

# Microchip dsPIC & Auto Code Generator with MATLAB SIMULINK

서한석부장(**Philip Seo, CAE**)

**Microchip Korea**

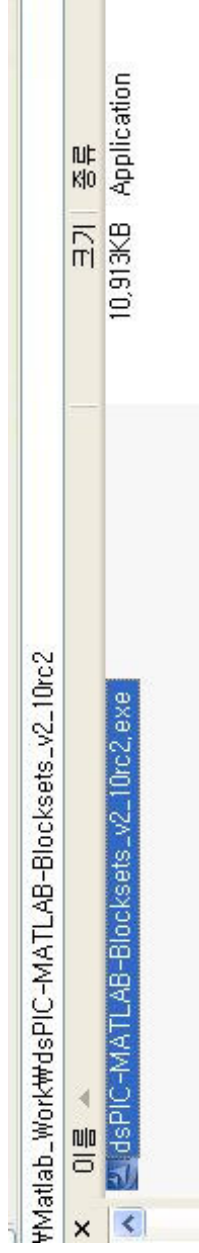
**Jan. 10<sup>th</sup> , 2011**

# 1. How to install dsPIC MATLAB Blocksets

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- ❑ 1.1 Download Matlab device blockset for MPLAB demo version at [http://www.microchip.com/stellent/idcplg?IdcService=SS\\_GET\\_PAGE&nodeId=1406&dDocName=en538347](http://www.microchip.com/stellent/idcplg?IdcService=SS_GET_PAGE&nodeId=1406&dDocName=en538347)

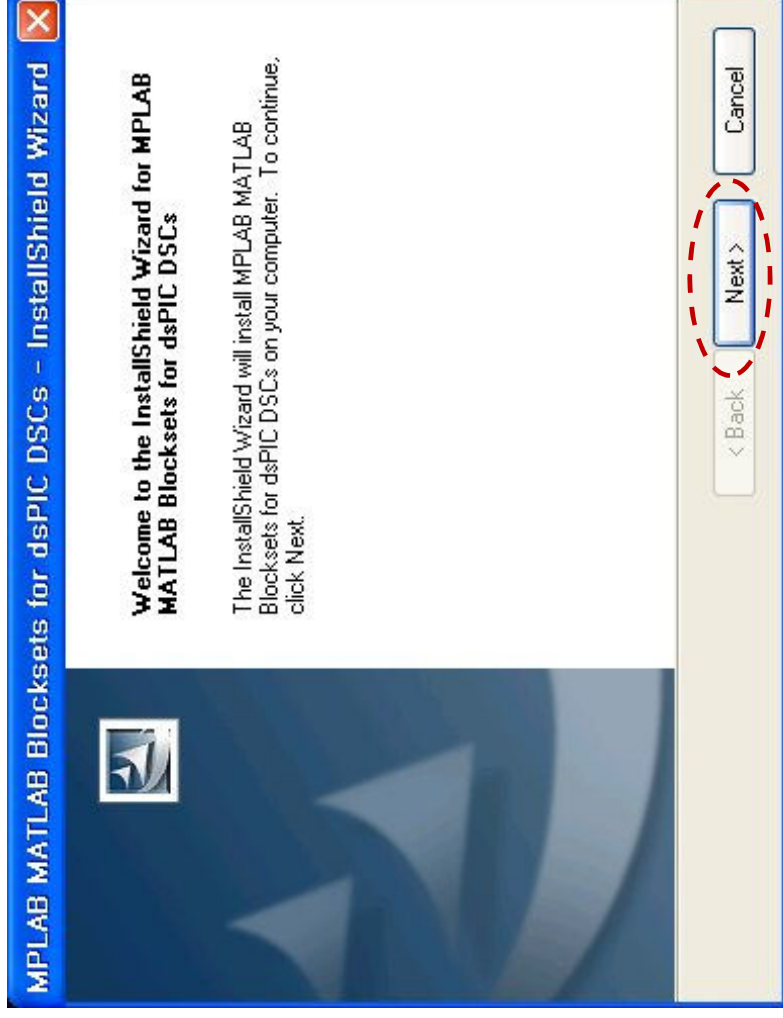
- ❑ Unzip dsPIC-MATLAB-Blocksets\_v2\_10rc2.zip



- ❑ 1.2 Click dsPIC-MATLAB-Blocksets\_v2\_10rc2.exe

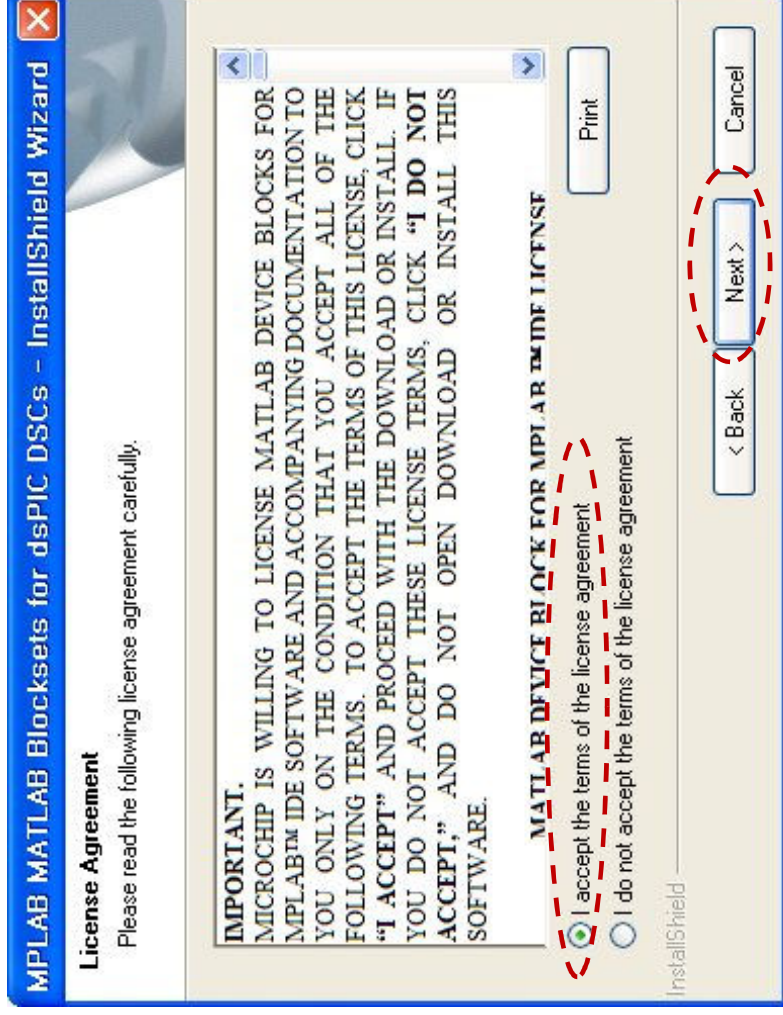
# 1. How to install dsPIC MATLAB Blocksets

## □ 1.3



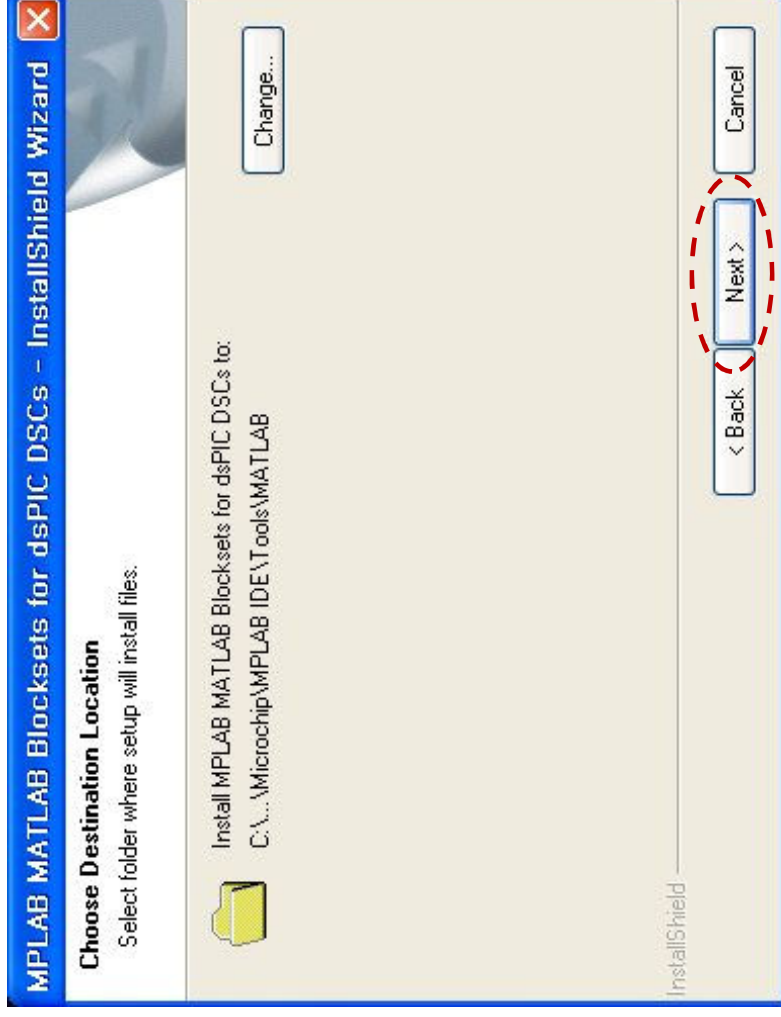
# 1. How to install dsPIC MATLAB Blocksets

## □ 1.4



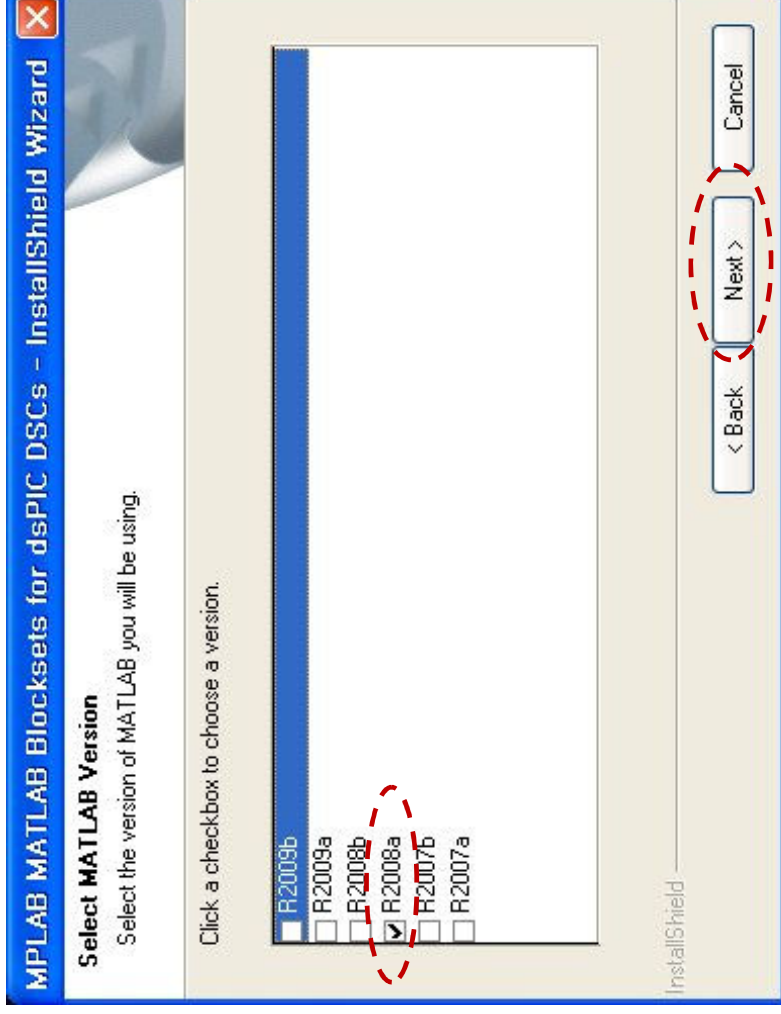
# 1. How to install dsPIC MATLAB Blocksets

## □ 1.5



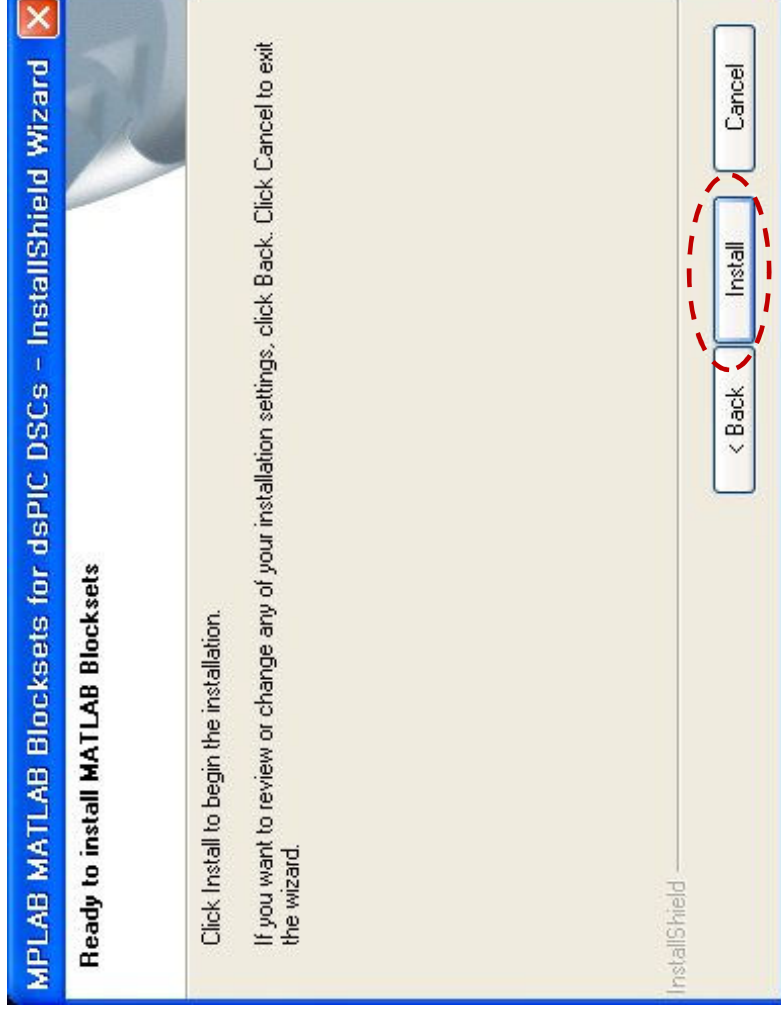
# 1. How to install dsPIC MATLAB Blocksets

□ 1.6 사용하는 MATLAB 버전과 일치하는 것 선택



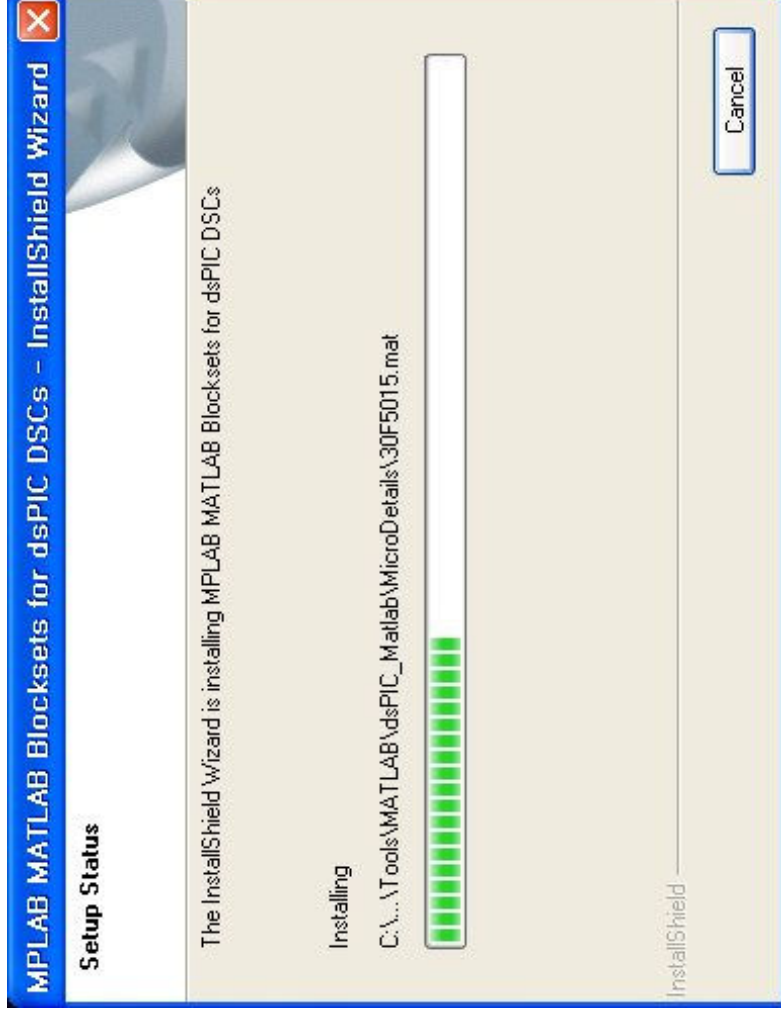
# 1. How to install dsPIC MATLAB Blocksets

## □ 1.7



# 1. How to install dsPIC MATLAB Blocksets

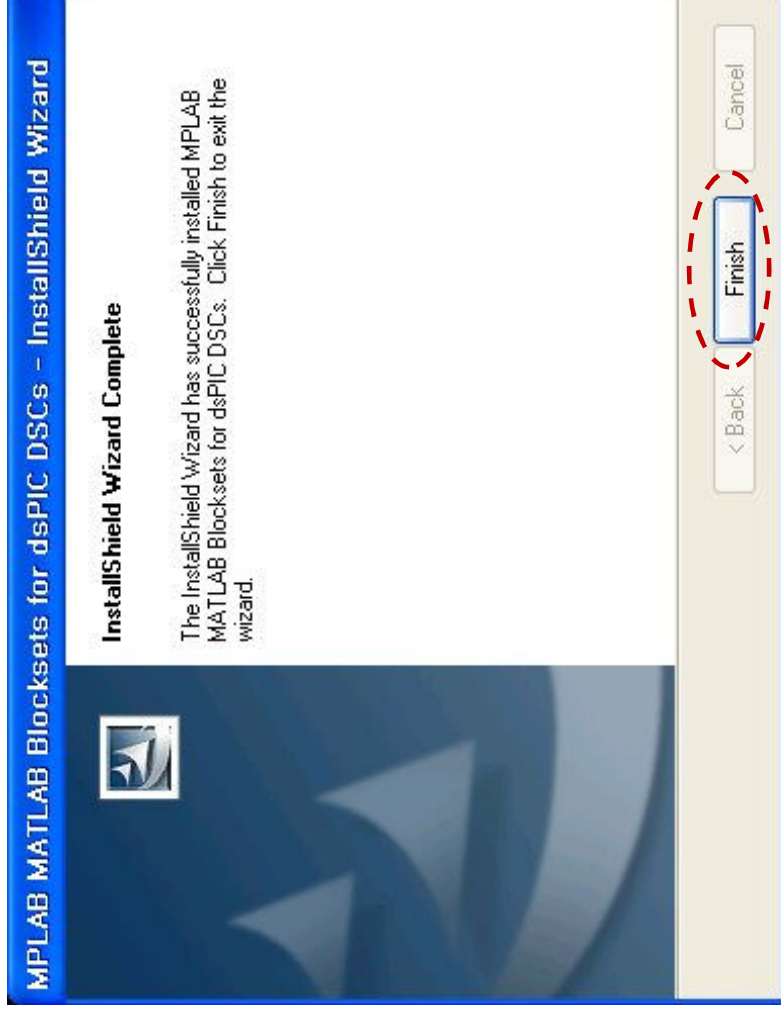
## □ 1.8





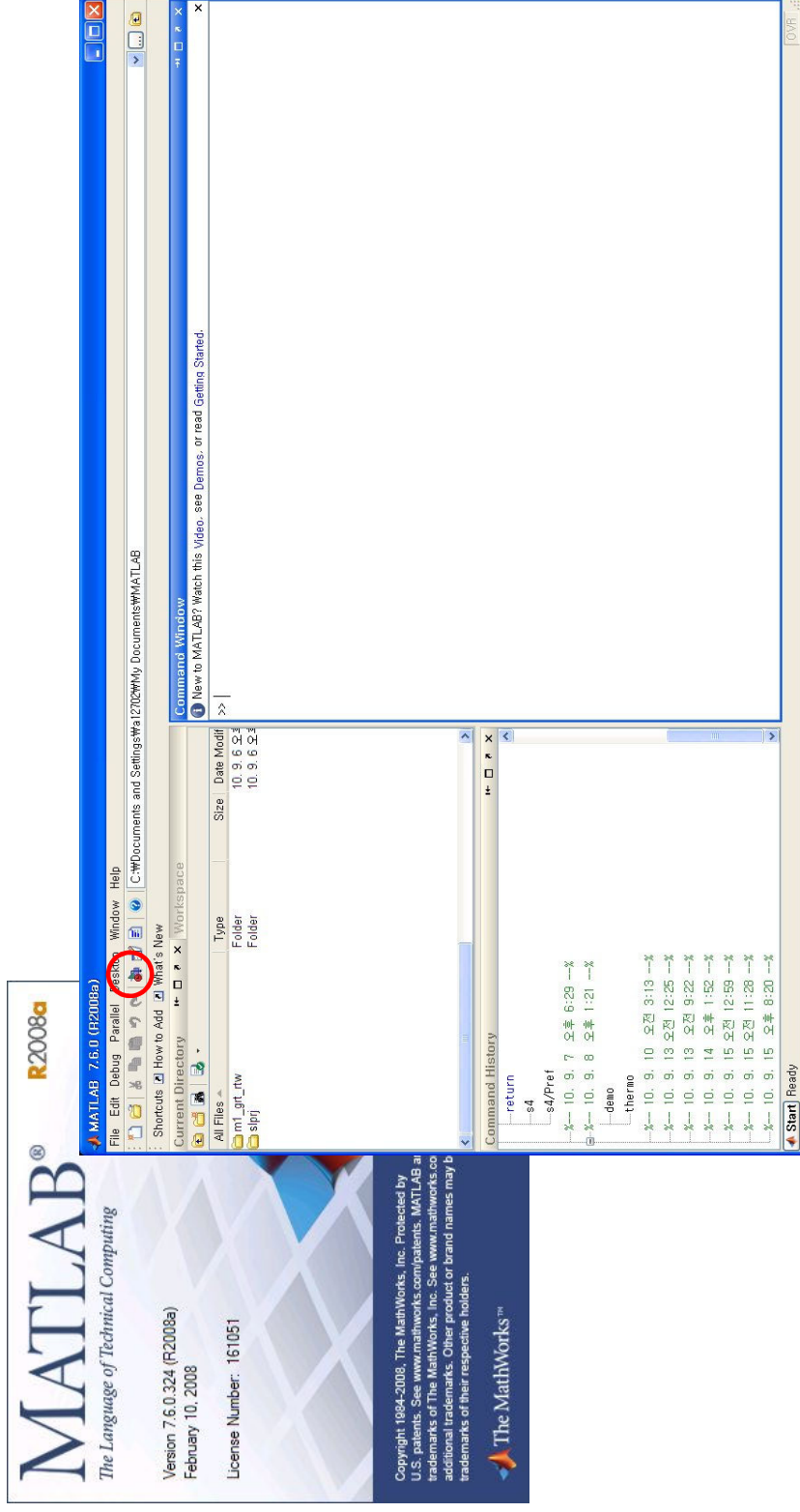
# 1. How to install dsPIC MATLAB Blocksets

## □ 1.9



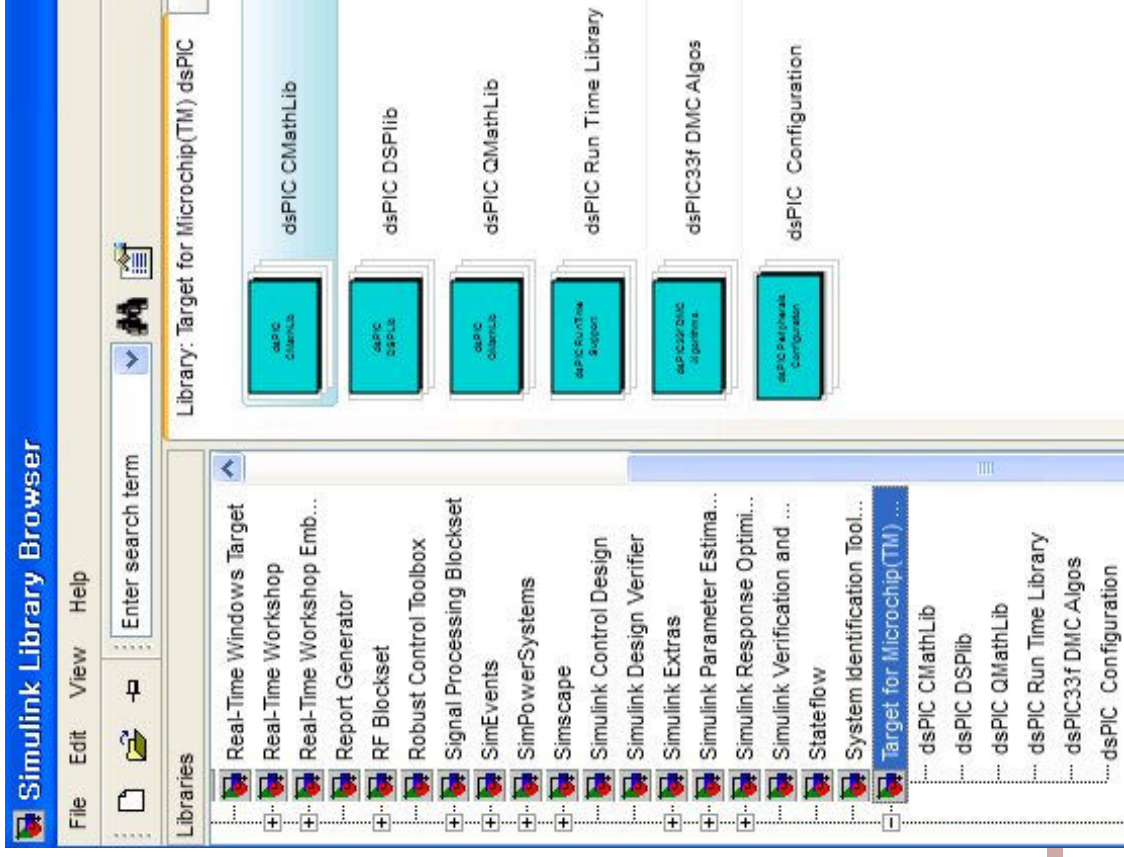
# 1. How to install dsPIC MATLAB Blocksets

- 1.10 Check the status of completing the installation
  - Run MATLAB and Click "SIMULINK" Icon



# 1. How to install dsPIC MATLAB Blocksets

## □ 1.11 Click Target for Microchip™ dsPIC



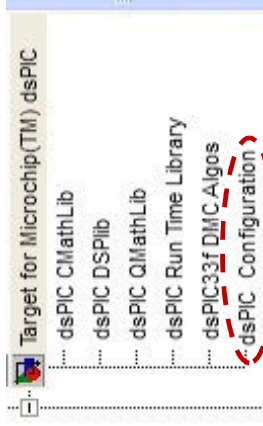
## 2. How to design Example Basics

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- 2.1 Functions for BLDC Motor Controls
  - ADC Module (AN8) – POT1 : Analog Voltage
  - UART Transmit
  - PORT Output : Explore 16 LED control

## 2. How to design Example Basics

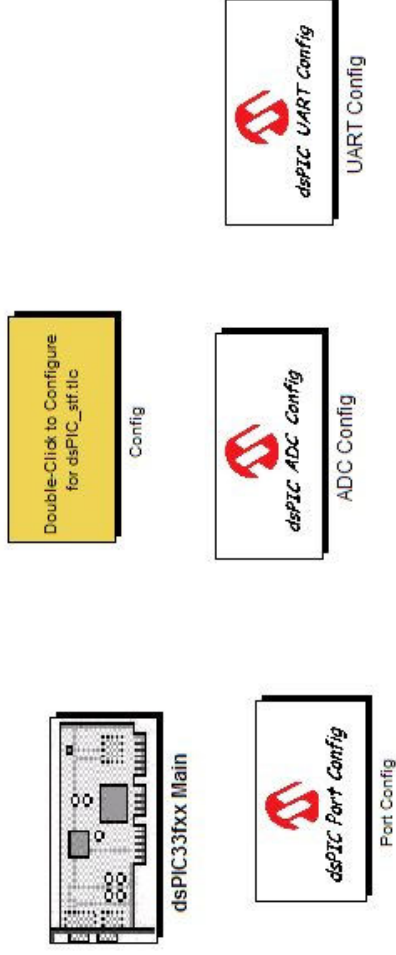
- ❑ 2.2 Run MATLAB
- ❑ 2.3 Click "SIMULINK"
- ❑ 2.4 Click File -> New -> Model
- ❑ 2.5 Click Target for Microchip™ dsPIC in Library window



- ❑ 2.6 Click dsPIC Configuration in Target for Microchip

## 2. How to design Example Basics

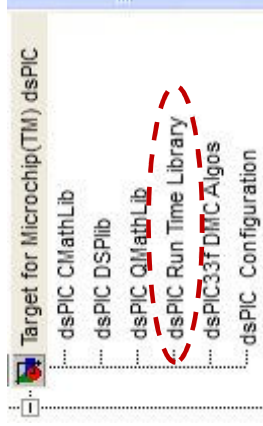
- 2.7 Drag "dsPIC33Fxx Main", "Config", "Port Config", "ADC Config", "UART Config" to New Project



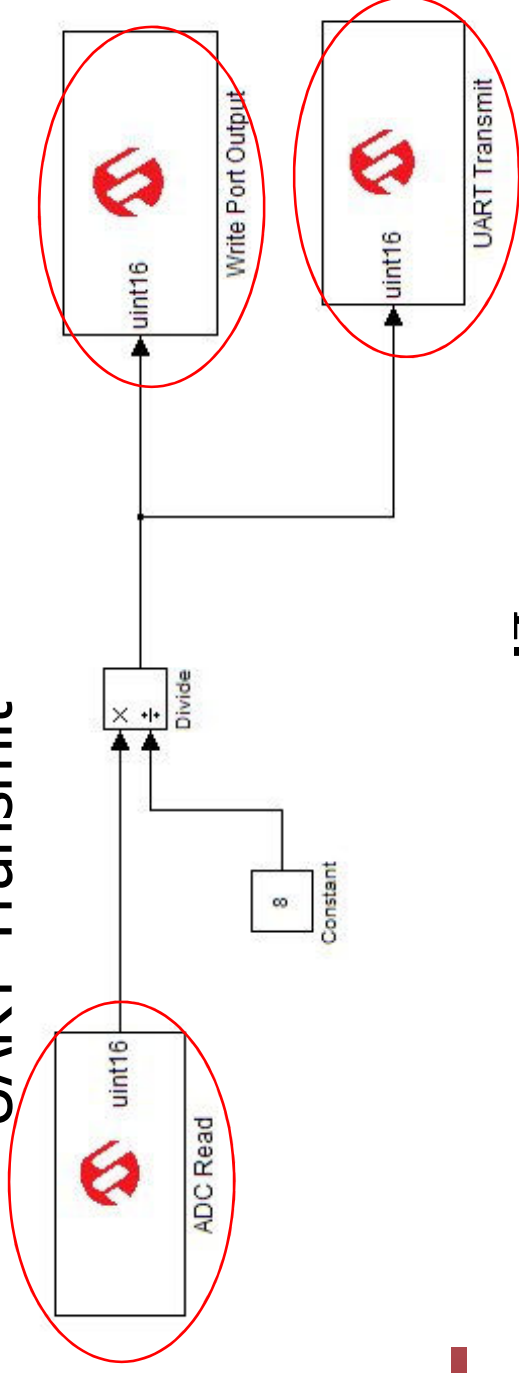
- 2.8 Save "dsPIC33FJ2576GP710\_Simple\_Test.mdl"

## 2. How to design Example Basics

### □ 2.9 Click dsPIC Run Time Library

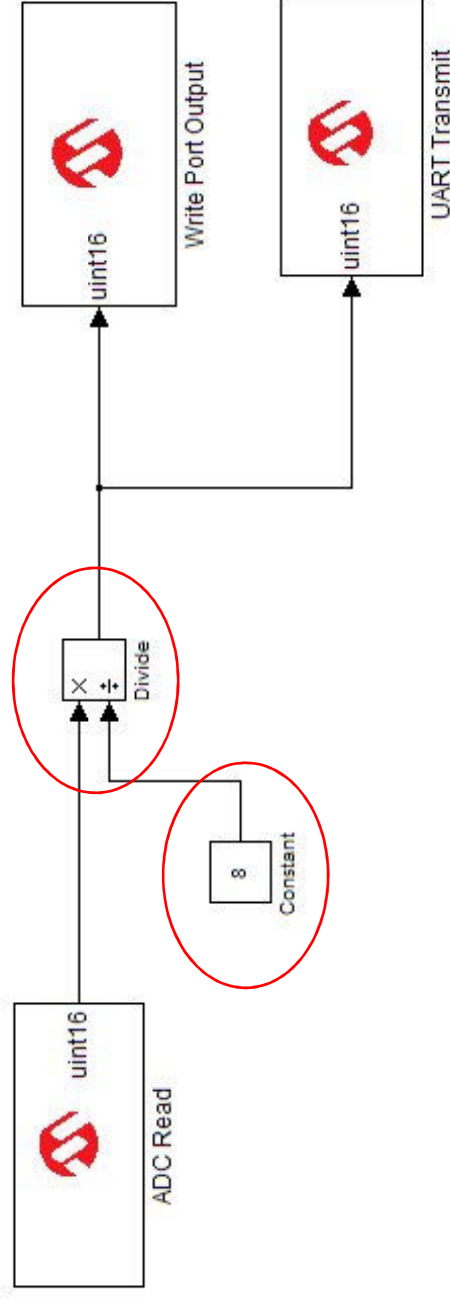


### □ 2.10 Drag "ADC Read", "Write Port Output", "UART Transmit"



## 2. How to design Example Basics

- ❑ 2.11 Click Simulink in Libraries window
- ❑ 2.12 Drag the followings to Simple Project
  - Constant: input 8
  - Divide



- ❑ 2.13 Save



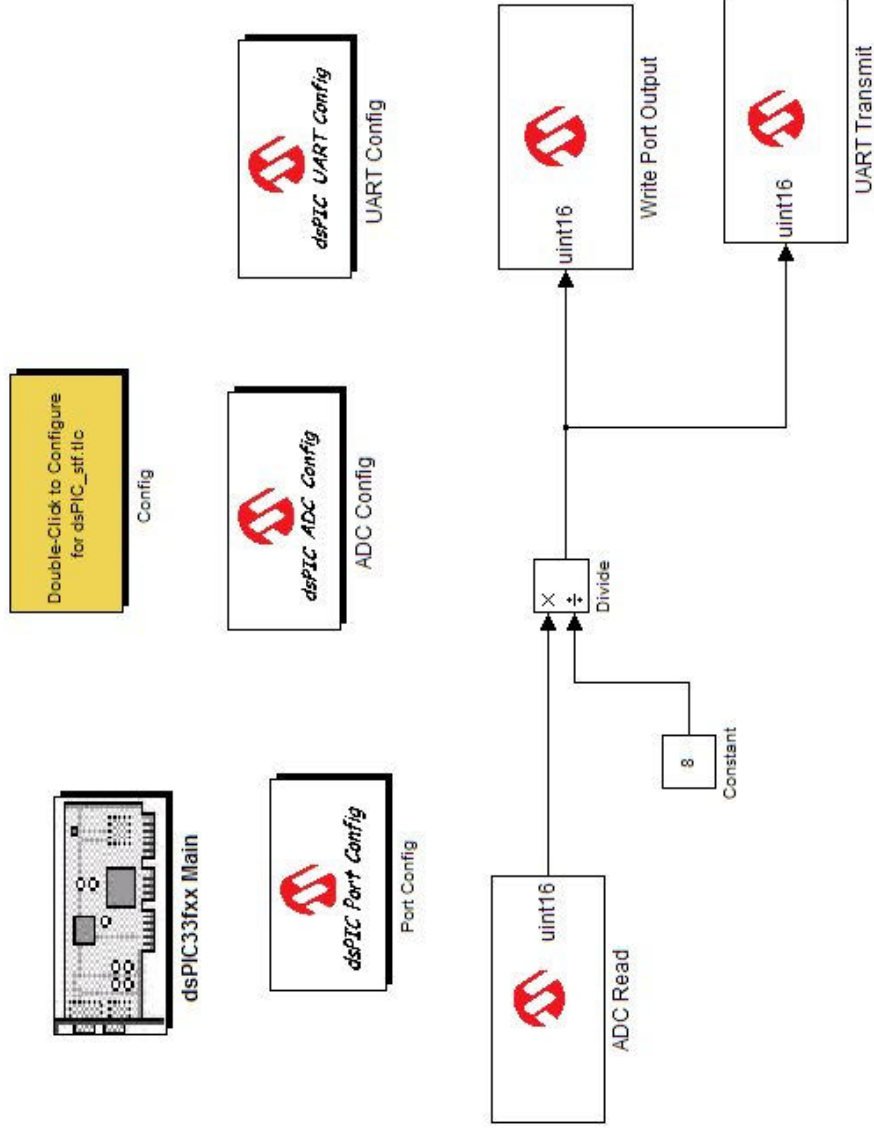
### 3. How to make Project

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- ❑ 3.1 Run MPLAB IDE (After Closing MATLAB all)
- ❑ 3.2 Click Project -> Project Wizard
  - Welcome : Click Next
  - Step One -> Device : dsPIC33FJ256GP710 -> Click Next
  - Step Two -> Compiler : Microchip C30 Toolsuite -> Next
  - Step Three : Project Folder, Project Name (Only English)
  - Step Four : Next , Step Five : Finish
- ❑ 3.3 Click Tools -> "Matlab/Simulink"
- ❑ 3.4 Click Matlab/Simulink -> Specify Simulink Model Name
- ❑ 3.5 Open "dsPIC33FJ256GP710\_Simple\_Test.mdl" & Wait for opening

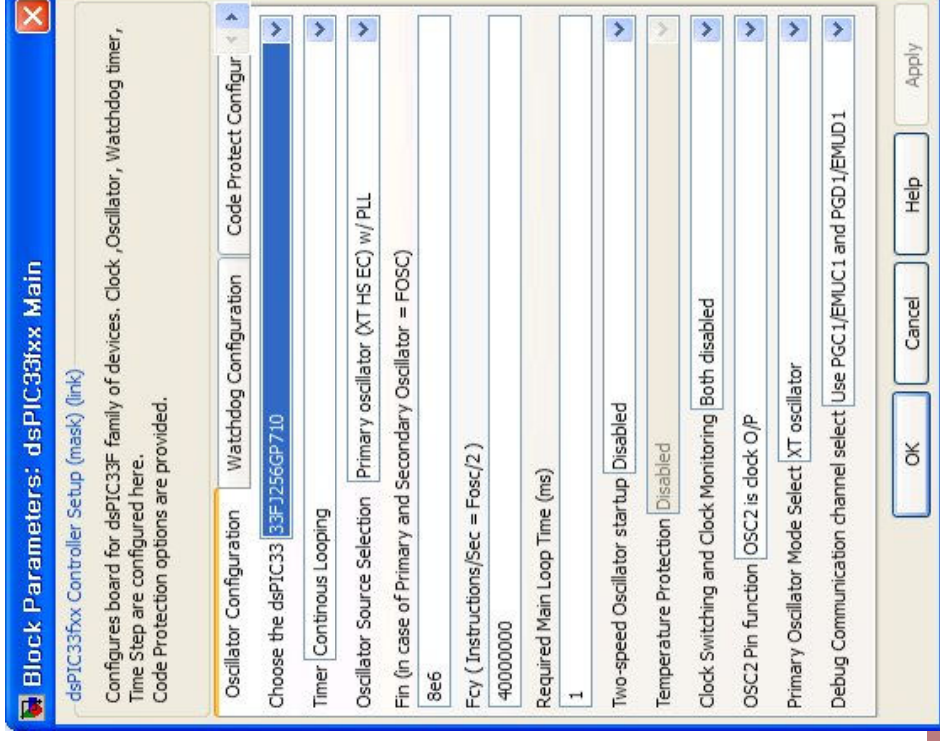
### 3. How to make Project

□ 3.6 Connect Line to each Modules as below



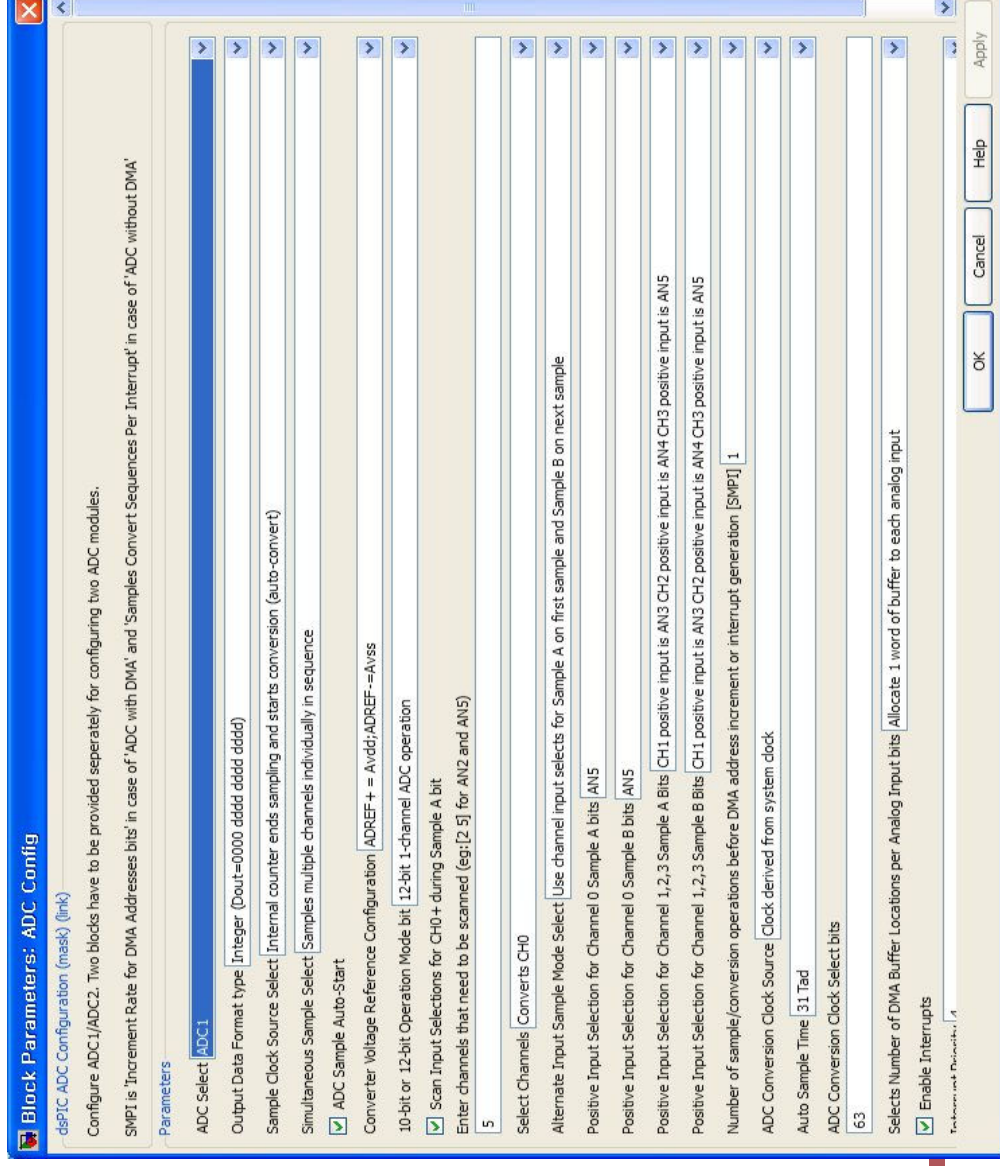
# 3. How to make Project

## ❑ 3.7 Click “dsPIC33Fxx Main” for initializing



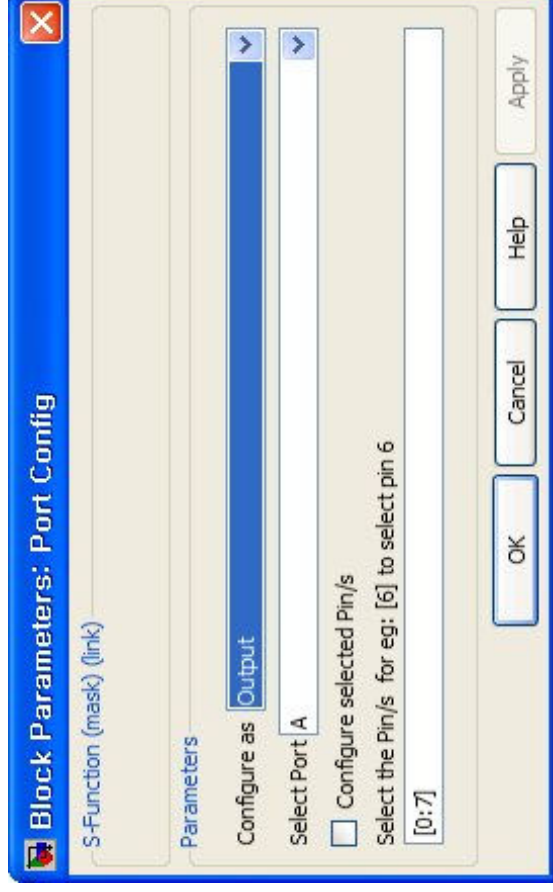
# 3. How to make Project

## ❑ 3.8 Click “ADC config” for initializing (use AN5 pin)



# 3. How to make Project

- ❑ 3.9 Click “Port config” for initializing



# 3. How to make Project

- ❑ 3.10 Click “UART Transmit config” for initializing



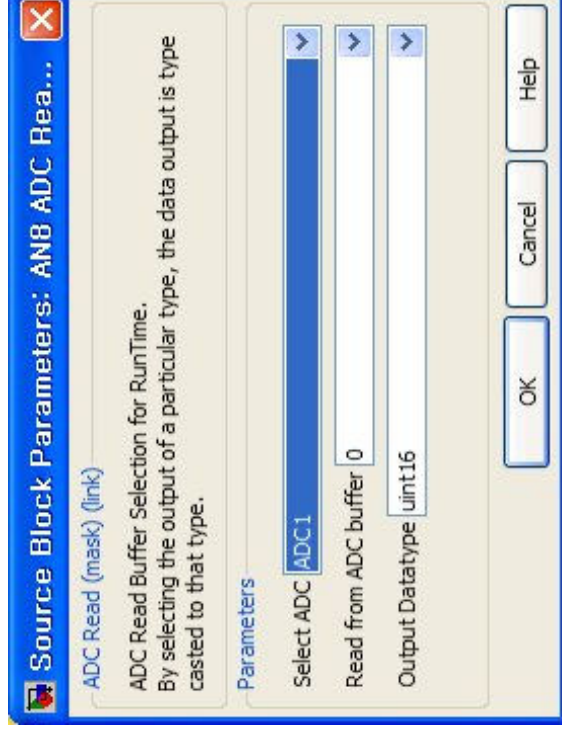
The image shows a Windows-style dialog box titled "Block Parameters: UART Config". It contains a "Parameters" section with the following settings:

- Select UART: 2
- ☐ Discontinue module operation when device enters Idle mode
- Baud (Kb/s): 9600
- Stop Bit Selection: One Stop Bit
- Mode: Standard Mode
- Parity and Data Selection: 8-bit data: no parity
- ☐ Enable Transmit Interrupts
- Tx Interrupt Priority: 4
- ☐ Enable Receive Interrupts
- Rx Interrupt Priority: 4
- Transmission Interrupt Mode Selection-Interrupt when: All transmit operations are completed

At the bottom right, there are buttons for "OK", "Cancel", "Help", and "Apply".

## 3. How to make Project

### □ 3.11 Click “ADC Read” for setting



## 3. How to make Project

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- 3.12 Click “UART Transmit” for setting





## 3. How to make Project

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### □ 3.13 Click “Port Output” for setting



## 3. How to make Project

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- ❑ 3.14 Click Save Icon
- ❑ 3.15 Click Matlab/Simulink -> Generate Codes & Import
- ❑ 3.16 Click Project -> Build All
- ❑ 3.17 Click Programmer -> ICD2 or ICD3 or PICKIT3....
- ❑ 3.18 Click Programmer -> Program
- ❑ 3.19 Run & Test Demo board Operation

감사합니다.