

SOCHexapodSIM

Linear Actuator Hexapod
(Stewart Platform)

Simulator Application Description
V1.00

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SOCHexapodSIM is a Stewart Platform motion simulator for the Windows™ platform using the OpenGL API to create a 3D adjustable view of a linear-drive Hexapod and to simulate the kinds of motion attainable through the use of G-code input.

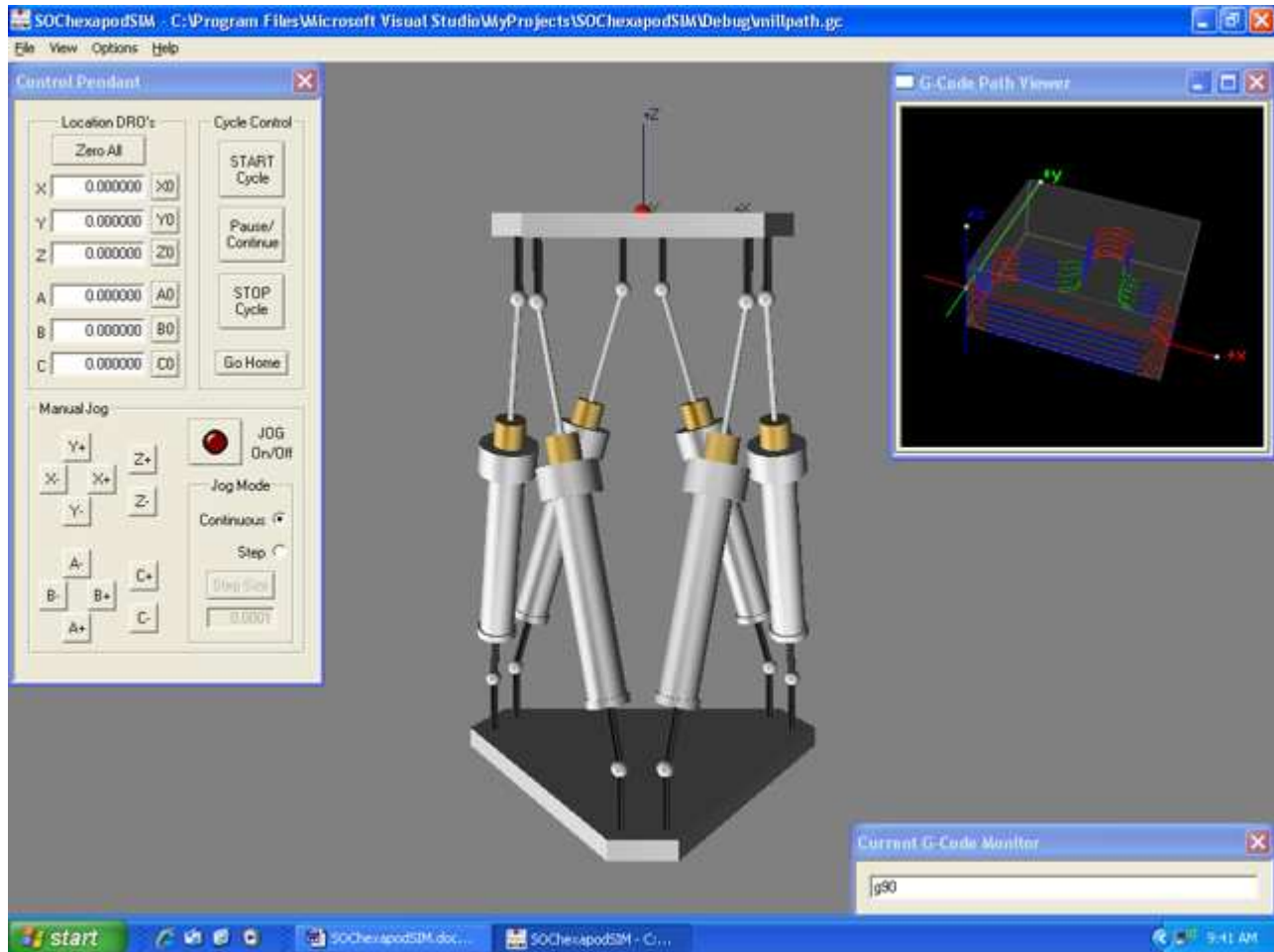


Fig.1 – SOCHexapodSIM application main window model view, Control Pendant, G-code Path Viewer and G-code line monitor

The simulated machine platform can be given commands to perform linear and circular moves (G1, G2 and G3) in the 3 axes x, y and z, and can perform G1 rotations in the 3 axes a, b and c. The linear and rotational moves can be combined on one line of g-code.

Text files containing G-code commands can be loaded by using the File / Load menu command (Fig.2).

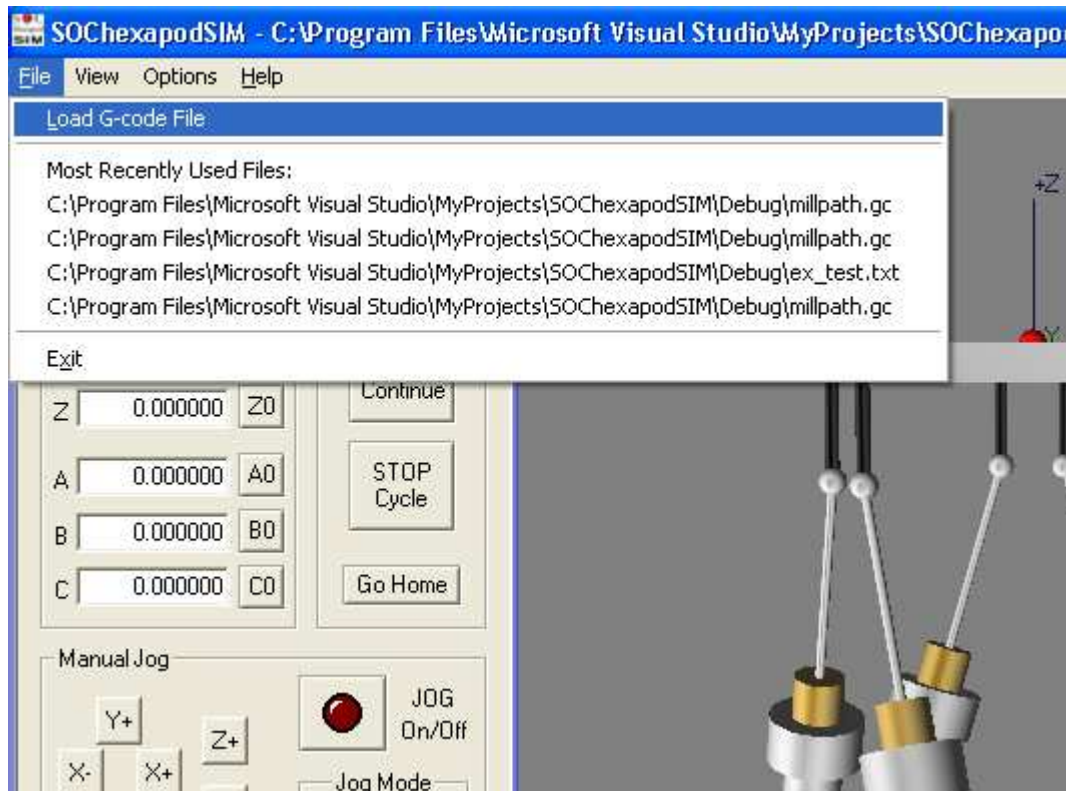


Fig.2 – The File / Load menu command

Single moves can be created and executed using the Create Move dialog interface available in the View Menu (Fig.3).

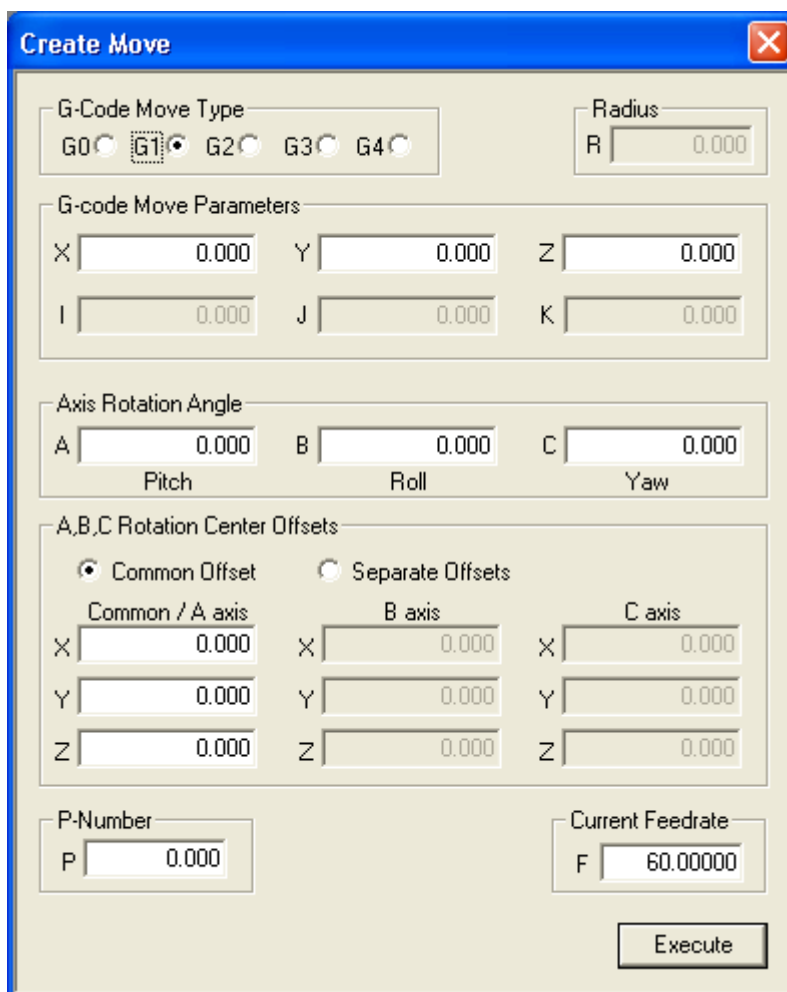
The 'Create Move' dialog box is a software interface for defining a G-code move. It has a blue title bar with the text 'Create Move' and a close button. The main area is light beige and contains several sections: 1. 'G-Code Move Type' with radio buttons for G0, G1 (selected), G2, G3, and G4. 2. 'Radius' with a text field 'R' containing '0.000'. 3. 'G-code Move Parameters' with text fields for X, Y, Z, I, J, and K, all containing '0.000'. 4. 'Axis Rotation Angle' with text fields for A (Pitch), B (Roll), and C (Yaw), all containing '0.000'. 5. 'A,B,C Rotation Center Offsets' with two radio buttons: 'Common Offset' (selected) and 'Separate Offsets'. Below these are three columns of text fields for X, Y, and Z offsets for the Common/A axis, B axis, and C axis, all containing '0.000'. 6. 'P-Number' with a text field 'P' containing '0.000'. 7. 'Current Feedrate' with a text field 'F' containing '60.00000'. An 'Execute' button is located at the bottom right.

Fig.3 – The Create Move dialog interface

Global Parameters such as units of measure, default feed rates, g-code motion modes and jogging increments etc., can be set in the Global Parameters dialog interface (Fig.4), available from the Options menu.

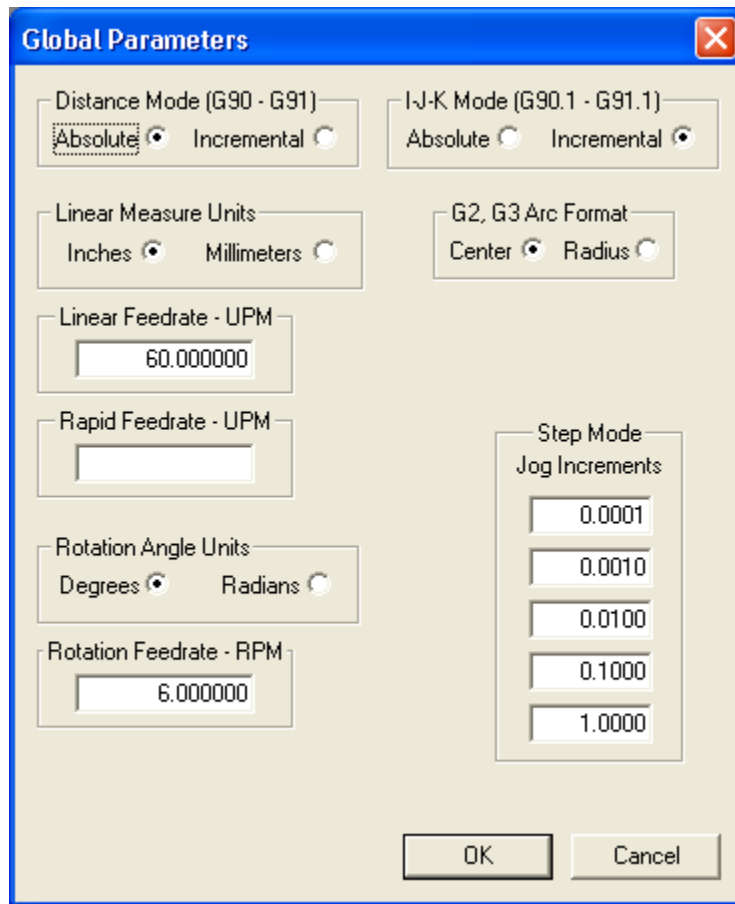


Fig.4 - the Global Parameters dialog interface

SOCHexapodSIM includes a g-code path viewer that displays an OpenGL 3D representation of the path that the center of the platform will follow using the currently loaded g-code file (Fig.5).

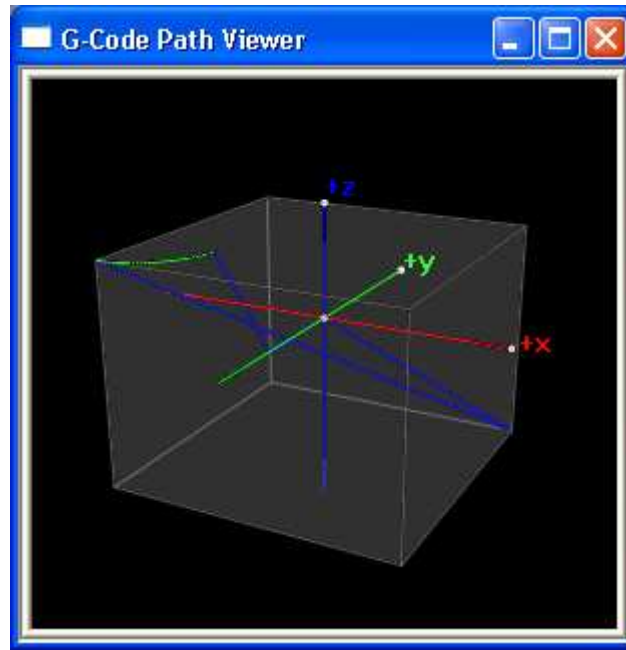
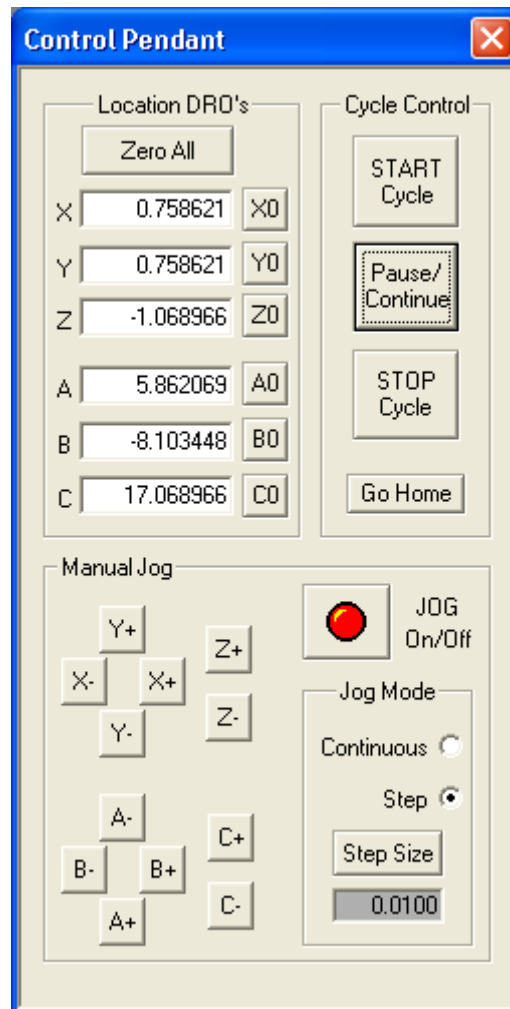


Fig.5 – the 3D G-code Path Viewer

The 3D orientation of the views in both the Path Viewer and the main window model view can be manipulated on-screen with the mouse. To rotate the view, click the left mouse button and drag to rotate. Click and drag with the Shift Button to Zoom, and click and drag with the Alt Button to position (translate) the view.

The Control Pendant dialog interface (Fig.6) is used to control the execution of the currently loaded g-code file, displays the current position of the center of the platform in DRO's (Digital ReadOuts), and provides controls for both Continuous Jogging and Step Jogging.



SOCHexapodSIM can be downloaded from our downloads page at:

<http://soc-robotics.com/download/download.htm>

Thank you for your interest in SOCHexapodSIM
and other motion control products from SOC Robotics, Inc.