

## **INSTRUCTION MANUAL**

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891-9603-004 Ver.5 March 2020



### **Hitachi L-2000 driver for Empower3 (INSTALLATION)**

This product is intended for research use only. It is not to be used for reporting patient diagnostic or therapeutic results.



- Before using the instrument, read the safety instructions and precautions carefully.
- Be sure to observe the safety instructions in this manual and the WARNING/CAUTION labels on the instrument.
- Keep this manual in a safe place nearby so it can be referred to whenever needed.

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3. Hitachi High-Tech Science Corporation assumes no liability for any direct, indirect, or consequential damages arising from use not described in this manual.  
Utmost care must be exercised when using the instrument.
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## PREFACE

Thank you very much for purchasing Hitachi L-2000 driver for Empower3.  
The Hitachi L-2000 driver for Empower3 is the Chromatography data station (CDS) for high performance liquid chromatography (HPLC).

**This software is intended for use by persons having a basic knowledge of chemical analysis.**

**Remember that improper use of analytical instruments, chemicals or samples would result not only in wrong analytical data but also in consequences adverse to safety. Note that it is allowed only for persons having a basic knowledge of chemical analysis procedures to use this instrument.**

Carefully read this instruction manual before attempting operation. For proper use of the software, please acquaint yourself with it.

## ABOUT THIS MANUAL

This instruction manual describe how to install and use the Hitachi L-2000 driver for Empower3 for customer.

- The manual of the Hitachi L-2000 driver for Empower is consists of:
  - INSTRUCTION MANUAL FOR HITACHI L-2000 DRIVER FOR EMPOWER3 (INSTALLATION)
  - INSTRUCTION MANUAL FOR HITACHI L-2000 DRIVER FOR EMPOWER3 (OPERATION)
  - INSTRUCTION MANUAL FOR HITACHI L-2000 DRIVER FOR EMPOWER3 (MAINTENANCE SOFTWARE)
- ※ Manuals of OPERATION and MAINTENANCE SOFTWARE have been saved to the Installation CD as PDF files.

The operating procedures and matters that should be especially noted for the software are contained in this manual.

INSTALLATION	This includes how to install the Hitachi L-2000 driver for Empower3.
OPERATION	This includes how to control the L-2000 series and set the analysis method.
MAINTENANCE SOFTWARE	This includes how to operate the Maintenance Software to maintain each modules of L-2000 series.

- First of all, read "IMPORTANT" and "SAFETY SUMMARY" at the beginning of this manual for ensuring safety in operation of Hitachi L-2000 driver for Empower3.

## ABOUT THE MARK IN THIS TEXT

There is the symbol mark in this text. The symbol mark help you understand the contents of information. The meaning of symbol mark is as shown below.

Mark	Name	Meaning
	Supplementary Mark	Provides detailed/complementary information to expand operational application for the left column contents.
	Reference Mark	Provides detailed/complementary information, and indicated in other chapters or other manuals.
	Attention Mark	Provides notes for reading instruction manuals, and precautions for operating modules. This is different from the information indicated in <b>NOTE</b> . The information which doesn't cause slight damage of module is indicated as attention.
[END]	End Mark	This is a mark to show the end of the operation.

# IMPORTANT

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This section describes Warranty, Installation and After-sale Technical Service.

Before using the Hitachi L-2000 driver for Empower3, read this section carefully.

Warranty on Product.....	IMPORTANT-1
Installation, Relocation and After-sale Technical Service .....	IMPORTANT-3
Technical Seminars and Training Courses for Users .....	IMPORTANT-3
Other Precautions .....	IMPORTANT-3

# IMPORTANT

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## Warranty on Product

### Limited Warranty

The Hitachi L-2000 driver for Empower3 is warranted to be free from defects in material or workmanship under normal use within the product specifications indicated in this manual and under conditions given below. This warranty is void if the software is not used according to the instruction manual.

The manufacturer makes no warranties, either express or implied, except as provided herein, including without limitation thereof, warranties as to marketability, merchantability, for a particular purpose or use, or against infringement of any patent.

No oral or written information or advice given by the manufacturer, its dealers, distributors, agents or employees shall create a warranty or in any way increase the scope of this warranty.

### Scope of Warranty

Any parts which prove to be defective in design or workmanship during the warranty period will be repaired, adjusted or replaced without charge. A substitute part may be used for repair, or replacement with an equivalent product may be made instead of repair. Such system components as a personal computer and printer to be updated frequently for improvement may not be available in original versions at the time of replacement.

Note that this warranty does not apply to the instrument after it is discarded, or if modified by the user or resold without permission from the manufacturer, consumable parts, and any failure of lifetime-expired parts.

The manufacturer assumes no liability for any damage to data or application software due to any possible fault or failure of this instrument.

### Warranty Period

One year from the date of initial installation.

(In case a separate warranty document has been issued, the warranty period indicated in it takes precedence over the above period.)

### Warranty Limitations and Exclusions

#### Disclaimer of Warranty

THE MANUFACTURER MAKES NO WARRANTIES, EITHER EXPRESS OR IMPLIED, EXCEPT AS PROVIDED HEREIN, INCLUDING WITHOUT LIMITATION THEREOF, WARRANTIES AS TO MARKETABILITY, MERCHANTABILITY, FOR A PARTICULAR PURPOSE OR USE, OR AGAINST INFRINGEMENT OF ANY PATENT. IN NO EVENT SHALL THE MANUFACTURER BE LIABLE FOR ANY DIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE, OR LOSSES OR EXPENSES RESULTING FROM ANY DEFECTIVE PRODUCT OR THE USE OF ANY PRODUCT.

NO ORAL OR WRITTEN INFORMATION OR ADVICE GIVEN BY THE MANUFACTURER, ITS DEALERS, DISTRIBUTORS, AGENTS OR EMPLOYEES SHALL CREATE A WARRANTY OR IN ANY WAY INCREASE THE SCOPE OF THIS WARRANTY.

Note that the following cases are excluded from the scope of this warranty, i.e., these cases are beyond the coverage of free-of-charge repair even during the warranty period indicated above.

- (a) Failure due to operation at a place not meeting the installation requirements specified by the manufacturer.
- (b) Failure due to power supply voltage/frequency other than specified by the manufacturer or due to abnormality in power supply.
- (c) Corrosion or deterioration of the tubing due to impurities contained in reagent, gas, air or cooling water supplied by the user.
- (d) Corrosion of the electric circuits or deterioration of the optical elements due to highly corrosive atmospheric gas.
- (e) Failure due to use of software, hardware or spare parts not supplied by the manufacturer.
- (f) Failure due to use not described in the manual or improper repair not approved by the manufacturer.
- (g) Failure due to maintenance or repair by other than service personnel qualified by the manufacturer.
- (h) Failure due to relocation or transport conducted not under the supervision of the manufacturer after the initial installation of the instrument.
- (i) Failure due to disassembly, modification or relocation not approved by the manufacturer.
- (j) Failure due to acts of God, including fire, earthquake, storm, flood, lightning, social disturbance, riot, crime, insurrection, terrorism, war (declared or undeclared), radioactive pollution, contamination with harmful substance, etc.
- (k) Failure of the hardware, or damage to the system software, application software, data or hard disk due to computer virus infection.
- (l) After disposal of this instrument, after its resale without prior approval from the manufacturer, consumable parts, and failure of any part that have reached the end of its service life.
- (m) Failure due to a life-limited part that has exceeded the end of its useful lifetime.

## Installation, Relocation and After-sale Technical Service

### Installation and Relocation

- (a) Installation at delivery shall not be carried out by the user. It shall be carried out by our sales representative or the engineers who have been trained and qualified for this purpose by us in order to use the instrument safely and accurately.
- (b) Before installation, the user shall make preparations for satisfying the installation requirements in accordance with this instruction manual.
- (c) If relocation becomes necessary after initial installation (delivery), please contact the dealer from whom you purchased the instrument or our sales representative.

### After-sales Service

- (a) For after-sales service, contact our sales representative or service office of our sales representative.
- (b) For service after the warranty period, consult us with regard to a maintenance and inspection service contract.

## Technical Seminars and Training Courses for Users

We offer technical seminars and training courses at either our or user's facilities to ensure proper and safe operation of the analytical instrument to its full performance. For further information, contact our sales representative. (Applicants will be charged.)

## Other Precautions

### Handling of Chemicals and Samples

- (1) The user is responsible for following relevant laws and regulations in handling, storage and disposal of chemicals and samples used in analytical operation with this instrument.
- (2) Reagents, standard solutions and accuracy-control samples shall be handled, stored and discarded as instructed by the respective suppliers.

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Empower are trademark of Waters Corporation.

All other trademarks are the property of their respective holders and are hereby acknowledged.

# SAFETY SUMMARY

Before using the Hitachi L-2000 driver for Empower3, be sure to read the following safety instructions carefully.

 Definitions of Safety Alert Symbol and Direction Word.....	SAFETY-1
 CAUTION Precautions in the Manual.....	SAFETY-2
NOTICE Precaution .....	SAFETY-3
Accuracy and Precision of Measured Values.....	SAFETY-3
Data Backup .....	SAFETY-3
Protection against Computer Viruses.....	SAFETY-3
Power Interruption .....	SAFETY-4
About Personal Computer .....	SAFETY-4

# SAFETY SUMMARY

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## Definitions of Safety Alert Symbol and Direction Word

The hazard warnings which appear on the warning labels on the product or in the manual have one of the following alert headings consisting of a safety alert symbol  and signal word WARNING or CAUTION.

	: The alert symbol shown at left precedes every signal word for hazard warnings, and appears in safety-related descriptions in the manual. To prevent possible hazards or injury, be sure to follow the safety precautions preceded by this symbol.
 <b>WARNING</b>	: Indicates a potentially hazardous situation which, if not avoided, will or can result in death or serious injury.
 <b>CAUTION</b>	: Indicates a potentially hazardous situation which, if not avoided, will or can result in minor or moderate injury.

The following signal word *NOTICE* or NOTE is used to indicate precautionary instructions concerning possible property damage.

<b>NOTICE</b>	: Used to indicate a potentially hazardous situation which, if not avoided, will or can result in damage to user's property, serious damage to the instrument, damage to data, or environmental pollution, though personal injury may not be incurred.
<b>NOTE</b>	: Used to indicate explanatory information for ensuring proper instrument operation and accurate measurement while preventing any possible damage to the instrument.

- Be sure to observe the precautionary instructions in the manuals accompanying the instrument.
- Do not perform any operation or action other than described in these manuals.
- On occurrence of any trouble in the instrument, notify the nearest sales service representative of Hitachi High-Technologies.
- Keep in mind that the hazard warnings in the manuals or on the product cannot cover every possible case, as it is impossible to predict and evaluate all circumstances beforehand. Always be alert and use your common sense.

 CAUTION Precautions in the Manual

Notes described in this manual and the description locations are shown as follows.

 CAUTION

- Fatigue due to Long-Hour Operation

If you keep working with the display monitor and keyboard for long hours, your eyes and body will be fatigued to jeopardize your health. When working with the display monitor for a long time, take a break for 10 to 15 minutes per hour for health of your eyes and body.

(Chapter 1)

## NOTICE Precaution

### Accuracy and Precision of Measured Values

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- Carry out periodic inspection and check whether the system is operating normally. If necessary, conduct measurement on a control sample.

### Data Backup

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- Data on the hard disk may become unusable due to a system failure, wrong operation, computer virus infection, etc.  
To ensure data integrity in case of accidental damage to the hard disk, periodically make backup copies of hard disk files onto removable disks. Be sure to carry out this data backup procedure periodically.

### Protection against Computer Viruses

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- If any program/data is damaged suddenly or an unexpected operation/screen is encountered, the personal computer may be infected by a computer virus. Computer viruses are malicious programs that sneak into personal computers to cause misbehavior or damage to data. And, a program designed to offer protection against computer viruses is called a vaccine program.

Possible causes of virus infection are:

- (1) Downloading a virus-laden program through communication.
- (2) Using a floppy disk or other storage medium infected by a virus.

Note also that once a virus infects any personal computer, it may spread to other computers via communication or storage medium.

Never use a program or storage medium that is suspected of containing a virus.

If there is a possibility of virus infection, check for a virus using a vaccine program. Note, however, that some kinds of vaccine programs cannot eradicate particular viruses.

In such a case, be sure to make a backup of hard disk files.

The user is requested to prepare a vaccine program and carry out virus removal on his or her responsibility.

## NOTICE Precaution (Continued)

### Power Interruption

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- On occurrence of momentary power voltage drop due to power interruption or lightning, the personal computer may become faulty or the basic software, application software or data may be damaged.  
For protection against momentary power voltage drop, it is advisable to use an AC uninterruptible power supply unit (stated according to the Japanese Electronic Industry Development Association guidelines for protection against momentary power voltage drop in personal computers).

### About Personal Computer

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- About handling of the personal computer, read the manual that is standard-furnished for personal computer and use as directed.  
When using this product, be sure to observe the warnings and cautions shown by the personal computer manufacturer.
- Do not turn off the personal computer main circuit while the hard disk or removable disk drive is active. If power to the personal computer is turned off while the hard disk or removable disk is being accessed, the personal computer may become faulty or data/software stored in it may be damaged. Before turning off power to the personal computer, quit the Empower and then take the shutdown sequence of the operating system of the personal computer.
- Do not locate the personal computer on an unstable place or a narrow place. Failure to do so could result in personal injury or damage to the personal computer.
- Do not spill the solvent on the personal computer because there is a possibility that the personal computer fails. Should you spill the solvent on the personal computer, wipe it off immediately.  
If you use as it is, it cause an electric shock, release of fume and ignition.
- Do not use the volatile liquid near the personal computer because of the possibility of ignition hazard.

## PREFACE

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## IMPORTANT

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### **TERMINOLOGY**

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# 1

## OVERVIEW



This section shows the overview of Hitachi L-2000 driver for Empower3, system configuration and PC requirement.

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# 1



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 **CAUTION**

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**Fatigue due to Long-Hour Operation**

If you keep working with the display monitor and keyboard for long hours, your eyes and body will be fatigued to jeopardize your health. When working with the display monitor for a long time, take a break for 10 to 15 minutes per hour for health of your eyes and body.

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## 1.1 Overview

This manual describes the procedure for installing the Hitachi L-2000 driver for Empower3, and the USB driver for Interface Board (IFB) onto a personal computer (PC). Please read this manual when installing the Hitachi L-2000 driver for Empower3 and the USB driver for IFB.

For installation and operation of the Empower™ 3 Software, read the instruction manual of Empower™ 3 Software.

In each of the instruction manuals, including this document, the Empower™ 3 Software is referred to as “Empower” and the Microsoft® Windows® operating system as “Windows”, unless otherwise specified.

The Hitachi L-2000 driver for Empower3 is an application software product designed to run on Windows. In each instruction manual for the Hitachi L-2000 driver for Empower3, such basic operations of Windows as menu opening, command selection, dialog box setting, and file copying are not explained. If you are using Windows for the first time, please acquaint yourself with its basic operations and functions through use of the manuals accompanying Windows.

The descriptions contained in this manual are given on the premise that the Windows character input system tool and printer driver software have already been set up properly. For details on how to set up these software facilities, refer to the manuals accompanying Windows.

## 1.2 System Configuration

This section describes the PC requirement and the system configuration supported by the Hitachi L-2000 driver for Empower3.

<Hitachi L-2000 driver for Empower3>

### ◆ Empower™ 3 Software Requirement

Please refer to the Release Notes about the Hitachi L-2000 driver for Empower3.

### ◆ Hitachi L-2000 driver for Empower3 System Configuration

The Hitachi L-2000 driver for Empower3 supports Empower Personal, Empower Workgroup, or Empower Enterprise system.

### ◆ Supporting Module

The Hitachi L-2000 driver for Empower3 supports the following module types:

#### <LaChrom Elite Modules>

- L-2100 Pump System  
(Maximum two per system. Support gradient mode is low-pressure gradient mode (Maximum four-solvent) and high- pressure gradient mode (Maximum two-solvent)):  
Program Number 890-8110-02 or later
- L-2130 Pump System  
(Maximum two per system. Support gradient mode is low-pressure gradient mode (Maximum four-solvent) and high-pressure gradient mode (Maximum two-solvent)):  
Program Number 890-8110-02 or later
- L-2200 Auto sampler(Thermo Unit (Option) supported.):  
Program Number 890-8120-03 or later, or Program Number 890-8121-00 or later
- L-2300 Column Oven  
(Column Selector Valve (Option) supported.):  
Program Number 890-8130-02 or later
- L-2350 Column Oven(Option Valve (Option) supported.):  
Program Number 890-8150-00 or later

☞ The number of connectable pumps per system is two.

- L-2400 UV Detector(Up to two detectors per system):  
Program Number 890-8140-02 or later
- L-2420 UV-VIS Detector(Up to two detectors per system):  
Program Number 890-8142-00 or later
- L-2455 Diode Array Detector:  
Program Number 890-8146-00 or late
- L-2485 FL Detector (Up to two detectors per system):  
Program Number 890-8149-00 or later
- L-2490 RI Detector (Up to two detectors per system):  
Program Number 1.01 or later
- Analog Input Device (Up to two device per system):  
Program Number 890-8165-00 or later
- USB Interface Board:  
Program Number 890-8190-01 or later,  
or Program Number 891-8190-00 or later

#### <LaChromUltra Modules>

- L-2160U Pump System  
(Maximum two per system. Support gradient mode is  
Isocratic mode and high-pressure gradient mode  
(Maximum two-solvent)):  
Program Number 891-8110-00 or later
- L-2200U Auto sampler  
(Thermo Unit (Option) supported. 0.5 mL syringe kit  
(Option) supported.):  
Program Number 891-8120-00 or later,  
or Program Number 891-8128-00 or later
- L-2400U UV Detector (Up to two detectors per system):  
Program Number 891-8140-00 or later
- L-2420U UV-VIS Detector  
(Up to two detectors per system):  
Program Number 891-8142-00 or later
- L-2455U Diode Array Detector:  
Program Number 891-8145-00 or later
- L-2485U FL Detector (Up to two detectors per system):  
Program Number 891-8148-00 or later
- USB Interface Board:  
Program Number 891-8190-00 or later

☞ The number of connectable DAD per system is one.

☞ The number of connectable detectors and AID per system is two.

## ◆ System Configuration

The Hitachi L-2000 driver for Empower3 can have a maximum of four systems connected to one PC. Supported instrument types and combinations are as follows:

One system:

- LaChrom Elite
- LaChromUltra

Two systems:

- LaChrom Elite + LaChrom Elite
- LaChromUltra + LaChromUltra
- LaChrom Elite + LaChromUltra

Three systems:

- LaChrom Elite + LaChrom Elite + LaChrom Elite
- LaChrom Elite + LaChrom Elite + LaChromUltra
- LaChrom Elite + LaChromUltra + LaChromUltra
- LaChromUltra + LaChromUltra + LaChromUltra

Four systems:

- LaChrom Elite + LaChrom Elite + LaChrom Elite  
+ LaChrom Elite
- LaChrom Elite + LaChrom Elite + LaChrom Elite  
+ LaChromUltra
- LaChrom Elite + LaChrom Elite + LaChromUltra  
+ LaChromUltra
- LaChrom Elite + LaChromUltra + LaChromUltra  
+ LaChromUltra
- LaChromUltra + LaChromUltra + LaChromUltra  
+ LaChromUltra

**NOTE:** If Diode Array Detector (DAD) is connected, supported system is as follows:

< If the connected system is only LaChrom Elite. >

<b>Number of connected DAD</b>	<b>Maximum number of connectable instrument</b>
1	Four instruments
2	Two instruments
3 or more	Connection disabled

\*DAD: Except L-2455U DAD

< If the connected system includes LaChromUltra. >

<b>Number of connected DAD</b>	<b>Maximum number of connectable instrument</b>
1	Two instruments
2	Connection disabled

\*DAD: Except L-2455U DAD

< If the connected system includes L-2455U DAD. >

<b>Number of connected DAD</b>	<b>Maximum number of connectable instrument</b>
1	One instrument
2	Connection disabled

## ◆ PC Requirements

OS:	< for Personal > Windows 7 Professional with Service Pack 1 64bit Windows 10 Professional 64bit < for Client and LAC/E <sup>32</sup> > Windows 7 Professional with Service Pack 1 64bit Windows 10 Professional 64bit
CPU:	Please refer to the Empower™ 3 Feature Release 4 installation manual.
RAM:	Please refer to the Empower™ 3 Feature Release 4 installation manual.
Hard Disk Space:	Please refer to the Empower™ 3 Feature Release 4 installation manual.
Optical Drive:	One DVD drive for software installation
USB:	One USB port (HiSpeed USB) per one LaChrom Elite or LaChromUltra system One USB port (HiSpeed USB) if connecting the L-2455U DAD
Network:	Microsoft Network with TCP/IP for Empower Enterprise Systems or Empower Workgroup
Internet Explorer:	Version 8.0 or 11.0 (However, Windows 10 is only IE 11.0.)
Acrobat:	Adobe Acrobat Reader for browsing the online manual

# 2

## INSTALLING SOFTWARE

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This section shows the preparation and procedure for installation of the Hitachi L-2000 driver for Empower3.

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# 2



## 2.1 Before Installation

Please make sure the connection between PC and peripherals before installation of the Hitachi L-2000 driver for Empower3 and USB driver for Interface Board (IFB). And you need to check and set some configuration to install the Hitachi L-2000 driver for Empower3. Please logon to PC as an Administrator and make sure the configuration below and configure to suit requirement of this software.

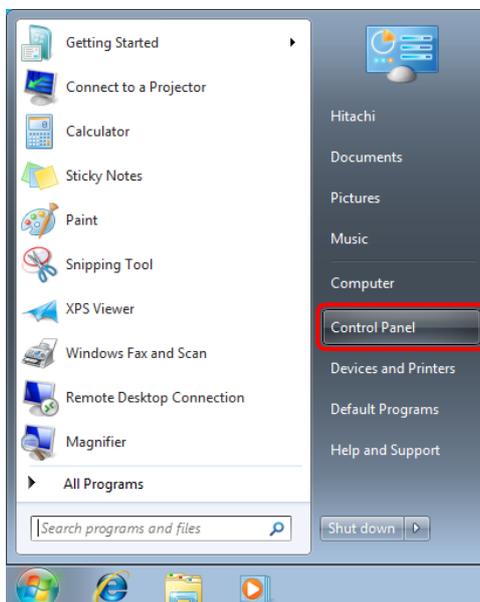
### 2.1.1 Setting of Windows 7

Please set the following configurations before installation. About undesignated settings (include BIOS), use these settings in default configuration.

#### ◆ Setting up Screen Saver

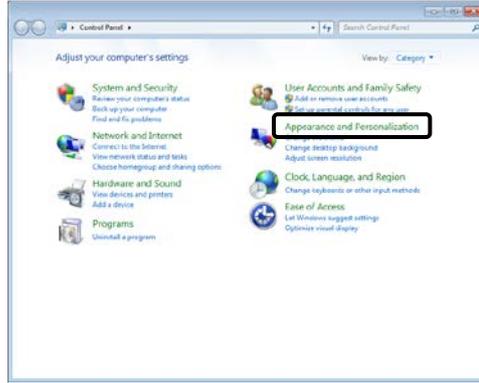
Set screen saver to [None] in accordance with the following process.

(1) Click [Control Panel] from Start menu.

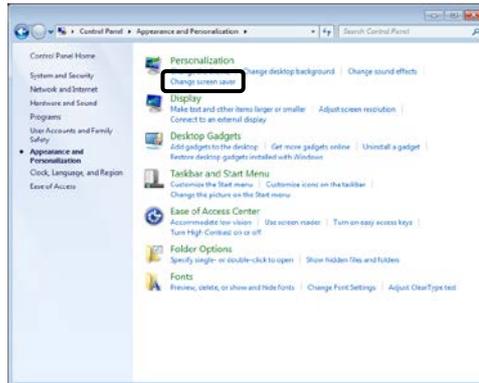


☞ Please set the following configurations for each user that use the Hitachi L-2000 driver for Empower3.

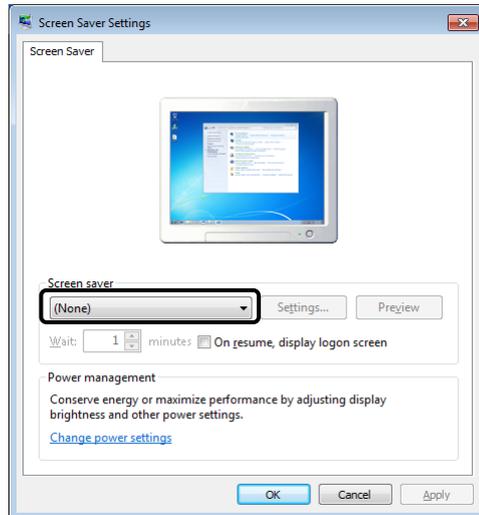
(2) Click [Appearance and Personalization].



(3) Click [Change screen saver].



(4) Select [None] from the drop-down menu of [Screen saver] and then click [OK] button.

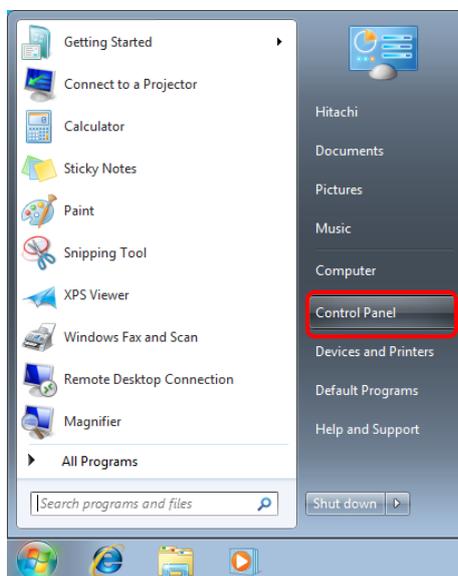


[END]

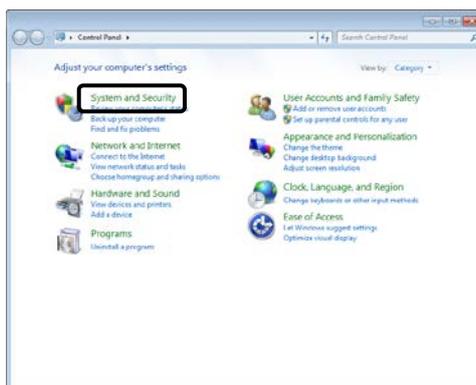
◆ Setting up Power Options

Set a power plan to [High performance] in accordance with the following process.

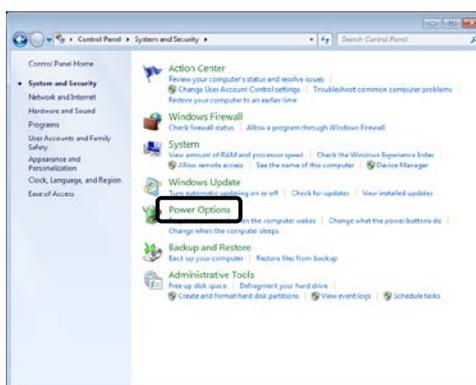
- (1) Click [Control Panel] from Start menu.



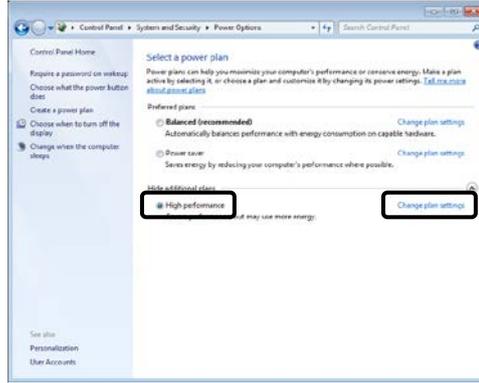
- (2) Click [System and Security].



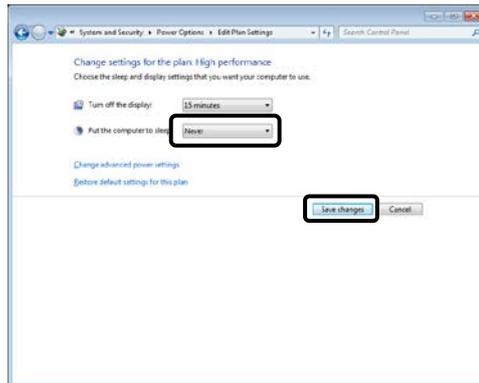
- (3) Click [Power Options].



(4) Select [High performance] and then click [Change plan settings]. (When "high performers" are not displayed, click "Hide Additional plans")



(5) Select [Never] from the drop-down menu of [Put the computer to sleep] and click [Save Changes].

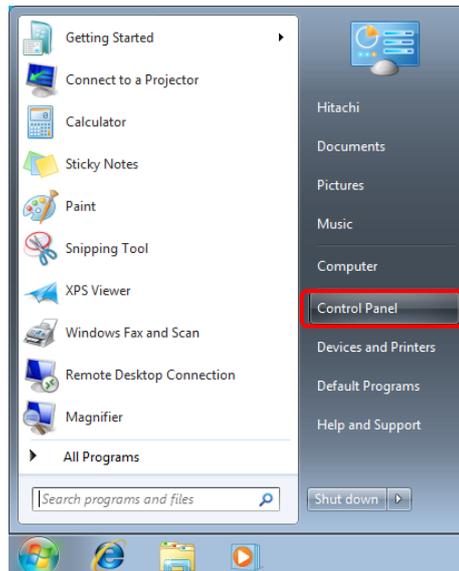


[END]

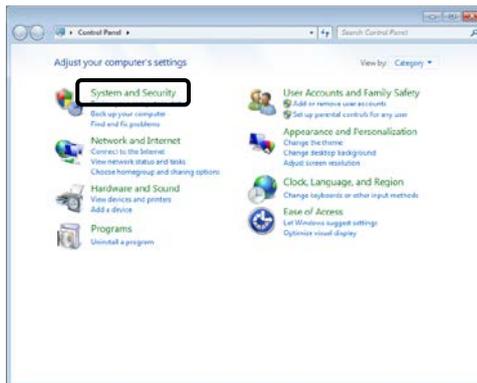
◆ Setting up Virtual Memory

Set Virtual Memory in accordance with the following process.

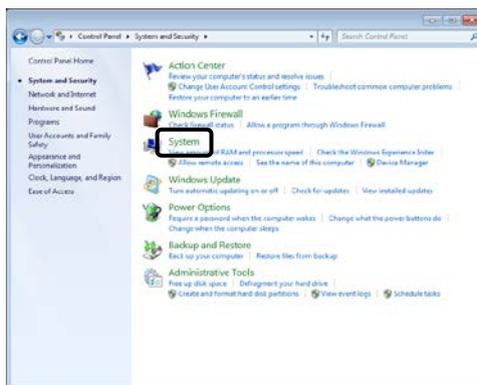
(1) Click [Control Panel] from Start menu.



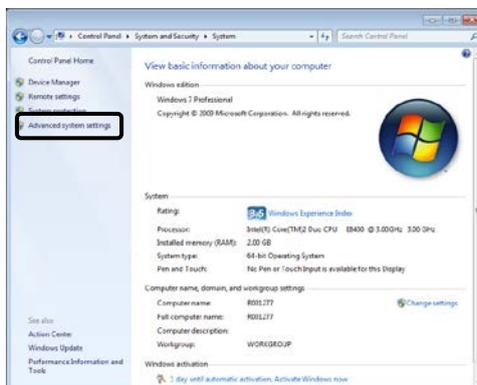
(2) Click [System and Security].



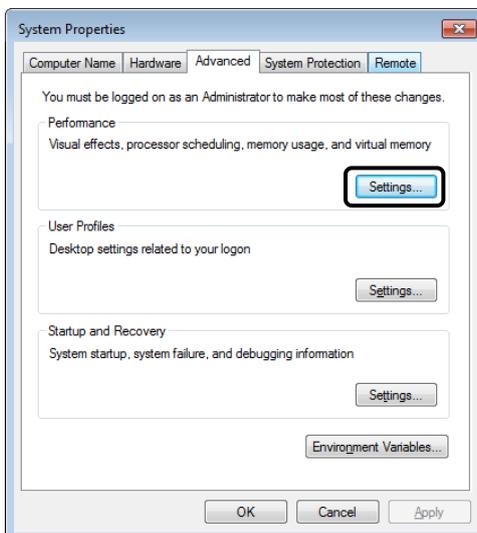
(3) Click [System].



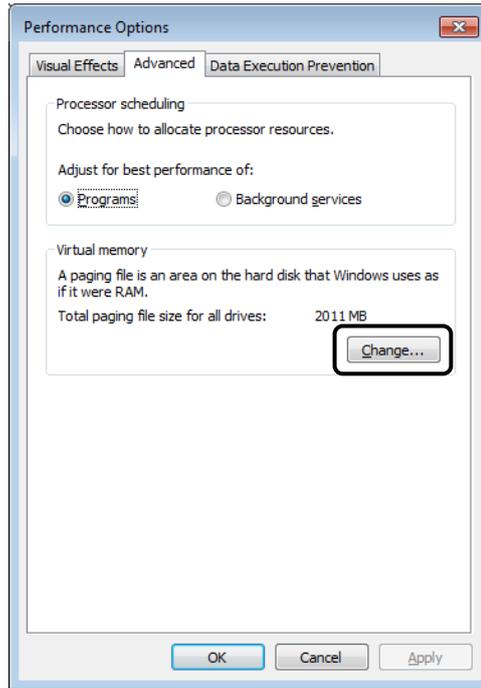
(4) Click [Advanced system settings].



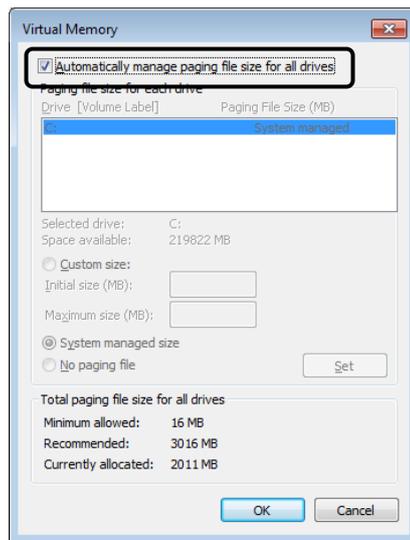
(5) Open [Advanced] tab and then click [Settings] button on [Performance] area.



(6) Open [Advanced] tab and then click [Change] button.



(7) Check the check box for [Automatically manage paging file size for all drives] and then click [OK] button. The message for reboot appears after setting up. Restart the PC in accordance with the message.

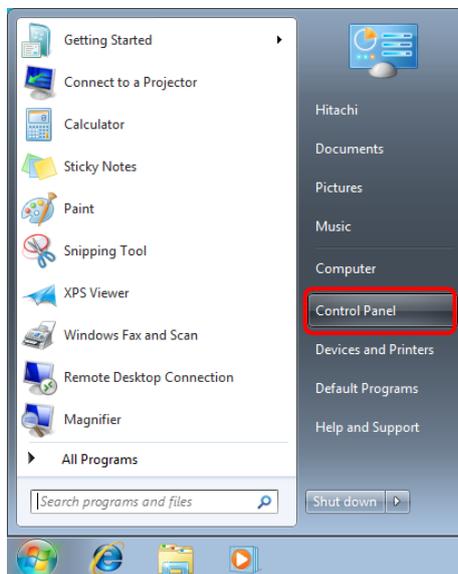


[END]

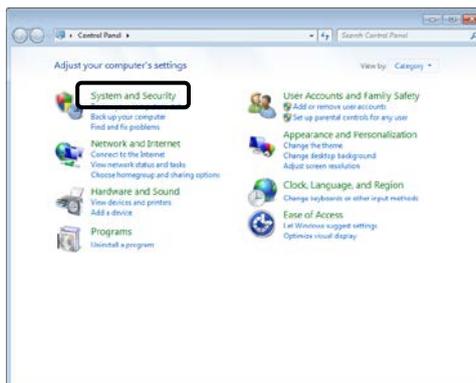
◆ Setting up Windows Update

Set Automatic Updates to [Never check] in accordance with the following process.

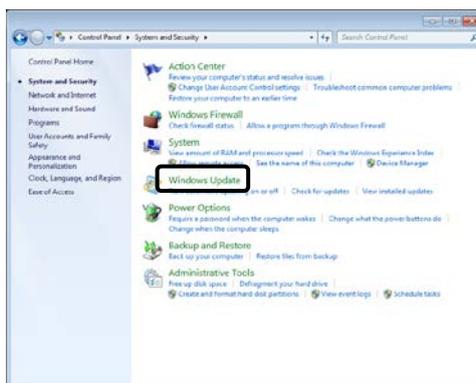
(1) Click [Control Panel] from Start menu.



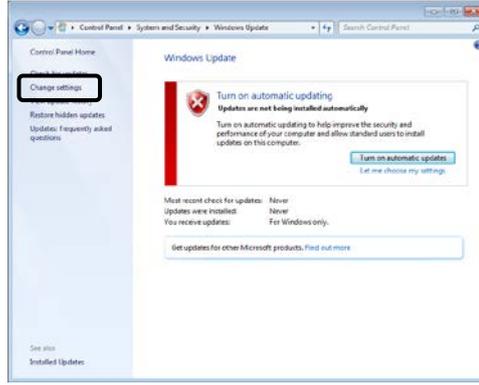
(2) Click [System and Security].



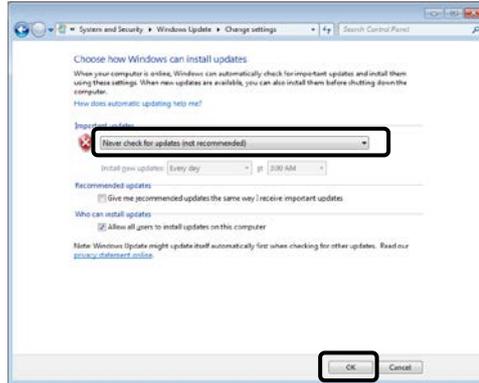
(3) Click [Windows Update].



(4) Click [Change settings].



(5) Select [Never check for updates (not recommended)] and then click [OK] button.

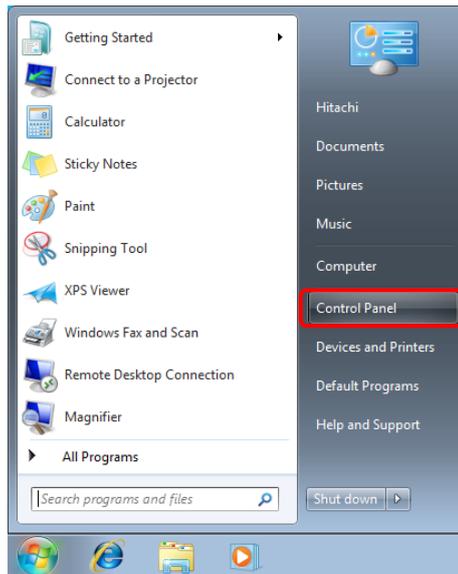


[END]

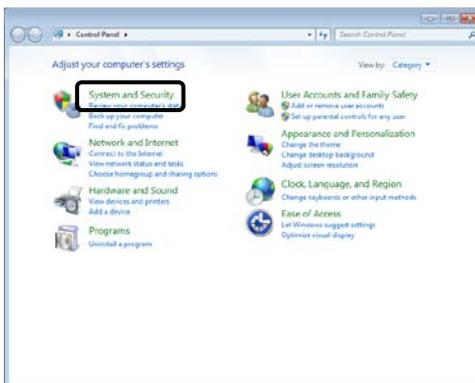
◆ Setting up Disk Defragment

Set the schedule of Disk Defragment to [Off] in accordance with the following process.

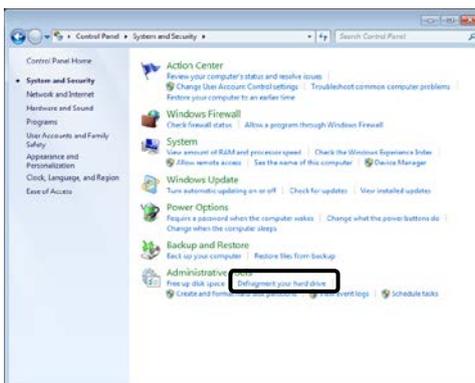
(1) Click [Control Panel] from Start menu.



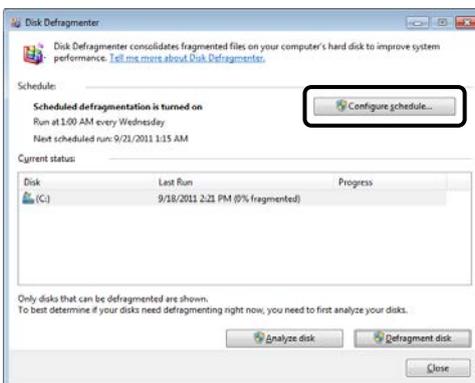
(2) Click [System and Security].



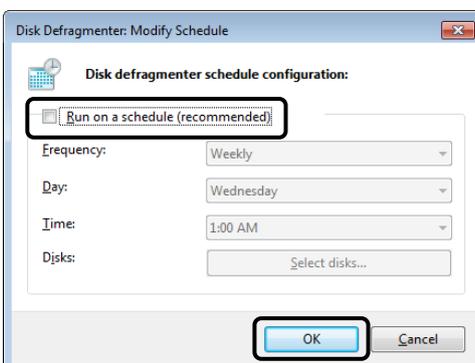
(3) Click [Defragment your hard drive].



(4) Click [Configure schedule].



(5) Clear the check box for [Run on a schedule (recommended)] and then click [OK] button.

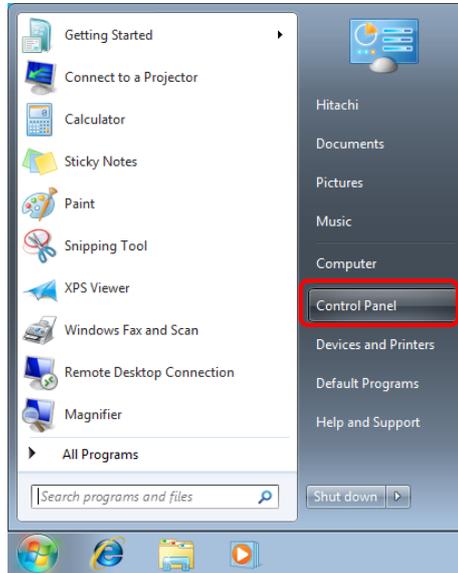


[END]

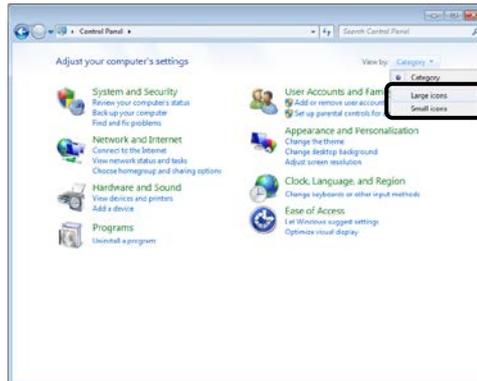
◆ Setting up Windows Defender

Set Windows Defender to [Turn off] in accordance with the following process.

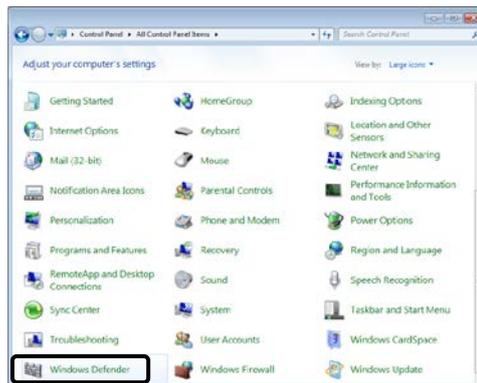
(1) Click [Control Panel] from Start menu.



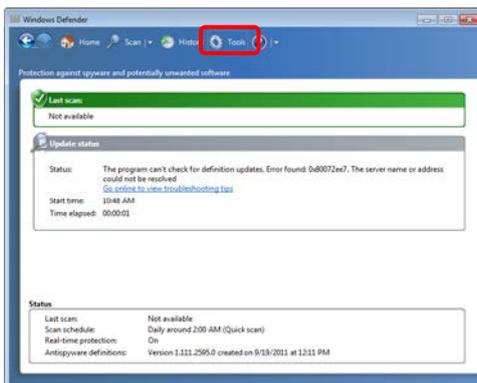
(2) Choose <Large icon> or <Small icon> among menu <category>.



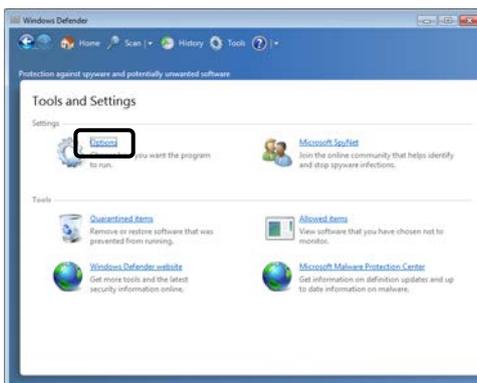
(3) Click [Windows Defender].



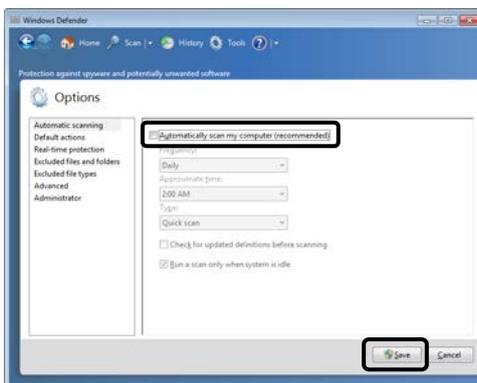
(4) Click [Tools]. (When the definition of the anti-spyware measure is unclear, the setting is unnecessary.)



(5) Click [Options].



(6) Clear the check box for [Automatically scan my computer (recommended)] and then click [Save] button.



[END]

◆ Setting up Gadget

Delete the Gadget (Feed Headlines, stocks, Currency, Weather, etc) with web services from Windows Side Bar. Please refer to the Help or the manual attached Windows for deletion method of Gadget.

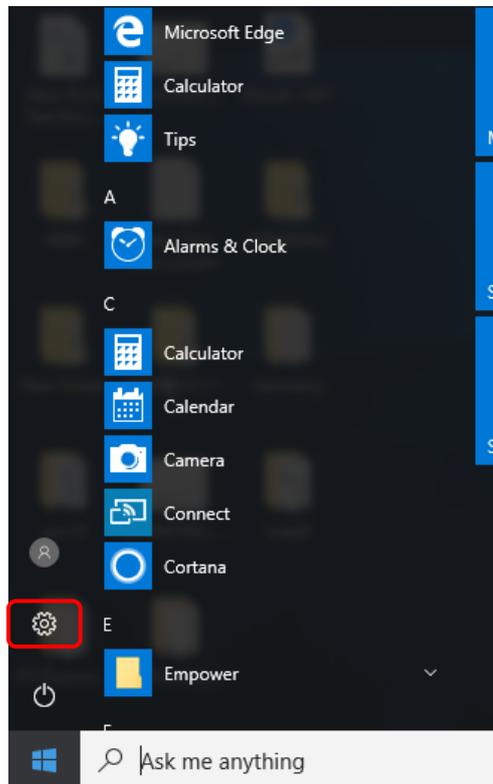
## 2.1.2 Setting of Windows 10

Please set the following configurations before installation.  
About undesignated settings (include BIOS), use these settings in default configuration.

### ◆ Setting up Screen Saver

Set screen saver to [None] in accordance with the following process.

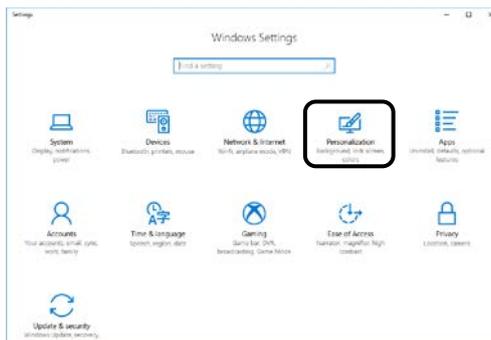
(1) Click [Setting] button from Start menu.



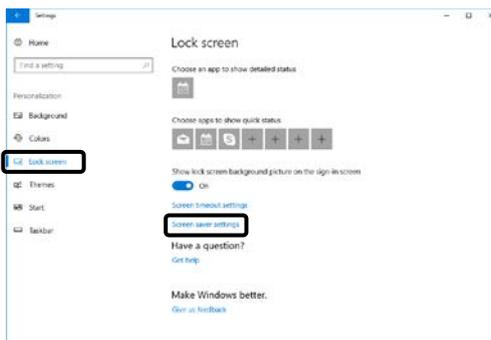
☞ Please set the following configurations for each user that use the Hitachi L-2000 driver for Empower3.

☞ The operating procedure of Windows in this manual is based on Windows 10 Version 1703 (OS Build 15063.0).  
If the version number is different, the operation procedure may be different.

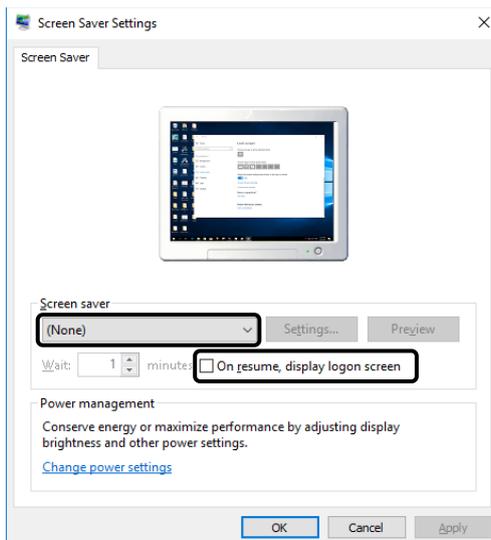
(2) Click [Personalization].



(3) Select [Lock Screen] from the left pane, and click [Screen saver settings].



(4) Select [None] from the drop-down menu and Uncheck of the [On resume, display logon screen] of [Screen saver]. After that click [OK] button.

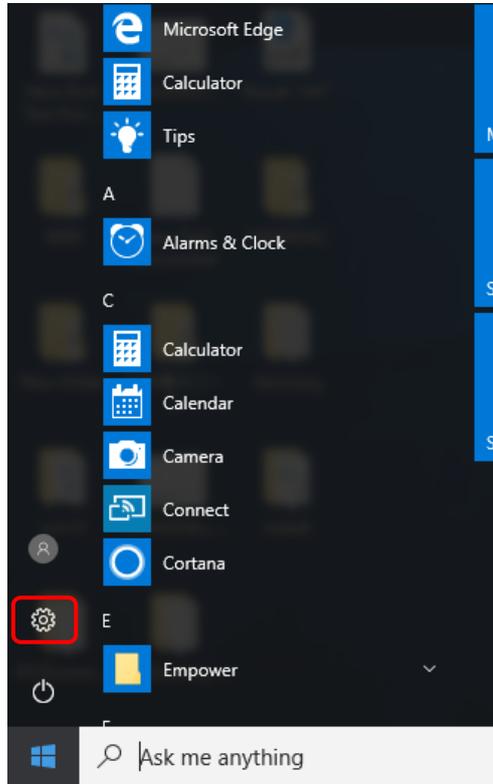


[END]

◆ Setting up Power Options

Set a power plan to [High performance] in accordance with the following process.

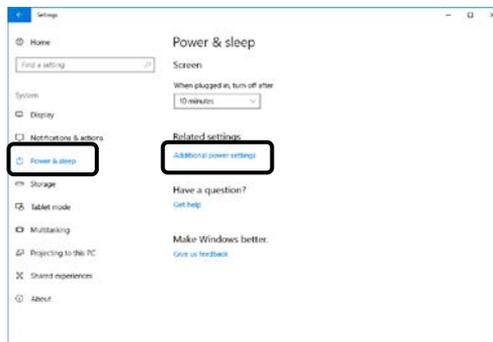
(1) Click [Setting] button from the Start menu.



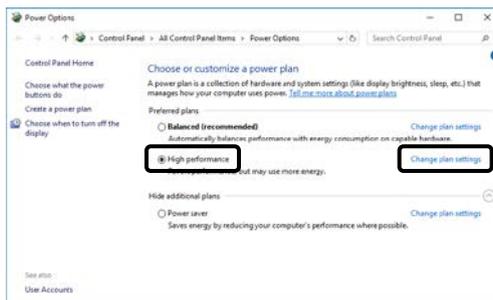
(2) Click [System].



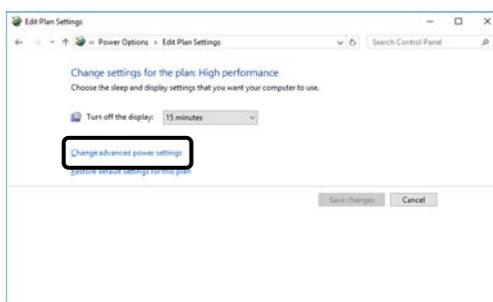
(3) Select [Power & sleep] from the left pane, and click [Additional power settings].



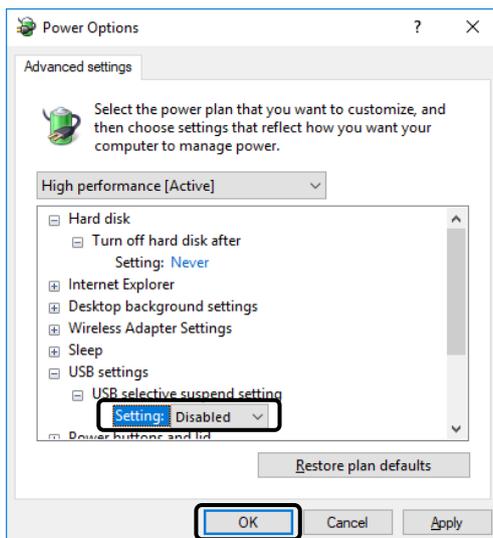
(4) Select [High performance] and then click [Change plan settings].  
 (When "high performers" are not displayed, click "Show Additional plans")



(5) Click [Change advanced power settings].



(6) [Hard disk / Turn off hard disk after] set to [Never], and [USB settings / USB selective suspend setting] set to [Disabled]. Then click [OK] button.

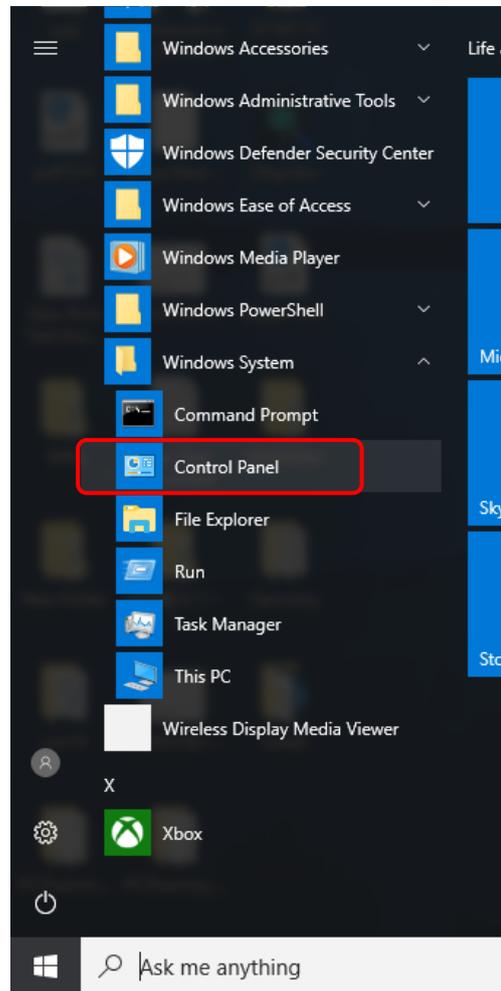


[END]

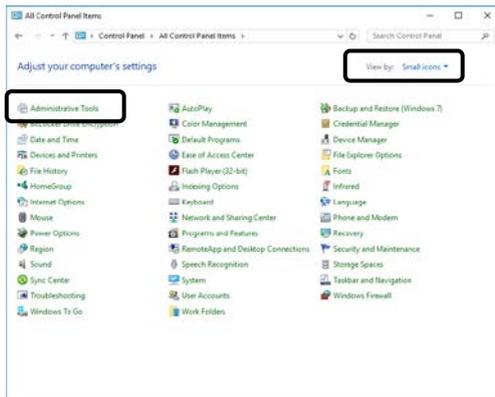
### ◆ Setting up Disk Defragment

Set the schedule of Disk Defragment to [Off] in accordance with the following process.

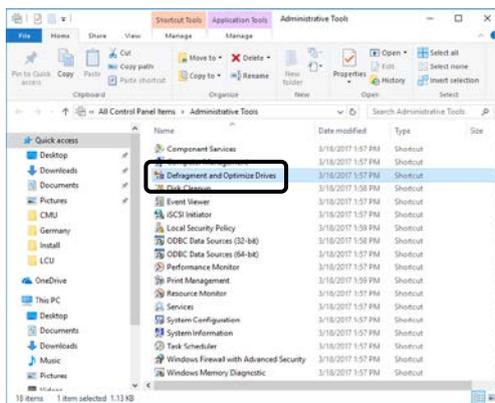
- (1) Select [Windows System / Control Panel] from the Start menu.



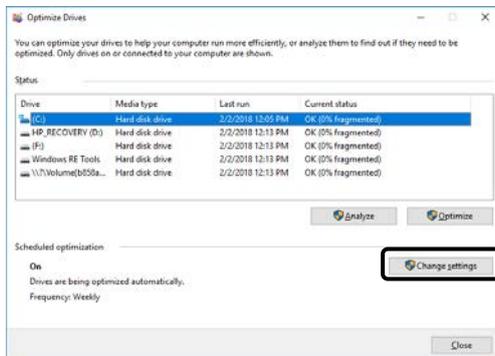
(2) Change [View by] to [Small icons] and choose [Administrative Tools].



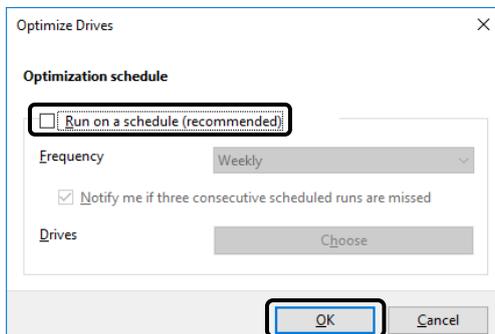
(3) Double click [Defragment and Optimize Drives].



(4) Click [Change settings] button.



(5) Clear the check box for [Run on a schedule (recommended)] and then click [OK] button.



[END]

## 2.2 Installation Procedure

**NOTICE:** The customer must not attempt installation, uninstallation, or upgrade of the software. To insure safe and correct use of the instrument, its installation must be carried out by, or under the supervision of, service personnel qualified by our authorized service agent or us.

Please install the Hitachi L-2000 driver for Empower3 and USB driver for IFB according to the following step.

- (1) Installation of Empower3 (Refer to chapter 2.2.1)
- (2) Installation of Hitachi L-2000 driver for Empower3 (Refer to chapter 2.2.2 and 2.3)
- (3) Installation of USB driver (Refer to chapter 3.1)

### 2.2.1 Installation of Empower™ 3

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Install Empower™ 3 before installation of the Hitachi L-2000 driver for Empower3. Please refer to the manual supplied with your Empower™ 3 for the installation procedure of it.

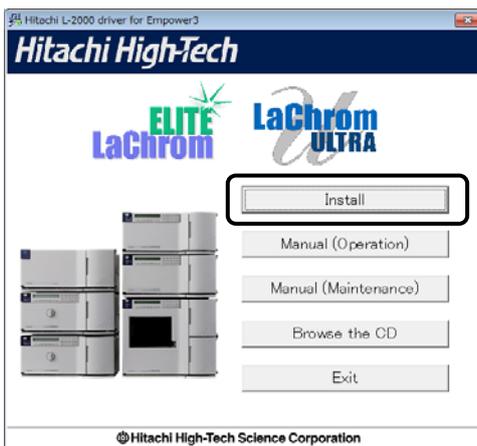
### 2.2.2 Installation of Hitachi L-2000 driver for Empower3

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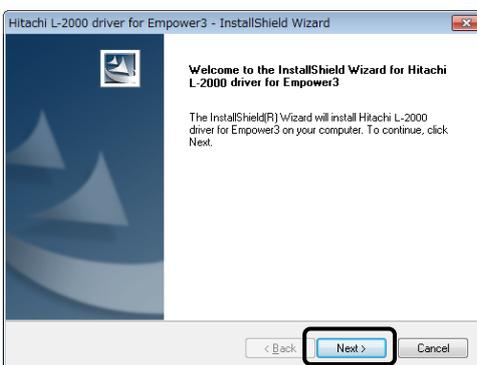
For installing the Hitachi L-2000 driver for Empower3, start up the Windows and logon to PC as an Administrator account. If the Windows cannot be started up normally or if a log-on operation cannot be accomplished, refer to the manual accompanying the Windows. Install the software following the process below.

- (1) Close all running application software and insert the install CD into the Optical drive.

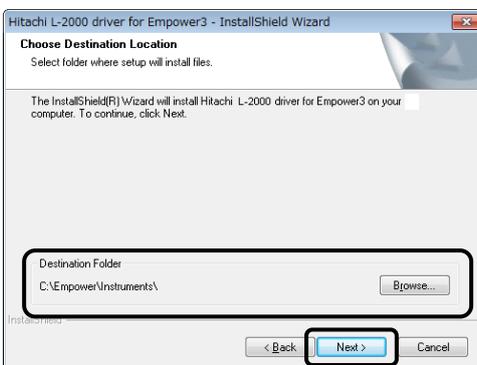
- (2) The dialog shown right is displayed. Click [Install]. If this screen does not appear automatically, browse the CD and run the StartSelector.exe program.



- (3) The InstallShield Wizard dialog box is displayed. Click [Next] to continue the installation.

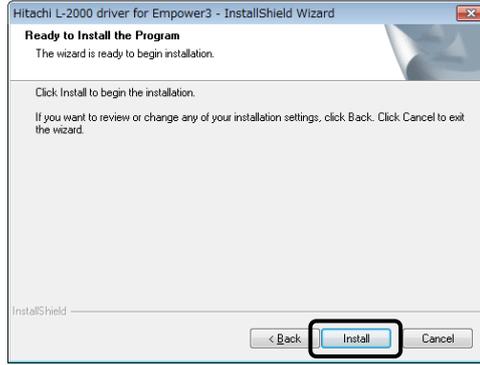


- (4) At the "Choose Destination Location" page, confirm that the Destination Folder is [ C:\Empower\Instruments\ ] and then click <Next>. ([C] is the drive with Empower3 installed.)



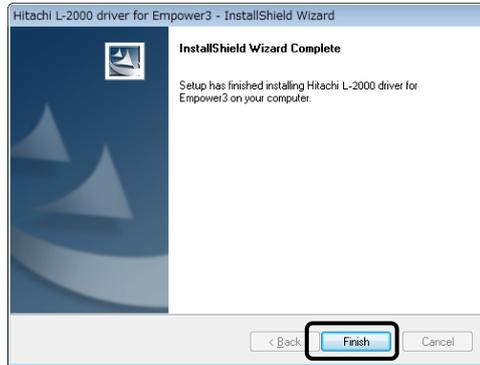
**NOTE:** If you select a folder other than [ C:\Empower\Instruments\ ] as the Destination Folder, this software might not work properly. Be sure to select [ C:\Empower\Instruments\ ] as the Destination Folder.

- (5) At the "Ready to Install the Program" page, click [Install] to start the installation.



- (6) After the "Setup Status" page is closed, the File Verification Utility starts and opens the Checksum.txt file of the File Verification Results log in a WordPad window. Please close this file.

- (7) Upon completion of installation, the InstallShield Wizard Complete dialog box is displayed. Click [Finish] to finish the wizard.



- (8) Remove the install CD from the Optical drive and reboot the PC.

[END]

## 2.3 Verification of Installed Files

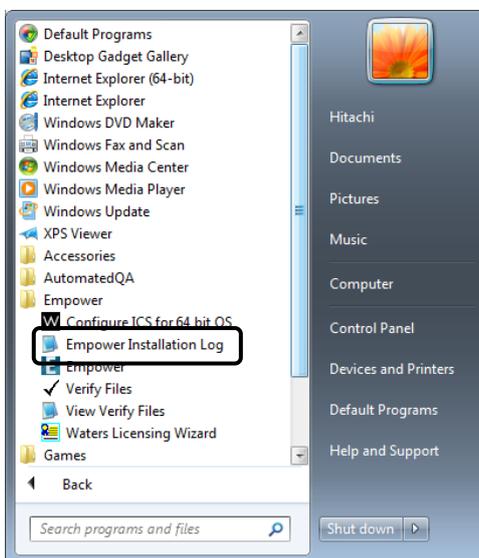
### 2.3.1 Confirmation of the Install Log Text

Using the Installation Log, confirm that the installation has been completed properly.

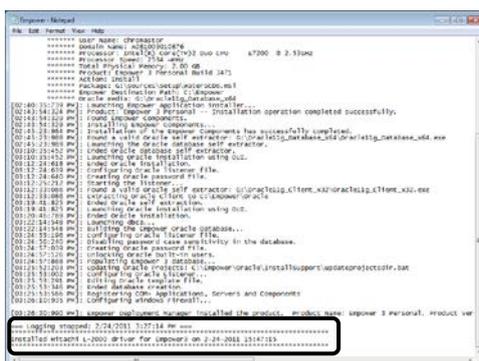
The Installation Log contains information about your Empower installations. You can read the log file to review your installation choices. If the installation has been partial or unsuccessful, you can review the Installation Log to check for errors.

To confirm the Installation Log:

- (1) From the Start menu, click [All Programs] – [Empower] – [Empower Installation Log]. The program displays the Empower log file in Notepad.



- (2) Review the contents of the Installation Log file. The most recent installation is at the end of the file. Confirm that the installation log has recorded the installation of the Hitachi L-2000 driver for Empower3 at the bottom of the log.



[END]

### 2.3.2 File Verification Utility

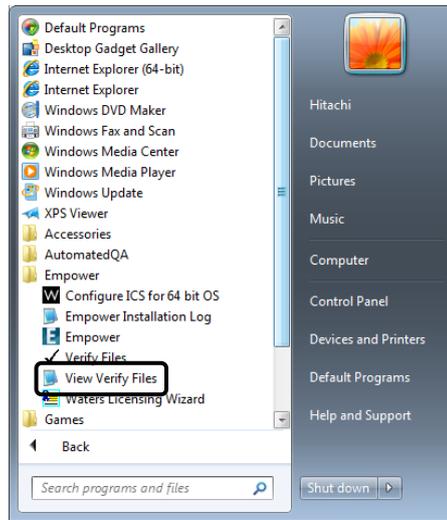
Using the File Verification Utility, confirm the integrity of the installed Empower3 program.

The File Verification Utility checks the integrity of the installed Empower program, data files, and database files.

After installation, use the File Verification Utility to verify the Empower program and data files only (not the database files).

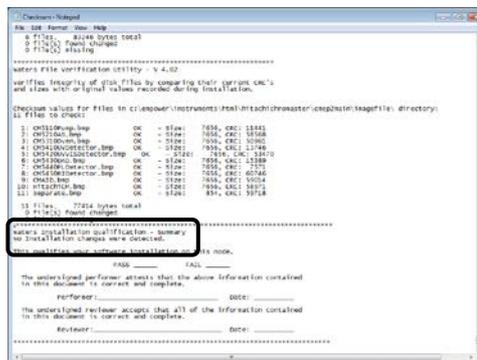
To confirm the integrity of the installed Empower program:

- (1) From the Start menu, click [All Programs]
  - [Empower]
  - [View Verify Files].



- (2) The File Verification Utility compares the installed Empower3 files checksum with a previously stored checksum number, creates a File Verification Results log, and opens the Checksum.txt file in a WordPad window.

- (3) Review the contents of the file. Confirm that the result log has not recorded the file name in "Waters Installation Qualification – Summary" in the closing content. If you store the results, you can print or save a copy.



✎ If installation changes is detected, please restart the PC and reinstall in accordance with Chapter 2.5.

[END]

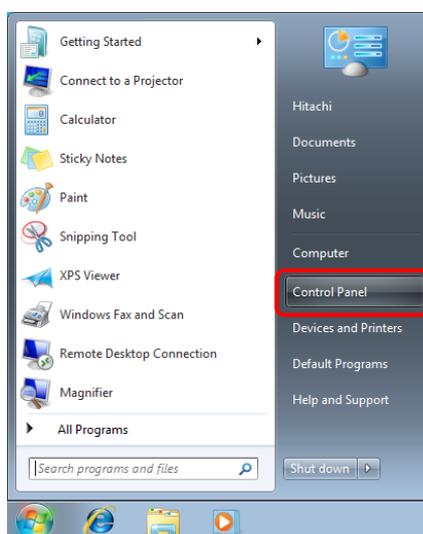
## 2.4 Uninstalling Hitachi L-2000 driver for Empower

For uninstallation of the Hitachi L-2000 driver for Empower, turn on the PC and log on to Windows as a user with Administrator privileges. If Windows doesn't start or you don't log on to Windows, please refer to the manuals accompanying Windows.

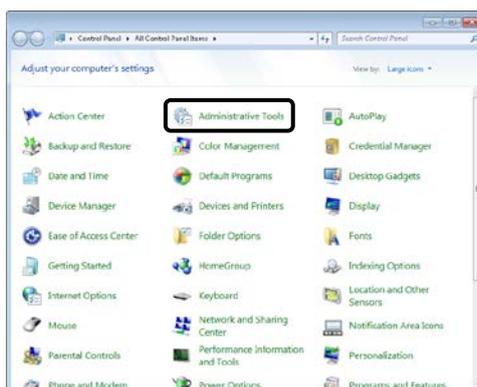
Uninstall the software following the process below.

### 2.4.1 Uninstalling on Windows 7

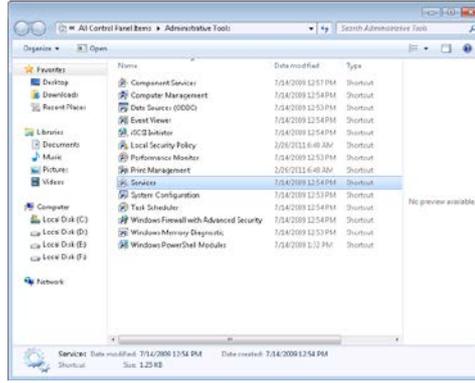
- (1) Select [Control Panel] from Start menu.



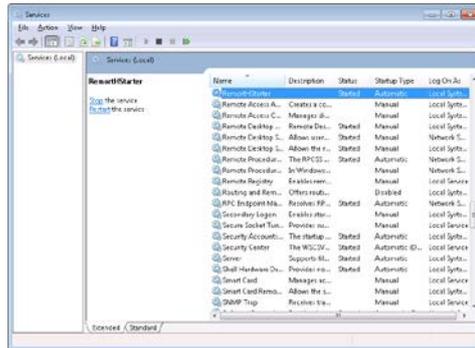
- (2) Double click the <Administrative Tools> item.



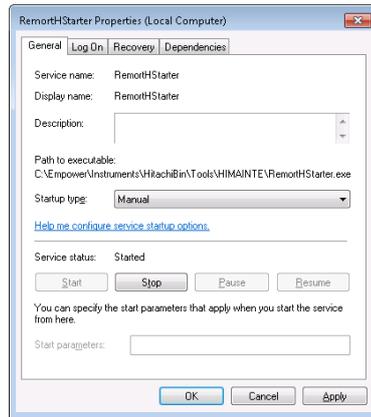
(3) Double click the <Services> item.



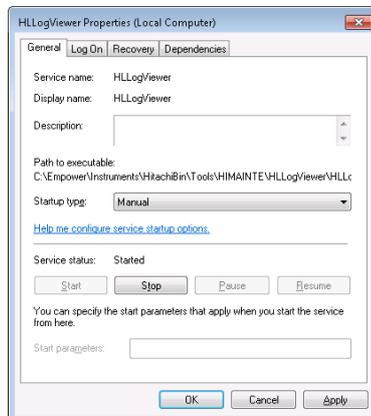
(4) Double click the <RemothStarter> item.



(5) Select <Manual> in <Startup type> and click the <OK> button.

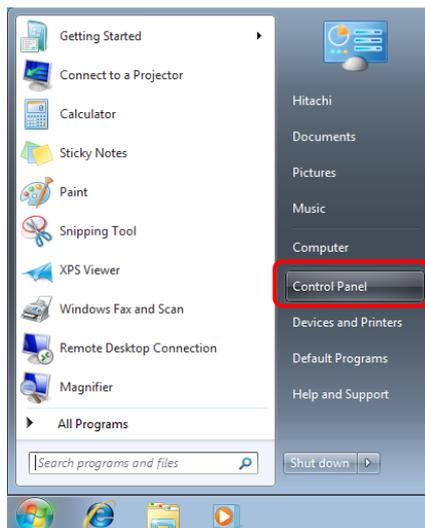


(6) Similarly, change <startup type> into <manual> in regard to <HLLogViewer>.

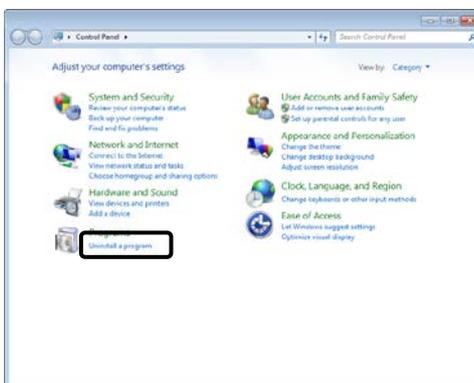


(7) Reboot the PC.

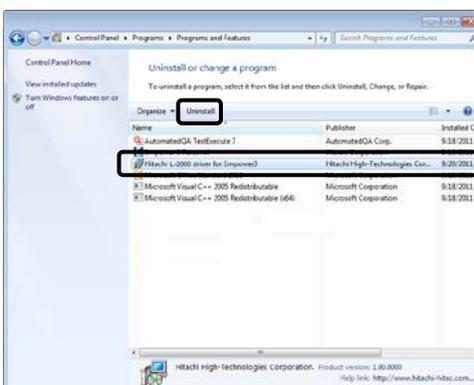
(8) After restarting the PC, on the <Start> menu, select the <Control Panel> item.



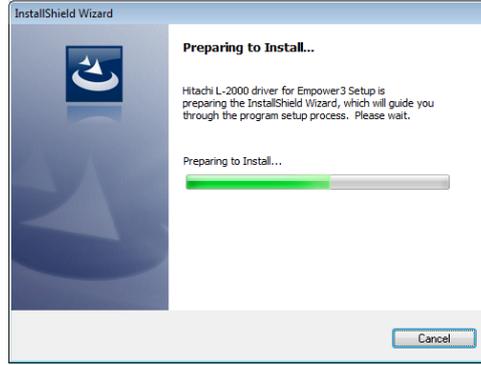
(9) Click [Uninstall a program].



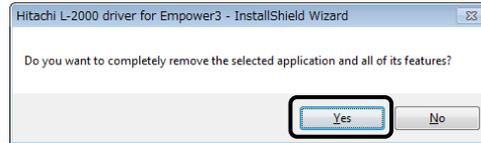
(10) Select the [Hitachi L-2000 driver for Empower3], and click the [Uninstall].



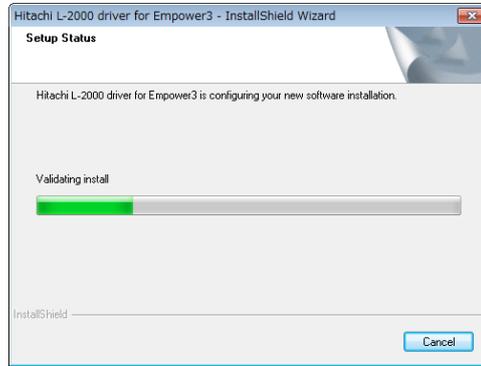
- (11) The dialog box for preparing for uninstallation is displayed.



- (12) Click the [Yes] button.



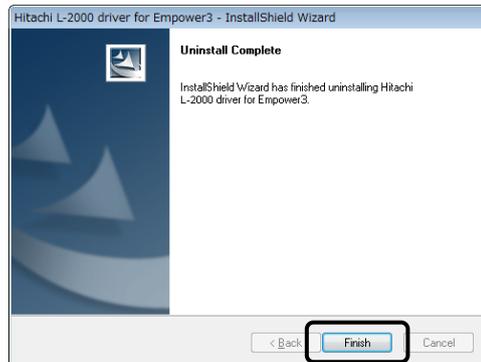
- (13) The dialog box shown below is displayed during uninstallation.



- (14) After the Setup Status page was closed, the File Verification Utility starts and opens the Checksum.txt file of a File Verification Results log in a WordPad window. Please close this file.

**NOTE:** Although changed parts are detected during file verification, uninstallation is performed normally. These are the parts changed by uninstallation of the Hitachi L-2000 driver for Empower3.

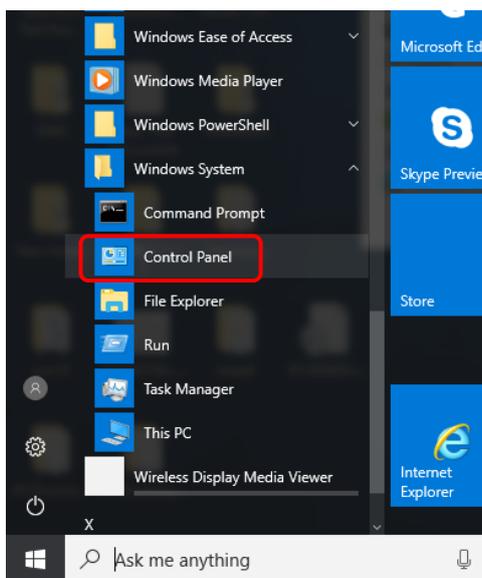
- (15) On completion of uninstallation, the dialog box shown at the right comes up. In this dialog box, click the [Finish] button.



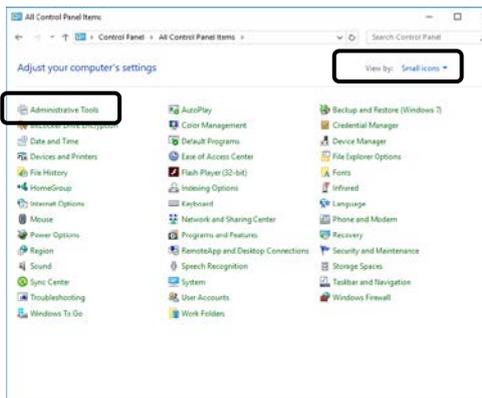
[END]

## 2.4.2 Uninstalling on Windows 10

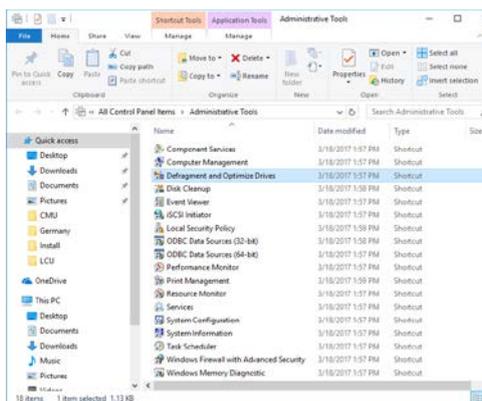
(1) Select [Windows System / Control Panel] from the Start menu.



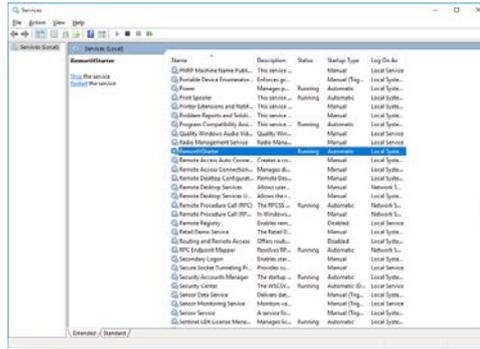
(2) Change [View by] to [Small icons] and choose [Administrative Tools].



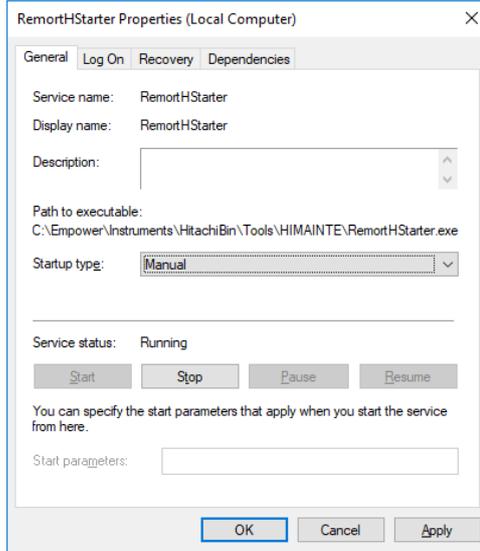
(3) Double click [Services].



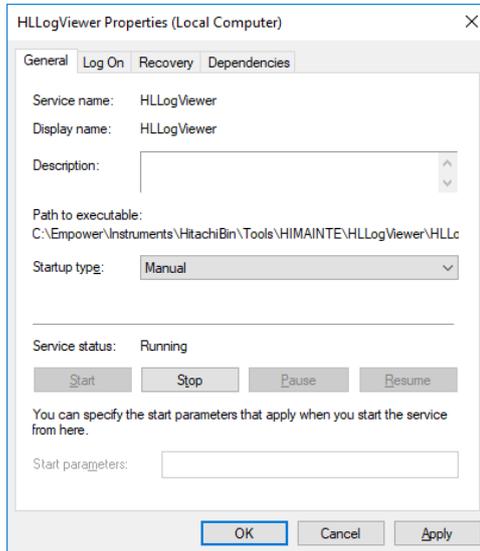
(4) Double click the <RemortHStarter> item.



(5) Select <Manual> in <Startup type> and click the <OK> button.

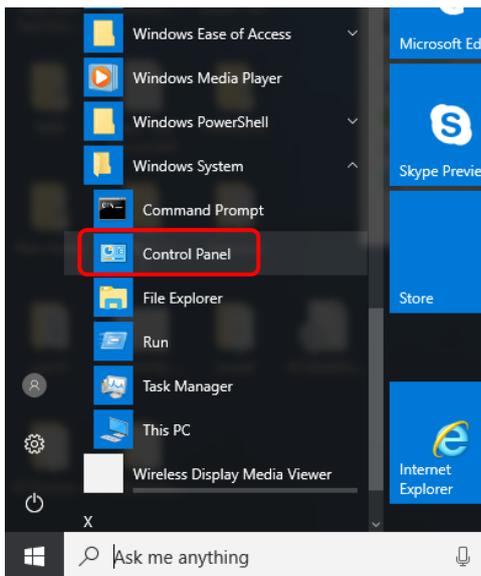


(6) Similarly, change <startup type> into <manual> in regard to <HLLogViewer>.

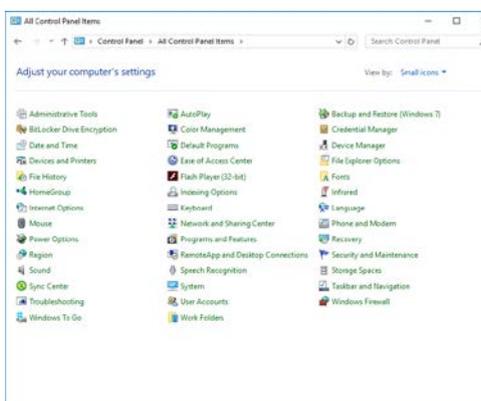


(7) Reboot the PC.

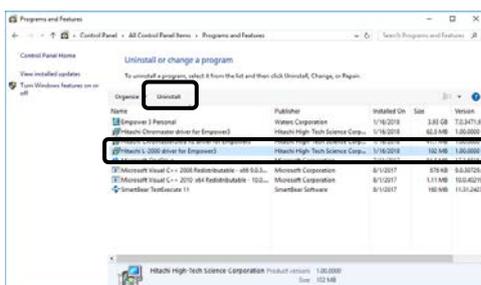
(8) After restarting the PC, on the <Start> menu, select the <Control Panel> item.



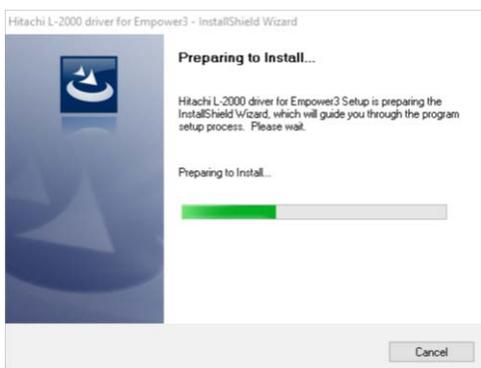
(9) Double click [Program and Features].



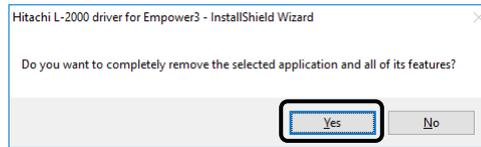
(10) Select the [Hitachi L-2000 driver for Empower3], and click the [Uninstall].



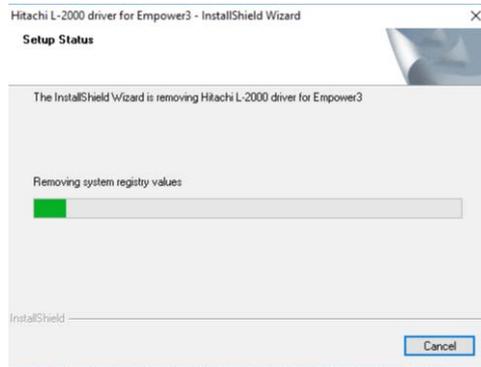
(11) The dialog box for preparing for uninstallation is displayed.



(12) Click the [Yes] button.



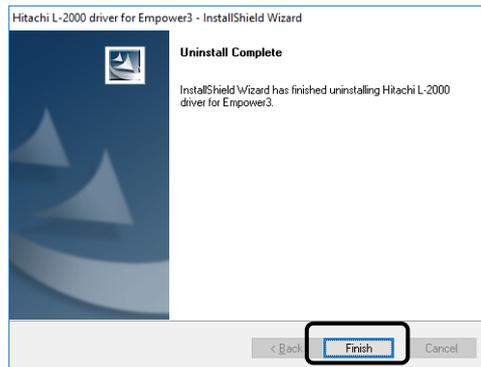
(13) The dialog box shown below is displayed during uninstallation.



(14) After the Setup Status page was closed, the File Verification Utility starts and opens the Checksum.txt file of a File Verification Results log in a WordPad window. Please close this file.

**NOTE:** Although changed parts are detected during file verification, uninstallation is performed normally. These are the parts changed by uninstallation of the Hitachi L-2000 driver for Empower3.

(15) On completion of uninstallation, the dialog box shown at the right comes up. In this dialog box, click the [Finish] button.



[END]

## **2.5 Upgrading Hitachi L-2000 driver for Empower**

When upgrading the existing Hitachi L-2000 driver for Empower3, uninstall it in accordance with Chapter 2.4 and then perform installation as instructed in Section 2.2 or 2.3.

# 3

## INSTALLING COMMUNICATION INTERFACE

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This section describes how to mount the communication interface and install the driver for the communication interface.

3.1 Installing USB Interface Board .....	3-1
3.2 Installation of the USB driver for IFB .....	3-3
3.3 Setting up the DTC (L-2455U).....	3-11
3.4 Installation of the USB driver for DTC .....	3-11

# 3



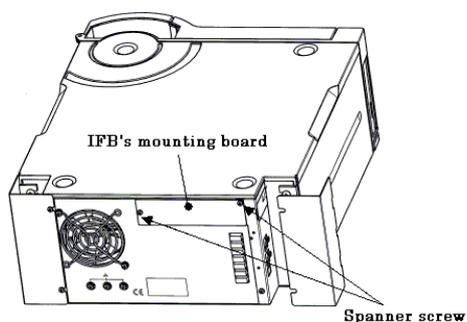
### 3.1 Installing USB Interface Board

The LaChrom Elite module or LaChromUltra module communicates with the personal computer via the USB Interface Board (IFB).

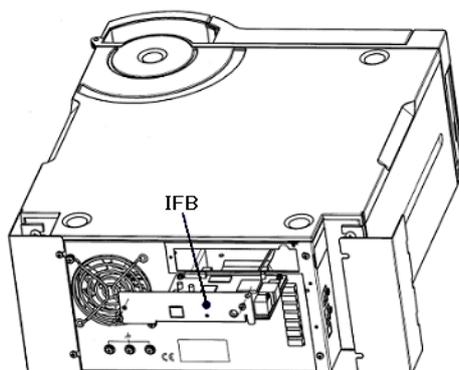
Mount the IFB by following the process below.

- (1) Turn off the power to the LaChrom Elite module or LaChromUltra module, and disconnect the power cord from it.

- (2) Remove the two spanner screws from the IFB's mounting board on the rear face of the module and remove the IFB's mounting board.



- (3) Insert the IFB into the area from which you removed the IFB's mounting board and screw it down. It is not necessary to secure the connector part.

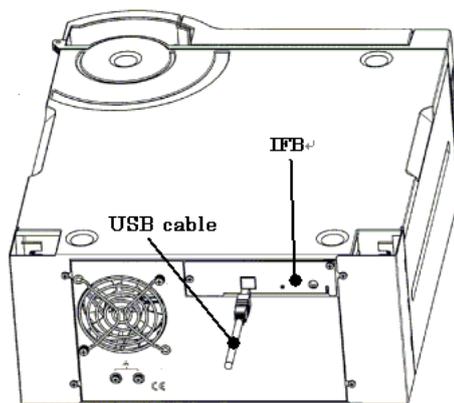


**NOTE:** The IFB should be connected to the instrument, not to turn on/off on the setting and analysis procedure. The autosampler is a suitable unit for connecting to the IFB.

**NOTE:** The IFB should be installed on one module per system. For multi-system control systems, each board should have a unique ID number. The ID number of the board can be selected by using the rotary switch on the IFB. Set Sys1 to 0 or 1, Sys2 to 2, Sys3 to 3, and Sys4 to 4.

(4) Connect the IFB and the module with an e-Line cable. Be sure to connect the e-Line cable to the upper e-Line connector of the module in order to supply power to the IFB.

(5) Using the USB cable (A-B type) that is supplied as standard with the IFB, connect the USB cable terminal of the IFB to the USB port of the PC.



[END]

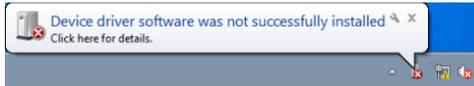
## 3.2 Installation of the USB driver for IFB

Install the IFB driver by following the process below.

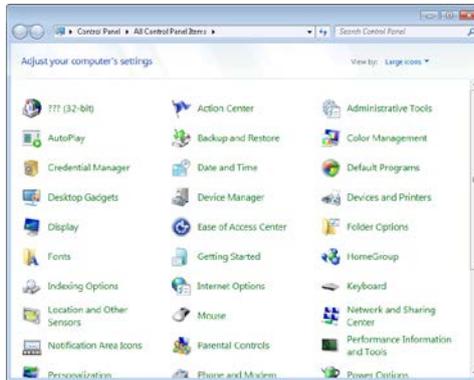
### 3.2.1 Install on Windows® 7

- (1) Turn on power to the PC and then turn on power to the module including the IFB.

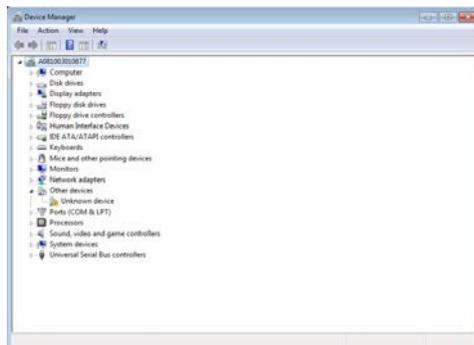
- (2) The <Device driver software was not successfully installed> message is displayed, close it.



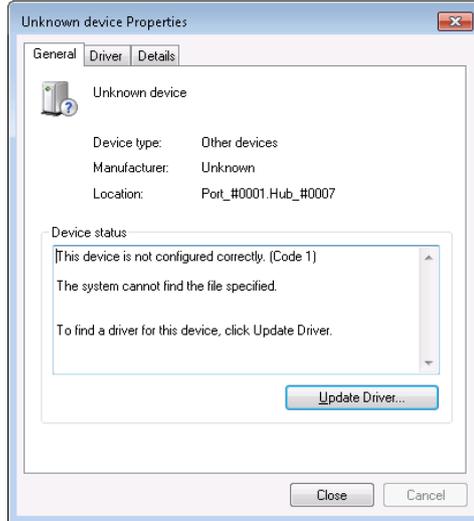
- (3) On the <Start> menu, select the <Control Panel> item, and then double click the <Device Manager> item. (For Windows Vista, the User Account Control dialog box might be displayed after click OK. Please click Continue.)



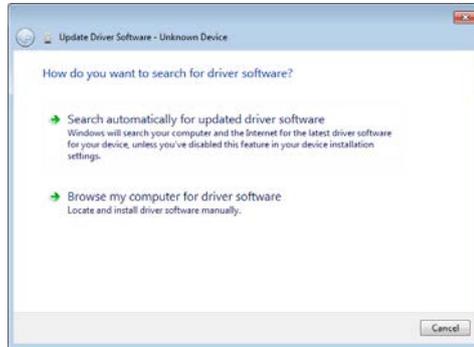
- (4) The Device Manager screen is displayed. Double click the <Unknown device> item.



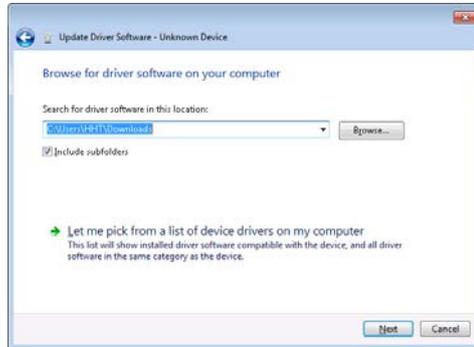
- (5) The following dialog is displayed. Click the <Update Driver...> button.



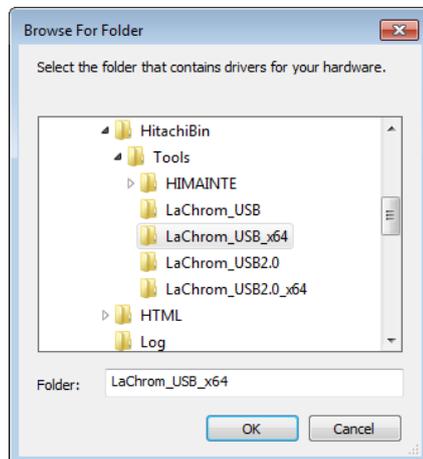
- (6) The following dialog is displayed, and then clicks the <Browse my computer for driver software> item.



- (7) The following dialog is displayed. Click the <Browse...> button.



- (8) Select the folder, <C:\Empower\Instruments\HitachiBin\Tools\LaChrom\_USB\_x64>, and then click <OK>.



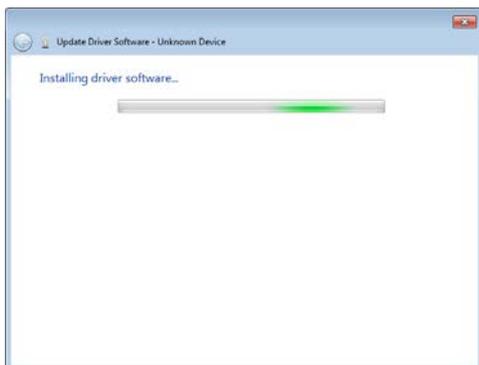
(9) With the driver software location displayed in the dialog. Click the <Next> button.



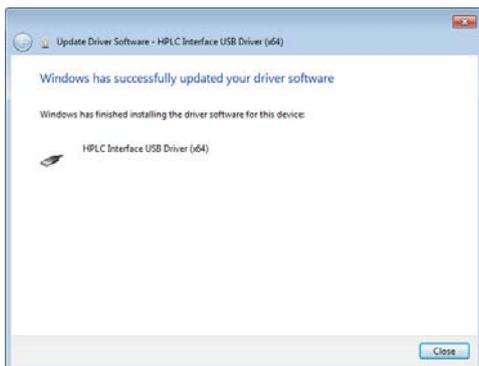
(10) The following dialog is displayed. Click the <Install this driver software anyway> item.



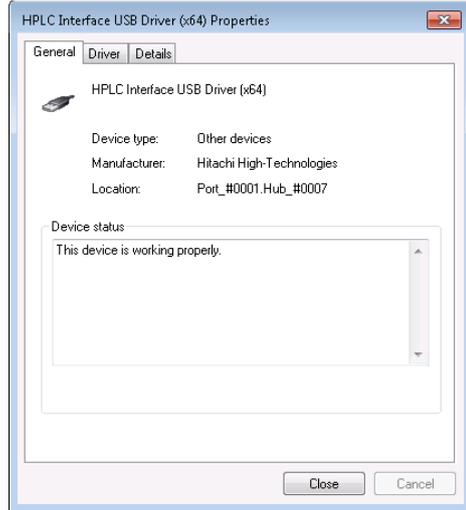
(11) The installation is started. Please wait.



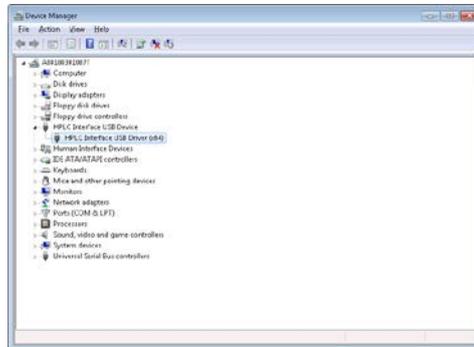
(12) The following dialog is displayed after completing the installation. Click the <Close> button.



- (13) The HPLC Interface USB Driver(x64) Properties screen is displayed, and then clicks the <Close> button.



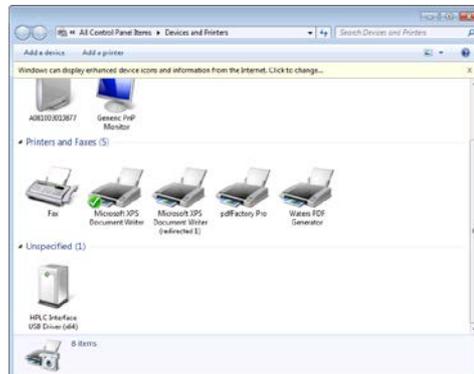
- (14) When the installation is completed, the Device Manager screen is as follows.



- (15) To check that the driver software has been installed normally, double-click its icon on the lower right part of the screen (marked with the red circle).



- (16) The dialog box for ensuring safe removal of hardware is then presented. Make sure that "HPLC Interface USB Driver (x64)" is indicated in this dialog box.



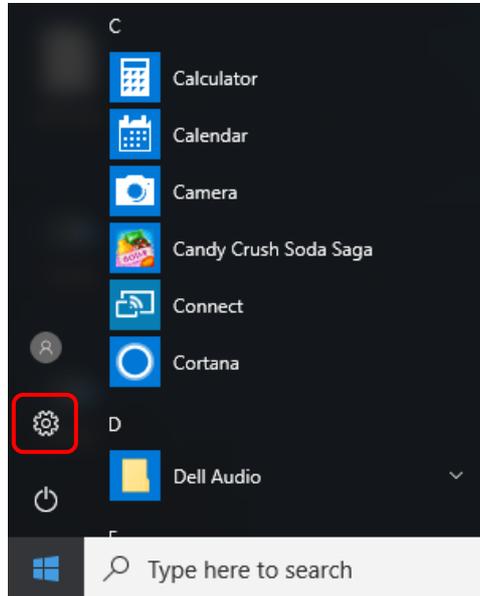
This is the end of the installation.

[END]

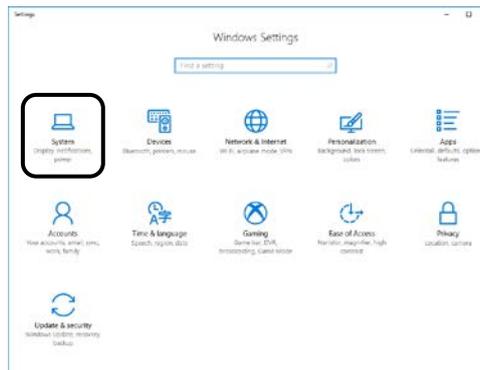
### 3.2.2 Install on Windows® 10

(1) Turn on power to the PC and then turn on power to the module including the IFB.

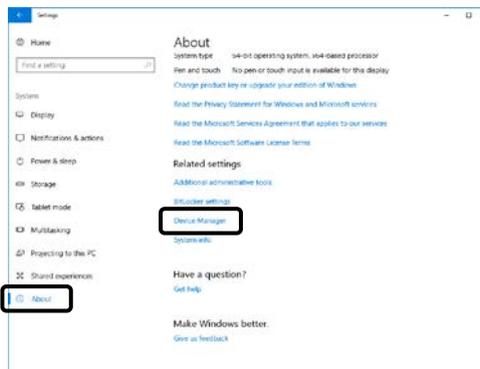
(2) Click [Settings] from Start menu.



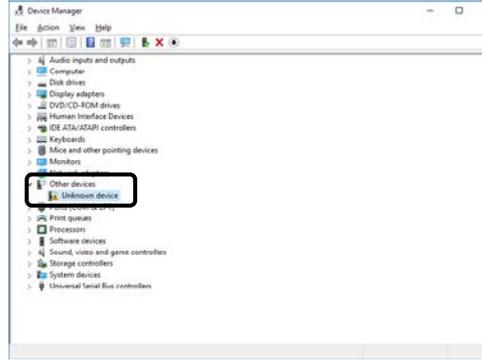
(3) Click [System].



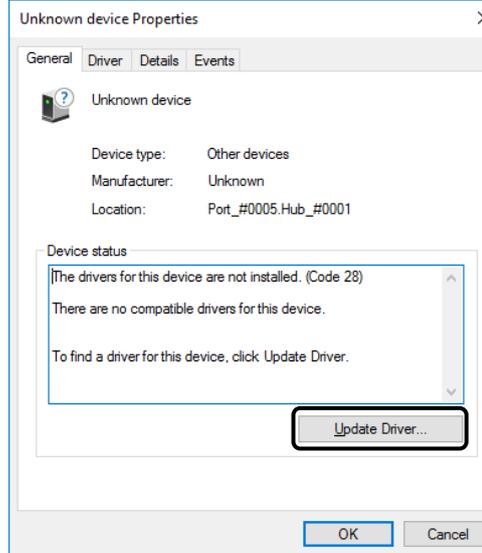
(4) On the System page, switch to the About tab and click [Device Manager].



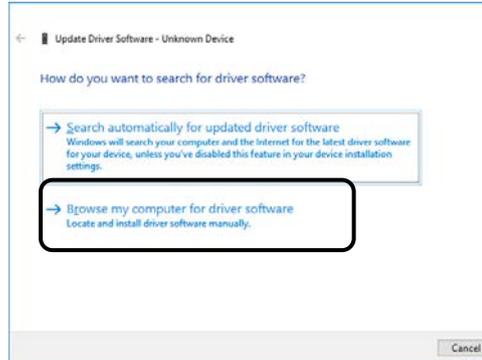
(5) Double-click [Unkown device] under Other devices to open the Unkonwn device Properties dialog.



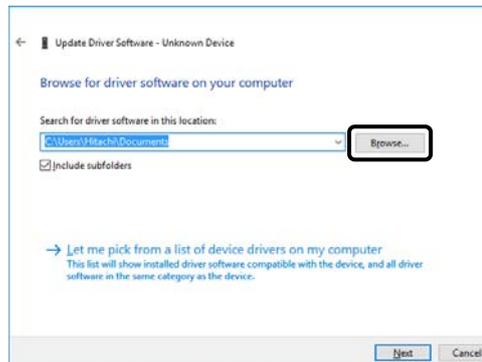
(6) Open [General] tab and then click the [Update Driver...] button.



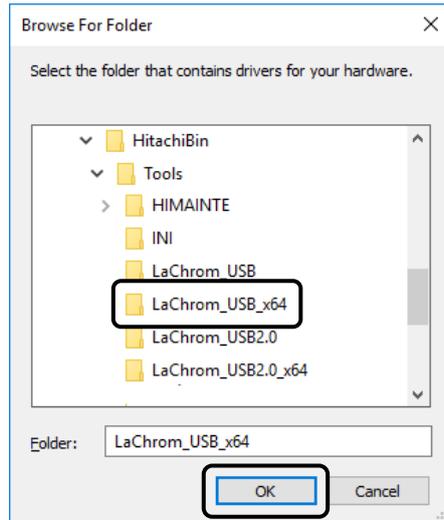
(7) Click the [Browse my computer for driver software].



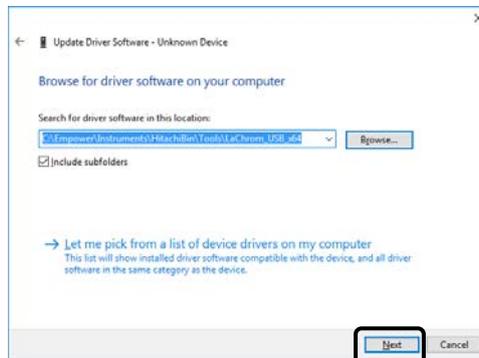
(8) Click the [Browse...] button.



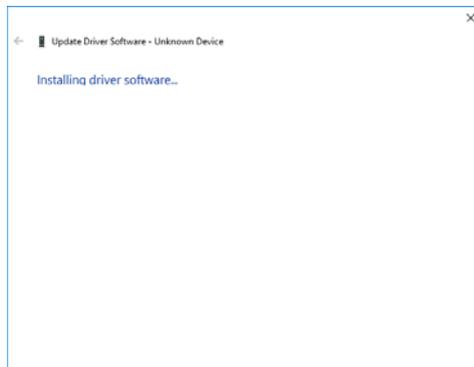
(9) Select the folder, <C:\Empower\Instruments\HitachiBin\Tools\LaChrom\_USB\_x64>, and then click <OK>.



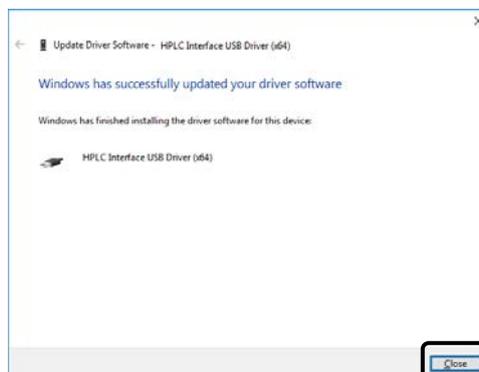
(10) With the driver software location displayed in the dialog. Click the <Next> button.



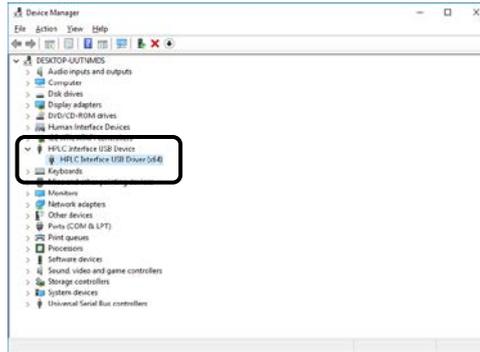
(11) The installation is started. Please wait.



(12) The dialog shown right appears after completing the installation. Click the [Close] button.



(13) Make sure that "HPLC Interface USB Driver (x64)" is indicated in the Device Manager screen.



This is the end of the installation.

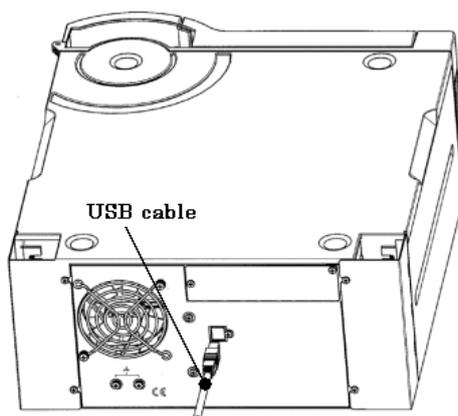
[END]

### 3.3 Setting up the DTC (L-2455U)

L-2455U DAD executes data transfer to the personal computer via DTC (Data Transfer Controller).

Connect the USB cable by following the process below.

- (1) Using the USB cable (A-B type) that is supplied as standard with the L-2455U DAD, connect the USB cable terminal of the DTC to the USB port of the PC.



[END]

### 3.4 Installation of the USB driver for DTC

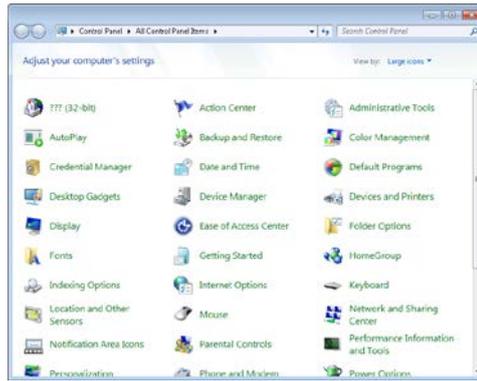
Install the DTC driver by following the process below.

#### 3.4.1 Install on Windows® 7

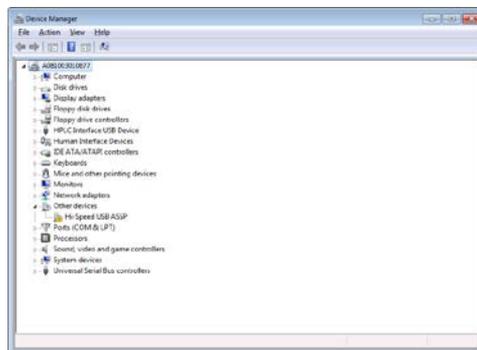
- (1) Turn on power to the PC and then turn on power to the L-2455U DAD.
- (2) The <Device driver software was not successfully installed> message is displayed, close it.



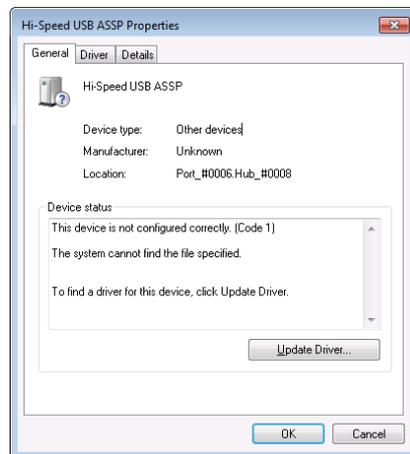
(3) On the <Start> menu, select the <Control Panel> item, and then double click the <Devices and Printers> item. (For Windows 7, the User Account Control dialog box might be displayed after click OK. Please click Continue.)



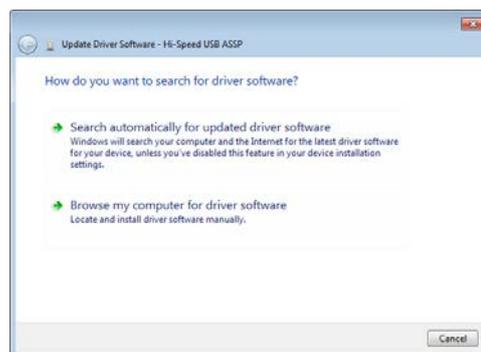
(4) The Device Manager screen is displayed. Double click the <Hi-Speed USB ASSP> item.



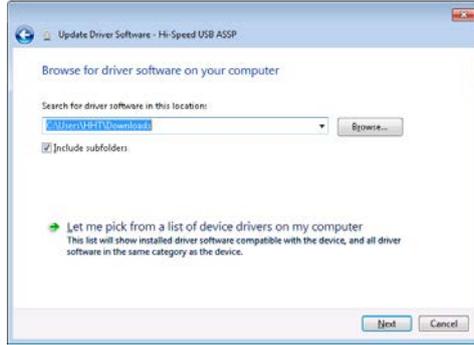
(5) The following dialog is displayed. Click the <Update Driver...> button.



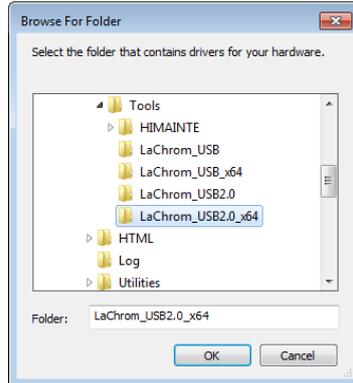
(6) The following dialog is displayed, and then clicks the <Browse my computer for driver software> item.



- (7) The following dialog is displayed. Click the <Browse...> button.



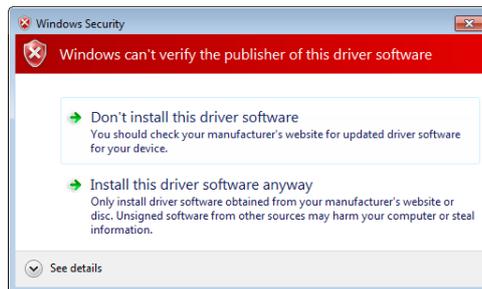
- (8) Select the folder, <C:\Empower\Instruments\HitachiBin\Tools\LaChrom\_USB 2.0\_x64>, and then click <OK>.



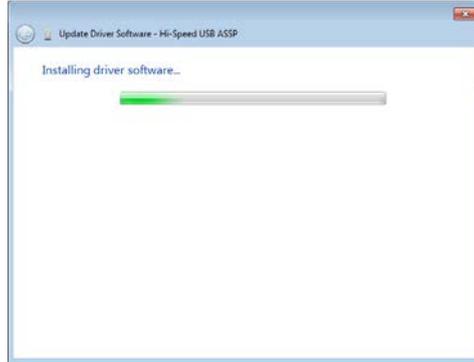
- (9) With the driver software location displayed in the dialog. Click the <Next> button.



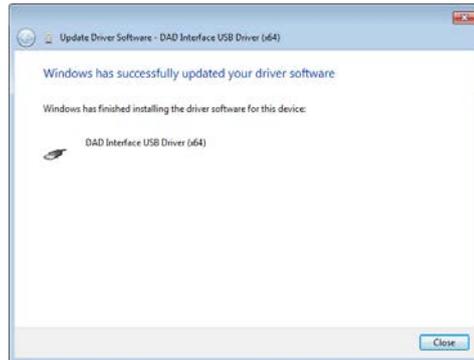
- (10) The following dialog is displayed. Click the <Install this driver software anyway> item.



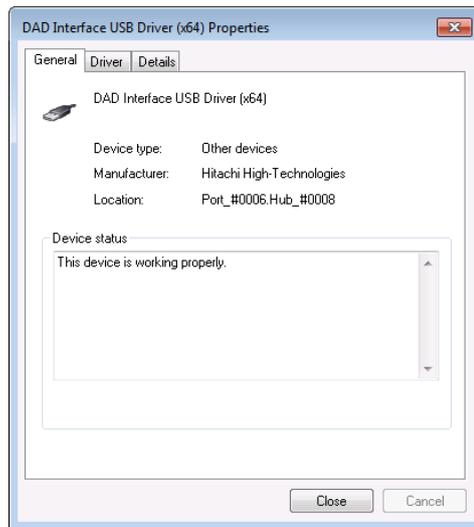
(11) The installation is started. Please wait.



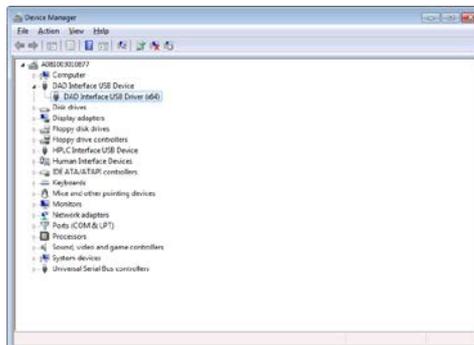
(12) The following dialog is displayed after completing the installation. Click the <Close> button.



(13) The DAD Interface USB Driver(x64) Properties screen is displayed, and then clicks the <Close> button.



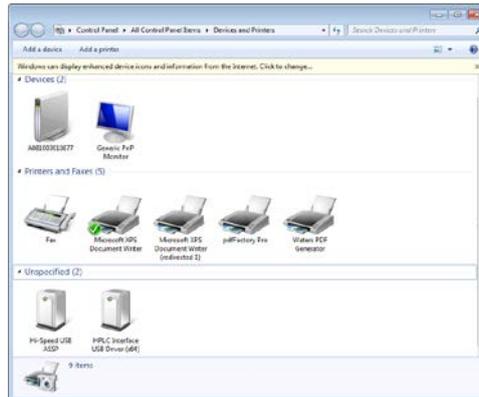
(14) When the installation is completed, the Device Manager screen is as follows.



- (15) To check that the driver software has been installed normally, double-click its icon on the lower right part of the screen (marked with the red circle).



- (16) The dialog box for ensuring safe removal of hardware is then presented. Make sure that "Hi-Speed USB ASSP" is indicated in this dialog box.



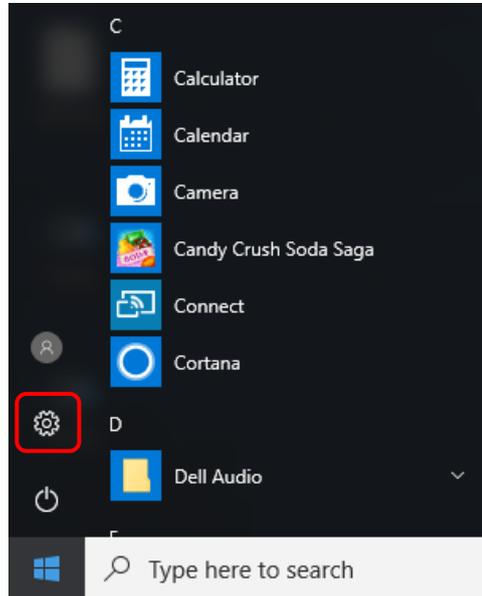
This is the end of the installation.

[END]

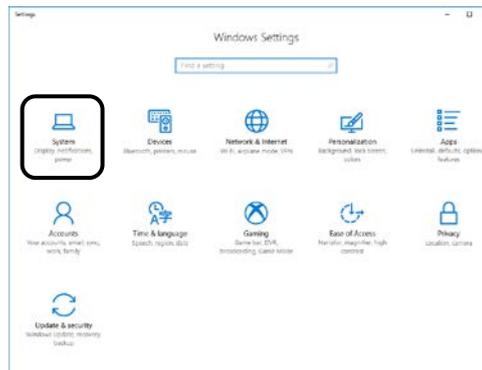
### 3.4.2 Install on Windows® 10

(1) Turn on power to the PC and then turn on power to the L-2455U DAD.

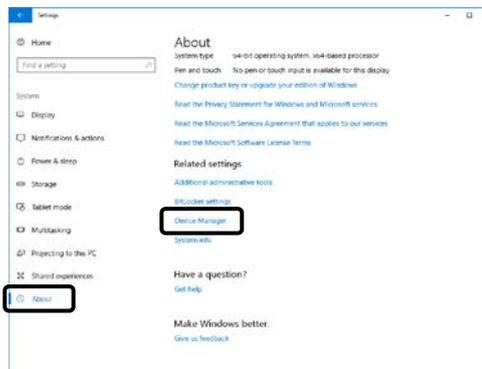
(2) Click [Settings] from Start menu.



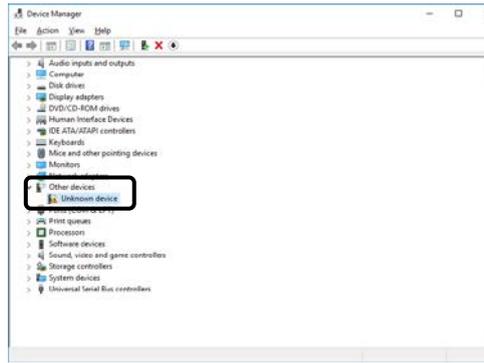
(3) Click [System].



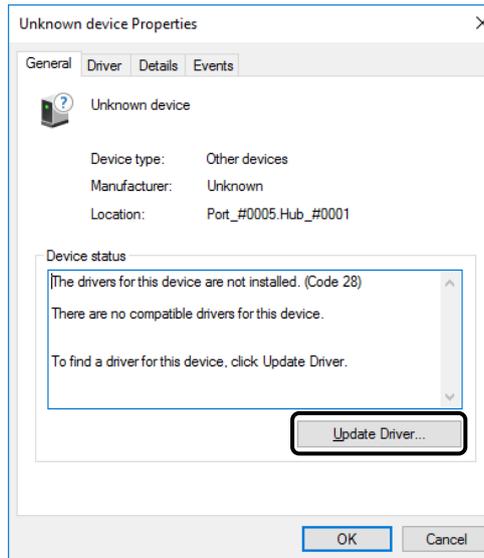
(4) On the System page, switch to the About tab and click [Device Manager].



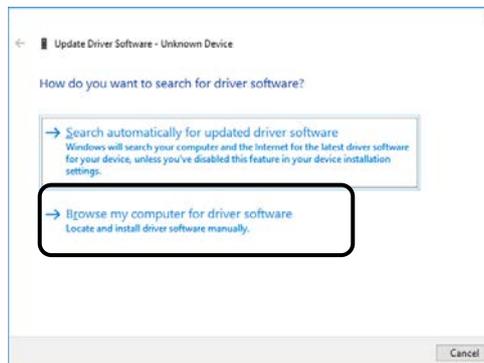
(5) Double-click [Unknown device] under Other devices to open the Unknown device Properties dialog.



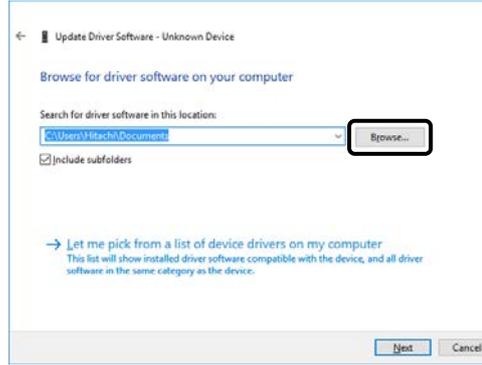
(6) Open [General] tab and then click the [Update Driver...] button.



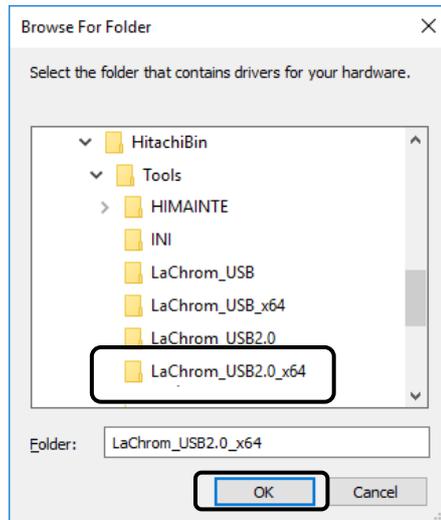
(7) Click the [Browse my computer for driver software].



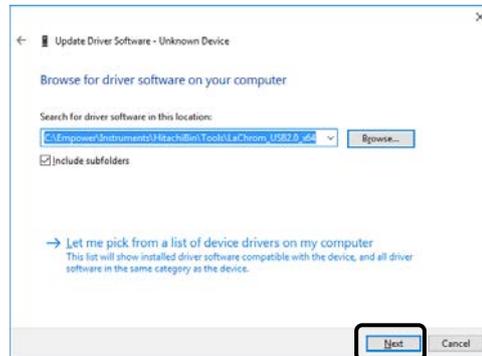
(8) Click the [Browse...] button.



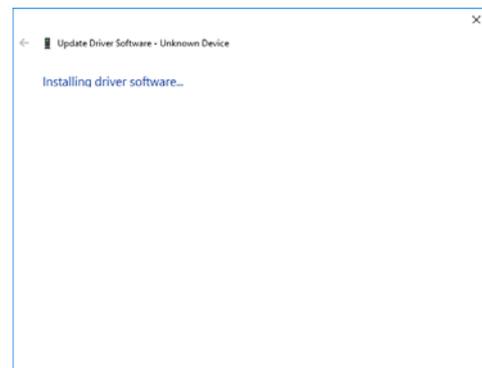
(9) Select the folder, [X:\Empower\Instruments\HitachiBin\Tools\LaChrom\_USB 2.0\_x64], and then click [OK].



(10) With the driver software location displayed in the dialog. Click the [Next] button.



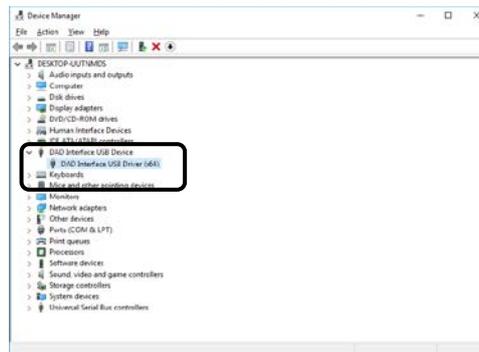
(11) The installation is started. Please wait.



(12) The dialog shown right appears after completing the installation. Click the [Close] button.



(13) Make sure that "DAD Interface USB Driver(x64)" is indicated in the Device Manager screen.



This is the end of the installation.

[END]

# 4

## CHECKING THE INSTRUMENT REGISTRATION AND CONNECTION

---

This section describes how to check the instrument registration and connection of the L-2000 LaChrom Elite/Ultra Series models.

4.1	Checking the Connection with Maintenance Software .....	4-1
4.2	Setting up the Empower3 Chromatography System.....	4-3
4.3	Checking the Connection with Empower3.....	4-7

# 4



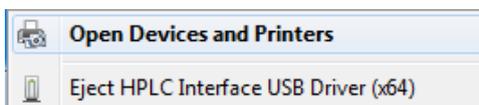
## 4.1 Checking the Connection with Maintenance Software

- (1) Turn on the power supply of all the L-2000 LaChrom Elite/Ultra Series modules. Then check that no error occurs after initialization of each module.

- (2) Double-click the Safely Remove Hardware icon on the task tray.

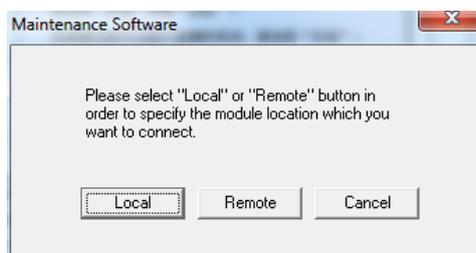


- (3) The Safely Remove Hardware dialog box is displayed. Check that the HPLC Interface USB Driver is displayed in the dialog box.

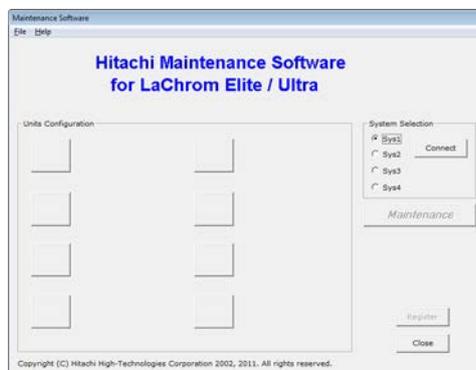


- (4) On the <Start> menu, Select <All Programs> → <Hitachi L-2000 driver for Empower3> → <RemoteMaintenance>.
- (5) The Maintenance Software is launched.

- (6) Click the <Local> button. Click the <Remote> button when a PC on a network is connected to the module.



- (7) Select the system ID (Sys1-Sys4), then click <Connect>.

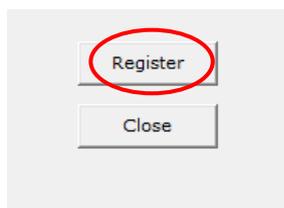


**NOTE:** Even if the Hitachi L-2000 driver for Empower3 is closed, the connection with Empower is maintained. The connection will be broken when the Maintenance Software is used, so be sure to reboot the PC. When the Maintenance Software is used without rebooting the PC, the connection with all systems will be closed.

- (8) The module icon connecting to your PC is displayed.



- (9) Click <Register>.



- (10) Click <Close> to close the Maintenance Software.

[END]

## 4.2 Setting up the Empower3 Chromatography System

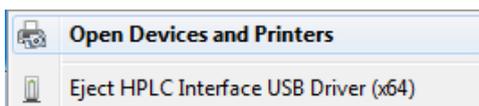
Set up the chromatography system for use with the Empower system control.

- (1) Turn on the power supply of the PC.
- (2) Turn on the power supply of all the L-2000 LaChrom Elite/Ultra Series modules. Then check that no errors occur after- initialization of each module.

- (3) Double-click the Safely Remove Hardware icon on the task bar.



- (4) The Safely Remove Hardware dialog box is displayed. Check that the HPLC Interface USB Driver is displayed in the dialog box.

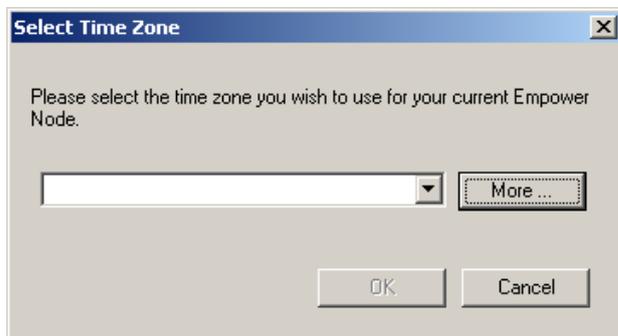


- (5) On the <Start> menu, select <All Program> → <Empower> → <Empower>. The Empower3 Login dialog is displayed. Enter User Name and Password as follows, then click <Advanced>.

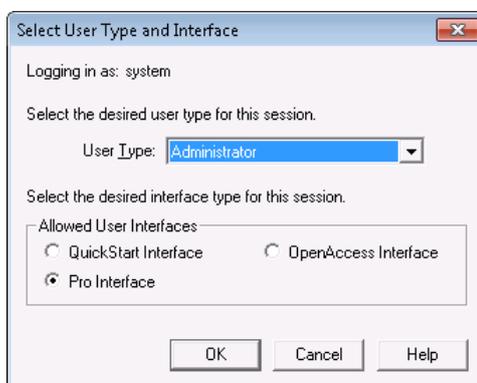


User Name : system  
Password : manager

**NOTE:** If you have never launched Empower, the Select Time Zone dialog box will be displayed. Select the time zone, then click <OK>.



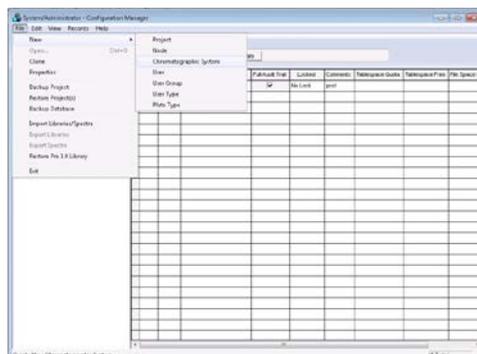
- (6) Select <Pro Interface> in the Allowed User Interfaces group box, then click <OK>.



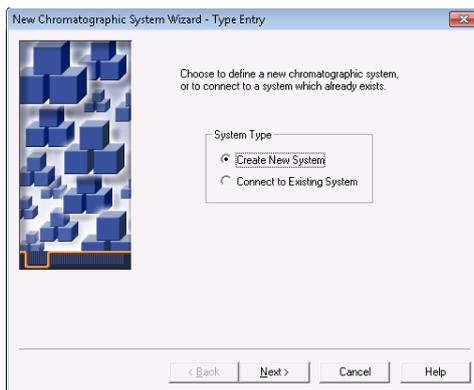
- (7) Click <Configure System>.



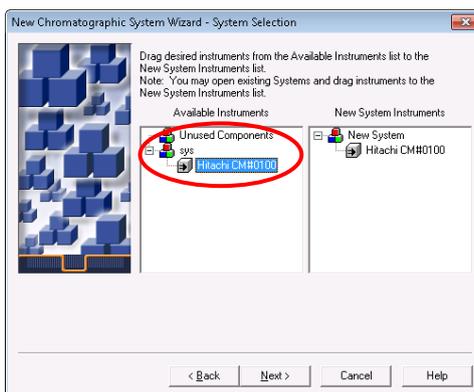
- (8) Select <File> → <New> → <Chromatographic System>.



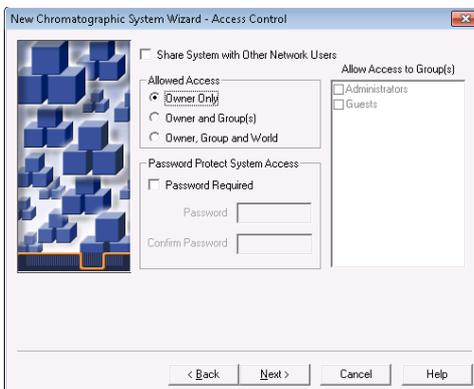
- (9) Select <Create New System> in the System Type group box, then click <Next>.



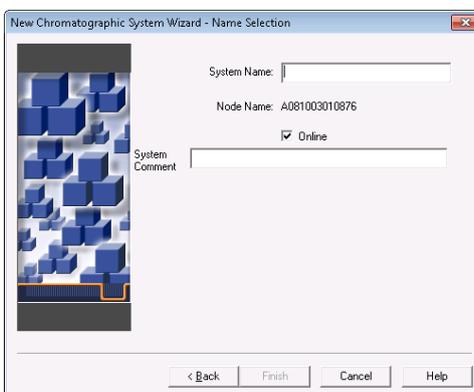
- (10) Select the instrument icon that you want to use from the Available Instruments list, then double-click the icon. Check that the icon moves to the New System Instruments list, then click <Next>.



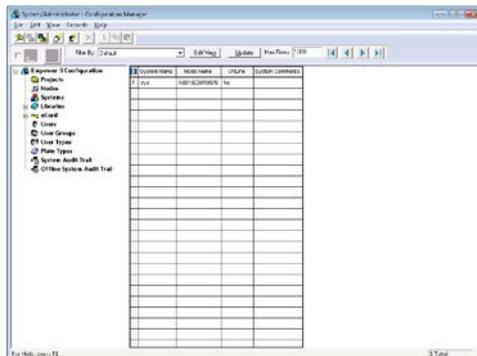
- (11) Setup the access control, then click <Next>.



- (12) Enter the system name, then click <Finish>.



- (13) Check that the system name is displayed in the Systems list.

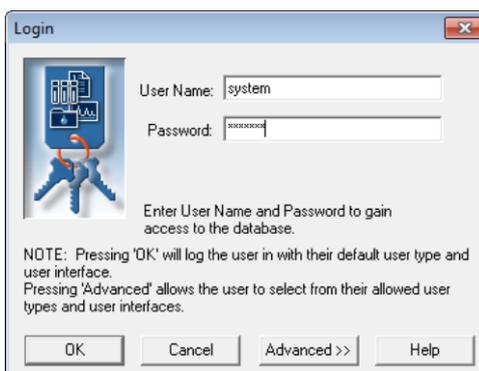


**NOTE:** The registration of plural systems that are neither used nor connected to instrument will cause failure or delay (up to 1 hour) of the program startup process.  
Maintain the maximum registration number of the system as 4 or less.

[END]

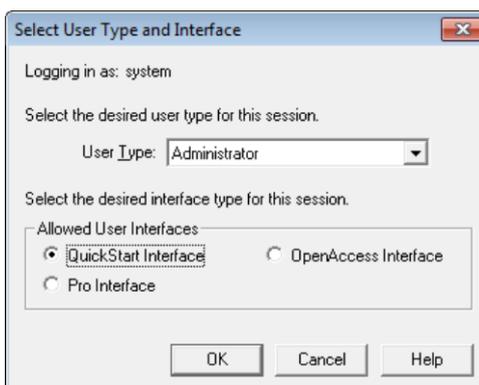
### 4.3 Checking the Connection with Empower3

- On the <Start> menu, select <All Programs> → <Empower> → <Empower> item. The Empower3 Login dialog box is displayed. Enter User Name and Password as follows, then click <Advanced>.

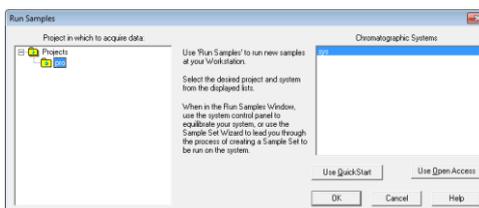


User Name : system  
 Password : manager

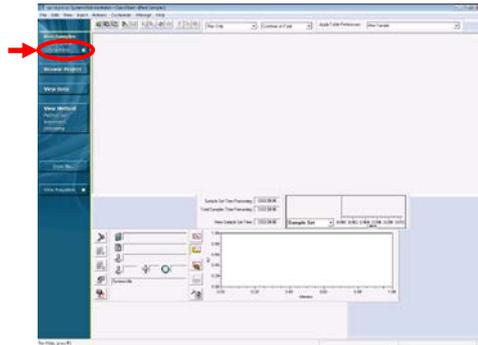
- Select <Quick Start Interface> in the Allowed User Interfaces group box, then click <OK>.



- Select <Defaults> in the Projects in which to operate list, then select the system name that you want to check in the Chromatographic Systems list. Then click <OK>.



- (4) The Quick Start screen is displayed. Select <Control Panel> in the navigation bar.



- (5) Check that the connection is correct.  
For details of module status please refer to section 4.2, Status Display of Each Module of the Control Panel, in the "Hitachi L-2000 driver for Empower3 (Operation)" manual.

[END]

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# INDEX

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# APPENDIX

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## Appendix1 Setup of the Option Rack for L-2200/L-2200U Autosampler

**NOTE:** The customer must not attempt setup of the option rack. When the change in the setting of the option rack is necessary, please notify your local Hitachi High-Technologies Corporation sales representative or service office of Hitachi High-Technologies Corporation sales representative.

### 1.1 Setting of Rack Parameters

Please set the rack parameters of the L-2200/L-2200U Autosampler with the Maintenance Software.

Refer to the instruction manual of optional rack for Model L-2200/L-2200U Autosampler, enter rack parameters appropriate for the option rack to be used.

☞ Refer to section 3.2 in the Instruction Manual for the Hitachi L-2000 driver for Empower3 (Maintenance Software) for setup procedures.

Rack Code:1 - Parameters

Rack Type:

Xvials:  Yvials:

Pattern:

Vial Position

First X Position (mm):  First Y Position (mm):

Last X Position (mm):  Last Y Position (mm):

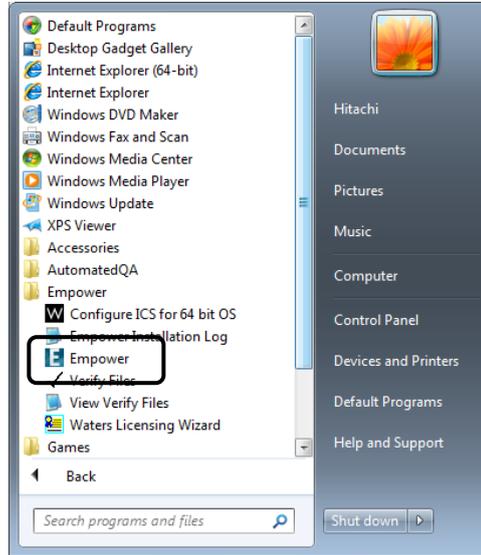
Depth (mm):

## 1.2 Registration of Plate Information on Empower3

### 1.2.1 Create New Plate Type

Please create the New Plate Type with Configuration Manager.

- (1) From the Start menu, click [All Programs]
  - [Empower]
  - [Empower].



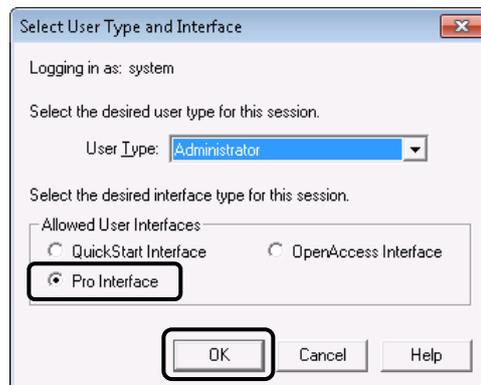
You can start Empower from the following shortcut icon for Empower to start if you create the shortcut on the desktop.

- (2) Launch “Empower Login” dialog, enter “User Name” and “Password” as follows, and then click <Advanced> button.

User Name : system  
 Password : manager



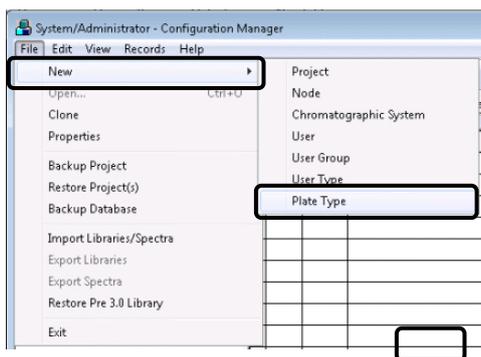
- (3) Select [Pro Interface] in "Allowed User Interfaces" group box, and then click [OK] button.



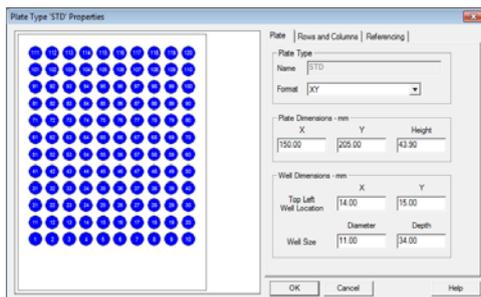
(4) Click [Configure System] in the Empower Pro screen.



(5) Select [File] – [New] – [Plate Type]



(6) New Plate Type dialog is displayed. Please set the parameters with reference to section 1.2.2, 1.2.3 and 1.2.4 in this manual. Enter plate parameters appropriate for the option rack to be used.



[END]

## 1.2.2 Setting of Plate

Please set the parameters of the plate as follows according to the used rack.

- (1) Standard Option Rack: Sample rack for 200 vials  
(12 x 32) of 1.5 mL each (Part No.890-3584)  
Cooling Option Rack: Sample rack for 200 vials  
(12 x 32) of 1.5 mL each (Part No.890-3501)

< Plate tab >

Category	Parameter		Value
Plate Type	Name		STD
	Format		XY
Plate Dimensions (mm)	X		153.50
	Y		282.50
	Height		43.90
Well Dimensions (mm)	Top Left Well Location	X	16.00
		Y	13.00
	Well Size	Diameter	12.00
		Depth	48.00

< Rows and Columns tab >

Category	Parameter		Value
Row and Column Dimensions (mm)	Rows	Number	20
		Spacing	13.50
	Columns	Number	10
		Spacing	13.50
Row and Column Offset (mm)	Row Offset		None
	Column Offset		None

< Referencing tab >

Category	Parameter	Value
Origin	Origin	Top Left
Scheme	Referencing	Sequential
	Sequential Continuous	Not Checked
	Horizontal First Priority	Checked
Terminology	Plate	Plate
	Well	Well

- (2) Standard Option Rack: Sample rack for micro plate (x3)  
(Part No.890-3522)
- Cooling Option Rack: Sample rack for micro plate (x3)  
(Part No.890-3502)

(a) 96-hole micro-plate

< Plate tab >

Category	Parameter		Value		
Plate Type	Name		MP96A	MP96B	MP96C
	Format		XY	XY	XY
Plate Dimensions (mm)	X		127.90	127.90	127.90
	Y		85.70	85.70	85.70
	Height		43.90	43.90	43.90
Well Dimensions (mm)	Top Left Well Location	X	14.30	14.30	14.30
		Y	11.30	11.30	11.30
	Well Size	Diameter	8.00	8.00	8.00
		Depth	25.30*1	25.30*1	25.30*1

\*1 When you use Cooling Option Rack, please set "42.00"

< Rows and Columns tab >

Category	Parameter		Value
Row and Column Dimensions (mm)	Rows	Number	8
		Spacing	9.00
	Columns	Number	12
		Spacing	9.00
Row and Column Offset (mm)	Row Offset		None
	Column Offset		None

< Referencing tab >

Category	Parameter	Value
Origin	Origin	Top Left
Scheme	Referencing	Sequential
	Sequential Continuous	Not Checked
	Horizontal First Priority	Checked
Terminology	Plate	Plate
	Well	Well

(b) 384-hole micro-plate

< Plate tab >

Category	Parameter		Value		
Plate Type	Name		MP96A	MP96B	MP96C
	Format		XY	XY	XY
Plate Dimensions (mm)	X		127.60	127.60	127.60
	Y		85.50	85.50	85.50
	Height		43.90	43.90	43.90
Well Dimensions (mm)	Top Left Well Location	X	12.10	12.10	12.10
		Y	9.00	9.00	9.00
	Well Size	Diameter	4.00	4.00	4.00
		Depth	25.80*1	25.80*1	25.80*1

\*1 When you use Cooling Option Rack, please set "42.00"

< Rows and Columns tab >

Category	Parameter		Value
Row and Column Dimensions (mm)	Rows	Number	16
		Spacing	4.50
	Columns	Number	24
		Spacing	4.50
Row and Column Offset (mm)	Row Offset		None
	Column Offset		None

< Referencing tab >

Category	Parameter	Value
Origin	Origin	Top Left
Scheme	Referencing	Sequential
	Sequential Continuous	Not Checked
	Horizontal First Priority	Checked
Terminology	Plate	Plate
	Well	Well

- (3) Standard Option Rack: Sample rack for 4 mL (15 x 46) vial (x128) (Part No.890-3524)
- Cooling Option Rack: Sample rack for 4 mL (15 x 46) vial (x128) (Part No.892-0242)

< Plate tab >

Category	Parameter		Value
Plate Type	Name		128 well
	Format		XY
Plate Dimensions (mm)	X		153.50
	Y		282.50
	Height		43.90
Well Dimensions (mm)	Top Left	X	17.90
	Well Location	Y	15.00
		Well Size	Diameter
			Depth

< Rows and Columns tab >

Category	Parameter		Value
Row and Column Dimensions (mm)	Rows	Number	16
		Spacing	16.8
	Columns	Number	8
		Spacing	16.80
Row and Column Offset (mm)	Row Offset		None
	Column Offset		None

< Referencing tab >

Category	Parameter	Value
Origin	Origin	Top Left
Scheme	Referencing	Sequential
	Sequential Continuous	Not Checked
	Horizontal First Priority	Checked
Terminology	Plate	Plate
	Well	Well

- (4) Standard Option Rack: Sample rack for 1 mL vial (×338)  
(Part No. 890-3526)
- Cooling Option Rack: Sample rack for 1 mL vial (×338)  
(Part No. 890-3506)

< Plate tab >

Category	Parameter		Value
Plate Type	Name		338 well
	Format		XY
Plate Dimensions (mm)	X		153.50
	Y		282.50
	Height		43.90
Well Dimensions (mm)	Top Left	X	16.20
	Well Location	Y	15.00
	Well Size	Diameter	9.00
		Depth	48.00

< Rows and Columns tab >

Category	Parameter		Value
Row and Column Dimensions (mm)	Rows	Number	26
		Spacing	10.10
	Columns	Number	13
		Spacing	10.10
Row and Column Offset (mm)	Row Offset		None
	Column Offset		None

< Referencing tab >

Category	Parameter	Value
Origin	Origin	Top Left
Scheme	Referencing	Sequential
	Sequential Continuous	Not Checked
	Horizontal First Priority	Checked
Terminology	Plate	Plate
	Well	Well

- (5) Standard Option Rack: Sample rack for 1.5 mL tube (×72)  
 (Part No. 890-3527)  
 Cooling Option Rack: Sample rack for 1.5 mL tube (×72)  
 (Part No. 890-3507)

< Plate tab >

Category	Parameter		Value
Plate Type	Name		72 well
	Format		XY
Plate Dimensions (mm)	X		153.50
	Y		282.50
	Height		43.90
Well Dimensions (mm)	Top Left	X	26.20
	Well Location	Y	30.30
	Well Size	Diameter	12.00
		Depth	48.00

< Rows and Columns tab >

Category	Parameter		Value
Row and Column Dimensions (mm)	Rows	Number	12
		Spacing	20.20
	Columns	Number	6
		Spacing	20.20
Row and Column Offset (mm)	Row Offset		None
	Column Offset		None

< Referencing tab >

Category	Parameter	Value
Origin	Origin	Top Left
Scheme	Referencing	Sequential
	Sequential Continuous	Not Checked
	Horizontal First Priority	Checked
Terminology	Plate	Plate
	Well	Well

(6) Cooling Option Rack: Sample rack for 1.5 mL (12 × 32) vial (×100) (Part No. 890-3503)

< Plate tab >

Category	Parameter		Value
Plate Type	Name		100 well
	Format		XY
Plate Dimensions (mm)	X		153.50
	Y		283.50
	Height		43.90
Well Dimensions (mm)	Top Left	X	16.00
	Well Location	Y	80.50
	Well Size	Diameter	12.00
		Depth	48.00

< Rows and Columns tab >

Category	Parameter		Value
Row and Column Dimensions (mm)	Rows	Number	10
		Spacing	13.50
	Columns	Number	10
		Spacing	13.50
Row and Column Offset (mm)	Row Offset		None
	Column Offset		None

< Referencing tab >

Category	Parameter	Value
Origin	Origin	Top Left
Scheme	Referencing	Sequential
	Sequential Continuous	Not Checked
	Horizontal First Priority	Checked
Terminology	Plate	Plate
	Well	Well

### **1.3 Setting of Plate on Empower3**

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Refer to section 3.4.1 in the Instruction Manual for the Hitachi L-2000 driver for Empower3 (Operation) for setup procedures.

# TERMINOLOGY



# TERMINOLOGY

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**D**

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DTC	A circuit board inside the rear of the L-2455U DAD. DTC, which is short for Data Transfer Controller, is used to execute data transfer to the personal computer.
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**E**

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e-line cable	A digital network used exclusively for analysis.
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**I**

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IFB	IFB, which is short for USB Interface Board, is an interface board required for controlling the HPLC system from a PC.
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**L**

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LaChrom Elite	A general name for the L-2000 Series High-Performance Liquid Chromatograph.
LaChrom Ultra	A general name for the L-2000U Series High-Speed Liquid Chromatograph.

**P**

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PC	The abbreviation of personal computer.
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