

7 Time Course Application

- [7.1 Window Layout](#)
- [7.2 Menu Bar](#)
- [7.3 \[Time Course Measurement Parameters\] Window](#)
- [7.4 Graph View](#)
- [7.5 Data Processing View](#)

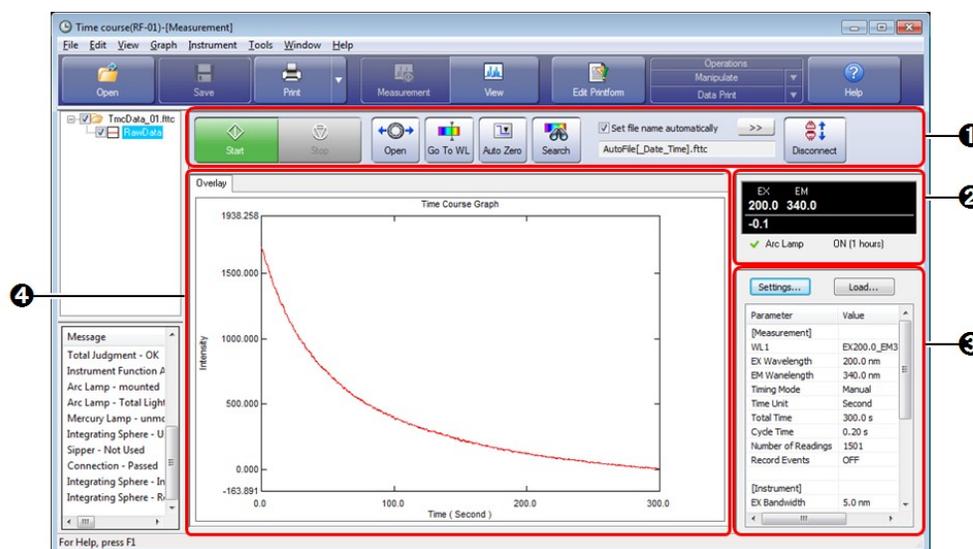
7.1 Window Layout

The time course application has two modes consisting of "measurement mode" and "view mode".

Clicking [Measurement] on the main toolbar changes to measurement mode and clicking [View] changes to view mode, which is used for offline tasks such as data analysis.

To edit time course report files or print using any created layout, click [Edit Printform] on the toolbar.

■ Measurement mode

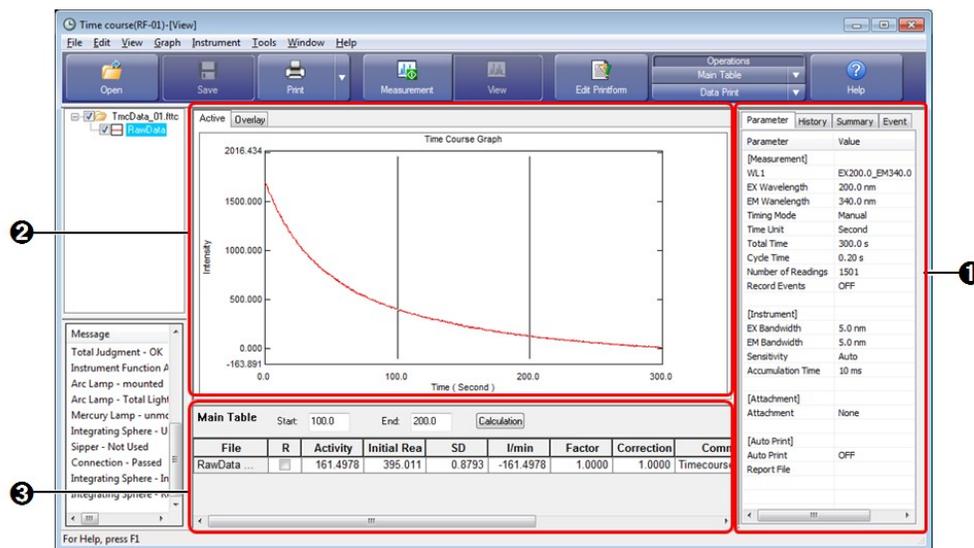


Window Layout of the Time Course Application (Measurement Mode)

No.	Name	Function
①	Time course measurement toolbar	The buttons used for starting and stopping measurement and performing instrument control are located on this toolbar. Clicking  ([Connect]) and establishing a connection with the instrument enables  ([Start]) and other buttons.
②	Photometer status	The upper section displays the current wavelength and fluorescence intensity and the lower section displays the status of the spectrofluorophotometer. ▶▶ Reference "2.7 Photometer Status"
		Displays the settings of the currently configured measurement parameters (settings

3	Parameter view	such as parameters related to measurement and whether to perform automatic printing). This view is used to configure, save, and load measurement parameters. ▶▶ Reference "2.8 Parameter View"
4	Graph view	Displays a time course graph in real time during measurement. Only [Overlay] is available as the graph display method. ▶▶ Reference "3.4 Graph View" Display or hide the time course graph from the tree view. ▶▶ Reference "2.4.1 Spectrum/3D Spectrum/Time Course Applications"

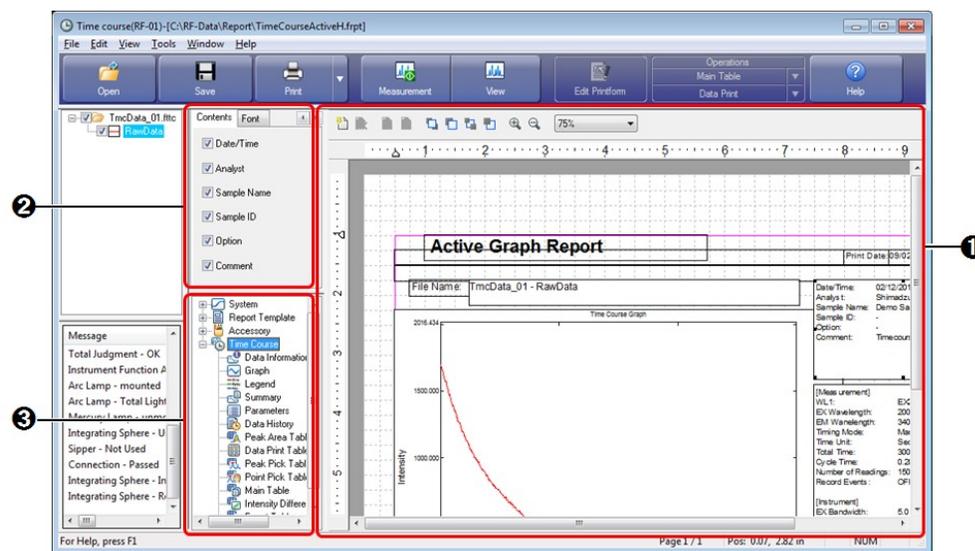
■View mode



Window Layout of the Time Course Application (View Mode)

No.	Name	Function
1	Parameter view	Displays measurement parameter information, data history, and summary information (such as sample information and instrument information) of the active data. ▶▶ Reference "2.8 Parameter View"
2	Graph view	Displays a time course graph of the loaded data. [Active] and [Overlay] are available as the graph display methods. Display or hide the time course graph from the tree view. ▶▶ Reference "2.4.1 Spectrum/3D Spectrum/Time Course Applications"
3	Data processing view	Displays the parameter setting window for the data print table, main table, and data operations. ▶▶ Reference "7.5 Data Processing View"

■Edit print form



Window Layout of the Time Course Application (Edit Print Form)

No.	Name	Function
❶	Print form editing area	Edit properties such as position and size of printable objects placed on a report.
❷	Properties view	Displays the properties of printable objects selected in the print form editing area. Properties such as link settings and text font can be changed.
❸	Object list	Displays the printable objects that can be used in tree format. Either double-click on object names or drag object names into the print form editing area to add printable objects to a report file. ▶▶ Reference "9.3 Printable Objects"

7.2 Menu Bar

- [7.2.1 \[File\] Menu](#)
- [7.2.2 \[Edit\] Menu](#)
- [7.2.3 \[View\] Menu](#)
- [7.2.4 \[Graph\] Menu](#)
- [7.2.5 \[Instrument\] Menu](#)
- [7.2.6 \[Tools\] Menu](#)
- [7.2.7 \[Window\] Menu](#)
- [7.2.8 \[Help\] Menu](#)

7.2.1 [File] Menu

Command	Description
[Open]	Open a saved file. <ul style="list-style-type: none"> • [Measurement] mode: Data, measurement parameters • [View] mode: Data, measurement parameters, templates ▶▶ Reference "1.2 File Types"
[Data]	Open a time course data file (.ftc) or RFPC file (.tmc).

[Parameters]	Open a time course measurement parameter file (.fmtc).  Hint This type of file can also be opened with [Load] in the parameter view.
[Template]	Open a point pick template (.ftp) or area calculation template (.fta). <div style="border: 1px solid black; padding: 5px;"> NOTE This menu command is enabled when a point pick table or area calculation table is displayed in the data processing view.</div>
[Close]	Close the data file that contains the active data set. ▶▶ Reference "2.4.3 Active Data Set"
[Close All]	Close all currently open data files.
[Save]	Save the data file that contains the active data set by overwriting. ▶▶ Reference "2.4.3 Active Data Set"
[Save As]	Specify a filename and save a file such as a data file or measurement parameter file. • [Measurement] mode: Data, measurement parameters • [View] mode: Data, templates, data processing tables ▶▶ Reference "1.2 File Types"
[Data]	Save a data file (.ftc). The file targeted for saving is the data file that contains the active data set.
[Parameters]	Save the settings configured in the parameter view of the measurement mode window to a measurement parameter file (.fmtc).
[Template]	Create a template (.ftp/.fta) from the point pick table or area calculation table in the data processing view and save it to file.
[Data Table]	Save the data processing result table for data print, point pick, and the main table in the data processing view to a text file (.txt).
[Save All]	Save all unsaved data files that are open by overwriting.
[Text File Output]	Extract the time course data and measurement parameter information of the active data set and save it to a text file (.txt) or CSV file (.csv). The format and conversion conditions for text file output are set via [User Setting] on the [Tools] menu. ▶▶ Reference "[User Setting] window (common)"
(Recent File)	The three most recently opened files are displayed.
[Properties]	Display the [File Properties] window. This window is used to check data information and perform operations such as renaming data sets. ▶▶ Reference "[File Properties] window"
[Print Preview]	Display a preview of printer output.
[Print]	Print the report file linked to the currently active view. ▶▶ Reference "[Quick Print] tab"
[Exit]	Exit the time course application and close the window.

7.2.2 [Edit] Menu

▶▶ **Reference** ["2.2.1 \[Edit\] Menu"](#)

7.2.3 [View] Menu

▶▶ **Reference** ["2.2.2 \[View\] Menu"](#)

7.2.4 [Graph] Menu

▶▶ Reference ["3.2.4 \[Graph\] Menu"](#)

7.2.5 [Instrument] Menu

▶▶ Reference ["2.2.3 \[Instrument\] Menu"](#)

7.2.6 [Tools] Menu

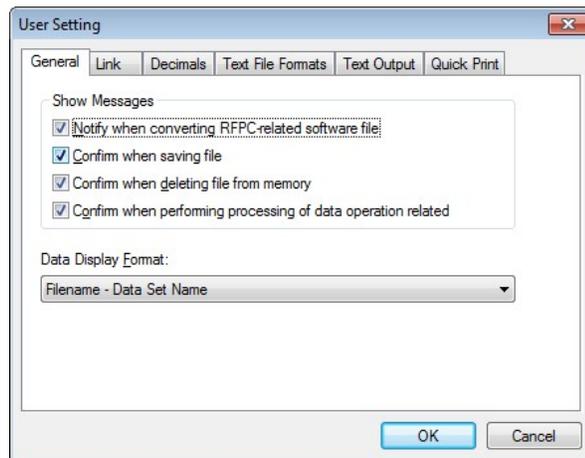
▶▶ Reference ["2.2.4 \[Tools\] Menu"](#)

■[User Setting] window (time course application)

The settings on the [Text File Formats], [Text Output], [PDF Output] (Option) tabs are the same for all of the basic analysis applications.

▶▶ Reference ["\[User Setting\] window \(common\)"](#)

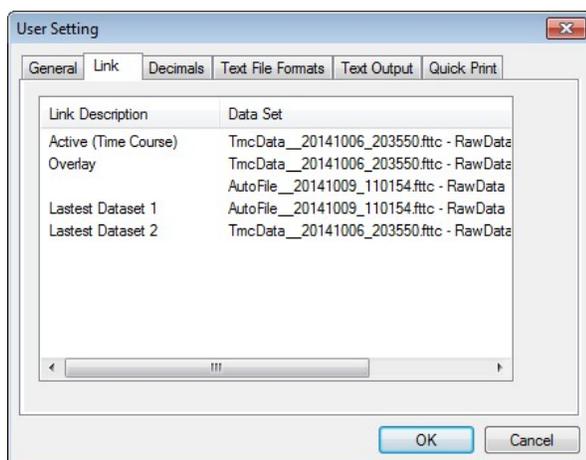
[General] tab



[User Setting] Window - [General] Tab

Item	Description
[Show Messages]	Select whether to display confirmation messages.
[Data Display Format]	Select the format of data set names for printing and display in the data processing table. Display formats that can be selected include "full path name" and "data set name only".

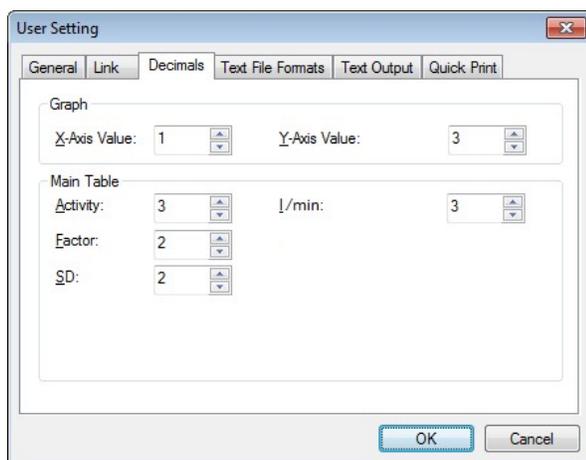
[Link] tab



[User Setting] Window - [Link] Tab

Item	Description
[Link Description]	Displays link items (active spectrum, overlay, etc.) for setting to reports.
[Data Set]	Displays the data sets corresponding to the [Link Description] items. For example, when quick printing a report that contains a graph object set with "time course data 1", this column allows you to check which data set graph will be printed.

[Decimals] tab

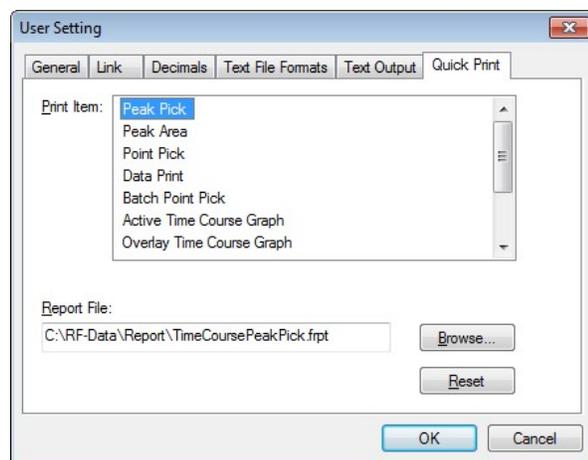


[User Setting] Window - [Decimals] Tab (Time Course)

Item	Description
[Graph]	Set the number of decimal places to show for displayed numerical data, such as graph scale values and for data printing.
[X-Axis Value]	Select the number of decimal places for X-axis values. Selection options: 0 to 2
[Y-Axis Value]	Select the number of decimal places for Y-axis values. Selection options: 0 to 3
[Main Table]	Set the number of decimal places to show for numerical data displayed in the main table for data processing.
[Activity]	Select the number of decimal places for activity values. Selection options: 0 to 5

[I/min]	Select the number of decimal places for I/min (Intensity/Minute) values. Selection options: 0 to 5
[Factor]	Select the number of decimal places for factors. Selection options: 0 to 5
[Wavelength]	Select the number of decimal places for measurement wavelengths. Selection options: 0 to 5
[SD]	Select the number of decimal places for SD values. Selection options: 0 to 5

[Quick Print] tab



[User Setting] Window - [Quick Print] Tab

Item	Description
[Print Item]	Displays the views and data tables that can be linked to report files. Hint [Measurement Parameters] here refers to the parameter view of the [View] menu.
[Report File]	Clicking an item in the [Print Item] list selects it and displays the name and save destination of the report file to which it is linked.
[Browse]	Display the report file selection window.
[Reset]	Return links to their initial state.

7.2.7 [Window] Menu

▶ Reference ["2.2.5 \[Window\] Menu"](#)

7.2.8 [Help] Menu

▶ Reference ["2.2.6 \[Help\] Menu"](#)

7.3 [Time Course Measurement Parameters] Window

■[Wavelength] tab

[Time Course Measurement Parameters] Window - [Wavelength] Tab

Item	Description
[Wavelength]	Set the wavelengths used in measurement.
[Excitation]	Enter the excitation wavelength. Effective range: 220.0 to 900.0 (RF-5300 series), 200.0 to 900.0 (RF-6000 series)
[Emission]	Set the emission wavelength. Effective range: 220.0 to 900.0 (RF-5300 series), 200.0 to 900.0 (RF-6000 series)
[Add]	Add the entered wavelength to the list. A maximum of four entries can be displayed. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">NOTE When adding a registered wavelength, delete the existing wavelength from the list in advance.</div>
[Edit]	Edit the set wavelengths of a wavelength selected in the list. Hint Clicking a wavelength in the list displays the set wavelengths of the selected wavelength in [Excitation] and [Emission].
[Delete]	Delete the selected wavelength from the list. Hint Wavelength pairs registered for Manipulate (ratio/difference) cannot be deleted. First delete the manipulation from the list that includes the wavelength.
[Manipulate (Ratio/Difference)]	When multiple wavelength pairs are registered, operations and result plotting in the graph view using the measurement data of each pair can be performed in real time.
[Wavelength 1]/ [Wavelength 2]	Displays the wavelength registered as the selection options.
[Operator]	Displays the selection options of "-" (subtraction) and "/" (division).
[Add]	Add the set manipulation to the list. A maximum of three entries can be displayed.
[Edit]	Edit the manipulation selected in the list. Hint The set values of the selected manipulation are displayed in [Wavelength 1], [Operator], and [Wavelength 2].
[Delete]	Delete the manipulation from the list.
[Save As]	Save the settings as a measurement parameter file.
[OK]	Confirm the settings made and close the [Time Course Measurement Parameters] window.
[Cancel]	Cancel the settings made and close the [Time Course Measurement Parameters] window.

■[Measurement] tab

Time Course Measurement Parameters

Wavelength Measurement Instrument Attachment

Timing Mode
 Auto Manual

Time Unit: Second

Total Time: 302

Cycle Time: 2x 2

Number of Readings: 152

Graph
 Y axis Upper: 100
 Y axis Lower: 0

Utilities
 Record Events

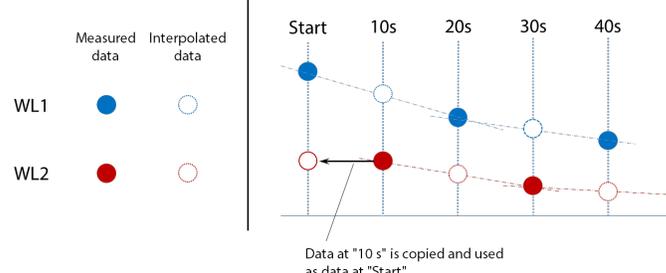
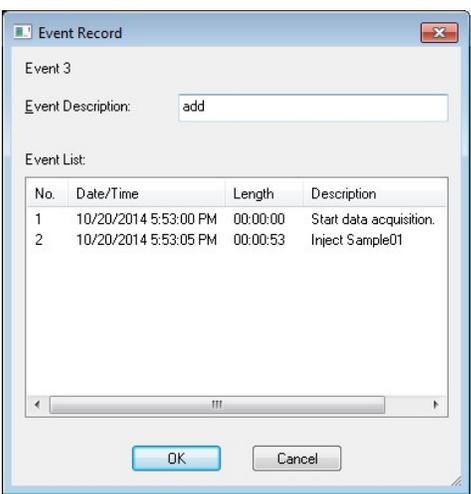
Perform Auto Print

Report File: [] ...

Save As... OK Cancel

[Time Course Measurement Parameters] Window - [Measurement] Tab

Item	Description
[Timing Mode]	<p>The two setting methods for the timing mode are [Auto] and [Manual].</p> <div style="border: 1px solid black; padding: 5px;"> <p>NOTE When multiple measurement wavelengths have been registered, only [Manual] is available.</p> </div>
[Auto]/ [Manual]	<p>Select [Auto] to perform measurement without specifying values or select [Manual] to specify the sampling interval and number of data points for measurement.</p> <ul style="list-style-type: none"> [Auto]: Entering a value for [Total Time] automatically calculates the data interval and number of data points. [Manual]: Selecting a value for [Time Unit] and entering values for [Cycle Time] and [Number of Readings] calculates the total measurement time. <p>Hint When [Auto] is selected, a data interval is calculated such that the number of data points does not exceed "10001".</p>
[Time Unit]	<p>When [Manual] is selected, also select the measurement time unit. The measurement time is automatically calculated after input. Selection options: Second, Minute, Hour</p>
[Total Time]	<p>When [Auto] is selected, enter the total measurement time (in seconds). The data interval and number of data points are automatically set after input. Effective range: 1 to 100000</p>
[Cycle Time]	<p>When [Manual] is selected, enter the interval to perform measurement. The measurement time is automatically calculated after input.</p> <ul style="list-style-type: none"> Effective range when there is one measurement wavelength: 0.02 to 1000 Options when there are multiple measurement wavelengths (only for the RF-5300 series): 1, 2, 5, 10 <p>A data interval is an interval at which measurement is performed.</p> <p>Hint For example, when two wavelengths (WL1, WL2) have been registered as measurement wavelengths and the data interval is set to "10 seconds", the interval to capture data at each wavelength will be 2 x 10 (seconds) with the measurement cycle of "WL1 measurement - (10 seconds) -> WL2 measurement - (10 seconds) -> WL1 measurement -..." Therefore, "2x" is displayed when two wavelengths have been registered and "3x" is displayed when three wavelengths have been registered.</p>

	 <p>Example of measurement at two wavelengths</p>
[Number of Readings]	<p>When [Manual] is selected, enter the number of data points. The measurement time is automatically calculated after input.</p> <p>▶▶ Reference When measurement is performed at multiple wavelengths, the number of data points needs to be a multiple of the number of measurement wavelengths. For example, in the case where two wavelengths have been registered as measurement wavelengths, if "101" is entered as the number of data points, it will be automatically changed to "102" points.</p>
[Graph]	Set the graph scale range at the start of measurement.
[Y axis Upper]	Enter the upper limit for the Y axis on the graph. Effective range: 1000000
[Y axis Lower]	Enter the lower limit for the Y axis on the graph. Effective range: -1000000
[Utilities]	-
[Record Events]	<p>Select this checkbox to enable [Pause] and allow recording of events during pausing. The event record window is displayed when pausing. This window can be used to enter processing details and check a list of events for the same measurement.</p> <div data-bbox="641 1050 1372 1144" style="border: 1px solid black; padding: 5px;"> <p>NOTE When the [Record Events] checkbox is selected, the minimum data interval that can be set becomes one second.</p> </div>  <p>For a data set measured with the [Record Events] checkbox selected, the event record is displayed on the [Event] tab in the parameter view in view mode.</p> <p>▶▶ Reference "View mode"</p>
[Perform Auto Print]	Select this checkbox to perform printing automatically after measurement using the specified report file.
	Enter the full path of the report file to use for automatic printing. The report file can

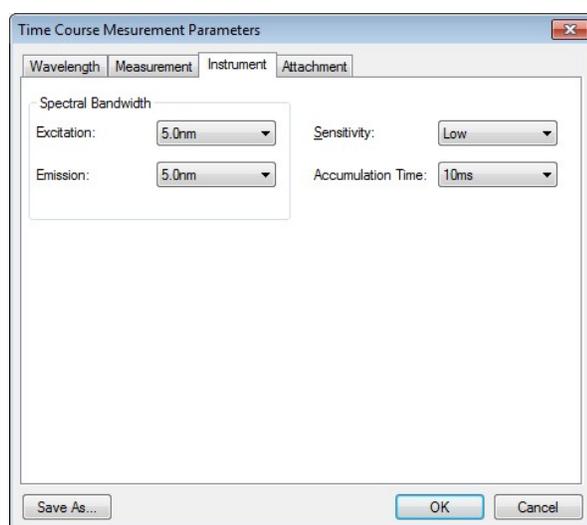
[Report File]	also be selected by clicking  . This field is enabled when the [Perform Auto Print] checkbox is selected.
[Save As]	Save the settings as a measurement parameter file.
[OK]	Confirm the settings made and close the [Time Course Measurement Parameters] window.
[Cancel]	Cancel the settings made and close the [Time Course Measurement Parameters] window.

■ [Instrument] tab

RF-5300 series

▶▶ Reference ["\[Instrument\] tab"](#)

RF-6000 series



[Time Course Measurement Parameters] Window - [Instrument] Tab

Item	Description
[Spectral Bandwidth]/ [Excitation]	Set the spectral bandwidth of the excitation side monochromator. Selection options: 1.5 nm, 3.0 nm, 5.0 nm, 10.0 nm, 15.0 nm, 20.0 nm
[Spectral Bandwidth]/ [Emission]	Set the spectral bandwidth of the emission side monochromator. Selection options: 1.0 nm, 3.0 nm, 5.0 nm, 10.0 nm, 15.0 nm, 20.0 nm
[Sensitivity]	Set the sensitivity of the detector. Selecting [Auto] performs measurement while automatically setting the optimal sensitivity. Selection options: Auto, High, Low  Hint Select [Auto] to automatically set the appropriate sensitivity ([High] or [Low]) for measurement by pre-scanning the fluorescence intensity distribution of the set wavelength before measurement.
[Accumulation Time]	Set the accumulation time for the data to capture. Selection options: 10 ms, 20 ms, 50 ms, 100 ms, 200 ms, 500 ms, 1 s, 2 s, 5 s, 10 s

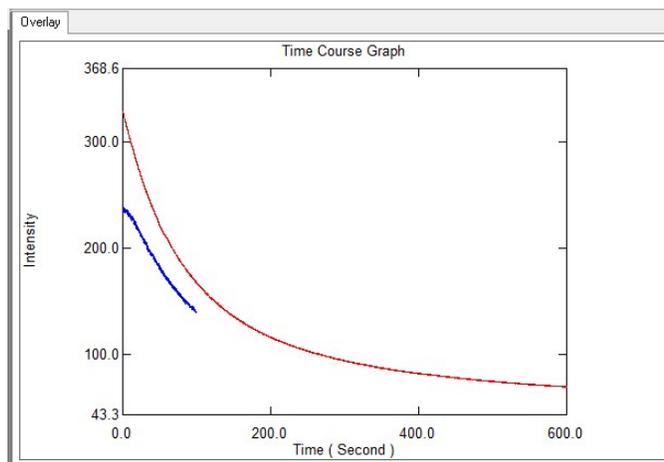
7.4 Graph View

- [7.4.1 Measurement Mode](#)
- [7.4.2 View Mode](#)

7.4.1 Measurement Mode

The only available graph view in measurement mode is the [Overlay] tab.

Time course data in memory is displayed in an overlaid state in this graph area and time course data currently being measured is displayed overlaid in real time.



Graph View (Measurement Mode)

■ Right-click menu of the graph view (measurement mode)

Click the right mouse button on the graph view to display the following right-click menu.



Hint

This is the same as the view mode right-click menu apart from the [Cursor] and [Lock Cursor] menu items.

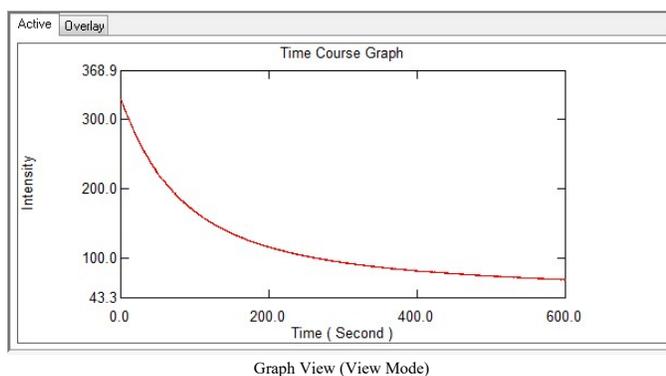
Command	Description
[Copy]	Copy the graph on the [Overlay] tab to the clipboard.
[Picture]	Save a graph image in metafile format to the clipboard.
[For Report Item]	The graph can be pasted as an embedded graph object in report editing mode.  Hint An embedded graph object is an object that is not linked to the graph view state.
[Auto Scale]	Perform automatic scaling of the graph. Automatic scaling is configured on the [Limits] tab in the [Customize Graph] window.  Reference "[Customize Graph] window"  Hint Double-clicking on the graph will also perform automatic scaling.
[Customize]	Configure settings such as graph line type, line color, background color, and scale font.  Reference "[Customize Graph] window"
[Properties]	Display the graph properties window. This window allows a line to be drawn at the zero point of fluorescence intensity on the graph.

7.4.2 View Mode

The available graph views in view mode are the [Active] and [Overlay] tabs. There is one 2D graph area on each tab.

The currently active data set is drawn on the graph area of the [Active] tab.

The time course data loaded from memory is drawn overlaid on the graph area of the [Overlay] tab.



■ Right-click menu of the graph view (view mode)

Click the right mouse button on the graph view to display the following right-click menu.

The same menu items are displayed for both the [Active] and [Overlay] tabs.

Command	Description
[Copy]	Copy the graph on the [Active] tab or [Overlay] tab to the clipboard.
[Picture]	Save a graph image in metafile format to the clipboard.
[For Report File]	The graph can be pasted as an embedded graph object in report editing mode. Hint An embedded graph object is an object that is not linked to the graph view state.
[Auto Scale]	Perform automatic scaling of the graph. Automatic scaling is configured on the [Limits] tab in the [Customize Graph] window. Reference " [Customize Graph] window " Hint Double-clicking on the graph will also perform automatic scaling.
[Cursor]	Select the cursor type to display on the graph.
[None]	A normal cursor is displayed (default).
[Crosshairs]	Displays a cursor with an intersecting vertical and horizontal line. The intersecting point is moved in the graph view using the mouse and the coordinates are displayed on both scales.
[Surfing]	This can only be selected on the [Active] tab. Displays a cursor with an intersecting vertical and horizontal line. The intersecting point is moved across the active graph using the mouse and the coordinates are displayed on both scales.
[Lock Cursor]	Fix the position of the cursor in the graph view.
[Graph Setting]	Configure settings such as graph line type, line color, background color, and scale font. Reference " [Customize Graph] window "
[Print]	Perform a quick print. Set the report file to use via [User Settings] on the [Tools] menu. Reference " [User Settings] window (spectrum application) "
[Properties]	Display the graph properties window. This window allows a line to be drawn at the zero point of fluorescence intensity on the graph.

7.5 Data Processing View

This view is displayed in view mode.

The displayed tables and items differ depending on the type of the selected data processing. The [Active] and [Overlay] tabs also change in the graph view according to the type of data processing. Because table data created in data processing can be copied or saved as text, table data can be inserted into report files as objects.

■Data processing that changes the display to the [Active] tab

Item	Description
[Peak Pick]	This function detects all peaks and valleys contained in time course data and displays the results as a peak pick table. This table displays the time and fluorescence intensity corresponding to each peak and valley.
[Point Pick]	This function creates a point pick table that displays fluorescence intensities at the specified times.
[Peak Area]	This function calculates the area of the region enclosed by the specified time range and data curve (region below the data curve). Adding a calculation region automatically displays the calculated area value in the area calculation table and displays the region on the graph. Multiple regions can be specified with respect to a single data set.
[Manipulate]	This function creates a new data set by performing data set calculations, data transformation, and arithmetic with respect to any time course data.
[Main Table]	Displays information such as activity and I/min values of all loaded time course data.

■Data processing that changes the display to the [Overlay] tab

Item	Description
[Data Print]	This function displays the fluorescence intensity of each data point in time course data in the data print table. This table displays the time course data displayed on the [Overlay] tab.
[Batch Point Pick]	This function creates a batch point pick table by detecting the fluorescence intensity at any time from all of the time course data displayed on the [Overlay] tab. The results in the batch point pick table can also be updated to the point pick result of each data set.
[Intensity difference]	Regardless of the graph display state on the [Overlay] tab, this table displays fluorescence intensity differences (intensity differences) and gradients for any data interval with respect to all loaded time course data.