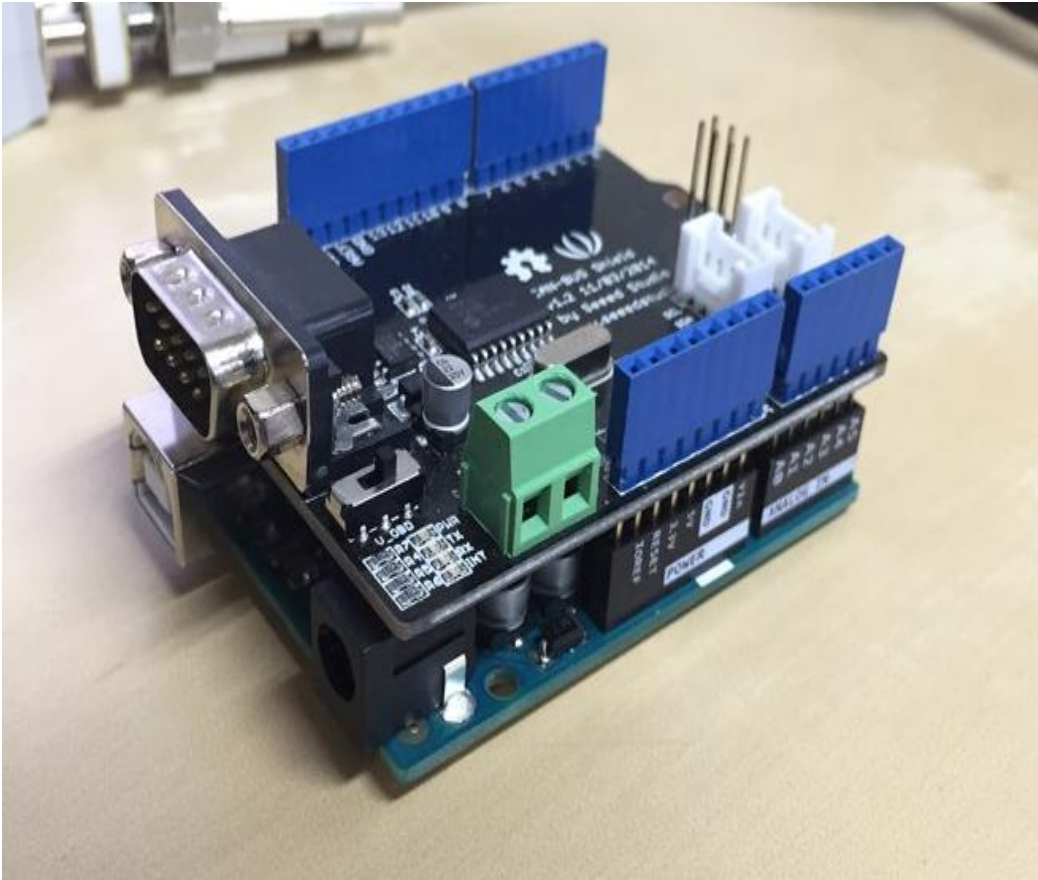


How to use CAN Bus Shield

Avees Lab

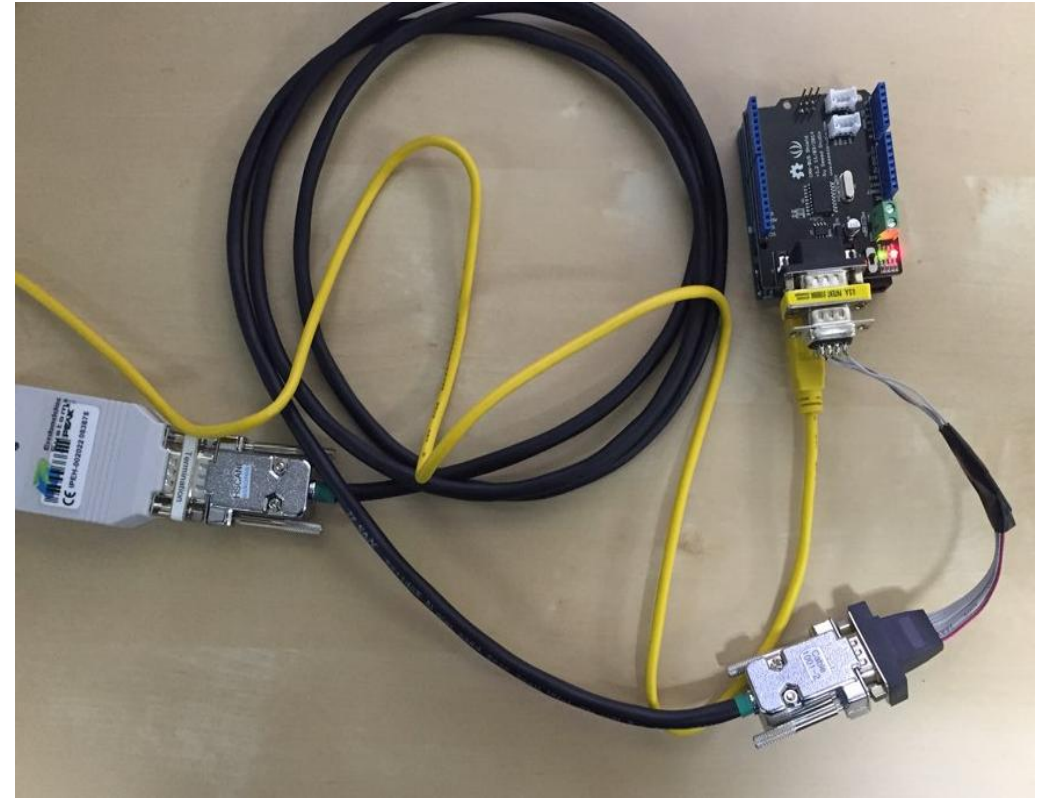
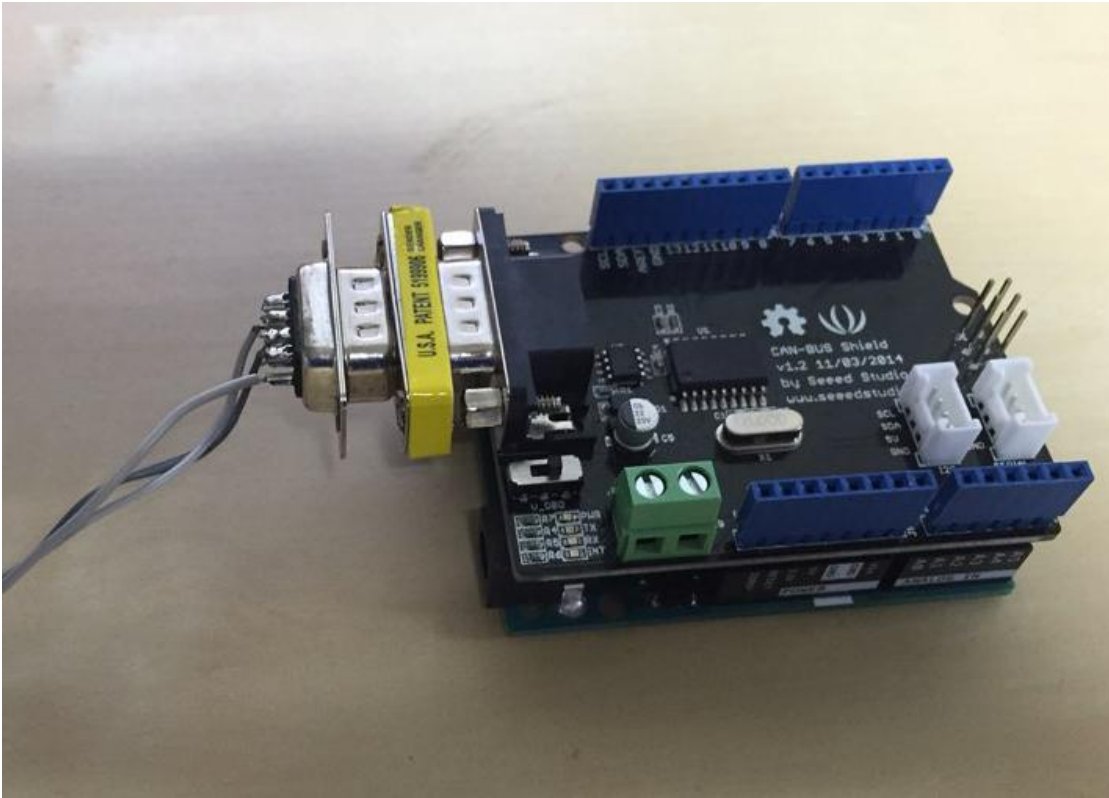
장비 사용법

CAN Bus Shield를 그림과 같이 아두이노위에 장착 (핀배열에 유의할 것)
PCAN USB에 Termination을 장착



장비 사용법

노란색 핀 커넥터가 붙어있는 부분을 CAN Bus Shield에 부착
CAN BUS Shield와 PCAN USB 양쪽에 케이블을 연결 후 사용



PCAN USB Driver 설치(1/5)

<http://www.peak-system.com/Downloads.76.0.html?&L=1>

접속 후 PCAN-USB Package 다운로드

DOWNLOADS

Product Packages

Software & APIs

Documentation

Product Catalog

Product DVD

Linux

SOFTWARE INFORMATION


HARDWARE INFORMATION

TUTORIALS

PRODUCT SEARCH

KEYWORDS

TEXT SEARCH



Download Center
Click on a filter option on the left hand side to search for your download

General

▶ Browse Product DVD

Website

▶ Download Product DVD

Download

Price lists

German

English

Product catalog (High Quality)

German

English

French

Product catalog (Low Quality)

German

English

French

ISO 9001:2008 Certificate

German

English

French

ISO 14001:2004 Certificate

German

English

French

▶ General Terms of Business

German

English

French

Product Packages

▶ PCAN-USB package

Download

▶ PCAN-USB FD package

Download

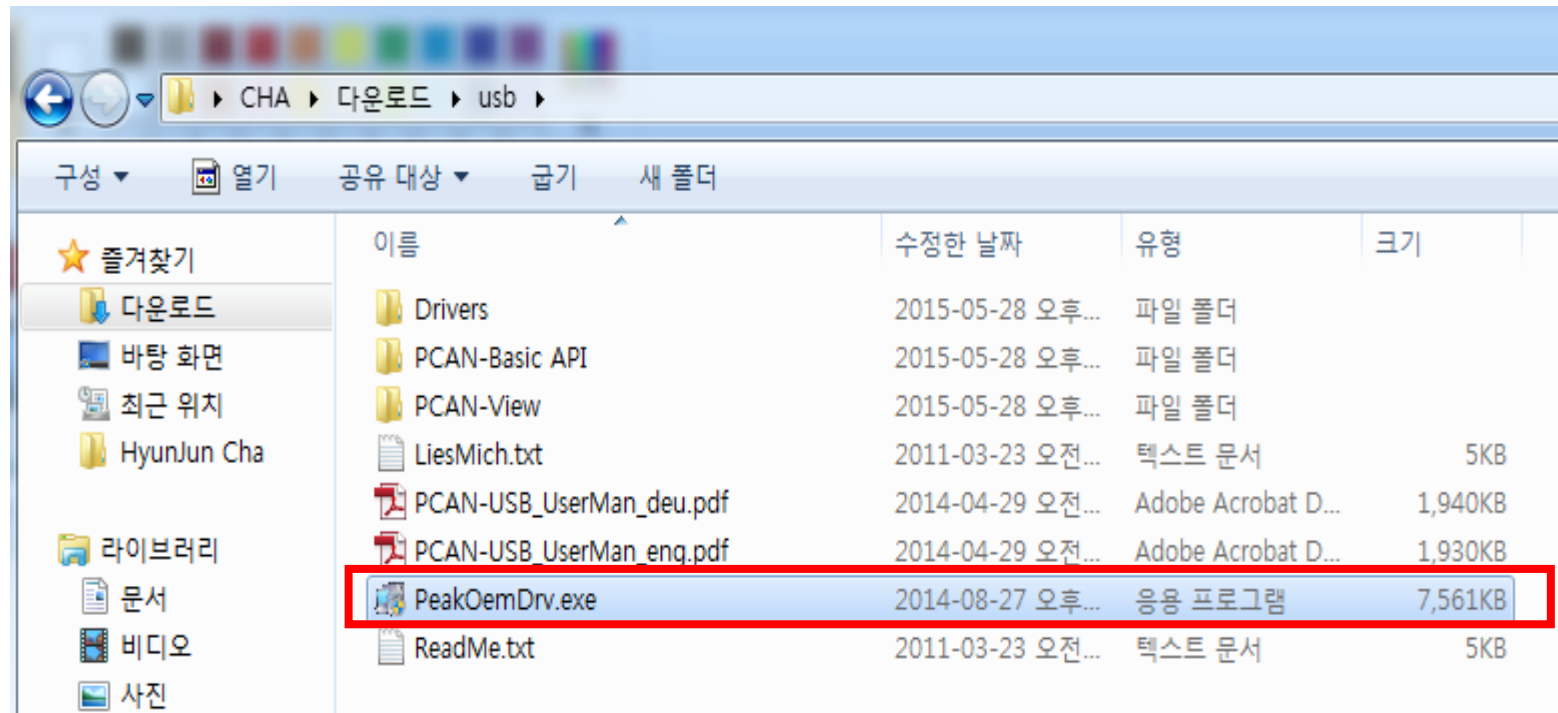
▶ PCAN-USB Pro package

Download

Download 클릭 후 다운로드

PCAN USB Driver 설치(2/5)

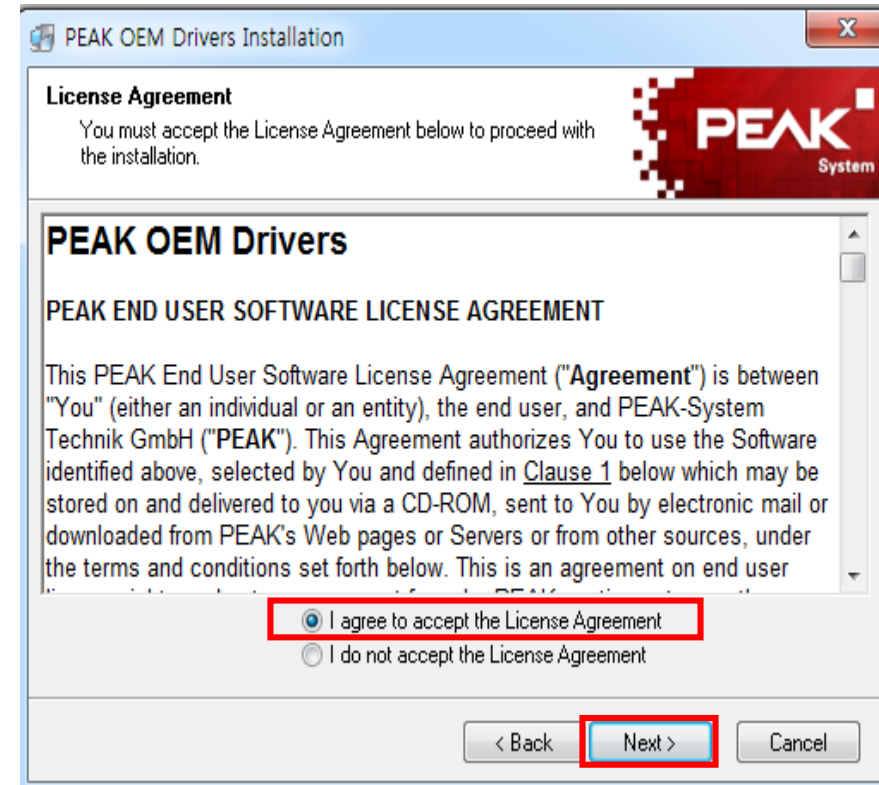
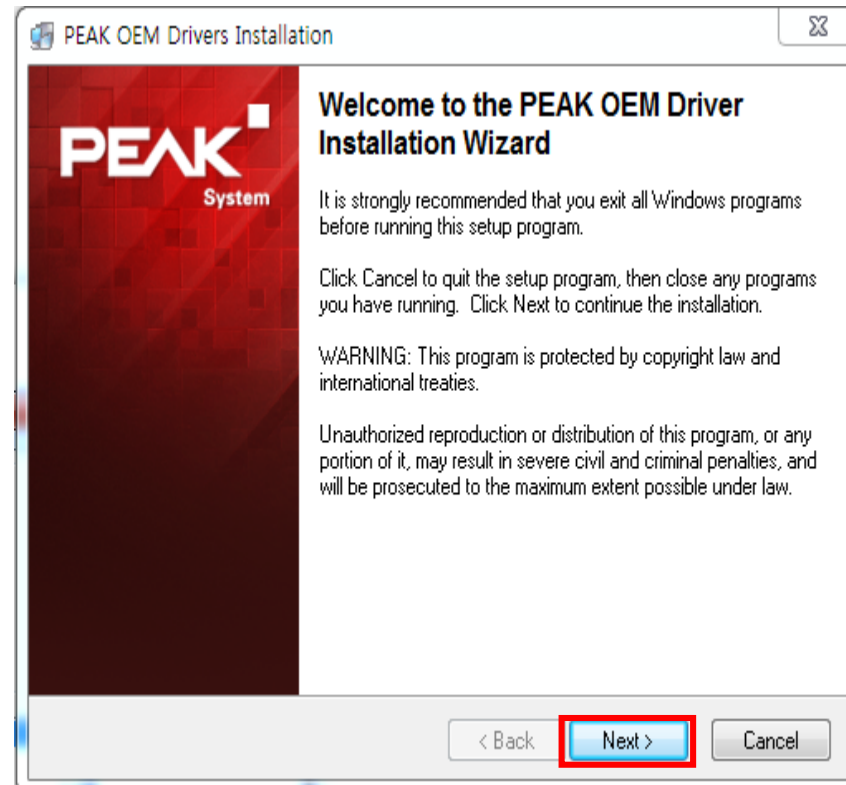
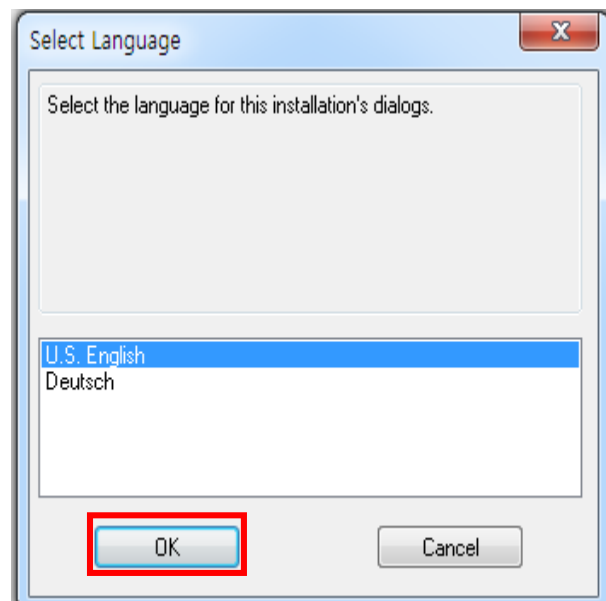
압축 해제 후 PeakOemDrv.exe 실행



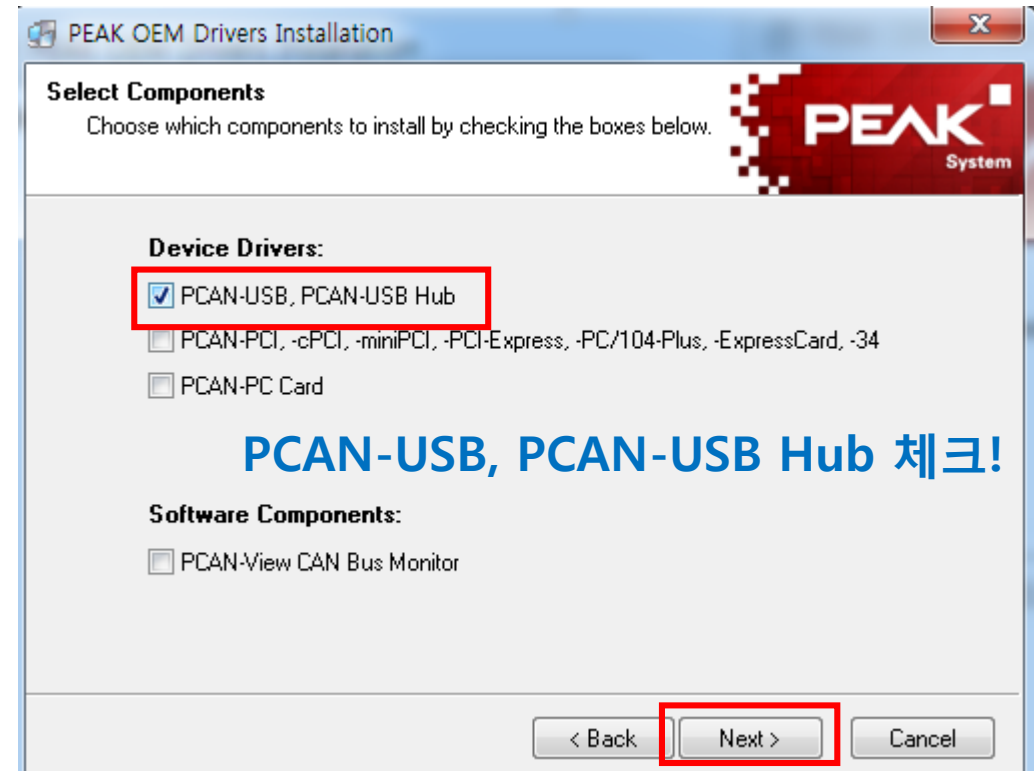
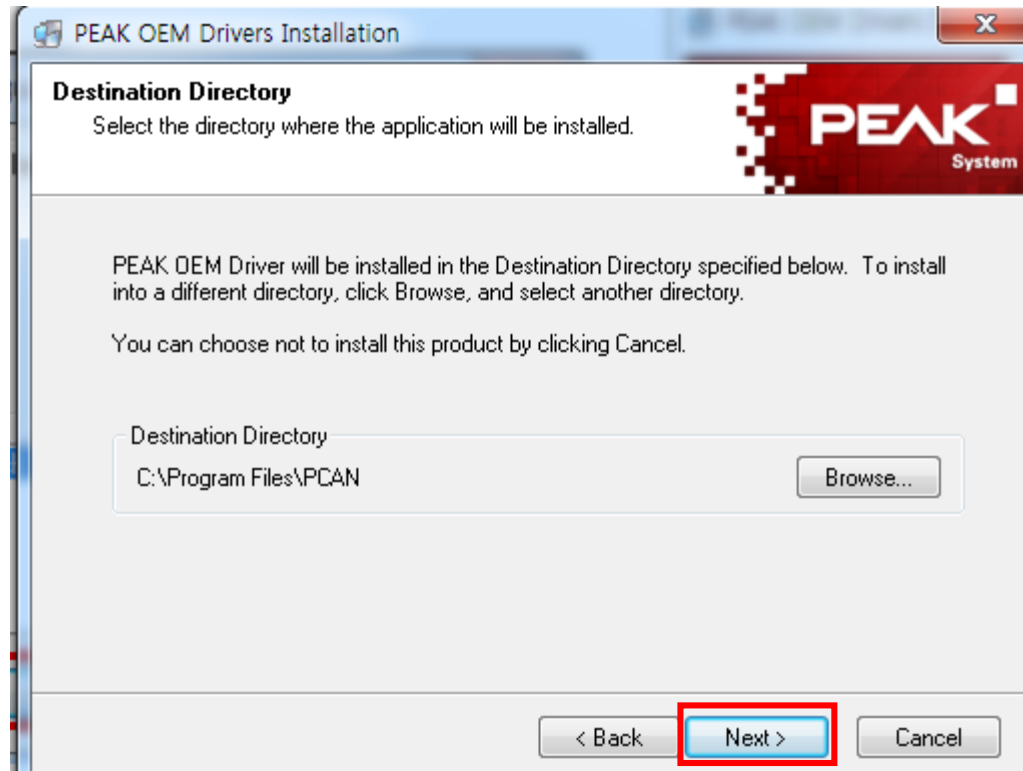
PCAN USB Driver 설치(3/5)

U.S English 설정 후 OK

그림 순서대로 Next를 클릭하여 설치 진행

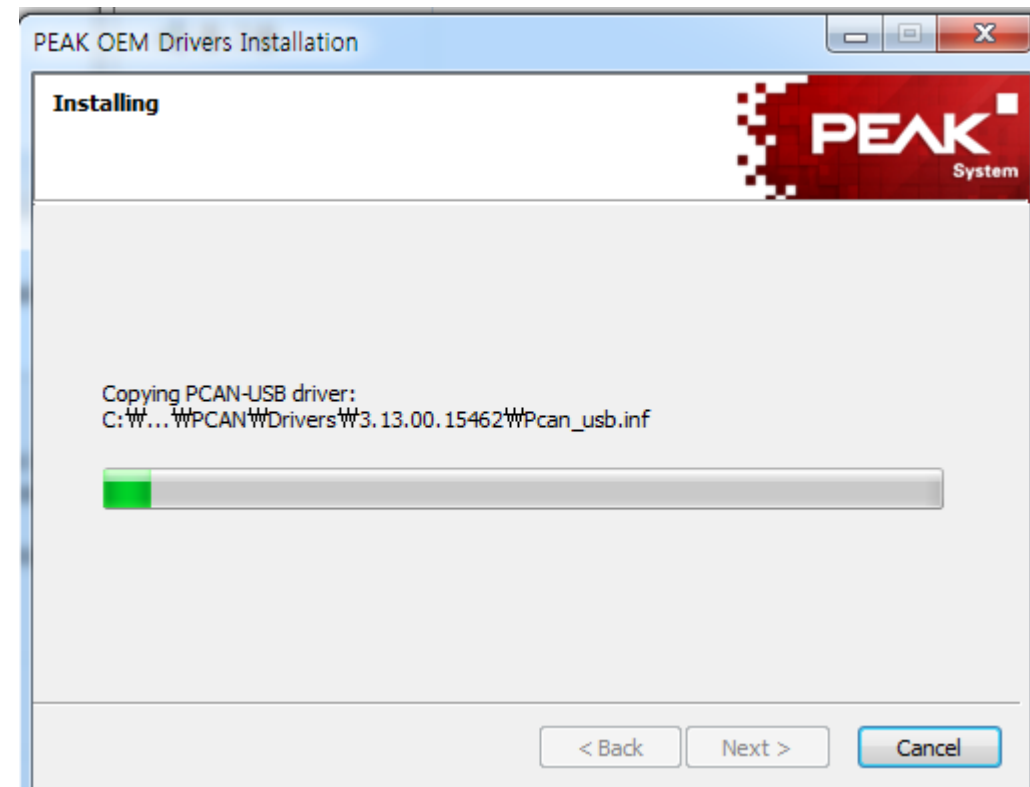
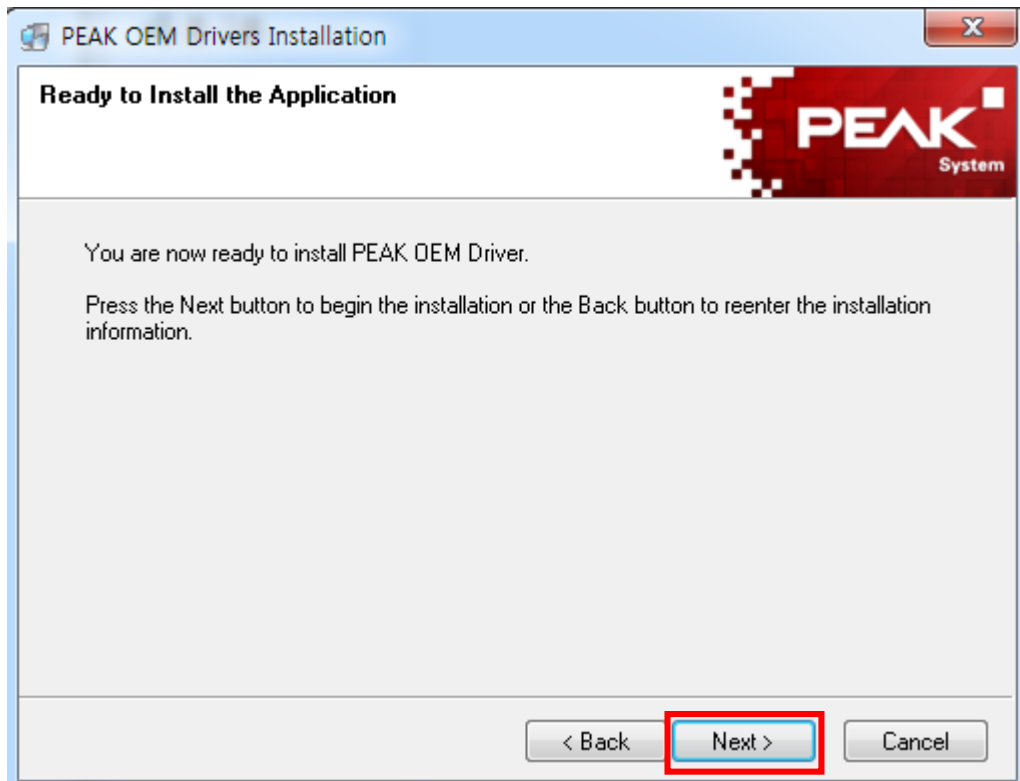


PCAN USB Driver 설치(4/5)



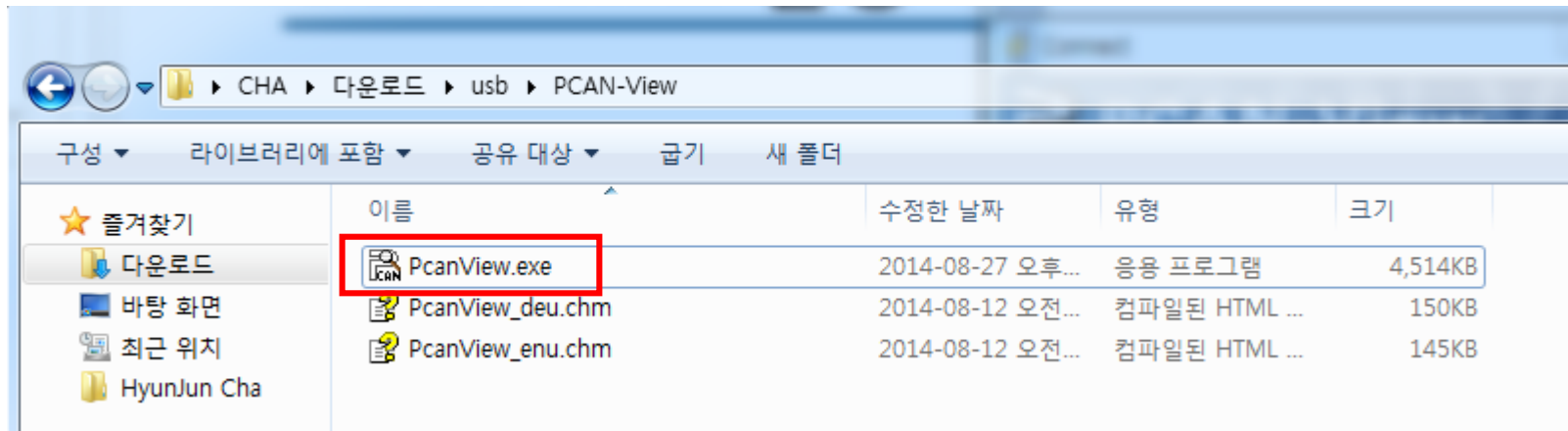
PCAN USB Driver 설치(5/5)

Next를 누른 후 설치 진행
설치가 마무리 된 후 컴퓨터 재부팅



PCAN View 실행

PCAN-View -> PcanView.exe 실행



libcfg.mk 파일 수정

C:\WEE_RT-Druid-2.4.0-juno-win32-x86_64\W
eclipse\plugins\com.eu.evidence.ee_2.4.0.20141105_0021\W
ee_files\contrib\arduino\Wcfg 밑에 있는 **libcfg.mk** 파일 수정

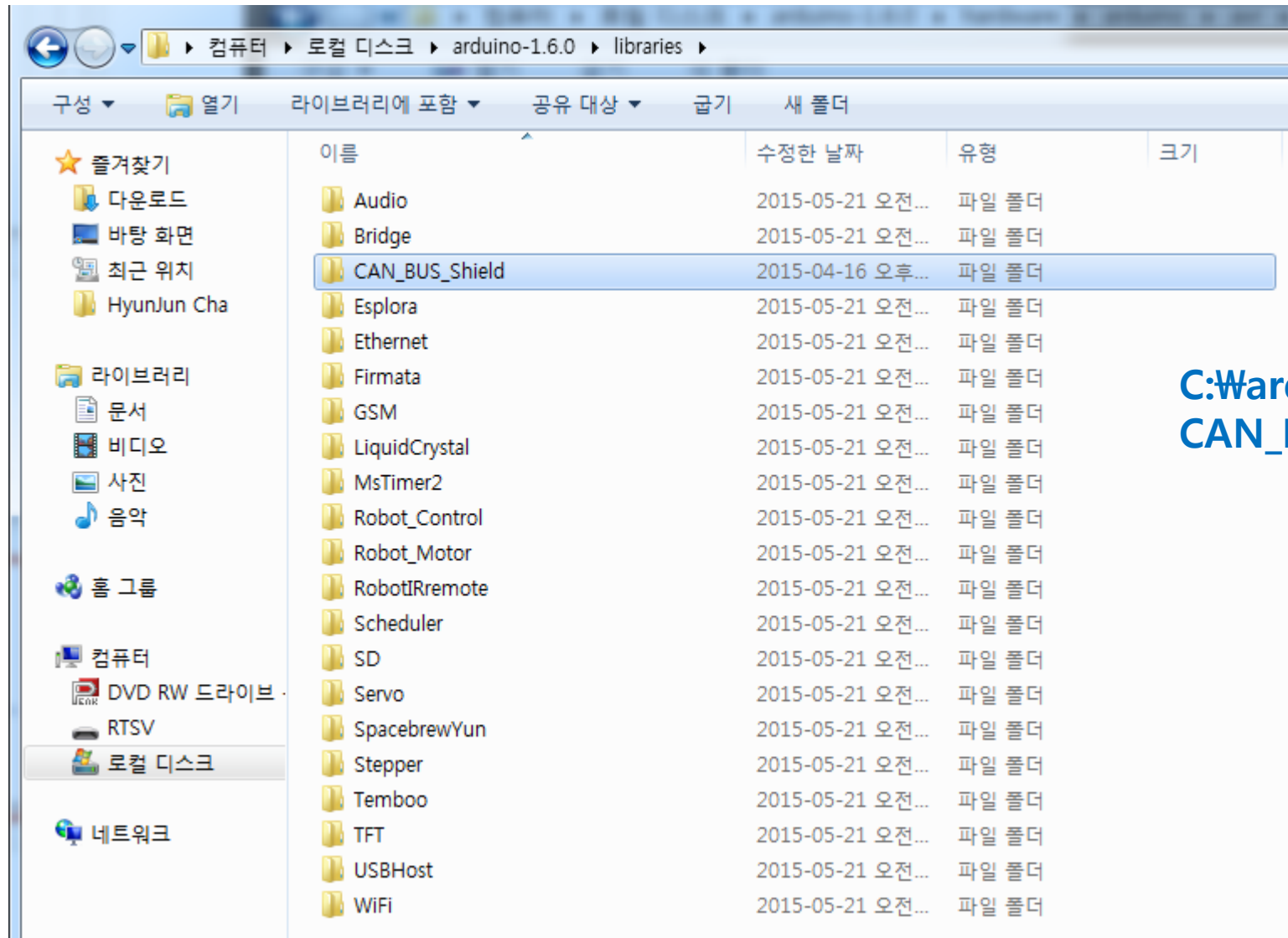
```
EE_SRCS_ARDUINO_SDK += hardware/arduino/avr/cores/arduino/wiring.c
EE_SRCS_ARDUINO_SDK += hardware/arduino/avr/cores/arduino/wiring_digital.c
EE_SRCS_ARDUINO_SDK += hardware/arduino/avr/cores/arduino/wiring_analog.c
EE_SRCS_ARDUINO_SDK += hardware/arduino/avr/cores/arduino/wiring_pulse.c
EE_SRCS_ARDUINO_SDK += hardware/arduino/avr/cores/arduino/wiring_shift.c
EE_SRCS_ARDUINO_SDK += hardware/arduino/avr/cores/arduino/CDC.cpp
EE_SRCS_ARDUINO_SDK += hardware/arduino/avr/cores/arduino/HardwareSerial.cpp
EE_SRCS_ARDUINO_SDK += hardware/arduino/avr/cores/arduino/HID.c
EE_SRCS_ARDUINO_SDK += hardware/arduino/avr/cores/arduino/IPAddress.cpp
EE_SRCS_ARDUINO_SDK += hardware/arduino/avr/cores/arduino/new.c
EE_SRCS_ARDUINO_SDK += hardware/arduino/avr/cores/arduino/Print.cpp
EE_SRCS_ARDUINO_SDK += hardware/arduino/avr/cores/arduino/Stream.cpp
EE_SRCS_ARDUINO_SDK += hardware/arduino/avr/cores/arduino/Tone.cpp
EE_SRCS_ARDUINO_SDK += hardware/arduino/avr/cores/arduino/USBCore.cpp
EE_SRCS_ARDUINO_SDK += hardware/arduino/avr/cores/arduino/WMath.cpp
EE_SRCS_ARDUINO_SDK += hardware/arduino/avr/cores/arduino/WString.cpp
EE_SRCS_ARDUINO_SDK += hardware/arduino/avr/cores/arduino/hooks.c
EE_SRCS_ARDUINO_SDK += hardware/arduino/avr/cores/arduino/WInterrupts.c
EE_SRCS_ARDUINO_SDK += hardware/arduino/avr/cores/arduino/abi.cpp
EE_SRCS_ARDUINO_SDK += hardware/arduino/avr/cores/arduino/HardwareSerial0.cpp
EE_SRCS_ARDUINO_SDK += hardware/arduino/avr/cores/arduino/HardwareSerial1.cpp
EE_SRCS_ARDUINO_SDK += hardware/arduino/avr/cores/arduino/HardwareSerial2.cpp
EE_SRCS_ARDUINO_SDK += hardware/arduino/avr/cores/arduino/HardwareSerial3.cpp
```

박스안에 있는 내용을 추가 (오타주의!)

```
INCLUDE_PATH := $(ARDUINO_SDK_ROOT)/libraries/CAN_BUS_Shield $(INCLUDE_PATH)
EE_SRCS_ARDUINO_SDK += libraries/CAN_BUS_Shield/mcp_can.cpp

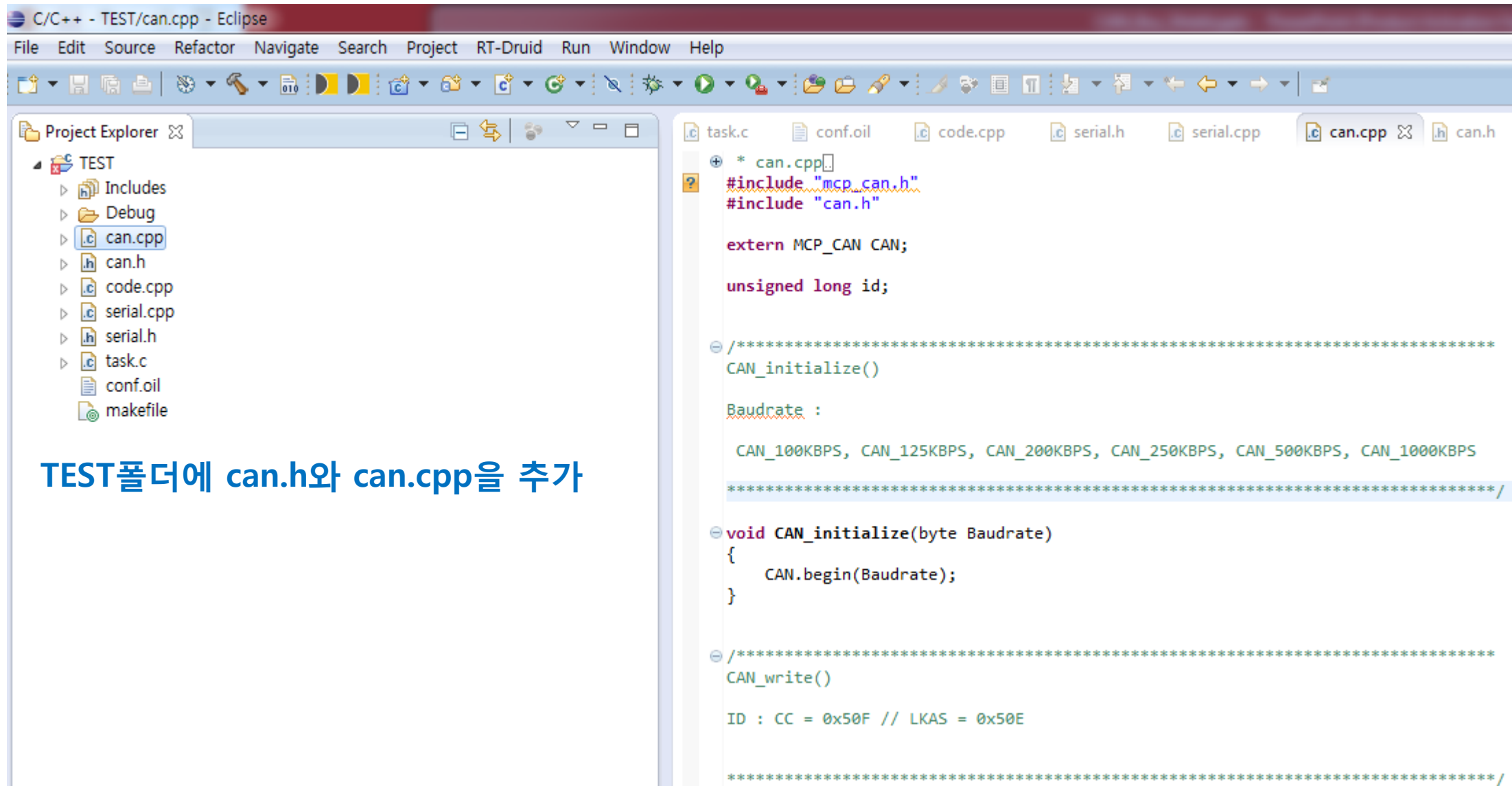
INCLUDE_PATH := $(ARDUINO_SDK_ROOT)/hardware/arduino/avr/libraries/SPI $(INCLUDE_PATH)
EE_SRCS_ARDUINO_SDK += hardware/arduino/avr/libraries/SPI/SPI.cpp
```

CAN_BUS_Shield 라이브러리 복사



C:\Warduino-1.6.0\libraries 경로에
CAN_BUS_Shield 폴더 복사

Eclipse 실행 후 파일 추가



TEST폴더에 can.h와 can.cpp를 추가

code.cpp, conf,oil, task.c 파일 수정

Project Explorer

- TEST
 - Includes
 - Debug
 - can.cpp
 - can.h
 - code.cpp
 - serial.cpp
 - serial.h
 - task.c
 - conf.oil
 - makefile

File List (CAN directory):

이름	수정한 날짜	유형	크기
CAN_BUS_Shield	2015-05-28 오후...	파일 폴더	
can.cpp	2015-05-28 오후...	C++ Source	2KB
can.h	2015-05-28 오후...	C/C++ Header	1KB
code.cpp	2015-05-28 오후...	C++ Source	3KB
oil.txt	2015-05-28 오후...	텍스트 문서	4KB
task.c	2015-05-28 오후...	C Source	3KB

기존에 있는 code.cpp / conf.oil / task.c / can.h / can.cpp 을
가상대학에서 다운 받은 코드 내용으로 수정 or Copy & Paste

CAN Message 전송

can.cpp에 정의되어 있는 CAN_write 함수를 사용
CAN_write(ID, Data Length, Buffer)

```
*task.c  conf.oil  code.cpp  serial.h  serial.cpp  can.cpp  can.h

/* ***B***

#include "ee.h"
#include "Arduino.h"
#include "can.h"

unsigned char len;
unsigned char buf[8];
unsigned char buffer[8] = {0, 1, 2, 3, 4, 5, 6, 7};
unsigned char temp[8] = {10, 11, 12, 13, 14, 15, 0, 1};
extern unsigned long id;

ISR(isr) {
    static int count = 1;
    if (count == 4) { // Increment Counter every 1 second.
        IncrementCounter(SysTimerCnt);
        count = 0;
    }
    count++;
}

TASK(TaskL1) {
    CAN_write(0x400, 8, buffer); // send CAN Message

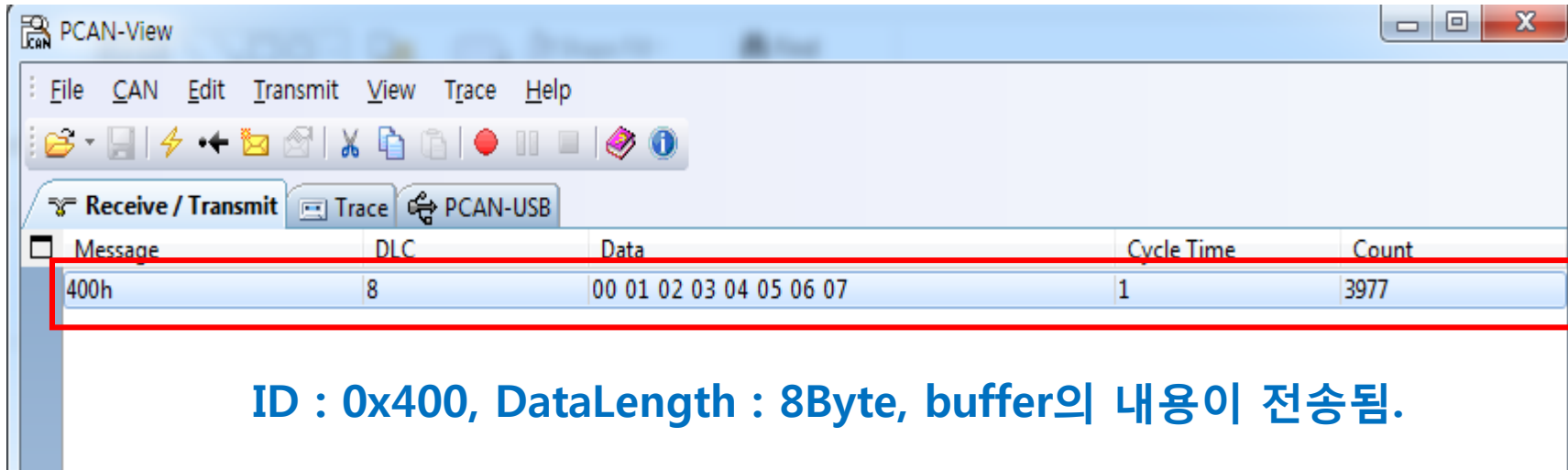
    TerminateTask();
};
```

Build 후 업로드!!

ID : 0x400, DataLength : 8Byte, buffer의 내용을 Send

CAN Message 전송 확인

PCAN View 실행 후 화면 확인



ID : 0x400, DataLength : 8Byte, buffer의 내용이 전송됨.

CAN Message 수신

CAN_read(&len, buf) len: 수신된 Data의 길이가 저장, buf에는 수신된 Data가 저장

```
*task.c  conf.oil  code.cpp  serial.h  serial.cpp  can.cpp  can.h

unsigned char len;
unsigned char buf[8];
unsigned char buffer[8] = {0, 1, 2, 3, 4, 5, 6, 7};
unsigned char temp[8] = {10, 11, 12, 13, 14, 15, 0, 1};
extern unsigned long id;

ISR(isr) {
    static int count = 1;
    if (count == 4) { // Increment Counter every 1 second.
        IncrementCounter(SysTimerCnt);
        count = 0;
    }
    count++;
}

TASK(TaskL1) {
    CAN_write(0x400, 8, buffer); // send CAN Message

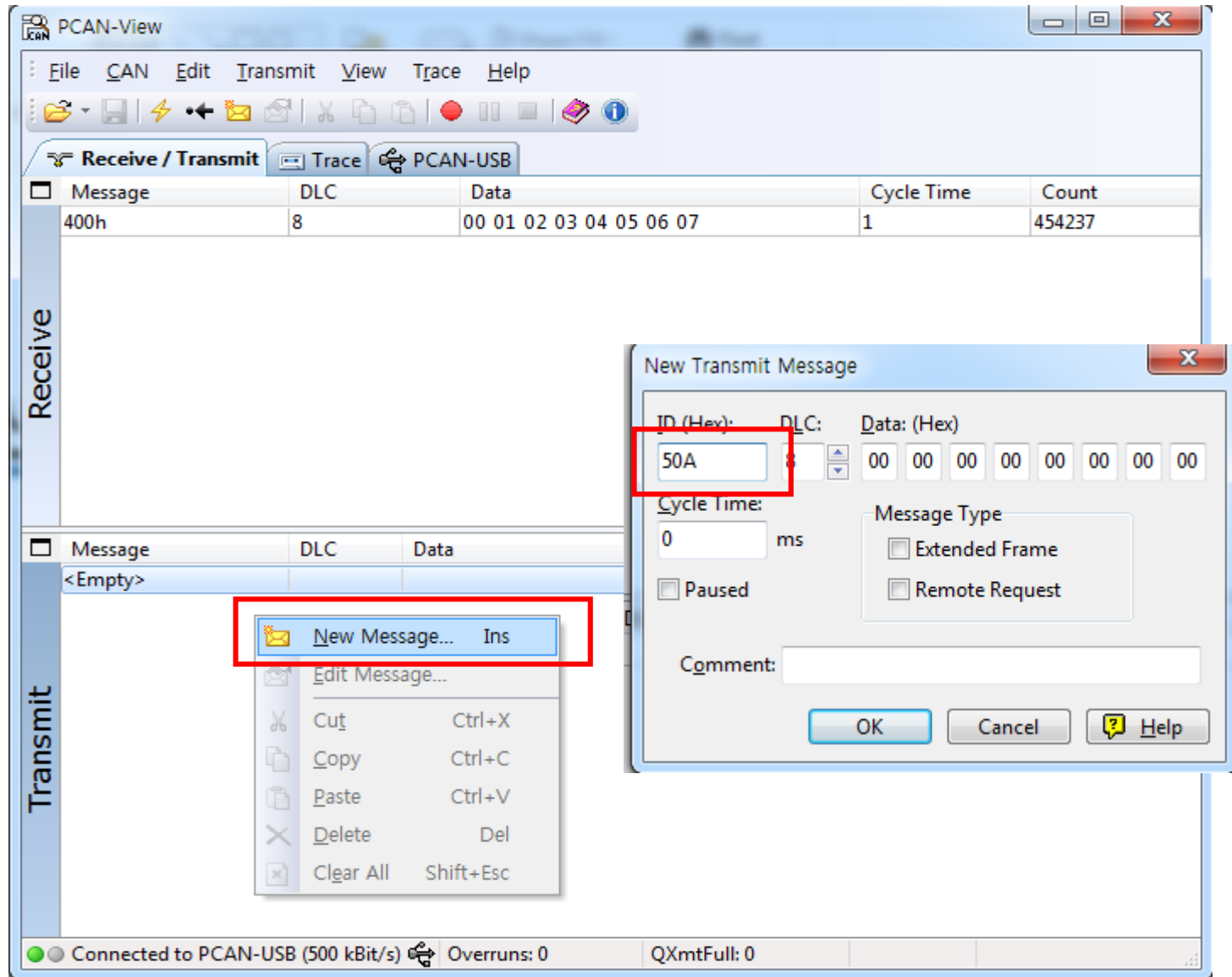
    TerminateTask();
};

TASK(TaskL2) {
    CAN_read(&len, buf);
    if (id == 0x50A)
    {
        CAN_write(0x300, 8, temp);
    }
    TerminateTask();
};
```

Build 후 업로드!!

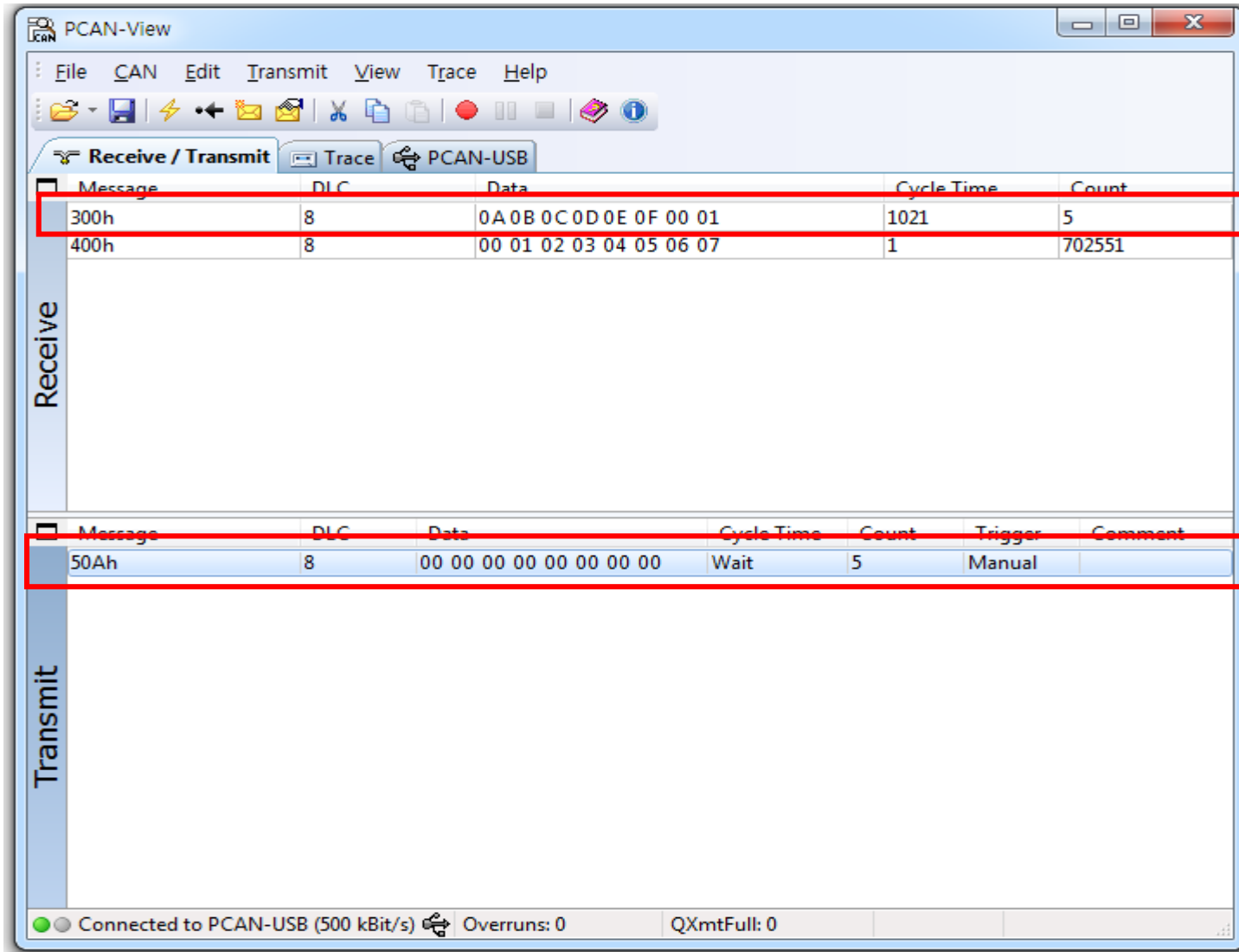
수신된 메시지의 ID가 0x50A일 경우
ID : 0x300, DataLength : 8, temp에 내용을 전송

CAN Message 수신 확인(1/2)



Transmit 부분에서 우클릭 후
New Message클릭
ID를 50A로 설정 후 OK 클릭

CAN Message 수신 확인(2/2)



50A Message 클릭 후
스페이스를 누르면 0x300의 아이디가 도착

THANK YOU