AMI306EVK

Version.100912

Project name	AMI306EVK
Category	Basic design / Detail design / Programdesign / Other（instruction manual）
Function	Evaluation kit
Creation date	2. March. 2010
Revision date	12. September. 2010

Approval	Approval	Draft
技術部門長（基本設計書のみ）	リーダー	

Distribution	

Revision history

Version	Date	Contents	Author
Version. 100302 Preliminary	2010. Mar. 2	First edition	Urakawa
Version. 100428 Preliminary	2010. Apr. 28	3.2.2 Evaluation command Setting of adjusted value (coarse, fine) for origin coarse (0), fine (1 to 91)	Urakawa
Version. 100912 Preliminary	2010. Sep. 12	Append Compass-demo.exe	masaki

Table of Contents

1 Introduction

This document presents how to use AMI306EVK, as well as its detailed specifications

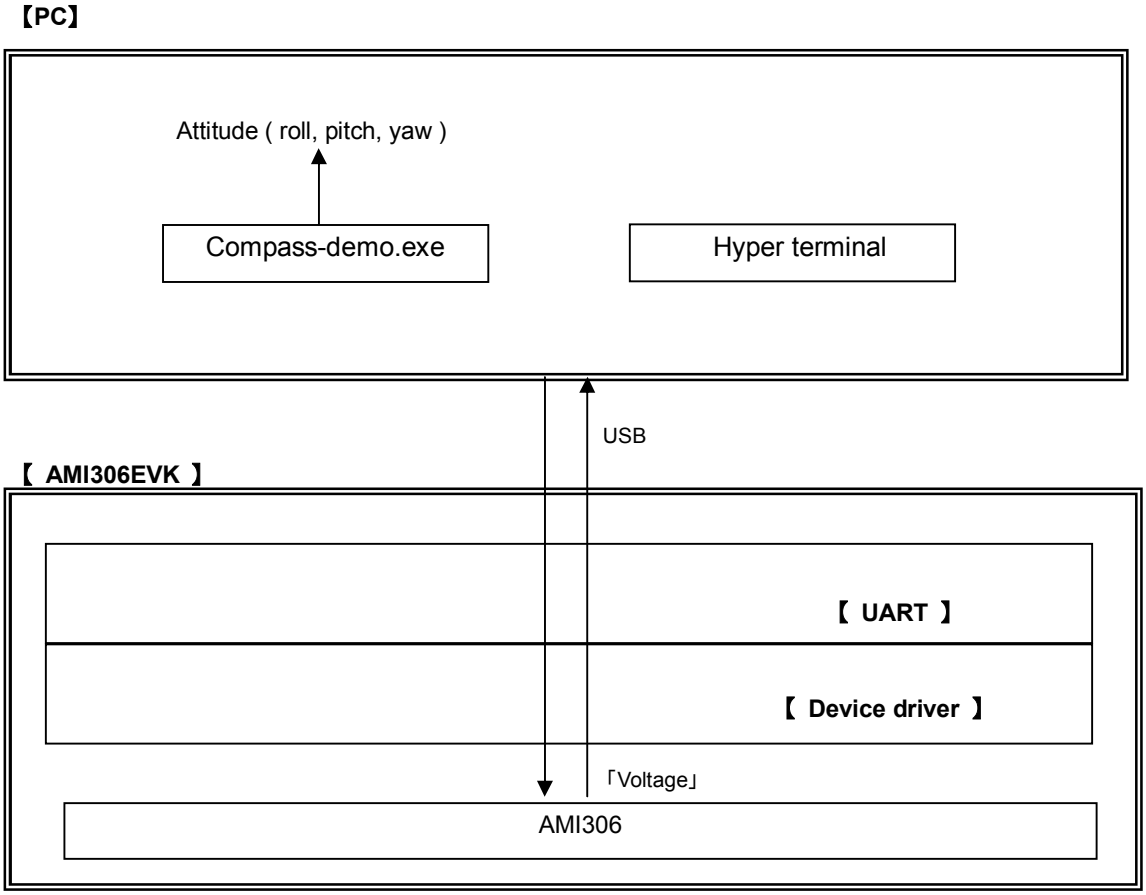
2 General description of AMI306EVK

(1) Components

	Part	Name	Description	Reference
1	Application	Hyper terminal (WindowsStandardAPP)	Sensor value,Device control	This document
		Compass-demo.exe	Attitude Cal , User Cal	AMI304-AMI306-demo-User-Manual(2010-09-12).pdf
2	Device driver	—	Device control	Source code
3	Magnetic Sensor	AMI306	Sensor	AMI306 Specification
4	Acceleration sensor	KXTF9		

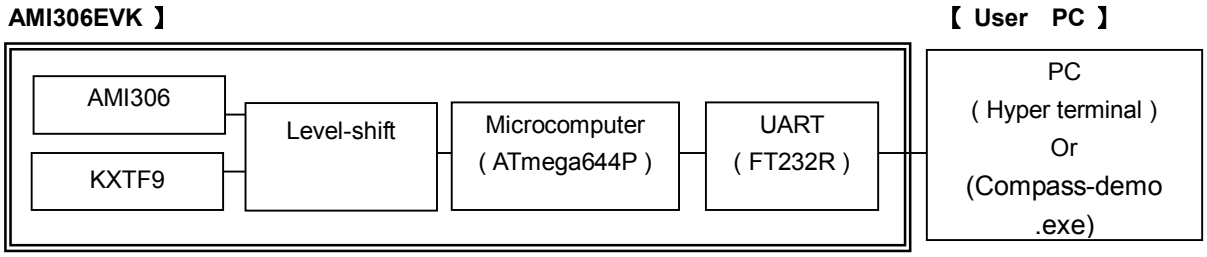
(3) Application structure

It is possible for AMI306EVK to measure the magnetic field and acceleration and it is controlled by Hyper terminal. Attitude and direction are also able to be calculated by using Compass-demo.exe software.



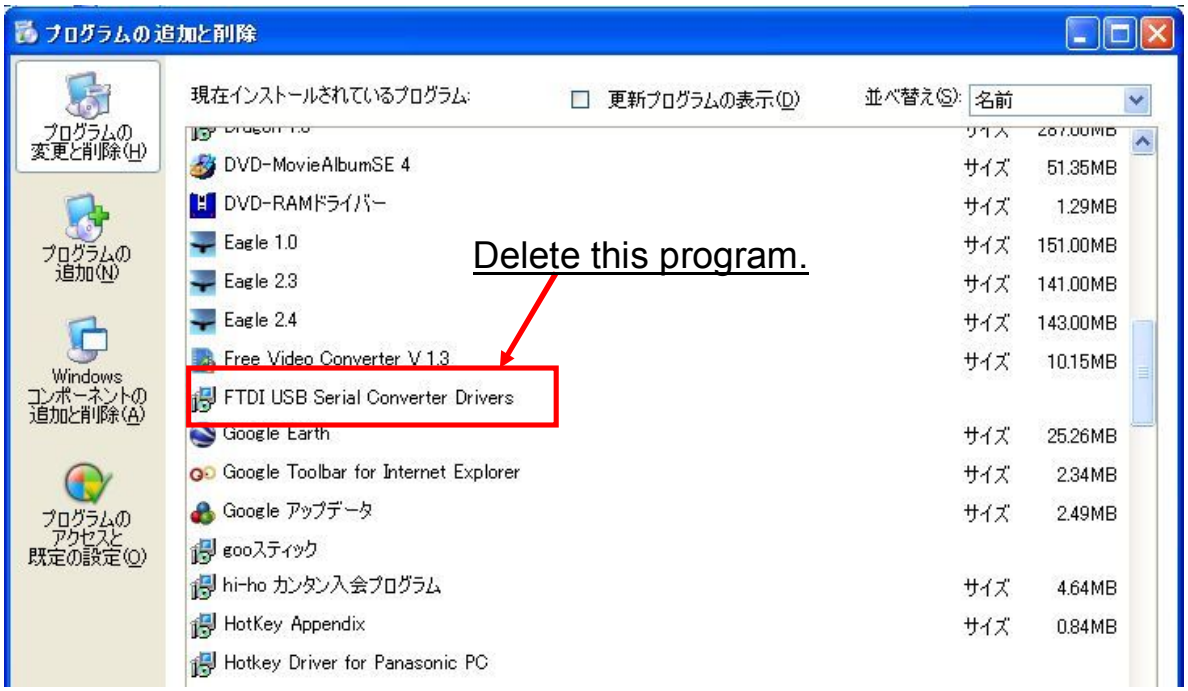
(3) Hardware structure

(3)-1 Hardware block diagram



3 Initial setting

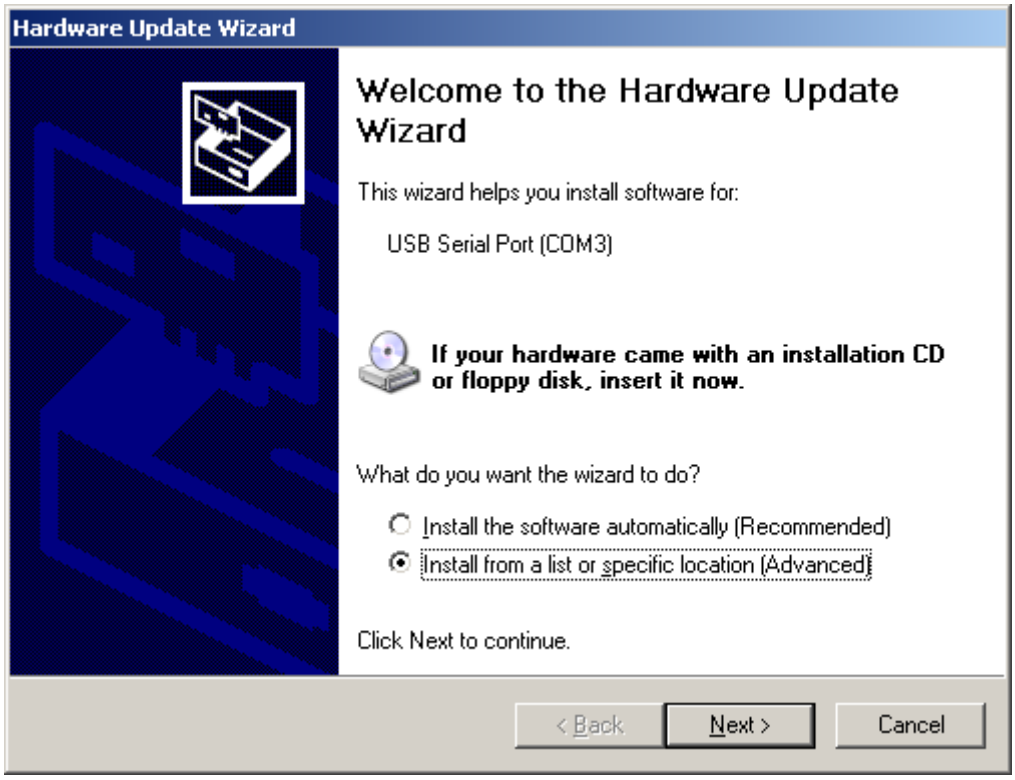
Step1) When the driver of FTDI's old version had already been installed, you have to delete the driver.



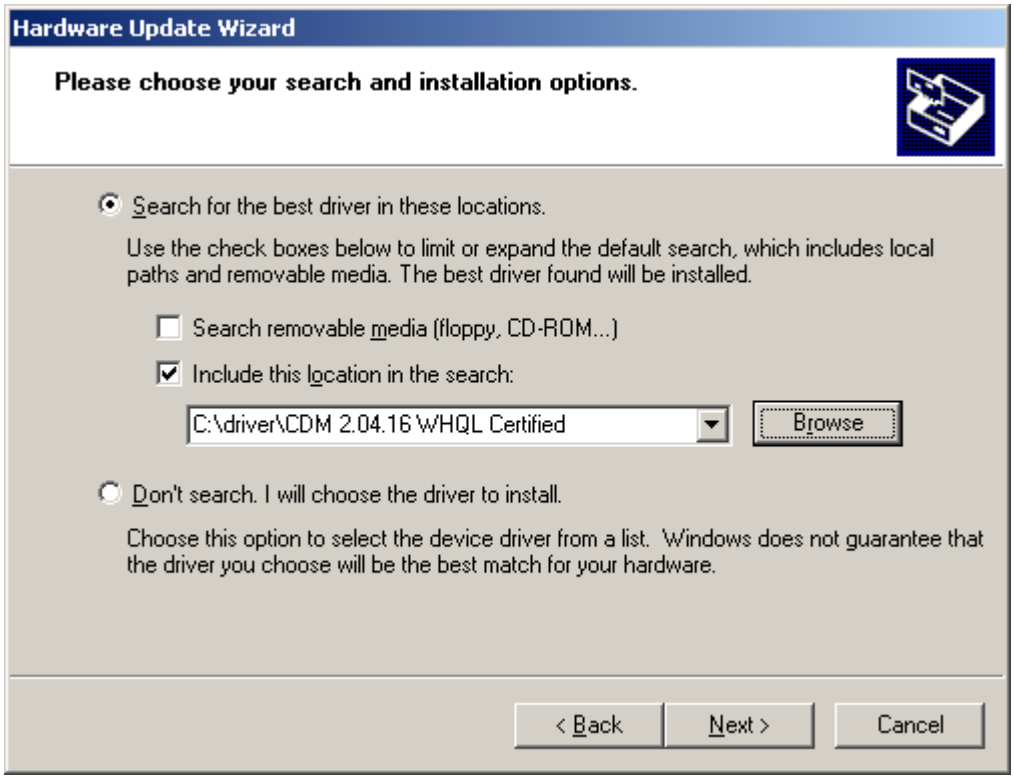
Note. Delete the old driver from Control panel →「addition and deletion of program」

Step2) Driver install of “FT232R”

- Copy the driver file of “FT232R” to “C:¥drivers¥CDM 2.02.04 WHQL Certified”.
- Connect the computer and AMI602EVK with USB cable.
- With the screen below, click the “Next”.



- With the screen below, choose the upper button (S) and click the “Next”.



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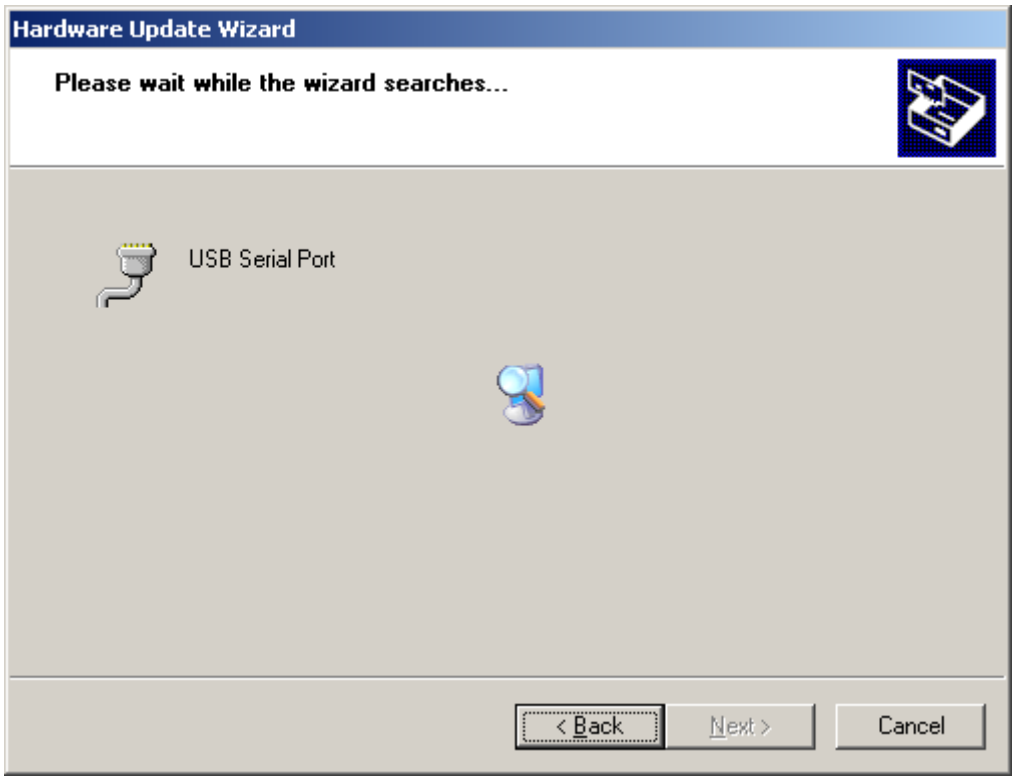
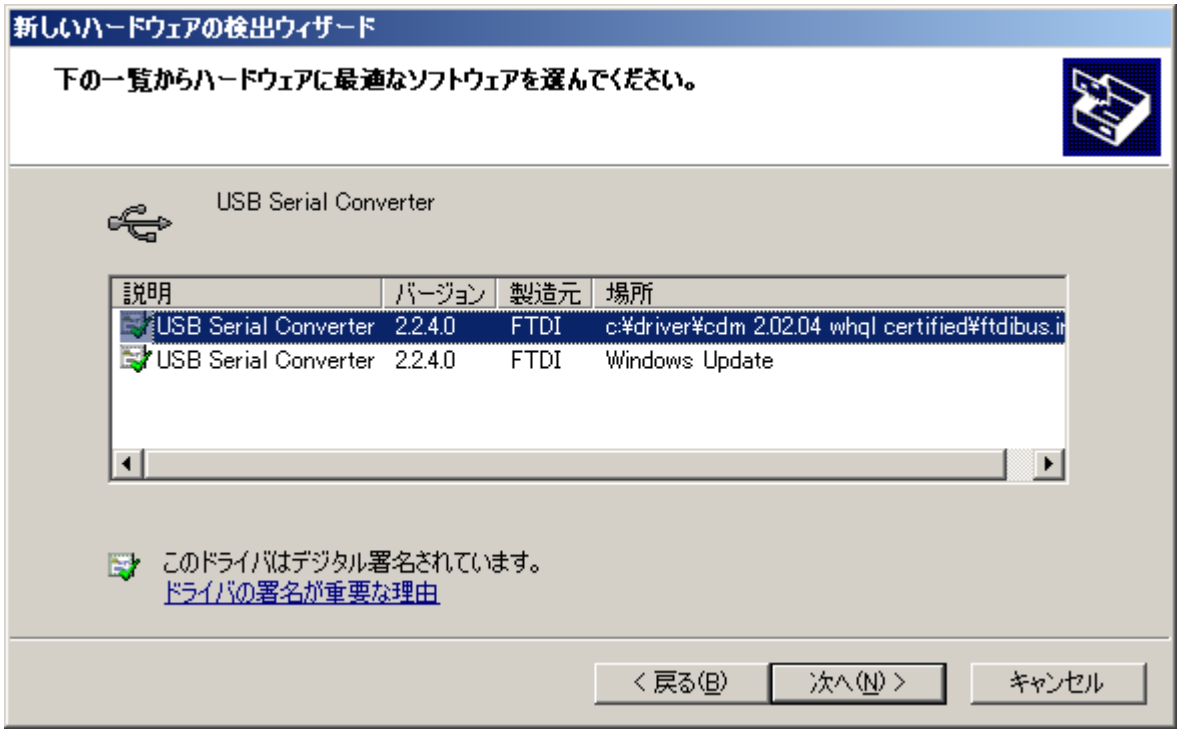
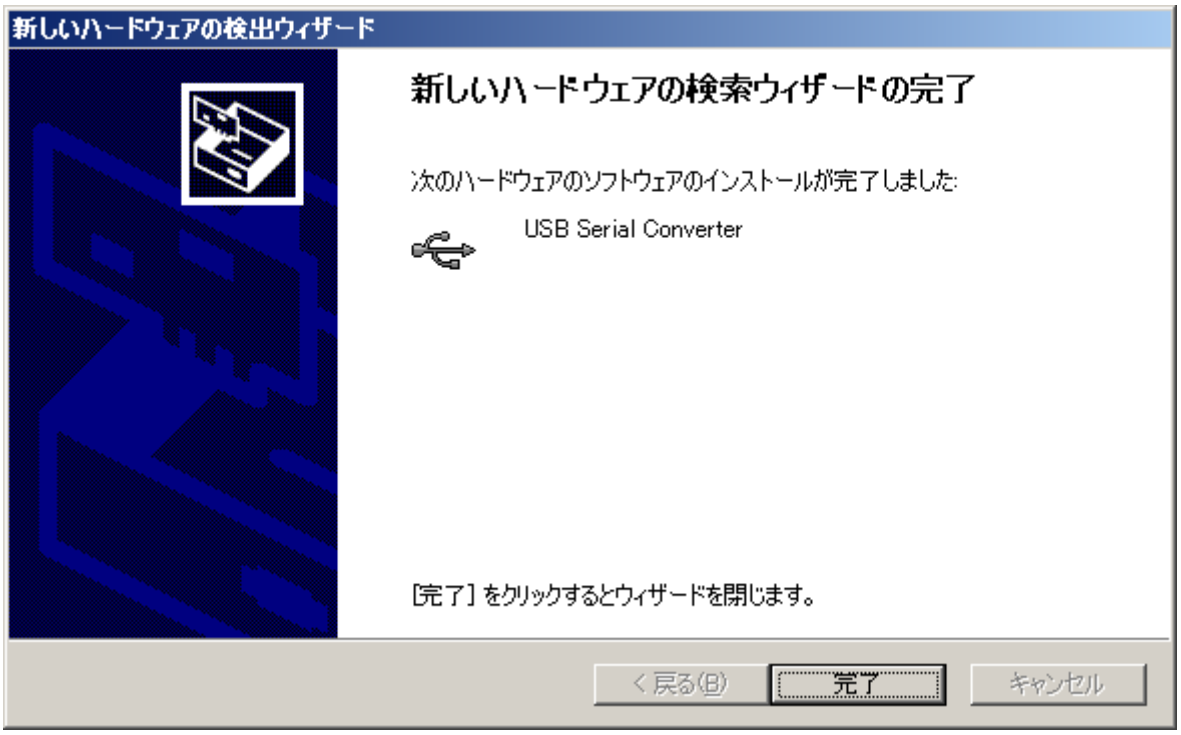
With the screen below, please wait awhile.



- With the screen below, choose the upper file place and click the “Next”.



- With the screen below, click the “done”



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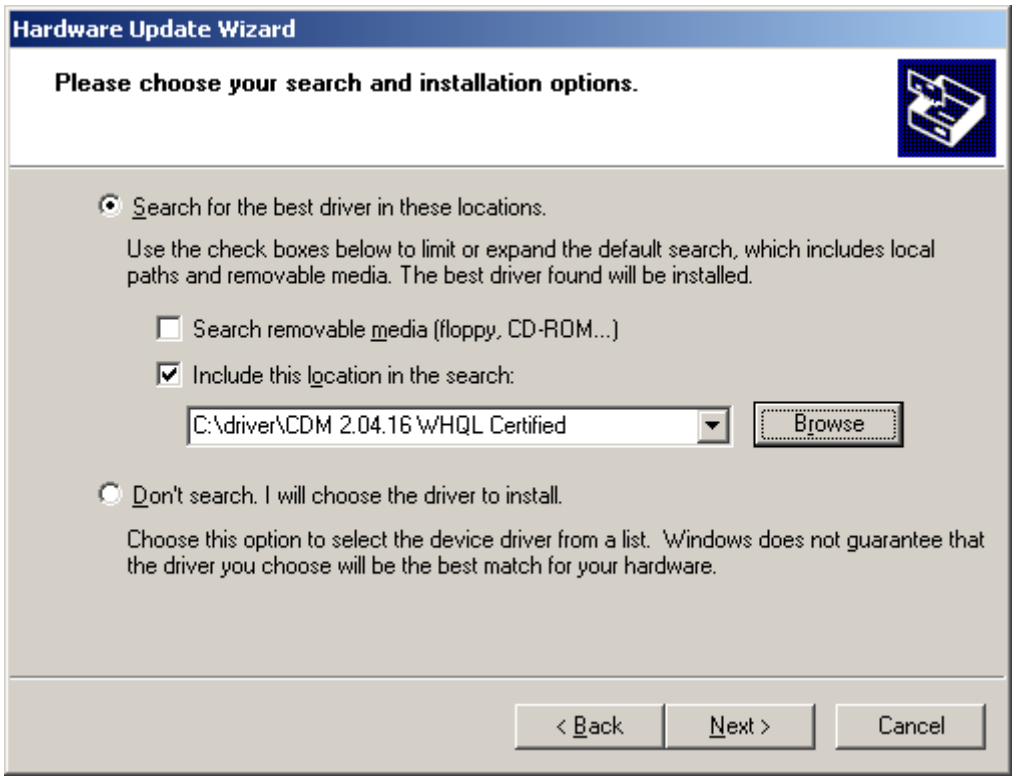
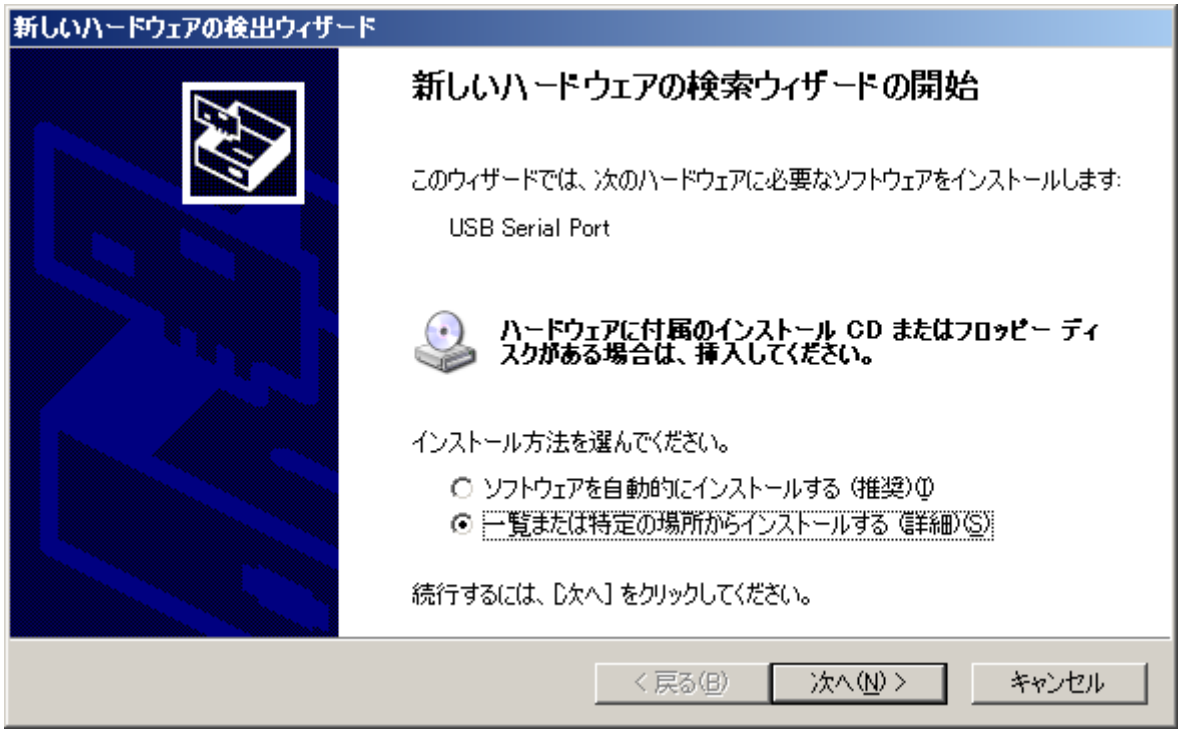
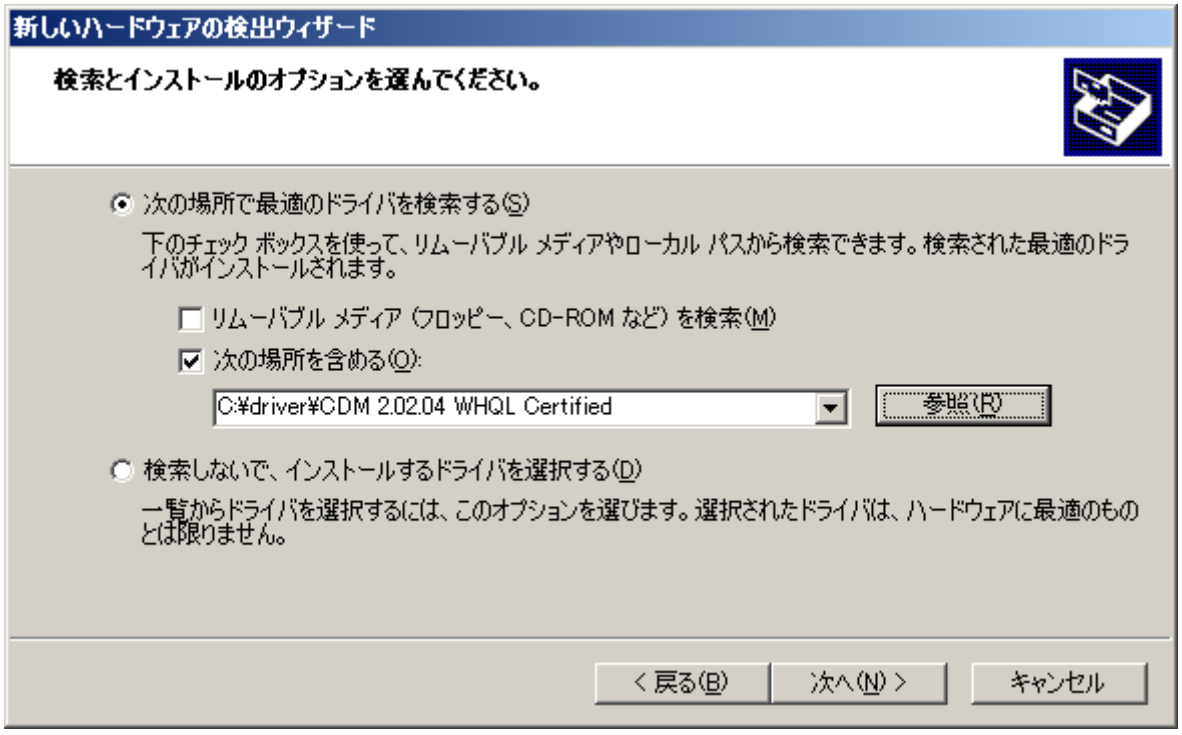


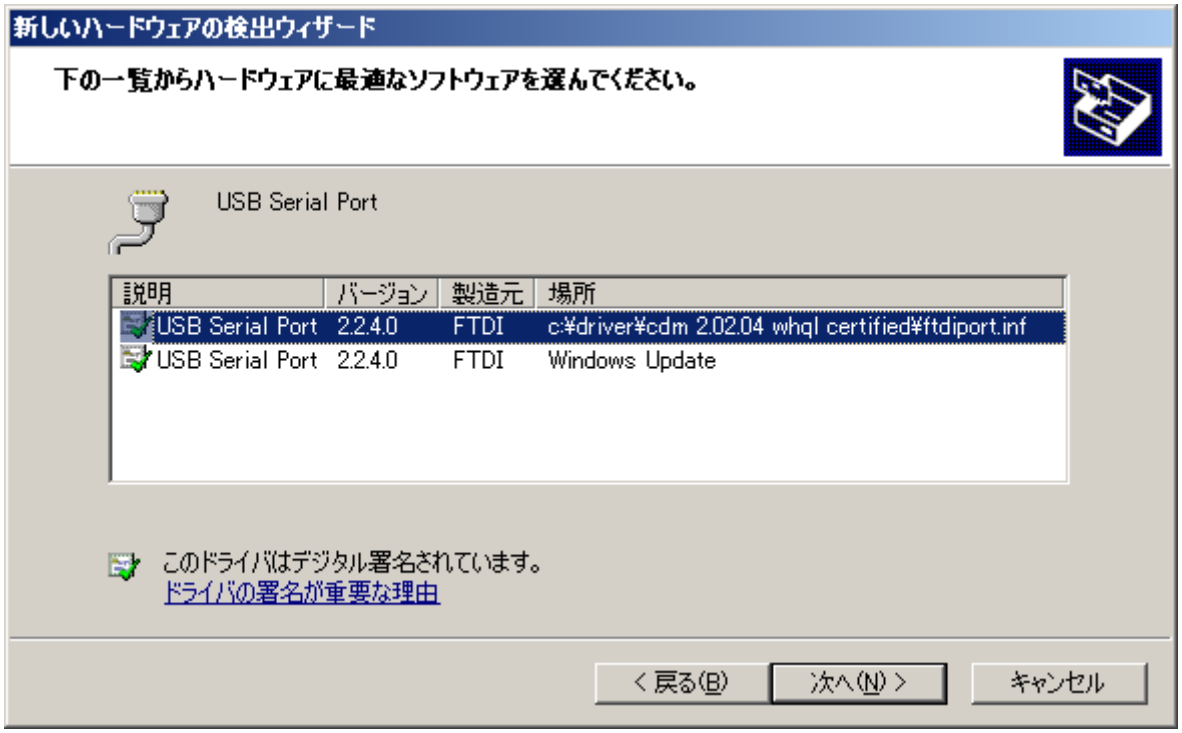
- With the screen below, choose the lower button and click the “Next”.



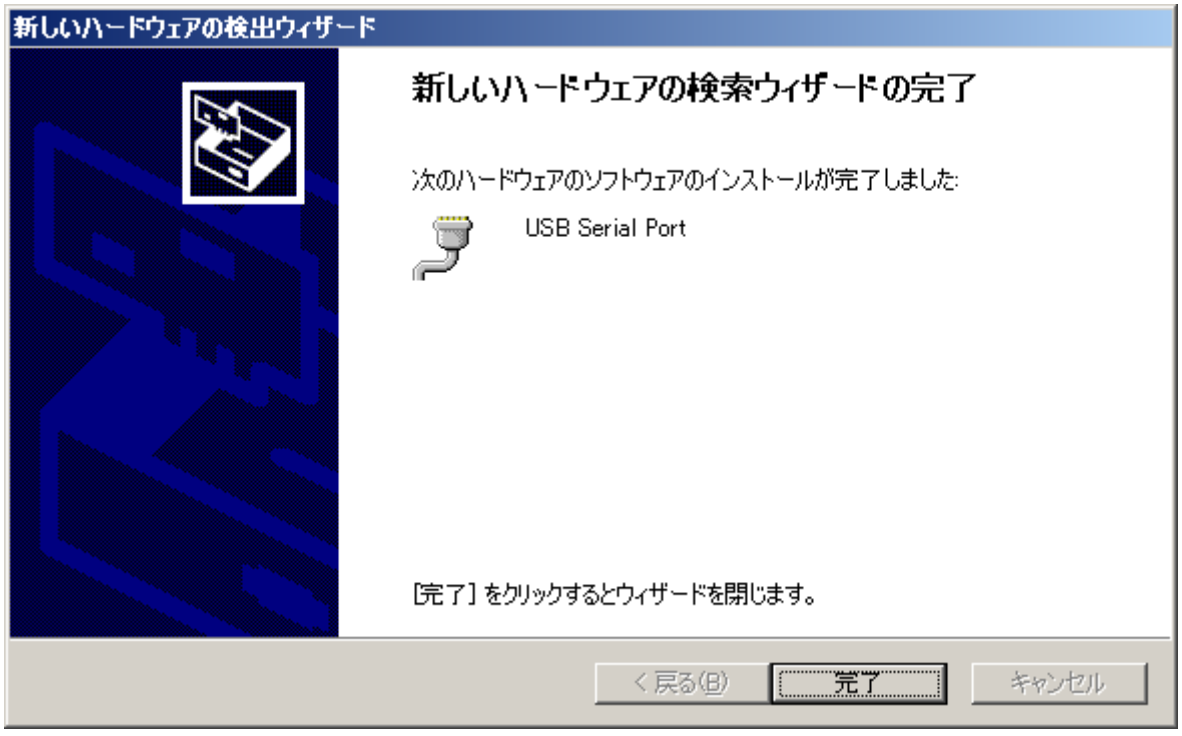
- With the screen below, choose the upper button and select the driver file and click the “Next”.



・ With the screen below, choose the upper file place and click the “Next”.



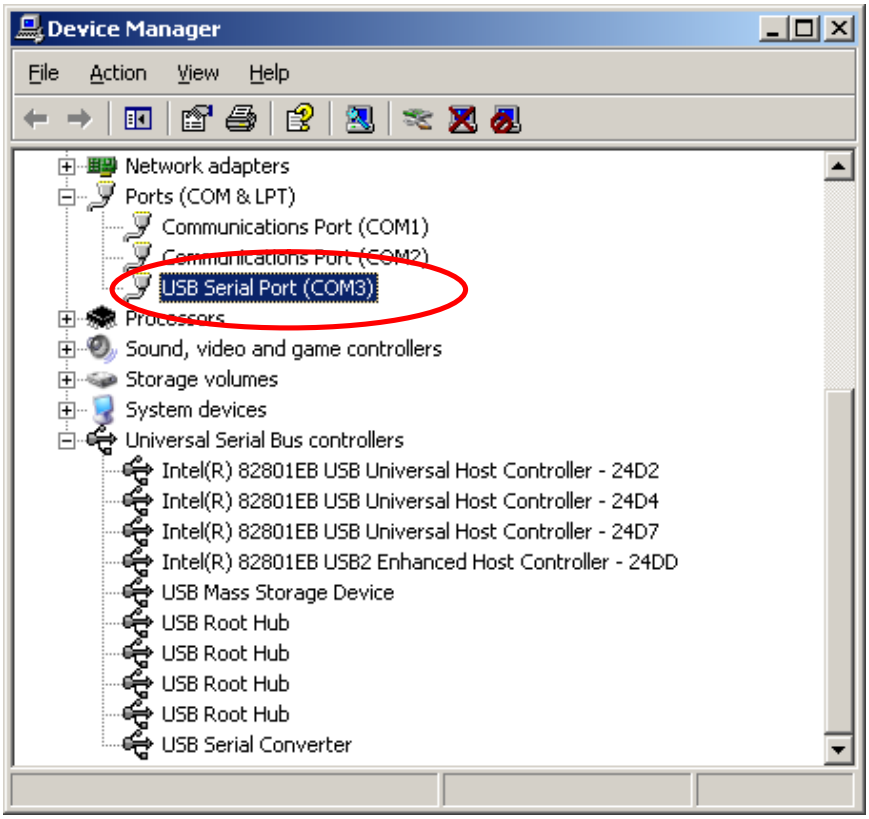
・ With the screen below, click the “done”.



Step3) Find the COM port number

Open the Ports (COM and LPT) of device manager

- Check the COM number. This screen shows COM3.



4.Hyper Terminal Specification

4.1 Communication specification

① Interface : More than USB1.0
② Application : HyperTerminal (Windows standard)
③ Port setting

	Item	Spec.
1	Bit/sec.	115200
2	Data bit	8
3	Parity	None
4	Stop bit	1
5	Flow control	None
6	Linefeed code	CR

4.2 Command specification

4.2.1 Main command

Contents	Command	Send parameter	Recv parameter
Start the cycle measurement (para2 cycle is measured.)	mes	Para1 :0 Para2: Measuring cycle 0:20ms 1: 20ms ・・・ 20:20ms 21:21ms ・・・ 254: 254ms	None
Stop the cycle measurement	mes	Para1 :1	None
Origin compensation (Output of each axis should be around 2048 by adjusting coase and fine) (Note) AMI306 should be ACTIVE at 「act 0」 before starting this command.	seh	None	Adjusted value of coase /fine Para1 : x coarse Para2: y coarse Para3: z coarse Para4: x fine Para5: y fine Para6: z fine
Obtaining of version	ver	Para1: 0: AMI306EVK 1: AMI306	Para1: Version information
Obtaining of serial No.	sn	None	Serial No.
Making command to be acceptable state. (Suspend the data serial output)	q	None	None
Escape from the command acceptable state.	c	None	None

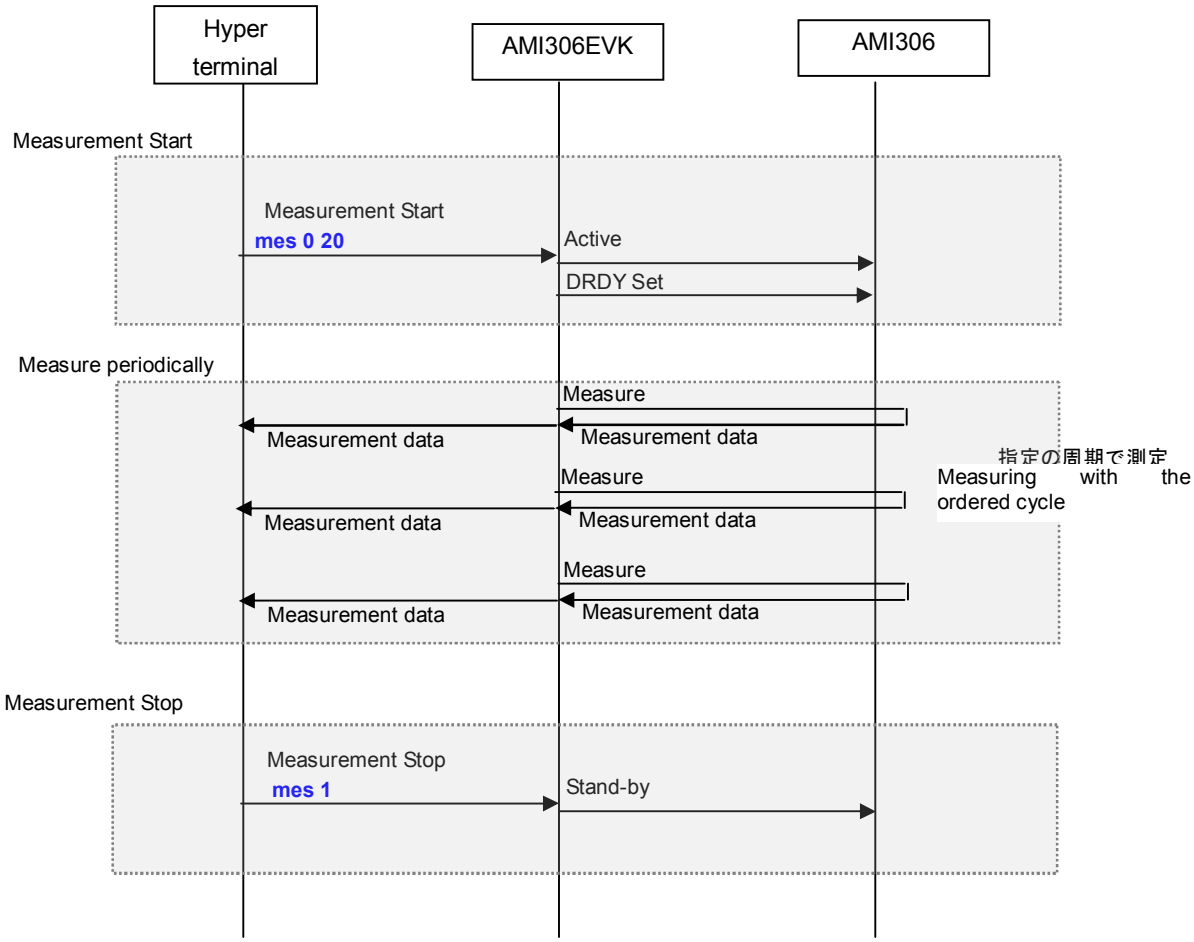
4.2.2 Evaluation command

Contents	Command	Send parameter	Recv parameter
Setting of adjusted value (coarse, fine) for origin	ofs	Para1: x coarse (0) Para2: y coarse (0) Para3: z coarse (0) Para4: x fine (1 to 91) Para5: y fine (1 to 91) Para6: z fine (1 to 91)	None
Obtaining of adjusted value (coarse, fine) for origin	ofg	None	Para1: x coarse Para2: y coarse Para3: z coarse Para4: x fine Para5: y fine Para6: z fine
Power On/Off	pwr	Para1: 0: AMI306 Power Off 1: AMI306 Power On	None
Active control	act	Para1: 0:Force-Active 1:Normal-Active (10sps) 2:Normal-Active (20sps)	None
Stand-by control	sty	Para1: 0: AMI306EVK 1: AMI306	Para1: Version information
Obtaining of Status (Active / Stand-by)	rmg	None	Status
One time measurement	mea	None	Para1: Magnetic X (LSB) Para2: Magnetic Y (LSB) Para3: Magnetic Z (LSB) Para4: Acceleration X (LSB) Para5: Acceleration Y (LSB) Para6: Acceleration Z (LSB) Para7: Temperature (LSB)

4.2.3 Debug command

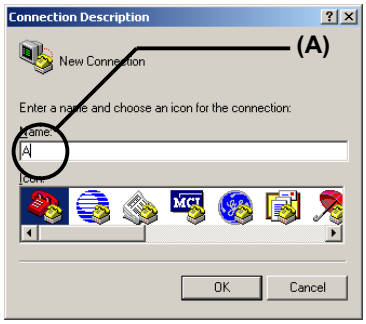
Contents	Command	Send parameter	Recv parameter
I2C Write (Byte)	b2w	Para1: AMI306 Register Address Para2: Write Data (byte)	None
I2C Read(Byte)	b2r	Para1: AMI306 Register Address	Para1: Read Data (byte)
I2C Write (WORD)	w2w	Para1: AMI306 Register Address Para2: Write Data (word)	None
I2C Read (WORD)	w2r	Para1: AMI306 Register Address	Para1: Read Data (byte)

4.2.4 Sequence example



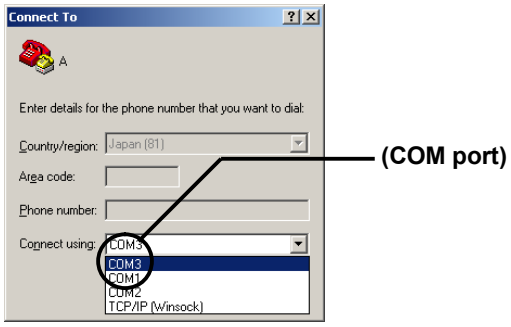
4.3 Communication method

Step1) Launch a hyper terminal (File name：arbitrary)

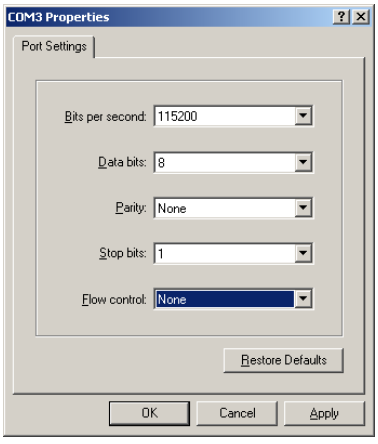


Step2) Enter the fine name (arbitrary) and choose “A”.

Step3) Choose the COM port that is connected to AMI306EVK.



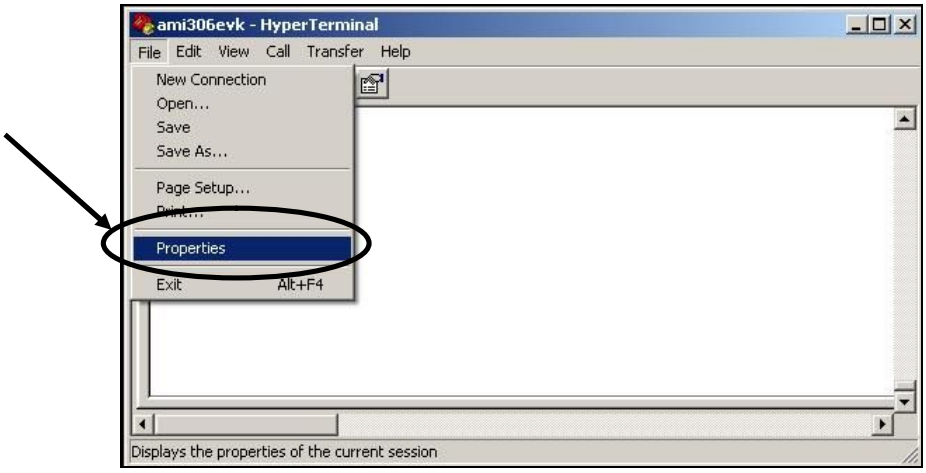
Step4) 3.1 communucation specification: Type in the setting as the table shown below.



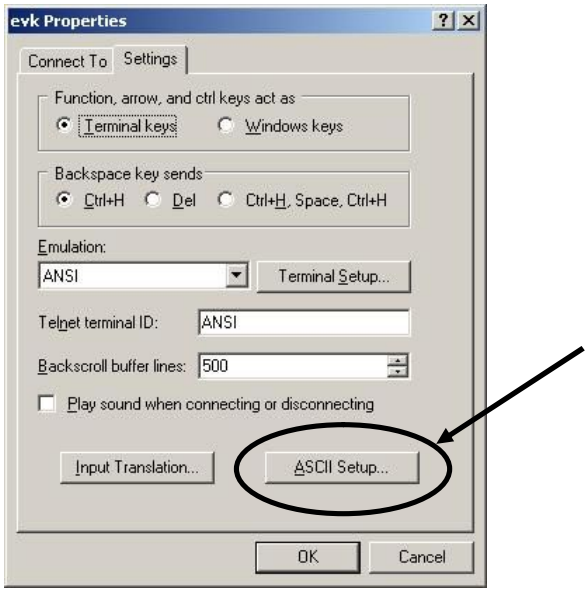
Communication setting

Item	Value
Bit/sec	115200
Data bit	8
Parity	None
Stop bit	1
Flow control	None

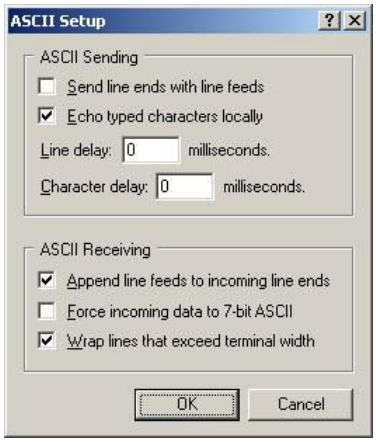
Step5) From the menu above the screen, choose “File -> Properties”.



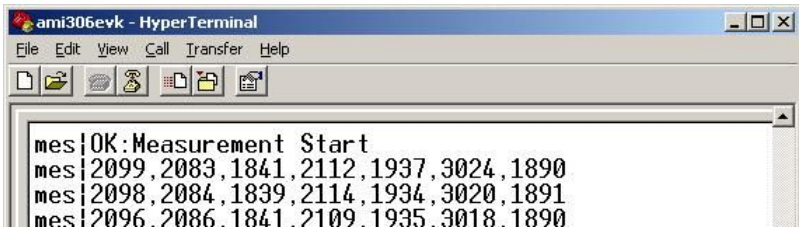
Step6 Click the “ASCII Setup”



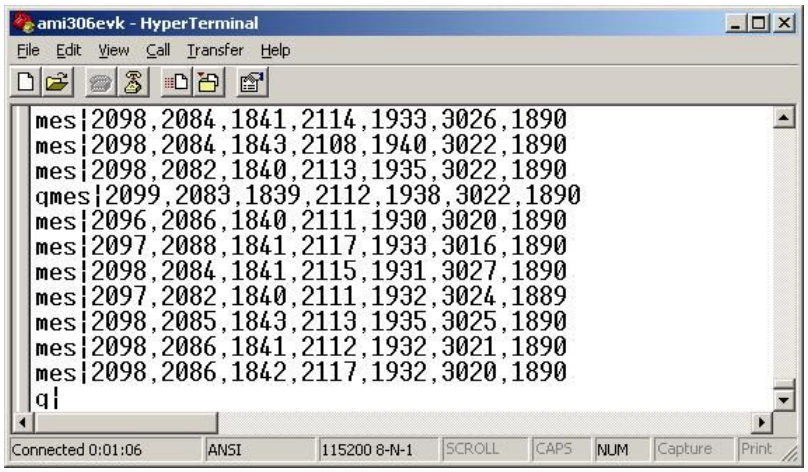
Step7 Set like the screen below and click “ OK”.



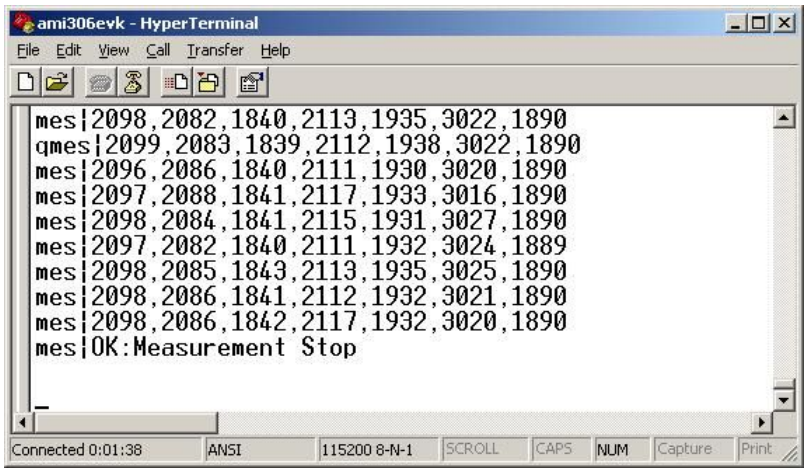
Step8) The measurement begins when ' mes 0 20' is input and it presses return.



Step9) The measurement is suspended by inputting “q” and pressing return.



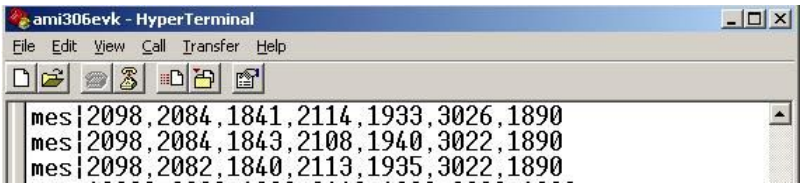
Step10) The measurement is stopped by inputting “mes 1” and pressing return.



4.4 Data specification

(1) Data format

The default data order is shown as follows



No.	1	2	3	4	5	6	7
Item	X axis magnetic (※1)	Y axis magnetic (※1)	Z axis magnetic (※1)	X axis acceleration (※2)	Y axis acceleration (※2)	Z axis acceleration (※2)	Temperature
Sign	Hx	Hy	Hz	Ax	Ay	Az	Tj
Unit	bit			bit			bit

(※1) See also AMI306 delivery specification regarding polar character

(※2) See also KXTF9 datasheet by Kionix regarding polar character