RN0087
Release note

STM32 embedded target for MATLAB and Simulink release 2.0

Introduction

This release note is related to STM32 embedded target for MATLAB and Simulink (STM32-MAT/TARGET). It is updated periodically in order to keep you abreast of evolutions of the software and any problems or limitations found in this release. Check the ST microcontroller support website at www.st.com to ensure that this is the latest version of this release note.

Summary for STM32 embedded target for MATLAB and Simulink release 2.0:

- Supported MCUs: STM32 F4 series
- Automated Processor-in-the-Loop (PIL) Testing using USART communication link
- Support for IAR EWARM, Atollic TrueSTUDIO, and Keil MDK-ARM toolchains
- Peripheral driver blockset for STM32F4 devices including ADCs, GPIOs, USARTs, and Timers.

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1.1 Overview

The STM32 Embedded Target enables to quickly deploy application models in MATLAB and Simulink to STM32 F4 MCUs.

The STM32 Embedded Target lets you verify and profile STM32 F4 execution results versus Simulink simulation behavior using Processor In the Loop (PIL) testing.

The STM32 Embedded Target provides a Simulink blockset library for STM32 F4 peripherals.

Automated process from "C" code generation to programing STM32 F4 MCU.

1.2 Host PC system requirements

- Windows XP or Windows 7 32-bit operating systems.
- MATLAB, Simulink and EmbeddedCoder R2012b versions or more.
- One of following toolchains:
  - Atollic TrueSTUDIO V3.2 or more.
  - IAR EWARM V6.30 or more
  - Keil MDK-ARM V4.60 or more

2 Differences in release 2.0

2.1 New features

ADC

- Injected mode
- Interrupt management: analog watchdog + end of conversion + overrun
- Usable during simulation

A test program (or example) can be found in *ADC3_IN7_Pot_WD_int.slx* and *ADC3_IN7_Pot_Sim.slx* files.

TIMERS

- PWM output interrupt generation for up, down or center aligned modes

A test program (or example) can be found in *PWM_Read_Write_Interrupt.slx* file.

EXTINT

- External interrupt available for GPIOA-G Pin0-15

A test program (or example) can be found in *Test/Examples:ButtonAndLeds_Interrupt.slx* file.

USART

- Send 0 terminated string or given number of characters
- Receive through interrupt
- Receive buffer size is configurable
- Software interrupt generation after configurable number of received characters (soft interrupt configured using external interrupt model)

A test program (or example) can be found in *USART_Rcv_Interrupt.slx* and *USART_Rcv_SoftInterrupt.slx* files.

2.2 Enhancements

- No solver time limitation even at 168MHz
- PIL USART receive buffer size is configurable

2.3 Corrections

- Remove ModelCloseFcn callback function to solve linker error regarding ADC driver peripheral (stm32f4xx_adc.c)

3 Limitations

- The value of the *Rev Buffer Size* parameter must be a multiple of the *Number of char to recieve before interrupt* parameter.
- Only mex32 files are provided.
- Only timers 1 to 5 and 8 are supported
  - 3 channels only
  - PWM output mode only
  - Only the Input capture interrupt mode is available to compute frequency
  - J-Link must be used with the IAR toolchain (ST-LINK is not supported).

4 Revision history

Table 1. Document revision history

Date	Revision	Changes
03-Apr-2013	1	Initial release.
15-Jul-2013	2	Added *Section 2: Differences in release 2.0*. Updated *Section 3: Limitations*.