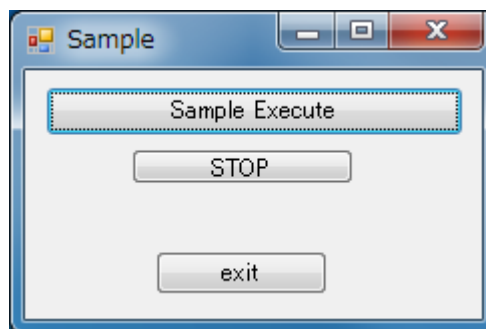


PCL6115 Starter Kit  
PCL6115-EV  
User's Manual  
Motion Pattern Builder  
Sample Project



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## **1. Introduction**

Thank you for considering PCL6115-EV Starter Kit.

By using PCL6115-EV starter kit, this manual can learn the motor control function using pulse control LSI PCL6115.

Please use the source code of this software as a reference for software creation while adding to and modifying your original control content.

Please refer to the following manuals along with this manual.

(x: revision)

	Manual Name [Outline]	Document File name	Software File name	Document No.
Hardware Manual	PCL6115 Starter Kit User's Manual (Hardware)	PCL6115-EV_HardwareManual_VerxE.pdf	—	TA600021-ENx/x
	PCL6115 Starter Kit User's Manual (Simple Manual)	PCL6115-EV_SimpleManual_VerxJE.pdf	—	TA600020-ENx/x
Application Software Manual	PCL6115 Starter Kit User's Manual (Application Software) [Setting accel/decel pattern and register display]	PCL6115-EV_ApplicationManual_VerxE.pdf	PCL6115-EV_Application_VxxxJEzip	TA600018-ENx/x
	PCL6115 Starter Kit User's Manual (Language File Creation Rule) [Multi-language]	PCL6115-EV_ApplicationLanguageFileManual_VerxE.pdf	PCL6115-EV_ApplicationLanguageFile_VxxxE.zip	TA600007-ENx/x
	PCL6115 Starter Kit User's Manual (Sample program) [Check and add motion pattern on development environment]	PCL6115-EV_ApplicationSampleManual_VerxE.pdf	PCL6115-EV_ApplicationSample_VxxxE.zip	TA600022-ENx/x

(x: revision)

	Manual Name [Outline]	Document File name	Software File name	Document No.
Motion Pattern Builder Manual	PCL6115 Starter Kit User's Manual (Motion Pattern Builder Application Software) [To describe function to perform axis control visually with a flowchart]	PCL6115-EV_MotionBuilderManual_VerxE.pdf	PCL6115-EV_MotionBuilder_VxxxJE.zip	TA600023-ENx/x
	PCL6115 Starter Kit User's Manual (Motion Pattern Builder Language File Creation Rule) [Motion Pattern Builder in Multi-language]	PCL6115-EV_MotionBuilderLanguageFileManual_VerxE.pdf	PCL6115-EV_MotionBuilderLanguageFile_VxxxE.zip	TA600008-ENx/x
	PCL6115 Starter Kit User's Manual (Motion Pattern Builder Sample Project) [Check and add motion pattern created by Motion Pattern Builder on development environment]	PCL6115-EV_MotionBuilderSampleManual_VerxE.pdf	PCL6115-EV_MotionBuilderSample_VxxxE.zip	TA600024-ENx/x (This document)
Reference	PCL6115/6125/6145 User's Manual		-	DA70152-0/xE

Please download application software and related materials from our NPM website.

### **1-1. Operating Environment**

This software checks the operation on Windows7 and Windows10 (both 32-bit and 64-bit).

(We do not check on OS other than the above.)

Please change power saving setting so as not to operate sleep mode during operation.

### **1-2. Operation mode**

This software controls PCL6115 in serial bus I/F mode through USB.

### **1-3. Programming language used**

This software uses the following products of Microsoft Corporation.

Microsoft Visual Studio Express 2013 for Windows Desktop ( Free )

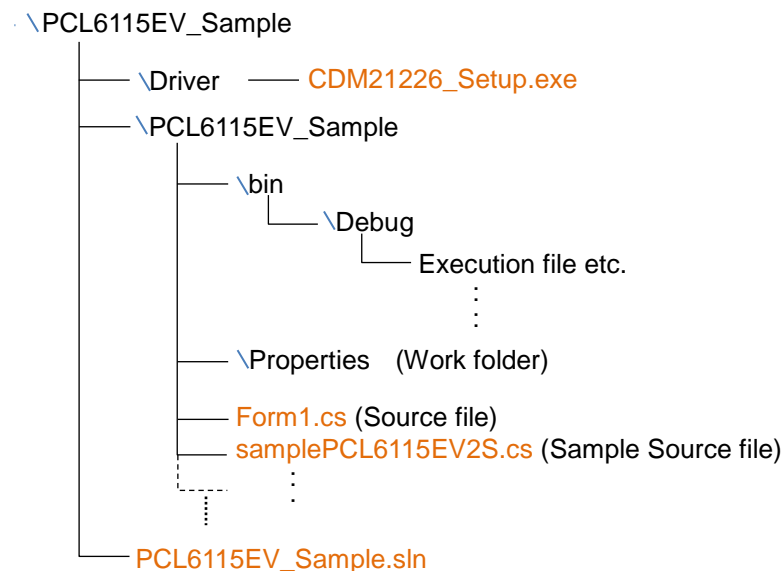
### **1-4. Notes**

- We can not answer about usage of "Microsoft Visual C#" etc.
- We can not answer about usage of products made by FTDI, etc.
- Please understand that we will not be responsible at all even if damage occurs as a result of operating the application based on this sample program.

## 2. Sample project structure

### 2-1. Folder structure

When decompressing the compressed file (PCL6115-EV\_MotionBuildersample\_V100JE.zip), the folder structure is as follows.



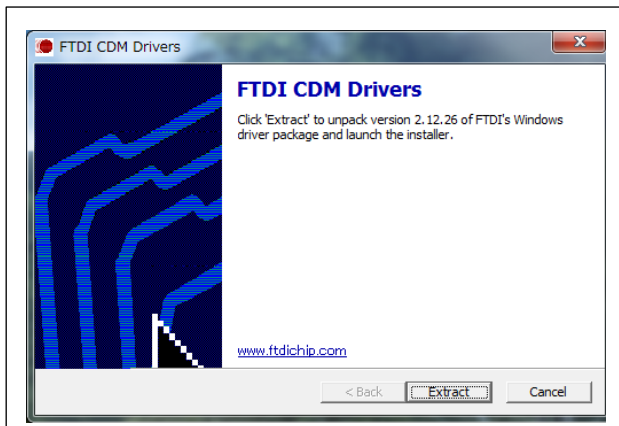
### 2-2. Files structure

- < \PCL6115\_EV2S\_Sample in folder>
- |                         |       |               |
|-------------------------|-------|---------------|
| PCL6115_EV2S_Sample.sln | ----- | Solution file |
|-------------------------|-------|---------------|
- < \PCL6115\_EV2S\_Sample\Driver in folder>
- |                    |       |                                |
|--------------------|-------|--------------------------------|
| CDM21226_Setup.exe | ----- | Device driver installer (FTDI) |
|--------------------|-------|--------------------------------|
- < \PCL6115\_EV2S\_Sample\PCL6115\_EV2S in folder>
- |                      |       |   |
|----------------------|-------|---|
| Form1.cs             | ----- | Source code                             |
| clsFTDI.cs           | ----- | FTDI Access function                    |
| accessPCL6115.cs     | ----- | PCL6115 Access function                 |
| samplePCL6115EV2S.cs | ----- | Sample source code ← (Replacement file) |
| FTD2XX_NET.dll       | ----- | FTDI Library                            |
| FTD2XX_NET.xml       | ----- | FTDI XML document                       |
| Others               |       |   |
- < \PCL6115\_EV2S\_Sample\PCL6115\_EV2S\bin\Debug in folder>
- |                  |       |   |
|------------------|-------|---|
| PCL6115_EV2S.exe | ----- | Execution file                            |
| FTD2XX_NET.dll   | ----- | FTDI Library (Required at execution)      |
| FTD2XX_NET.xml   | ----- | FTDI XML document (No need for execution) |
| Others           | ----- | Work file etc. (No need for execution)    |

### **3. Install the Device Driver**

Double-click "CDM21226\_Setup.exe" to launch the installer and follow the instructions on the screen to complete the installation.

If you have already installed it, you do not need to install it again.

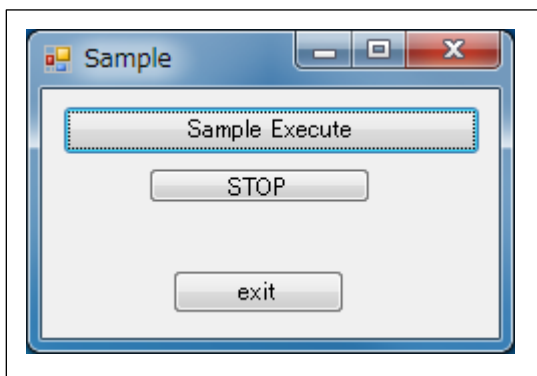


Note: If there is the latest version of the device driver on FTDI's website (<http://www.ftdichip.com/Drivers/D2XX.htm>), download and use it.

### **4. Start-up project in C#**

Please make sure that PCL6115-EV is connected to a PC.

Confirm that "Microsoft Visual C#" is installed and double-click PCL6115\_EV2S.sln "Solution file".



For Microsoft product installation, please refer to Microsoft's website.

For details on how to build and debug projects, please refer to Microsoft website.

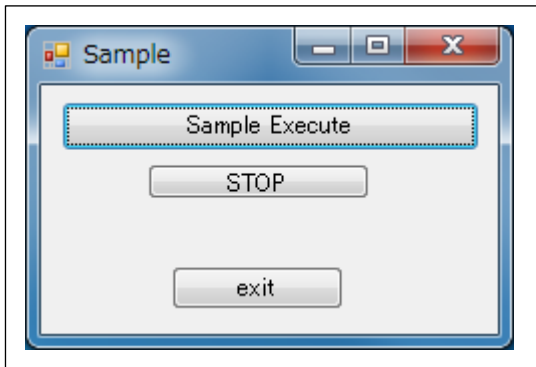
## **5. Operation explanation**

Overwrite the source file code "samplePCL6115EV2S.cs" generated with PCL6115-EV application software2 "PCL6115\_EV2.exe" on the same name file in the project.

(File described as "replacement file" in "2-2. File configuration")

### **5-1. Start-up program**

When you start debugging, the software on the following screen will start up.



### **5-2 Operation button**

#### **5-2-1. Sample Execute**

The control procedure created with "PCL6115\_EV2.exe" will be done.

#### **5-2-2. STOP**

Forcibly stops the operation running.

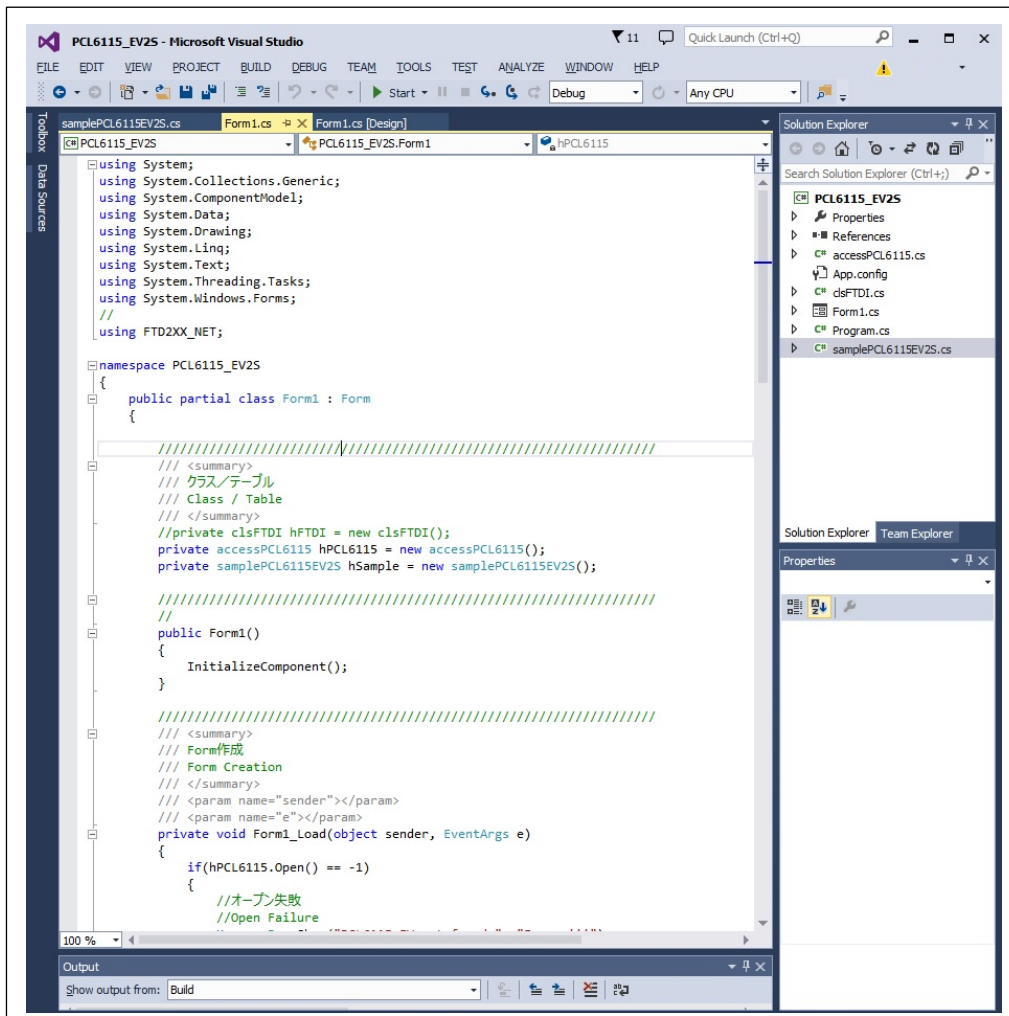
#### **5-2-3. Exit**

Quit this Software.

## 6. Source code description

The source code file is "Form1.cs", and the sample source code file is "samplePCL6115EV2S.cs". Please check the operation procedure by adding to and modifying the action you want to try.

### 6-1. Form1.cs



The source code file "Form1.cs" displays the screen created by Form1.cs [design] after confirming the connection of PCL6115-EV.

When the "Sample Execute" button is clicked, the main function of the sample source code file "samplePCL6115EV2S.cs" is executed.



## 6-2. samplePCL6115EV2S.cs

```

PCL6115_EV2S - Microsoft Visual Studio
FILE EDIT VIEW PROJECT BUILD DEBUG TEAM TOOLS TEST ANALYZE WINDOW HELP
samplePCL6115EV2S.cs Form1.cs [Design]
PCL6115_EV2S.samplePCL6115EV2S GetTime()
Toolbox Data Sources
PCL6115_EV2S
  Properties
  References
  accessPCL6115.cs
  App.config
  dsFTDL.cs
  Form1.cs
  Program.cs
  samplePCL6115EV2S.cs
Solution Explorer Team Explorer
Properties
Output
Show output from: Build


```

/// <summary>
/// Main processing
/// Return value
/// 0 : All processing was completed.
/// -1 : Processing was interrupted.
/// </summary>
public int main(accessPCL6115 hPCL)
{
    hPCL6115 = hPCL;
    ClearReg();

    //
    if(hPCL6115.PCL6115EV_on == true)
    {
        // -----
        // 0 [ 0番目のレジスタの初期設定 ]
        //
        LOOP1:
            RegCalculation("IN", ref REG_00, 3);

        // -----
        // 1 [ マイナス方向に半回転(1152/パルス)[原点復帰] ]
        //
        hPCL6115.Write_REG(hPCL6115.WPRMV, 0xFFFFFB80);
        hPCL6115.Write_REG(hPCL6115.WPRFL, 0x000000C8);
        hPCL6115.Write_REG(hPCL6115.WPRFH, 0x000007D0);
        hPCL6115.Write_REG(hPCL6115.WPRUR, 0x00000000);
        hPCL6115.Write_REG(hPCL6115.WPRDR, 0x00000000);
        hPCL6115.Write_REG(hPCL6115.WPRMG, 0x000004AF);
        hPCL6115.Write_REG(hPCL6115.WPRDP, 0x00000000);
        hPCL6115.Write_REG(hPCL6115.WPRMD, 0x00000041);
        hPCL6115.Write_COM((byte)0x50);
        hPCL6115.SendUsb();
        // Wait until operation is completed. [ エラーに対する処理は省略しています。 ]
        WaitHsts(0x0000000B, 0x00000008, 0); // MainStatus check

        // -----
        // 2 [ CW方向へ半回転(1152/パルス)／一定速度動作 ]
        //
        hPCL6115.Write_REG(hPCL6115.WPRMV, 0x00000480);
        hPCL6115.Write_REG(hPCL6115.WPRFL, 0x00000190);
        hPCL6115.Write_REG(hPCL6115.WPRFH, 0x00000190);
        hPCL6115.Write_REG(hPCL6115.WPRUR, 0x00000000);
        hPCL6115.Write_REG(hPCL6115.WPRDR, 0x00000000);
        hPCL6115.Write_REG(hPCL6115.WPRMG, 0x000004AF);
    }
}

```


```

"samplePCL6115EV2S.cs" is the source code file that is generated from the contents of the flowchart of "PCL6115\_EV2".

For the contents of the main function, the settings of parts (register operation, branch control, pattern generation, wait control) are described in order from the upper part of the flowchart.

Particularly in pattern generation, since each register control command and setting data and start command of PCL6115 are described, contents can be changed, and pattern generation can be added.

---

**Revision**

Revision	Date	Contents
First	April 5, 2018	Initial Release.
Second	April 20, 2018	Revised by mistake in the Japanese manual.
Third	July 16, 2019	Change Document No. Add the manual list.



Information  
[www.pulsemotor.com/group/support](http://www.pulsemotor.com/group/support)