

AMI305EVK <u>Ver 1.0</u>

Project Name	AMI305EVK
Specification Type	Basic Design / Detailed Design / Program Design Other (User Manual)
Function	Evaluation Kit
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1 To begin

This document describes the specification and operation of the AMI305 EVK.

2 About AMI305EVK

(1) Structure List

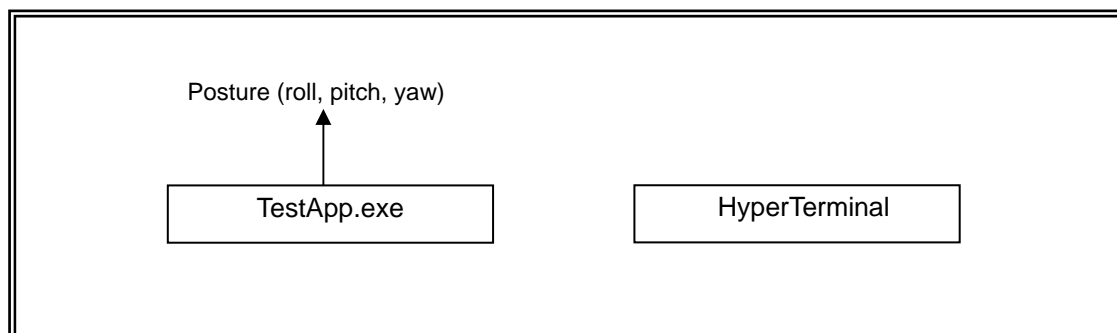
	Element	Name	Detail	Reference
1	Application	HyperTerminal (Windows Standard)	Sensor output, device control	This document
		TestApp.exe	Posture calculation, user calibration	TestApp Operation Manual
2	Device Driver	—	Device Control	Source code
3	Magnetometer	AMI305	Sensor	AMI305Deliver Datasheet

(2) Application Structure

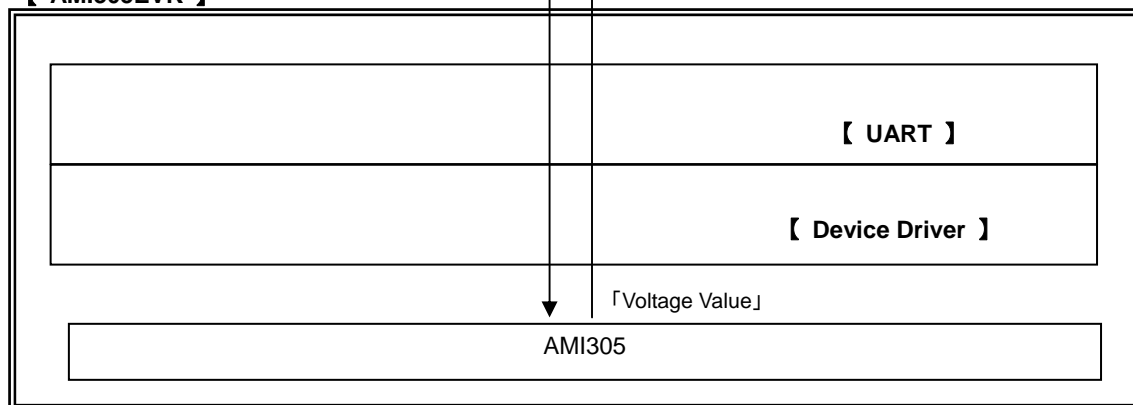
The AMI305EVK is controlled by HyperTerminal and is capable of measuring magnetism, acceleration and step count.

In addition, by using Compass-demo.exe (upper-application), it is possible to calculate posture and azimuth.

【PC】



【 AMI305EVK 】



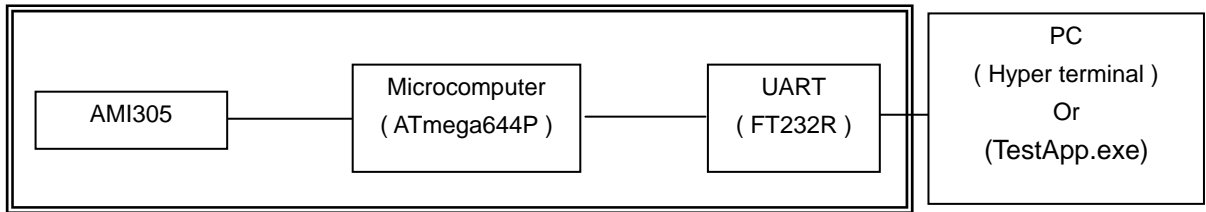
Preliminary

(3) Hardware Structure

(3)-1Hardware Block Diagram

【 AMI305EVK 】

【 User PC 】



3 Initial Setting

Refer to EVK_InstallerManul.pdf .

4 HyperTerminal Specification

4.1 Communication Specification

- ① Interface USB1.0 or higher
- ② Application HyperTerminal (Windows Standard)
- ③ Port Settings

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

Preliminary

4.2 Command Specification

4.2.1 Main Commands

Detail	command	send parameter	recv parameter
Initiate interval measurement (Carries out measurement at para2 interval)	mes	Para1 :0 Para2: Measuring cycle 0:20ms 1: 20ms ... 20:20ms 21:21ms ... 254: 254ms	None
Stopping interval measurement	mes	Para1 :1	None
Origin adjustment (adjusts coarse, fine to bring each axis output value close to 2048) (Warning) Before issuing this command, AMI305 needs to be set to Normal with 「act 0」	seh	none	coarse /fine adjustment value Para1 : x coarse Para2: y coarse Para3: z coarse Para4: x fine Para5: y fine Para6: z fine Para7,Para8,Para9=0
Obtain version	ver	Para1: 0: AMI305EVK 1: AMI305	Para1: Version information
Obtain Serial Number	sng	none	Serial number
Put into command accepting state (pauses serial output of data)	q	None	None
Release from command accepting state	c	None	None

Preliminary

4.2.2 Evaluation Commands

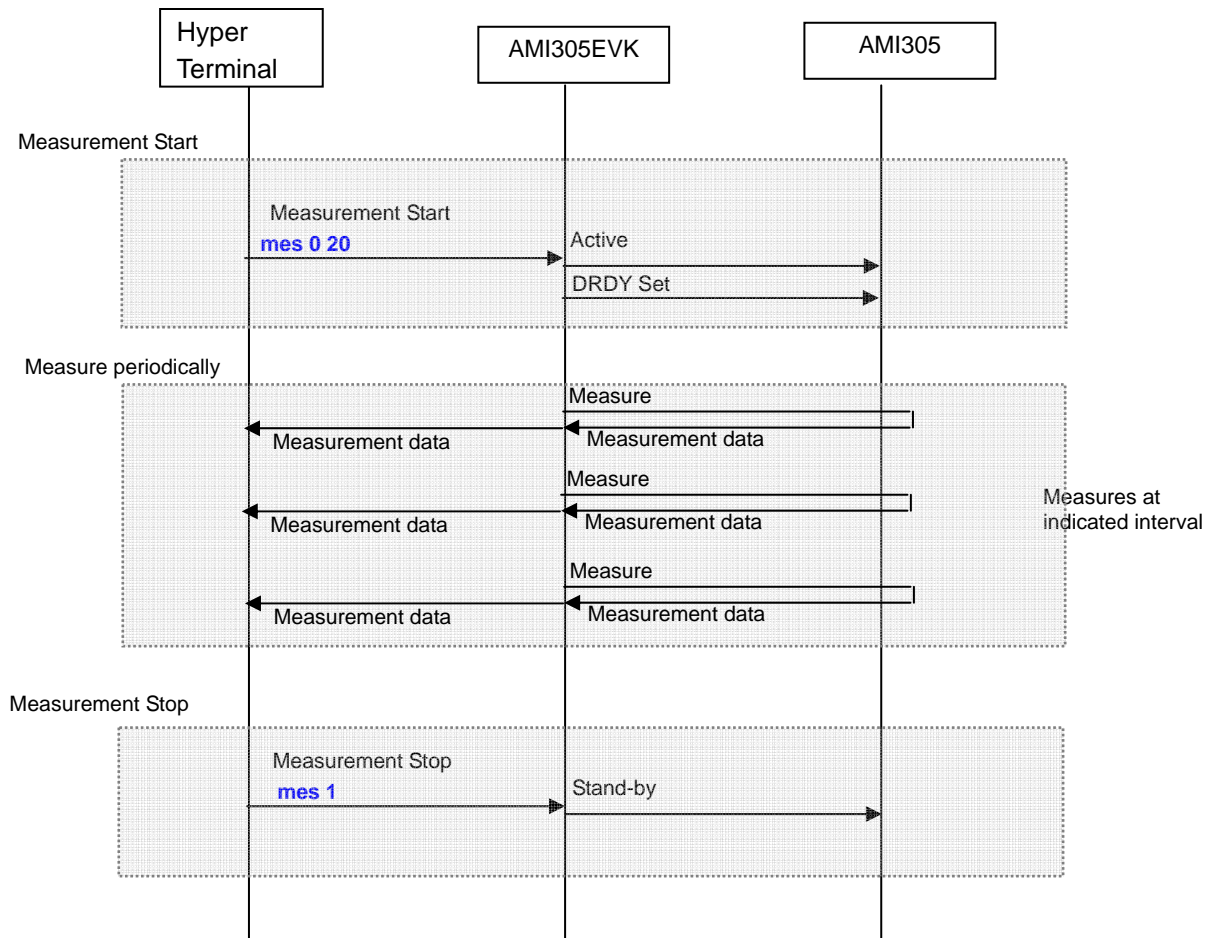
Detail	command	send parameter	recv parameter
Setting for origin adjustment value (coarse, fine)	ofs	Para1: x coarse (0) Para2: y coarse (0) Para3: z coarse (0) Para4: x fine (1-95) Para5: y fine (1-95) Para6: z fine (1-95)	None
Obtain origin adjustment values (coarse, fine)	ofg	None	Para1: X coarse Para2: Ycoarse Para3: Z coarse Para4: X fine Para5: Yfine Para6: Z fine
Power On/Off	pwr	Para1: 0: AMI305 Power Off 1: Ami305 Power On	None
Active Control	act	Para1: 0:Force-Active 1:Normal-Active (20Hz) 2:Normal-Active (10Hz)	None
Stand-by Control	sty	None	None
Obtain Status (Active / Stand-by)	rmg	None	Status
Carry out single measurement	mea	None	Para1: X Magnetism (LSB) Para2: Y Magnetism (LSB) Para3: Z Magnetism (LSB) Para4: X Acceleration (LSB) Para5: Y Acceleration (LSB) Para6: Z Acceleration (LSB) Para7: Temperature (LSB)

4.2.3. Debug Command

Detail	command	send parameter	recv parameter
I2C Write (Byte)	b2w	Para1: AMI305 Register Address Para2: Write Data (byte)	None
I2C Read(Byte)	b2r	Para1: AMI305 Register Address	Para1: Read Data (byte)
I2C Write (WORD)	w2w	Para1: AMI305 Register Address Para2: Write Data (word)	None
I2C Read (WORD)	w2r	Para1: AMI305 Register Address	Para1: Read Data (word)

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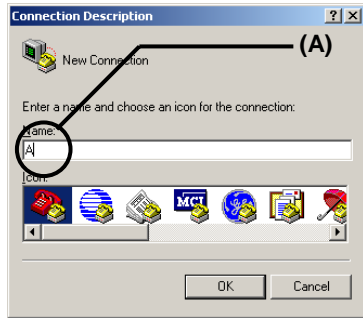
4.2.4 Sequence Example



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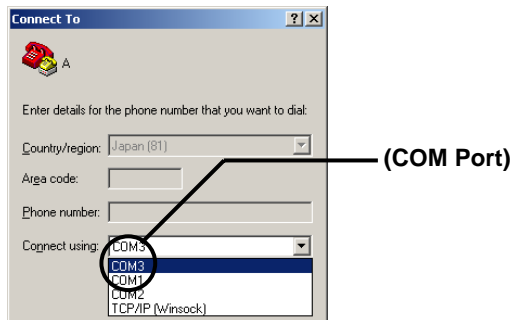
4.3 Connection Method

Step1) Launch HyperTerminal (File name: Arbitrary)

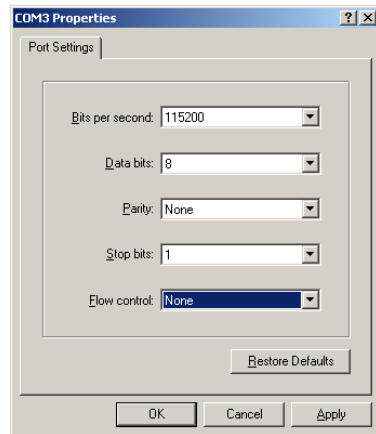


Step2) Enter file name (Arbitrary: Example (A) and click OK.

Step3) Select the COM port AMI305EVK is connected to.



Step4) Set as indicated in port settings in 3.1 Connection Specifications.

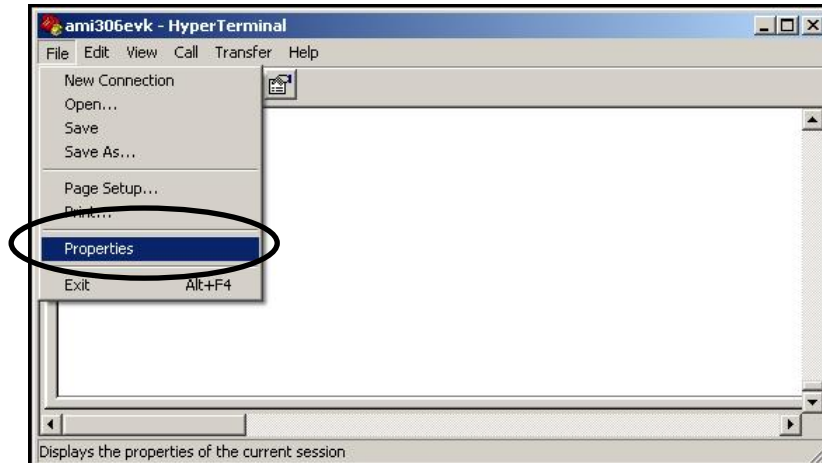


Connection Settings

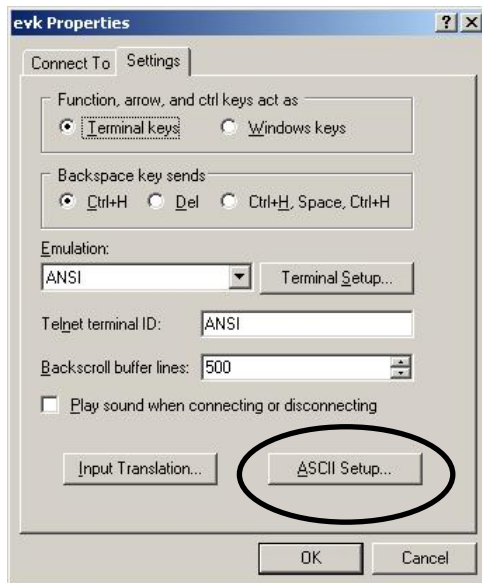
Item	Setting Value
Bit/second	115200
Data bit	8
Parity	None
Stop bits	1
Flow control	None

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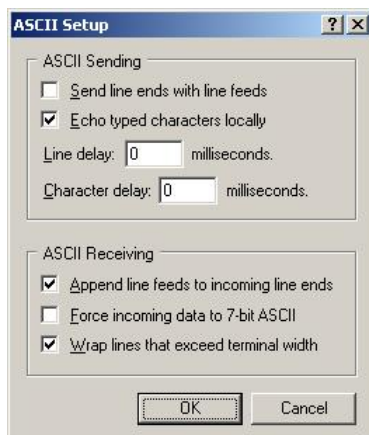
Step5) From the above menu, select File -> Properties.



Step6 Click ASCII Setup.



Step7 Carry out the settings below and click OK.



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Step8) After entering 『mes 0 20』 and pressing the return key, measurement will begin.

```

ami306evk - HyperTerminal
File Edit View Call Transfer Help
mes|OK:Measurement Start
mes|2099,2083,1841,2112,1937,3024,1890
mes|2098,2084,1839,2114,1934,3020,1891
mes|2096,2086,1841,2109,1935,3018,1890
  
```

Step9) Press return key after entering 『q』 and measurement will be paused.

```

ami306evk - HyperTerminal
File Edit View Call Transfer Help
mes|2098,2084,1841,2114,1933,3026,1890
mes|2098,2084,1843,2108,1940,3022,1890
mes|2098,2082,1840,2113,1935,3022,1890
qmes|2099,2083,1839,2112,1938,3022,1890
mes|2096,2086,1840,2111,1930,3020,1890
mes|2097,2088,1841,2117,1933,3016,1890
mes|2098,2084,1841,2115,1931,3027,1890
mes|2097,2082,1840,2111,1932,3024,1889
mes|2098,2085,1843,2113,1935,3025,1890
mes|2098,2086,1841,2112,1932,3021,1890
mes|2098,2086,1842,2117,1932,3020,1890
q|
Connected 0:01:06 ANSI 115200 8-N-1 SCROLL CAPS NUM Capture Print
  
```

Step10) Press return key after entering 『mes 1』 and measurement will stop.

```

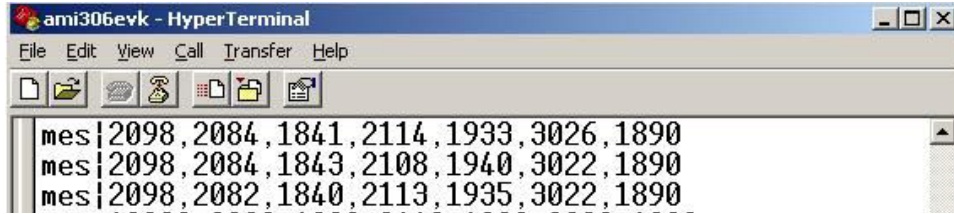
ami306evk - HyperTerminal
File Edit View Call Transfer Help
mes|2098,2082,1840,2113,1935,3022,1890
qmes|2099,2083,1839,2112,1938,3022,1890
mes|2096,2086,1840,2111,1930,3020,1890
mes|2097,2088,1841,2117,1933,3016,1890
mes|2098,2084,1841,2115,1931,3027,1890
mes|2097,2082,1840,2111,1932,3024,1889
mes|2098,2085,1843,2113,1935,3025,1890
mes|2098,2086,1841,2112,1932,3021,1890
mes|2098,2086,1842,2117,1932,3020,1890
mes|OK:Measurement Stop
  
```

Preliminary

4.4 Data Specification

(1) Data Format

The default data order is shown below.



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)	AMI305 Temperature
Symbol	Hx	Hy	Hz	Ax	Ay	Az	temp
unit	bit						

(※1) See AMI305 Delivery Specification for polarity.

(※2) See Kionix KXCJ9 datasheet for polarity.