

Instruction Manual of ForceSensorEvaluationKit1

Outline

This document is the instruction manual for ForceSensorEvaluationKit1. ForceSensorEvaluationKit1 can acquire MMS101 logging data with PC and USB communication.

Refer to the datasheet for more information on MMS101.

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Rev.1

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Evaluation Kit Configuration

This evaluation kit consists of below:

✓ Force sensor MMS101



✓ Conversion Board Conv.BD Ver1.1



✓ Evaluation Board ForceSensorControllerBoard Ver.2.0/3.0 MCU FW 2.0.0.x



 \checkmark Cable for sensor connection



✓ USB Type-C cable

*USB cable is not included. Required Spec. USB cable: USB cable ver.2.0/ Type-C

 Evaluation App. ForceSensorEvaluationProgram App Ver. 3.0.0.0





Evaluation Board

ForceSensorControllerVer2.0/3.0 Board size: 40x40mm



4

No Longer Supported:



Setup (Install driver)

This evaluation board operate a UART-USB conversion of FTDI's IC. To download or update the driver, please follow the steps below.

1. Download the latest driver file from the FTDI website. Please select the driver to your operating system.

FTDI drivers download website: <u>https://www.ftdichip.com/Drivers/VCP.htm</u>



"Includes the following version of of the Windows operating system: Windows 7, Windows Server 208 R2 and Windows 8, 8, 1, Windows server 2012 R2, Windows Server 2016 and Windows 10. Also, as Windows 8 RT is a closed system not allowing for 3rd party driver installation our Windows 8 driver will not support this variant of the OS. You must use the Windows 7 build for this platform.

**includes the following versions of Windows Mobile 6.1.2.2.2 based operating systems: Windows Mobile 2003, Windows Mobile 2003 SE, Windows Mobile 5, Windows Mobile 6, Windows Mobile 6.1. Windows Mobile 6.5.



e.g.: For Windows

		Processor Architecture							
Operating System	Release Date	X86 (32-Bit)	X64 (64-Bit)	PPC	ARM	MIPSII	MIPSIV	SH4	Comments
Windows*	2021-06-17	2.12.36.2	<u>2.12.36.2</u>	-	-	-	-	- [WHQL Certified. Includes VCP and D2XX. entrop executable Desease and installation in Notes and Installation Guides
Linux	-	-	=	-	-	-	-	-	All FTDI devices new supported in Lbunder1 10, kernel 3.0.0-19 Refer to T <u>N-101</u> if you need a custom VCP VID/N-101 Linux VCP drives are integrated into the <u>kernel</u> .
Mac OS X 10.3 to 10.8	2012-08-10	2.2.18	2.2.18	2.2.18	-	-	-	-	Refer to TN-105 if you need a custom VCP VID/PID in MAC OS
Mac OS X 10.9 to 10.14	2019-12-24	-	<u>2.4.4</u>	-	-	-	-	-	This driver is signed by Apple
Mac OS X10.15 and macOS 11	2021-05-18		<u>1.4.7</u>						This is a Beta driver release and the installer should be run from the <u>(Applications</u> folder on your machine
Windows CE 4.2-5.2**	2012-01-06	<u>1.1.0.20</u>	-	-	<u>1.1.0.20</u>	1.1.0.10	<u>1.1.0.10</u>	<u>1.1.0.10</u>	
Windows CE 6.0/7.0	2016-11-03	1.1.0.22 CE 6.0 CAT CE 7.0 CAT	-	-	1.1.0.22 CE 6.0 CAT CE 7.0 CAT	<u>1.1.0.10</u>	<u>1.1.0.10</u>	<u>1.1.0.10</u>	For use of the CAT files supplied for ARM and x86 builds refer to $\underline{\lambda N}$.315
Windows CE 2013	2015-03-06	1.0.0			1.0.0				VCP Driver Support for WinCE2013

Click "setup executable" and download the setup file

The following file will be downloaded.

Click "CDM21228_Setup", and install according to the displayed information.

CDM21228_Setup			_		
← → ✓ ↑	5 ~	CDM21228_Setupの検	ب		
3 b (b = b k=	名前 ^	更新日時	種類	サイズ	
★ クイック アクセス	CDM21228_Setup	2018/11/27 13:03	アプリケーション	2,400 KB	
PC					•
🥏 ネットワーク					
1 個の項目					

 After the installation is completed, confirm that "USB Serial Converter" and "USB Serial Port (COMx)" are displayed in the device manager with the evaluation board connected.
*When connecting for the first time, recognition may take some time.

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3. USB Serial Port (COMx) is required for communication settings. Check the assigned port number. *The port number assignment differs depending on the PC.



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Setup Evaluation Kit (Hardware)

Connect the evaluation kit as shown below.



After the connection of the evaluation kit is completed, start "ForceSensor_EvaluationProgram.exe" in the "ForceSensor_EvaluationProgram_ver.3.0.0.0" zip file.

When the app is started, a "Start up" dialog will be displayed. Click "Controller Board (USB)".



*To operate this application, .NET Framework 3.5 must be valid. The activation procedure is posted on the Microsoft website (the following URL). If it is not activated, activate it according to the contents of the website.

Microsoft .NET Framework 3.5 activation procedure homepage URL: <u>https://blogs.technet.microsoft.com/askcorejp/2018/10/05/enable_net35_win10/</u>

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Evaluation App. Display Screen





Evaluation App. Basic Instruction for Use

1. Select the COM port on the evaluation board. Click the "Set" button.



*The COM port depends on the PC. Please refer to P.7 for confirmation.

2. Click the "ON/OFF" key on Power. => Turn on LED of 4.5V, 1.2V.



3. Enter Interval and Restart times.

Interval[msec] 1 Restart Times 0	*The temperature sensor value for offset/temperature control is updated every number of times the numerical value set in Restart Times is acquired.
	e.g. Restart Times: 0 -> Temperature sensor value acquisition is the first time only. No temperature sensor value updating is performed thereafter. Restart Times: 1 -> Update temperature sensor value every time
Click the "INIT." button.	Restart Times: 10 -> Temperature sensor value updated once every 10 data acquisitions
	INIT. *The sensor operation is started. The "INIT." button turns light green while the sensor is operating. Click it again to stop the sensor operation.

5. Enter Measuring Times.



4.



Evaluation App. Basic Instruction for Use

6. Enter Y Width. (Value can be changed even during measurement)



7. Enter X Width. (Value can be changed even during measurement)



8. Click the "START" button. => The data logging starts.



9. Click the "STOP" button. => The data logging stops. If the data of Measuring Times se before measurement is acquired, measurement will stop without clicking the "STOP" button.



10. Click the "INIT." button => The sensor operation stops.



*The sensor operation is stopped. The "INIT." button turns gray after the sensor operation stops.

*Before replacing the sample while the application is running, stop the sensor operation and press the "ON/OFF" key on Power to drop 4.5V, 1.2V. After replacement, press the "ON/OFF" key on Power again to turn on 4.5V, 1.2VLED, and then proceed from step 3 of the basic usage.



Evaluation App. Offset Cancel Function

The sensor output has an initial offset. Offset also occurs in the mounted condition or in gravity. It is possible to cancel the offset deviation with the "OFFSET CANCEL" button. Click the "OFFSET CANCEL" button again to cancel the offset cancel.



Please click the "OFFSET CANCEL" button after more than 5min has elapsed since sensor operation started to use. *It is recommended that the output (initial-drift) stabilization wait time after sensor activation be equal to or greater than 5min.



Evaluation App. Log Data Save Function

The data acquired by measurement can be saved with the "Save Log" button.



The following window will be displayed. Enter the file name and click the "Save" button.



The data will be saved in the following format.

	A	В	С	D	E	F	G	н	I
1	2019/4/3 14:20								
2	count[times]	Measured Time[s]	Fx Value[N]	Fy Value[N]	Fz Value[N]	Mx Value[Nm]	My Value[Nm]	Mz Value[Nm]	Temp.Value[degC]
3	1	0.00244	0.014	-0.095	-1.537	0.00095	-0.0007	-0.00027	0
-4	2	0.003681	0.013	-0.12	-1.318	0.00121	-0.00062	-0.00087	0
5	3	0.004922	0.009	-0.125	-1.214	0.00113	-0.00081	-0.001 21	0
6	4	0.006161	-0.011	-0.106	-1.052	0.00119	-0.00085	-0.00088	0
7	5	0.0074	0.003	-0.111	-0.961	0.00093	-0.00067	-0.001 31	0
8	6	0.008641	0.005	-0.133	-0.837	0.0012	-0.00091	-0.001 24	0
9	7	0.009882	0.003	-0.099	-0.743	0.0009	-0.00081	-7.00E-05	0