

# TABLE OF CONTENTS

---



Warning.....	i
Publication History.....	iv
Table of Contents.....	vi
<b>Chapter 1 - Getting Started.....</b>	<b>1-1</b>
Productivity Suite System Requirements.....	1-3
Step 1: Install Programming Software.....	1-4
Step 2: Launch Programming Software.....	1-8
Step 3: Install Hardware.....	1-10
Step 4: Apply Power to CPU.....	1-13
Step 5: Establish PC to CPU Communications.....	1-14
Step 6: Open/Read Hardware Configuration.....	1-15
Step 7: Create a Project.....	1-17
Step 8: Save Project.....	1-23
Step 9: Write Project to CPU.....	1-24
Step 10: Place CPU in RUN Mode.....	1-25
Step 11: Test the Project Using Monitor Mode or Simulator.....	1-26
<b>Chapter 2 - Specifications.....</b>	<b>2-1</b>
Overview.....	2-3
P2-04B, P2-07B, P2-11B, P2-15B Bases.....	2-4
P2-01AC, P2-01DCAC, P2-01DC and P2-02DC Power Supplies.....	2-6

## Table of Contents

---

Productivity 2000 CPU Modules.....	2-12
P2-RS Remote Slave Module.....	2-32
I/O Modules Overview.....	2-41
Discrete I/O Modules.....	2-42
P2-08SIM Input Simulator Module.....	2-43
P2-08ND3-1 Sinking/Sourcing DC Input.....	2-44
P2-16ND3-1 Sinking/Sourcing DC Input.....	2-47
P2-16ND-TTL Sinking/Sourcing DC Input.....	2-50
P2-32ND3-1 24VDC Sinking/Sourcing Input.....	2-53
P2-08NE3 AC/DC Sinking/Sourcing Input.....	2-56
P2-16NE3 AC/DC Sinking/Sourcing Input.....	2-59
P2-32NE3 AC/DC Sinking/Sourcing Input.....	2-62
P2-08NAS Isolated AC Input.....	2-65
P2-16NA AC Input.....	2-68
P2-08TD1S Isolated Sinking DC Output.....	2-71
P2-08TD2S Isolated Sourcing DC Output.....	2-74
P2-15TD1 Sinking DC Output.....	2-77
P2-15TD2 Sourcing DC Output.....	2-80
P2-08TD1P Sinking Protected DC Output.....	2-83
P2-08TD2P Sourcing Protected DC Output.....	2-86
P2-16TD1P Sinking Protected DC Output.....	2-89
P2-16TD2P Sourcing Protected DC Output.....	2-92
P2-16TD-TTL Sourcing DC Output.....	2-95
P2-32TD1P Sinking Protected DC Output.....	2-98
P2-32TD2P Sourcing Protected DC Output.....	2-101
P2-08TAS Isolated AC Output.....	2-104
P2-16TA AC Output.....	2-107
P2-06TRS Isolated Relay Output.....	2-110

P2-08TRS Isolated Relay Output..... 2-113

P2-16TR Relay Output..... 2-116

**Chapter 3 - Analog I/O Specifications ..... 3-1**

    Analog I/O Modules Overview.....3-3

    Analog I/O Modules.....3-4

    Analog I/O Modules.....3-5

    P2-04AD Analog Input.....3-6

    P2-04AD-1 Analog Input.....3-12

    P2-04AD-2 Analog Input.....3-17

    P2-08AD-1 Analog Input.....3-22

    P2-08AD-2 Voltage Analog Input.....3-27

    P2-08ADL-1 Current Analog Input .....3-32

    P2-08ADL-2 Voltage Analog Input.....3-36

    P2-16AD-1 Current Analog Input.....3-40

    P2-16AD-2 Voltage Analog Input.....3-45

    P2-16ADL-1 Current Analog Input.....3-50

    P2-16ADL-2 Voltage Analog Input .....3-54

    P2-06RTD Analog Input.....3-58

    P2-08THM Analog Input.....3-65

    P2-08NTC Thermistor .....3-72

    P2-04DA Analog Output.....3-76

    P2-04DA-1 Analog Output .....3-82

    P2-04DA-2 Analog Output.....3-87

    P2-04DAL-1 Analog Output .....3-92

    P2-04DAL-2 Analog Output.....3-96

    P2-08DA-1 Current Analog Output.....3-100

    P2-08DA-2 Voltage Analog Output.....3-105

## Table of Contents

---

P2-08DAL-1 Current Analog Output.....	3-110
P2-08DAL-2 Voltage Analog Output.....	3-114
P2-16DA-1 Current Analog Output.....	3-118
P2-16DA-2 Voltage Analog Output.....	3-123
P2-16DAL-1 Current Analog Output.....	3-128
P2-16DAL-2 Voltage Analog Output.....	3-132
P2-8AD4DA-1 Current Analog Input/Output .....	3-136
P2-8AD4DA-2 Voltage Analog Input/Output.....	3-142
<b>Chapter 4 - Specialty Module Specifications .....</b>	<b>4-1</b>
Specialty Modules Overview.....	4-2
P2-HSI High-Speed Pulse Input Module.....	4-4
P2-HSO High-Speed Output Module .....	4-13
High-Speed Module Tester Utility.....	4-22
P2-02HSC High-Speed Counter Module .....	4-23
P2-04PWM Module.....	4-29
P2-SCM Module.....	4-33
P2-SCM Module Communications.....	4-35
<b>Chapter 5 - Installation and Wiring.....</b>	<b>5-1</b>
Safety Guidelines .....	5-2
Introduction .....	5-5
Dimensions and Installation .....	5-6
Mounting Guidelines .....	5-7
Wiring Guidelines.....	5-14
I/O Module Wiring Options.....	5-16
System Wiring Strategies.....	5-22
<b>Chapter 6 - Communications .....</b>	<b>6-1</b>
Communications .....	6-1

Communications: Connectivity .....	6-8
Communications: Ethernet .....	6-16
Communications Modbus Functionality .....	6-20
EtherNet/IP for the Productivity Series .....	6-35
Communications: Remote I/O and GS-Drives .....	6-50
Communications: Port Configuration .....	6-58
Communications: Error Codes .....	6-66
<b>Chapter 7 - Maintenance and Troubleshooting .....</b>	<b>7-1</b>
Hardware Maintenance .....	7-2
Diagnostics .....	7-3
CPU Indicators .....	7-4
PWR Indicator .....	7-5
Run Indicator .....	7-7
CPU Indicator .....	7-7
Communications Problems .....	7-7
I/O Module Troubleshooting .....	7-8
Noise Troubleshooting .....	7-10
Run Time vs Stop Mode Transfer Instruction .....	7-11
Forcing I/O Points .....	7-14
<b>Appendix A - European Union Directives (CE).....</b>	<b>A-1</b>
European Union (EU) Directives .....	A-2
Basic EMC Installation Guidelines .....	A-4
<b>Appendix B - Productivity® 2000 Error Codes.....</b>	<b>B-1</b>
<b>Appendix C - Security Considerations for Control Systems Networks.....</b>	<b>C-1</b>
Security Considerations for Control Systems Networks .....	C-2