# Electromagnetic Current Velocity Sensor for Laboratory use

Software Operation Manual

April 6, 2010 Version 1.02



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# Electromagnetic Current Velocity Sensor for Laboratory use Operation Manual Ver. 1.01

## 1-1. System Requirements

This software runs on Windows OS. We advise you to check your PC before installing.. The recommended environment is as below.-

CPU	Pentium 4 3.0GHz or higher
Memory	512MB or greater
Display resolution	$1280 \times 1024$ or less
OS	Windows 2000 SP4, Windows XP SP2
	(Not yet checked with Vista)

## 1.2. Install

Double clicking "setup/exe" in the CD starts the installation of the software into your PC. In some case, NET Framework may start to be installed. As this software use it, follow instructions appeared in the screen and install it

Follow the on-screen prompts appeared in each pane.

You can suspend the installation by pressing "Cancel" at any moment.



Click "Next" button.

😸 WinLabEM - InstallShield Wizard 🛛 🛛 🔀
Ready to Install the Program   If E Advantech Co., Lto     The wizard is ready to begin installation.   If E Advantech Co., Lto
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard. Current Settings:
Setup Type:
Typical
Destination Folder:
C:\Program Files\JFE Advantech\WinLabEM\
User Information: Name: Kobe Circuit Development Section Company: JFE Advantech
InstallShield
<u>A Back</u> Install Cancel

Click "Install" button, then the install starts

记 WinLab	EM - InstallShield Wizard
<b>Installing</b> The prog	WinLabEM ram features you selected are being installed.
12	Please wait while the InstallShield Wizard installs WinLabEM. This may take several minutes.
	Status:
InstallShield –	
	< <u>B</u> ack <u>N</u> ext > Cancel

Now on installing....



Click "Finish", then install has been completed.

## 1-3. Uninstall

- 1) Click <u>Start button</u> and select <u>Control Panel</u>.
- 2) Double click **Delete & Add of Programs** in Control Panel
- 3) Click "<u>**Remove**</u>" after selecting "WinLabEM"



Electromagnetic Current Velocity Sensor for Laboratory use Operation Manual Ver. 1.01 2) To boot the software

## 2-1. To boot the software

Click start button of Windows and then click

 $Program \ \rightarrow JFE \ Advantech \rightarrow WinLabEM \rightarrow \ WinLabEM \ in \ turn.$ 

If you have a shortcut on disk top, double click it.



The software of Electromagnetic Current Meter for Laboratory starts.

Following initiation screen is turned on.

🖸 WinLabEM - [Measure]					
<u> File View T</u> ools <u>W</u> indow <u>H</u> elp					_ <del>_</del> _ ×
🖻 🔚   🗾 🌆 🚺	k 💽 🕻		略略略		Windows XP 🗸
Measuring available			Grap	h 1	
Item Value					
📮 File Info.			S1	Depth	
File Name	_				
Start Date-Tin	96 -				
End Date-Time					
E Sensor 1					
Emm Depth	72 -				
	48 -				
	24 -				
		3	75 7	750 11	25 1500
Status				COM1	2007/04/24 17:46:02

## 2-2. To quit the software

To quit the software click **file**  $\rightarrow$  **close** or click **[x]** button at the right upper corner. You are not allowed to quit the software during measurement or on the way of setting zero point.

# 3) Setup

## 3-1. Comm Setup

Display the setup window from initiation screen or icon.



Here we set up which communication port I/F is to be connected with.

On clicking Comm Setup, following window shows up.

In case with which comm port I/F have not yet been designated to connect or in case the instrument is not detected at designated port, it shows up automatically.

🗾 Port Setting 🛛 🛛 🗙
Port Setting
Port
Auto
<u>A</u> uto Setting
Manual
Manual Setting

•Auto Setting

Click, Auto Setting button after you connect sensor and turn the power on.

Then, connecting port number will be searched for.

#### ·Manual Setting

It is to be used for manual setup before you connect sensor.



When you click here <u>at combo box</u>, COM port numbers currently connected to PC appear in dropdown window.

## 3-2. I/F Setup

Display the setup window from initiation screen or icon.

Click **Tool**  $\rightarrow$  **I/F setup** or Click **V** 

a management of the second	₩ I/F Setting		
WINLADEM - [Measure]	Selection of sensor to use		
🔜 File View Tools Window Help	Use ime constar S/N Sensor		
	Sensor 1 V 0.05 1 ACH-300RS		
🖻 🖃 🗾 🜆 🚺 🚱 🚦			
	<u>U</u> pdate		
-	Setting of sampling frequency		
	Sampling frequency [Hz] 50 (1-100)		
	Mayn't measure at designated frequency due to numbers of instrument or to your PC's efficiency		
	//F Setting		
	Make analog output		

#### 3-2-1. Selection of sensor to use

·It allows you the sensor you want to use displaying all sensor currently connected to PC

For the selection, check the box to use



Checked sensors are in use of measurement

•Change of time constant

You can change the time constant. (The water meter is not revokable.) Selectable among 0.05, 1.0 and 5.0 seconds

#### 3-2-2. Sampling frequency setup

You can select sampling frequency between 1-100Hz.

Setting of sampling frequency Sampling frequency [Hz] 50 (1-100)

Please be noted fastest sampling rate of 100Hz may not be executed depending on the ability of your PC or on the numbers of sensor connected (20Hz recommended).

#### 3-2-3. Analog output setup

Select whether you need analog output from I/F.

If checked, analog output is available(in default, not being checked)

L/F Setting Make analog output

## 3-3. Zero point setup

Setup zero point of the sensor selected.

Click **Tool**  $\rightarrow$  **Zero point setup** or Click

WinLabEM - [Measure]	0 Zero Point Setting
File View Tools Window Help	Select Sensor Sensor 1 Zero Point Last Update Current value Set value
	Depth 0.000000E+00
	Qlear Start on Receiving Start on setting   Setting Qlose

Select the sensor number to be set, and do that submerging the sensor in **still water**. After making the zero point setting, don't forget to verify before measurement.

First click **Start on Receiving** button for displaying current velocity. Then click **Start on setting** button at the moment you want to do zero point setting. 10minutes averaged value at 25Hz is calculated and the setting is completed.

(Clicking on **Clear** button returns to default)

If there is no unreasonable in the value, click **Setting** button to set it as zero point.

## 3-4. Coef setting

It is to read constant with which N-value is converted to calculated value.



💁 WinLabEM	– [Measure]				
<u> F</u> ile <u>V</u> iew	<u>T</u> ools <u>W</u> indow <u>H</u> elp				
: 💫 💷	<u>P</u> ort Setting				
: .	I/ <u>F</u> Setting				
Meas	<u>Z</u> ero Point Setting				
Item	Co <u>e</u> f Setting				
I≡ File Info. File Name	Option	😳 Coef. Setti	ng		
		Select Sensor	Sensor 1 🔽		
		Coef.			
			A	B	
		U	0.00000E+00	1000000E+00	
					<u>U</u> pdate
					<u>C</u> lose

You can select <u>the sensor</u> whose constant you want to display

😳 Coef. Setti	ing	
Select Sensor		•
-Coef	Sensor	1

Clicking Display Update reads the latest constant and displays it. (Only available for display. You cannot change the value)

## 3.5. Option

Here you can set up software.

Click **Tool**  $\rightarrow$  **Option** or Click

🖸 WinLabEM – [Measure]	Setting
File View Tools Window Help	File Setting     Raw File Folder     C#Alec Project#Visual Studio 2005#Projects#WinLabEt     Refer     CSV File Folder     C#Alec Project#Visual Studio 2005#Projects#WinLabEt     Refer     C appoint file name when recording data starts     Number to be recorded in a     60000   ( Up to 60000 )

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🖻 Setting 🛛 🗙
File Setting
-Folder Setting-
Raw File Folder
C¥Alec Project¥Visual Studio 2005¥Projects¥WinLabEN Refer
CSV File Folder
C¥Alec Project¥Visual Studio 2005¥Projects¥WinLabEN Refer

Folder setting

.

You can set the folder to reserve Raw and  $\ensuremath{\mathrm{CSV}}$  data.

Write on text box or select it in the dialog appeared when pushing refer button.

Compose engineering unit file simultaneously on recording data

Appoint file name when recording data starts

Number to be recorded in a 60000 ( Up to 60000 )

Compose CSV file on recording data

You can select during measurement whether RAW file (N-value file) and CSV file are composed at the same time.

If CSV file is added, measuring interval may be extended than original setting.

Designate file name on starting to record data

Dialog is displayed and file name is to be designated when data cording starts.

If not being checked in this edit box, it automatically composed in the format of **YYYYMMDD\_HHMMSS\_00001.RAW** 

Set the number of data to be recorded in a file

You can set the number of data to be recorded in a file. The maximum is limited as 60000

In case the number of data exceed the setting, files with the names of 00001  $\cdot$  99999 are composed in turn\_  $\!\!\!$ 

The name comes to 99999, measurement and recording cease automatically.

## 4) Measurement

#### 4-1. Start measurement

Click icon 🜔 , then measurement starts and graphic display and list display start.

💁 WinLabEM – [Measure]		
🔂 Eile <u>V</u> iew <u>T</u> ools <u>W</u> indow <u>H</u> elp		- 8 ×
		Windows XP 🗸
Measuring	Graph 1	
Item Value	S1 Depth	
File Name	01 bop(ii	
Start Date-Tim	96 -	
End Date-Time		
📮 Sensor 1		
Depth 162.00	72 -	
	<u></u>	
	24 -	
	375 750	1125 1500
Measuring	50 Hz   CO	M1 2007/04/24 18:09:32

- Click  $\bigcirc$ , then the display of graph and list ceases while data recording in file still is going when you get working. List display can be hidden by clicking [-] button.
- Click 💟 , during measurement stops measuring. If the data recording is in on the way, it also stops the recording.
- During the measurement is allows you to change the setting of graphical display.

#### 4-2. Record the data

Clicking gets data recording starting in file.

If you check the box of **Designate file name on starting data recording** in optional condition, a dialog shows up when recording starts. You can designate file name.

File recording is not on the way, Measuring sign appears at the lower left of the window.

When recording is taken, O appears and Recording sign at the place.

Click O to stop the recording

# 5) Raw file (N-value file) reading. Engineering Unit (CSV) file outputting

### 5.1. To read Raw file(N-value file)

To read Raw file(N-value file) and display graph, click **File**  $\rightarrow$  **Open File** or click icon

Select the file you want to read in the dialog.

When reading is completed, graph setup window appears. Do setting of graph.

🐌 Graph	Sett	ing					×
_Setting of	graph	ing ite	ems				
	Use		Sensor	Item	Color	Min	Max
Graph1	$\checkmark$	Y٦	Sensor 1 🛛 🔽	Depth 💌		1	100
		Y2	Not selected 💌	Not selected 💌		1	65535
Graph?		~1	Not selected V	Not selected 🗸		1	65535
on aprile	<u> </u>	Y2	Not selected V	Not selected V		1	65535
Graph3	<ul><li>✓</li></ul>	YI	Not selected 💙	Not selected 💙			65535
		Y2	Not selected 💙	Not selected 💌		1	65535
Graph4		YI	Not selected 💌	Not selected 💌		1	65535
		Y2	Not selected 💌	Not selected 💌		1	65535
Setting of	graph	horiz	ontal axis				
Data			1500				
Long time	e settin	ng ma	y affect measuring	velocity			
Initia	ize				<u>O</u> k		<u>C</u> ancel

Use	Select of use
Sensor	Select of sensors to
	be displayed in Y axis
Item	Select of displaying
Color	Select in graph line
Smallest	Value in Y axis
Biggest	Value in Y axis

In case the graph is used, make sure to select its sensor and item.

When graphical setting is completed, the data are displayed in the graph and in the list.

🔁 WinLabEM – [Graph]								
🞦 File View Iools Window Help		1 Million 10	10	×				
📄 🖬 🔛 💯 🕕 🚱	1 🛃 🔘 🕕 🔘 🛤 Ab		Windows XP	•				
1 💌 45 45 🚳 🛄 🛄								
Item Value								
File Info.		Graph 1						
- File Name 20061220_172004_0000		lel-X S1 Vel-Y						
- Start Date-Tin 2006/12/20 17:20:04	45000 m							
- End Date-Time 2006/12/20 17:23:51	00000 -		- 66000					
⊜ Graph 1	60000 -		- 60000					
- Axis Y1 VelX [cm/sec]	55000 -		- 55000					
- Axis Y2 VelY [cm/sec]	50000 -		- 50000					
😑 Graph 2	45000 -		- 45000					
- Axis YI	40000 -	<b>/</b>	- 40000					
- (# Axis Y2	<u>1</u> 35000 -		🖸 WinLabEM -	[Data List]				
E Graph 3	≧ 30000 -		🛄 Eile View Io	ols <u>Window</u> <u>H</u> elp				- e ×
The Axia Y2	25000 -		1 🕑 🔲 1	J V 0 P			125 M	Windows XP +
Graph 4	20000 -	10 A.						
- Axis YI	15000 -		1 <b>1 1 1 1</b>	1 MA1   🚳				
- Axio Y2	10000 -		Sensor 1 Sensor	y 2 Canony 2 Canony				
	5000 -		CONTRACT CONTRACT				D: 10/	
				日付 時刻	[cm/sec] [c	m/sec] [cm/sec]	C ]	
	500 1000 1500 20	0 2500 3000 3500 4000	1 20	06/12/20 17:20:04	32811.00	32765.00 46369.25	45.0	
			2 20	06/12/20 17:20:04	32800.00	32766.00 46362.17	45.0	
Status S1	VelX No558 Date-Time:2006/12/20 17:20:30 V	alue3 50 Hz COM1 1	3 20	06/12/20 17:20:04	32791.00	32773.00 46360.75	45.0	
			4 20	06/12/20 17:20:04	32807.00	32809.00 46397.52	45.0	
			5 20	06/12/20 17:20:04	32819.00	32833.00 46422.98	45.0	
			6 20	06/12/20 17:20:04	32900.00	32777.00 46369.94	45.0	
			7 20	06/12/20 17:20:04	3200800	32768.00 46369.24	45.0	
			9 20	06/12/20 17:20:04	32017.00	22707000 4037430 2277000 46277.72	450	
			10 20	06/12/20 17:20:04	32814.00	32795.00 46392.57	450	
			11 20	06/12/20 17:20:04	32830.00	32833.00 46430.75	45.0	
			12 20	06/12/20 17:20.04	32859.00	32852.00 46464.69	45.0	
			13 20	06/12/20 17:20:04	32878.00	32837.00 46467.53	45.0	
			14 20	06/12/20 17:20:04	32879.00	32810.00 46449.16	45.1	
			15 20	06/12/20 17:20:04	32853.00	32795.00 46420.16	45.1	
			16 20	06/12/20 17:20:04	32822.00	32797.00 46399.64	45.0	
			17 20	06/12/20 17:20:04	32814.00	32810.00 46403.18	45.0	
			18 20	06/12/20 17:20:04	32822.00	32829.00 46422.27	45.0	v .
			10 1 10	12004	nn neore	04 CONTRACT ON DE LA CONTRACT	AKOR	
			Status	S	1 VelX No:120 Date-T	Time:2006/12/20 17:20:09 V	alue3 50 Hz	COM1 2007/04/24 181647

Maximum 4 graphs are available at the same time. Expanded display is available by clicking and dragging on graphs. When multiple graphs are displayed, all are to be extended at same scale. An extension can be released by right clicking. Extended range is highlighted on the data list.

Sign of graph setting Selection of displayed graph Graph not in use is not selectable

### 5.2. Engineering unit file outputting

Data currently in reading are output are output in engineering unit file (CSV file). Click File  $\rightarrow$  Reserve in CSV file or Click icon

Below dialog appears, then input fine name and click Save button.

Enter file name	9						? 🛛
Savejn:	🞯 Desktop		~	G	ð 🖻	•	
My Recent Documents Desktop My Documents My Computer	Hy Documents My Computer	ıces					
	File <u>n</u> ame:	20080306_104443_00001.cs	v		~	]	<u>S</u> ave
My Network	Save as <u>t</u> ype:	CSV Files (*.csv)			*	]	Cancel

When extension of graph(range-selected) is applied, the data of the range are output.

## 6) Contents of files

#### 6-1. Headers

are same both in Raw file(N value file) and in engineering unit file with some exceptions. Information of data file and instrument is written.

[SoftWare] Name=WinLabEM SoftwareVersion=0.5.3 LogVersion=

[File] DataType=Raw

StartTime=2006/12/13 9:00:03 EndTime=2006/12/13 9:00:21 DateFormat=yyyy/MM/dd TimeFormat=HH:mm:ss DateSeparator=/ TimeSeparator=: DataNumber=551 FileNumber=1

[Measurment] StartTime=2006/12/13 8:59:58

#### [I/F]

Connect=1100 ModelName=ACM-4IF DeviceVersion= . FirmwareVersion=01.00 SerialNumber=65535

[Sensor1] Connect=1 ModelName=ACM2-RS DeviceVersion=01.00 FirmwareVersion=01.00 SerialNumber=1 SensorType=XY Channel=2 CoefMax=2 SubChannel=4 SubCoefMax=2 Ch11=0.000000E+00 Ch12=1.000000E+00

Ch12=1.000000E+00 Ch21=0.000000E+00 Ch21=0.000000E+00 Ch22=1.000000E+00 Software information

Application software name Version of Application software

#### File information

Data Type Raw=N-value Physical=Engineering Start Time of Recording Close Time of Recording Date Format Time Format For Data Separating For Time Separating Data Number File No. (A number from starting)

**Measurement information** Starting Time of measurement

#### I/F Setup

Connecting Status of Sensor in use Model Name Version of Device Version of Firmware Serial No.

#### Sensor 1 information

Being used in measurement Model Name Version of Device Version of Firmware Serial No. Type of Sensor Number of Sensor Channel Maximum Coefficient Number of Sub Coefficient Channel Maximum Sub Coefficient

Coefficient 1 of Ch1 Coefficient 2 of Ch1 Coefficient 1 of Ch2 Coefficient 2 of Ch2

SubCh11=0.000000E+00	Coefficient 1 of SubCh1
SubCh12=0.000000E+00	Coefficient 2 of SubCh1
SubCh21= 16465.74	Coefficient 1 of SubCh2
SubCh22 = 16388.90	Coefficient 2 of SubCh2
SubCh31=0.000000E+00	Coefficient 1 of SubCh3
SubCh32=0.000000E+00	Coefficient 2 of SubCh3
SubCh41=0.000000E+00	Coefficient 1 of SubCh4
SubCh42=0.000000E+00	Coefficient 2 of SubCh4
[Sensor2]	Sensor 2 information
Connect=0	
ModelName=ACM2-RS	
DeviceVersion=01.00	
FirmwareVersion=01.00	
SerialNumber=2	
SensorType=XY	
Channel=2	
CoefMax=2	
SubChannel=4	
SubCoefMax=2	
Ch11=0.000000E+00	
Ch12=1.000000E+00	
Ch21=0.000000E+00	
Ch22=1.000000E+00	
SubCh11= 4095	
SubCh12= $1$	
SubCh21=0.000000E+00	
SubCh22=0.000000E+00	
SubCh31=0.000000E+00	
SubCh32=0.000000E+00	
SubCh41=0.000000E+00	
SubCh42=0.000000E+00	
[Sensor3]	Sensor 3 information
Connect=0	No coefficient information is
ModelName=	available on the port not being
DeviceVersion=	connected
FirmwareVersion=	
SerialNumber=	
SensorType=	
Channel=	
CoefMax=	
SubChannel=	
SubCoefMax=	
[Sensor4]	Sensor 4 information
Connect=0	
ModelName=	

DeviceVersion=
FirmwareVersion=
SerialNumber=
SensorType=
Channel=
CoefMax=
SubChannel=
SubCoefMax=

## 6-2. Data part

Measured N-values are recorded in Raw file while measured data are recorded in engineering unit file.

Each datum is separated by [,] and one datum is written in a line. The lower the newer.

Data part in engineering unit file vary format by sensor.

Raw file

[Item]

Measuring year month and date, Measuring hour minute and second, Sensor1 Ch1 N-value, Sensor1 Ch2 N-value, ...... Sensor 4 ChX N-value,

Engineering unit file

[Item]

Measuring year month and date, Measuring hour minute and second, .... format for others varies by sensor



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