ABOV CodeGen32

(Code Generator)

USER GUIDE

Release V1.000.00

ABOV CodeGen32 ( )

Release information

Version	Date	Change
V1.000.00	July 2016	First release

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ABOV

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ABOV

http://www.abov.co.kr

ABOV CodeGen32 ( )

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1.1

CodeGen32

1.1.1

CodeGen32

- MS-Windows NT
- MS-Windows 2000
- MS-Windows XP
- MS-Windows Vista
- MS-Windows7
- MS-Windows8
- MS-Windows10

100 MB

1.1.2

CodeGen32

- CPU
-

1.2

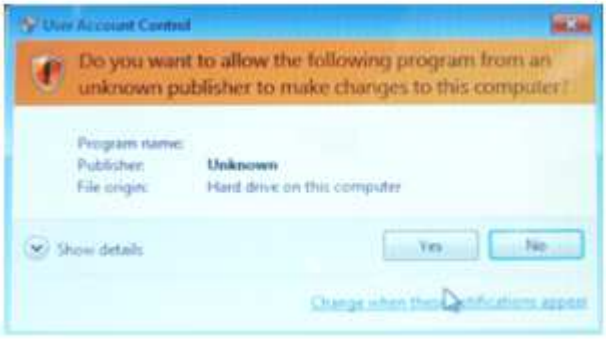
ABOV CodeGen32 http://www.abov.co.kr

ABOV CodeGen32 MCU ABOV

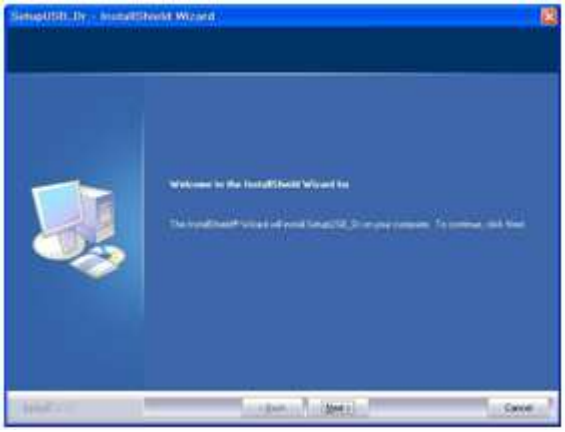
CodeGen32 CodeGen32 PC

1.2.1

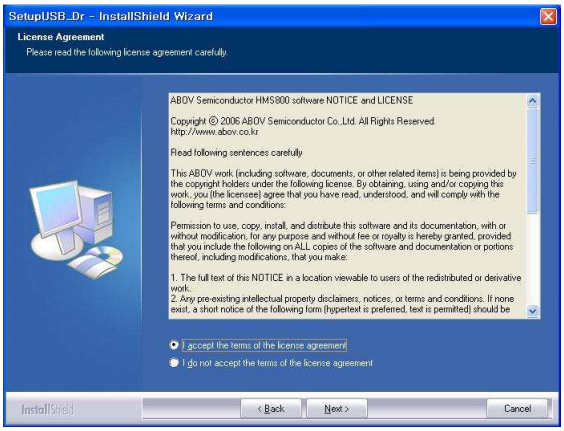
" Yes "



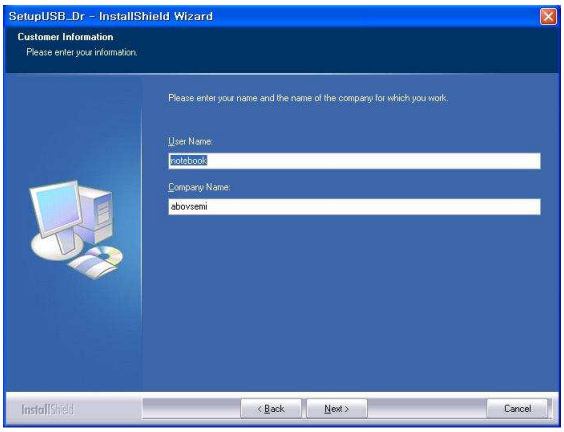
" Next"



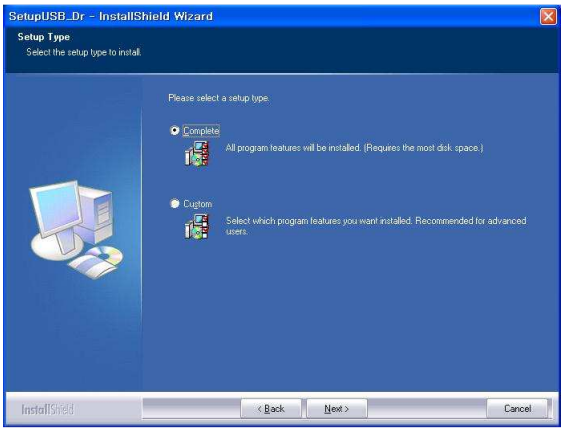
" I accept the items of the license agreement " " Next "



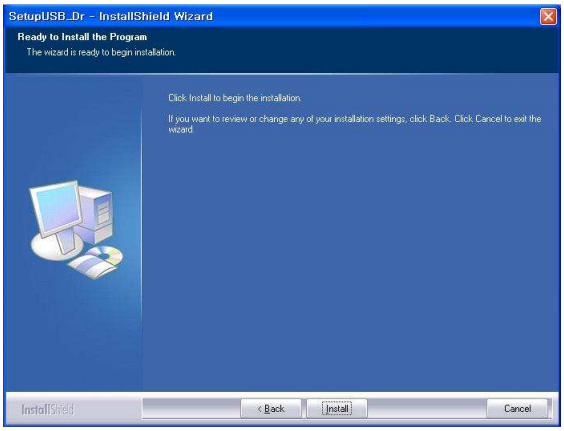
" Next "



“ Complete ” **“ Next ”**



“ Install”



“ Finish ”

2 CodeGen32 32

- **CodeGen32**
- **CodeGen32**

2.1 CodeGen32

CodeGen32 “ Project ” “ Project ” CodeGen32

CodeGen32 *.VPR *.VDA

*.VPR

ABOV-CodeGen32-A3x V1.000.00 20160422

AC33M8128 MQFP 80

*.VDA

*Clock 1

*GPIO-A 1

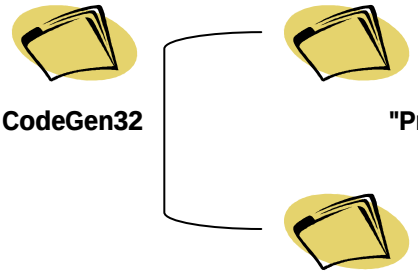
*GPIO-B 1:

u02 000000.....00000000

u03 000000.....00000000

w00 040000.....CA000000

*.VPR *.VDA



*.VPR

CodeGen32 "Project” *.VDA

“Library”

2.2 CodeGen32

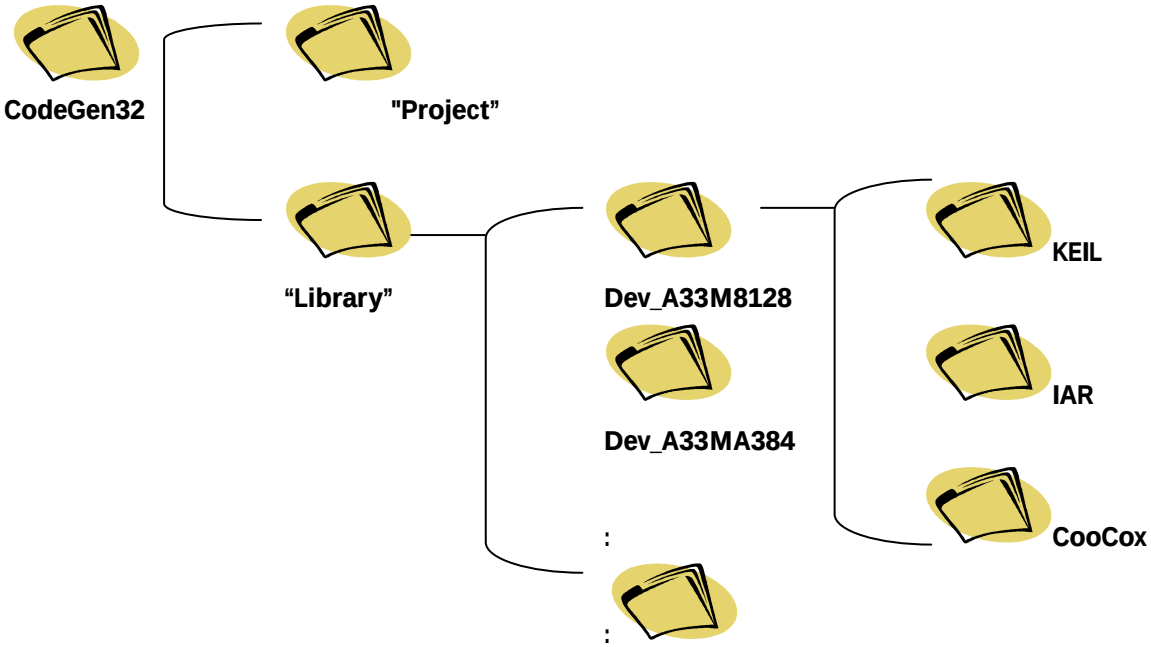
CodeGen32 “ Library ” “ Library ” CodeGen32

library

-
-
-

CodeGen32

Library

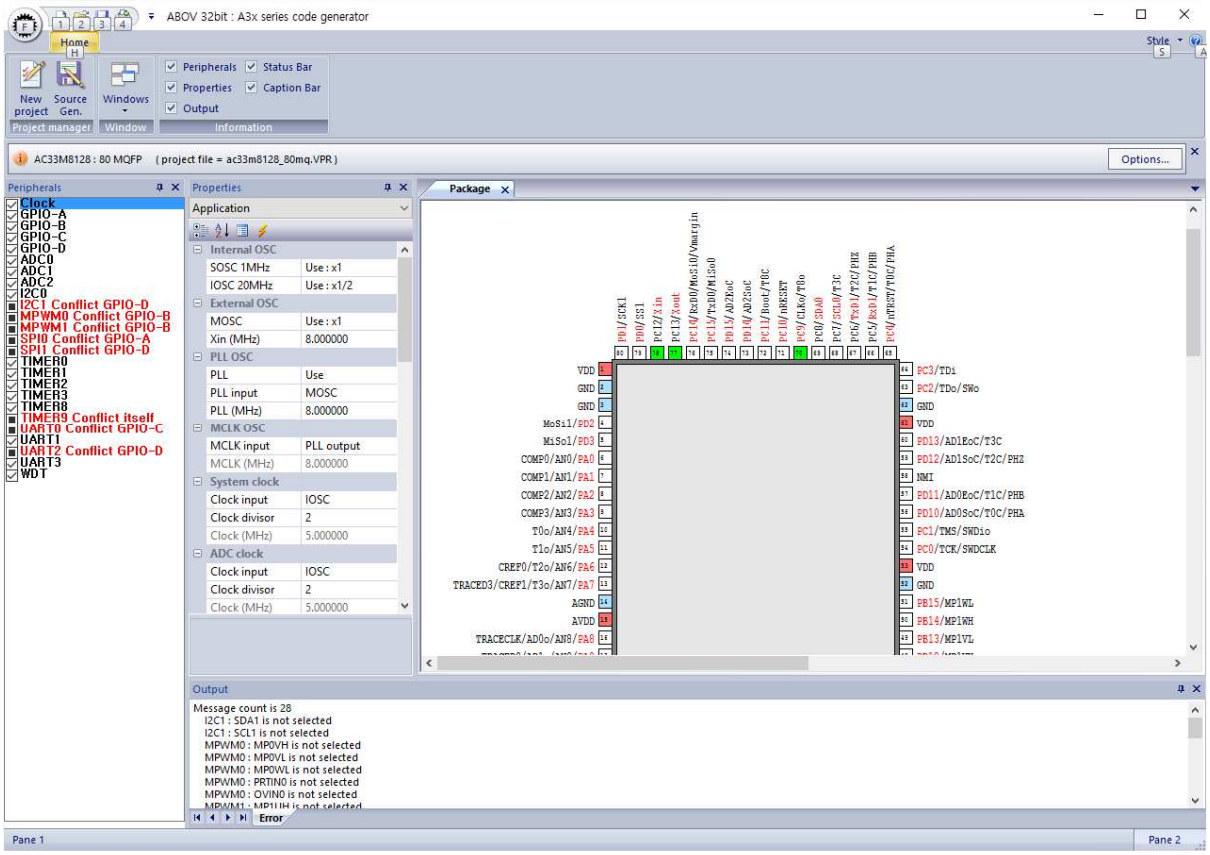


3 CodeGen32

- CodeGen32
-
-
-

3.1 CodeGen32

ABOV A3x CodeGen32



3.1.1

ABOV A3x C

- C
- KEIL 2016
  - *.uvproj
  -
  -
  - C “main.c” “init.c” “peri.c”
- IAR CooCox
- CodeGen32
-
-
- CodeGen32

3.1.2

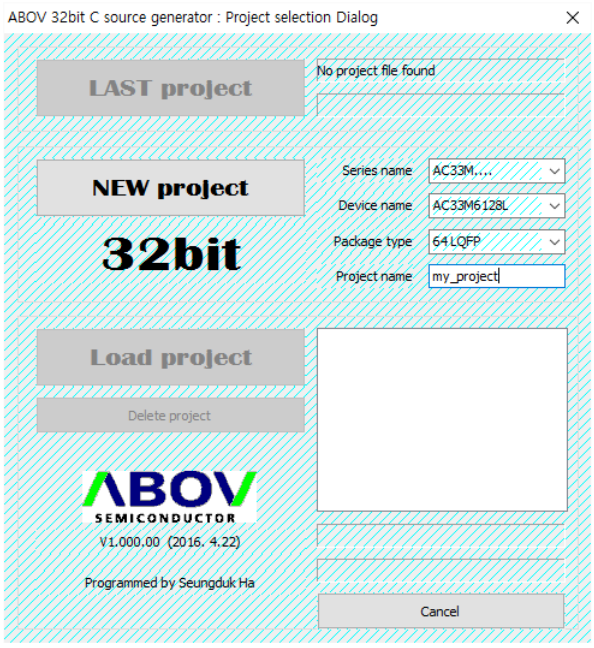
CodeGen32

CodeGen32


ABOV 32bit C source generator : Project selection Dialog
LAST project
No project file found
NEW project
Series name
AC33M....
Device name
AC33M6128L
AC33M6128L
AC33M8128
AC33M8126L
Package type
32bit
Project name
Load project
Delete project
ABOV
SEMICONDUCTOR
V1.000.00 (2016. 4.22)
Programmed by Seungduk Ha
Cancel


ABOV 32bit C source generator : Project selection Dialog
LAST project
No project file found
NEW project
Series name
AC33M....
Device name
AC33M6128L
Package type
64 LQFP
64 LQFP
32bit
Project name
Load project
Delete project
ABOV
SEMICONDUCTOR
V1.000.00 (2016. 4.22)
Programmed by Seungduk Ha
Cancel

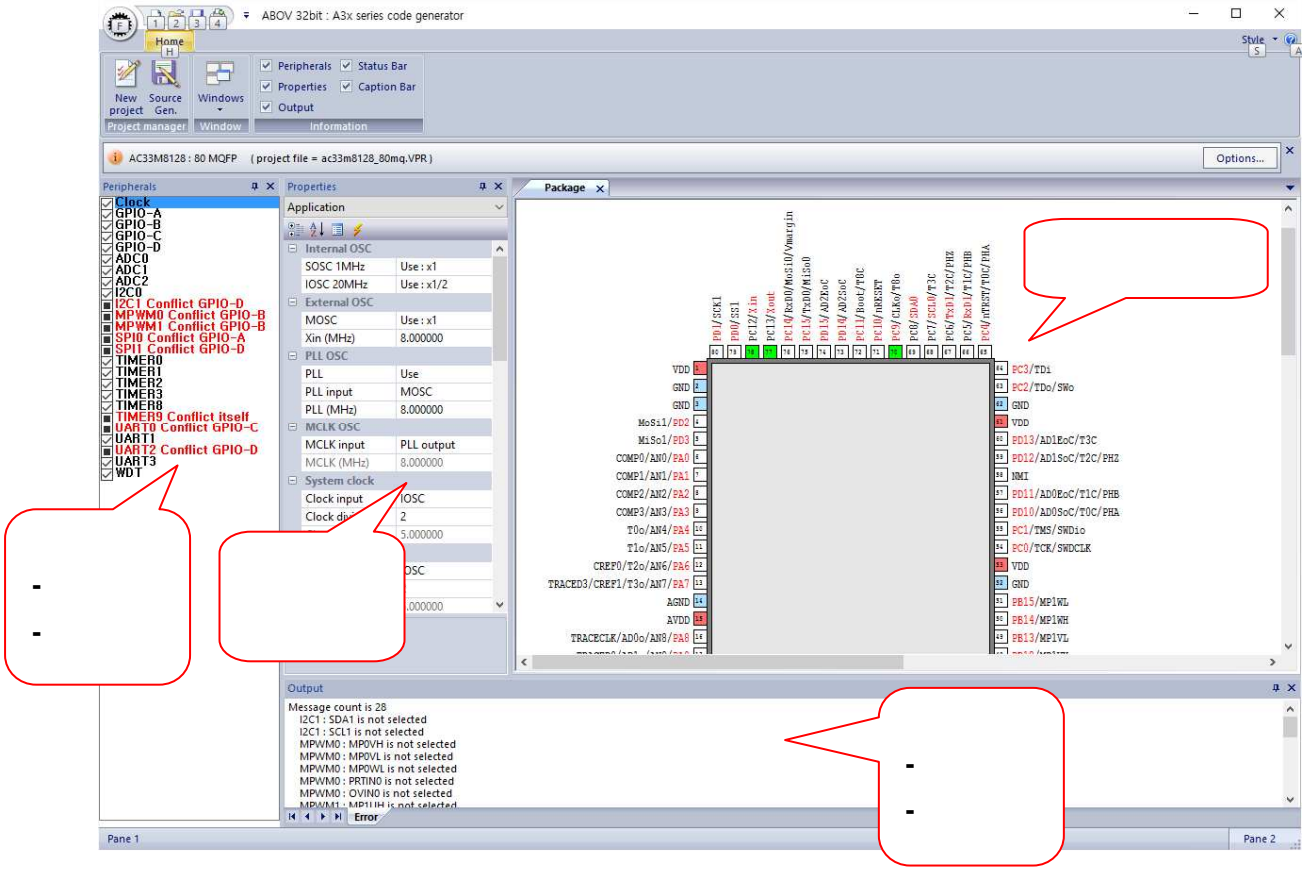
“ New project ”



CodeGen32

- **“ LAST project ”**
- **“ New project ”**
-
-

CodeGen32


ABOV 32bit : A3x series code generator
Home
New project
Source Gen.
Project manager
Windows
Window
Peripherals
Status Bar
Properties
Caption Bar
Output
Information
AC33M8128 : 80 MQFP (project file = ac33m8128_80mq.VPR)
Options...
Peripherals
Clock
GPIO-A
GPIO-B
GPIO-C
GPIO-D
ADC0
ADC1
ADC2
I2C0
I2C1 Conflict GPIO-D
MPWM0 Conflict GPIO-B
MPWM1 Conflict GPIO-B
SPI0 Conflict GPIO-A
SPI1 Conflict GPIO-D
TIMER0
TIMER1
TIMER2
TIMER3
TIMER8
TIMER9 Conflict itself
UART0 Conflict GPIO-C
UART1
UART2 Conflict GPIO-D
UART3
WDT
Properties
Application
Internal OSC
SOSC 1MHz
Use : x1
IOSC 20MHz
Use : x1/2
External OSC
MOSC
Use : x1
Xin (MHz)
8.000000
PLL OSC
PLL
Use
PLL input
MOSC
PLL (MHz)
8.000000
MCLK OSC
MCLK input
PLL output
MCLK (MHz)
8.000000
System clock
Clock input
IOSC
Clock div
2
5.000000
Package
VDD
GND
GND
MoSi1/PD2
MiSo1/PD3
COMP0/AN0/PA0
COMP1/AN1/PA1
COMP2/AN2/PA2
COMP3/AN3/PA3
T0o/AN4/PA4
T1o/AN5/PA5
CREF0/T2o/AN6/PA6
TRACED3/CREF1/T3o/AN7/PA7
AGND
AVDD
TRACECLK/AD0o/AN8/PA8
PC3/TDi
PC2/TDo/SWo
GND
VDD
PD13/AD1EoC/T3C
PD12/AD1SoC/T2C/PHZ
NMI
PD11/AD0EoC/T1C/PHB
PD10/AD0SoC/T0C/PHA
PC1/TMS/SWDio
PC0/TCK/SWDCLK
VDD
GND
PB15/MP1WL
PB14/MP1WH
PB13/MP1VL
Output
Message count is 28
I2C1 : SDA1 is not selected
I2C1 : SCL1 is not selected
MPWM0 : MP0VH is not selected
MPWM0 : MP0VL is not selected
MPWM0 : MP0WL is not selected
MPWM0 : PRTIN0 is not selected
MPWM0 : OVIN0 is not selected
Error
Pane 1
Pane 2

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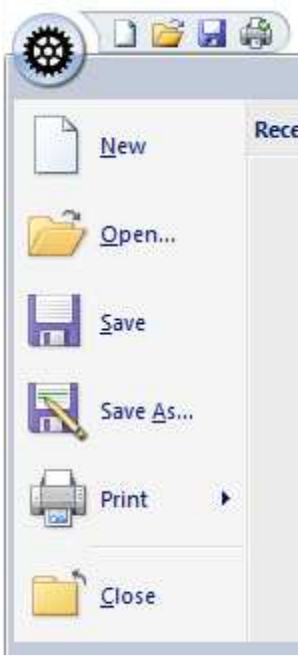
3.2



3.3

CodeGen32 2

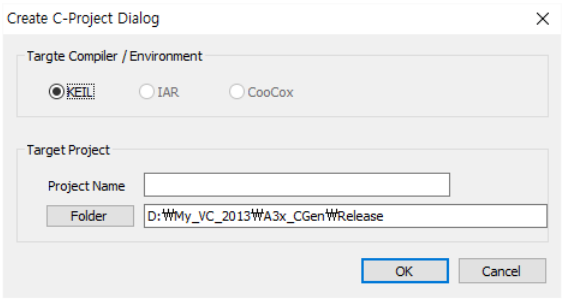
3.3.1 New project

LAST project NEW project

3.3.2 Source Gen

CodeGen32 C

KEIL



CodeGen32

-
  - init.h :
  - peri.h :
-
  - init.c :
  - main.c : main(void)
  - peri.c :
- KEIL project file
  - KEIL_proj.uvproj :

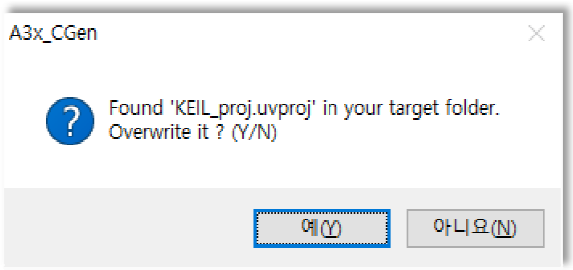
CodeGen32

- Driver files
- Sample files
- Documents

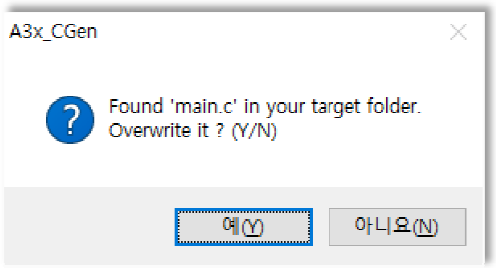
CodeGen32

“Init.c”, “peri.h”, “peri.c”

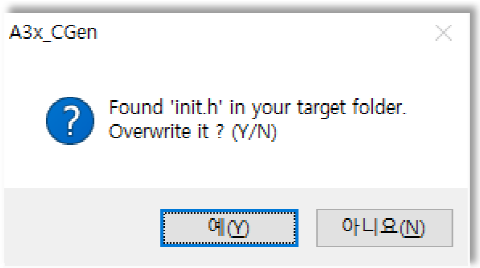
)



) main.c

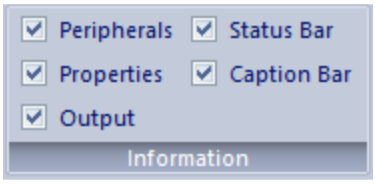


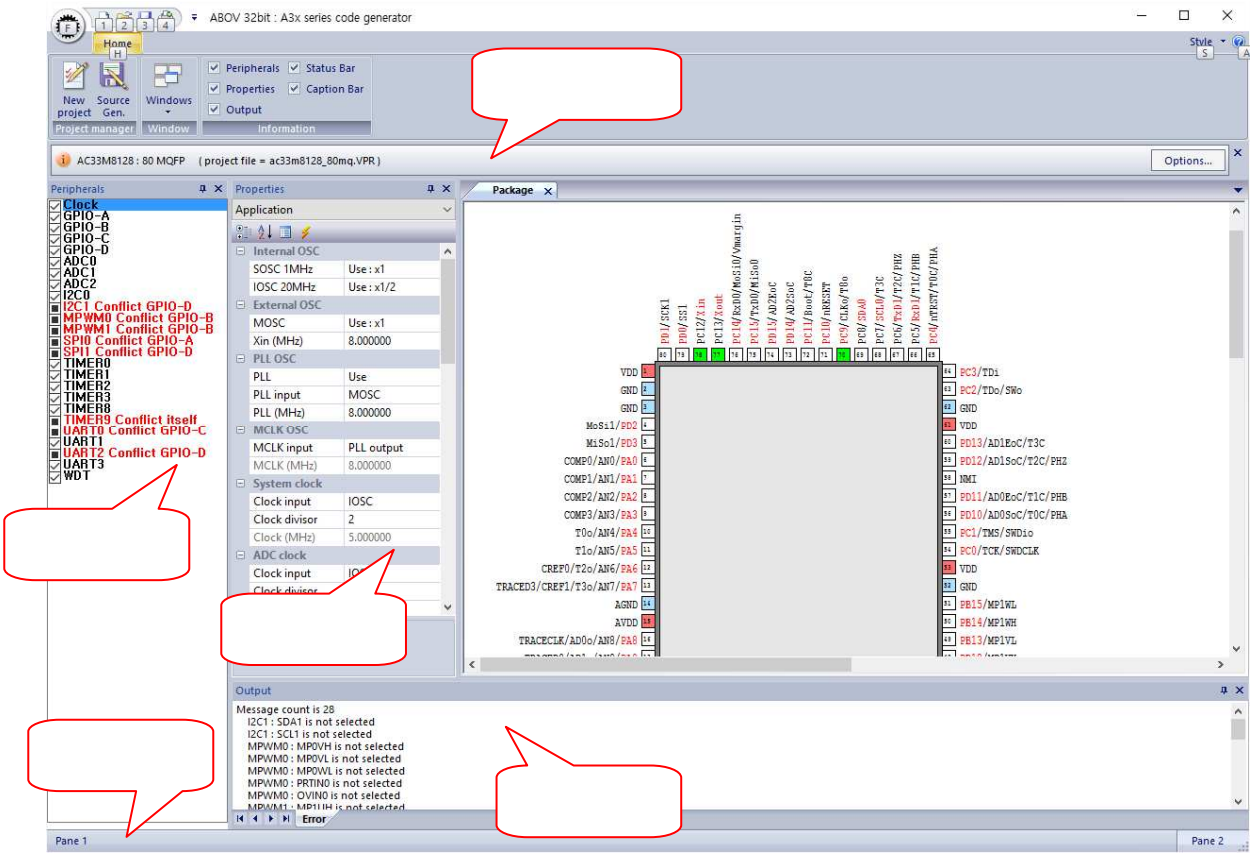
) init.h



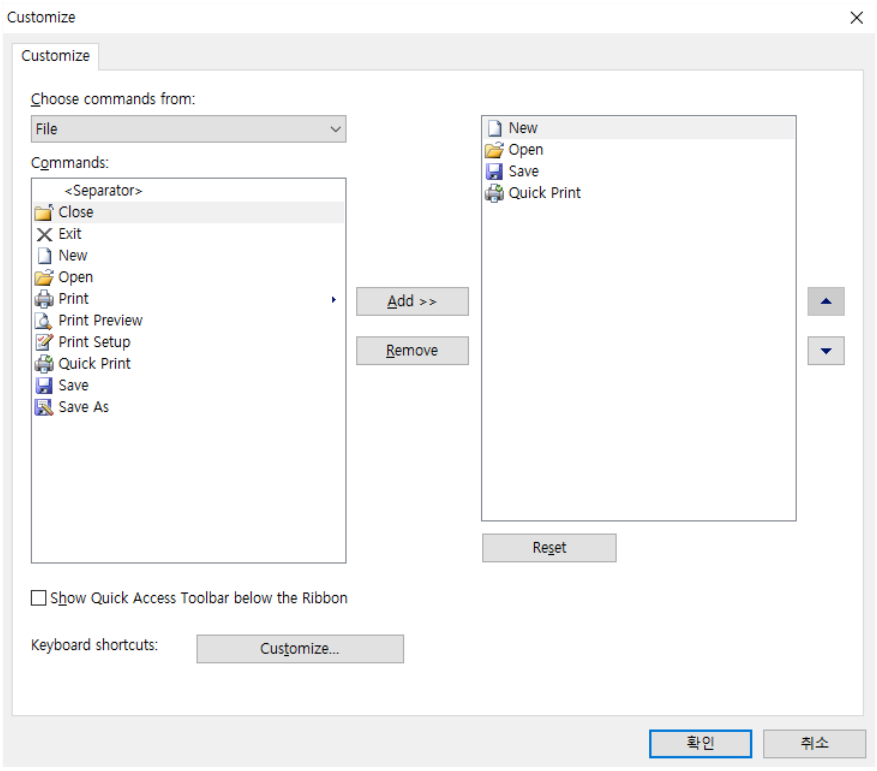
3.3.3 Windows

3.3.4 Information





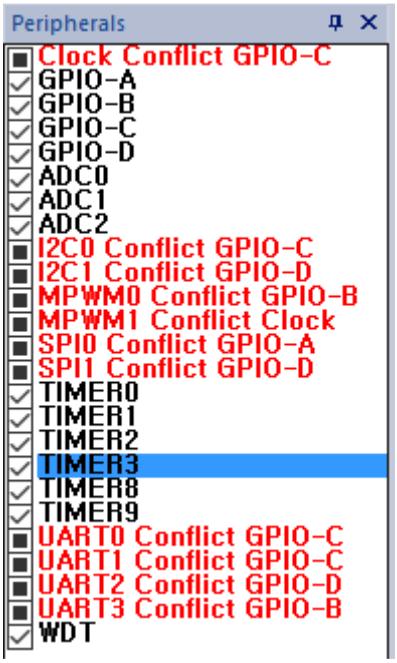
/


Customize
Customize
Choose commands from:
File
Commands:
<Separator>
Close
Exit
New
Open
Print
Print Preview
Print Setup
Quick Print
Save
Save As
Add >>
Remove
New
Open
Save
Quick Print
Reset
Show Quick Access Toolbar below the Ribbon
Keyboard shortcuts:
Customize...
확인
취소

3.4

CodeGen32 3

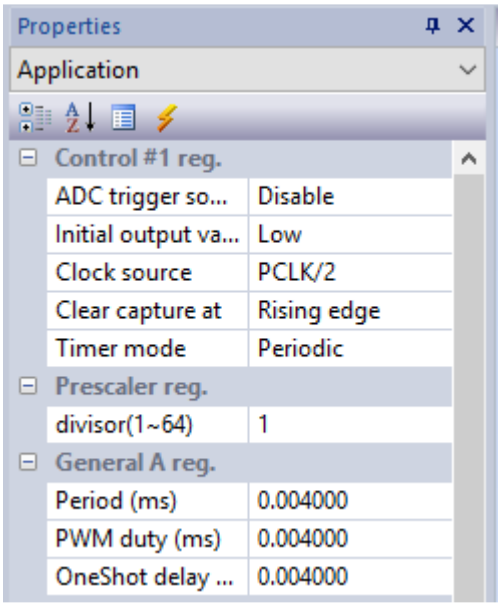
3.4.1 Peripherals



3.4.2 Properties

CodeGen32

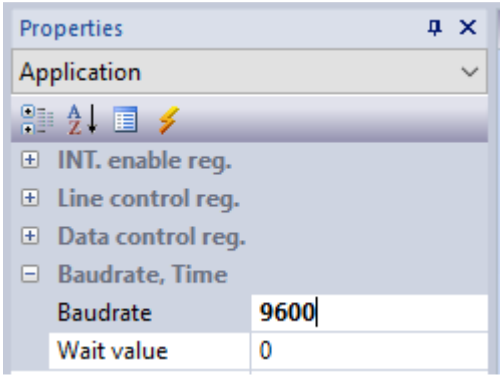
-
-
-
-

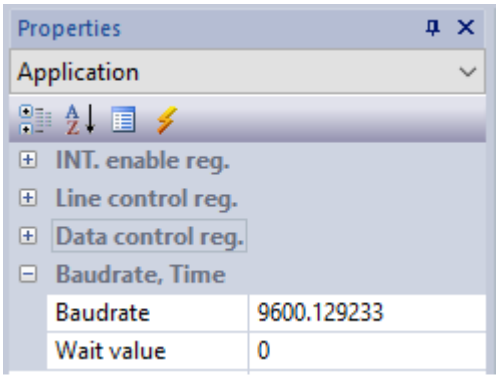


➢

66MHz UART 9600bps 66MHz

9600bps CodeGen32



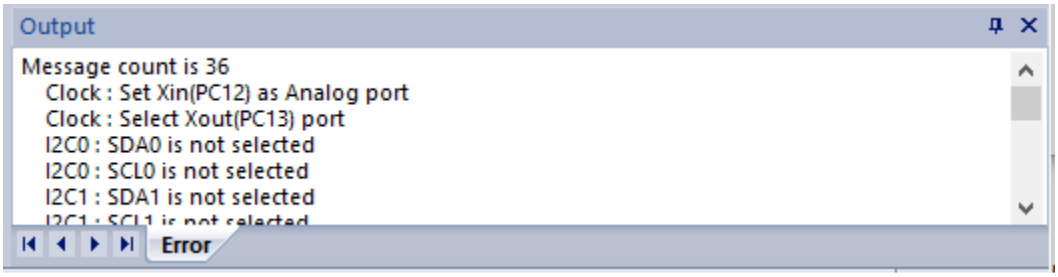


9600bps CodeGen32

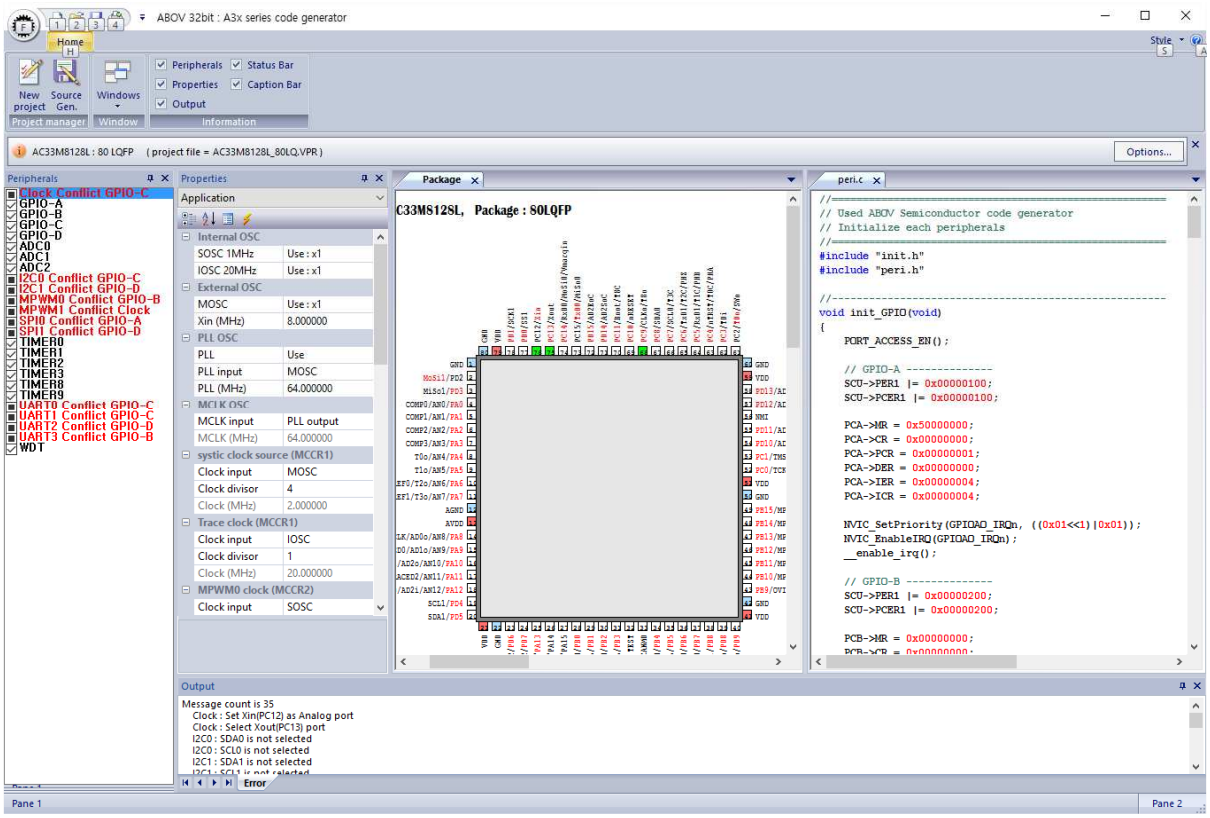
9600.129bps @66MHz

CodeGen32

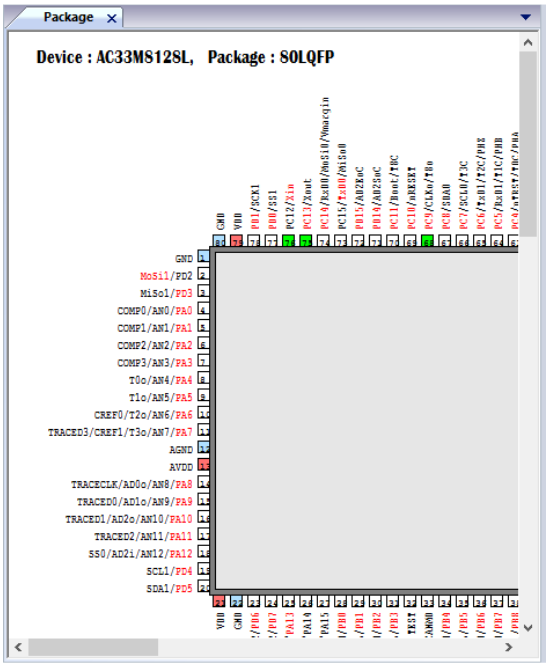
3.4.3 Output


Output
Message count is 36
Clock : Set Xin(PC12) as Analog port
Clock : Select Xout(PC13) port
I2C0 : SDA0 is not selected
I2C0 : SCL0 is not selected
I2C1 : SDA1 is not selected
Error

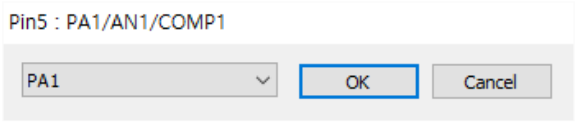
3.5


ABOV 32bit : A3x series code generator
Home
New project
Source Gen.
Windows
Project manager
Window
Peripherals
Status Bar
Properties
Caption Bar
Output
Information
AC33M8128L : 80 LQFP (project file = AC33M8128L_80LQ.VPR)
Options...
Peripherals
Clock Conflict GPIO-C
GPIO-A
GPIO-B
GPIO-C
GPIO-D
ADC0
ADC1
ADC2
I2C0 Conflict GPIO-C
I2C1 Conflict GPIO-D
MPWM0 Conflict GPIO-B
MPWM1 Conflict Clock
SPI0 Conflict GPIO-A
SPI1 Conflict GPIO-D
TIMER0
TIMER1
TIMER2
TIMER3
TIMER8
TIMER9
UART0 Conflict GPIO-C
UART1 Conflict GPIO-C
UART2 Conflict GPIO-D
UART3 Conflict GPIO-B
WDT
Properties
Application
Internal OSC
SOSC 1MHz
Use : x1
IOSC 20MHz
Use : x1
External OSC
MOSC
Use : x1
Xin (MHz)
8.000000
PLL OSC
PLL
Use
PLL input
MOSC
PLL (MHz)
64.000000
MCLK OSC
MCLK input
PLL output
MCLK (MHz)
64.000000
systic clock source (MCCR1)
Clock input
MOSC
Clock divisor
4
Clock (MHz)
2.000000
Trace clock (MCCR1)
Clock input
IOSC
Clock divisor
1
Clock (MHz)
20.000000
MPWM0 clock (MCCR2)
Clock input
SOSC
Package
C33M8128L, Package : 80LQFP
peri.c
//==========
// Used ABOV Semiconductor code generator
// Initialize each peripherals
//==========
#include "init.h"
#include "peri.h"
//----------
void init_GPIO(void)
{
PORT_ACCESS_EN();
// GPIO-A --------------
SCU->PER1 |= 0x00000100;
SCU->PCER1 |= 0x00000100;
PCA->MR = 0x50000000;
PCA->CR = 0x00000000;
PCA->PCR = 0x00000001;
PCA->DER = 0x00000000;
PCA->IER = 0x00000004;
PCA->ICR = 0x00000004;
NVIC_SetPriority(GPIOA0_IRQn, ((0x01<<1)|0x01));
NVIC_EnableIRQ(GPIOA0_IRQn);
__enable_irq();
// GPIO-B --------------
SCU->PER1 |= 0x00000200;
SCU->PCER1 |= 0x00000200;
PCB->MR = 0x00000000;
Output
Message count is 35
Clock : Set Xin(PC12) as Analog port
Clock : Select Xout(PC13) port
I2C0 : SDA0 is not selected
I2C0 : SCL0 is not selected
I2C1 : SDA1 is not selected
Error
Pane 1
Pane 2

3.5.1

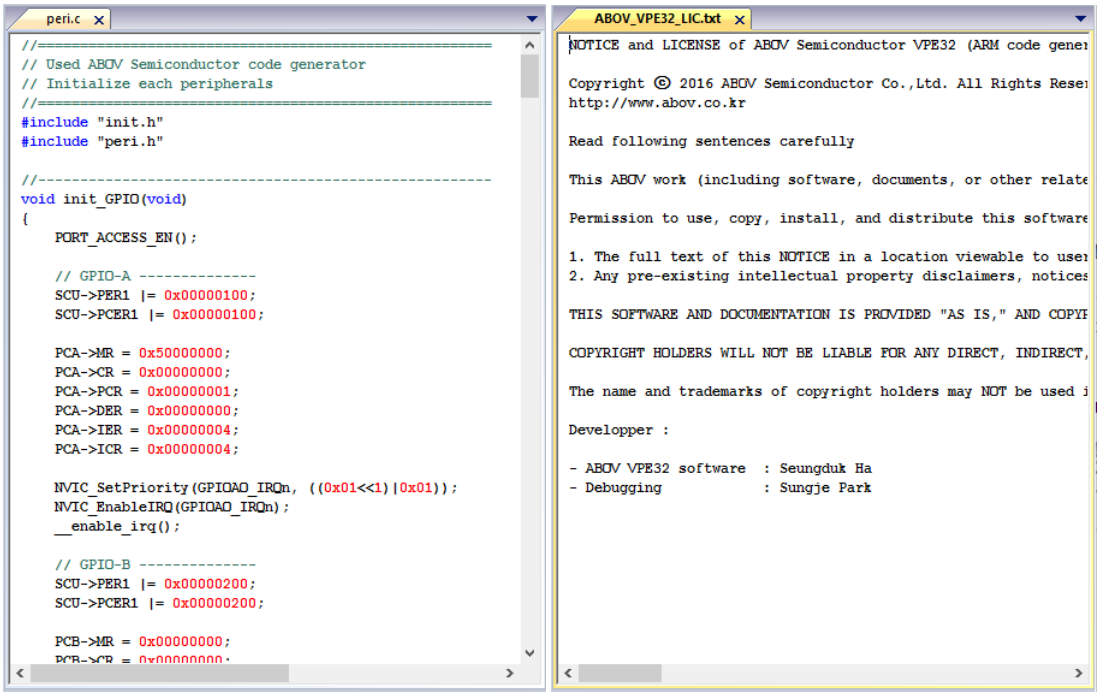


Pin color	Meaning
Red	It is a power source pin.
Blue	It is a ground pin.
White	Port, except power (Vcc, Gnd)
Green	It is associated pin with the selected peripheral.



3.5.2

'c' 'h'


peri.c
//===
// Used ABOV Semiconductor code generator
// Initialize each peripherals
//===
#include "init.h"
#include "peri.h"
//---
void init_GPIO(void)
{
PORT_ACCESS_EN();
// GPIO-A --------------
SCU->PER1 |= 0x00000100;
SCU->PCER1 |= 0x00000100;
PCA->MR = 0x50000000;
PCA->CR = 0x00000000;
PCA->PCR = 0x00000001;
PCA->DER = 0x00000000;
PCA->IER = 0x00000004;
PCA->ICR = 0x00000004;
NVIC_SetPriority(GPIOA0_IRQn, ((0x01<<1)|0x01));
NVIC_EnableIRQ(GPIOA0_IRQn);
__enable_irq();
// GPIO-B --------------
SCU->PER1 |= 0x00000200;
SCU->PCER1 |= 0x00000200;
PCB->MR = 0x00000000;
ABOV_VPE32_LIC.txt
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http://www.abov.co.kr
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The name and trademarks of copyright holders may NOT be used i
Developper :
- ABOV VPE32 software : Seungduk Ha
- Debugging : Sungje Park

TAB 4

4

- **CodeGen32 generating files**
- **CodeGen32 coping library**

4.1
CodeGen32

4.1.1 init.h

KEIL

) AC33M8128 init.h

```
//=====================================================
// Used ABOV Semiconductor code generator
// Device name : AC33M8128
//=====================================================
#include "AC33Mx128.h"
#include "system_AC33Mx128.h"
#include "aa_types.h"
#include "ac33mx128_adc.h"
#include "ac33mx128_afe.h"
#include "ac33mx128_dmac.h"
#include "ac33mx128_gpio.h"
#include "ac33mx128_i2c.h"
#include "ac33mx128_libcfg.h"
#include "ac33mx128_mpwm.h"
#include "ac33mx128_pcu.h"
#include "ac33mx128_pwr.h"
#include "ac33mx128_scu.h"
#include "ac33mx128_spi.h"
#include "ac33mx128_timer.h"
#include "ac33mx128_uart.h"
#include "ac33mx128_wdt.h"
#include "debug_frmwrk.h"
#include "slib.h"

#define _ADC
#define _AFE
#define _DMAC
#define _GPIO
#define _I2C
#define _MPWM
#define _SPI
#define _TIMER
#define _UART
#define _WDT

void init(void);
```

4.1.2 peri.h

CodeGen32

KEIL

) AC33M8128 peri.h

```
//=========================================================
// Used ABOV Semiconductor code generator
// Define initialize function of each peripherals
//=========================================================

void init_GPIO(void);
void GPIOA0_IRQHandler(void);
void GPIOCE_IRQHandler(void);
void init_clock(void);
void init_ADC_0(void);
void init_ADC_1(void);
void init_ADC_2(void);
void init_I2C_0(void);
void init_I2C_1(void);
void init_MPWM_0(void);
void init_MPWM_1(void);
void init_SPI_0(void);
void init_SPI_1(void);
void init_TIMER_0(void);
void init_TIMER_1(void);
void init_TIMER_2(void);
void init_TIMER_3(void);
void init_TIMER_8(void);
void init_TIMER_9(void);
void init_UART_0(void);
void init_UART_1(void);
void init_UART_2(void);
void init_UART_3(void);
void init_WDT(void);
```

4.2
CodeGen32

4.2.1 init.c

KEIL

) AC33M8128 init.c

```
//=====================================================
// Used ABOV Semiconductor code generator
// Basic initialize function
//=====================================================
#include "init.h"
#include "peri.h"

void init(void)
{
    init_GPIO();
    init_clock();
    init_ADC_0();
    init_ADC_1();
    init_ADC_2();
    init_I2C_0();
    init_I2C_1();
    init_MPWM_0();
    init_MPWM_1();
    init_SPI_0();
    init_SPI_1();
    init_TIMER_0();
    init_TIMER_1();
    init_TIMER_2();
    init_TIMER_3();
    init_TIMER_8();
    init_TIMER_9();
    init_UART_0();
    init_UART_1();
    init_UART_2();
    init_UART_3();
    init_WDT();
}
```

4.2.2 main.c

C c main

Main

- c main
- MCU main

CodeGen32 main.c

main.c CodeGen32

) AC33M8128 main.c

```
//=====================================================
// Used ABOV Semiconductor's code generator
// Device name : AC33M8128
//=====================================================
#include "init.h"

int main()
{
    WDT->CON = 0;    // disable watch-dog timer
    init();          // initialize selected peripherals here

    while(1) {
        // TOTO : Fill your code
    };
    return 0;
}
```

4.2.3 peri.c

KEIL

) AC33M8128 peri.c

```
//=====================================================
// Used ABOV Semiconductor code generator
// Initialize each peripherals
//=====================================================
#include "init.h"
#include "peri.h"

//-----------------------------------------------------
void init_GPIO(void)
{
    PORT_ACCESS_EN();

    // GPIO-A --------------
    SCU->PER1 |= 0x00000100;
    SCU->PCER1 |= 0x00000100;

    PCA->MR = 0x50000000;
    PCA->CR = 0x00000000;
    PCA->PCR = 0x00000001;
    PCA->DER = 0x00000000;
    PCA->IER = 0x00000004;
    PCA->ICR = 0x00000004;

    NVIC_SetPriority(GPIOA0_IRQn, ((0x01<<1)|0x01));
    NVIC_EnableIRQ(GPIOA0_IRQn);
    __enable_irq();

    // GPIO-B --------------
    SCU->PER1 |= 0x00000200;
    SCU->PCER1 |= 0x00000200;
```

4.3

CodeGen32

CodeGen32 KEIL