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Nidec
All for dreams

Handheld Digital Tachometer

DT-2100 Specialized Software

Instruction Manual

Be sure to read before use.

Precaution

- All the rights including copyrights related to the tachometer "DT-2100", specialized software, and its relevant documents belong to NIDEC-SHIMPO CORPORATION.
- For other precautions, refer to the terms of use described in this instruction manual.
- Some specifications differ depending on the sales area of the DT-2100.

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1. Introduction

Thank you for purchasing the Handheld Digital Tachometer "DT-2100" (hereinafter referred to as the DT-2100).

This instruction manual summarizes the operation procedure of the DT-2100 specialized software.

2. Operation Environment

The operation environment for the DT-2100 specialized software is as follows:

Operation environment

- Microsoft Windows® 10* (Japanese/English environment) 64bit
- Microsoft Windows® 8* (Japanese/English environment) 32bit/64bit
- Microsoft Windows® 7* (Japanese/English environment) 32bit/64bit
- Required Memory 4GB RAM

*Microsoft and Windows are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

Communication method: RS-232C (Virtual COM port)

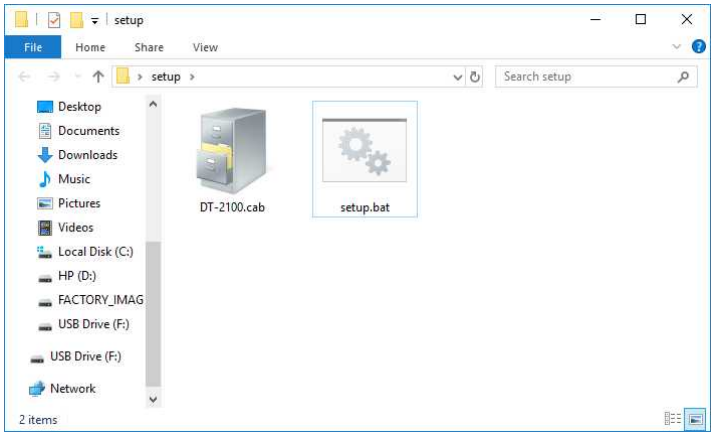
Communication protocol

Baud rate	38400bps
Data	8bit
Parity	None
Stop bit	1bit
Flow control	None

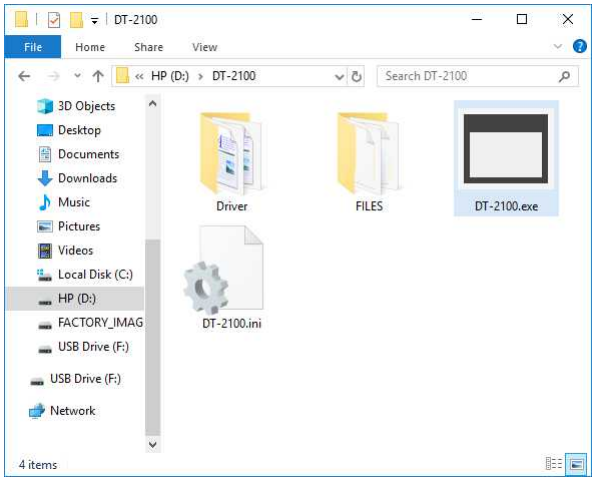
3. Installation

(1) Application installation

Double click setup.bat in the installation media "setup" folder to execute installation.



When installation is completed, the following files and folders are created under "C:\DT-2100".



(2)File configuration

Installation destination	Folder		Remark
C drive	C:\DT-2100	DT-2100.exe	Execution file
		DT-2100.ini	Setting value save file
		FILES	Used for saving the CSV file Initial folder to be specified at the time of saving
		Driver	USB driver

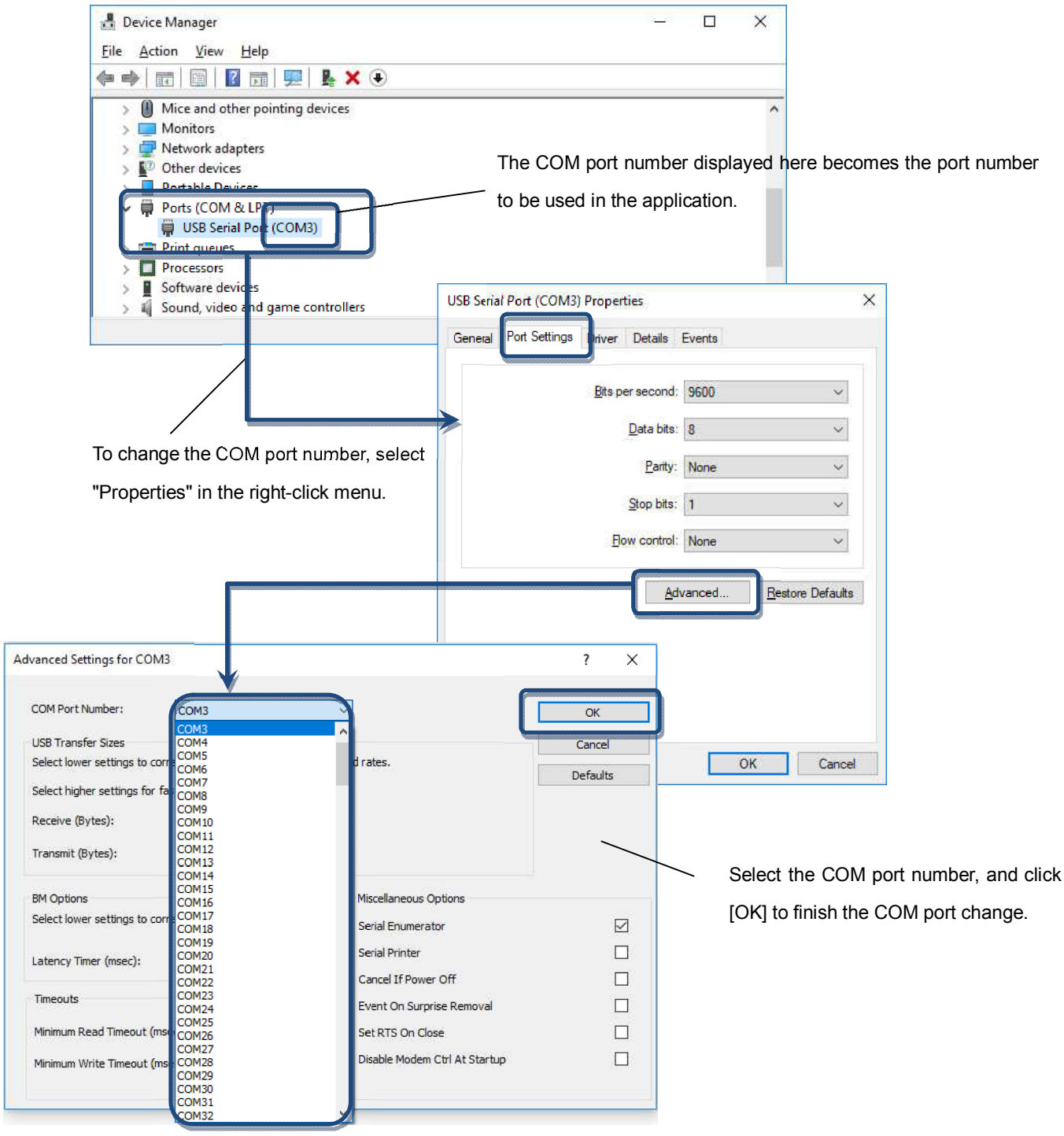
(3) USB driver installation

When connecting a USB device to the PC where the DT-2100 has been installed, the USB driver is automatically installed.

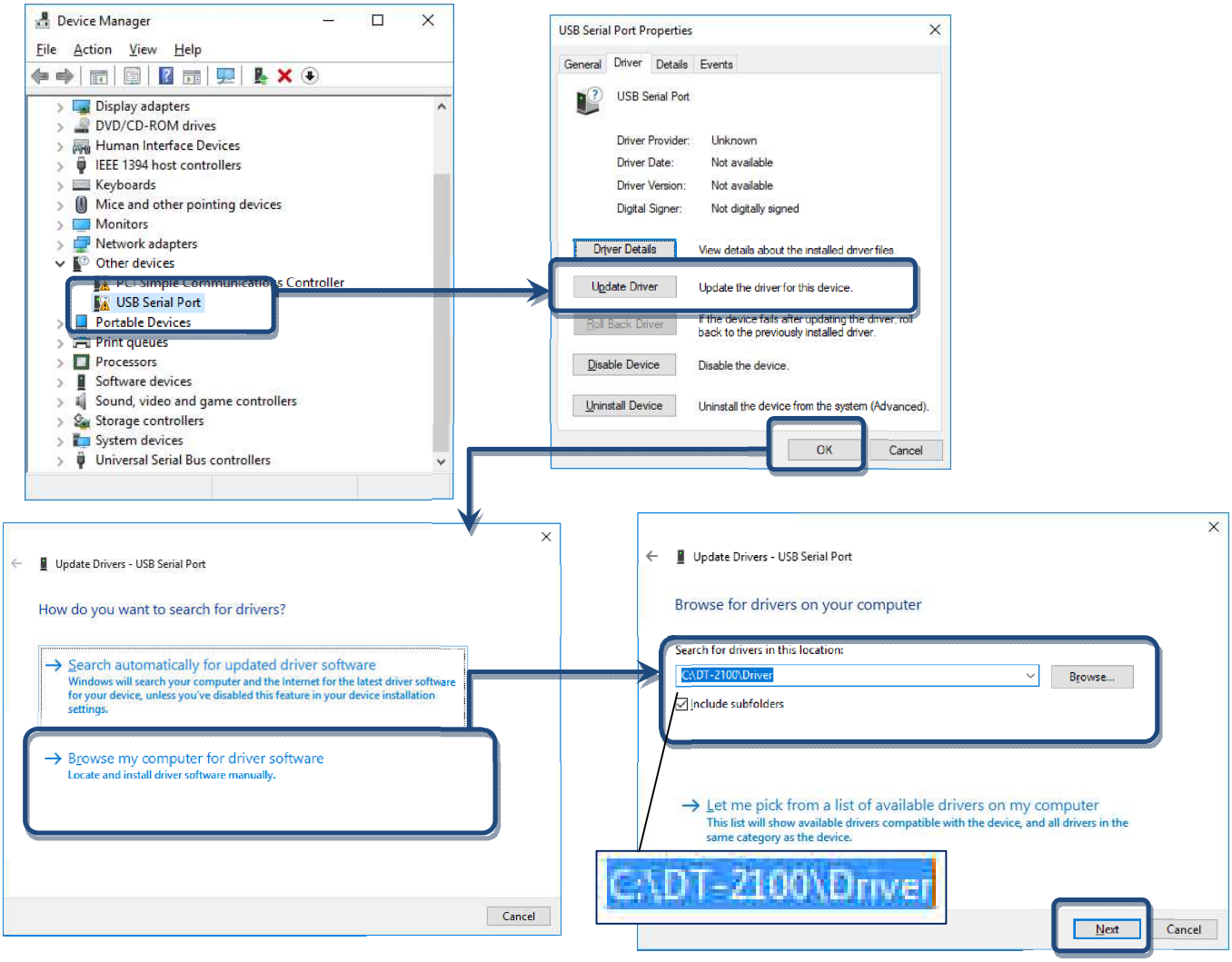
Wait for several minutes until the installation is completed.

(4) COM port setting

Select "USB Serial Port" created under [Control Panel] - [Device Manager], and start to set the port.

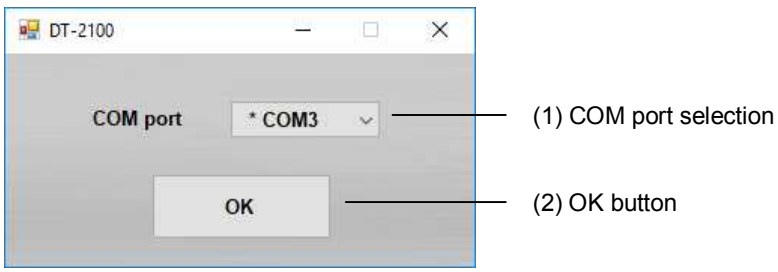


If the driver is not recognized correctly, perform [Update Driver] according to the following procedure.



4. Starting Application

Double click "DT-2100.exe" in the installation folder to start application.

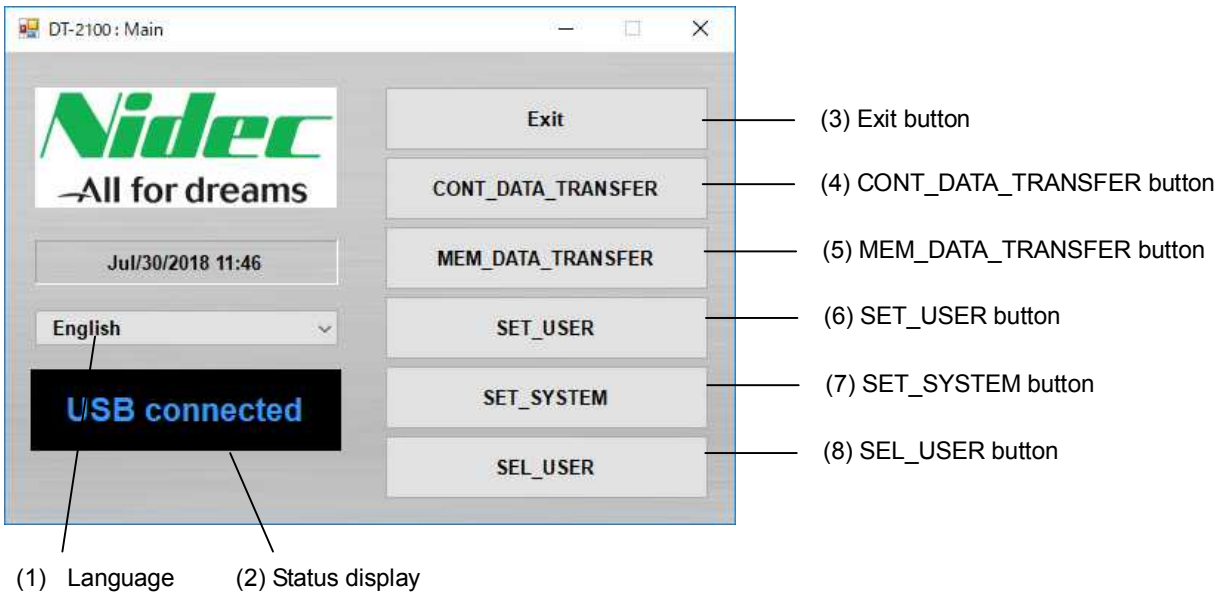


(1)COM port selection*	Select from among COM1 to COM15. Detects the available ports automatically, and attaches "*" before the COM number.
(2)OK button	Opens the selected COM port, and displays the main screen.

*Label and message descriptions depend on the language setting. (same as those for other screens)

*The initial language setting is English. From the next startup, the application starts with the language set when last closed.

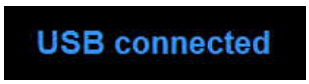
5. Main Screen



(1) Language selection	Select the language from Japanese or English.
(2) Status display	Displays the USB connection status.
(3) Exit button	Exits the application.
(4) CONT_DATA_TRANSFER button	Displays the Continuous Data Mode screen.
(5) MEM_DATA_TRANSFER button	Displays the Memory Mode screen.
(6) SET_USER button	Displays the SET_USER screen.
(7) SET_SYSTEM button	Displays the SET_SYSTEM screen.
(8) SEL_USER button	Displays the SEL_USER screen.

5.1 USB Connection Status

Check the connection status with the DT-2100 in the status display screen.

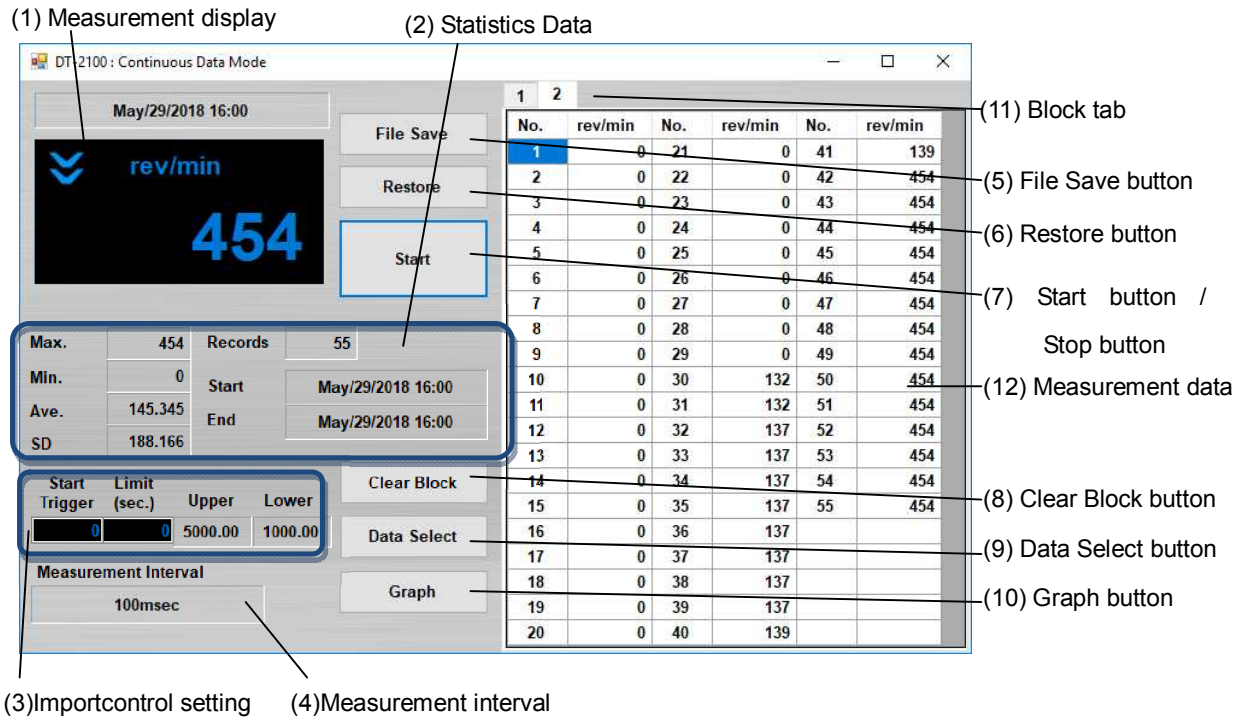


Connected

Disconnected

6. Continuous Data Import Screen

Select the "CONT_DATA_TRANSFER button" in the menu to display the continuous data import screen.



(1) Measurement display	Upper/lower judgment marks: Compared to the values specified in the user setting, indicates the upper limit mark when the upper limit value is less than the measurement value, and the lower limit mark when the lower limit value is more than the measurement value. Measurement unit: Indicates the unit specified in the user setting, and indicates "OVER" when the measured value exceeds the measurement range. Measurement value: Indicates the measurement value (6 digits + decimal point). When the measurement value exceeds 999999, indicates "------" (hyphens).
(2) Statistics Data	For the imported measurement data, indicates the maximum value/minimum value/average value/standard deviation, the number of measurement data, and the measurement start/end time. Updates during measurement. For the average value, when the integer part of the calculated result has x digits, the number of digits after decimal point becomes 6-x.
(3) Import control setting	Import start trigger: After the measurement value exceeding the Start Trigger setting value is detected, starts importing. Import time limit: Finishes importing when the Limit (sec.) setting value has elapsed. Upper/lower judgment values: Indicates the upper/lower judgment values specified in the user setting.
(4) Measurement interval	Indicates the measurement interval specified in the system setting.
(5) File Save button	Indicates the save destination folder selection screen. Saves the measurement data being displayed and statistics data (Max./Min./Ave./SD) to the file in the CSV format.
(6) Restore button	Indicates the file selection screen. Creates a new block, and reads the selected measurement data into it.

(7) Start button /Stop button	Press the Start button to start importing the data. The Start button then becomes the Stop button. Press the Stop button to finish importing the data. The Stop button then becomes the Start button. During data import, buttons other than the Stop and Graph buttons, as well as the selection columns are disabled.
(8) Clear Block button	Click this button to display the confirmation screen. Click OK to delete the block that has been selected. When there are blocks No.1 to 4 and you delete block No.3, block No.4 is changed to No.3.
(9) Data Select button	Click this button to keep only the data that has been selected.
(10) Graph button	Click this button to display the Graph screen.
(11) Block tab*	Indicates the measurement data for every measurement. Up to 1000 block. Creates a new block for every measurement by pressing the Start button.
(12) Measurement data*	Indicates the measurement value. Up to 65535 data points can be imported. Importing ends automatically when the maximum number of data points is attained.

*The measurement data and block tab are synchronized with the graph screen.

6.1 Measurement Display

Indicates the data importing status during measurement.

(1) Measurement value

●Indicates the measurement value (6 digits + decimal point).

●When the measurement value exceeds 999999, indicates "------" (hyphens).

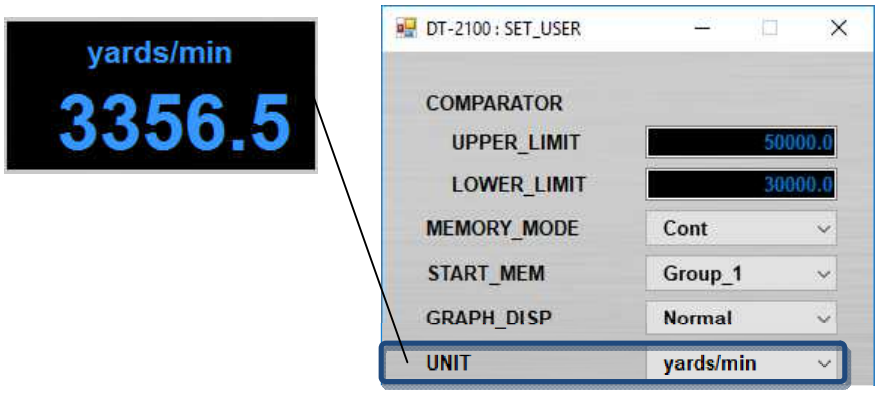
(2) Upper/lower limit judgment marks

●Indicates the upper limit mark when COMPARATOR UPPER_LIMIT in the user setting is less than the measurement data.

●Indicates the lower limit mark when COMPARATOR LOWER_LIMIT in the user setting is more than the measurement data.

(3) Measurement unit

●Indicates the unit specified in the SET_USER.

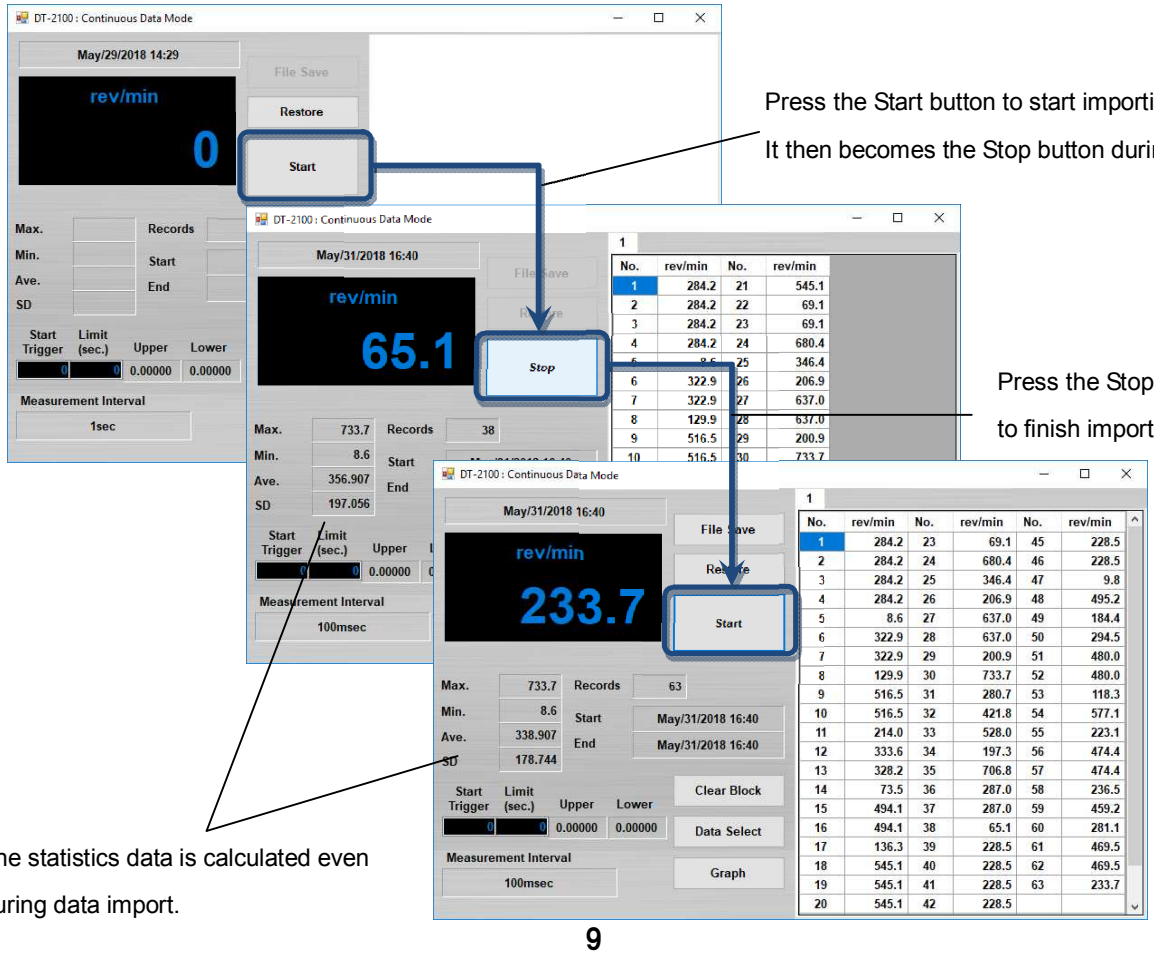


●Indicates "OVER" when the measured value exceeds the measurement range.

6.2 Measurement Results

(1) Measurement data

Measurement operation - 1



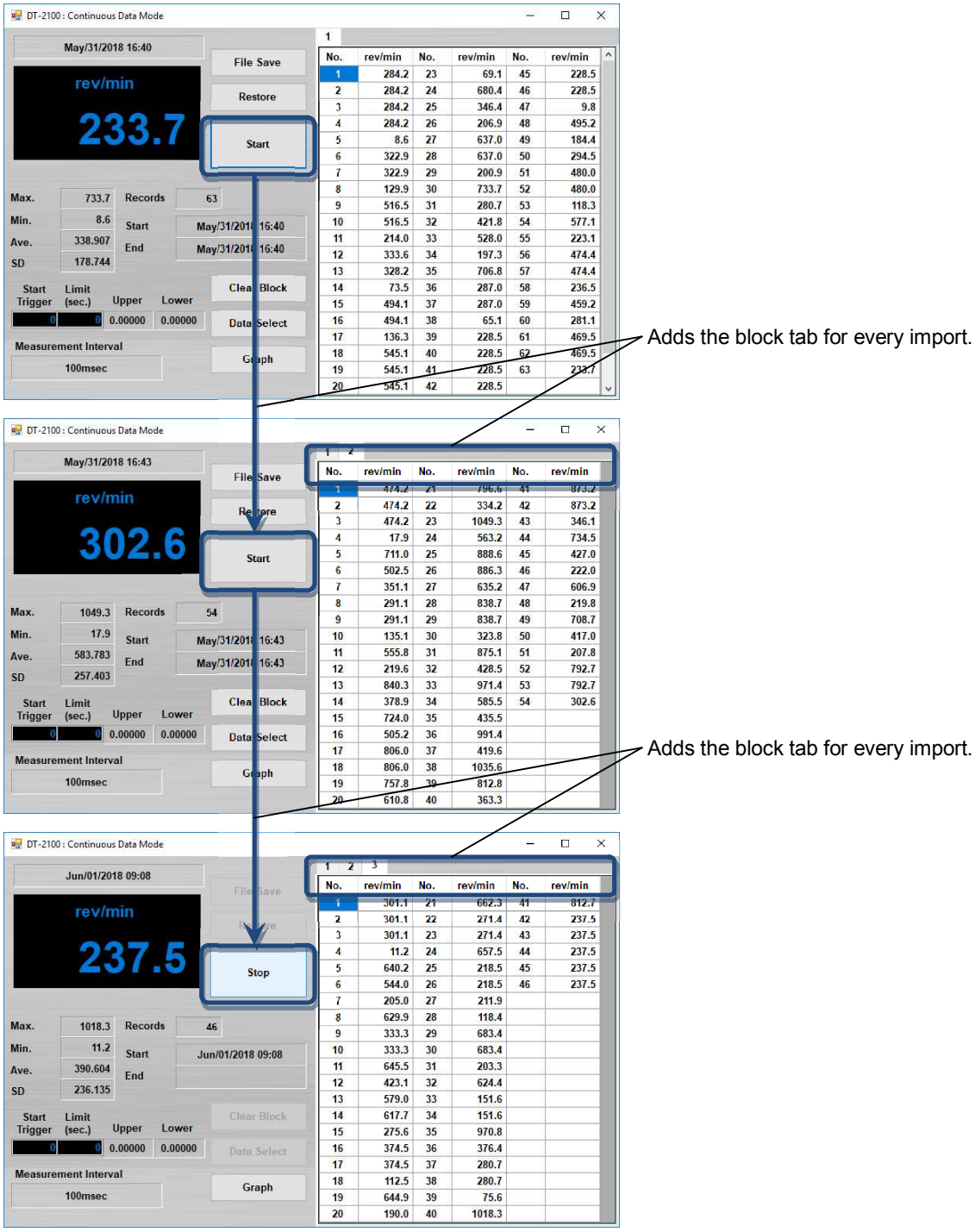
Press the Start button to start importing data.
It then becomes the Stop button during measurement.

Press the Stop button
to finish importing data.

The statistics data is calculated even
during data import.

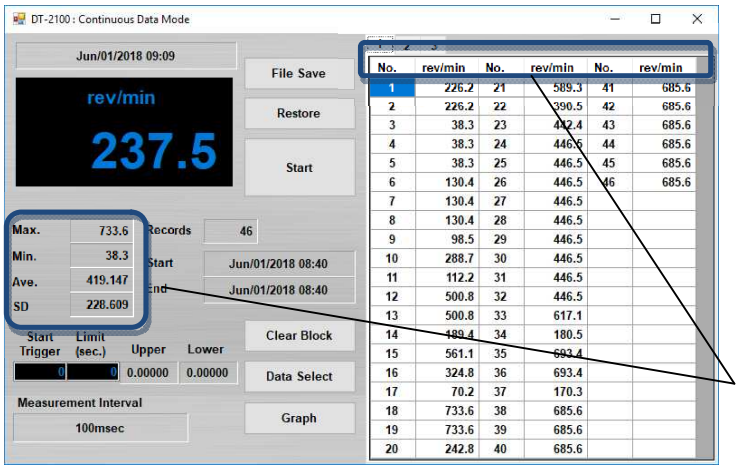
Measurement operation - 2

Adds a new block for every data import by pressing the Start button, and holds the measurement data.



(2) Statistics Data

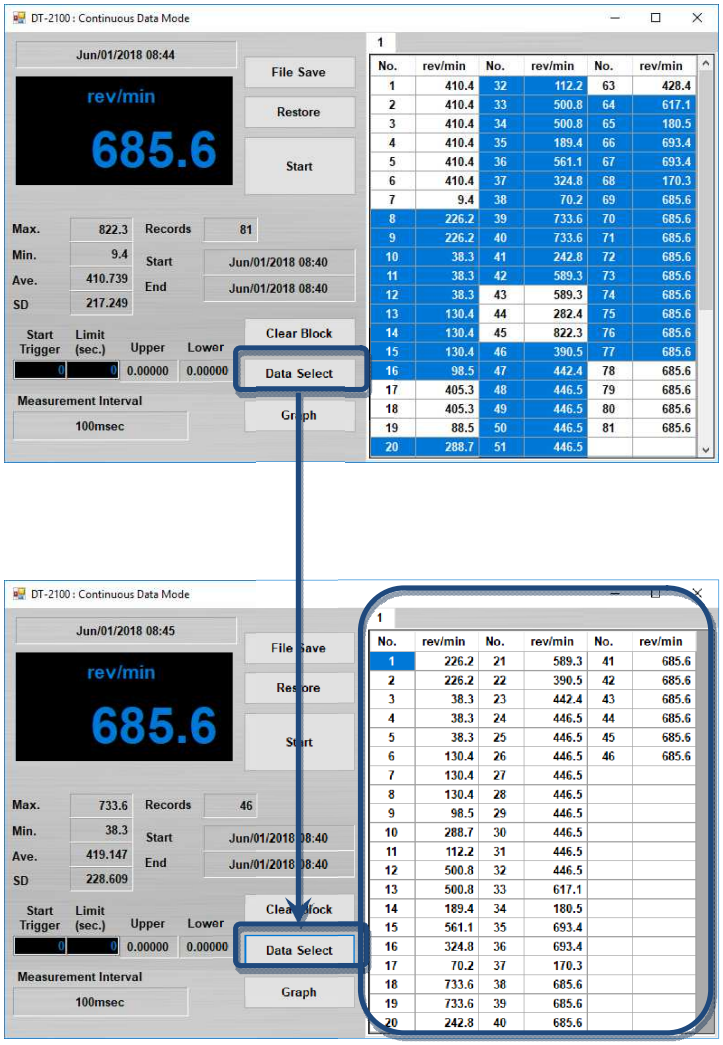
From the measurement data, calculates the maximum value/minimum value/average value/standard deviation (Max./Min./Ave./SD). Indicates and holds the data for every import.



Calculate and holds the statistics data for every import.

(3)Exporting the measurement data

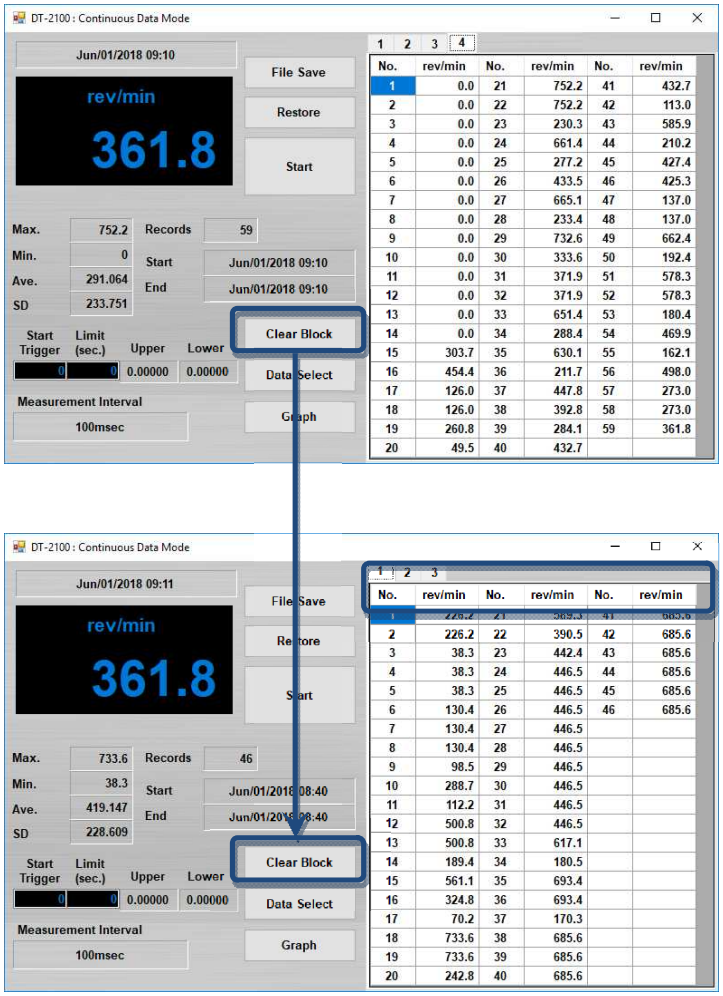
Select the arbitrary measurement data, and click the Data Select button to export the selected data.



***When you press and hold the Ctrl key, and click or drag, multiple data can be selected.**

(4) Deleting the measurement data

Click the Clear Block button to delete the block tab that has been selected.



6.3 CSV File Operation

The measurement results can be saved in or read from the arbitrary CSV file.

● Save the measurement results in the CSV file

Click the File Save button to display the "Save as" dialog window.

Specify the arbitrary file name and save destination, and click the save button to save the setting contents.

● Read the measurement results from the CSV file

Click the File Save button to display the "Open" dialog window.

Select the CSV file you want to open, and click the "Open" button.

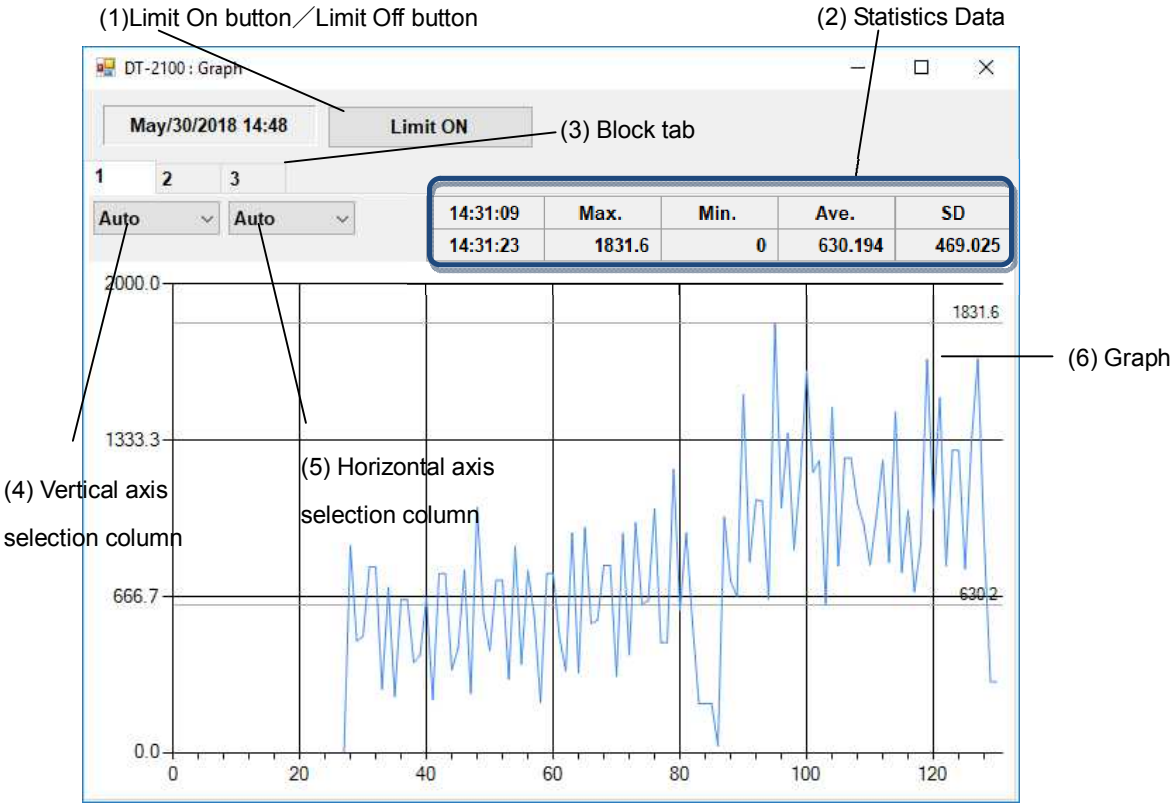
A new block tab is created and the measurement data as well as statistics data are displayed in the tab.

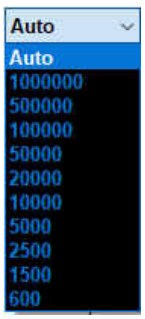
Only CSV files that have been saved with this application can be opened here.

If you try to open files other than those specified above, they cannot be opened normally.

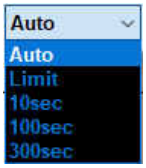
7. Graph Screen

Select the "Graph button" in the continuous data import screen to display the graph screen.



(1)Limit On button／Limit Off button	Press the Limit On button to draw the upper/lower limit graph. The Limit On button then becomes the Limit Off button Press the Limit Off button to erase the upper/lower limit graph. The Limit Off button then becomes the Limit On button
(2) Statistics data	For the imported measurement data, indicates the maximum value/minimum value/average value/standard deviation, the number of measurement data, and the measurement start/end time. Updates during measurement. For the average value, when the integer part of the calculated result has x digits, the number of digits after decimal point becomes 6-x.
(3) Block tab	Synchronized with the block tab in the continuous data import screen, holds the measurement data and statistics data.
(4) Vertical axis selection column	Select the maximum value on the vertical axis and specify the measurement data range. Ranges depend on each unit setting. If the measurement data does not fit within the range, the scroll bar becomes enabled to allow you to scroll up or down the column. If the Auto setting is selected, it switches the range automatically based on the measured data.  Indicates the maximum value divided into three, average value, and maximum value on the vertical axis memory. When drawing the upper/lower limit graph, the upper and lower limit values are displayed on the vertical axis memory.

(5) Horizontal axis selection column	Select the maximum value on the horizontal axis. Auto: Automatically sets to the time during measurement, or measurement time after measurement ends. Limit: Applies the Limit setting in the USB main screen. When the Limit is 0, the range setting is same as that for the Auto. 10sec, 100sec, 300sec: Sets to the specified measurement time. If the measurement data exceeds the setting range, the scroll bar becomes enabled to allow you to scroll up and down the column.
(6) Graph	Indicates the real-time graph.



7.1 Graph Drawing

(1) Synchronization of measurement data and statistics data with the continuous data import screen

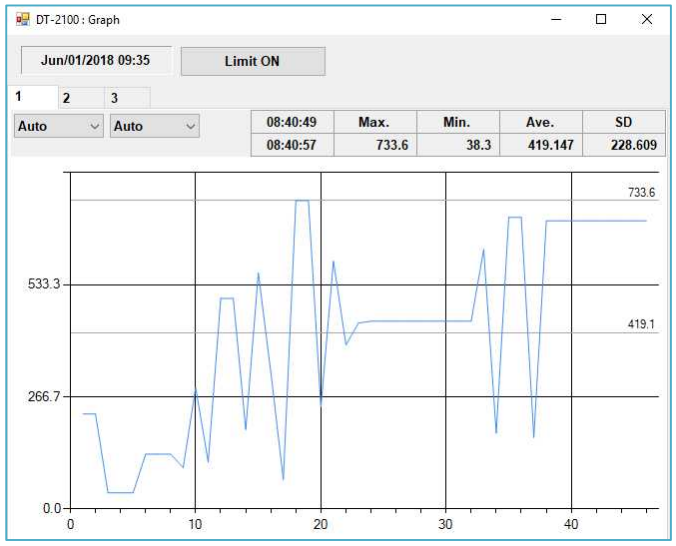
The graph and statistics data to be displayed are synchronized with the block tab in the continuous data import screen.

The 1st measured data

Max.	733.6
Min.	38.3
Ave.	419.147
SD	228.609

1 2 3

No.	rev/min	No.	rev/min	No.	rev/min
1	226.2	21	589.3	41	685.6
2	226.2	22	390.5	42	685.6
3	38.3	23	442.4	43	685.6
4	38.3	24	446.5	44	685.6
5	38.3	25	446.5	45	685.6
6	130.4	26	446.5	46	685.6
7	130.4	27	446.5		
8	130.4	28	446.5		
9	98.5	29	446.5		
10	288.7	30	446.5		
11	112.2	31	446.5		
12	500.8	32	446.5		
13	500.8	33	617.1		
14	189.4	34	180.5		
15	561.1	35	693.4		
16	324.8	36	693.4		
17	70.2	37	170.3		
18	733.6	38	685.6		
19	733.6	39	685.6		
20	242.8	40	685.6		

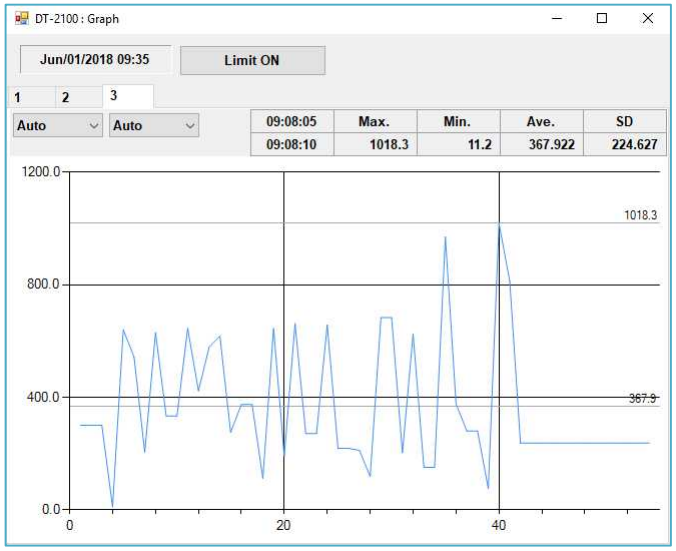


The 3rd measured data

Max.	1018.3
Min.	11.2
Ave.	367.922
SD	224.627

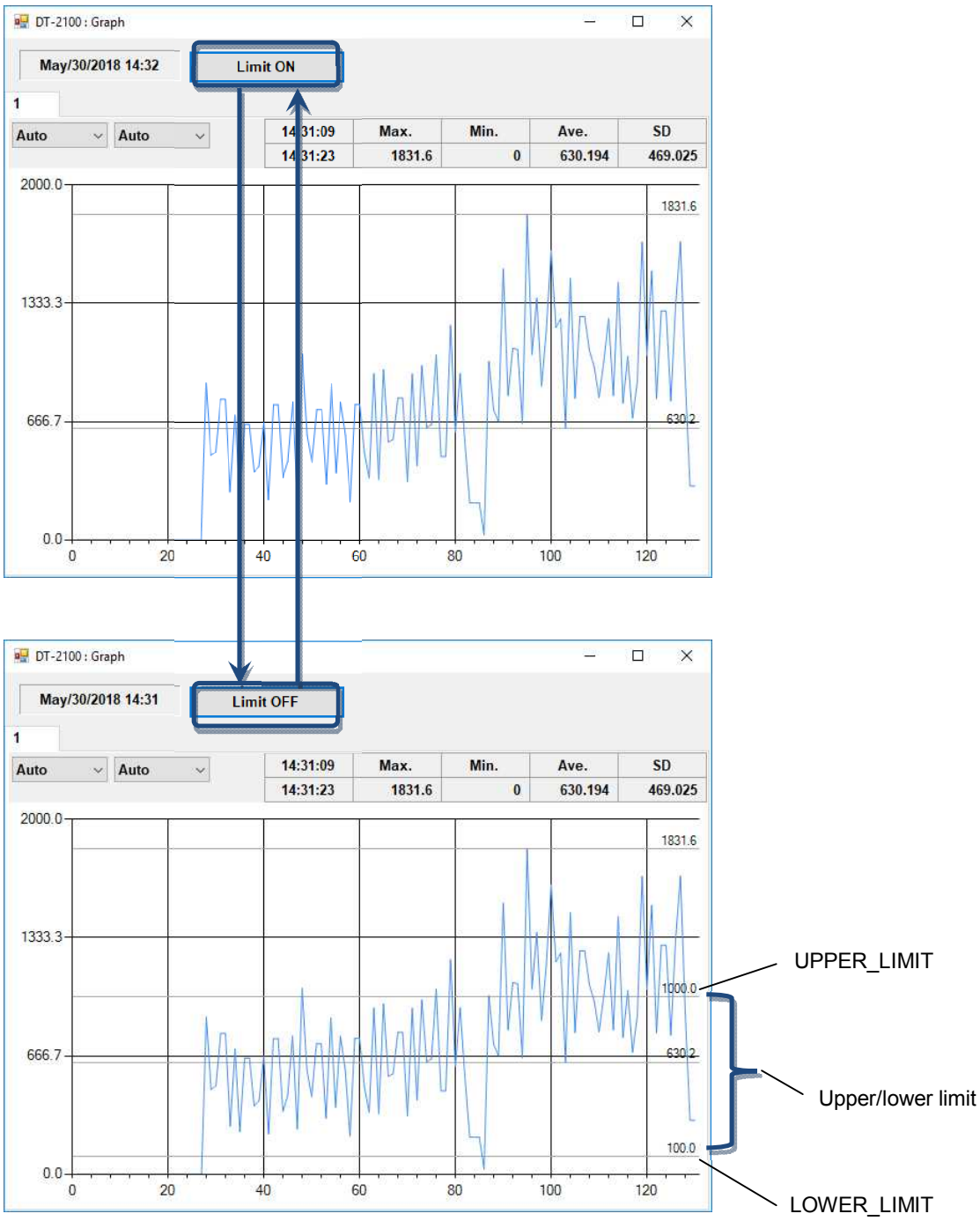
1 2 3

No.	rev/min	No.	rev/min	No.	rev/min
1	301.1	21	662.3	41	812.7
2	301.1	22	271.4	42	237.5
3	301.1	23	271.4	43	237.5
4	11.2	24	657.5	44	237.5
5	640.2	25	218.5	45	237.5
6	544.0	26	218.5	46	237.5
7	205.0	27	211.9	47	237.5
8	629.9	28	118.4	48	237.5
9	333.3	29	683.4	49	237.5
10	333.3	30	683.4	50	237.5
11	645.5	31	203.3	51	237.5
12	423.1	32	624.4	52	237.5
13	579.0	33	151.6	53	237.5
14	617.7	34	151.6	54	237.5
15	275.6	35	970.8		
16	374.5	36	376.4		
17	374.5	37	280.7		
18	112.5	38	280.7		
19	644.9	39	75.6		
20	190.0	40	1018.3		



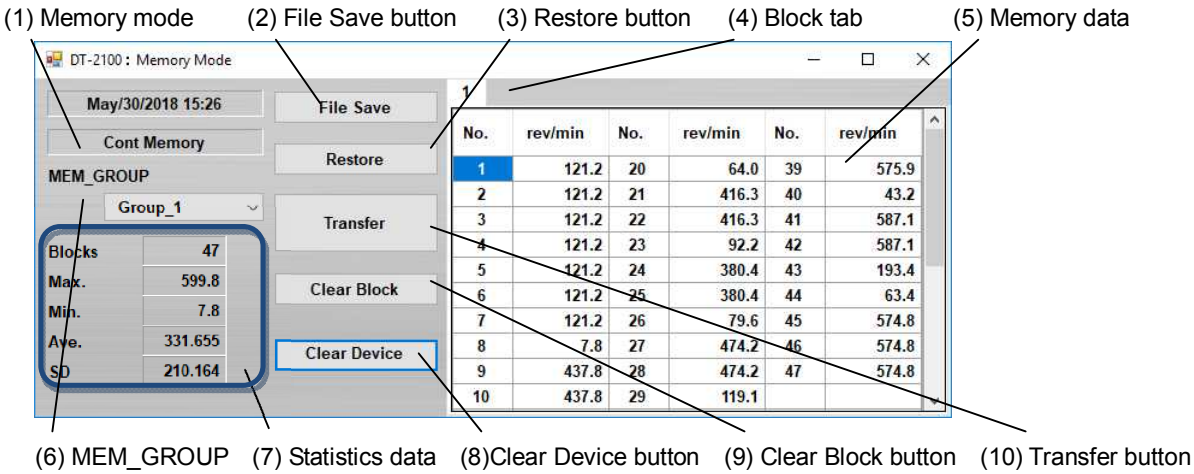
(2) Switching the display of the upper/lower limit graph

Use the Limit On button/Limit Off button to switch showing and hiding of the upper/lower limit graph.



8. Memory Data Import Screen

Select the "MEM_DATA_TRANSFER button" in the menu to display the memory data import screen.



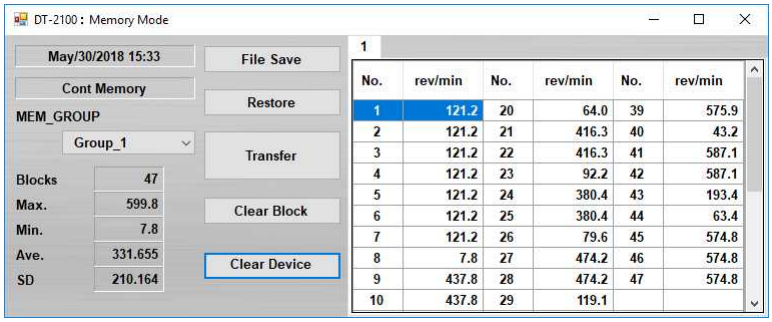
No.	rev/min	No.	rev/min	No.	rev/min
1	121.2	20	64.0	39	575.9
2	121.2	21	416.3	40	43.2
3	121.2	22	416.3	41	587.1
4	121.2	23	92.2	42	587.1
5	121.2	24	380.4	43	193.4
6	121.2	25	380.4	44	63.4
7	121.2	26	79.6	45	574.8
8	7.8	27	474.2	46	574.8
9	437.8	28	474.2	47	574.8
10	437.8	29	119.1		

(1) Memory mode	Indicates the memory mode specified in the user setting.
(2) File Save button	Indicates the save destination folder selection screen. Saves the memory data being displayed to the file in the CSV format.
(3) Restore button	Indicates the file selection screen. Creates a new block, and reads the selected memory data into it.
(4) Block tab	Indicates the measurement data every time the memory data is read from the DT-2100. Up to 1000 blocks.
(5) Memory data	Indicates the memory data that has been read. The contents depend on the measurement mode (continuous memory/each memory/statistics memory).
(6) MEM_GROUP	Select the MEM_GROUP.
(7) Statistics Data	Indicates the maximum value, minimum value, average value, and standard deviation for the selected block number. Indicates the number of memory data in Blocks.
(8)Clear Device button	Click this button to display the confirmation screen. Click OK to delete the memory data for the MEM_GROUP that has been selected.
(9)Clear Block button	Click this button to display the confirmation screen. Click OK to delete the block that has been selected.
(10) Transfer button	Reads the memory data for the MEM_GROUP that has been selected.

8.1 Continuous Memory

Indicates "No." and "(measurement unit)" on the first row of the memory data, and the serial number and memory data below them.

Indicates the statistics data corresponding to the memory data on the statistics data column.

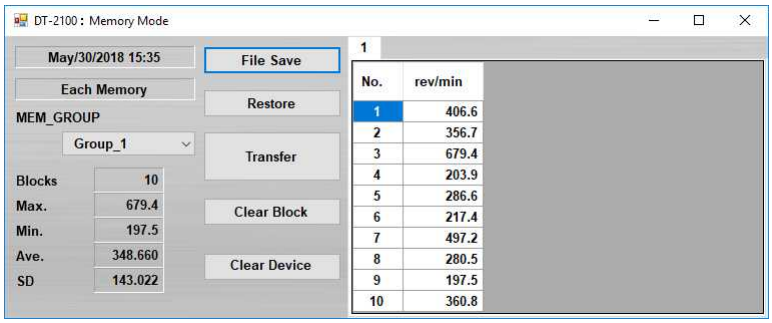


No.	rev/min	No.	rev/min	No.	rev/min
1	121.2	20	64.0	39	575.9
2	121.2	21	416.3	40	43.2
3	121.2	22	416.3	41	587.1
4	121.2	23	92.2	42	587.1
5	121.2	24	380.4	43	193.4
6	121.2	25	380.4	44	63.4
7	121.2	26	79.6	45	574.8
8	7.8	27	474.2	46	574.8
9	437.8	28	474.2	47	574.8
10	437.8	29	119.1		

8.2 Each Memory

Indicates "No." and "(measurement unit)" on the first row of the memory data, and the serial number and memory data below them.

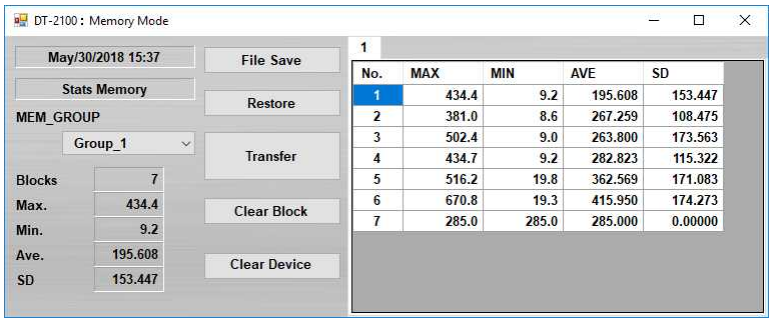
Indicates the statistics data corresponding to the memory data on the statistics data column.



8.3 Statistics Memory

Indicates "No.", "MAX", "MIN", "AVE", and "SD"on the first row of the memory data, and the serial number and memory data below them.

Indicates the selected memory data on the statistics data column.



8.4 CSV File Operation

The measurement results can be saved in or read from the arbitrary CSV file.

● Save the measurement results in the CSV file

Click the File Save button to display the "Save as" dialog window.

Specify the arbitrary file name and save destination, and click the save button to save the setting contents.

● Read the measurement results from the CSV file

Click the File Save button to display the "Open" dialog window.

Select the CSV file you want to open, and click the "Open" button.

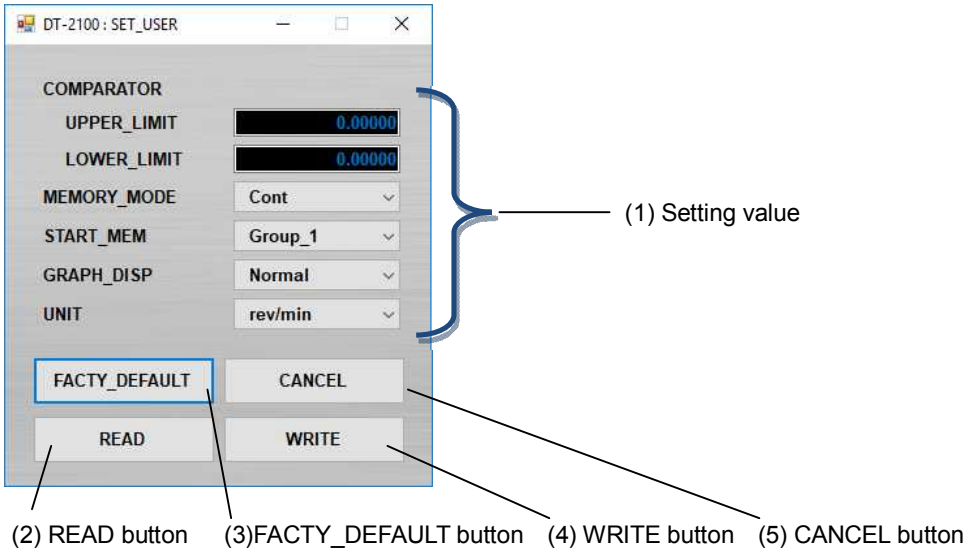
A new block tab is created and the measurement data as well as statistics data are displayed in the tab.

Only CSV files that have been saved with this application can be opened here.

If you try to open files other than those specified above, they cannot be opened normally.

9. SET_USER Screen

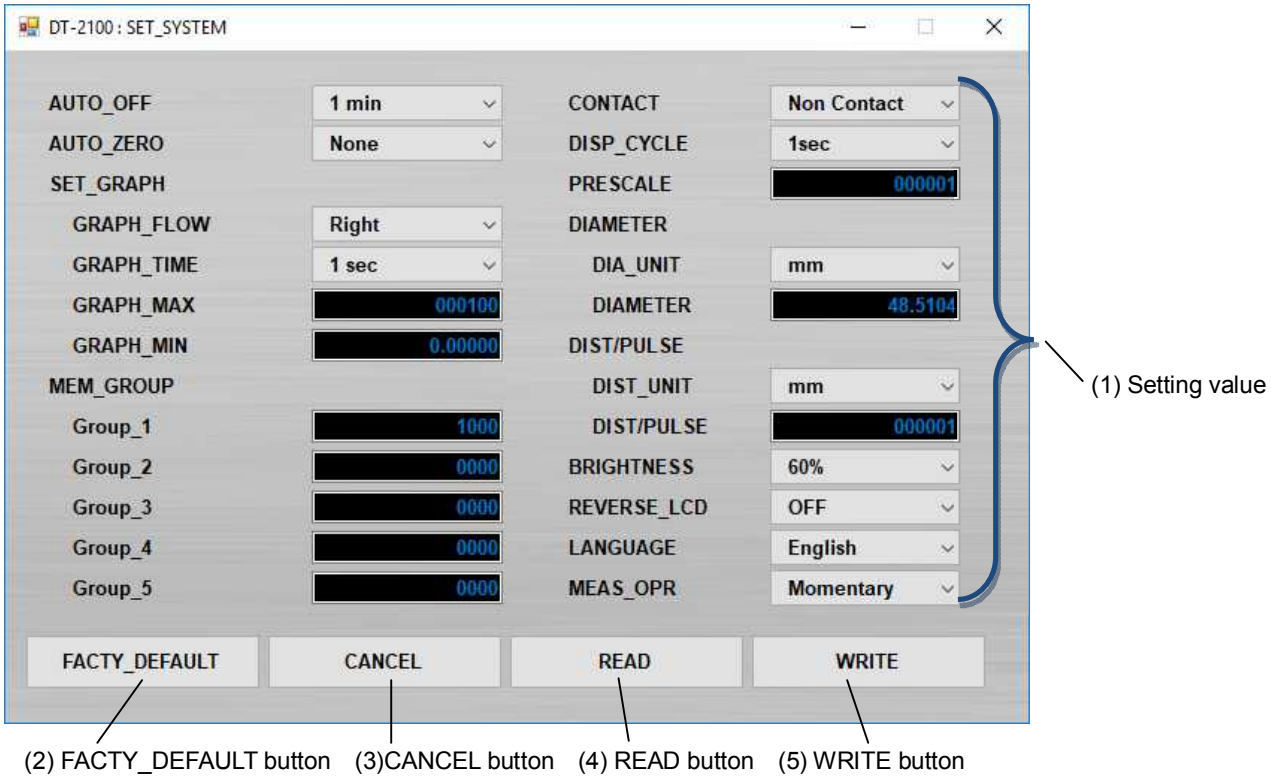
Select "SET_USER button" in the menu to display the SET_USER screen.



(1) Setting value	COMPARATOR	—
	UPPER_LIMIT	Enter 0.00000 to 999999 (**0.00000**)
	LOWER_LIMIT	Enter 0.00000 to 999999 (**0.00000**)
	MEMORY_MODE	Select from **Cont**, Each, or Stats
	START_MEM	Select from **Group_1**, Group_2, Group_3, Group_4, or Group_5
	GRAPH_DISP	Select from **Normal**, Graph_1, Graph_2, or Graph_3
	UNIT	Select from the following items **rev/min**, m/min, cm/min, inch/min, feet/min, yards/min, rev/sec, m/sec, cm/sec, inch/sec, km/h, miles/h, cm, m, km, inch, feet, yards, or STP
(2) READ button	Reads the current user setting information from the DT-2100.	
(3) FACTY_DEFAULT button	Indicates the factory default values.	
(4) WRITE button	Saves the user setting in the DT-2100, and returns to the main screen. If the MEMORY_MODE value is different from the current setting value in the DT-2100, the confirmation message (OK/Cancel) is displayed.	
(5) CANCEL button	Returns to the main screen without saving the changed content.	

10. SET_SYSTEM Screen

Select "SET_SYSTEM button" in the menu to display the SET_SYSTEM screen.

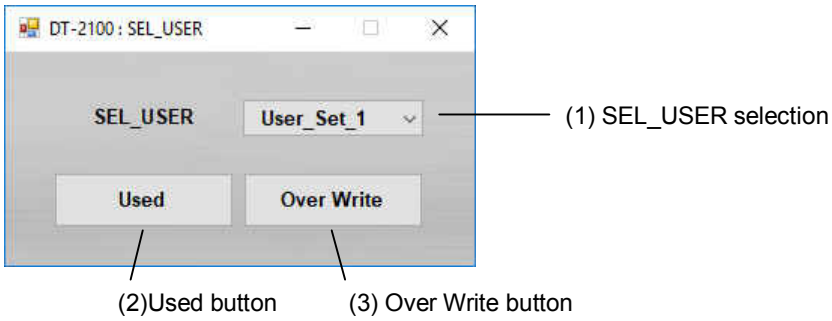


(1) Setting value	AUTO_OFF	Select from **1min**, 10min, or 30min
	AUTO_ZERO	Select from 1sec, 10sec, 30sec, 60sec, or **None**
	SET_GRAPH	—
	RAPH_FLOW	Select **Right** or Left
	GRAPH_TIME	Select from **1sec**, 10sec, 50sec, or 100sec
	GRAPH_MAX	Enter 0.00001 to 999999 (**000100**)
	GRAPH_MIN	Enter 0.00000 to 999999 (**0.00000**)
	MEM_GROUP	—
	Group_1	0 to **1000**/100/100 (Cont/Each/Stats)
	Group_2	**0** to 1000/100/100 (Cont/Each/Stats)
	Group_3	**0** to 1000/100/100 (Cont/Each/Stats)
	Group_4	**0** to 1000/100/100 (Cont/Each/Stats)
	Group_5	**0** to 1000/100/100 (Cont/Each/Stats)
	CONTACT	Select from Contact, **Non Contact**, Auto, or Contact(Low)
	DISP_CYCLE	100msec, 500msec, **1sec**, 5sec
	PRESCALE	Enter 0.00001 to 999999 (**000001**)
	DIAMETER	—
	DIA_UNIT	Select from **mm**, cm, m, inch, feet, or yards
	DIAMETER	Enter 0.00001 to 999999 (**48.5104**)

	DIST/PULSE	—
	DIST_UNIT	Select from **mm**, cm, m, inch, feet, or yards
	DIST/PULSE	Enter 0.00001 to 999999 (**000001**)
	BRIGHTNESS	Select from 20%, 40%, **60%**, 80%, or 100%
	REVERSE_LCD	Select **OFF** or ON
	LANGUAGE	Select Japanese or **English**
	MEAS_OPR	Select **Momentaty** or Continuous
(2) FACTY_DEFAULT button	Indicates the factory default values.	
(3) CANCEL button	Returns to the main screen without saving the changed content.	
(4) READ button	Reads the current system setting information from the DT-2100.	
(5) WRITE button	Saves the system setting in the DT-2100 and returns to the main screen.	

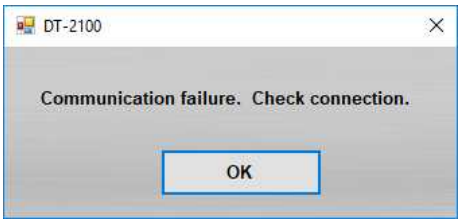
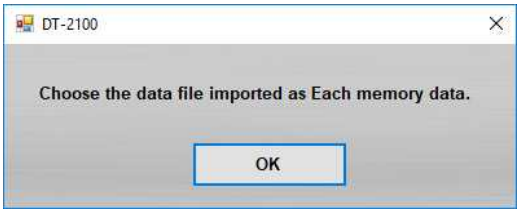
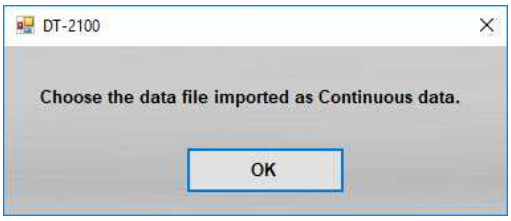
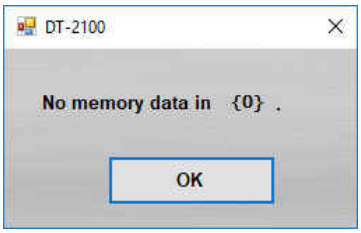
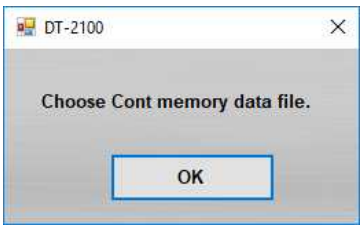
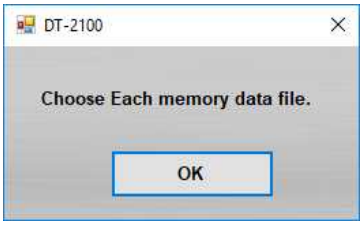
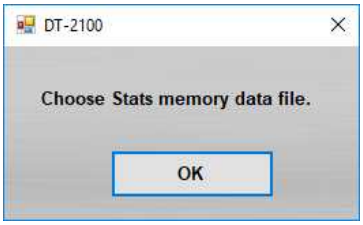
11. SEL_USER Screen

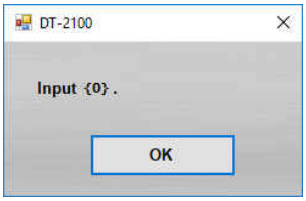
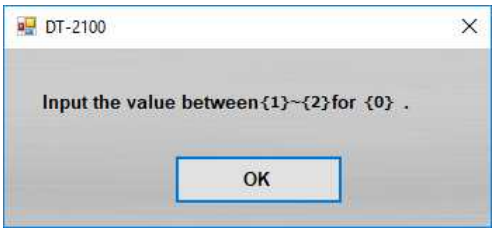
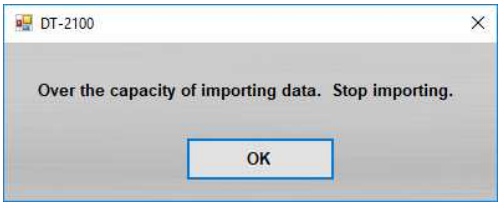
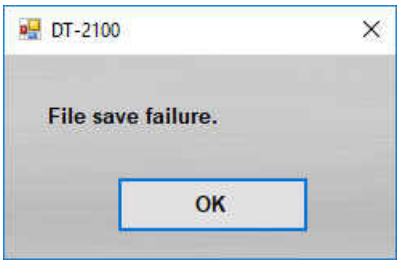
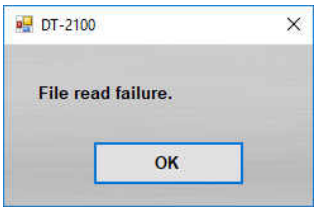
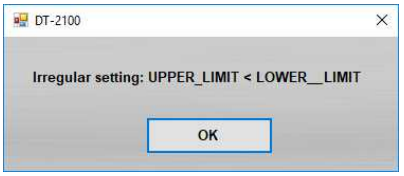
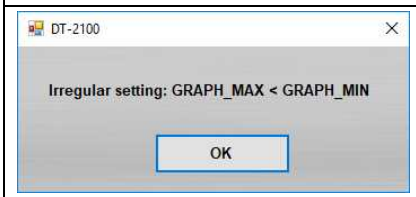
Select "SEL_USER button" in the menu to display the SEL_USER screen.

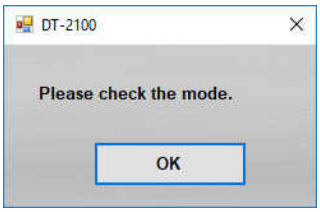
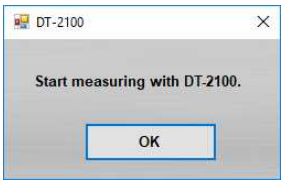
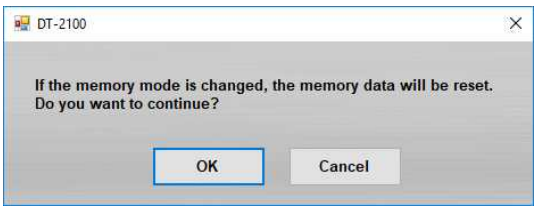
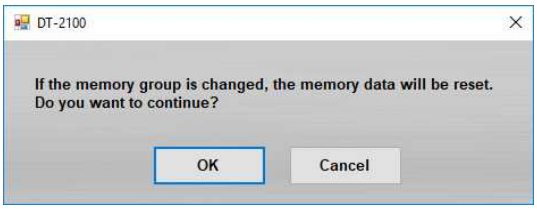
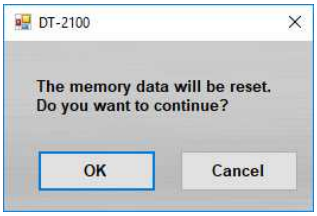
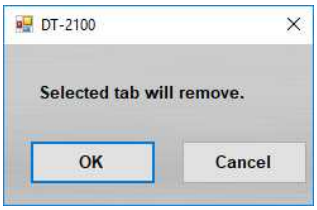


(1) SEL_USER selection	Select SEL_USER from User Set_1, User Set_2, or User Set_3.
(2) Used button	Reads the user setting and system setting contents for the selected SEL_USER.
(3) Over Write button	Writes the contents specified in the user setting and system setting for the selected SEL_USER.

12. Error Message List

Error Message	Cause	Countermeasure
	The DT-2100 cannot communicate normally with PC Or the COM port number is incorrect	・Check communication between the DT-2100 and PC, as well as the power supply. ・Check the COM port number from the Device Manager.
	Tried to open the measurement data, which was saved in the continuous data import screen, in the memory data import screen.	Open the measurement data saved in the memory data import screen.
	Tried to open the measurement data, which was saved in the memory data import screen, in the continuous data import screen.	Open the measurement data saved in the measurement data import screen.
	There is no memory data in the group where the memory is imported	Create the memory data. *The target group is shown in {0}.
	In the memory data import screen (continuous memory mode), tried to open the measurement data saved in modes other than the continuous memory mode	Open the measurement data saved in the continuous memory mode
	In the memory data import screen (each memory mode), tried to open the measurement data saved in modes other than the each memory mode	Open the measurement data saved in the each memory mode
	In the memory data import screen (statistics memory mode), tried to open the measurement data saved in modes other than the statistics memory mode	Open the measurement data saved in the statistics memory mode

	There is a blank in the input item of the user setting screen and/or system setting screen	Enter the value in the item. *The target item name is shown in {0}.
	There is the value beyond the specified range in the input item of the user setting screen and/or system setting screen	Enter the correct value within the specified range. *The target item name is shown in {0}. *The lower limit value of the range is shown in {1}. *The upper limit value of the range is shown in {2}.
	When reading files for data measurement and continuous data, the number of tab blocks exceeds the maximum number	Delete the existing tab blocks so that the maximum number of the tab blocks does not exceed 1000.
	An error occurred while saving a file.	・Check that the save destination folder exists. If not, create a folder. ・Check that you have write permission into the save destination folder. If not, perform the write permission setting. ・Check that the free space is sufficient on the drive. If not, secure the free space.
	An error occurred while reading a file	The file may be corrupt. Select the file in the correct format.
	In the user setting screen, the LOWER_LIMIT value is higher than the UPPER_LIMIT value	Set the UPPER_LIMIT value higher than the LOWER_LIMIT value.
	In the system setting screen, the GRAPH_MIN value is higher than the GRAPH_MAX value	Set the GRAPH_MAX value higher than the GRAPH_MIN value.

	Measurement data cannot be imported correctly from the DT-2100	Check that the DT-2100 is in the correct mode for measurement.
	The Start button was pressed when the DT-2100 was not in the measurement mode	Start measurement.
	This message is displayed when you have changed the memory mode value in the user setting screen, and have clicked the WRITE button.	Select "OK" to initialize the memory data, and switch the memory mode. Select "Cancel" to avoid switching the memory mode.
	This message is displayed when you have changed the memory group value in the system setting screen, and have clicked the WRITE button.	Select "OK" to initialize the memory data, and change the memory group. Select "Cancel" to avoid changing the memory group.
	This message is displayed when you have clicked the Clear Device button in the memory data import screen.	Select "OK" to initialize the memory data. Select "Cancel" not to initialize the memory data.
	This message is displayed when you have clicked the Clear Block button in the memory data import screen.	Select "OK" to delete the selected tab. Select "OK" not to delete the selected tab.

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14. Communication Commands

For communication commands, refer to the "RS232C Command List".