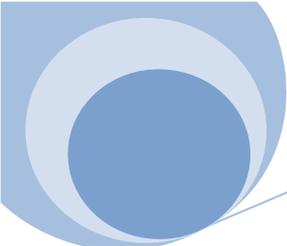




ABOV
CodeGen32
(Code Generator)
USER GUIDE

Release V1.00000



ABOV CodeGen32 ()

@ ABOV 2013 . ABOV

Release information

Version	Date	Change
V1.00000	July 2016	First release

. ABOV

ABOV

ABOV

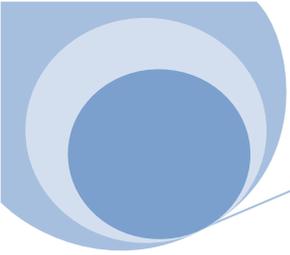
<http://www.abov.co.kr>

ABOV CodeGen32 ()

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ABOV CodeGen32 ()

1

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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

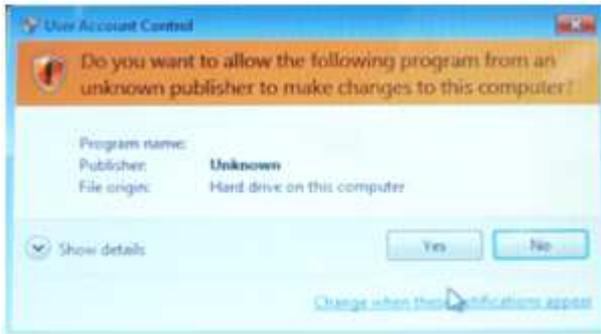
ABOV CodeGen32 <http://www.abov.co.kr>

ABOV CodeGen32 MCU ABOV

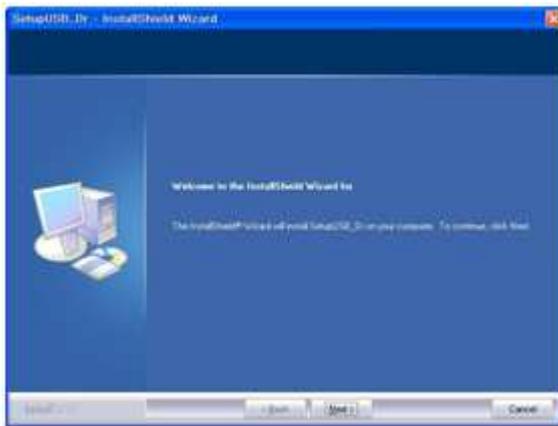
CodeGen32 CodeGen32 PC

1.2.1

" Yes"



" Next"

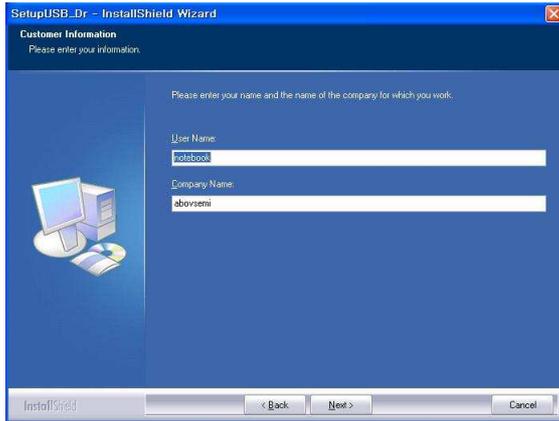


" I accept the items of the license agreement"

" Next"



" Next"



“ Complete” “ Next”



“ Install”



“ Finish”

2 CodeGen32 32

- CodeGen32
- CodeGen32



ABOV CodeGen32 ()

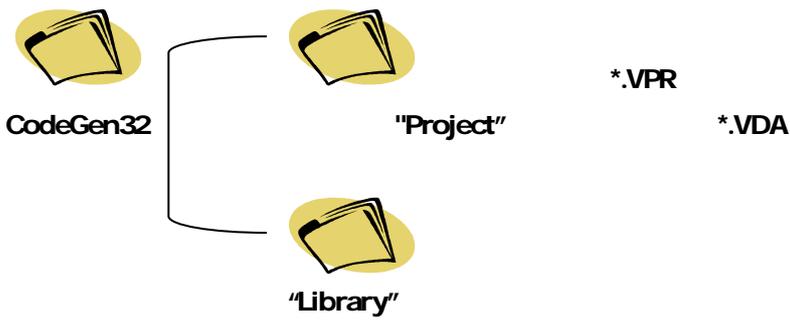
2.1 CodeGen32

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



2.2 CodeGen32

CodeGen32

" Library"

" Library"

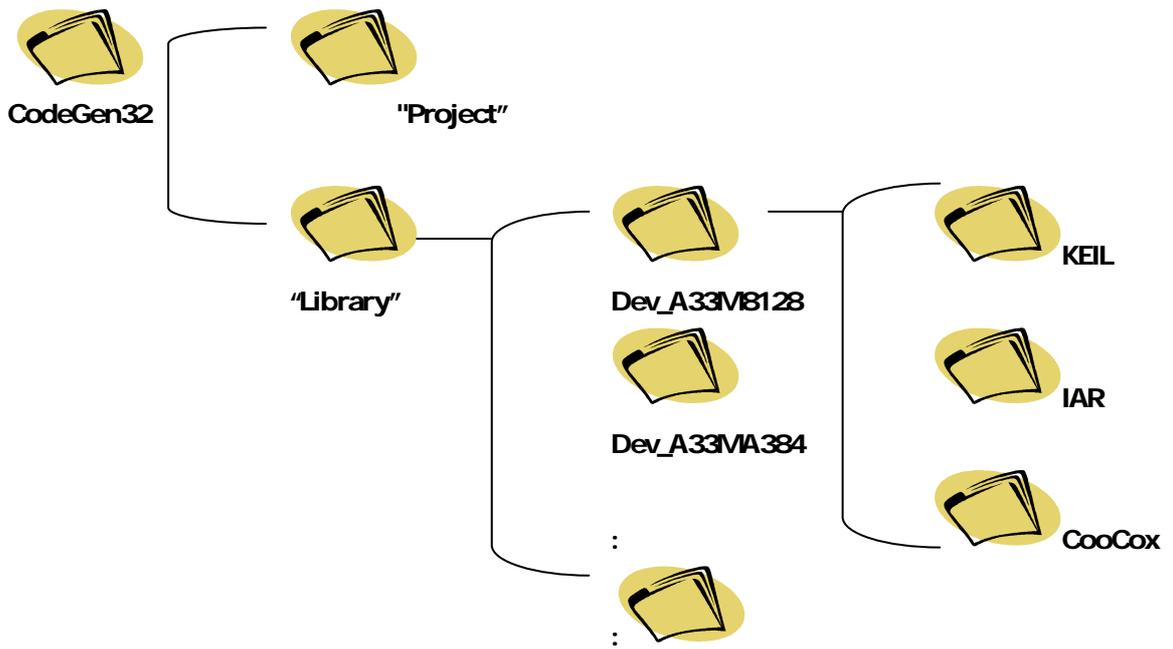
CodeGen32

library

-
-
-

CodeGen32

Library



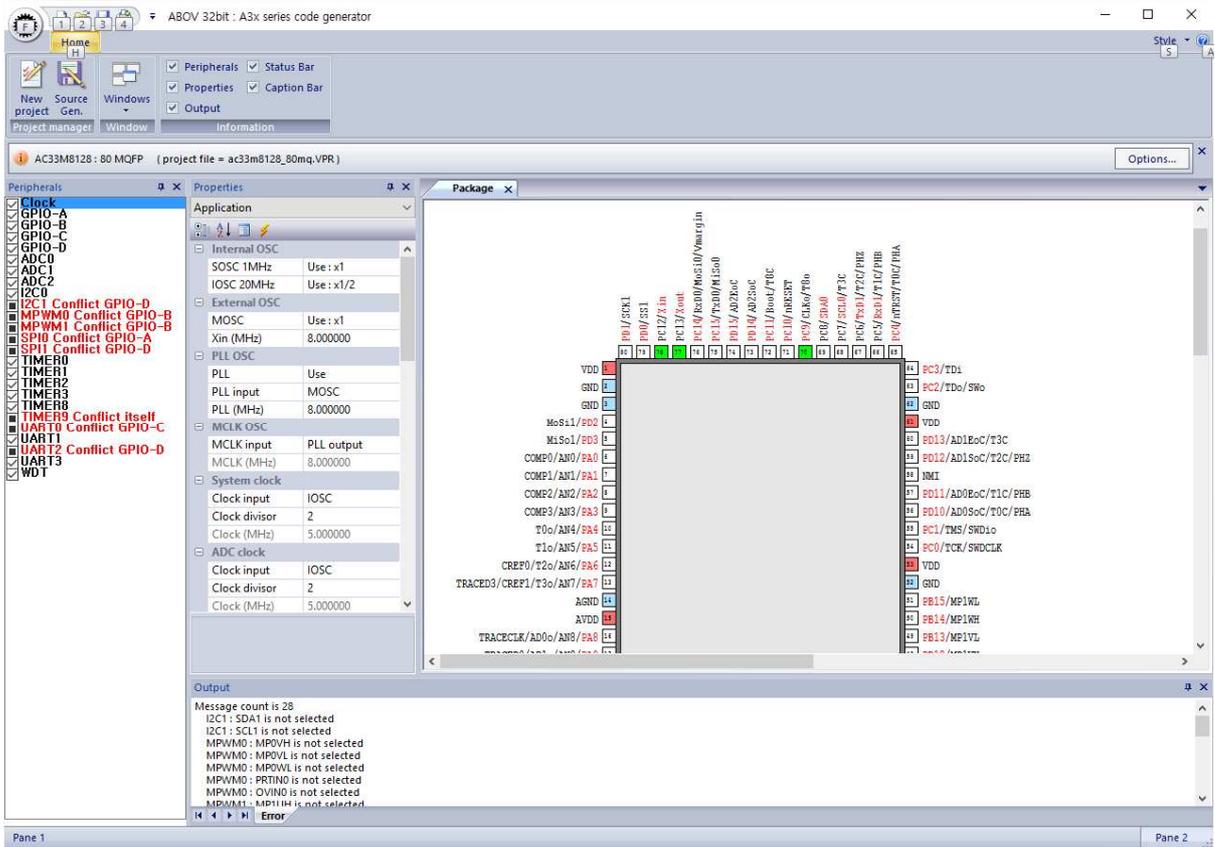
3 CodeGen32

- CodeGen32
-
-
-

3.1 CodeGen32

ABOV A3x

CodeGen32



3.1.1

- ABOV A3x C
- KEIL 2016
- *.uvproj
-
- C "main.c" "init.c" "peri.c"
- IAR CooCox
- CodeGen32
-
-
- CodeGen32

3.1.2

CodeGen32



CodeGen32





“ New project”



CodeGen32



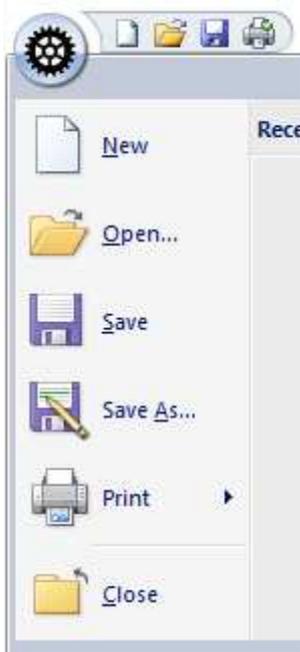
- “ LAST project”
- “ New project”
-
-

CodeGen32

The screenshot displays the CodeGen32 application window for an ABOV 32-bit A3x series code generator. The interface is divided into several panes:

- Peripherals:** A list of peripherals with checkboxes. Several are marked with red text indicating conflicts: **i2c1 Conflict GPIO-D**, **MPWM0 Conflict GPIO-B**, **MPWM1 Conflict GPIO-B**, **SPI0 Conflict GPIO-A**, **SPI1 Conflict GPIO-D**, **UART2 Conflict i2c1**, **UART2 Conflict GPIO-C**, **UART3 Conflict GPIO-D**, and **WDT**.
- Properties:** Configuration options for the selected peripheral (Application). It includes sections for Internal OSC (SOSC 1MHz, IOSC 20MHz), External OSC (MOSC), PLL OSC (PLL, PLL input, MCLK OSC), and System clock (Clock input, Clock divider).
- Package:** A pinout table for the package. The pins are listed in two columns. A red speech bubble points to the top right corner of this table.
- Output:** A text area showing error messages. A red speech bubble points to this area. The messages include: "Message count is 28", "i2c1: SDA1 is not selected", "i2c1: SCL1 is not selected", "MPWM0: MPOVH is not selected", "MPWM0: MPOVL is not selected", "MPWM0: MPOVH is not selected", "MPWM0: PRTINO is not selected", "MPWM0: OVINO is not selected", and "MPWM1: MPVHH is not selected".

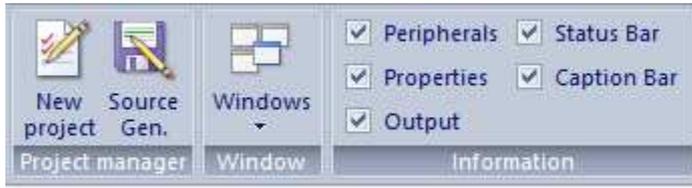
At the bottom of the window, there are two panes labeled "Pane 1" and "Pane 2".



3.3

CodeGen32

2

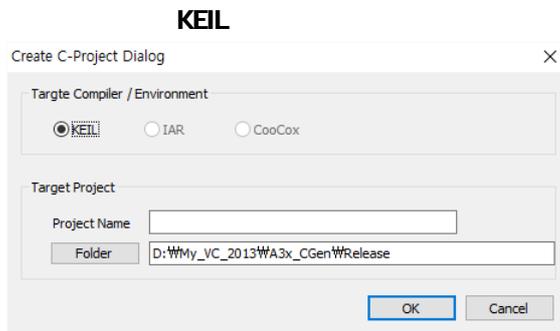


3.3.1 New project

LAST project NEW project



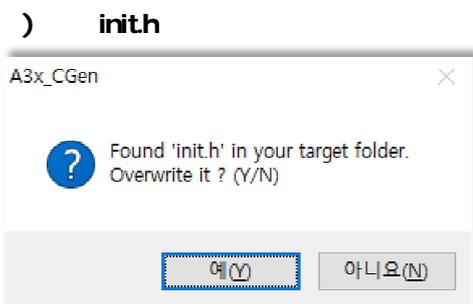
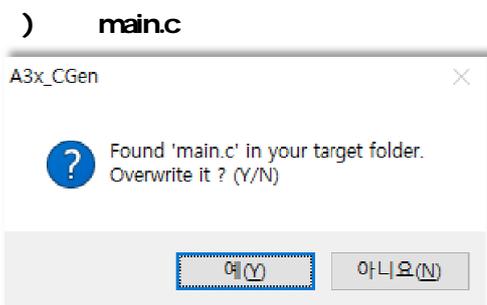
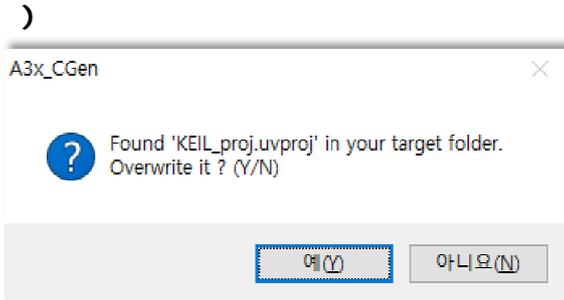
3.3.2 Source Gen CodeGen32 C



CodeGen32

-
- inith** :
- peri.h** :
-
- init.c** :
- main.c** : **main(void)**
- peri.c** :
-
- KEIL project file**
- KEIL_proj.uvproj** :
- CodeGen32**
-
- Driver files**
-
- Sample files**
-
- Documents**

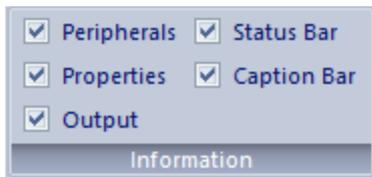
"init.c", "peri.h", "peri.c"



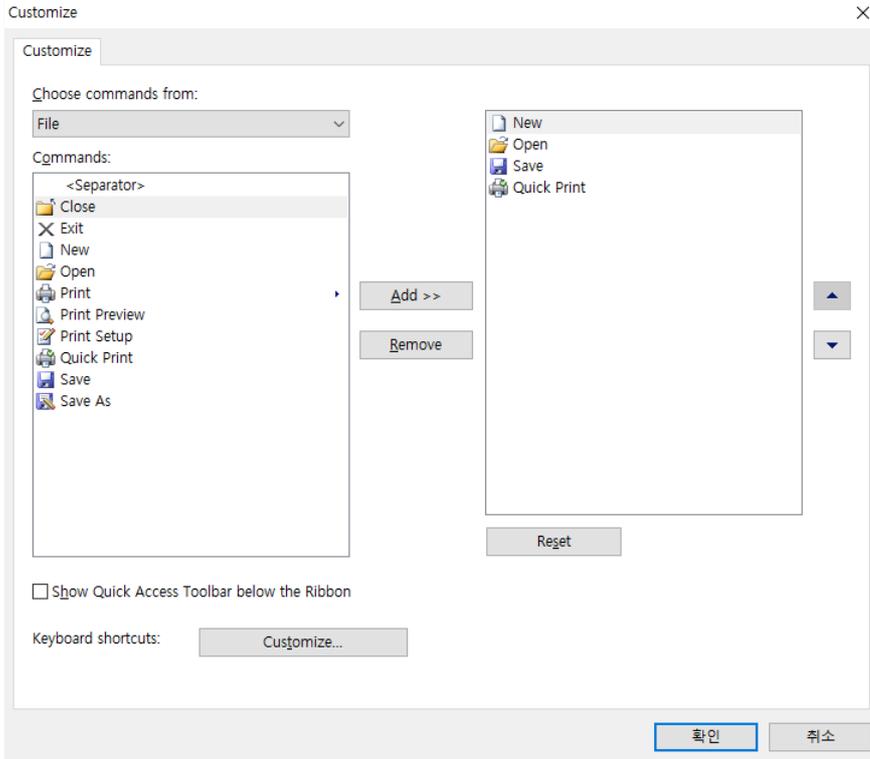
3.3.3 Windows



3.3.4 Information



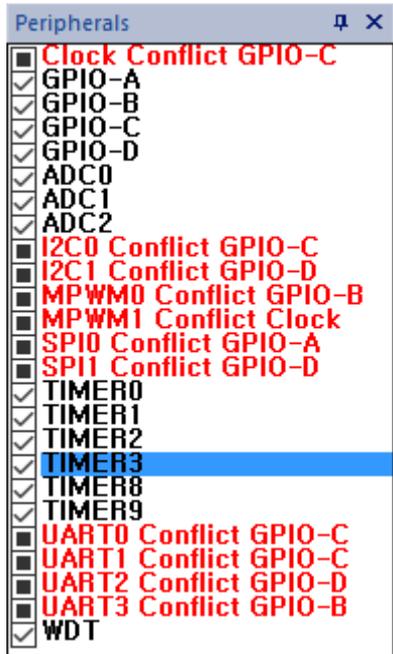
The screenshot shows the ABOV CodeGen32 software interface. The main window title is 'ABOV 32bit : A3x series code generator'. The project name is 'AC33M6128: 80 MQFP (project file = ac33m6128_80mq.VPR)'. The interface includes a menu bar with 'Home', 'New project', 'Source Gen.', 'Windows', and 'Window'. The 'Windows' menu is open, showing 'New Window', '1 Package', and 'Windows...'. The 'Information' dialog box is also open, showing checked options for 'Peripherals', 'Status Bar', 'Properties', 'Caption Bar', and 'Output'. The main workspace is divided into four panes: 'Peripherals' (listing various components like GPIO-A, ADC0, etc.), 'Properties' (showing application settings like SOSC, IOSOC, etc.), 'Package' (showing a pinout diagram for the AC33M6128 package), and 'Output' (showing a list of messages and errors). Red speech bubbles are placed over the 'Peripherals' list, the 'Properties' pane, the 'Package' pinout diagram, and the 'Output' pane.



3.4

CodeGen32 3

3.4.1 Peripherals



3.4.2 Properties

CodeGen32

-
-
-
-

Control #1 reg.	
ADC trigger so...	Disable
Initial output va...	Low
Clock source	PCLK/2
Clear capture at	Rising edge
Timer mode	Periodic

Prescaler reg.	
divisor(1~64)	1

General A reg.	
Period (ms)	0.004000
PWM duty (ms)	0.004000
OneShot delay ...	0.004000



66MHz UART
9600bps CodeGen32

Baudrate, Time	
Baudrate	9600
Wait value	0

9600bps

9600.129bps @ 66MHz

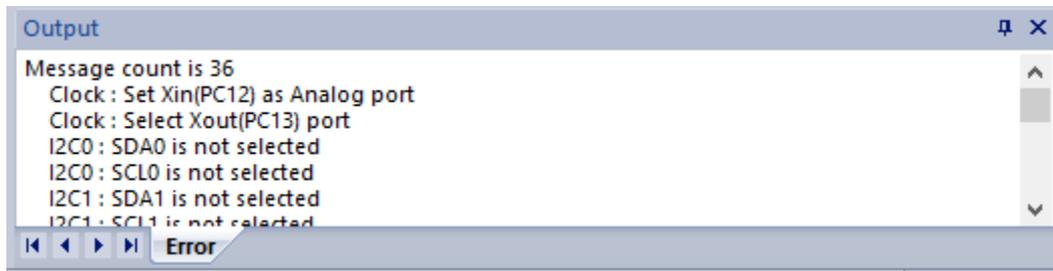
9600bps 66MHz

Baudrate, Time	
Baudrate	9600.129233
Wait value	0

CodeGen32

CodeGen32

3.4.3 Output



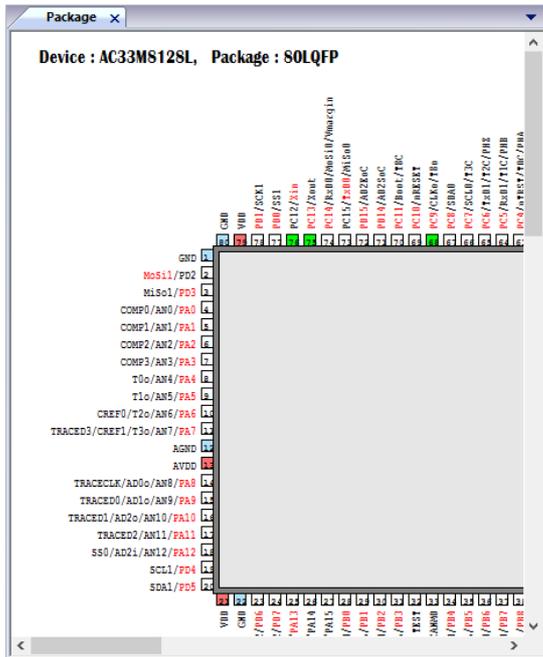
The screenshot shows a window titled "Output" with a scrollable list of messages. The messages are as follows:

```
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
I2C1 : SCL1 is not selected
```

At the bottom of the window, there is a status bar with navigation icons and a tab labeled "Error".

The screenshot displays the ABOV CodeGen32 software interface for generating code for an AC33M8128L microcontroller. The interface is divided into several panes:

- Peripherals:** A tree view on the left lists various peripherals. Conflicts are highlighted in red, such as "GPIO-A Conflict GPIO-C", "I2C1 Conflict GPIO-D", "MPWM0 Conflict GPIO-B", "SPI0 Conflict GPIO-A", "SPI1 Conflict GPIO-D", "UART0 Conflict GPIO-C", "UART1 Conflict GPIO-C", "UART2 Conflict GPIO-D", and "UART3 Conflict GPIO-B".
- Properties:** A central pane shows configuration options for the selected peripheral (Application). It includes sections for Internal OSC (SOSC, IOSC), External OSC (MOSC), PLL (PLL input, PLL output), MCLK OSC (MCLK input, MCLK output), and system clock source (MCCR1, MCCR2).
- Package:** A diagram in the center shows the pin configuration for the "C33M8128L, Package : 80LQFP". Pins are color-coded and labeled with their functions.
- Code:** A pane on the right shows the generated C code for the "peric" module. It includes initialization functions for GPIO-A and GPIO-B, and configuration for PCA and NVIC.
- Output:** A pane at the bottom shows the output of the code generation process, including a message count and a list of selected and not-selected peripherals.

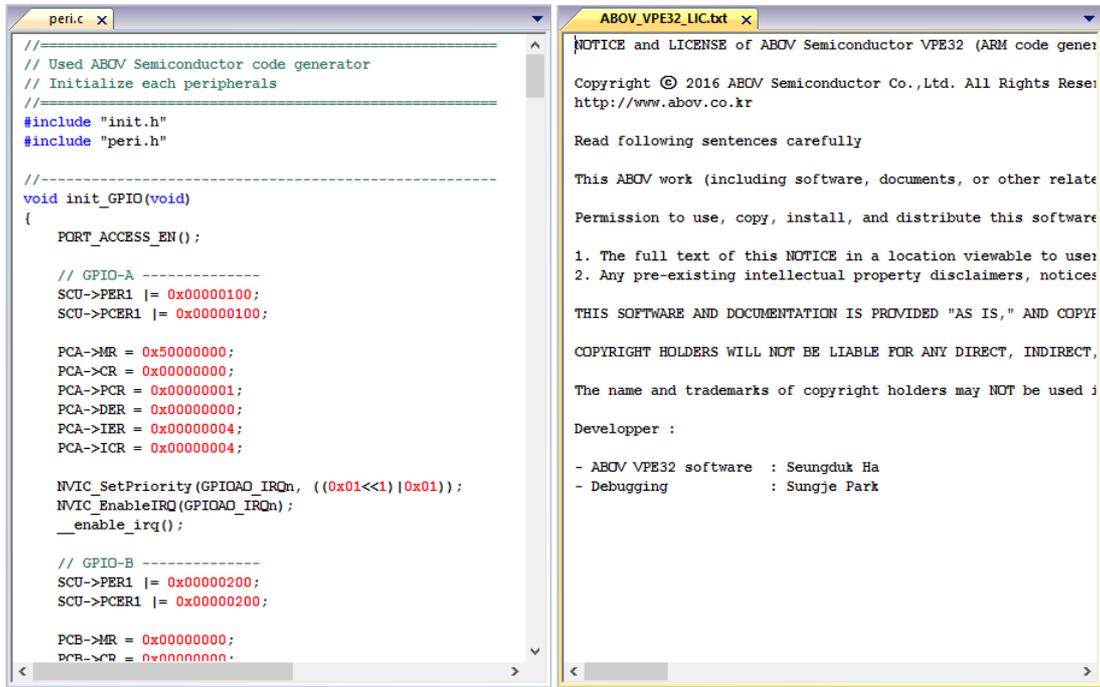


Pin color	Meaning
Red	It is a power source pin.
Blue	It is a ground pin.
White	Port, except power (Vcc, Gnd)
Green	It is associated pin with the selected peripheral.

Pin5 : PA1/AN1/COMP1

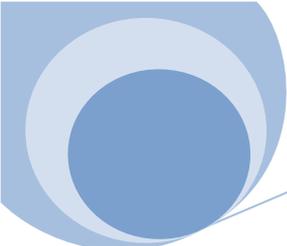
PA1

'c' 'h'



TAB

4



ABOV CodeGen32 ()

4

- CodeGen32 generating files
- CodeGen32 coping library

4.1

CodeGen32

4.1.1 init.h

KEIL

```
) AC33M8128      inith
//=====
// 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_mpwmm.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 _MPWMM
#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 GPIOAQ_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      initc
//=====
// 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_MFWM_0();
    init_MFWM_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();
}
```

4.22 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;
}
    
```

4.23 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;
```

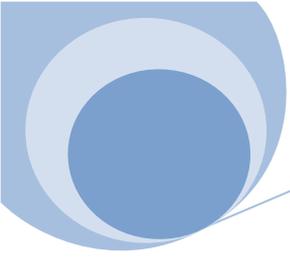
4.3

CodeGen32

CodeGen32

KEIL

Core	2016-06-23 오전 9:33
Doc	2016-06-23 오전 9:33
Drivers	2016-06-23 오전 9:33
Examples	2016-06-23 오전 9:33
Flashloader	2016-06-23 오전 9:33
Ini	2016-06-23 오전 9:33
SVD	2016-06-23 오전 9:33



ABOV CodeGen32 ()