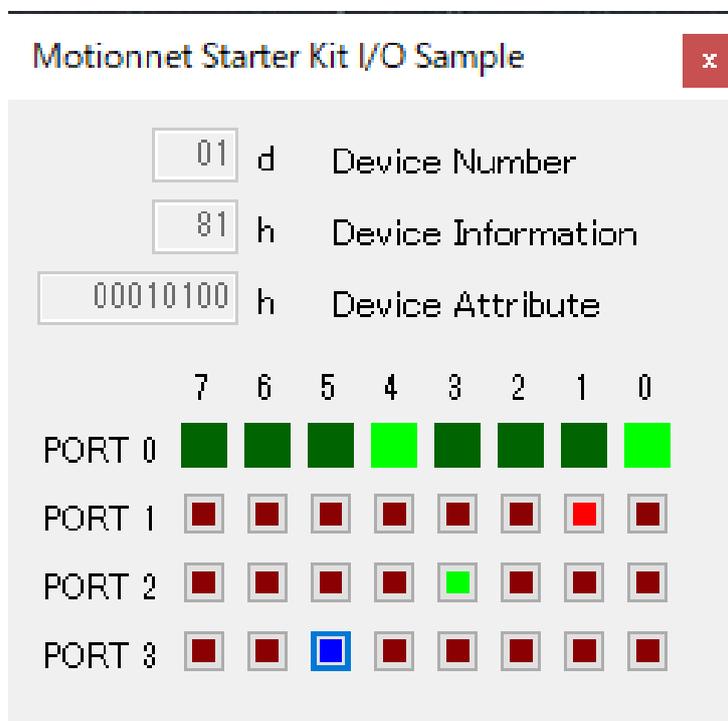


Motionnet Starter Kit

G9001A-EV, G9002A_G9103C-EV

User's Manual

I/O Sample Program



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1. Introduction

This manual describes the specifications, functions, connections, and usages of our Motionnet Starter Kit I/O sample software (MNET-STK_IO_Sample.exe).

Be sure to read this manual thoroughly and keep it handy in order to use the product appropriately.

1.1 How to use this manual

1. Reproduction of this manual in whole or in part without permission is prohibited by the Copyright Act.
2. The contents of this manual are subject to change without the prior notice along with the improvement of performance and quality.
3. Although this manual is produced with the utmost care, if there are any questions, errors or omissions, please contact our sales representative.

1.2 Notice

This document aims to describe the details of functions of the product. It does not warrant fitness for a particular purpose of the customer. The examples of applications and circuit diagrams in this manual are included only for your reference. Please confirm the features and the safeties of devices or equipment before use.

1.3 Confirmation

Please do not use this product in the following conditions. If you need to use in the following conditions, please contact our sales representatives:

1. Any equipment that may require a high reliability or a safety, such as nuclear facilities, electricity or gas supply systems, transportation facilities, vehicles, various safety systems, medical equipment, etc.
2. Any equipment that may directly affect human survival or property.
3. Usages under conditions or circumstances that are not specified in the catalog, manual, etc.

For applications that may cause serious damage to a human life or property due to failure of this product, ensure high reliability and safety by redundant design.

2. Information

This manual is the operation manual of I/O sample software (MNET-STK_IO_Sample.exe) that operates a control board. By using this software and Motionnet Starter Kit (G9001A-EV, G9002A_G9103C-EV), you can learn the Motionnet's communication specifications and I/O control functions using the center device, G9001A and the local devices, G9002A.

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	Motionnet Starter Kit User's Manual (Hardware)	MotionnetStarterKit_HardwareManual_VerxE.pdf	—	TA600036-ENx/x
	Motionnet Starter Kit User's Manual (Simple Manual)	MotionnetStarterKit_SimpleManual_VerxJE.pdf	—	TA600035-ENx/x
Application Software Manual	Motionnet Starter Kit User's Manual (Application Software) [Display of all registers]	MotionnetStarterKit_ApplicationManual_VerxE.pdf	MotionnetStartKit_Application_VxxxJE.zip	TA600037-ENx/x
I/O Sample Software Manual	Motionnet Starter Kit I/O Sample User's Manual	Motionnet Starter Kit_IO_SampleManual_VerxE.pdf	MotionnetStarterKit_IO_Sample_Vxxx.zip	TA600048-JPx/x (This document)
Axis Sample Software Manual	Motionnet Starter Kit AXIS Sample User's Manual	Motionnet Starter Kit_AXIS_SampleManual_VerxE.pdf	MotionnetStarterKit_AXIS_Sample_Vxxx.zip	TA600049-JPx/x
Reference	G9001A/G9002A User's Manual	—	—	DA70109-4/xE
	G9103C User's Manual	—	—	DA70143-1/xE

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

2.1 Operating environment

We have confirmed the operation of this software with Windows 7 and Windows10 (both 32 bit and 64 bit).
(not confirmed to operate with OS other than the above.)

Change the power saving setting in your PC so as not to move to "sleep mode" during operation.

2.2 Operation mode

This software controls G9001A in 8-bit parallel bus interface mode through USB.

The center device, G9001A and the local device, G9002A are connected by a Motionnet cable to control.

2.3 Programming language

The following software from Microsoft is used:

Microsoft Visual Studio Express 2013 for Windows Desktop (Free version)

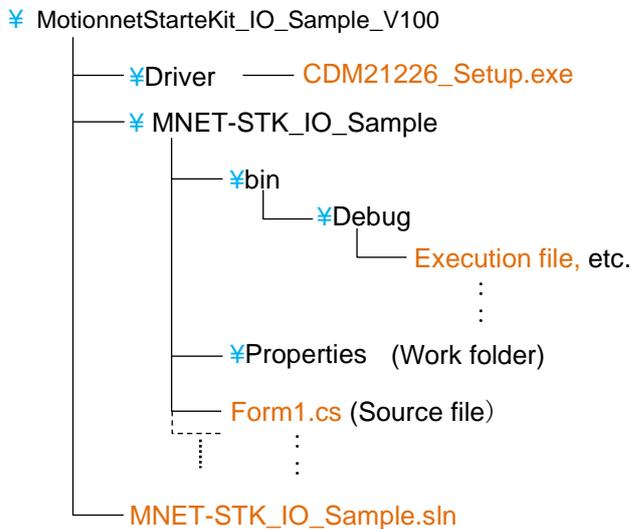
2.4 Notes

- We cannot answer the questions regarding Microsoft Visual C#.
- We cannot answer the questions regarding FTDI products.
- We are not responsible even if any damage may occur as a result of operating the applications created based on this sample program.

3. Structure of sample program

3.1 Folder structure

When you unzip the compressed file ([MotionnetStarterKit_IO_Sample_V100.zip](#)), the following folder are generated:



3.2 File structure

<MotionnetStarterKit_IO_Sample_V100 > folder

MNET-STK_IO_Sample.sln Solution file

<MotionnetStarterKit_IO_Sample_V100\Driver> folder

CDM21226_Setup.exe Device driver installer (FTDI)

<MotionnetStarterKit_IO_Sample_V100\MNET-STK_IO_Sample> folder

Form1.cs	.....	Source code
clsFTDI_Serial.cs	.....	FTDI Access function
accessMNET_IO.cs	.....	G9001A and G9002A access function
FTD2XX_NET.dll	.....	FTDI library
FTD2XX_NET.xml	.....	FTDI XML document
*.bmp	.....	Image data
Others		

<MotionnetStarterKit_IO_Sample_V100\MNET-STK_IO_Sample\bin\Debug> folder

MNET-STK_IO_Sample.exe	.....	Execution file
FTD2XX_NET.dll	.....	FTDI library (Need for execution)
FTD2XX_NET.xml	.....	FTDI XML document (No need for execution)
Others	.....	Work file, etc. (No need for execution)

Even if "Microsoft Visual C #" is not installed, the I/O sample program starts by executing MNET-STK_IO_Sample.exe (executable file).

3.3 Device driver Installation

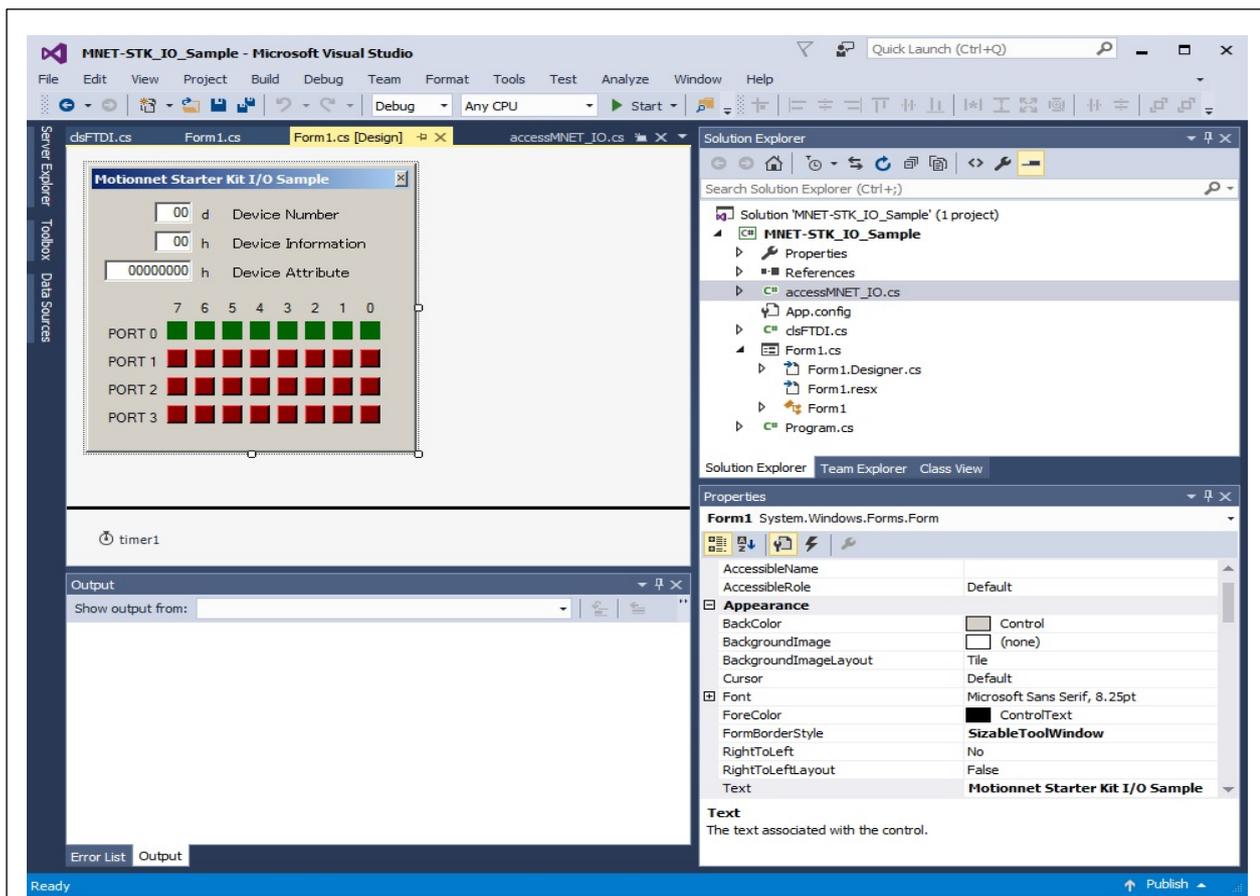
Double-click “CDM21226_Setup.exe” to launch the installer and follow the instructions on the screen to complete the installation. If you have already installed it, you do not need to install it again.



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

4. Start-up in C#

Make sure that Motionnet Starter Kit (G9001A-EV, G9002A_G9103C-EV) is properly connected to your PC. Confirm that "Microsoft Visual C#" has been installed and double-click MNET-STK_IO_Sample.sln “Solution file”.



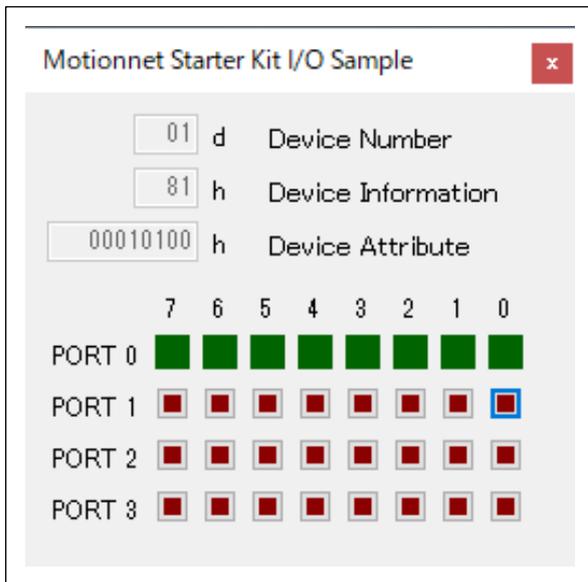
For installation of Microsoft products, please refer to Microsoft's website.

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

5. Operation

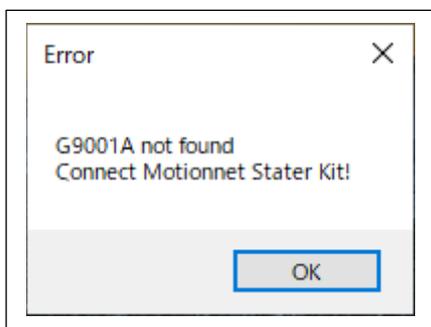
5.1 Start up a program

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

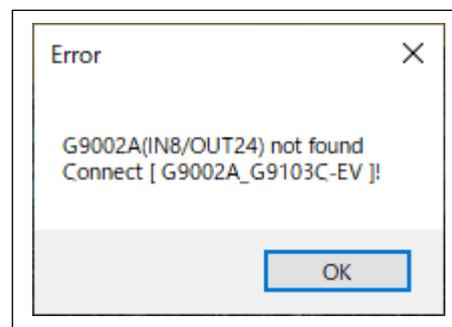


If the Motionnet Starter Kit (G9001A-EV, G9002A_G9103C-EV) is not properly connected to your PC, the following error screens will be displayed.

G9001A-EV is not connected



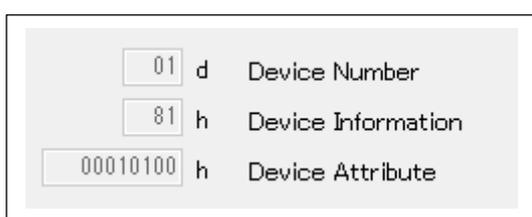
G9001A-EV is connected; G9002A_G9103C-EV is not connected



Click the [OK] button to exit the software.

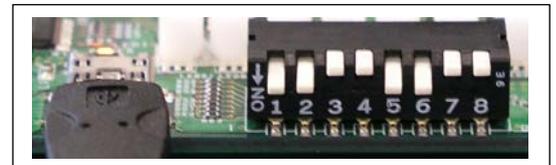
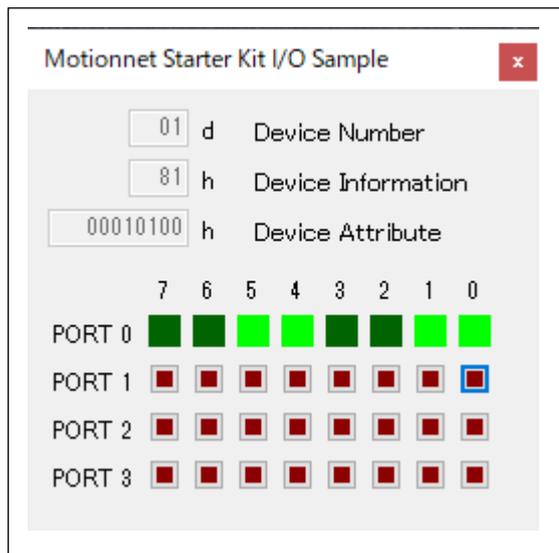
5.2 Device information

The device number, device information and device attribute data of "G9002A" mounted on the connected G9002A_G9103C-EV board are displayed as follows:



5.3 Port 0 information display

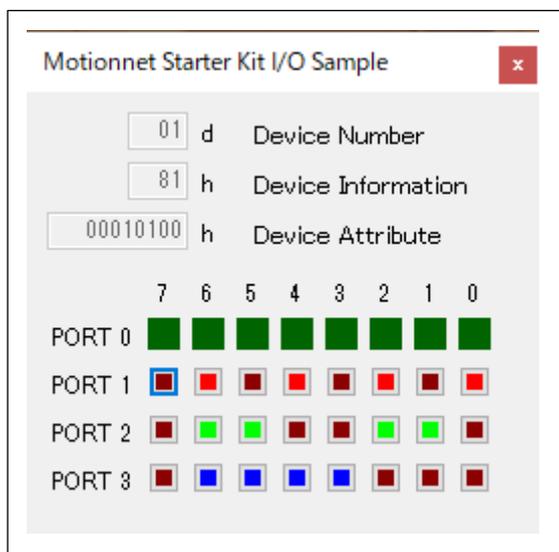
The status of DSW0 switch on the connected G9002A_G9103C-EV board is displayed in PORT 0.



When 1, 2, 5, and 6 are ON in DSW0 switch, PORT 0 is displayed as above on the screen.

5.4 Port 1, Port 2, Port 3 button control

Control ON and OFF of Port 1, Port 2, and Port 3 buttons to light LED 1 to LED 8 on G9002_G9103C-EV board as follows:

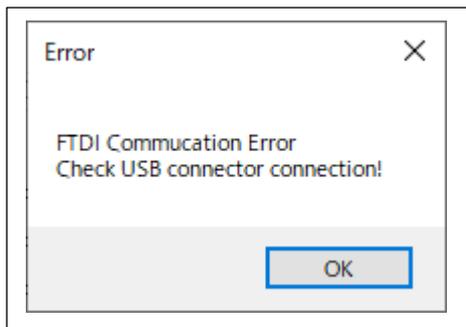


- LED1 (red): Turn ON the bit 0 of Port 1
- LED2 (green): Turn ON the bit 1 of Port 2
- LED3 (yellow): Turn ON the bit 1 of Port 1 and the bit 1 of Port 2
- LED4 (blue): Turn ON the bit 3 of Port 3
- LED5 (pink): Turn ON the bit 4 of Port 1 and the bit 4 of Port 3
- LED6 (light blue): Turn ON the bit 5 of Port 2 and the bit 5 of Port 3
- LED7 (white): Turn ON the bit 6 of Port 1, the bit 6 of Port 2 and the bit 6 of Port 3
- LED8 (-): Turn OFF the bit 7 of Port 1, the bit 7 of Port 2 and the bit 7 of Port 3

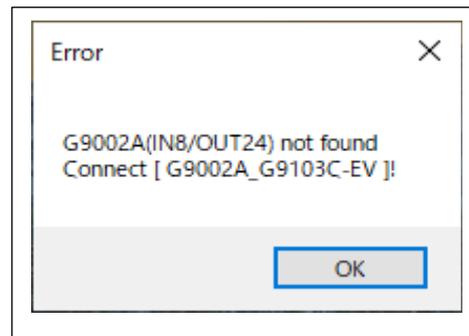
5.5 Error occurrence display

The following error screens will be displayed, if
G9001A-EV USB cable is disconnected,
Power of G9002A_G9103C-EV turns OFF, or
Motionnet cable is disconnected,
while the software is running.

G9001A-EV USB cable is disconnected



Power of G9002A_G9103C-EV turns OFF
or Motionnet cable is disconnected



Click [OK] button to exit the software.

6. Source code

The source file is "Form1.cs" in the "MNET-STK_IO_Sample" folder.

Enter values that you want to try and check the procedures of the operation.

6.1 Access function to FTDI

Opening the access to FTDI is described in the "Form1_Load" function.

Function to confirm that the connected board is G9001A-EV

LSI_Open (string description)	
description	Access starts if the connected product is G9001A-EV.

Closing the access to FTDI is described in the "Form1_FormClosed" function.

Function to cancel the access to G9001A-EV

LSI_Close()	
	Cancels the access to G9001A-EV.

6.2 Access function to the center device, G9001A

Access to the center device is described in the "Form1_Load" function.

Function to reset the contents in the center device, G9001A

MNETCenterComWriteSoftwareReset ()	
	Resets G9001A (command = 0x0100)

Function to start the system communication from the center device, G9001A, to the all devices

MNETCenterComdWriteSystemComm()	
	System communication to the all devices (command = 0x1000)

Function to start the cyclic communication from the center device, G9001A, to the all devices

MNETCenterComdWriteCyclicComm()	
	Cyclic communication to the all devices (command = 0x3000)

Function to acquire the status information in the center device, G9001A.

MNETCenterReadSts(ref Status, ref IntStatus)	
Status	Acquire the status information in G9001A
IntStatus	Acquire the interrupt status information in G9001A

Local device search access is described in the "Device_Search" function.

Function to access to the address map to acquire the device information.

MNETCenterReadInf(dno, ref Devinf_D)	
dno	Device number
Devinf_D	A buffer to acquire and store the specified device information data

Function to read the device attribute information by command access

MNETCenterComdReadDevAttribute(dno)	
dno	Device number (command = 0x1300 + dno)

Function to acquire the device attribute information by command access

MNETCenterComdGetDevAttribute(dno, ref Attr_D)	
dno	Device number (command = 0x1300 + dno)
Attr_D	Buffer to acquire and store the specified device attribute information data (Reads the data from data reception FIFO)

Function to read and acquire the port data by command access

MNETCenterComdReadPortD(dno, 0/1, ref portrd[x], ref portrd[y]);	
dno	Device number (command = 0x6400 + dno x 2)
0/1	0: Port 1,0 specified 1: Port 3,2 specified
portrd[]	Buffer to acquire and store the port data in a specified device (Reads the data through I/O buffer)

Function to write the port data by command access

MNETCenterComd WritePortD(dno, 0/1, portx, porty);	
dno	Device number (command = 0x5400 + dno x 2)
0/1	0: Port 1,0 specified 1: Port 3,2 specified
port	Port data to write to the specified device (Writes the data to I/O buffer)

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Revision

Revision	Date	Contents
1st	March 11, 2020	Initial Release



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Information

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