



## FLOWMETER PC LOADER SOFTWARE INSTRUCTION MANUAL

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Thank you very much for purchasing our PC Loader Software.Read this instruction manual carefully before using this personal computer communication software.

(\*) Caution: This manual is subject to change without prior notice.

# 1. OUTLINE

## 1.1. COPYRIGHT OF THIS SOFTWARE

• The copyright of this software belongs to Fuji Electric Systems Co., Ltd.No part of this software may be reproduced or transmitted in any form.

### 1.2. GENERAL

• Using this software, you can set, read and display relevant graphs of the Flowmeter on your PC with ease.

### **1.3. SYSTEM REQUIREMENTS**

### 1.3.1. PC main unit

• AT compatible-type with CPU Pentium IV 1 GHz/Celeron 1 GHz or more installed, display resolution of 1024 × 768, and use of small font recommended and CD-ROM drive.

### 1.3.2. Memory capacity

• 128 MB or more (256 MB or more recommended) [52 MB memory or more for free space required]

### 1.3.3. Interface

• More than one USB port is necessary.

### 1.3.4. OS

- Microsoft Windows 2000 Professional (SP4 or more)
- Microsoft Windows XP Professional (SP2 or more)
- Microsoft Windows Vista Susiness: Use it in Basic mode.
- It is not avairable for Windows Aero.
- Microsoft Windows 7 (Home Premium, Professional)

## 1.4. SCOPE OF DELIVERY

#### CD-ROM: 1

- Setup disk: Installing software to PC
- Instruction manual

# 2. INSTALLING OF SOFTWARE

## 2.1. Installing Microsoft Windows Installer 3.1

Note) this software is not required for PC which already installed Windows installer.

(1) Insert the setup disk into the drive, and double-click "WindowsInstaller-KB893803-v2-x86.exe" in the WindowsInstaller3.1 folder.

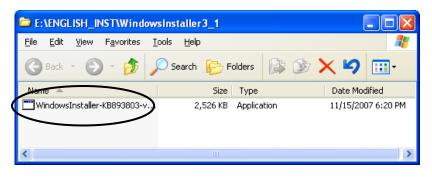


Fig. 2-1 File Installation

(2) Setting wizard will start up. Click the [Next] button.Click the [Cancel] button to cancel the installation.



Fig. 2-2 Wizard screen

(3) There is a query about the License Agreement, check the [I Agree] and click the [Next] button.Click the [Cancel] button to cancel the installation.The [Back] and the [Print] buttons are not used here.

Software Update Installation Wizard				
License Agr	eement			
Please read the following license agreement. To continue with setup, you must accept the agreement.         SUPPLEMENTAL END USER LICENSE AGREEMENT FOR MICROSOFT SOFTWARE ("Supplemental EULA")         IMPORTANT: READ CAREFULLY - The Microsoft operating system components accompanying this Supplemental EULA, including any "online" or electronic documentation ("OS Components") are subject to the terms and conditions of the agreement under which you have licensed the applicable Microsoft operating system product described below (each an Constitution of the agreement under which you have licensed the applicable Microsoft operating system product described below (each an Constitution)				
		< Back Nex	t> Cancel	
		< <u>B</u> ack <u>N</u> ex		

Fig. 2-3 License Agreement screen

(4) Screen for updating your system is displayed.Wait until installation is completed.

Software Update Installation Wizard					
Updating Your System					
Please wait while setup inspec your current files and updates y Installing files Details Installing file MSIEXEC.EXE	ets your current configuration, archives your files.				
	< Back Finish C	ancel			

Fig. 2-4 Updating Your System screen

(5) After installation, the installation complete screen appears. Check the "Do not restart new", click the [Finish] button.That is the end of installation for Microsoft Windows Installer 3.1.

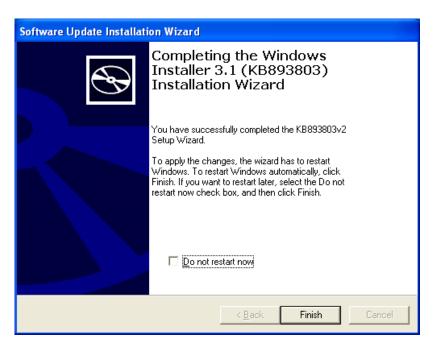


Fig. 2-5 Install Complete

# 2.2. Installing Microsoft .NET Framework Version 2.0

(1) Insert the setup disk into the drive, and double-click "dotnetfx.exe" in the FrameWork2.0 folder.

E:\ENGLISH_INST\FrameWork2.0						
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites (	ools <u>H</u> elp	A.				
Gark - 🕤 - 🏂 🍃	🔎 Search 😥 Folders	Х № 💷 ·				
Name 🔺	Size Type	Date Modified				
Gotnetfx.exe	22,960 KB Application	10/31/2007 3:33 PM				
		>				

Fig. 2-6 File Installation

(2) Setting wizard will start up. Click the [Next] button. Click the [Cancel] button to cancel the installation.

Hicrosoft .NET Framework 2.0 Setup	
Welcome to Microsoft .NET Framework 2.0 Setup	
This wizard will guide you through the installation process.	
	Next > Cancel

Fig. 2-7 Setup wizard screen

(3) There is a query about the End-User Liecemse Agreement, check the [I accept the terms of the License Agreement] and click the [Install] button. Click the [Cancel] button to cancel the installation. The [< Back] and the [Print] buttons are not used here.

🖟 Microsoft .NET Framework 2.0 Setup	
End-User License Agreement	
End-User License Agreement	~
MICROSOFT SOFTWARE SUPPLEMENTAL LICENSE TERMS MICROSOFT .NET FRAMEWORK 2.0	
Microsoft Corporation (or based on where you live, one of its affiliates) licenses thi supplement to you. If you are licensed to use Microsoft Windows operating system software (the "software"), you may use this supplement. You may not use it if you not have a license for the software. You may use a copy of this supplement with e validly licensed copy of the software.	n Jido
By clicking "I accept the terms of the License Agreement" and proceeding to use the product, I indicate that I have read, understood, and agreed to the terms of the El License Agreement.	
✓ I accept the terms of the License Agreement	
< <u>B</u> ack Install >	⊆ancel

Fig. 2-8 End-User License Agreement screen

(4) Screen is displayed to confirm installation. Click the [Cancel] button to cancel the installation.

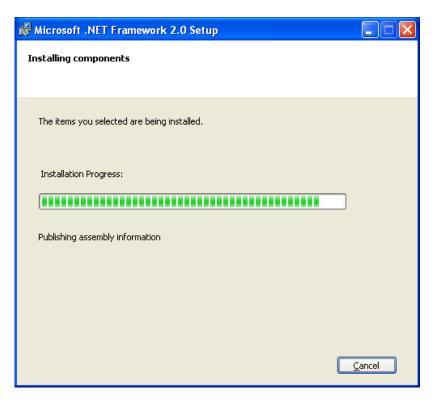


Fig. 2-9 Installation confirmation screen

(5) After installation, the Completion of Process Setting screen appears. Click the [Finish] button, and the installation of Microsoft .NET Framework Version 2.0 is completed.



Fig. 2-10 Setup Complete

## 2.3. Installing of USBExpress

(1) Insert the setup disk into the drive, and double-click "USBXpressInstaller.exe" in the USBExpress folder.

E:\ENGLISH_INST\USBExp	ress		
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites ]	ools <u>H</u> elp		
🕞 Back 👻 🌍 🔹 🏂 🍃	🔘 Search 🛛 🍺 Folde	ers 🕼 🎯 >	< 4 🔟 -
Name 🔺	Size T	уре	Date Modified
🛅 x64	Fil	le Folder	4/8/2008 7:21 PM
🚞 x86	Fil	le Folder	4/8/2008 7:21 PM
🣴 setup.ini	1 KB - Co	onfiguration Settings	10/15/2007 7:55 PM
🗃 siusbxp.cat	12 KB - Se	ecurity Catalog	3/1/2007 12:11 PM
Sitosexp.inf	2 KB Se	etup Information	10/31/2007 6:42 PM
🔀 USBXpressInstaller.exe	284 KB Ap	pplication	10/15/2007 7:55 PM



(2) Installer will start up. Click the [Install] button. Click the [Cancel] button to cancel the installation. The [Change Install Location] button is not used.



Fig. 2-12 Installer screen

(3) If the warning on the windows logo test is indicated, click the [Continue Anyway] button to continue the operation.

Software Installation				
♪	The software you are installing has not passed Windows Logo testing to verify its compatibility with Windows XP. ( <u>Tell me why</u> <u>this testing is important.</u> ) Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the software vendor for software that has passed Windows Logo testing.			
	Continue Anyway			

Fig. 2-13 Software Instration screen

(4) After installation, the installation complete screen appears. Click the [OK] button, and the installation of USBExpress is completed.



Fig. 2-14 Installation complete screen

### 2.4. Device Recognition

(1) After the setup in "Section 2.1, 2.2 and 2.3" are normally completed, connect the Flowmeter to the PC with USB cable. Found New Hardware Wizard will start up. Check the [Install from a list or specific location (Advanced) (S)] button and click the [Next] button. Click the [Cancel] button to cancel the installation.



Fig. 2-15 Found New Hardware Wizard

(2) The Found New Hardware Wizard appears. Check the [Don't search. I will choose the driver to install (D)] and click the [Next] button. Click the [Cancel] button to cancel the installation. The [Back (B)] button is not used here.

Found New Hardware Wizard				
Please choose your search and installation options.				
O Search for the best driver in these locations.				
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.				
Search removable media (floppy, CD-ROM)				
Include this location in the search:				
C: Browse				
O Don't search. I will choose the driver to install.				
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.				
< <u>₿</u> ack <u>N</u> ext > Cancel				

Fig. 2-16 Found New Hardware Wizard 2

(3) The Found New Hardware Wizard appears. Select the device driver to be installed for this hardware. Select the [USBExpress Driver] indicated in the [Model], and click the [Next] button. Click the [Cancel] button to cancel the installation. The [Back] button is not used here.

Found New Hardware Wizard				
Select the device driver you want to install for this hardware.				
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.				
Model				
USBXpress Device				
Image: This driver is not digitally signed!       Have Disk         Tell me why driver signing is important       Have Disk				
< <u>B</u> ack <u>N</u> ext > Cancel				

Fig. 2-17 Found New Hardware Wizard 3

(4) If the warning on the windows logo test is indicated, click the [Continue Anyway] button to continue the operation. Screen is displayed to confirm installation. Wait until installation is completed.

Har dwa	re Installation
<u>.</u>	The software you are installing for this hardware: USBXpress Device has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.) Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
	Continue Anyway

Found New Hardware Wizard				
Please wait while the	wizard installs the	software		E)
Constant USBXpress	Device			
	) a system restore point our system needs to be			
		< <u>B</u> ack	<u>N</u> ext >	Cancel

Fig. 2-18 Installation confirmation screen

(5) After installation, the installation complete screen appears. Click the [OK] button, and the device recognition is completed.

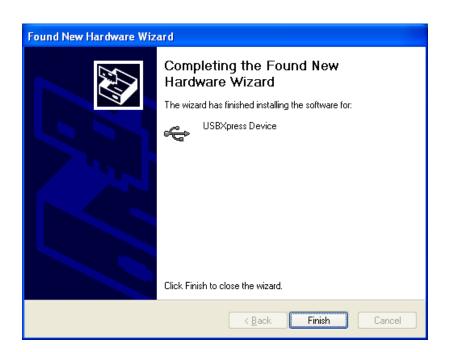


Fig. 2-19 Installation complete screen

## 2.5. Installing of Loader Software

(1) Insert the setup disk into the drive, and double-click "FSC\_SETUP\_ENG.msi".



Fig. 2-20 File Installation

(2) Setting wizard will start up. Click the [Next] button. Click the [Cancel] button to cancel the installation.

B FSC ENG	x
Welcome to the FSC ENG Setup Wizard	5
The installer will guide you through the steps required to install FSC ENG on your	computer.
WARNING: This computer program is protected by copyright law and internation Unauthorized duplication or distribution of this program, or any portion of it, may re or criminal penalties, and will be prosecuted to the maximum extent possible under	esult in severe civil
Cancel < Back	Next >

Fig. 2-21 Setup wizard screen

(3) There is a query about selection of installation folder. Click the [Next] button to install the software in that folder. Click the [Cancel] button to cancel the installation. The [Back (B)], the [Print (P)] and the [Disk range (D)] buttons are not used here.

岁 FSC ENG	
Select Installation Folder	5
The installer will install FSC ENG to the following folder.	
To install in this folder, click "Next". To install to a different folder, enter it be	ow or click "Browse".
Eolder: C¥Program Files¥FSC ENG¥	Browse
Install FSC ENG for yourself, or for anyone who uses this computer	
Just me     Cancel <back< td=""><td>Next &gt;</td></back<>	Next >

Fig. 2-22 Select installation folder screen

(4) Screen is displayed to confirm installation. Click the [Next] button to execute the installation. Click the [Cancel] button to cancel the installation. The [Back (B)] button is not used here.

闄 FSC ENG	
Confirm Installation	5
The installer is ready to install FSC ENG on your computer.	
Click "Next" to start the installation.	
Cancel < Back	Next >

Fig. 2-23 Installation confirmation screen

(5) Execute installation. Click the [Cancel] button to cancel the installation.

谩 FSC ENG	
Installing FSC ENG	5
FSC ENG is being installed.	
Please wait	
Cancel < Back	Next >

Fig. 2-24 Installing screen

(6) The Installation Complete screen is displayed. Click the [Close] button to exit the installation screen.

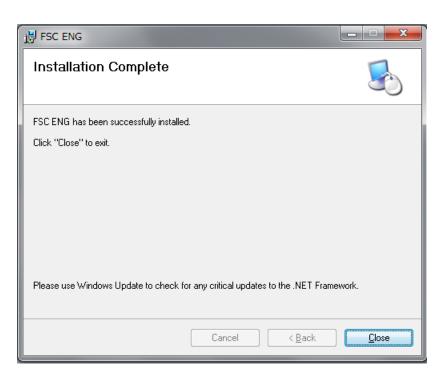


Fig. 2-25 Installation complete screen

(7) After installation, the start menu and the application ("Flowmeter") that has been installed in the desktop are created.

# 3. Communication Specification

See the following table for communication specifications.

(1) Genearal specification

Item	Specifications
Standard (Electrical specification)	USB communication
Transmission system	Half-duplex
Synchronizing method	Start-stop synchronous transmission
Transmission rate	500kBPS
Parity	Odd-parity
Start/Stop bit	1 bit
Data length	8 bits
Station	0 fixed
Number of units connected	Max. 1
Transmission code	HEX value (MODBUS RTU mode)
Error detection	CRC-16
Echo back	None
Flow control	Xon/of

Table 3-1 Communication specifications

Interface specification
 Electrical specification: Confirms to USB standard.
 Cable length: 3m or less
 Conforming cable: Mini USB cable
 Connection scheme: 1:1 connection.

# 4. Startup Method

Select "Flowmeter" from the Start menu and the following Menu screen appears.

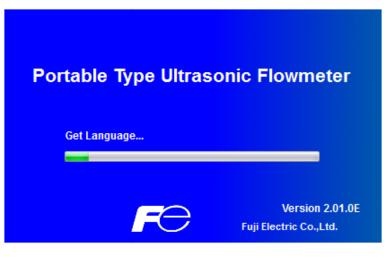


Fig. 4-1 Startup screen

- The Menu Window (Fig. 4-2).
  - At this time, read the ini file, perform communication with the flowmeter, and the unit information is acquired.
- If error occurs during communications, a pop-up message "Check the connection" is displayed. Check the connection using the wired device.

Portable Type Ultrasonic Flowmeter						
Version						
123.45 2500 - 0.999	⊐Ъ	$\Rightarrow$	ΪÅ			
MEASURE LOGGER DATA	SITE SETUP	FLOW PROFILE				Quit
WEASURE LOUGER DATA	SITE SETUP	FLOW PROFILE	MAINTENANCE			Quit
				ENGLISH	METRIC	11:59

Fig. 4-2 Menu screen

Click the Main menu and each function button to execute a desired function

### 4.1. Version

On the Menu screen, click "Version" of the main menu item, and the following screen appears.



Fig. 4-3 Version screen

• Click the [X] button on the upper right to close the screen.

# 5. Setting Screen

Set the check box of each setting item to ON " $\square$ " so that the item can be input or selected. When it is set to OFF " $\square$ ", the item cannot be input or selected. Click the [Set up] and send the setting value of the item (check box set to ON " $\square$ ") one by one, and reflect the response value to the setting value. Click the [load] and read the setting value of the item (check box set to ON " $\square$ ") one by set to ON " $\square$ "), and reflect the response value to the setting value. Click the [load] and read the setting value of the item (check box set to ON " $\square$ "), and reflect the response value to the setting value. Click the [Save] and write the current setting value into Flash ROM. If you change your setting, this operation above must be required.

When the unit in the system setting is changed, it reflects the corresponding item. Be sure to reflect the setting value or the range unit after reading is completed. (The flowmeter returns values in a unit specified.) The values are displayed in a set unit. (Read or change the unit when the flowmeter is started. You cannot change the unit by key operation at the loader.)

In the case of the unit whose input range is limited, the input value is not checked by the loader and sent as it is. The range is checked on the flowmeter side. If the range is exceeded, the flowmeter does not update the request and respond the current value.

- 🔨 CAUTION \_\_\_\_\_

• For changing Flow meter setting, make sure to switch from flow meter screen to measurement screen.

If the setting change is operated except measurement screen, communication error will occur

# 6. Measurement

Click the "MEASURE" button on the Menu screen, and the following screen appears.

Moment Value	FLOW RAT		VELOCITY 2.114 [m/s]	+TOTAL(ACTUAL)	-TOTAL(ACTUAL)
FLOW RATE	FLOW RAT		RAS INFO.		ANALOG INPUT CH2
DISP.2		.023 [%]	Normal		
	THERMAL		THERMAL FLOW(%)	+TOTAL(THERAMAL)	-TOTAL(THERAMAL)
*		0 [MJ/h]	0 [%]		
		,	FEEDING TEMP.	RETURNING TEMP.	DIFFEREIAL TEMP.
START Stop	SCALE SETTING	Save As CSV	0 [C]	0 [C]	0 [C]
			ATE[m3/h] No Select		
300					
280					
260					
240					
220 -					
200					
180					
160					
140					
120					
100					
80					
60					
40					
	<b>•</b>				
			+++++++++++++++++++++++++++++++++++++++	80 500 520 540 560 580 600	+++++++++++++++++++++++++++++++++++++++

Fig. 6-1 MEASURE screen

- First, select instantaneous trend value from [FLOW RATE], [FLOW RATE%], [VELOCITY], [THERMAL FLOW], [THERMAL FLOW%], [ANALOG INPUT1], [ANALOG INPUT2], [FEEDING TEMP], [RETURNING TEMP] and [DIFFEREIAL TEMP].
- Up to 2 instantaneous values can be selected.
- Click the [SCALE SETTING] button to set [Max.] and [Min.] of Y scale and [Cycle] and [Point] of X scale. Press the [Setting] button to reflect the setting.Press the [Cancel] button to cancel the setting. When setting is not made, the initial value is reflected.

🔦 SCALE SET	TING			X
Scale Y:Scale	Max.	150	Min.	-150
X:Scale	Cycle	1 [se	ec] Point	300
			Setting	Cancel

Fig. 6-2 Scale setting screen

• Click the [Save as CSV] button and you are prompted to enter the name of a file to which the data is to be saved. Specify the destination to save and enter the file name, and a CSV file is created. When the save file is set, the [START] button can be pressed. If number of data exceeds 65531, create a separate file to save the data. Note that the number of files to be created (serial number) is up to 500.

A	В	C	D	E	F	G	н	I	
<the data="" measurement=""></the>									
TIME	'VELOCITY[m/s]	'FLOW RATE[m3/h]	FLOW RATEN[N]	'+TOTAL(ACTUAL)[m3]	'-TOTAL(ACTUAL)[m3]	'ANALOG INPUT CH1	'ANALOG INPUT CH2	'THERMAL FLOW[MJ/h]	'TH
2008/05/05 16:53:49	0	0	0	0	0	-24.986	-24.94		0
2008/05/0516:53:50	0	0	0	0	0	-24.988	-24.941		0
2008/05/05 16:53:51	0	0	0	0	0	-24.988	-24.941		0
2008/05/05 16:53:52	0	0	0	0	0	-24.984	-24.941		0
2008/05/05 16:53:53	0	0	0	0	0	-24.984	-24.943		0
2008/05/05 16:53:54	0	0	0	0	0	-24.991	-24.944		0
2008/05/05 16:53:56	0	0	0	0	0	-24.995	-24.944		0
2008/05/0516:53:56	0	0	0	0	0	-24.995	-24.941		0
2008/05/05 16:53:57	0	0	0	0	0	-24.993	-24.941		0
2008/05/05 16:53:58	0	0	0	0	0	-24.989	-24.943		0
2008/05/0516:54:00	0	0	0	0	0	-24.989	-24.942		0
2008/05/05 16:54:01	0	0	0	0	0	-24.99	-24.942		0
2008/05/05 16:54:01	0	0	0	0	0	-24.99	-24.939		0
2008/05/05 16:54:02	0	0	0	0	0	-24.991	-24.939		0
2008/05/05 16:54:04	0	0	0	0	0	-24.988	-24.941		0
2008/05/05 16:54:05	0	0	0	0	0	-24.988	-24.937		0
2008/05/05 16:54:05	0	0	0	0	0	-24.989	-24.937		0
2008/05/05 16:54:07	0	0	0	0	0	-24.989	-24.941		0
2008/05/05 16:54:08	0	0	0	0	0	-24.991	-24.941		0
2008/05/05 16:54:08	0	0	0	0	0	-24.989	-24.939		0
2008/05/05 16:54:09	0	0	0	0	0	-24.989	-24.947		0
2008/05/05 16:54:10	0	0	0	0	0	-24.993	-24.947		0
2008/05/05 16:54:11	0	0	0	0	0	-24.993	-24.941		0
2008/05/05 16:54:13	0	0	0	0	0	-24.987	-24.943		0
2008/05/05 16:54:13	0	0	0	0	0	-24.989	-24.943		0
2008/05/05 16:54:14	0	0	0	0	0	-24.989	-24.941		0
2008/05/05 16:54:16	0	0	0	0	0	-24.99	-24.941		0
2008 (05 (05 16 5415 ↓ ▶ ▶ \ a20080505165	0	0	0	0		-94.00	_94.020		0

Example) Setting file name \_ YYYYMMDDHHMMSS \_ XXX (3-digit serial number. 1 START)

• Click the [START] button, and the trend is displayed (X-axis is a collection time. When the specified number of items is stored, the oldest data is deleted and the time display is changed so that the latest value is displayed.), the data is read in the specified cycle, and the following are updated: [FLOW RATE], [FLOW RATE%], [VELOCITY], [THERMAL FLOW], [THERMAL FLOW%], [ANALOG INPUT1], [ANALOG INPUT2], [FEEDING TEMP], [RETURNING TEMP], [DIFFERELAL TEMP], [+TOTAL(ACTUAL)], [-TOTAL(ACTUAL)], [+TOTAL(THERMAL)], [-TOTAL(THERMAL)], [RAS INFO.].The line of graph in the display 1 is blue and that in the display 2 is red. For stop collecting, click [Stop].

# 7. Logger data

Click the "Logger data" button on the Menu screen, and the following screen appears.

Portable Type Ultrasonic Flowmeter - [LOGGER DATA ] Version	
MEASURE LOGGER DATA SITE SETUP FLOW PROFILE MAINTENANCE	Quit
LOGGER DATA LOGGER DATA LIST LOGGER DATA No. LOGGER DATA LIST NUMBER OF REGIST. LOGGER DATA	
LOGGER DATA No.	
LOGGER DATA LIST DISPLAY LOGGER DATA LIST CLEAR	
LOGGER DATA READ	
SAVE FILE NAME	
2016/02/03 12:02:39 Reading of Data Logger was started ENGLISH METRIC	12:04

#### Fig. 7-1 LOGGER DATE screen

Item	Contents
Logger data list	Name list of the logger data numbers from 0 to 100. You cannot select multiple data. To select a logger data in the list to be read, check the check box of the logger data.
Logger data number	Displays the logger data number selected in the list.
Number of logger data registered	Displays total number of logger data files registered.
Logger data number Setting	To display a [LOGGER DATE LIST] of an arbitrary first and subsequent data, manually input the first logger data number.
Logger data list display	Redisplays the logger data list from the [LOGGER DATE No] (setting).
Storage	Specify the storage area for logger data during read operation. If specified, press the [READ] button to save the file.
Name of save files	Full pathname including a name of a destination file to save data that is specified in the "Select a destination to save the data" is displayed. You cannot directly edit this item. The extension of save files is in CSV format.

#### Table 7-1 LOGGER DATE screen specifications

### 

The time of reading logger data to PC will take about 25 min. in case of 1.6MB.
 The reading will take time for a while; regularly reading SD memory card directly via a PC is recommended.

# 8. Site Setting

Click the "SITE SETUP" button on the Menu screen, and the following screen appears.

EASURE LOGGE		PROFILE	MAINTENANCE			Qu
SITE MEMORY	PROCESS SETT	NG	UNITOF	OUTPUT/OUTPU	T CONTROL	
SITE	MEMORY Setting					
	SITE NUMBER SITE NAME		SITE NUMBER	SITE NAME	SITE NAME	
dian 0	2	0000	17 18			
	2 3 4	00	19 20		Reading o	of Site List
S D	5 6 7	0				
	7	-0	21 22 23 24 25 26		REGIST	RATION
EAD	8	00	24		-	
2 8	10	0			DEL	ETE
3	12	0	27 28 29 30		155	
	13	0000	29			
	15	ő	31			
0	16	. 0	32		1	

Fig. 8-1 SITE MEMORYscreen

PROCESS S OR SPACING OR SPACING2 R DIAMETER MATERIAL 3.V. THICKNESS	ETTING jmmj (mmj (msj) (msj)	SEM D S D TI D S	ITPUTIOUTPUT CONTR ISOR ENSOR MOUNT RANS. VOLTAGE ENSOR TYPE	ROL	+ - [Vpp]
OR SPACING2 R DIAME TER MATERIAL	(mm) (m/s)		ENSOR MOUNT		
OR SPACING2 R DIAME TER MATERIAL	(mm) (m/s)		RANS. VOLTAGE		- [Vpp]
MATERIAL B.V.	[mva]	ÐS			
3,V,			ENSOR TYPE		
		755			
THICKNESS	(mm)	700			
		LER	ROADJUSTMENT		
G MATERIAL	+		CLEAR	SETZER	05
3 S.V.	(m/s)		the monotone		
G THICKNESS	[mm]				
OF FLUID	+				
S.V.	[m/s]				
ISITY	[E-6m2	5]	SITE NAM	E	
	S.V.	DF FLUID         +           S.V.         [m/s]	S.V.	S.V. [mb]	SV. [ms]

Fig. 8-2 PROCESS SETTING screen

NEASURE	LOGGER DATA	SITE SETUP	FLOW PROFILE	НАНТЕНАНСЕ			Quit
SITE ME	MORY	PROCESS	SETTING	UNIT OF OUTPUT/C	UTPUT CONTROL		
	UNIT OF OU	TPUT		OUTPUT CONTROL			
1231	FLOW	UNIT		DAMPING			
Setting				DAMPING		[sec]	
	TOTAL	UNIT		CUTOFF			
READ				CUT OFF		[m/s]	
_	TEMP	ERATURE		CALIBRATION			
Save				ZERO		[m/s]	
Check ON/OFF	15 THER	MAL FLOW UN	IT	🗂 SPAN		[%]	
	TOTAL	UNIT(THERA	MAL)				
		,			SITE NAME		
					ENGLISH	METRIC	1328

Fig. 8-3 UNIT OF OUTPUT/OUTPUT CONTROL

### 8.1. Site Memory

Select Tab Page 1 on the SITE SETUP screen and the following screen appears.

Portable Type UI Version 123.45 2800 - 0.699 MEASURE SITE MEN	LOGGER		1		LE		ουτρυτ/ουτρι	JT CONTROL		Quit
	SITE M	EMORY Setting	J							
		SITE NUMBER	SITE N/	AME		SITE NUMBER	SITE NAME	SITE NA	ME	
	۲	1			0	17				
Setting		2			0	18 19		-		
	õ	4			õ	20		Rea	ding of Site L	ist
		5			0	21			-	
	0	6			0	22 23			EGISTRATIO	N
READ	õ	، ع			õ	24			EGISTRATIO	
	0	ç	)		0	25				
		10			0	26		_	DELETE	
-		11			0	27 28		_		
_	0	13			ŏ	29		_		
Save	0	14			0	30				
		15			0	31 32		_		
		16			0	32				
								ENGLISH	METRIC	13:23

#### Fig. 8-4 SITE MEMORY screen

Table	8-	1
-------	----	---

Item	Contents
Site memory setting	Name list for site memory number 1 to 32. The number of lists to be displayed is fixed to 32 and multiple selections are not allowed. Check the site number 1 in case of initial display.
Site name	Displays the name of site memory selected in the list.
Reading of Site list	Pressed when the site memory list is being acquired. Acquire the name list for site memory number 1 to 32 to be displayed in the site memory setting.
REGISTRATION	Registers the site memory as a new entry. On the site memory setting list, select the site number that has not been registered in the site memory, and press it after entering the site name.
DELETE	Deletes the site memory. On the site memory setting list, select the site number registered in the site memory, and press it.

• Press the [Setting] button, and set all the tab pages of the site setting only on this screen. The setting is performed only for checked setting items in the [PROCESS SETTING] and [UNIT OF OUTPUT/OUTPUT CONTROL] pages.

• Press the [READ] button, and set all the tab pages of the site setting only on this screen. The setting is performed only for checked setting items in the [PROCESS SETTING] and [UNITOF OUTPUT/OUTPUT CONTROL] pages.

## 8.2. Establish Setting

Version Version 123.45 2500 - 0.999 MEASURE	Ultrasonic Flowmeter - [SITE SET	<u></u>	MAINTENANCE	Quit	X
SITE M	EMORY PROC	ESS SETTING	UNITO	OF OUTPUT/OUTPUT CONTROL	
	PIPE			SENSOR	
	SENSOR SPACING		[mm]		
Setting	SENSOR SPACING2			TRANS. VOLTAGE	
	OUTER DIAMETER		[mm]		
	PIPE MATERIAL		<b>*</b>		-
READ	PIPE S.V.		[m/s]		
	WALL THICKNESS		[mm]		
	LINING MATERIAL		<b>•</b>	CLEAR SET ZERO	
Save	LINING S.V.		[m/s]		
Check ON/OFF	LINING THICKNESS		[mm]		
	KIND OF FLUID		<b>*</b>		
	FLUID S.V.		[m/s]		
			[E-6m2/s]	SITE NAME	
				ENGLISH METRIC 13:25	

Fig. 8-5 PROCESS SETTING screen

Item	Contents
OUTER DIAMETER	Enter in the range of 13.00 to 6000.00mm [0.5118 to 236.22inch].
PIPE MATERIAL	Select from carbon steel, stainless steel, PVC, Copper, Cast iron, aluminum, FRP, ductile iron, PEEK, PVDF, acrylic, PP and others.
PIPE S.V.	Enter in the range of 1000 to 3700m/s [3280 to 12140ft/s].(Unit dependent)
WALL THICKNESS	Enter in the range of 0.10 to 100.00mm [0.0039 to 3.9370inch].(Unit dependent)
LINING MATERIAL	Select from no lining, tar epoxy, mortar, rubber, Teflon, pyrex, glass, PVC and others.
LINING S.V.	Enter in the range of 1000 to 3700m/s [3280 to 12140ft/s].(Unit dependent)
LINING THICKNESS	Enter in the range of 0.01 to 100.00mm [0.0003 to 3.9370inch].(Unit dependent)
KIND OF FLUID	Select from water, seawater, dist. water, ammonia, alcohol, benzene, bromide, ethanol, glycol, kerosene, milk, methanol, toluol, lube oil, fuel oil, petrol and others.
FLUID S.V.	Enter in the range of 300 to 2500m/s [984 to 8203ft/s].(Unit dependent)
VISCOSITY	Enter in the range of 0.0010 to $999.999 \times 10^{-6} \text{ m}^2/\text{s}$ [0.0107 to $10763.9094 \times 10^{-6} \text{ ft}^2/\text{s}$ ].(Unit dependent)
SENSOR SPACING	Displayed during [READ] only.
SENSOR SPACING	Displayed during [READ] operation or when the sensor type is FSSA/FSSG or FLS_12/FLS_22.

#### Table 8–2 Piping specifications

- If "Other" is selected as pipe material, pipe sound velocity becomes valid.
- If "Other" is selected as lining material, lining sound velocity becomes valid.
- If other than "No lining" is selected as lining material, lining thickness becomes valid.
- If "Other" is selected as fluid type, fluid sound velocity becomes valid.

Item	Contents		
SENSOR MOUNT	Select from Z method and V method.		
TRANS. VOLTAGE	Select from 20, 40, 80 and 160.		
SENSOR TYPE	Select from FSD12/FLD12, FSSD/FSD22/FLD22, FSSH, FSSC, FSSF, FLD11/FSG31/FLW11, FSG32/FLW12, FSD32/FLD32/FLW32, FSD41/FLD41/FSG41/FLW41, FSD51/FLD51/FSG51/FLW51, FSSE/FSG50/FLW50, FSSA/FSSG, FLS_12/FLS_22, FSW12, FSW21, FSW40 and FSW50.		

Table 8–3 Sensor specifications

#### Table 8-4 Zero point calibration specifications

Item	Contents
ZERO ADJUSTMENT	Perform zero point calibration using the Clear and the Adjust button. ZERO ADJUSMENT is different from the method below of other parameters. Click the [Setting] button and display the confirmation message screen.

• The site name which belongs to reading/writing information is displayed in SITE NAME.

# 8.3. Output unit/Output control

Select Tab Page 3 on SITE SETUP screen and the following screen appears.

Portable Type Ultras	sonic Flowmeter - [SITE SETUP]				
Version					
123 45 2800 - 0.999 MEASURE L	LOGGER DATA	FLOW PROFILE			Quit
SITE MEMO	RY PROCESS	SETTING	UNIT OF OUTPUT/C	UTPUT CONTROL	
-L	JNIT OF OUTPUT		OUTPUT CONTROL		
	E FLOW UNIT		DAMPING		
Setting	<b>•</b>			[sec]	
	TOTAL UNIT		CUTOFF		
READ	-		CUT OFF	[m/s]	
	TEMPERATURE		CALIBRATION		
Save	-		🗖 ZERO	[m/s]	
	THERMAL FLOW UNI	т	SPAN	[%]	
Check ON/OFF	•			[]	
	TOTAL UNIT(THERAM	IAL)			
	· · · · · · · · · · · · · · · · · · ·				
				SITE NAME	
				ENGLISH METRIC	: 13:28

Fig. 8-6 UNIT OF OUTPUT/OUTPUT CONTROL

Table 8-5 Output unit specifications	Table 8-5	Output uni	t specifications
--------------------------------------	-----------	------------	------------------

Item	Contents
System Unit	Metric or inch
FLOW UNIT	Select from L/s, L/min, L/h, L/d, kL/d, ML/d, m3/s, m3/min, m3/h, m3/d, km3/d, Mm3/d, BBL/s, BBL/min, BBL/h, BBL/d, kBBL/d, MBBL/d [gal/s, gal/min, gal/h, gal/d, kgal/d, Mgal/d, ft3/s, ft3/min, ft3/h, ft3/d, kft3/d, Mft3/d, BBL/s, BBL/min, BBL/h, BBL/d, kBBL/d and MBBL/d]
THERMAL FLOW UNIT	Select from mL, L, m3, km3, Mm3, mBBL, BBL, kBBL [gal, kgal, ft3, kft3, Mft3, mBBL, BBL, kBBL, ACRf]
TEMPERATURE	Select either °C or K. [F or K]
THERMAL FLOW UNIT	Select either MJ/h or GJ/h, BTU/h, KBTU/h, MBTU/h, kW, MW.
TOTAL UNIT(THERMAL)	Select either MJ or GJ, BTU, KBTU, MBTU, kWh, MWh.

Table 8-6	Output control	specifications
-----------	----------------	----------------

Item	Contents
DAMPING	Enter in the range of 0.0 to 100.0sec.
CUT OFF	Enter in the range of 0,000 to 5,000m/s [0.000 to 16.405ft/s] .
CALIBRATION ZERO	Enter in the range of -5,000 to 5,000m/s [-16.405 to 16.405ft/s].
CALIBRATION SPAN	Enter in the range of 10 to 200.00%.

• The site name which belongs to reading/writing information is displayed in the SITE NAME.

## 9. Maintenance

Click the "MAINTENANCE" button on the Menu screen, and the following screen appears.

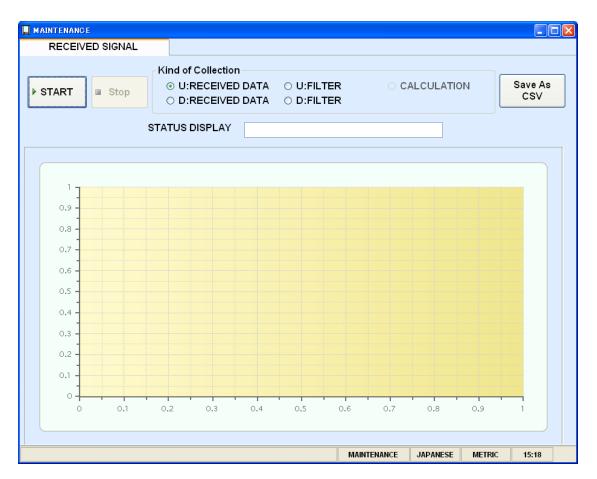


Fig. 9-1 RECEIVED SIGNAL screen

### 9.1. RECEIVED SIGNAL

Select Tab Page 2 on the MAINTE screen and the following screen appears.

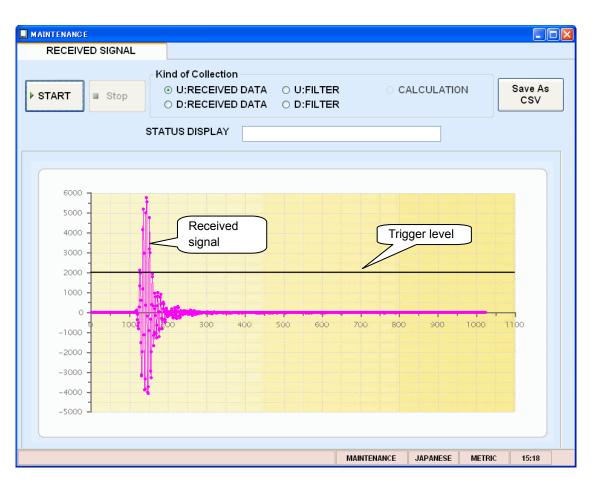


Fig. 9-2 RECEIVED SIGNAL screen

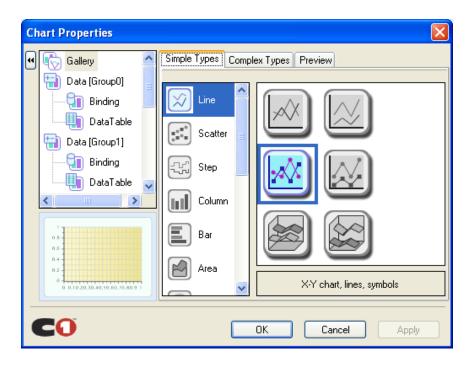
- Select one from forward direction received wave, reverse direction received wave, forward direction filter, reverse direction filter and calculation waveform.
- Click the [START] button to read in the specified cycle and click the [Stop] button to cancel the operation. Display is updated with each read.
- Save the received waveform in the specified file by [SAVE As CSV] button. Trigger level is also displayed.
- Display the RAS information in the STATUS DISPLAY.

Point

- 1. Startup is completed within 3 to 6 waves.
- 2. No peak (amplitude) fluctuation should be observed. Otherwise air is mixed in.

## 9.2. Adjustment of graph scale

\* For adjusting scale, right-click on "Measurement", "Waves" or "Velocity" screen.



Example) For adjusting the scale of X axis, select X axis, input "Max." and "Min." on the scale tab. Click [OK] button.

C	hart Properties	×
•	Data [Group1] Binding DataTable Axis× Gridlines Gridlines	Axis X       Scale       Annotation       Preview         Minimum:       0       ✓ auto         Maximum:       1000       auto         Major unit:       500       ✓ auto         Minor unit:       250       ✓ auto         Origin:       0       ✓ auto
-		CK Cancel Apply

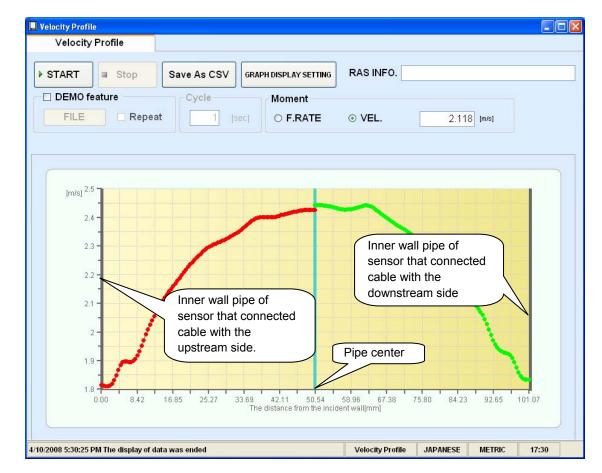
# 10. Flow velocity profile

When 6th digit of the type of main unit is 1(Velocity profile measurement opton), this function should be available. Click the "Velocity Profile" button on the Menu screen and the following screen appears.

Velocity Profile	
Velocity Profile	
START Stop Save As CSV GRAPH DISPLAY SETTING	3 RAS INFO.
DEMO feature FILE Repeat Sec] OF.RATE	O VEL.
[m/s] <sup>26</sup>	
24 -	S GRAPH DISPLAY SETTING
22 -	KIND
20 -	
18 -	Collection ⓒ Moment ○ Moving Average 1000
16	MODE
14 -	SOURCE SENSOR-U/D
12	Setting Cancel
8	22.2         25.9         29.6         33.3         37         40.7           cident wal[mm]         29.6         33.3         37         40.7           Velocity Profile           ENGLISH         METRIC         17:25

Fig. 10-2 Velocity Profile screen

### 10.1. Flow velocity profile



Select Tab Page 2 on the Velocity Profile screen and the following screen appears.

Fig. 10-1 Velocity Profile screen

First, press the "GRAPH DISPLAY SETTING" button, and select either from VELOCITY / STANDARD DEVIATION/ POWER or Moment / Moving Average in the following screen. In case of Moving Average, set the number of times and select one from SENSOR-U/ SENSOUR-D/ SENSOUR-U/D on the graph display.

🔦 GRAPH DISPLAY SET	TTING	×
	○ STANDARD DEVIATION ○ POWER	
Collection	O Moving Average 1000	
MODE	SENSOR-U/D	
	Setting Cancel	

Fig. 10-2 Graph display setting screen

[KIND]
[VELOCITY]
[Collection]
Moment : Displays data by each read.
Moving Average : Displays data in moving average with the number of times set by channel in each read data.
[MODE]
SENSOR-U : Displays only upstream sensor that connected cable with the upstream side.
SENSOR-D : Displays only downstream sensor that connected cable with the upstream side.
SENSOR-U : Displays both upstream/downstream sensor above.

[Moment]

VEL. / F.RATE : Displays flow velocity or flow rate with each read.

[RAS]

RAS...Displaying RAS with each read.

[DEMO feature]

Reads the file logged by flow rate or [SAVE As CSV], displays the flow velocity profile.

[Check Box]

Displays repeatedly by setting check box to ON ("☑").

[OFFSET Calculation]

Displays flow velocity profile detected by the sensor on the upper stream side and that on the lower stream side overlapped at the center of the piping.

- Click the [START] button to read in the specified cycle and click the [Stop] button to cancel the operation.
- Click the [SAVE As CSV] button to save the data in the CSV file.

For saving format, refer to "16.5.3 Flow Velocity Profile" in the manual.

# 11. QUIT

Click the Quit on the main menu screen or  $[\boxtimes]$ .



Fig. 11-1 Quit popup screen

# 12. UNINSTALLING SOFTWARE

For uninstalling, selects "control pannel" - "add/ deleate application" from Windows, click Alter and Delete button.

# 13. APPENDIX

## 13.1. If an USB device is recognized as a COM port

If there is an error of reorganization of a PC device driver, an USB device is not installed properly. In this case, the communication between Portaflow-C and a loader software can not be performed.

This section provides the information about the restoration procedure how to make a PC recognize an USB device.

### 13.1.1. How to check

Check if there is any recognition error of a device driver according to the following procedure.

(1) Right click on My Computer on the PC side, and then click the [Properties]. Select the [Hardware] tab, and click the [Add Hardware Wizard].

System Properties
System Restore         Automatic Updates         Remote           General         Computer Name         Hardware         Advanced
Add Hardware Wizard The Add Hardware Wizard helps you install hardware.
Add <u>H</u> ardware Wizard
Device Manager
The Device Manager lists all the hardware devices installed on your computer. Use the Device Manager to change the properties of any device.
Driver Signing Device Manager
Hardware Profiles
Hardware profiles provide a way for you to set up and store different hardware configurations.
Hardware Profiles
OK Cancel Apply

Fig. 13-1

(2) Select the [Ports (COM & LPT)] on the displayed screen.

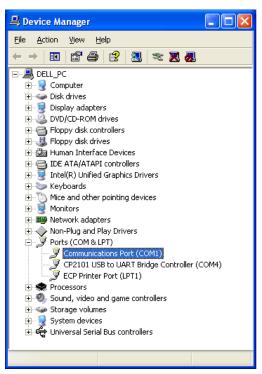
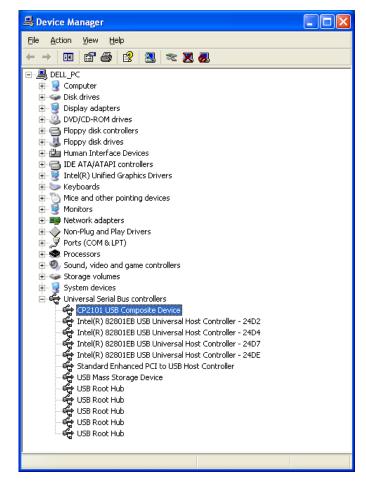


Fig. 13-2

(3) Next, select the [Universal Serial Bus controllers].





If the items of the Fig. 13-2 [CP2101 USB to UART Bridge Controller] and the Fig. 13-3 [CP2101 USB Composite Device] are displayed when checked the error according to the procedure above, the restoration procedure provided in the next section is applied.

### 13.1.2. Restoration procedure

Before proceeding to the following procedure, make sure to connect the PC used and the Portaflow-C with an USB cable. (1) Right click on the Fig. 13-3, and then click the [Properties].

USBXpre	ss Device Prope	erties 🔹 🤶 🔀	
General	Driver		
÷	USBXpress Devic	e	
	Device type:	Universal Serial Bus controllers	
	Manufacturer:	Silicon Labs Software	
	Location:	Location 0 (CP2102 USB to UART Bridge Cor	
Devic	e status		
If you	This device is working properly.		
		Iroubleshoot	
<u>D</u> evice			
Use th	is device (enable)	<u> </u>	
		OK Cancel	

Fig. 13-4

(2) Click the [Driver] tab on the displayed screen. Then, click the [Update Driver...].

JSBX press Device Properties ? 🔀	
General Driver	
	vice
Driver Provider:	Silicon Labs Software
Driver Date:	2/6/2007
Driver Version:	3.1.0.0
Digital Signer:	Microsoft Windows Hardware Compatibility Publ
Driver Details	To view details about the driver files.
Update Driver	To update the driver for this device.
Boll Back Driver	If the device fails after updating the driver, roll back to the previously installed driver.
<u>U</u> ninstall	To uninstall the driver (Advanced).
	OK Cancel

Fig. 13-5

(3) The [Hardware Update Wizard] is launched.

Select the [Install from a list or specific location(Advanced)], and click the [Next] button to transit to the [Hardware Update Wizard].



Fig. 13-6

(4) Select the [Don't search. I will choose the driver to install.], and then click the [Next] button.

Hardware Update Wizard	
Please choose your search and installation options.	
○ <u>S</u> earch for the best driver in these locations.	
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.	
Search removable media (floppy, CD-ROM)	
✓ Include this location in the search:	
C:\SiLabs\MCU\CP210x\WIN SIgowse	
● Don't search. I will choose the driver to install.	
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.	
< <u>B</u> ack <u>N</u> ext > Cancel	

Fig. 13-7

(5) Click the [Have Disk...] button to install a device driver.



Fig. 13-8

(6) Click [Browse...] button, and select CD-ROM drive:\ENGLISH\ENGLISH\_INST\USBExpress in the install disk, and then click [OK] button.

Install From Disk		
<u>–</u>	Insert the manufacturer's installation disk, and then make sure that the correct drive is selected below.	OK Cancel
	Copy manufacturer's files from: D:\ENGLISH\ENGLISH_INST\USBExpress	Browse

Fig. 13-9

(7) Select [USBXpress Device] that is listed in [Model] box, and click the [Next] button .

Hardware Update Wizard
Select the device driver you want to install for this hardware.
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Model
USBXpress Device
This driver is not digitally signed! <u>I ave Disk     I ell me why driver signing is important</u>
< <u>B</u> ack <u>N</u> ext> Cancel

Fig. 13-10

(8) Now, installation starts. If the warning like the Fig. 13-12 concerning Windows Logo test appears during installation, click [Continue Anyway] button.

Hardware Update Wizard	
Please wait while the wizard installs the software	
Ŷ	USBXpress Device
	SiLib.sys To C:\WINDOWS\System32\Drivers
	< <u>B</u> ack <u>N</u> ext > Cancel

Fig. 13-11



Fig. 13-12

(9) When installation has completed, the completion screen is displayed. Click [Finish] button. Now, restoration procedure for USB communication error has completed.



Fig. 13-13

### 13.1.3. Check after installation

Check [Universal Serial Bus controller] in the Device Manager.

Check if the device type has changed from Fig. 13-3 [CP2101 USB Composite Device] in the procedure "13.1.1. How to check" to [USBXpress Device] that is highlighted in the Fig. 13-14 below.

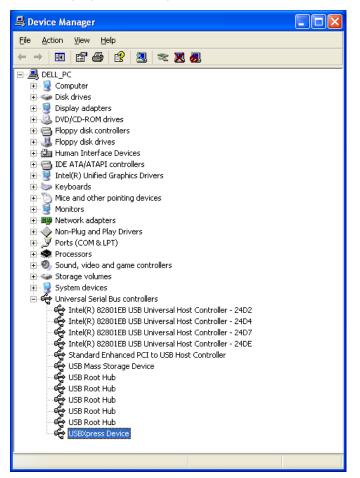


Fig. 13-14



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