How to Use WinCT-Pipette

- Contents -

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1. Features

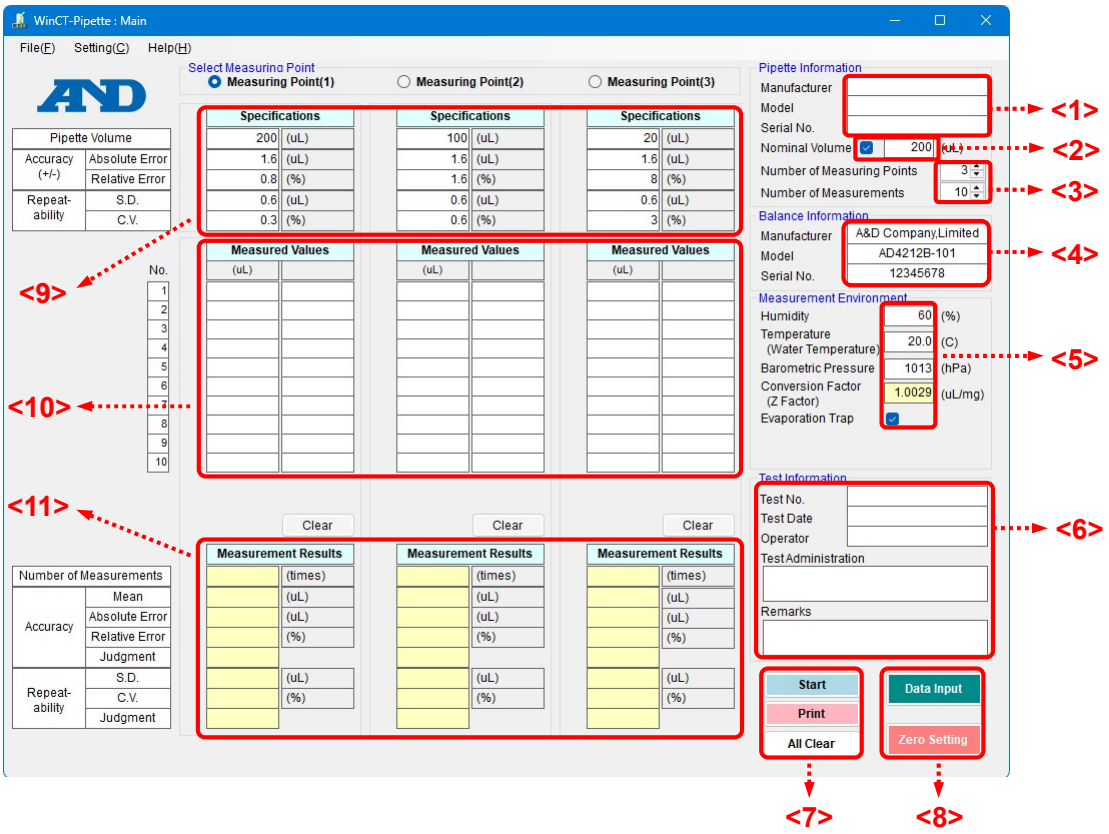
The mass value of distilled water dispensed from a pipette is transmitted from the balance to a PC. Using the temperature of the test liquid and the barometric pressure that are previously entered, the PC calculates the conversion factor (Z-factor) from a mass value to a volumetric value and converts the mass value into a volumetric value automatically, using the Z-factor.

- Comparing the test results with the specifications previously entered, judgment can be performed to determine whether the pipette is acceptable or not.
- Besides the pipette volume, test numbers, test dates and pipette information (manufacturer, model, serial number) can be recorded as test data. The test data, output to a printer or stored in the PC, allows easy management of pipette accuracy and reduces errors due to data mismanagement.
- The specifications of accuracy (systematic error) and repeatability (random error) can be entered either as an absolute value (uL) or as a relative value (percentage to the pipette volume).
- The mass value data from the balance can be transmitted to the PC either using a COM port or using a USB connection. (For a USB connection, use the accessory USB converter.)
- For testing various pipettes easily, multiple test conditions (pipette volume, number of measurements and specifications) can be set in advance. When multiple operators are set in advance, an operator can be selected easily when necessary.

2. Functions of Each Window

2-1 Main Window

When WinCT-Pipette starts up, the window below opens. Operations are normally performed on this window once the communication has been set up.



<1> Enter here the manufacturer, model and the serial number of the pipette to be tested. This enables easier identification of a pipette when printing out or saving the test data on a PC.

<2> Enter the nominal volume (maximum volume).

To initialize “<3> Number of measuring points and number of measurements” and “<9> Specifications” to the values for variable volume pipettes in accordance with ISO8655, check the box and enter the nominal volume.

Note) When the box is unchecked (i.e., no setting is applied), initialization is not performed. When the value in <9> Volume is changed, the changed volume is regarded as the nominal volume, and the specifications of accuracy (systematic error) and repeatability (random error) are initialized to values in accordance with ISO8655.

<3> Select the number of measuring points and the number of measurements at each point.

The number of measuring points (volumes to be measured by one pipette) can be set freely between 1 and 3 points, and the number of measurements at each volume between 3 and 12 times depending on the required strictness of the accuracy test.

According to ISO8655, 10 replicate measurements at each of three measuring points is recommended to test a variable volume pipette.

<4> Information on the balance to be used

No manual input is required. The model and the serial number are automatically entered as the measurement starts.

<5> Enter the ambient relative humidity, the distilled water temperature and the barometric pressure.

The Z-factor is automatically calculated using the values of the distilled water temperature and the barometric pressure.

Note 1) The effect of the barometric pressure is as small as approx. 0.01% when it is between 950 and 1050 hPa.

Note 2) Acclimatize the distilled water to the ambient temperature sufficiently so that the temperature of the distilled water does not vary during the measurement. Based on ISO8655 recommendations, the distilled water should be left longer than two hours for the acclimatization.

<6> Enter information to manage and identify the test data

- Test No. Enter the identification number for managing test data as records.
- Test Date The date is automatically entered at the time of measurement.
- Operator Enter the name of the operator.
- Test Administration
  Enter the name of the testing agency and the testing place.
  Double-click here to save/load the test administrative information.
- Remarks Enter memo and any supplementary data.

<7> Buttons for starting/finishing measurements and for printing out test data

[Start] Starts communication with the balance and becomes ready to retrieve mass value from the balance. (The balance should be in the weighing mode.)
The model and serial number of the balance will be read.
This button changes to [Finish] once the measurement starts.

[Finish] Finishes the communication.
The button returns to [Start].

[Print] Prints the test data on a sheet of paper.
Only the A4 or letter size in the longitudinal direction can be used. The data is output to the default printer.
In case of outputting data to another printer than the default printer or printing on multiple sheets at one time, go to [Print] in [File] Menu.

[All Clear] Clears all the measured values <10> and mesurement results <11>.

<8> Buttons for controlling the balance, which appears when the [Start] button is clicked.

[Data Input] WinCT-Pipette retrieves a mass value from the balance when this button is clicked while the balance indicates a stable value (when the stable mark "o" of the upper left is on). It is also possible to retrieve a mass value by pressing the ((PRINT)) key on the balance instead.
The displayed value of the balance will be zero automatically when a mass value has been retrieved.
It is also possible to retrieve a mass value automatically when the balance becomes stable after the water has been dispensed from a pipette to the weighing container on the balance. (The internal settings of the balance should be changed to “dout Prt 1”. Refer to the instruction manual of the balance for the setting.)

[Zero Setting] Sets the displayed value of the balance to zero.
This button is used when the displayed value is not zero before dispensing water from a pipette. It is also possible to set the displayed value to zero by pressing the ((RE-ZERO)) key on the balance instead.

<9> Enter the pipette volume and specifications of accuracy (systematic error) and repeatability (random error) used for judgment of acceptance.

The specifications of accuracy and repeatability can be entered either as an absolute value (uL) or as a relative value (percentage to the pipette volume).

The relative value (%) is automatically calculated when the absolute value (uL) is changed. Likewise, the absolute value (uL) is automatically calculated when the relative value (%) is changed.

Note) The specifications of accuracy and repeatability will be initialized when the pipette volume is changed. Make sure that the specifications are set correctly each time.

<10> Displays the mass values transmitted from the balance and the volumetric values obtained using the Z-factor.

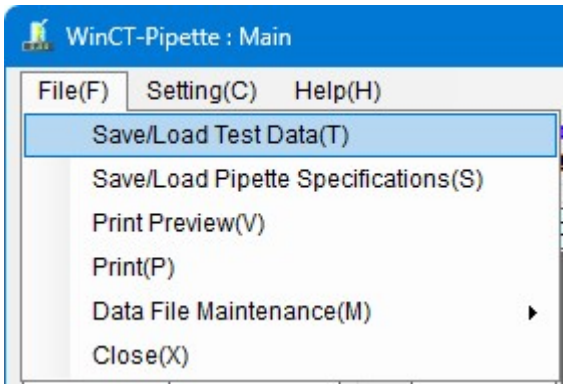
<11> Displays the test results and judgment results.

These are automatically calculated when three or more measurement values are obtained and are recalculated every time another measurement value is added.

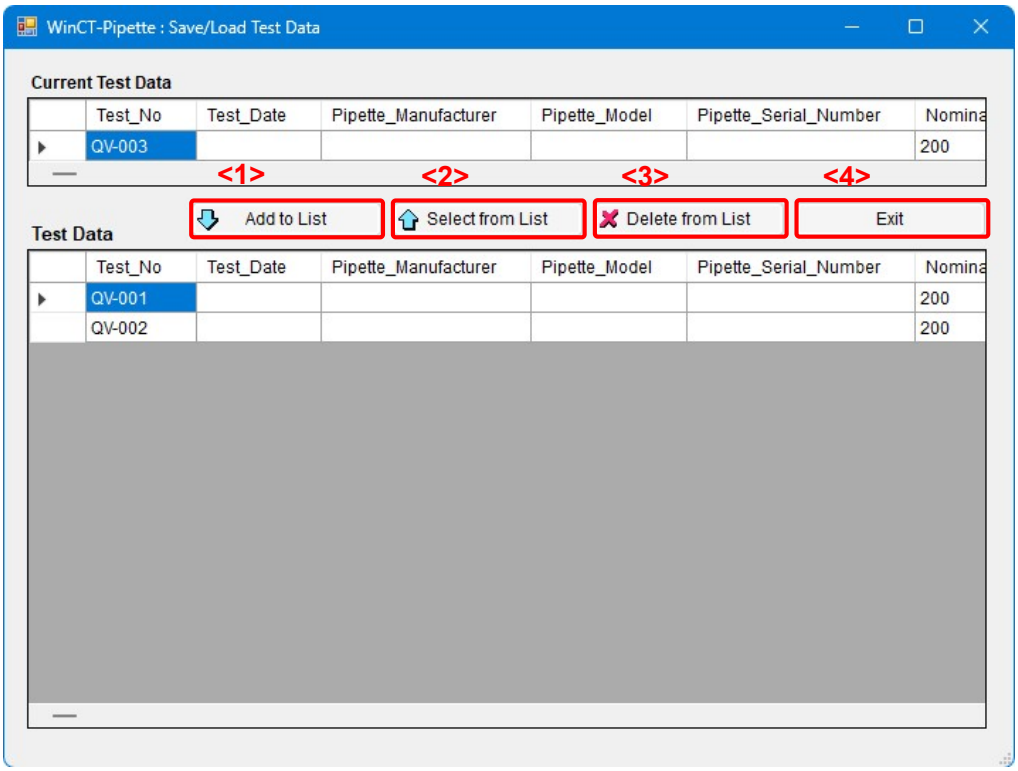
2-2 Other Windows

2-2-1 [File] Menu

1) [Save/Load Test Data]



It is possible to save the obtained test data as well as to load and delete previously saved test data. It is also possible to output to a printer after loading the past test data.



<1> [Add to List]

Saves obtained test data (current test data) on the PC.

<2> [Select from List]

Loads the past test data saved on the PC.

Select the test data to be loaded and click on this button.

The loaded data can be output to a printer by clicking on the [Print] in the main window or by [Print] in [File] Menu.

Note) The loaded test data cannot be modified on the main window. It becomes possible to perform a new measurement only when the loaded data are all cleared by clicking on the [All Clear] button.

<3> [Delete from List]

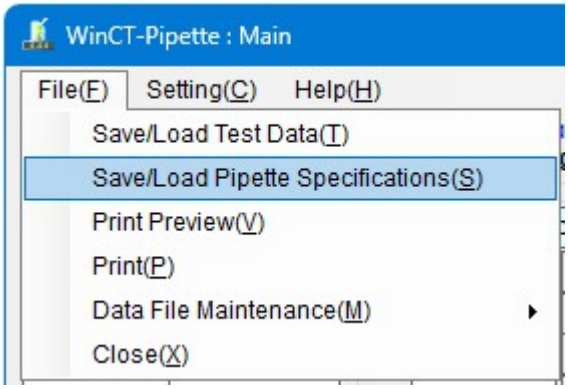
Deletes previously saved test data on the PC.

Select the test data to be deleted and then click on the button.

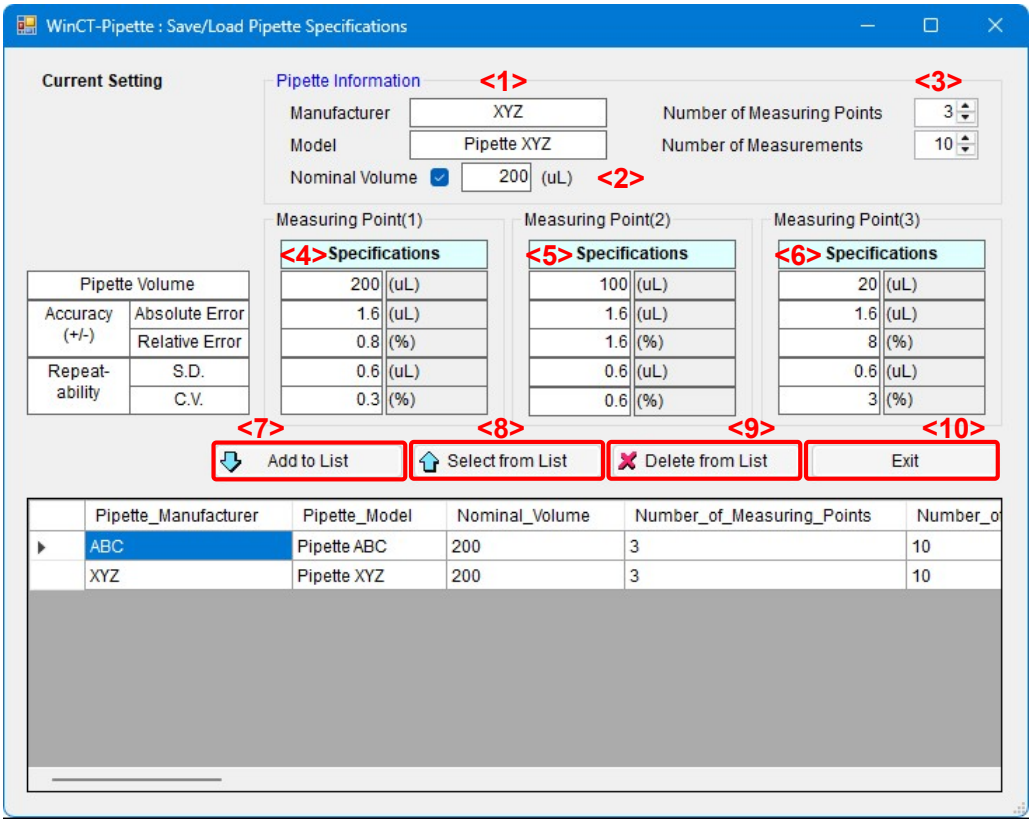
<4> [Exit]

Closes this window.

2) [Save/Load Pipette Specifications]



It is possible to set specifications (pipette volume, accuracy, repeatability, etc.) preliminarily with respect to the manufacturers or models of the pipettes and to load the specifications when conducting a test.



2)-1 Setting pipette specifications preliminarily

Enter <1> the manufacturer and the model of the pipette to be tested, <3> the nominal volume, <3> the number of measuring points and the number of measurements at each point and <4> ~ <6> specifications, and then click on <7> the [Add to List] button.

Repeat the same procedure when setting and saving multiple sets of pipette specifications.

Click on <10> the [Exit] button to return to the main window.

2)-2 Loading pipette specifications

Set the pipette specifications to be loaded in the selection mode and then click on <8> the [Select from List] button.

Click on <10> the [Exit] button to return to the main window.

2)-3 Deleting saved pipette specifications

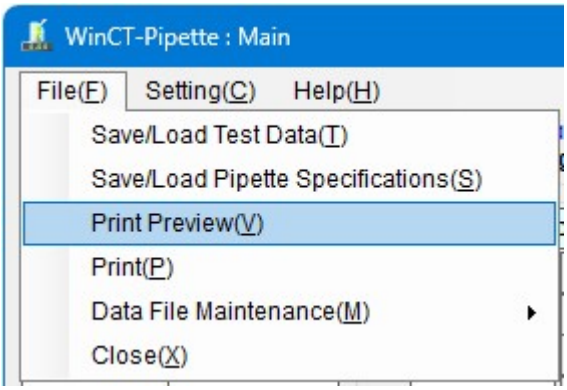
Set the specifications to be deleted in the selection mode and then click on <9> the [Delete from List] button.

Repeat the same procedure when deleting multiple sets of pipette specifications.

Click on <10> the [Exit] button to return to the main window.

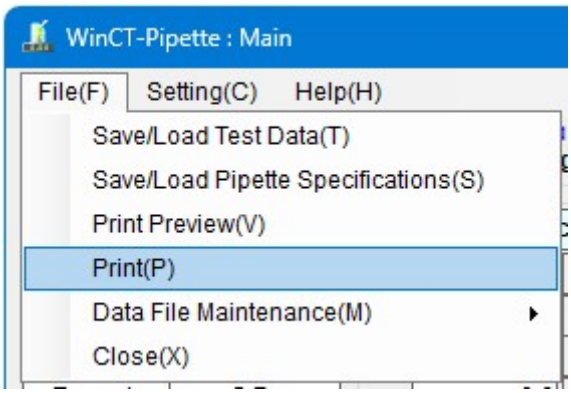
3) [Print Preview]

Checks the printing image



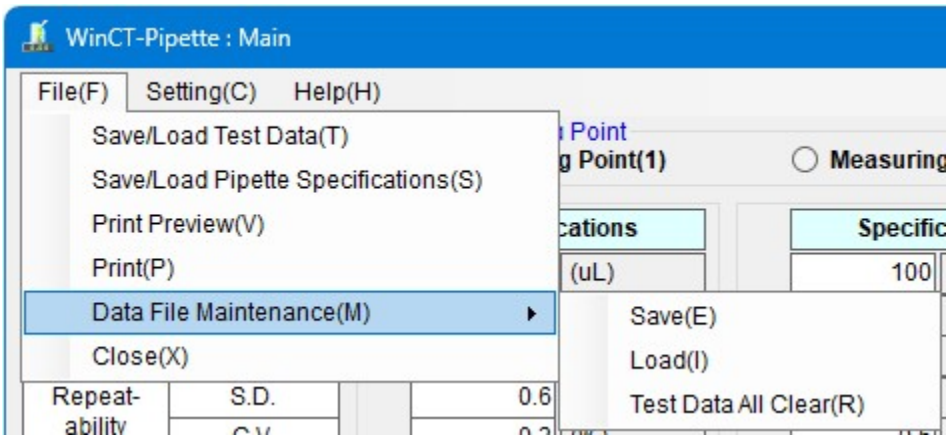
4) [Print]

Outputs test data to a printer. Only the A4 or letter size in the longitudinal direction can be used. It is also possible to output data to another printer than the “default printer” or to print on multiple sheets at one time.



5) [Data File Maintenance]

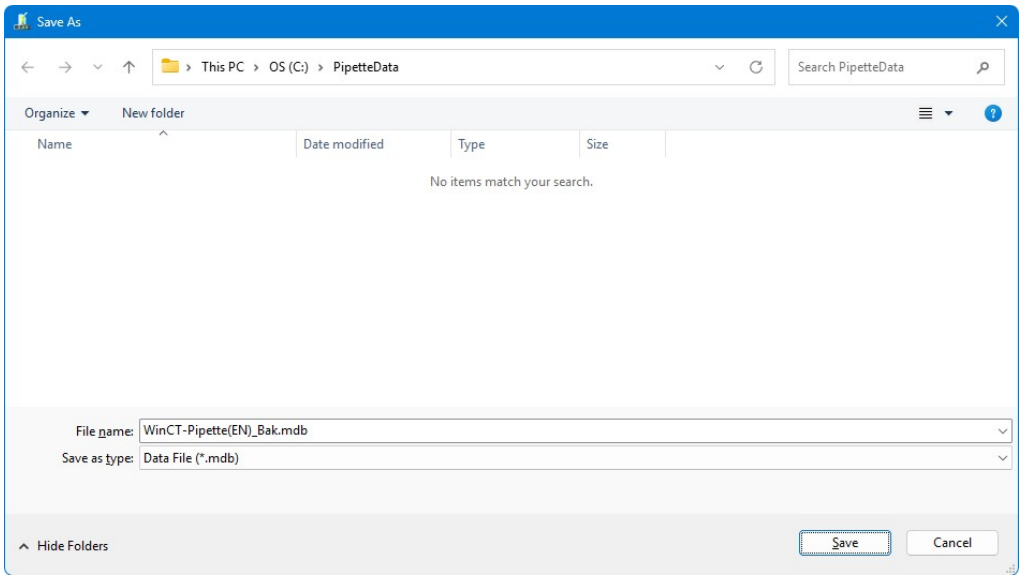
WinCT-Pipette stores saved test results and conditions as data files "WinCT-Pipette(EN).mdb" on the PC and loads the data files as required. It is recommended to make a backup copy periodically in case the data files are destroyed.



5)-1 [Save]

It is possible to store a copy of the data file "WinCT-Pipette(EN).mdb" in another drive or another folder. Do not change the extension “mdb” although the file name can be changed freely when making a copy in order to make it easier to identify. (The software searches files with the extension “mdb” when loading.)

Example of making a folder named “PipetteData” and storing a copy in that folder

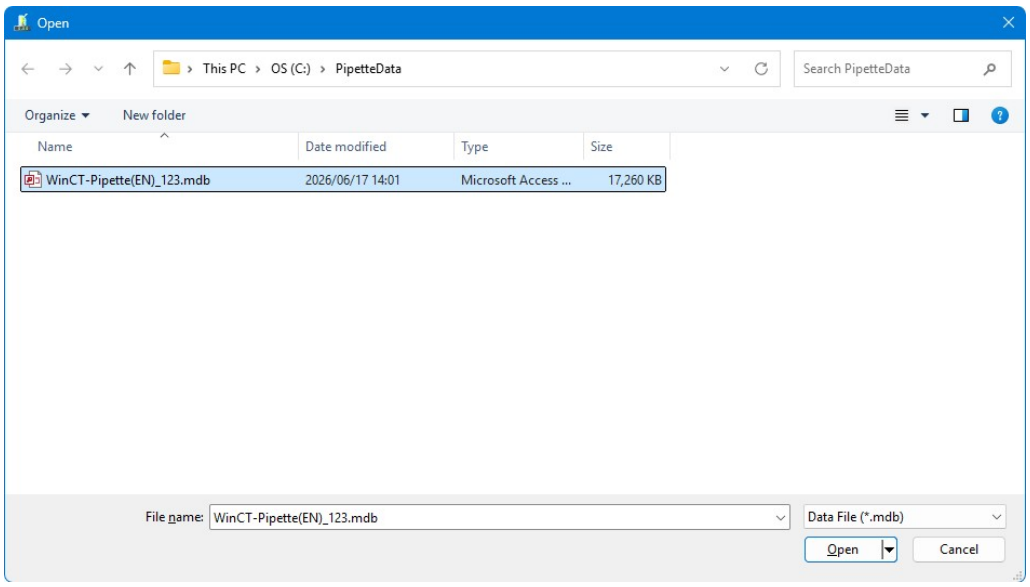


5)-2 [Load]

It is possible to load the data saved in another drive or another folder onto the data file "WinCT-Pipette(EN).mdb" .

The current data file will be overwritten. Save the current data beforehand if necessary.

Example of loading “WinCT-Pipette(EN)_123.mdb” in the folder named “PipetteData".



5)-3 [Test Data All Clear]

Clears all the test data stored in the current data file "WinCT-Pipette(EN).mdb".

Example) Saving test results monthly

a) Transaction on October 31, 2008

[Save]

Make a copy of “WinCT-Pipette(EN).mdb” under the name of “WinCT-Pipette(EN)_200810.mdb” (Save the data of October, 2008)

[Test Data All Clear]

Clear all test data in “WinCT-Pipette(EN).mdb”

b) Transaction on November 30, 2008

[Save]

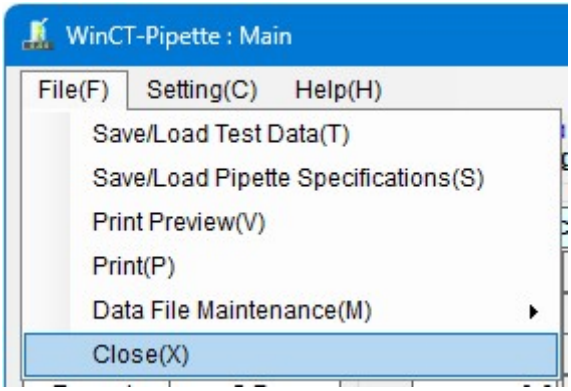
Make a copy of “WinCT-Pipette(EN).mdb” under the name of “WinCT-Pipette(EN)_200811.mdb” (Save the data of November, 2008)

[Test Data All Clear]

Clear all test data in “WinCT-Pipette(EN).mdb”

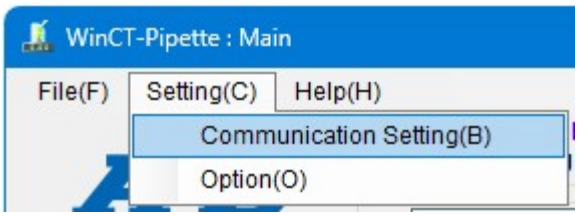
6) [Close]

Ends WinCT-Pipette

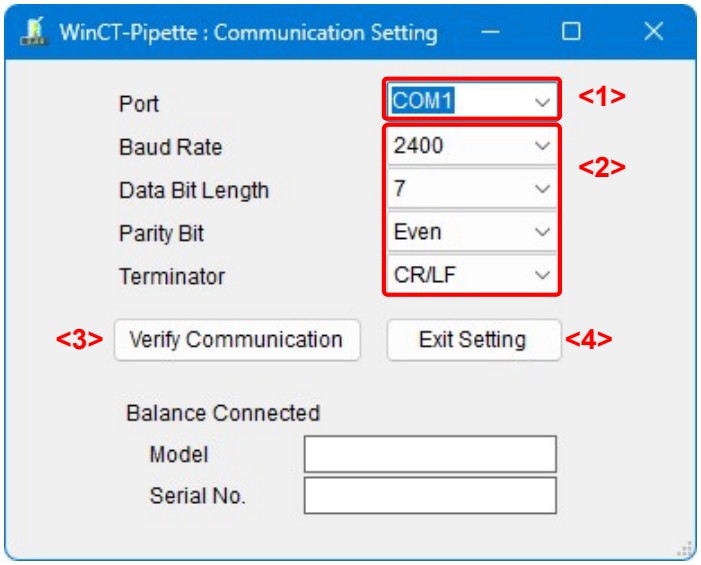


2-2-2 [Setting] Menu

1) [Communication Setting]



Set the protocol for communication with a balance



Communication Protocol (<2> baud rate, data bit length, parity bit, terminator) are set by default to match the factory setting for balances. It is therefore only <1> “Port” setting that should be checked.

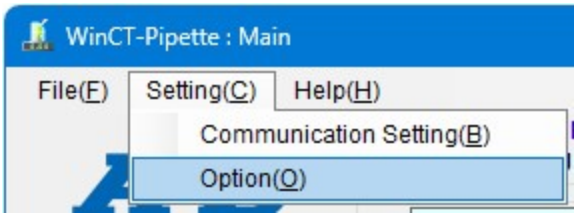
A port other than COM1 and COM2 is normally allocated when using a USB-serial converter. To find out which port is allocated for the USB-serial converter, go to [System] in [Control Panel] and open [Device Manager]. Verify the port setting if communication cannot be established. For instance, when "USB Serial Port (COM9)" is shown, the port to be set is “COM9”.

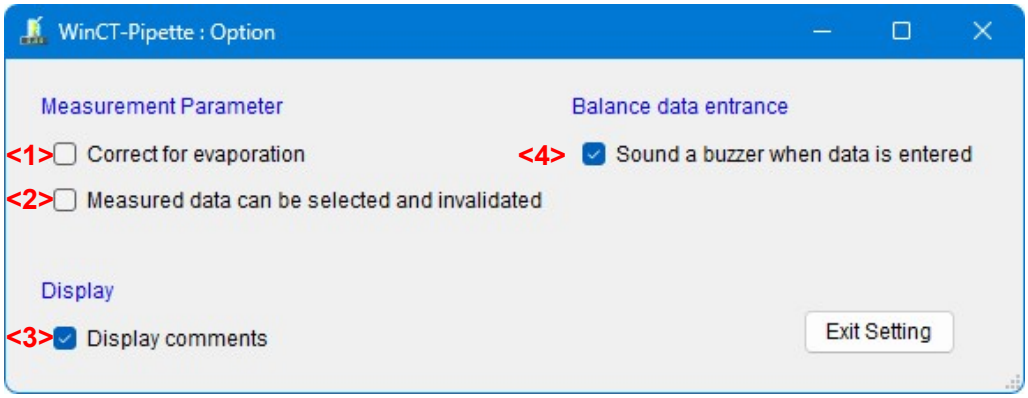
Set the balance in the weighing mode and click on the <3>

[Verify Communication] button to start communication with the balance. “Connection to balance OK” message will appear when communication with the balance is established.

Click on <4> [Exit Setting] to return to the main window. (The set communication protocol has been stored on the PC.)

2) [Option]





<1> Correct for evaporation

The setting item “Correction amount for evaporation” will appear on the main window when this box is checked.

When the correction amount for evaporation is entered, it will be considered that a certain amount of evaporation exists per mass value measured, and the conversion to the volumetric value will be corrected based on the below formula:

$$V = (m + e) \times Z$$

where V : volumetric value m : measured mass value
e : correction amount for evaporation
Z : conversion factor (Z factor)

<2> Measured data can be selected and invalidated.

A check box will appear on the left side of each measurement value on the main window when this box is checked. The data whose check boxes are checked will be excluded from the calculation for the test results (mean, accuracy, repeatability). The selected data will be shown with parentheses when printing out the test results.

<3> Display comments

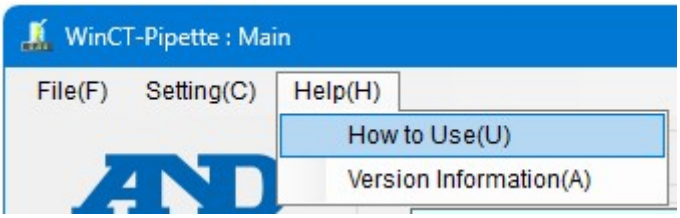
With the factory setting, a comment will appear when the cursor is placed where an explanation is necessary. Uncheck this box to disable this function.

<4> Sound a buzzer when data is entered

Uncheck this box to disable the buzzer when entering data.

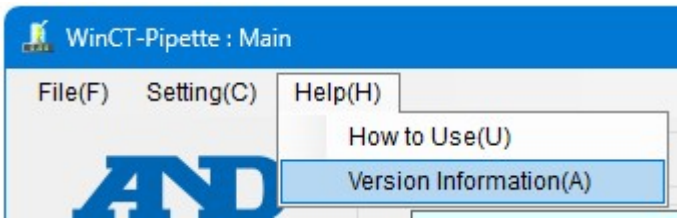
2-2-3 [Help] Menu

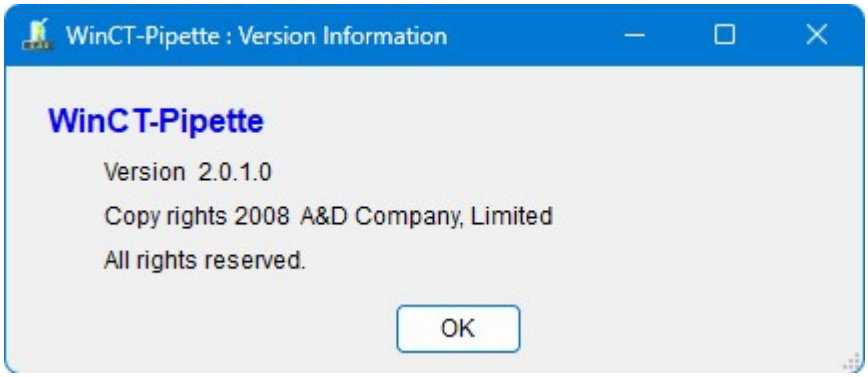
1) [How to Use]



Displays “How to Use WinCT-Pipette”

2) Displays the version of the software

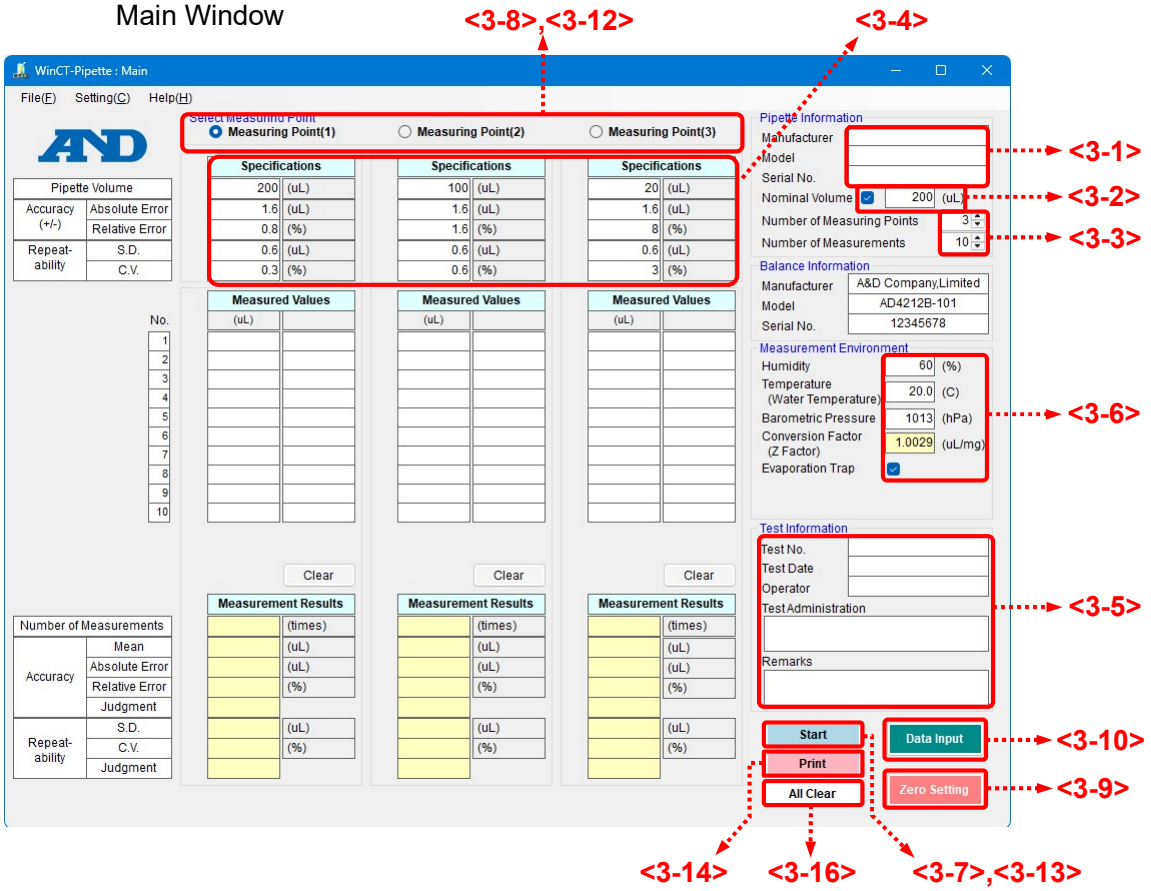




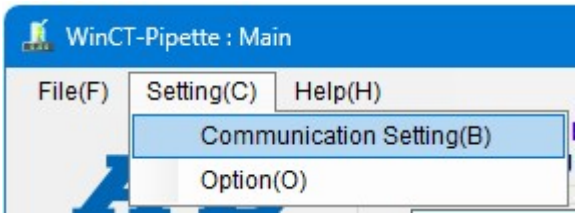
For example, for Version 1.1.4.0, Ver.1.14 is printed on the CD-ROM.

3. Measurement Procedure

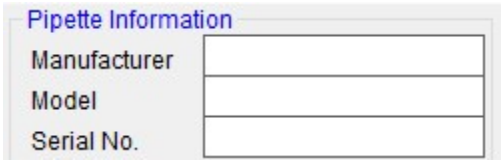
Main Window



Note) Communication between the balance and the PC has to be set before starting the measurement.
(Refer to 2-2-2 [Setting] Menu, 1) [Communication Setting].)
The communication setting is stored in the PC.



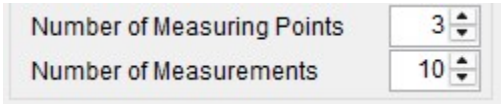
3-1 Enter the pipette information (manufacturer, model, serial number).



3-2 Enter the nominal volume (maximum volume).

To initialize “3-3 Number of measuring points and number of measurements” and “3-4 Specifications” to the values for variable volume pipettes in accordance with ISO8655, check the box and enter the nominal volume.

3-3 Select the number of measuring points and the number of measurements at each point.



3-4 Set the specifications (pipette volume, accuracy, repeatability).

		Specifications		Specifications		Specifications	
Pipette Volume		200	(uL)	100	(uL)	20	(uL)
Accuracy (+/-)	Absolute Error	1.6	(uL)	1.6	(uL)	1.6	(uL)
	Relative Error	0.8	(%)	1.6	(%)	8	(%)
Repeat-ability	S.D.	0.6	(uL)	0.6	(uL)	0.6	(uL)
	C.V.	0.3	(%)	0.6	(%)	3	(%)

Note) When the pipette volume is changed, the specifications of accuracy (systematic error) and repeatability (random error) are initialized to the values in accordance with ISO8655.

When the volume is changed with the nominal volume checkbox unchecked, the changed volume is regarded as the nominal volume, and the specifications of accuracy and repeatability are initialized to values in accordance with ISO8655.

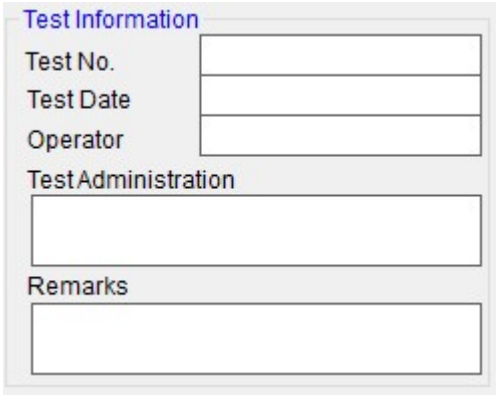
If tolerance ranges are specified by internal regulations, re-set the specifications of accuracy and repeatability as required.

It is possible to store the set specifications in the PC and recover them when necessary (Refer to 2-2-1 [File] Menu, 2) [Save/Load Pipette Specifications]).

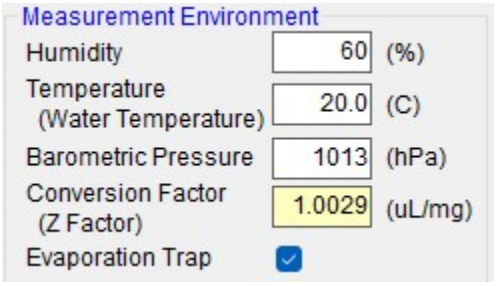
Example) In the case of a variable volume pipette whose nominal volume is 20uL (2 - 20uL) :

Pipette volume	Accuracy (Systematic error)		Repeatability (Random error)	
	Absolute error (plus or minus)	Relative error (plus or minus)	S.D.	C.V.
20uL (nominal volume)	0.2uL	1%	0.1uL	0.5%
10uL (50% of nominal volume)	0.2uL	2%	0.1uL	1%
2uL (10% of nominal volume)	0.2uL	10%	0.1uL	5%

3-5 Enter test information (test number, operator, test administration, remarks).
Test date will be entered automatically when the measurement starts.



3-6 Enter measurement environment (humidity, temperature [water temperature], barometric pressure).



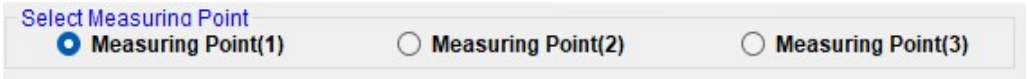
A mass-volume conversion factor (Z factor) will be calculated upon entering the temperature (water temperature) and barometric pressure.
Uncheck the checkbox when the evaporation trap will not be used (whether the evaporation trap was used or not will also be recorded as test data).

Note) Before entering the temperature (water temperature), sufficiently acclimatize the distilled water to be used for the test to the ambient temperature so that the water temperature does not vary during the measurement.

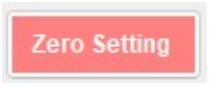
3-7 Confirm that the balance is in the weighing mode and then click on [Start].

WinCT-Pipette starts communication with the balance and read the model and the serial number of the balance.
The button changes to [Finish] once the communication starts.

3-8 If the number of measuring points is more than 1, select the column in which to enter the measurement values.



3-9 Confirm that the displayed value of the balance is zero.
If the balance is displaying a value other than zero, click on [Zero Setting] so that the display will become zero (same function as the ((RE-ZERO)) key of balances).
Dispense the specified volume from a pipette to the weighing container on the balance.

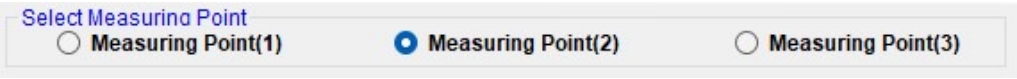


3-10 Confirm that the mass value displayed by the balance has become stable (when the stable mark "o" on the upper left is on), and then click on [Data Input] to transmit the mass value from the balance to the PC (same function as the ((PRINT)) key of balances).

The balance displays zero automatically after the mass value has been transmitted.

3-11 Repeat 3-9 ~ 3-10 to perform the specified number of measurements.

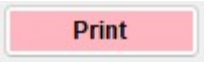
3-12 Change the measuring point and repeat the same measurement procedure (if the number of measuring points is more than 1) when the specified number of measurements are complete.



3-13 Finish the communication with the balance by clicking on [Finish] after all the measurements are complete.

3-14 Go to [Save/Load Test Data] on [File] Menu to save the test data in the PC.
Refer to 2-2-1 [File] Menu for how to operate.

3-15 Click on [Print] to print out the test data.



The test data will be output to the “default printer” (one sheet).
In case of outputting data to another printer than the default printer or printing on multiple sheets at one time, go to [Print] in [File] Menu.

3-16 To clear the test data, click on [All Clear].

3-17 To continue the measurement, repeat the operation from 3-1.

3-18 To quit "WinCT-Pipette", click on [x] on the upper right of the main window or on "Close" on [File] Menu.

June 24, 2026
A&D Company,Limited