

Compumotor

SD/IFX User Guide

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How To Use This Manual

This manual is designed to help you install, develop, and maintain your system. Each chapter begins with a list of specific objectives that should be met after you have read the chapter. This section is intended to help you find and use the information in this manual.

Assumptions

This user guide assumes that you have the skills or fundamental understanding of the following:

- IBM (or IBM-compatible) computer experience
- Basic electronics concepts (voltage, switches, current, resistors, etc.)
- Basic motion control concepts (torque, velocity, distance, etc.)
- Basic serial communication concepts (specifically RS-232C)

With this basic level of understanding, you will be able to effectively use this manual to install, develop, and maintain your system.

Contents of This Manual

This user guide contains the following information:

Chapter 1: Introduction

This chapter provides a description of the product and a brief account of its specific features.

Chapter 2: Getting Started

This chapter contains a detailed list of items you should have received with your SD/IFX system shipment. It will help you become familiar with the system and ensure that each component functions properly. In this chapter, you will perform a preliminary configuration of the system.

Chapter 3: Installation

This chapter provides instructions for you to properly mount the system and make all electrical and non-electrical connections. Upon completion of this chapter, your system should be completely configured, installed, and ready to perform basic operations.

Chapter 4: Application Design

This chapter will help you customize the system to meet your application's needs. Important application considerations are discussed. Sample applications are provided.

Chapter 5: Software Reference

This chapter explains Compumotor's X-Series programming language in detail. It provides an alphabetical listing of all commands, with a syntax and command description for each command. It also describes system parameters that affect command usage.

Chapter 6: Hardware Reference

This chapter contains information on system specifications (dimensions and performance). This chapter may be used as a quick-reference tool for proper switch settings and I/O connections.

Chapter 7: Maintenance & Troubleshooting This chapter describes Compumotor's recommended system maintenance and troubleshooting procedures. It also provides methods for isolating and resolving hardware and software problems.

Appendices At the end of this user guide, you will find the following appendices:

- Command Listing
- ASCII Table
- Warranty
- Glossary
- Index

Installation Process Overview

To ensure trouble-free operation, you should pay special attention to the following:

- The environment in which the SD/IFX system will operate
- The system layout and mounting
- The wiring and grounding practices used

These recommendations are intended to help you easily and safely integrate the SD/IFX system into your manufacturing facility. Industrial environments often contain conditions that may adversely affect solid state equipment. Electrical noise or atmospheric contamination may also affect the SD/IFX system.

Developing Your Application

Before you attempt to develop and implement your application, there are several issues that you should consider and address.

1. Recognize and clarify the requirements of your application. Clearly define what you expect the system to do.
2. Assess your resources and limitations. This will help you find the most efficient and effective means of developing and implementing your application.
3. Follow the guidelines and instructions outlined in this user guide. **Do not skip any steps or procedures.** Proper installation and implementation can be ensured only if all procedures are completed in the proper sequence.

**Installation
Recommendations**

Before you attempt to install this product, you should complete the following steps:

1. Review this entire manual. Become familiar with the manual's contents so that you can quickly find the information you need.
2. Develop a basic understanding of all system components, their functions, and interrelationships.
3. Complete the basic system configuration and wiring instructions provided in Chapter 2, Getting Started. *Note that this is a preliminary configuration, not a permanent installation, usually performed in a bench-top environment.*
4. Perform as many basic moves and functions as you can with the preliminary configuration. You can perform this task only if you have reviewed the entire manual. You should try to simulate the task(s) that you expect to perform when you permanently install your system. *However, do not attach a load at this time.* This will give you a realistic preview of what to expect from the complete configuration.
5. After you have tested all of the system's functions and used or become familiar with all of the system's features, carefully read Chapter 3, Installation.
6. After you have read Chapter 3 and clearly understand what must be done to properly install the system, you should begin the installation process. Proceed in a linear manner; do not deviate from the sequence or installation methods provided.
7. Before you begin to customize your system, check all of the system functions and features to ensure that you have completed the installation process correctly.

The successful completion of these steps will prevent subsequent performance problems and allow you to isolate and resolve any potential system difficulties before they affect your system's operation.

Conventions

To help you understand and use this user guide effectively, the conventions used throughout this manual are explained in this section.

Highlighted Text

Several methods are used to highlight text. Explanations of special text and the way it is highlighted are presented below.

Commands

The command examples in this user guide are presented vertically to help you read and understand them. When you actually type these commands at your computer keyboard, they will be displayed horizontally on your computer. All commands that you are instructed to enter are displayed in all capital letters, just as they appear on your computer CRT. A one-line explanation of the command is provided next to each example. The command is displayed in boldface. Be sure to add a delimiter (space or carriage return) after each command in a sequence. Refer to the example below.

<u>Command</u>	<u>Description</u>
A 5	Sets acceleration to 5 revs/sec/sec (rps ²)
V 5	Sets velocity to 5 rps
D1000	Sets distance to 1,000 steps
G	Executes the move (Go)

Bold face, quotation marks, or other forms of highlighting are not used for command responses. Responses are set in all capital letters, as they are on the terminal. An example is provided below.

<u>Command</u>	<u>Response</u>
1XU4	*A5 V5 D1000 G

The system generally ignores command syntax that is not within the valid range for a specific command (valid ranges are provided in Chapter 5, Software Reference). Compumotor does not guarantee system performance when the system executes commands that contain invalid syntax (outside the valid range).

**Warnings
(Personal Injury)
& Cautions
(System
Damage)**

Warning and caution notes alert you to possible dangers that may occur if you do not follow instructions correctly. Situations that may cause bodily injury are presented as warnings. Situations that may cause system damage are presented as cautions. These notes appear in a shadowed box with bold text, and the word warning or caution is centered and in all capital letters. Refer to the examples shown below.

WARNING

Do not touch the motor immediately after it has been in use for an extended period of time. The unit will be hot.

CAUTION

System damage will occur if you power up the system improperly.

Italics

Italics are used to highlight other important material. Refer to the example below.

Example: By doubling the resistor value, you can double the square-off speed. *Do not use a resistor with a value lower than 3.3k Ω .*

Voltage Levels

In this manual, you will deal with inputs and outputs that you can turn on or off. We will define the terminologies needed for these inputs and outputs.

Inputs

ON (\emptyset , low) Current flows
OFF (1, high) No current flows

CommandTR \emptyset 11Description

Waits for Trigger 1 to turn on and Triggers 2 and 3 to turn off

Outputs

ON (1, high) Current flows
OFF (\emptyset , low) No current flows

Commando \emptyset 1Description

Turns off Output 1 and turns on Output 2

Direction

Throughout this user guide, you will find references to positive (+) and negative (-) motor rotation. Positive refers to clockwise (CW) rotation and negative refers to counter-clockwise (CCW) rotation. *NOTE: This convention is accurate only if you connect the motor according to the instructions provided in this user guide. Refer to Figure C-1 to determine CW and CCW rotation.*

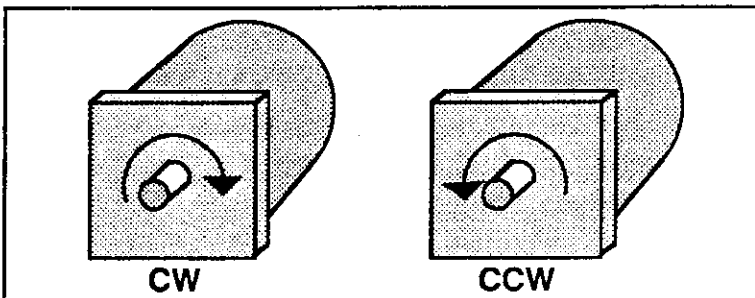


Figure C-1. CW and CCW Motor Rotation

Related Publications

The following publications may be helpful resources:

- Seyer, Martin. *RS-232C Made Easy: Connecting Computers, Printers, Terminals and Modems*, Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1984
- Parker Compumotor Motion Control Catalog
- Operations manual for the IBM or IBM-compatible computer that you will use with the SD/IFX system
- Schram, Peter (editor). *The National Electric Code Handbook (Third Edition)*. Quincy, MA: National Fire Protection Association