raisonance branded products regardless of their date of purchase or distribution are licensed to users, supported and maintained by KEOLABS in accordance with the companies' standard licensing maintenance and support agreements for its microcontroller application development tools. For information about these standard agreements, go to:

Support and Maintenance Agreement: <http://www.raisonance.com/warranty.html>

End User License Agreement: <http://www.raisonance.com/software-license.html>

2. Register your Raisonance tools

The new Ride7 and RKit-MRK must be registered to activate and use the software. Unregistered software functions for a 30-day evaluation period with full features of the Enterprise version. After 30 days the software can no longer be used. If this occurs, contact info@raisonance.com.

Registration requires a Raisonance software product license that is under a valid support contract (a standard support contract expires one year after the date of purchase).

To activate the software, register your RKit-MRK using your RKit-MRK license (Serial Key or Dongle).

2.1 Supported platforms

Raisonance tools and Ride7 operate on Windows 8 (32 and 64 bit), Windows 7 (32 and 64-bit), Windows Vista (32 and 64-bit) and Windows XP SP3 (32-bit only). Other versions of Windows, including Windows 2000, Windows XP 64-bit and Windows Server, are not supported.

Administrative rights are required in order to install this software.

Only native versions of Windows are supported. Emulators such as VMware, QEMU, Citrix, Wine, Xen (or others) are not supported.

2.2 Install the new software

To install your new software correctly, follow these steps in sequence:

1. Uninstall the program "MRK II device installer" (see warning below).
2. Uninstall old versions of Ride7 and RKit-MRK.
3. Install the new Ride7 software.
4. Install the RKit-MRK software.
5. Install the MRK derivatives using the MRK II device installer.
6. Launch **Ride7** and select **Help > License**. Activate your software using your USB dongle.
7. Register the software by selecting the menu item **Help > License...**

Note: Be sure to execute all installers with administrator rights using the "Run as administrator" option.

Note: During the registration process, you will be notified if your product's support contract has expired. This notification includes information about how to renew your tool's support contract.



If you do not perform Step 1, it will be mandatory to relaunch the MRK II device installer and choose the repair option.

2.3 Register using a dongle

Note: Ride6 and Ride7 dongles are the same, so a dongle provided with Ride6 can be used to register the RKit-MRK for Ride7.

1. Open Ride7 or RFlasher7. If it does not open automatically click **Help->About Ride7**.
2. Plug in the dongle and make sure the LED lights up (otherwise you must install the driver).
3. Click the **Change License** button. Select **Dongle Activation**, click **Next**.
4. Close Ride7 and open it again. Check in the **About Ride7** window that you are in "Standard version" for Ride7, otherwise contact our technical support (support-mcu@raisonance.com).

3. Assembler

The assembler has some extensions that are enabled by selecting MRK II mode.

- Under Ride7, a global switch is located in the target options (**Options|Target**).
- If the DOS command line is used, the STC2 directive must be defined either in the command line, or at the top of the source files, before any statement.
- If the NOMO directive is used with the STC2 directive, the NOMO directive should be put after the STC2 directive.

Example:

```

;--- new file ----
$STC2
$include (myheader.inc)
;...

```

3.1 New instructions

When STC2 mode is ON, new (Starc2XL specific) instructions are supported:

```

SYS ; call firm system
INTA #11101111b ; acknowledge wakeup (clear timer1 compare interrupt flag)

```

The new addressing modes are implemented as specified in the device's reference manual:

```

MOV R2, @R0+
MOV @dbp+, C ; store carry in RAM

```

Note: These new addressing modes are not really new instructions, but they take advantage of the hardware implementation below some specific addresses in the range (0CH to 11H).

3.2 New SFR default definition

The STC2 directive also switches from MRK I SFRs (Special Function Registers) to MRK II SFRs. However, Raisonance does not guarantee that automatic SFR selection will be kept in future devices. It is advised to switch OFF automatic selection of SFR definition (**Options|Project|MAMRK|Source|Define SFR symbols for PCF7941**) and to work by including the specific header file dedicated to the device you work with. Adding SFR declarations using an external header is done by the include directive:

```

$include (reg7941.inc)

```



WARNING: First experiences with these new tools show that frequent errors occur because of confusion between the FLD and the LFD symbols.

4. Emulation

Emulation for the PCF7942 and PCF7941 are based on different solutions, however, the same GUI (Ride7) is still valid, and most of the commands are similar.

- PCF7942 uses a bond-out chip technology,
- PCF7941 is based on an 'On-chip' software facility (like the BDM or Nexus technologies).

Because of these different technologies, the debugging facilities have been reduced for the PCF7941.

4.1 Hardware breakpoint

Only one code breakpoint is possible. Setting a second breakpoint generates a warning, and automatically disables the previous breakpoint.

4.2 TRAP instruction

The Starc2XL family provides a new debugging feature: the TRAP instruction.

This instruction sets software breakpoints. At the moment, these breakpoints cannot be set automatically by the emulator driver, but a programmer can use this facility at source level. Because this instruction is for debugging purposes only, it has not been implemented in the standard instruction test. But it can easily be added by defining a macro-instruction:

```
macro M_TRAP
dw 0F580H
endm
```

Then, the software can be included in the source files:

```
mov R1, #0E7H
M_TRAP
mov T1CON2, R1
...
```

Execution will be stopped after execution of the M_TRAP instruction. The only difference with a standard Breakpoint is that PC will point to the instruction after the TRAP. Important remarks:

1. You can disable/enable this breakpoint dynamically by modifying the instruction in the code view.
2. Commenting out the "dw" statement disables all the software breakpoints set in the application.
3. The TRAP instruction is not supported by the Simulator. It is executed as a No Operation (NOP).

4.3 No Code Coverage

The Code Coverage feature is not available with the U-DDB board.

4.4 Emulation control

Emulation control is delicate with the PCF7941. Control could be lost in the following situations:

- Power off
- IDLE mode
- Watchdog reset

Note: Watchdog is **always** enabled in Battery mode. It is strongly advised to perform frequent refreshes to discard any risk of watchdog reset. When control is lost, please wait for a few seconds (to allow it to timeout) and then reset the device using software.

5. Conformity



ROHS Compliance (Restriction of Hazardous Substances)

KEOLABS products are certified to comply with the European Union RoHS Directive (2002/95/EC) which restricts the use of six hazardous chemicals in its products for the protection of human health and the environment.

The restricted substances are as follows: lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE).



CE Compliance (Conformité Européenne)

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WEEE Compliance (The Waste Electrical & Electronic Equipment Directive)

KEOLABS disposes of its electrical equipment according to the WEEE Directive (2002/96/EC).

Upon request, KOLABS can recycle customer's redundant products.

For more information on conformity and recycling, please visit the KEOLABS website www.keolabs.com

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7. History

Date	Modification
22 Jun 11	Converted to new template
19 Jul 11	Added new registration method
10 Oct 12	Modified cover page, final page and section 1.3 Additional help or information for KEOLABS
15 Jan 2013	Put in new template
19 Apr 213	Updated installation description.



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