



## Motor Controls – Release Notes

### Version 3.2.1.0 – February 8, 2012

All users of version 3.0.0.0 and higher are strongly encouraged to update to this release. Many improvements have been made in the operation of the program since 3.0.0.0. This version is a bug-fix release of 3.2.0.0.

To upgrade to this release run the installation package.

For users of Motor Controls 3.1.0.0:

Simply run the installation package. The program executables and documentation will be updated without loss of calibration or settings.

For users of Motor Controls prior to 3.1.0.0:

All files will be created in C:\LaserVision (assuming Windows is installed to drive C) and overwrite any existing program files. However, setting files will remain untouched and will function with the new version. A Start Menu and Desktop shortcut will also be created.

NOTE: Because of the changes in how the program draws fonts it may be desirable to set the [SCREEN] FONT SIZE value in the INI file to 14.

NOTE: The settings file, CURRENT.MRG in this version is not compatible with versions prior to 3.1.0.0. If a downgrade is desired please manually record all desired program settings and do not use the existing file with the older version. You may also [send us](#) your current file and the version you are downgrading to and we will send you a file compatible with the older version.

### Motor Controls (3.2.1.0)

- Fixed a bug where  $\Delta Y$  wouldn't be calculated when using the Generate Fits wizard with data that included a zero valued position.
- The width of the motor setup windows has been increased to allow more visible space for entering position related values. Additionally, position related entry boxes now scroll automatically and allow entry of values that exceed the available screen space for the box.
- Adjusted the magnitude at which labels on the y-axis of charts are written in scientific notation.
- Motor and MASTER setup windows now appear over their corresponding motor/MASTER interface window (when present).
- The notification of an available update at startup now retains focus until it is closed.

### MotorSendCmd (1.0.4.0)

- No changes

## Version 3.2.0.0 – January 9, 2012

### Motor Controls (3.2.0.0)

- It is now possible to generate the polynomial and cubic spline fitting files from the program using the wizard accessed from the *Generate Fits* option of the *File* menu.
- Active motor fits can now be viewed and compared with the *View Fits* window accessible from the *File* menu.
- The cubic spline interpolation routine has been replaced with one that produces a smooth and continuous derivative and a continuous second derivative.
- A confirmation dialog is now displayed when reducing motor errors.
- If `Motor Controls.ini` is not found the program will now attempt to read `MDRIVE.INI` before failing. If `MDRIVE.INI` is found it will be copied to `Motor Controls.ini` and renamed `MDRIVE.INI.BAK`.
- The install wizard will now replace files that already exist in the installation directory which weren't installed by a previous wizard.
- The program will now read `CURRENT.MRG` files created in versions prior to 3.0.0.0 that are 377 bytes in size (most versions prior to 3.0.0.0).
- Motor and MASTER setup windows will now warn that changing settings while a motor is moving (possible if an external command is sent while a setup window is open) will stop the movement of the motor/and or scanning operation.
- Which motor buttons are lit during a scanning operation now reflect the direction of motor travel.
- The sign of the velocity values in the *Diagnostics* window now reflect the direction of motor travel.
- When using the Settings dialog to change the number of motors of the system the program will revert to the original number and coefficients if it fails to read the polynomial data file.
- Polynomial and cubic spline data values no longer require two spaces at the end of the files. Additionally, spaces are now optional between motor sections.
- Window focus is no longer lost when using the context menu on motor and MASTER windows.
- A menu item has been added for reducing motor errors under the *Motor* heading.
- The menu items for reducing and zeroing motor errors are now disabled when the MASTER window is not present.
- Demo mode simulated velocities have been improved.
- Fixed a display abnormality for the Diagnostics window where an average of any metric of zero would cause "0" to flash on the screen.
- The cubic spline data file no longer requires the values to be in order of increasing wavelength.
- When a motor moves out of bounds further movement in the out-of-bounds direction is now disabled.

- The text of the *Diagnostics* window is now greyed when the *MASTER* window is absent, reflecting that the information in that window is only related to scanning operations.
- Fixed a bug in RS-232 communications where an error would not be reported if a GOTO command was sent but a Go To operation was already in progress.
- There is now a space between the wavelength/wavenumber in the *MASTER* window and the unit.
- The wavenumber unit ( $\text{cm}^{-1}$ ) is now properly displayed in Windows XP.
- A bug in how versions were compared for update notifications has been fixed.
- Checking for updates at startup has been moved to a separate thread.
- The timer used for calculating Delta P values during a scanning operation has been improved on supported systems. The new timer does not suffer from rollover and is more accurate.
- Demo Mode motion for relative movement now simulate the motor moving at the specified velocity, instead of simply moving the motor to the specified position instantly.
- Manually moving a motor within two seconds of ending a scan no longer causes the Delta P for that motor to be reset when the two seconds have elapsed.
- Motor, MASTER, Diagnostics, and the progress window for waiting for motors to stop can no longer be resized by double-clicking on their window frame.
- Dialogs have been updated to use the current Windows style for Vista/Win7.
- Dialog box notifications for invalid text field entry have been replaced with balloon tips.
- The default system font is now used in Windows XP.
- Screen flicker further reduced.
- Fixed an error where using the right mouse button to activate the context menu when the cursor was positioned on the far right pixel of a secondary display to the left of the main would cause incorrect positioning of the menu.
- Numerous code improvements

#### **MotorSendCmd (1.0.4.0)**

- Minor code cleanup.

### **Version 3.1.0.0 – September 13, 2011**

#### **Motor Controls (3.1.0.0)**

- The program is now distributed as a MSI package. The program will be installed in C:\LaserVision and include all files required for immediate use except for midir.dat and cubicfit.dat. Existing CURRENT.MRG, POSITION.MOT, POSITION.BAK, and Motor Controls.ini files will not be overwritten. A Start Menu and Desktop shortcut will also be created.
- A demo mode has been added. While in this mode the program will simulate motor movements and position changes won't be saved. This has been added to facilitate testing of external communication programs as well as to allow a user to become familiar with the program.
- A Settings dialog has been added under the File menu. Using this it is possible to change many of the program settings stored in the INI file. Any changes are saved and

immediately applied. This does not apply to changes made to the file directly while the program is running. It is not possible to change settings while any motor is moving.

- Fixed a longstanding bug where when opening the *Go To* dialog if the user cancels the operation before previously starting a go to operation there would be approximately a 25% chance any subsequent go to operation would stop instantly until the program was restarted.
- Fixed a related longstanding bug that would cause the same symptoms as above when attempting to scan to a wavelength extremely close to the current wavelength (within about seven picometers). An error is reported if the user attempts this and valid go to wavelengths are given.
- Added a new value to INI file, [CONTROL]NEAR\_IR\_WAVELENGTH\_CORRECTION, that allows an offset (in nm) to be added to the wavelength/wavenumber reported by the program.
- Commanding a motor to move during a scanning operation, even in the direction it is already traveling in, now cancels the scanning operation before moving the motor.
- The Diagnostics window now displays average values during a scanning operation. This is the default behavior; the setting can be changed in the window's context menu.
- It is no longer possible to resize the motor, MASTER, and Diagnostics windows.
- It is no longer possible to open or close a motor window during a scanning operation.
- It is no longer possible to change the setup of a motor or the MASTER window while the motor is in motion or a scanning operation is in progress. This change is also present in the external commands and the SETSCRL command will fail under the same circumstances. A new Ethernet error code has been added: 7 indicates that the setting can't be changed due to active motor movement or scanning operation.
- Delta P values for all motors can now be zeroed through the menu *Motors – Reset All Motor Errors*.
- Context menus have been added to the motor, MASTER, and Diagnostics windows.
  - It is now possible to automatically adjust the positions of all motors to a delta p value of less than 0.5 by selecting *Reduce Errors* from the context menu of the Diagnostics window.
- The program will now read all CURRENT.MRG files created with version 3.0.0.0 and higher. If an older file version is opened a notification is displayed and a backup of the original file is saved.
- Shortcut keys have been added for most menu options.
- The ability to use the left and right arrow keys to move a motor has been improved so that the keys always function while a motor window has focus. Using these keys will also set focus within the motor window to the corresponding button.
- The R, G, and B keys now function in the MASTER window to scan red, go to, or scan blue, respectively.
- Double-clicking an old go to wavelength will now scan to that wavelength.
- When an invalid parameter has been entered in a dialog box the (first) erroneous field is now selected following the notification.
- The text box in the dialog that appears when F4 is pressed to record current motor positions now contains the wavelength as currently displayed in the MASTER window

(when present). The position of the dialog has been adjusted to always be centered under the Master window (when present).

- A menu option for the calibration window opened on pressing F4 has been added: *Motor – Record Positions*.
- A menu item has been added to open MOTPARAM.DAT: *Motor – View Stored Positions*. This will only function if the .DAT extension is registered to open with a default program.
- Cubic spline coefficients are now calculated only when the wavelength has changed enough during a scanning operation to necessitate it.
- Motor positions are now updated every 100 milliseconds, instead of 110.
- The program will check on startup and on opening the About dialog for available updates. If an update is found a notification will be displayed. It is possible to disable to check on startup.
- The *File – Open / Save / Save As* menu items have been removed.
- While a dialog box is active all other program windows are now disabled.
- Dialog boxes are now centered on the main program window, except for the Go To and Motor Calibration dialogs which are centered under the MASTER window (if present).
- The old go to wavelengths/wavenumbers in the *Go To* dialog are now displayed in ascending order. Typing a value into the text box will scroll the selection window to the old go to values that the user is anticipated to type.
- The text box in the *Go To* dialog now has keyboard focus by default.
- The default settings of the options in the INI file have been updated to reflect current practice. Many of these options are now unnecessary for normal use.
- Removed INI value [CONTROL]DIAGNOSTICS\_REFRESH. Updating of the Diagnostics window is now tied to the refresh of motor positions.
- If no INI file is found one is now created with the default values of the most useful settings.
- If POSITION.MOT isn't found one is created with default values.
- When a dialog is closed the previously active window now retains focus.
- The top three windows, Motor #1, MASTER, and Motor #2, are now sized to fit exactly within the top frame.
- The style of the dialog windows has been updated to a more contemporary style.
- The grey buttons in the motor and MASTER windows now displayed more appropriately at high vertical resolutions (much greater than 768).
- All fonts are now drawn in the face of the current Windows theme.
- The Diagnostics window now acts as a static display. It is no longer possible to resize columns or select items.
- The drawing of the top frame no longer assumes a white background when drawing.
- Error notifications have been updated to be more informative.
- Only one trailing zero is displayed for decimal numbers in editable text fields.
- Screen flicker has been reduced.
- Code improvements have been made.
- Program documentation has been rewritten and is now provided as an HTML document.
- A link [www.deanguyer.com](http://www.deanguyer.com) has been added to the *About* dialog.

### **MotorSendCmd (1.0.3.0)**

- Fixed a bug where displaying a Winsock error would cause the program to crash.
- Updated command window usage information to reflect the change in the SETSPD command.

### **Version 3.0.4.2b – June 8, 2011**

Source diagrams for the LabVIEW Ethernet sample .vi's are now included.

### **Motor Controls (3.0.4.2)**

- No changes

### **MotorSendCmd (1.0.2.0)**

- No changes

### **Version 3.0.4.2 – March 24, 2011**

### **Motor Controls (3.0.4.2)**

- Corrected two errors in the cubic fit interpolation routine: One that would cause an interpolation failure past the highest wavelength supplied in the cubic fit data file for a motor, and another that caused an offset in data that was used for the fit.
- Updated remaining obsolete Win16 functions to Win32 equivalents.
- Minor code improvements.

### **MotorSendCmd (1.0.2.0)**

- No changes

### **Version 3.0.4.1 – February 21, 2011**

### **Motor Controls (3.0.4.1)**

- It is no longer possible to run more than one instance of the program at once.

### **MotorSendCmd (1.0.2.0)**

- No changes

## Version 3.0.4.0 – February 4, 2011

NOTE: The settings file, `CURRENT.MRG` in this version is not compatible with previous versions. If a downgrade is desired please manually record all desired program settings and don't use the existing file with the older version. You may also [send us](#) your current file and the version you are downgrading to and we will send you a file compatible with the older version.

### Motor Controls (3.0.4.0)

- Added the ability to supply a data file that the program uses to construct a cubic spline fit on-the-fly of the desired motor position rather than the polynomial fit. This is useful for motors 2 and higher, but most worthwhile for motor #2. Once the required data file has been constructed and listed in the `Motor Controls.ini` file the cubic spline fit is enabled using the setup dialog for the desired motor. See the help documentation for more information.
- Corrected a bug that made it impossible to use the `SETSCRL` command over RS-232 for the Master window.

### MotorSendCmd (1.0.2.0)

- No changes

## Version 3.0.3.0 – December 20, 2010

### Motor Controls (3.0.3.0)

- Four new external commands have been added: `MOVE`, `STOP`, `TELLPOS`, and `SETSCRL`. `SETSPD` now supports setting the base speed of individual motors, however the syntax for setting the Master base speed has not changed. Please see help file or `MotorSendCmd` output for details.
- Additional error notifications have been added for reading and saving motor positions. A backup position file `POSITION.BAK` is now saved each time `POSITION.MOT` is successfully written. This file can be used to restore position data on starting the program in the event that reading `POSITION.MOT` fails. In this event a notification will instruct the user to manually set the motor positions from the information contained in the backup file.
- Motor setup windows now show the motor number as the title of the window.
- Code improvements.

### MotorSendCmd (1.0.2.0)

- Updated `--check` option to support new commands.
- The default instructional output now uses color to improve readability.
- Winsock errors will now display as a message instead of a number.
- Code adjustments for new commands and minor improvements.
- Fixed a minor code error, no change in behavior.

## Version 3.0.2.1 – November 11, 2010

### Motor Controls (3.0.2.1)

- Changed behavior of TCP communications to timeout after 5 minutes of command inactivity.
- Decimal values for GOTO and SETSPD for Ethernet communications are now handled correctly.
- Updated default motor minimum and maximum position values.
- Minor code improvements.
- Updated LabVIEW sample to reflect decimal point change. The sample is now only provided in version 8 format.

### MotorSendCmd (1.0.1.1)

- Updated `--check` option to support decimal values for GOTO and SETSPD.
- Fixed error where `--check` on GOTO repeated validation as if command was SETSPD.

## Version 3.0.2.0 – November 7, 2010

### Motor Controls (3.0.2.0):

- Ethernet communications now support receiving more than one command in a single packet. Any character other than a letter, number, or space serves as a delimiter. For example, `GOTO 760; TELLWL` will be interpreted as two separate commands.
- Error codes returned by Ethernet communications are now terminated with a carriage return followed by a line feed. This makes TCP communications compatible with LabView.
- A sample LabVIEW program is now included that demonstrates Ethernet communications with Motor Controls.
- Code cleanups.

### MotorSendCmd (1.0.1.0)

- Updated to support sending multiple Ethernet commands.
- The `--check` option now verifies that the secondary argument for SETSPD and GOTO is a number.
- Corrected the number of minimum arguments.

## Version 3.0.1.0 – October 28, 2010

### Motor Controls (3.0.1.0):

- Added ability to set an offset from 1064.000 nm for the YAG wavelength, [CONTROL] 1064\_OFFSET, see *To Change Advanced Program Settings* in the help file for details.
- Fixed an error in TCP communications where any Winsock error was defined to be WSAEWOULDBLOCK.
- Ethernet connections are now handled by separate threads, response times for both TCP and UDP commands should decrease. Additionally, third-party programs used for sending TCP commands, such as LabVIEW, which aren't as quick to send commands after a connection is established will now work properly. However, TCP commands must be sent within 5 seconds of establishing a connection or the connection will timeout. UDP commands are not affected by timeouts as UDP is a connectionless protocol.
- If a potentially unsafe Base Speed is set in the Master setup dialog, clicking Cancel on the resulting warning will now reset the value in the dialog box to the previous setting.
- Updated default motor values to current usage.

### MotorSendCmd (1.0.0.1):

- Will now return the Winsock error code as an exit code on a Winsock failure. Winsock errors are 6, 8, 87, and 995-11031. See <http://msdn.microsoft.com/en-us/library/ms740668.aspx> for error codes.

## Version 3.0.0.0 – October 20, 2010

### Motor Controls (3.0.0.0):

- First release using the MCAPI and supporting 32-bit Windows.
- Ethernet communications added.
- The SETSPD command will now fail (return a ? over RS-232, 1 for Ethernet) when the specified scanning speed may lead to velocities greater than 1e+6. The *Diagnostics* window has been redone.
- The following options have been added for use in the .ini file:
  - [SCREEN] FONT SIZE: Change the size of the program's display font.
  - [CONTROL] DIAGNOSTICS\_REFRESH: Set the refresh time for the *Diagnostics* window. See *To Change Advanced Program Settings* in the help documentation for details.
- If a valid datafile is not specified for the [MODEL] DATAFILE value the program will generate an error message and close.
- The arrow button arrows are now drawn with anti-aliasing.
- Controls are now drawn with Visual Styles enabled (ex: scrollbars will look visually similar to those in other applications).
- The *About* dialog has been redone.
- Help documentation has been transitioned to the Compiled HTML Help format (.chm).
- The *Setup – Communications* command has been renamed *RS-232 Communications* to distinguish it from Ethernet based communications.

- New program and window icons.
- Application has been renamed *Motor Controls*.
- The behavior of *Save As*, *Save*, and *Open* commands has been altered so they function according to contemporary expectations: *Save* will no longer prompt for a file name if one was not previously specified and will always save to the current .mrg file; *Save As* will cause the current .mrg file to change to that specified; *Open* will default to the current .mrg file. The .mrg file used at startup is still CURRENT.MRG.
- The program no longer has the ability to control single-frequency systems.

**MotorSendCmd (1.0.0.0):**

- Initial release.