

Dead-Time Correction Measurement Part

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1. How to set Part conditions

In this chapter, how to set the **Dead-Time Correction Measurement** Part conditions is described.

1.1 Setting conditions

Set the basic conditions in the **Dead-Time Correction Measurement** dialog box.

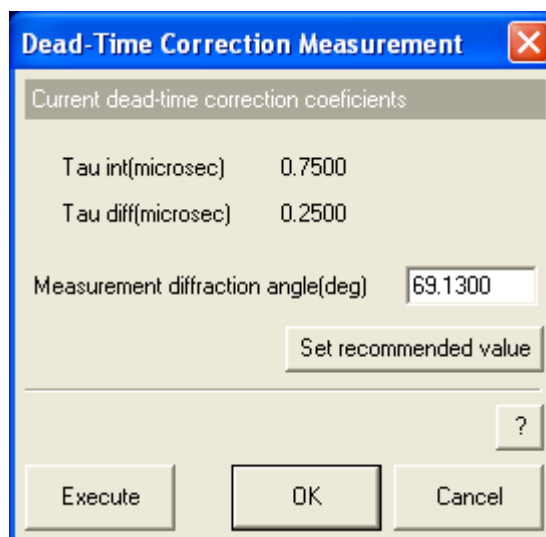


Fig. 1.1.1 Dead-Time Correction Measurement dialog box

Measurement diffraction angle (deg)

Enter the diffraction angle of the Si wafer reference sample.

Set recommended value

Sets the measurement diffraction angle to the recommended value when using Si(004) diffraction. The recommended diffraction angle is 69.1300 deg when using Cu x-ray tube.



Tip: It takes about 5 minutes for the dead-time correction measurement to complete. There are individual differences in the counting loss property of a scintillation counters (SC), and the property changes depending on usage environment and seasons. Therefore, it is recommended to perform the **Dead-Time Correction Measurement** Part on a regular basis (recommended: every 3-6 months).

Execute

Executes the dead-time correction measurement under the conditions specified in the **Dead-Time Correction Measurement** dialog box.


 [2. Sequence of dead-time correction measurement](#)



CAUTION: Clicking the **Cancel** button after executing the dead-time correction measurement does not cancel the specified conditions.



Tip: The dead-time correction measurement is executed with the **Dead-Time Correction Measurement** dialog box open. While the measurement is running, the Part conditions cannot be changed. They can be changed again after the measurement has been completed.

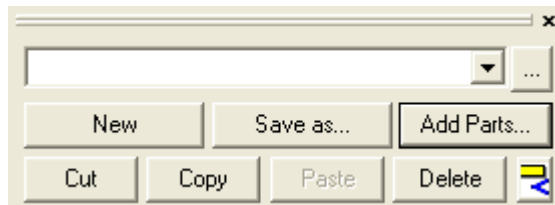
The setting of  (Show confirmation messages) on the flow bar becomes invalid.

OK

Sets the conditions and closes the dialog box.



CAUTION: When selecting another Package measurement or switching the task to the **Manual Control** task, etc. the specified conditions will be cancelled. To save the specified conditions in a file, click the **Save as** button on the flow bar and save the conditions.



Cancel

Does not set the conditions and closes the dialog box.

?

Opens the online help of this Part.

2. Sequence of dead-time correction measurement

The dead-time correction measurement is performed automatically. However, the Si wafer reference sample or optical device(s) must be installed (or removed) manually as instructed by messages displayed on the screen.

After the measurement, the message appears to confirm the obtained dead-time correction factors. Confirm and register the dead-time correction factors. Described below is the general sequence of dead-time correction measurement when using 9-kW rotating node.



CAUTION: Before executing this Part, optics alignment for para-focusing optics must be completed.



Tip: The **Dead-Time Correction Measurement** Part will register the calculated values of τ_{int} and τ_{diff} in the system parameter management database after the measurement. The registered values of τ_{int} and τ_{diff} can be confirmed in the **SC-70** dialog box, which is opened by clicking **Detector Setup – SC-70** in the **Options** menu.

- (1) Place the Si wafer reference sample on the attachment as instructed by the message.
Install the incident parallel slit, incident length limiting slit, receiving optical device, and receiving parallel slit as shown in Fig. 2.1.

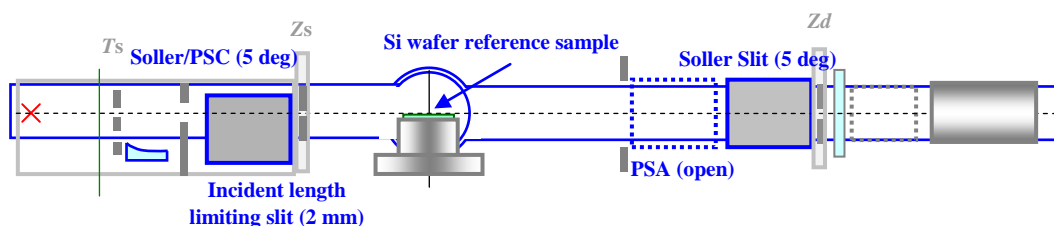


Fig. 2.1 Installation of the manual exchange slits

- (2) Set the IS width = 0.03 mm, RS1 width = 5 mm, RS2 width = 5 mm.

Drive the theta/2-theta axes to the diffraction angle entered in the **Dead-Time Correction Measurement** dialog box.

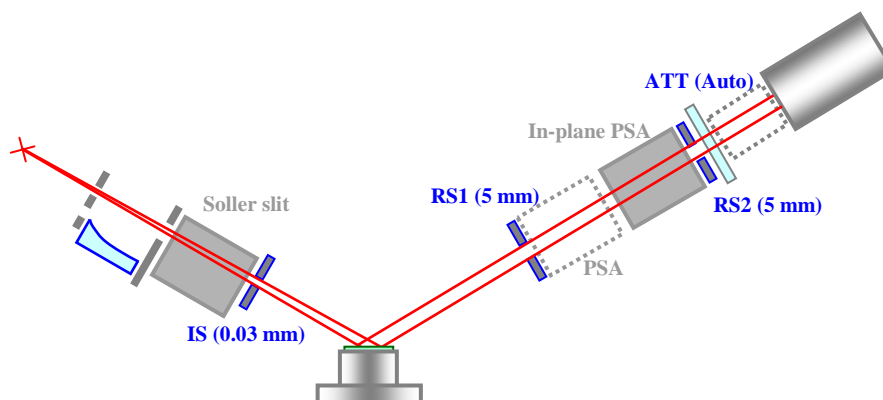


Fig. 2.2 Setting the slit widths and the initial position of the theta/2-theta axes

2. Sequence of dead-time correction measurement

- (3) Perform the automatic attenuator scan of the omega axis. When the peak intensity is lower than 600,000 cps, change the IS width and scan the omega axis again.
- (4) Determine the angle range of fine omega scan by setting the start and stop positions to where the x-ray intensity is 100,000 cps and 600,000 cps respectively.
- (5) Set the attenuator = Open, and perform the fine omega scan at the angle range determined in step (4).
- (6) Set the attenuator = 1/70, and perform the fine omega scan at the angle range determined in step (4).
- (7) Calculate the dead-time correction factors based on the obtained data of the omega scans performed in steps (5) and (6).
- (8) The following message appears to verify the obtained dead-time correction factors. Confirm the obtained dead-time correction factors, and click the **Yes** button to register the factors. If you do not want to register them, click the **No** button.

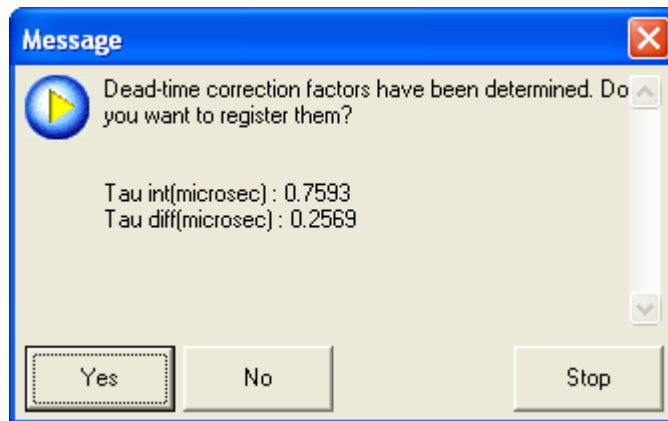


Fig. 2.3 Confirmation message of the dead-time correction factors