

# DIGITAL DUST INDICATOR

Operation Manual

## — Communication Software —



Thank you for purchasing this product.

- This operation manual describes precautions that are important for preventing accidents as well as
  procedures used to handle the product.
- Read this operation manual and the attached warranty thoroughly before use, and use the product correctly.
- After reading this operation manual and the warranty, keep them handy for future reference.

# **Table of Contents**

1 Precautions	4
2 Functions	6
3 Specifications	6
4 Composition	6
5 Installing the Software	7
5.1 Installing the Software	7
5.2 Installing the USB Drivers	10
5.3 Connecting the LD-6N/LD-6N2 and PC	13
5.4 Checking the Communication Port	14
6 Uninstalling the Software	16
7 Starting Up the Software	18
7.1 Connecting the LD-6N/LD-6N2 and PC	18
7.2 Starting Up the Software	18
8 Operations After the Software Starts Up	21
8.1 Logging Data	21
8.1.1 Reading In Data	21
8.1.2 Deleting Data	24
8.2 Basic Settings	25
8.3 System Settings	27
8.4 Closing the Software	30
9 Warranty	31
10 Disclaimers	31

## 1 Precautions

Read this operation manual carefully to the end before using the product and make sure it is used correctly. Also, keep this manual handy.

#### **Cautions Related to the Communication Software**

Using the Software for the LD-6N/LD-6N2

#### **Attention**

This software may be used only when you agree to all terms of this User Acceptance Agreement. By installing the software packet, you agree to be bound by the terms of this agreement.

Please thoroughly read this User Acceptance Agreement before starting installation. If you do not accept the terms of this User Acceptance Agreement, you may not use this software. Promptly return all software items (if included in a set, all items included in the set) to SIBATA SCIENTIFIC TECHNOLOGY LTD., or the distributor where you purchased the product, and delete any preloaded or embedded software.

#### **Advance Notice**

You need to install this software, perform initial operating procedures, and setup your personal computer for this software by yourself.

SIBATA SCIENTIFIC TECHNOLOGY LTD. and distributors selling our product are forbidden from directly operating your personal computer in regards to this software. (There is a possibility of occurrence of problems regarding compensation for data in the event that an accident occurs when a person from SIBATA SCIENTIFIC TECHNOLOGY LTD. or its sales representative carries out installation of the software. To prevent such problems, please perform installation and setup changes by yourself.)

If you are not sure how to install software, or operate your computer, please read the operation manual for your personal computer, or relevant parts of the operation manual of this software.

#### **User Acceptance Agreement and Warranty**

#### Authorized Items

- You may use one copy of the installation CD or working software or related attached file obtained from an applicable product on only one computer at a time.
- You may make one copy of the software solely for backup purposes. Or, you may transfer the software to a single hard disk provided you keep the original for backup purposes.

#### Forbidden Items

- You may not copy or distribute this software or the written materials included with this software, such as the Operation Manual.
- You may not partially or wholly transfer the rights of this software.
- You may not research the source code of this software, or reverse engineer, decompile, modify, or translate this software with intentions of producing copies of this product.
- You may not use a previous version of the software after you have received any medium for upgrading this software.

#### Warranty

- This software has been inspected and has no functional defects. However, this
  software may not operate in all personal computer and peripheral environments.
  In this case, SIBATA SCIENTIFIC TECHNOLOGY LTD. will do our utmost to help
  use the software on your computer by providing revised versions that address any
  problems that may arise. (SIBATA SCIENTIFIC TECHNOLOGY LTD. will not
  support functional defects that occur on computers due to the operating system.)
- This warranty does not necessarily warrant any customer satisfaction by using this software. It also does not warrant that this software is free of errors.

#### Damage Liability

- Regardless of this User Acceptance Agreement and Warranty items, in no event shall SIBATA SCIENTIFIC TECHNOLOGY LTD. be liable for any damages whatsoever for any special or indirect damages, or damages caused by the installation or use of this software. Damages include, loss of profits, loss of data arising from its use, or the inability to use it. SIBATA SCIENTIFIC TECHNOLOGY LTD. shall not be liable for damages even though SIBATA SCIENTIFIC TECHNOLOGY LTD. has warned the public of such possible damages.
- In no case shall SIBATA SCIENTIFIC TECHNOLOGY LTD's liability exceed the purchase price of the software.
  - The disclaimers and limitations set forth above will apply regardless of whether or not you return the software.

## 2 Functions

This software for the LD-6N/6N2 (hereinafter "software") provides a program for communication with a personal computer for the LD-6N/LD-6N2 Digital Dust Indicator (hereinafter "PC").

Using this software will enable setup information to be forwarded from the PC to the LD-6N/LD-6N2 or data collected on the LD-6N/LD-6N2 to be forwarded to the PC. The PC and LD-6N/LD-6N2 system are connected using the provided or a commercially available USB cable (A-miniB type).

# 3 Specifications

Operating System
 Windows\* 10 / 11

(Hereinafter "OS") \*Windows is a registered trademark of Microsoft

Corporation.

Personal Computer
 PC operating with above OS

CD drive
 A single CD drive is necessary (for installation).

Communication port
 USB A connector 1 port necessary

The communication port must function normally on

a computer.

Other peripheral equipment Operation has been completely confirmed under

the above OS.

This software has been confirmed to operate on standard personal computers and peripheral equipment. However, there may be certain models where the software does not operate normally. Please be informed that there may be changes made to specifications which will not affect the characteristic or functionality without any prior notice.

# 4 Composition

The Communication Software consists of the following components, which are packaged together with the LD-6N2.

Please confirm that you have all the parts that are included with this package after purchasing this product.

☐ "Communic	ation Software for the LD-6N/LD-6N2" CD-ROM	1
□ USB cable	A-mini B Type	1

# 5 Installing the Software

## 5.1 Installing the Software

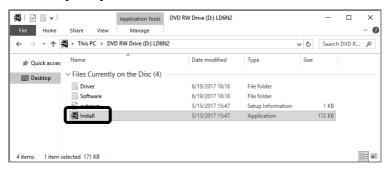
#### Depending on your OS, administrator authority may be required.

Installation automatically starts when the "Communication Software for the LD-6N/LD-6N2" CD-ROM is inserted into the CD drive of the PC. If it is not automatically installed due to the setting on your PC, follow the following procedures to install the software. (If installation is automatically performed, skip to (4).)

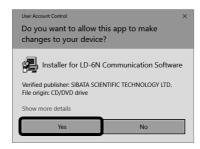
If the software needs to be reinstalled or upgraded, it is necessary to uninstall (delete) your current software. (Please refer to 6 Uninstalling the Software.)

The following procedures are for Windows 10. Display may be different depending on your PC settings or OS.

- Insert the "Communication Software for the LD-6N/LD-6N2" CD-ROM into the CD drive and use Explorer to select the drive.
- (2) Double click [Install].



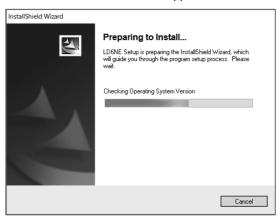
(3) When the following screen is displayed, check that the verified publisher is "SIBATA SCIENTIFIC TECHNOLOGY LTD.", then click [Yes] to continue installation.



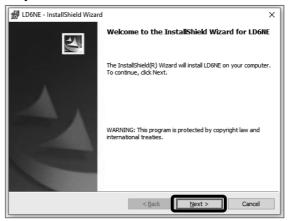
(4) The installation program starts up. Click [Communication Software].



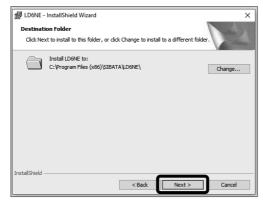
(5) Installation starts, and the Wizard screen appears.



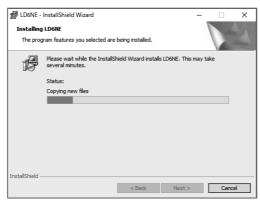
(6) Click [Next >].



(7) Click [Next >] to install to the displayed default folder, or click [Change...] to install to a different folder.



(8) Installation starts.



(9) When the following screen is displayed, installation is complete. Click [Finish].



(10) The USB driver needs to be installed next. Do not remove the CD-ROM and proceed to 5.2 Installing the USB Drivers.
In case that the USB driver has been installed, remove the CD-ROM and keep it in a safe place.



Do not connect the LD-6N/LD-6N2 to a PC before the USB drivers are installed. Make sure that the USB drivers have been installed before the LD-6N/LD-6N2 is connected to the PC.

## 5.2 Installing the USB Drivers

The LD-6N/LD-6N2 Digital Dust Indicator is equipped with a USB interface. To enable communications, the USB drivers must be installed on the PC. Once installed, you will be able to use them without being aware of them after the second time.

The following procedures are for Windows 10. Display may be different depending on your PC settings or OS.

(1) In the installation program screen, click [USB Driver].



(2) Click [Next >].



(3) When the following screen is displayed, check that the verified publisher is "SIBATA SCIENTIFIC TECHNOLOGY LTD.", then click [Install] to continue installation.

#### LD-6N Bus/D2XX Driver



The procedure is the same for the LD-6N VCP Driver.

(4)The drivers are installed.



- (5) When installation is complete, the following screen is displayed. Click [Finish] to complete the installation process. The following two USB drivers are installed:
  - SIBATA LD-6N Bus/D2XX Driver
  - SIBATA LD-6N VCP Driver



(6) In the installation program screen, click [Exit].



- (7) Click [Yes] to close the installation program.
- (8) Remove the CD-ROM, and keep it in a safe place.

## 5.3 Connecting the LD-6N/LD-6N2 and PC

The following procedures are for Windows 10. Display may be different depending on your PC settings or OS.

Connect the PC and LD-6N/LD-6N2 using the USB cable, and turn ON the LD-6N/LD-6N2.

At this point, the final step in the installation of the device drivers will be performed and completed by the PC.



During the installation, a message indicating that installation is in progress appears on the taskbar.

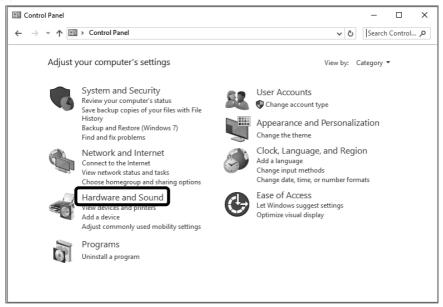
Click this taskbar icon to display the status of the installation.

When it is no longer displayed on the taskbar, the final step in the installation has finished.

## 5.4 Checking the Communication Port

The following procedures are for Windows 10. Display may be different depending on your PC settings or OS.

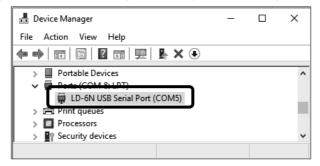
- Connect the PC and LD-6N/LD-6N2 using the USB cable, and turn ON the LD-6N/LD-6N2.
- (2) On the Start menu, click [Control Panel] [Hardware and Sound].



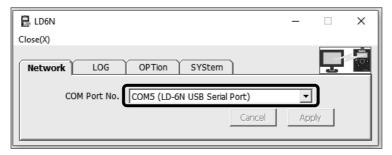
(3) Click [Device Manager] to display the [Device Manager] screen.



(4) Check that [LD-6N USB Serial Port (COM5)] is displayed under [Ports (COM & LPT)]. If items under [Ports (COM & LPT)] are not displayed, click ▷.



Here, the "5" in "COM5" refers to the COM port number. In this case, specify "COM 5" for [COM Port No.] in the [Network] tab page of the Communication Software.



- (5) Close the [Device Manager] screen and the Control Panel.
- The COM port number may change if the PC environmental settings are changed. Therefore, it is recommended that you check it each time the LD-6N/LD-6N2 is connected. (The COM port number cannot be checked unless the LD-6N/LD-6N2 is connected.)

# 6 Uninstalling the Software

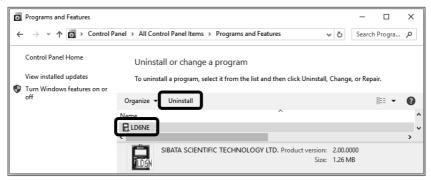
If you need to uninstall (delete) the Software for the LD-6N/LD-6N2 due to upgrades etc., use the following procedures.

The following procedures are for Windows 10. Display may be different depending on your PC settings or OS.

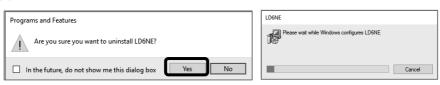
(1) On the [Start] menu, select [Control Panel] - [Uninstall a program].



(2) Select [LD6NE] and click [Uninstall].



(3) Click [Yes] to start uninstallation.



(4) If the screen for user account control is displayed, click [Yes].



(5) When the [LD6NE] screen closes, uninstallation is complete.

# 7 Starting Up the Software

## 7.1 Connecting the LD-6N/LD-6N2 and PC

- (1) Connect one end of the USB cable included with the LD-6N/LD-6N2 to the USB connector on the side of the control unit, and then turn ON the LD-6N/ LD-6N2.
- (2) Connect the other end of the USB cable to the USB port on the PC. If you are connecting the LD-6N/LD-6N2 to this PC for the first time, the USB drivers must be installed. See 5.2 Installing the USB Drivers.

## 7.2 Starting Up the Software

- (1) Click [Start], point to [All Programs] [SIBATA] [LD6NE], and click [LD6NE].
- (2) If [LD6NE] is not listed when you click [Start] [All Programs] [SIBATA] [LD6NE], then start up the program as per the following procedures. If you did not change the installation destination when the program was installed, the program to run is installed at:

32 bit edition, C:\(\text{Program Files}\(\text{SIBATA}\(\text{LD6NE}\)

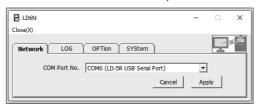
64 bit edition, C:\(\text{Program Files}(x86)\(\text{\text{YSIBATA}\(\text{\text{LD6NE}}}\)

In this folder, double-click "LD6NE.exe."

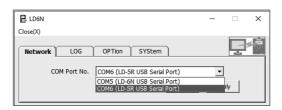
If the installation destination was changed when the program was installed, double-click "LD6NE.exe" in the specified installation folder.

### Initial "LD6NE.exe" Startup Screen

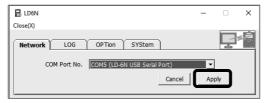
(The screens below are for Windows 10, but the details are the same for other OS versions.)



(3) Click ▼.



(4) Select the LD-6N/LD-6N2 COM port number confirmed in 5.4 Checking the Communication Port." Then click [Apply].



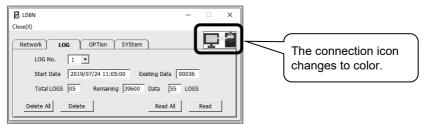
Here, only the actual and available COM port numbers are displayed. COM ports currently in use and COM ports that do not exist are displayed in parentheses.

#### **USB Cable Connections**

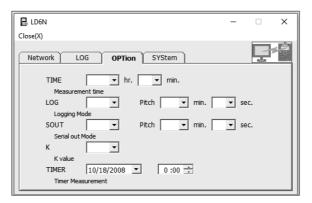
The USB cable can be removed/inserted while the Software for the LD-6N/6N2 is running. Wait at least 5 seconds however before inserting it. Also, it may take 30 seconds or longer for the LD-6N/LD-6N2 to be recognized, depending on the PC environment.

During this time, do not click any buttons in the Software for the LD-6N/6N2. If it cannot reconnect even after 1 minute, remove/insert the USB cable again, close the Software for the LD-6N/6N2, and restart it.

- (5) If the connection with the LD-6N/LD-6N2 is successful, the connection icon changes to color.
- (6) It is necessary to select the port when connecting for the first time only. Thereafter the [LOG] tab page is displayed. During the second and subsequent startups, the connection is established automatically if the LD-6N/LD-6N2 is connected correctly, and the [LOG] tab page is displayed. If the software starts up when the LD-6N/LD-6N2 is not connected, "COM" (the previously used COM port number) is displayed in parentheses. If the LD-6N/LD-6N2 is connected correctly, the connection is established automatically, and the [LOG] tab page is displayed.



While the LD-6N/LD-6N2 is measuring, or while carrying out basic settings or function settings, or when there is a communication error, the setting values are blank. When the measurements or settings are complete, or when communications are restored, the setting values will be displayed.



# 8 Operations After the Software Starts Up

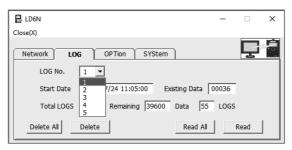
## 8.1 Logging Data

#### [LOG] Tab Page

On this tab page, you can check the measurement data stored in the LD-6N/LD-6N2 internal memory, read it in (transfer it to the PC), or delete it.

## 8.1.1 Reading In Data

(1) Click ▼ for [LOG No.] to display all the log numbers as a pull-down menu.



- (2) Select the log number to read in.
- (3) Information related to the selected log number is displayed.

Information: Start date and time, number of existing data items, total number of logs, and remaining capacity (number of data items and logs)

- (4) Click [Read].
- (5) The [Save As] dialog box is displayed. Specify a storage location and file name, and then click [Save].



(6) The data is read in. (This may take some time if there is a lot of data.)

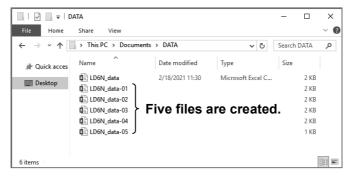


(7) To read in all log numbers, click [Read All].

In this case, one file is saved for each log number.

Log numbers are appended (starting with "-01") to the file name specified in the [Save As] dialog box.

The following shows an example when reading in and storing all logs. (File name: LD-6N\_data; Total: five logs; Log numbers are appended to the file name.)



The following message is displayed if the USB cable is removed or the LD-6N/LD-6N2 is turned OFF before you click [Save].

Check the connection/instrument. Then repeat the procedure starting from the [Save As] dialog box.

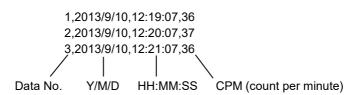


#### (8) The content of the saved data is as follows:

Start time: 2013/09/10 12:18:07 Measurement time: 1 hour 00 min. 00 sec.

Logging cycle: 1 min. 00 sec.

Data points: 60

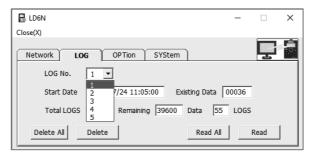


Example: This example shows the screen when saved data is opened in Microsoft Excel.

	D1	▼ f <sub>k</sub>				W		υλ.	2	=66
	A	В	С	D	Ε	F	G	Н	I	J
1	Starting Time:	2013/09/10 1	2:18:07							
2	Measuring Tir	ne: 1 hr. 00 m	in. 00 sec.							
3	Recording Cy	cle: 1 min. 00	sec.							
4	Number of Da	ta: 60								
5										
6	1	2013/9/10	12:19:07	36 🕶	$\overline{}$					)
7	2	2013/9/10	12:20:07	37	``	Measure	ement	value i	n CPM	
8	3	2013/9/10	12:21:07	36	▔					
9	4	2013/9/10	12:22:07	37						
10	5	2013/9/10	12:23:07	37						
11	6	2013/9/10	12:24:07	37						
12	7	2013/9/10	12:25:07	37						
13	8	2013/9/10	12:26:07	36						
14	9	2013/9/10	12:27:07	36						
15	10	2013/9/10	12:28:07	36						
16	11	2013/9/10	12:29:07	35						
17	12	2013/9/10	12:30:07	35						
18	13	2013/9/10	12:31:07	35						
19	14	2013/9/10	12:32:07	34						
4 4	▶ N LD6N c	data-01 /				<				>

## 8.1.2 Deleting Data

(1) Select the log number to delete.



(2) Information related to the selected log number is displayed.

Information: Start date and time, number of existing data items, total number of logs, and remaining capacity (number of data items and logs)

(3) Click [Delete].



(4) Click [Yes] to start deletion.

The following message is displayed if a communication error occurs, such as the USB cable is removed or the LD-6N/LD-6N2 is turned OFF before you click [Yes]. Check the connection/instrument and then repeat the deletion procedure.

cedure.



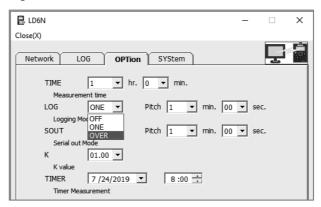
(5) To delete all data, click [Delete All].

# 8.2 Basic Settings

#### [OPTion] Tab Page

On this tab page, you can check and change the basic LD-6N/LD-6N2 settings. The content displayed corresponds to the current settings for the LD-6N/LD-6N2. Immediately after changing numbers or settings, the changes are reflected in the LD-6N/LD-6N2.

#### **Basic Setting Items**



(1)	TIME (Measurement time)	This sets the measurement time in hours and minutes.  Click ▼, and on the pull-down menu, click the desired value.  Setting range: 0 to 1,000 hr., 0 to 59 min.  However, for 1,000 hours the minutes are 0	
(2)	LOG (Logging Mode)	This configures the data log function.  Click ▼, and on the pull-down menu, click the desired setting.  OFF: Do not log  ONE: One-time (overwrite protected) is selected.  The log will not exceed the memory capacity.  OVER: Overwrite is selected.  Data will be overwritten if the memory capacity is exceeded.  Next, set the log cycle (for [ONE] or [OVER]) in minutes and seconds.  Click ▼, and on the pull-down menu, click the desired value.  Setting range: 0 to 100 min. 0 to 59 sec.  However, for 100 minutes the seconds are 0	

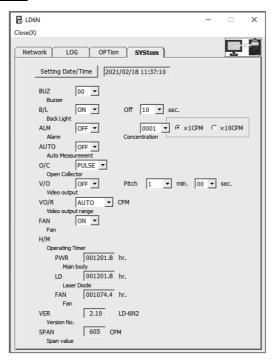
(3)	SOUT (Serial out Mode)	This configures the USB output for the measurement results.  Click ▼, and on the pull-down menu, click the desired setting.  OFF: No output  ON: Output  Next, set the log cycle (for [ON]) in minutes and seconds.  Click ▼, and on the pull-down menu, click the desired value.  Setting range: 0 to 100 min. 0 to 59 sec.  However, for 100 minutes the seconds are 0
(4)	K (K Value)	This sets the mass concentration conversion factor.  Click ▼, and on the pull-down menu, click the desired value.  Setting range: 0.10 to 99.99
(5)	TIMER (Timer Measurement)	This sets the start time for timed measurements.  Click ▼, and on the pull-down menu, click the desired setting (date).  Click ▼ or ▲ to set the time.  The ON/OFF setting for timed measurement cannot be switched with the communication software.  Just set the date and time here, and set the timed measurement to "ON" on the main unit.

# 8.3 System Settings

## [SYStem] Tab Page

On this tab page, you can check and change the LD-6N/LD-6N2 functional settings and check the hour meter. The content displayed corresponds to the current settings for the LD-6N/LD-6N2. Immediately after changing numbers or settings, the changes are reflected in the LD-6N/LD-6N2.

#### System Setting Items



(1)	Setting Date/Time	This transfers the time from the PC clock to the LD-6N/LD-6N2. Click [Setting Date/Time]. The date and time displayed is the LD-6N/LD-6N2 clock data.
(2)	BUZ (Buzzer)	This changes the length of buzzer sounds emitted when operating various setting switches, after measurements are finished, or for concentration warnings.  The larger the number, the longer the sound is emitted.  Click ▼, and on the pull-down menu, click the desired setting.  Setting range: 00 to 10 00: No buzzer

(3)	B/L (Back Light)	The LCD backlight time can be changed. Click ▼, and on the pull-down menu, click the desired setting.  OFF: Always OFF ON: Lit for the set time Next, set the time (for [ON]) in seconds. Click ▼, and on the pull-down menu, click the desired value.  Setting range: 0 to 99 0: Always lit
(4)	ALM (Alarm)	This enables the concentration warning, and sets the instantaneous concentration value when the warning occurs.  Click ▼, and on the pull-down menu, click the desired setting.  OFF: Disabled  ON: Warning emitted at the set value  Next, set the instantaneous concentration value (for [ON]) in CPM.  Click ▼, and on the pull-down menu, click the desired value.  In addition, select the ×1 or ×10 radio button.  Setting range ×1: 1 to 9,999 ×10: 10 to 99,990
(5)	AUTO (Auto Measurement)	This sets whether to start measurement automatically when the instrument is turned ON.  Click ▼, and on the pull-down menu, click the desired setting.  OFF: Disabled  ON: Enabled
(6)	O/C (Open Collector)	This sets one of three settings for the output: measurement value (pulse), concentration warning, or external device control. Click ▼, and on the pull-down menu, click the desired setting. PULSE: Measurement value (pulse) ALARM: Concentration warning CTRL: External device control

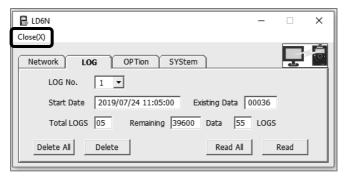
(7)	V/O (Video Output)	This is an auxiliary function setting. This setting does not need to be specified for normal operation. Set this to [ON] to enable signal output to a dedicated LD-6N/LD-6N2 external signal unit, and to set the transmission interval.  OFF: Disabled ON: Enabled Next, set the transmission interval to the external signal unit (for [ON]) in minutes and seconds.  Click ▼, and on the pull-down menu, click the desired value.  Setting range: 0 to 100 min. 0 to 59 sec.  However, for 100 minutes the seconds are 0
(8)	VO/R (Video Output range)	This is an auxiliary function setting. This setting does not need to be specified for normal operation. This sets the range of signal output to a dedicated LD-6N/LD-6N2 external signal unit.  Four types of measurement ranges are available for input signals sent to the external signal unit: [AUTO], [1000], [10000], and [100000].  Click ▼, and on the pull-down menu, click the desired setting.
(9)	FAN (Fan)	This sets the intake fan ON or OFF.  Click ▼, and on the pull-down menu, click the desired setting.  OFF: Always OFF  ON: Always ON
(10)	H/M (Operating Timer) VER (Version No.) SPAN (Span value)	The operating time, setting value, etc., for each part can be checked.  These settings cannot be changed.  PWR: Main unit operating time  LD: Semiconductor laser lighting time  FAN: Intake fan operating time  VER: The firmware version no.  SPAN: The standard scattering plate value

<b></b> <u> </u>
------------------

If the Software does not respond, there may be a communications error. Remove the USB cable, wait about five seconds, and then connect it again.

# 8.4 Closing the Software

(1) Click the close icon (x) at the top left of the screen.



(2) [Close the program. Continue?] dialog box is displayed. Click [OK] to close the program.



(3) Remove the USB cable from the PC, and turn OFF the LD-6N/LD-6N2.

# 9 Warranty

If a Sibata product fails within one year from date of purchase, it will be repaired free of charge.

To request repairs, contact the distributor where you purchased the product. Be sure to provide the item code, product name, model number, serial number, a description of the problem, and other relevant information. The warranty excludes consumable parts included with the product, products without the purchase date or distributor information recorded, and products for which warranty information was revised.

The warranty excludes any problems resulting from any of the following causes. Such repairs are subject to normal service fees.

- (1) Faults or damage due to improper usage
- (2) Faults or damage resulting from repairs or modifications implemented by parties other than Sibata
- (3) Faults caused by abuse or inadequate maintenance
- (4) Faults or damage resulting from fires or natural disasters, such as earthquakes
- (5) Faults or damage occurring after purchase due to relocation, movement, falling, or vibration
- (6) Faults or damage resulting from the use of consumable items not specified by Sibata

## 10 Disclaimers

Sibata shall not be responsible for providing compensation for data that was not successfully acquired or recorded, or for incidental damages (such as loss of profits or interruption of business operations) resulting from any problem that occurred for some reason while using the product. Under certain conditions, Sibata will provide compensation for repairing product problems, but Sibata will not provide compensation in the event of loss or damage to data recorded in memory. Therefore, always make a backup of necessary data before requesting repairs or other service work by Sibata. If you ignore the precautions in this manual or fail to create a backup, Sibata shall not be responsible for any damages resulting from lost or damaged data.



SIBATA SCIENTIFIC TECHNOLOGY LTD.
1-1-62, Nakane, Soka, Saitama, 340-0005, Japan
TEL:+81-48-933-1582 FAX:+81-48-933-1591
E-mail:overseas@sibata.co.jp
https://www.sibata.co.jp/en/