

# OVERVIEW

## About This Manual

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This manual is designed to help you implement the 6K Series Product's features in your application. Detailed feature descriptions are provided, including application scenarios and programming examples. For details on each 6K command, see the *6K Series Command Reference*.

## Organization of This Manual

Chapter	Information
Chapter 1. <i>Programming Fundamentals</i>	Discussion of essential programming guidelines and standard programming features such as branching, variables, interrupts, error handling, etc.
Chapter 2. <i>Communication</i>	Communication considerations, such as using Motion Planner, alert event handling, communication server and fast status control, RS-232 daisy-chains and RS-485 multi-drops, etc.
Chapter 3. <i>Basic Operation Setup</i>	General operation setup conditions, such as number of axes, scaling factors, feedback device setup, programmable input and output functions, end-of-travel limits, homing, etc.
Chapter 4. <i>Product Control Options</i>	Considerations for implementing various product control methods, such as programmable I/O, a joystick, an RP240, custom GUI, etc.
Chapter 5. <i>Custom Profiling</i>	Descriptions of custom profiling features such as S-Curves, linear and circular interpolation, compiled profiles, on-the-fly motion profiling, registration, and synchronized motion.
Chapter 6. <i>Following</i>	Feature descriptions and application examples for using Following features.
Chapter 7. <i>Multi-Tasking</i>	Feature descriptions and application examples for using multi-tasking in your application.
Chapter 8. <i>Troubleshooting</i>	Methods for isolating and resolving hardware and software problems.

## Programming Examples

Programming examples are provided in this document to demonstrate how the 6K product's features can be implemented. These examples are somewhat generalized, due to the diverse nature of the family of 6K Series products and their application; consequently, some attributes, such as the number of axes used or the I/O bit pattern referenced, can differ from those available with your particular 6K product.

**HINT:** From the Help menu in Motion Planner and from our web site ([www.compumotor.com](http://www.compumotor.com)), you can access the online version of the *6K Series Command Reference*. You can copy the programming examples from this online document and paste them into Motion Planner's Program Editor. Then you can edit the code for your application requirements and download the program to the product.

## Reference Documentation

This document is intended to accompany the printed and online documents listed below, as part of the 6K product user documentation set.

	<b>Reference Document</b>	<b>Description</b>
<b>ONLINE ACCESS</b>	<i>6K Series Hardware Installation Guide</i>	Hardware-related information specific to the 6K Series product: <ul style="list-style-type: none"><li>•Product hardware specifications</li><li>•Installation instructions</li><li>•Troubleshooting procedures</li><li>•Servo tuning instructions</li></ul>
Online versions of this Programmer's Guide and the Command Reference are available on the included compact disc.		
<b>INTERNET ACCESS</b>	<i>6K Series Command Reference</i>	Provides detailed descriptions of all 6K Series Programming Language commands. In addition, it includes quick-reference tables.
You can also view and print these documents our website at <a href="http://www.compumotor.com">www.compumotor.com</a>	<i>Com6srvr User's Guide for Gemini&amp; 6K Series Products</i>	Provides information about the Com6srvr, and detailed descriptions of its properties and methods.
	<i>Motion Planner Online Help</i>	Online instructional aids: <ul style="list-style-type: none"><li>•Step-by-step programming coaches</li><li>•Conceptual overviews</li><li>•Specifications on each 6K Series command</li></ul>

## Assumptions of Technical Experience

To effectively use the information in this manual, you should have a fundamental understanding of the following:

- Electronics concepts such as voltage, switches, current, etc.
- Motion control concepts such as motion profiles, torque, velocity, distance, force, etc.
- Programming skills in a high-level language such as C, BASIC, or Pascal is helpful
- Ethernet communication protocol (if using the Ethernet port)
- If you are new to the 6K Series Programming Language, read Chapter 1 thoroughly.

## Before You Begin

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Before you begin to implement the 6K controller's features in your application you should complete the items listed below.

- Complete all the installation and test procedures provided in your *6K Series Hardware Installation Guide*.
- If you are controlling any servo axes, complete the servo tuning procedures. Be sure to use Motion Planner's built-in tuning utility to easily tune the axis and integrate the gains into your motion program. Tuning instructions are provide on page 67, with conceptual material provided in an appendix to the *6K Series Hardware Installation Guide*.
- Keep the *6K Series Command Reference* close at hand to answer questions about specific 6K Series commands (the contents are also available online from the Motion Planner interface). If you are new to the 6K Series Programming Language, read Chapter 1 (*Programming Fundamentals*) thoroughly.

## Motion Planner — programming support software

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Motion Planner is a Windows-based graphical interface that assists you with programming and tuning your 6K Series product. Motion Planner is provided in your ship kit. The Motion Planner interface allows you to:

- Create, edit, download, and upload programs (or code modules).
- Tune your servo system.
- Test & debug programs and controller operation with customizable displays.
- Organize all of your programs and resource files for your programming project.

**PERFORMANCE SUPPORT.** To help you program with speed and efficiency, Motion Planner provides these "performance support" features:

- **Ergonomic Interface:** In addition to the menus and toolbar buttons, the main part of the interface is designed with tabbed windows to give you easy access to all the tools you need. With one click, you can switch between editor, terminal emulator, files organizer, and online help system. In addition, each tabbed window has its own set of utility buttons and right mouse click menu commands for easy access to common tasks specific to what you're working on.
- **Programming Help with Wizards:** Wizards are available to speed up your programming tasks and minimize your need to learn the details of the programming language. Wizards are included for such tasks as overall program structure, setup programming, error programming, compiled motion, multi-tasking setup, servo tuning, etc.
- **Smart Editor:** The smart editor is the focal point for your programming tasks: The smart editor watches over your shoulder and provides syntax checking on the fly (as you type). To get detailed information on the command you're using, just press the F1 key. At any point, you can check the entire program file for logic flow and syntax errors.

## Technical Support

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For solutions to your questions about implementing 6K product software features, first look in this manual. Other aspects of the product (command descriptions, hardware specs, I/O connections, graphical user interfaces, etc.) are discussed in the respective manuals or Online Help systems listed above in *Reference Documentation* (see page ii).

If you cannot find the answer in this documentation, contact your local Automation Technology Center (ATC) or distributor for assistance.

If you need to talk to our in-house application engineers, please contact us at the numbers listed on the inside cover of this manual. (The phone numbers are also provided when you issue the `HELP` command to the 6K controller.)