
SmartFusion2 MSS
Real Time Counter (RTC) Configuration
User Guide



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Introduction

The real-time counter (RTC) system has two main modes of operation:

- Real-time Calendar: Counts seconds, minutes, hours, days, week, months, and years
- Binary Counter.

In the Calendar mode, the RTC counts seconds, minutes, hours, days, month, years, weekdays, and weeks. In Binary mode, the RTC consecutively counts from 0 all the way to 2^{43} . In both modes, the alarm event generation logic simply compares the content of the Alarm Register with that of RTC; when they are equal, the RTC_MATCH output is asserted.

For details, refer to the [SmartFusion2 SoC and IGLOO2 FPGA Fabric User Guide](#).

The values entered in the configurator will be exported into the programming files for programming of the flash bits that control this functionality. The flash bits are loaded in the system registers at power up (or when the DEVRST_N external pad is asserted/de-asserted).

1 – Configuration Options

Clock Source - Select the clock that drives the RTC system (RTCCLK) (Figure 1-1).

- External 32KHz RTC Crystal Oscillator
- External Main Oscillator - Crystal (32KHz - 20MHz)
- External Main Oscillator - Ceramic Resonator (0.5MHz - 4MHz)
- External Main Oscillator - RC Network (32KHz - 4MHz)
- On-chip 1-MHz RC Oscillator
- On-chip 25/50-MHz RC Oscillator (50MHz in 1.2v part and 25MHz in a 1.0v part)

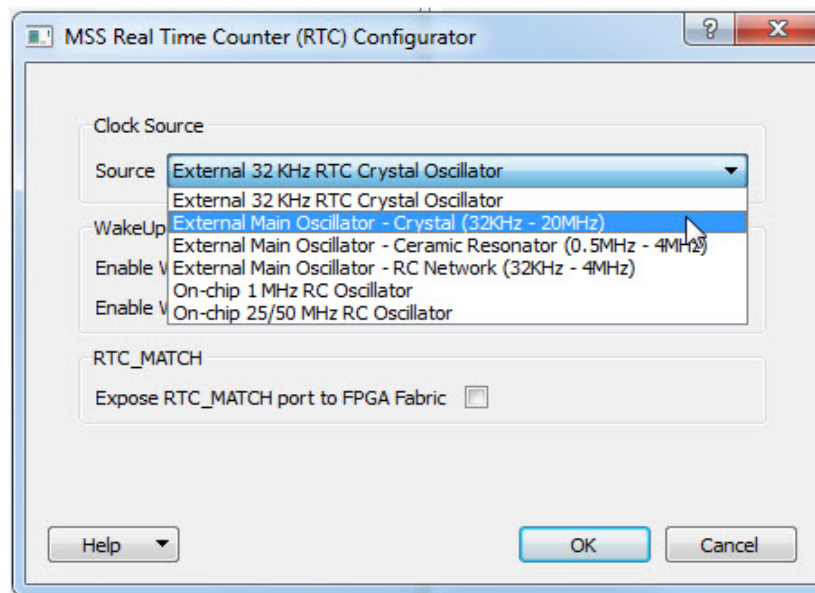


Figure 1-1 • RTC Clock Source Configuration

WakeUp Interrupt - The RTC_WAKEUP_CR in the SYSREG block provides masking for the RTC_WAKEUP interrupt to the FPGA fabric and the Cortex-M3 microcontroller (Figure 1-2). You can select which interrupt to enable using this configurator.

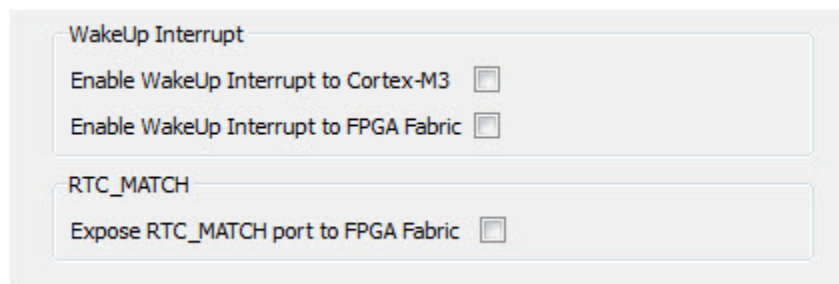


Figure 1-2 • WakeUp Interrupt Configuration

RTC_MATCH - RTC_MATCH status bit and output is asserted whenever the Alarm system is enabled and a match occurs (Figure 1-3). In Calendar mode, it is asserted for a 1 second period whilst the alarm condition is valid. The output is synchronous to the rising edge of the RTCCLK. You can expose the RTC_MATCH output signal to drive the FPGA fabric by checking the checkbox. The RTC_MATCH signal is then available to be used in the design.



Figure 1-3 • RTC_MATCH Configuration

A – Product Support

Microsemi SoC Products Group backs its products with various support services, including Customer Service, Customer Technical Support Center, a website, electronic mail, and worldwide sales offices. This appendix contains information about contacting Microsemi SoC Products Group and using these support services.

Customer Service

Contact Customer Service for non-technical product support, such as product pricing, product upgrades, update information, order status, and authorization.

From North America, call **800.262.1060**

From the rest of the world, call **650.318.4460**

Fax, from anywhere in the world, **650.318.8044**

Customer Technical Support Center

Microsemi SoC Products Group staffs its Customer Technical Support Center with highly skilled engineers who can help answer your hardware, software, and design questions about Microsemi SoC Products. The Customer Technical Support Center spends a great deal of time creating application notes, answers to common design cycle questions, documentation of known issues, and various FAQs. So, before you contact us, please visit our online resources. It is very likely we have already answered your questions.

Technical Support

For Microsemi SoC Products Support, visit <http://www.microsemi.com/products/fpga-soc/design-support/fpga-soc-support>.

Website

You can browse a variety of technical and non-technical information on the Microsemi SoC Products Group [home page](http://www.microsemi.com/soc), at www.microsemi.com/soc.

Contacting the Customer Technical Support Center

Highly skilled engineers staff the Technical Support Center. The Technical Support Center can be contacted by email or through the Microsemi SoC Products Group website.

Email

You can communicate your technical questions to our email address and receive answers back by email, fax, or phone. Also, if you have design problems, you can email your design files to receive assistance. We constantly monitor the email account throughout the day. When sending your request to us, please be sure to include your full name, company name, and your contact information for efficient processing of your request.

The technical support email address is soc_tech@microsemi.com.

My Cases

Microsemi SoC Products Group customers may submit and track technical cases online by going to [My Cases](#).

Outside the U.S.

Customers needing assistance outside the US time zones can either contact technical support via email (soc_tech@microsemi.com) or contact a local sales office.

Visit [About Us](#) for sales office listings and corporate contacts.

Sales office listings can be found at www.microsemi.com/soc/company/contact/default.aspx.

ITAR Technical Support

For technical support on RH and RT FPGAs that are regulated by International Traffic in Arms Regulations (ITAR), contact us via soc_tech_itar@microsemi.com. Alternatively, within My Cases, select **Yes** in the ITAR drop-down list. For a complete list of ITAR-regulated Microsemi FPGAs, visit the ITAR web page.



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