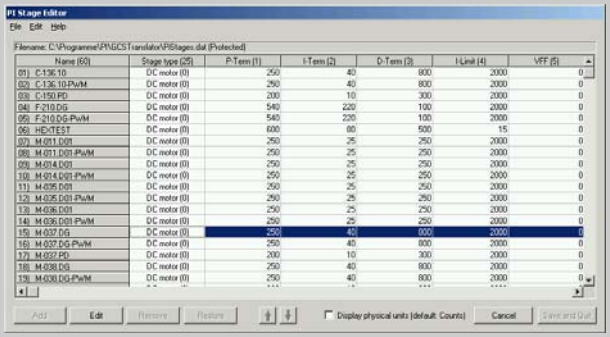
Piezo · Nano · Positioning

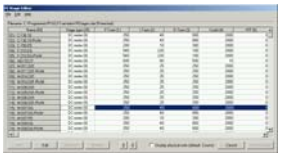
SM144E Software Manual

PIStageEditor

Release: 1.2.0 Date: 2008-08-15



This document describes software for use with PI stage parameter files (DAT files)



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Subject to change without notice. This manual is superseded by any new release. The newest release is available for download at www.pi.ws (http://www.pi.ws).

1. Introduction

The *PIStageEditor* is a GUI tool with which you can easily add, remove and edit stages (parameter sets) in stage parameter files (DAT files). You could do this also directly using the GCS DLL for your controller, but there you would have to put the desired values in variables and execute function calls for setting the parameters and manipulating the parameter sets (see the controller's GCS DLL manual for details).

There are two different types of DAT files: "normal" and protected DAT files. In protected DAT files—primarily *PIStages2.dat*, which installs automatically with the host software from PI—you cannot make any changes. The corresponding controls in the dialog boxes are disabled. Since these files are also protected with a CRC code, the *PIStageEditor* will notice if the file was changed or damaged in any way.

In cases where it is necessary to use an edited version, you can obtain it from PI ready for installation on your host PC—see Section 1.2.2 for details.

In contrast to the protected *PIStages2.dat* with stage entries configured by PI, you can edit "normal" DAT files, which contain database entries for "User" stages. The parameters of user-defined stages are thus not lost when the *PIStages2.dat* file is updated. Those *Prefix*Userstages.dat files are also kept when the controller host software from PI is updated. *Prefix* depends on the GCS library used, e.g. if your controller uses the PI GCS 2 library, *Prefix* will be *PI*. There can be one file of this type for each different GCS library.
The *Prefix*Userstages.dat file is created the first time you connect stages in the host software (i.e. the first time the VST? or CST functions of the GCS library are used).

For a list of the stage parameters in the DAT files and their possible values see the User manual or the GCS DLL manual of your controller and/or the User Manual of the appropriate stage.

Note

The hybrid-drive stages used with C-702 controllers are not part of any stage parameter files yet. They can not be displayed / edited with the *PIStageEditor*. See the C-702 User manual for more information.

1.1. Version Compatibility

The format of the DAT files has changed (more parameters provided), realized by a file version change from 1 to 2. Revision 4 and newer of the *PIStageEditor* supports stage parameter files of version 2. Note that *PIStages* and *Prefix*Userstages DAT files with version 2 contain a "2" in their file name, e.g. *PIStages2.dat* (instead of *PIStages.dat* for version 1). See p. 7 and p. 7 for how to check the versions of *PIStageEditor* and DAT file.

You can still open and edit DAT files of version 1 with the *PIStageEditor* rev. 4. If you use the "Save" functionality, DAT files will be saved in version 1 format. Using the "Save as" or "Export" functionality, the *PIStageEditor* automatically converts the file into version 2 format. This way you can still use stage entries of older Userstages DAT files with new controllers and new host software. If you do so, make sure that the parameter values for the stage are suitable for the controller you plan to use! See the controller User manual for more information.

1.2. Installation

1.2.1. Installing the PIStageEditor

Proceed as follows to install the *PIStageEditor* on your host PC:

- Be sure to login as administrator and insert the product CD, which comes with the controller, in your host PC.
- If the Setup Wizard does not open automatically, start it from the root directory of the CD with the  icon.
- Follow the on-screen instructions. You can choose between “typical” and “custom” installation. Typical components are LabView drivers, DLLs, and GUI programs like *PIMikroMove*™. “Typical” is recommended.

Notes

If you choose the “custom” setup, you are free to select the components you want to install and to set their installation directory. Nevertheless PiStages2.dat and *Prefix*Userstages2.dat must be located in the …\PI\GCSTranslator directory or—if this directory and its corresponding entry in the registry do not exist—in the same directory as the *Prefix*_GCS_DLL.dll.

1.2.2. Updating PiStages2.dat

To install the latest version of *PIStages2.dat* from the PI Website, proceed as follows:

1 On the www.pi.ws front page, click on *Download/Support* in the *Service* section on the left

2 On the *Download/Support* page, click on *Manuals and Software*

3 Click on *Download* in the navigation bar across the top (no login or password is required)

4 Click on the *General Software* category

5 Click on *PI Stages*

6 Click the download button below *PIStages2.dat*

7 In the download window, switch to the ...\PI\GcsTranslator directory. The location of the PI directory is that specified upon installation, usually in "C:\Program files" or "C:\Programme" (may differ in other-language Windows versions)

8 If desired, rename the existing PIStages2.dat (if present) so as to preserve a copy for safety reasons

9 Download the file from the server as PIStages2.dat

1.3. Starting the *PIStageEditor*

The *PIStageEditor* can be started

- with a function call from the GCS DLL
- from the *Start* menu of your Windows operating system
- from another application provided by PI (e.g. *PIMikroMove*™), see the appropriate software manual for more information

The number of parameters available in the *PIStageEditor* depends on the starting procedure:

- Starting from the Windows Start menu makes available all parameters used by all PI controllers.

  Use the *Start* → *Programs* → *PI* → *PI Stage Editor* menu sequence to start the program. In the *PIStageEditor* main window use the *File* → *Open* menu sequence to open the DAT file you want to work with.

- Starting it from the GCS DLL of your controller only parameters relevant for that controller are accessible.

  To start the *PIStageEditor* from the GCS DLL, call ***Prefix*_OpenUserStagesEditDialog**() (to open with the editable "User-stages" DAT file) or ***Prefix*_OpenPiStagesEditDialog**() (to open with the protected *PIStages2.dat*). For further information refer to the GCS DLL manual of your controller.

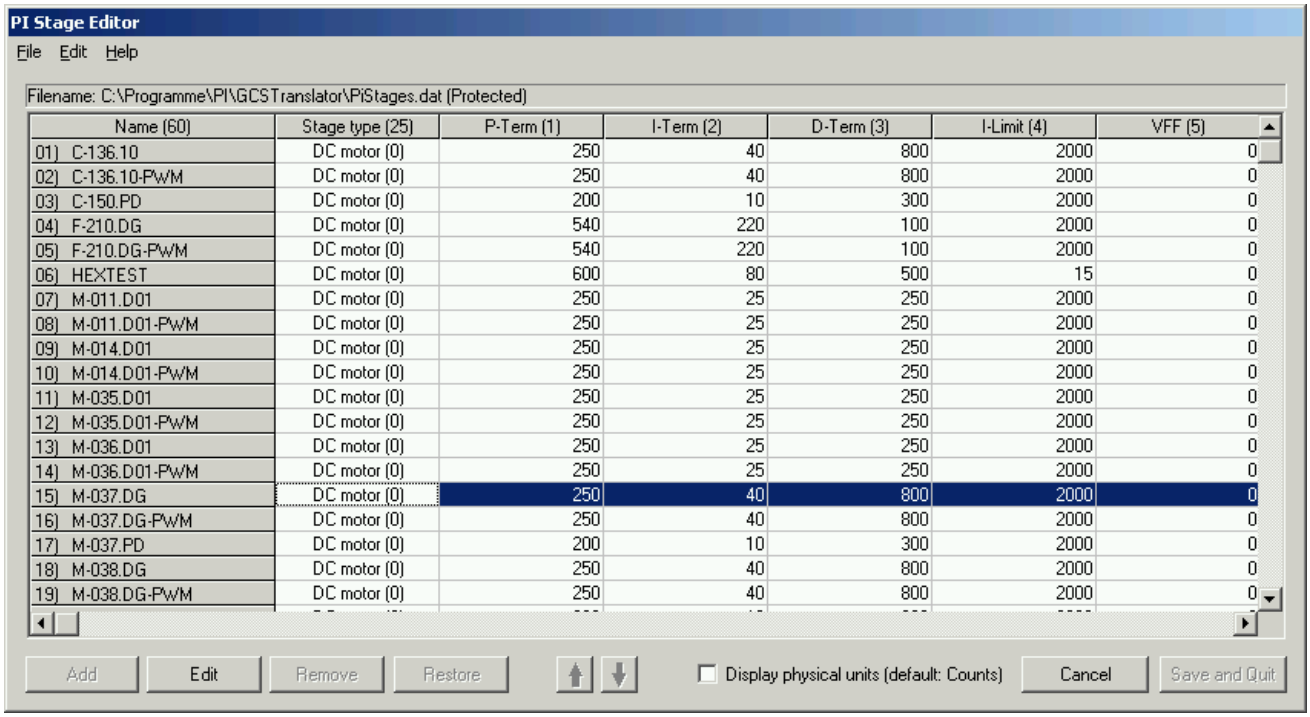
Note

When the *PIStageEditor* was called from *PIMikroMove*™, the number of parameters available depends on the menu item or the toolbar button which was used. All calls via controller-specific controls will open the *PIStageEditor* with the parameters relevant to this controller only.

1.4. The *PIStageEditor* Main Window

The main window has three parts:

- A menu bar
- A list with all stages
- Command buttons



1.4.1. Menu bar

Using the items of the menu bar you can

- Administer the DAT files, get information about them and exit the program (*File* menu; see Section 2, p. 8).
- Edit, add, remove stages and use copy, cut and paste operations (*Edit* menu; see Section 3, p. 9).

Some of the menu items can also be accessed by the command buttons at the bottom of the main window.

1.4.2. List of All Stages

In the header section of the stage list you can find the parameter names. The number in parentheses behind the parameter name is the parameter ID used with the General Command Set (GCS) commands SPA? and SPA. If the *PIStageEditor* was started from the GCS DLL of your controller, only those parameters relevant for that controller will be displayed (columns of the stage list). If started using the Windows *Start* menu, the *PIStageEditor* displays all the parameters available in the DAT file. Since in that case no controller-specific parameters are filtered out, you also see parameters which are not supported by your controller. For further information please refer to the documentation for the General Command Set of your controller.

With the *Show physical units (default: Counts)* check box at the bottom of the main window you can switch between the two display modes of the stage list. If the

check box is not activated (default), all stage parameters are shown in hardware dependent units (e.g. encoder counts or motor steps). If you activate the check box, the parameters are shown in physical units. (Most GCS implementations support physical units of measure, and the DAT files contain factors for converting hardware-dependent units into mm or degrees (see description of parameters 14 and 15)).

1.4.3. Command Buttons

With the command buttons at the bottom of the main window you can edit, add, and remove stages and move stages up or down in the list (see Section 3 on p. 9; these actions are also possible using the items of the *Edit* menu). The *Restore* button allows you to restore the opened DAT file to its most recently saved state (see Section 2.5, p. 8).

With the rightmost command buttons you can leave the program (see Section 1.7 on p. 7 for a description).

1.5. Get Information about the *PIStageEditor*

With *Help → About PiStageEditor* you can check the version of the *PIStageEditor*.

1.6. Get Information about the Currently Open File

The *File → File information* menu sequence displays the file information dialog box, like the one shown below. You can see time and date on which the currently open file was last saved.

1.7. Quitting the *PIStageEditor*

1.7.1. *Cancel* Command Button

The *Cancel* button near the lower right corner of the main window leaves the program without saving any changes.

1.7.2. *Save and Quit* Command Button

The *Save and Quit* button in the lower right corner of the main window leaves the program and saves the changes to the DAT file which was opened.

If the opened file is protected this command button is disabled.

1.7.3. *File→Exit* Menu Sequence

With this menu sequence you leave the program. If there are unsaved changes, the program asks you if you want to save them (to the currently opened DAT file).

2. Administering DAT Files

2.1. Open DAT files

With the *File* → *Open* menu sequence you can open a DAT file.

2.2. Save DAT files

With the *File* → *Save* menu you can save the changes you made to the DAT file. This menu is only enabled if the currently open file is not protected.

With the *File* → *Save as* menu you can save the DAT file under another name. This way you could, for example, save an editable copy of the protected *PIStages2.dat*. Note that the GCS DLL and other software tools provided on the distribution CD only accept the DAT files named “PiStages2.dat” and “<*Prefix*>UserStages2.dat” (and the appropriate files in version 1 file format). Although it is possible to save DAT files with any user-defined name, files with other names will not be used by the software.

2.3. Export DAT files

The *File* → *Export* menu sequence exports the DAT file to a text file (TXT) in which the columns are separated by tab characters (^I) You can use this feature to provide selected stage parameter sets for the import in other DAT files.

2.4. Import DAT files

With the *File* → *Import* menu sequence you can easily add stages to the currently opened DAT file by importing them from another suitable DAT file.

If the currently opened file is protected, the *File* → *Import* menu sequence is disabled.

2.5. Restore a DAT file

If you have made changes to the open DAT file, the *Restore* button or the *File* → *Restore file* menu sequence loads the last-saved version of the file. If you want to save these changes to the file, you must use the *File* → *Save* menu sequence (p. 8) or press the *Save and Quit* command button in the main window (p. 7; this button also exits the program).

If the opened DAT file is protected or no changes were made, the *Restore* command button and the *File* → *Restore file* menu sequence are disabled.

3. Handling Stage Entries

3.1. Adding Stages to a DAT File

With *Edit → Add stage* menu sequence you open a dialog where you can enter the stage parameters. In this dialog, the parameters are grouped on tab cards, and additional information for the parameters is available. If you use the *Edit → Add stage in full view mode* menu sequence, a window with all parameters opens. When you use the *Add* command button, the appearance of the dialog is that of the last time it was opened.

In the full view mode, you can also use a wizard. To open the wizard, press the *Wizard* button in the full view mode to open it in a separate window (see Fig. 4 on p. 11).

Irrespective of the way you want enter the values, first you should type in the new stage name and the controller type the stage parameters are valid for. Then choose the proper stage type from the appropriate pull-down menu. Depending on the selected stage type, only the relevant parameters are accessible, while all other parameters are grayed out (as in the figures in section 3.2). For a detailed description of the stage parameters see the controller's GCS DLL manual.

If you want to accept the parameters of the new stage after you have finished all entries, press the *OK* button, else press *Cancel*. Note that the new stage now is only added to the stage list in the main window and not yet to the DAT file. To save the changes to the DAT file select the *File → Save* menu sequence (p. 8) or press the *Save and Quit* command button in the main window.

If the open file is protected, the *Add* command button and the *Edit → Add stage* menu sequence are disabled.

Note

Stages may have identical names if they are specified for a certain controller ("Valid For" entries must be different). The maximum number of characters for the stage name is 30.

If the text field for the name is empty, the stage can not be added and *OK* will not be activated.

Hint:

If you want to add a new stage to a "User" DAT file and this stage is similar to an existing stage, you can use the entry for the existing stage as template. To do this, select the line with the desired "template" stage in the stage list of the main window and choose the menu items *Edit → Copy*; then use *Edit → Paste* to insert a line for the new stage into the "User" DAT file. Alternatively, you can import a suitable stage into the "User" DAT file using the *File → Import* menu sequence. After this, select the inserted line and press the *Edit* button or use the *Edit → Edit stage* menu item to open the configuration window (see below), where you can enter the proper name and edit the parameters for the new stage.

3.2. Edit Stage Parameters

To edit the parameters of a stage, first select the stage in the stage list of the main window with the left mouse button. Now open the dialog where you can edit all parameters. Using the *Edit → Edit stage* menu sequence, a dialog opens where the parameters are grouped on tab cards and additional information for the parameters is available. With *Edit → Edit stage in full view mode*, a window with all parameters opens. You can also use the *Edit* command button or double-click

on the appropriate stage line in the list. The appearance of the dialog will be that of the last time it was opened.

Note that in the dialog box only the parameters relevant to the selected stage type are accessible, while all other parameters are grayed out (see figures below). This is why you should always first choose the proper stage type from the appropriate pull-down menu. Optionally you can use a wizard which provides assistance—press the *Wizard* button to open it in a separate window (see Fig. 4 on p. 11). For a detailed description of the stage parameters see the controller's GCS DLL manual.

To accept the new parameters after you have finished all entries, press the *OK* button, to discard them press *Cancel*. Note that the new parameters are applied to the stage in the list in the main window but are not yet saved to the DAT file. If you want to save the changes to the DAT file you must use the *File → Save* menu sequence (p. 8) or press the *Save and Quit* command button in the main window.

Even though the *Edit* command button and the *Edit → Edit stage* menu sequence are enabled for protected files, no changes can be made in the parameter dialog box when it is opened.

Note

Stages may have identical names if they are specified for a certain controller ("Valid For" entries must be different). The maximum number of characters for the stage name is 30.

If the text field for the name is empty, it is not possible to apply the new parameters to the stage list in the main window.

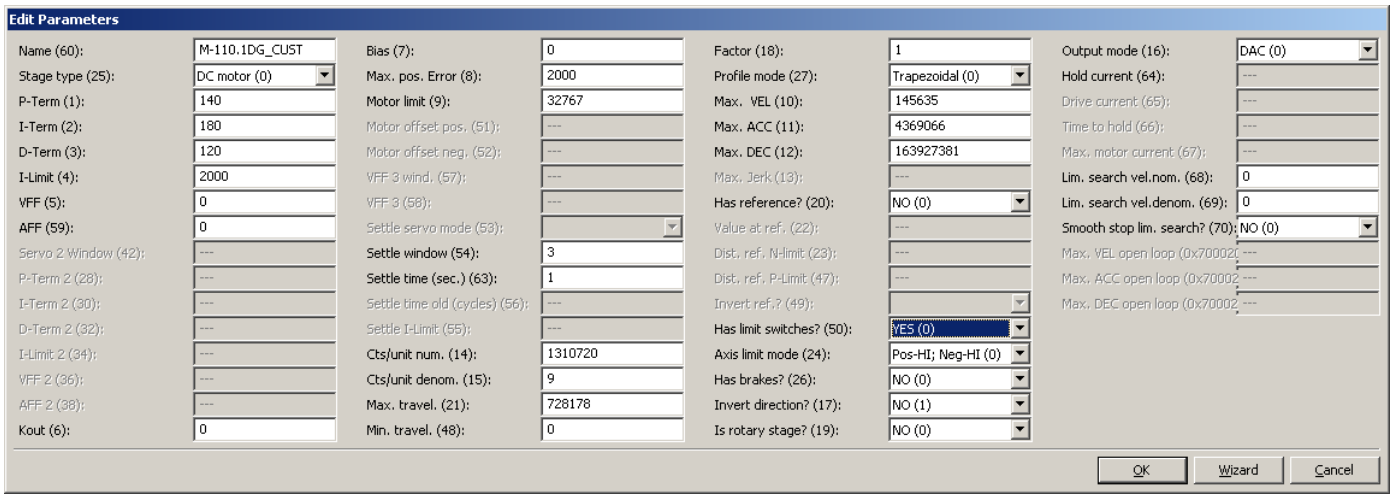


Fig. 2: Add/Edit stage dialog in full view mode for the "DC motor" stage type

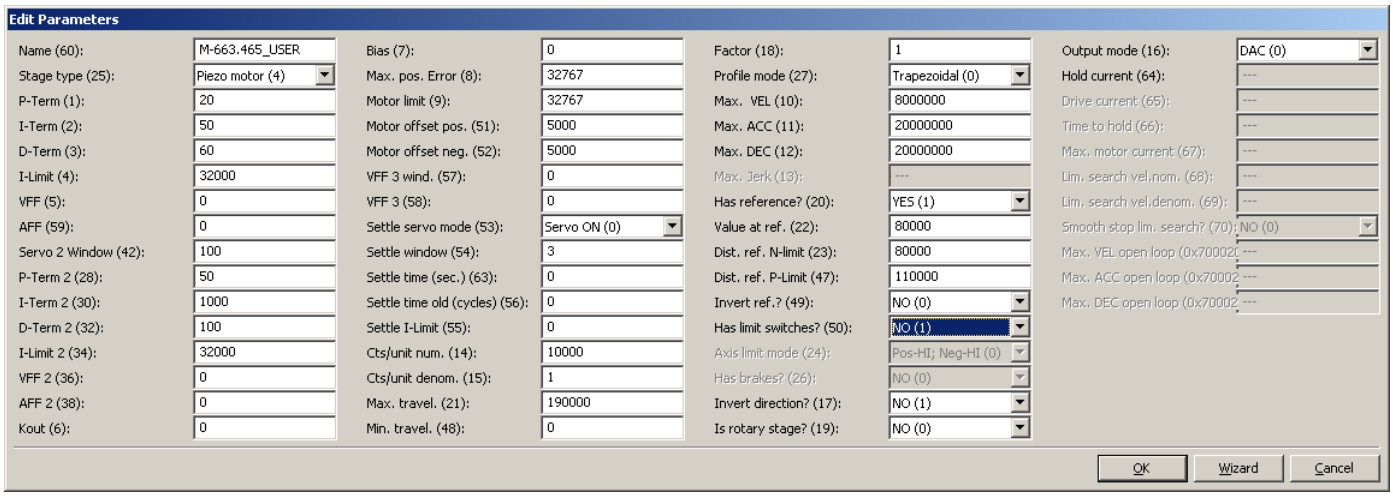


Fig. 3: Add/Edit Stage dialog in full view mode for the "Piezo motor" stage type

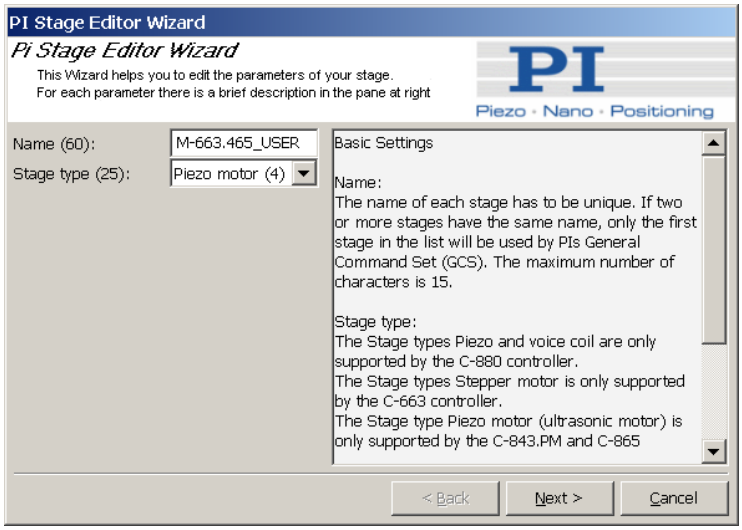


Fig. 4: Wizard window for adding/editing stage parameters

For a list of the parameters and their possible values see the User manual or the GCS DLL manual of your controller and/or the User Manual of the appropriate stage.

The parameters which are not grayed out can be changed for the selected stage type.

Observe the following general rules when entering values:

Name: max. 30 characters, no spaces allowed

Stage type: The number beside each stage type is the parameter value the CGS DLL uses for that type:

DC motor (0) = DC-motors with analog or PWM control input

Piezo (1) = piezo actuators

Voice coil (2) = voice coil drives

Piezo motor (4) = ultrasonic motors (also referred to as piezomotors)

Stepper motor (6) = 2-phase stepper motors

PiezoWalk motor (7) = NEXACT® linear drives

Make sure that the hardware-dependent parameters (e.g. for travel range limits and limit / reference switches) reflect the hardware configuration.

Note that the servo parameters may differ depending on the controller used. See the User manual or the GCS DLL manual of your controller for the servo algorithm and the appropriate parameters.

3.3. Removing Stages from a DAT File

The *Remove* button and the *Edit → Remove stage* menu sequence remove the selected stage(s) from the list. You can select more than one stage. Removing a stage from the list does not actually remove it from the DAT file. If you want to save the changes to the list in the DAT file, you must use the *File → Save* menu sequence (p. 8) or press the *Save and Quit* command button in the main window.

If the open file is protected the *Remove* command button and the *Edit → Remove stage* menu sequence are disabled.

3.4. Moving Stages in the Stage List

The arrow buttons at the bottom of the main window or the *Edit → Move stage up/down* menu sequences move the selected stage one position up or down in the stage list. If you want to save these changes in the list to the DAT file you must use the *File → Save* menu sequence (p. 8) or press the *Save and Quit* command button in the main window.

If the opened file is protected, the arrow buttons and the *Edit → Move stage up/down* menu sequences are disabled.