KM1M4B Series CMSIS BSP Guide

Directory Introduction for 32-bit NuMicro® Family

Directory Information

Document	Driver reference guide and revision history.
Library	Driver header and source files.
SampleCode	Driver sample code.

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1 Document

CMSIS.html	Document of CMSIS version 5.1.1.
NuMicro KM1M4B Series CMSIS BSP Driver Reference Guide.chm	This document describes the usage of drivers in KM1M4B BSP.
NuMicro KM1M4B Series CMSIS BSP Revision History.pdf	This document shows the revision history of KM1M4B BSP.
NuMicro KM1M4B Series CMSIS BSP Driver Revision History Details.xlsx	This document shows the revision history details of KM1M4B BSP Driver.
LICENSE.txt	Document of Apache License.

2 Library

CMSIS	Cortex® Microcontroller Software Interface Standard (CMSIS) V5.1.1 definitions by Arm® Corp.
Device	CMSIS compliant device header file.
StdDriver	All peripheral driver header and source files.
XMODEM	Specific libraries for FMC sample code

3 SampleCode

ISP	Sample codes for In-System-Programming.
StdDriver	Sample code to demonstrate the usage of KM1M4B series MCU peripheral driver APIs.
Template	A project template for KM1M4B series MCU.

* The following IDE versions have been confirmed to work.

IAR: Ver 9.1

KEIL: uVision 5.36

GCC: NuEclipse_V1.02.026

4 SampleCode\ISP

ISP_UART	In-System-Programming sample code through UART interface.

5 SampleCode\StdDriver

System Setting (SYS)

SYS_Reset	Reset, refer to reset factor, clear reset factor.

Clock Generator (CLK)

CLK_DeepSleep	Show how to entering and exiting deep sleep mode.
CLK_Sleep	Show how to entering and exiting sleep mode.

General Purpose I/O (GPIO)

GPIO_EINTAndNF	Show the usage of GPIO external interrupt function and noise filter function.
GPIO_OutputInput	Show how to set GPIO pin mode and use pin data input/output control.

Watchdog Timer (WDT)

WDT_ClearWindow	Demonstrate how to use WDT clear window function.
WDT_TimeoutAndReset	Demonstrate how to initialize WDT, reset WDT counter, and cause WDT error detection reset.

16-bit Timer (TIMER)

TIMER_CaptureCounter	Show how to use the Timer capture function to capture Timer counter value.
TIMER_Cascade	Show how to use the cascade connection of 16bit timers.
TIMER_EventCounter	Use Timer pin to demonstrate Timer event counter function.
TIMER_Periodic	Use the Timer periodic mode to generate Timer interrupt every 0.05 second.

TIMER_PeriodicINT	Implement Timer counting in periodic mode.
TIMER_PWM_ChangeDuty	Change duty cycle and period of output waveform in PWM up count type.
TIMER_PWM_OutputWaveform	Demonstrate output different duty waveform in Timer0~3 PWM.
TIMER_ToggleOut	Demonstrate the Timer toggle out function on Timer pin.
TIMER_Trigger	Start the timer with an external trigger.

Power Supply Voltage Detection (LVD)

LVD_BODWakeup	Demonstrate how to wake up system from Power-down mode by brown-out detector interrupt.

Clock Monitoring Circuit (CKM)

CKM_AfterPowerUp	After turning on the power of the MCU, the clock source of BASECLK is switched, and then the clock monitoring is started.
CKM_AfterPowerUp_RefClkCKMREFpin	After turning on the power of the MCU, the clock source of BASECLK is switched, and then the clock monitoring is started. At this time, use the CKMREF pin as a reference clock.
CKM_AfterPowerUp_withClkTransitionMode	After turning on the power of the MCU, switch to the clock transition mode, set the clock monitoring frequency, switch the clock, and enable the clock monitoring function, and then cancel the clock transition mode.
CKM_ChangingClock	The clock monitoring function is stopped, the clock monitoring frequency is changed, and the clock source of BASECLK is switched, and then the clock monitoring function is enabled.

CKM_ChangingClock_RefClkCKMREFpin	The clock monitoring function is stopped, the clock monitoring frequency is changed, and the clock source of BASECLK is switched, and then the clock monitoring function is enabled. At this time, use the CKMREF pin as a reference clock.
CKM_ChangingClock_withClkTransitionMode	After switching to the clock transition mode, changing the clock monitoring frequency, and switching the BASECLK clock source, cancel the clock transition mode. By using the clock transition mode, the clock monitoring function stops only when BASECLK is switched to the built-in oscillation (HRCCLK), and the original BASECLK can always be monitored before and after switching.

Power Control PWM (GPWM)

GPWM_Brake	Demonstrate how to use GPWM brake function.
GPWM_DeadTime	Demonstrate how to use GPWM Dead Time function.
GPWM_DoubleBuffer	Change duty cycle and period of output waveform by GPWM Double Buffer function.
GPWM_OutputWaveform	Demonstrate how to use GPWM counter output waveform.
GPWM_SwitchDuty	Change duty cycle of output waveform by configured period.

Multi Feedback Assist (MFA)

MFA_BlankingCMP	Demonstration of blanking function by MFA.
MFA_BlankingIRQ	Demonstration of blanking function by MFA.
MFA_Conflict	Demonstration of conflict detection function by MFA.
MFA_Sync	Demonstration of synchronous start control function by MFA.

Digital-to-Analog Converter (DAC)

DAC_Outport	Show how to DAC output.

Comparator (CMP)

CMP_CompareDAC	Demonstrate how to use comparator 2-level detection mode. (Reference voltage : DAC output)
CMP_WindowCompare	Show how to monitor CMP input with window detection mode.

Analog to Digital Converter (ADC)

ADC_ADINT_Trigger	Use ADINT interrupt to do the ADC continuous scan conversion.
ADC_FaultCheck	Show how to use A/D fault check function.
ADC_Multiple_Channel	Show how to convert multi-channel ADC.
ADC_Timer_Trigger	Show how to trigger ADC by Timer.

UART Interface Controller (UART)

UART_DMA	Demonstrate UART self loop back data transfer with DMA.
UART_SingleWire	Demonstrate UART single wire data transfer.
UART_TxRxFunction	Demonstrate UART self loop back data transfer to show transmission and reception with one UART.

Serial Peripheral Interface (SPI)

SPI_DMA	Demonstrate SPI Master/Slave data transfer with DMA.
SPI_TxRxFunction	Demonstrate SPI Master/Slave data transfer.

I²C Serial Interface Controller (I2C)

I2C_GCMode_Master	Show how a master uses I2C address 0x0 to write data to a slave. This sample code needs to work with I2C_GCMode_Slave.
I2C_GCMode_Slave	Show how a slave receives data from a master in GC (General Call) mode. This sample code needs to work with I2C_GCMode_Master.
I2C_Master	Show how a master accesses a slave. This sample code needs to work with I2C_Slave.
I2C_MultiBytes_Master	Show how to set I2C Multi bytes API Read and Write data to Slave. This sample code needs to work with I2C_Slave.
I2C_SingleByte_Master	Show how to use I2C Single byte API Read and Write data to Slave. This sample code needs to work with I2C_Slave.
I2C_Slave	Demonstrate how to set I2C in Slave mode to receive 256 bytes data from a master. This sample code needs to work with I2C_Master.
I2C_Wakeup_Slave	Show how to wake up MCU from Power-down mode via the I2C interface. This sample code needs to work with I2C_Master.

CRC Controller (CRC)

CRC_CCITT	Show how to CRC calculation function(CRC-16-CCITT)
CRC_CCITT_REV	Show how to CRC calculation function(CRC-16-CCITT_REV).

Flash Memory Controller (FMC)

FMC_BootUpdate	Demonstrate how to implement boot update with boot area swap function.

FMC_ExeInIFlash	Erase and rewrite one sector of D-Flash by I-Flash execution.
FMC_ExeInSRAM	Erase and rewrite one sector of I-Flash by RAM execution.
FMC_ProgramUpdate	Demonstrate how to implement program update with program area swap function.

DMA Controller (DMA)

DMA_BasicMode	Use DMA channel 1 to transfer data from memory to memory.
DMA_BurstRepeat	Demonstrate DMA burst repeat mode to transfer data from memory to memory.

Variable Gain Amplifier (VGA)

VGA_ADConversion	VGA0 output is A/D converted by A/D0.
VGA_ChannelRound	Use the VGA channel rotation function on VGA0 and compare the DACI00/01 output with the VGA0 output on comparator 00/01.

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