Table of Contents

Preface 1
Trademark Rights 2
How To Use This Manual 3
Manual Symbols and Terminology 5
Instructions for Safe Use 7
Inquiry 8
Contact Information 8
Table of Contents 9

Chapter 1 Welcome to GP-Pro EX

1.1 About GP-Pro EX 1-2
1.1.1 Features 1-2
1.1.2 Main features of GP-Pro EX Version 2.0 or later 1-3
1.2 Model Environment 1-4
1.3 List of Supported Functions by Device 1-5
1.3.1 GP-3200 Series 1-5
1.3.2 GP-3300 Series 1-7
1.3.3 GP-3400 Series 1-10
1.3.4 GP-3500 Series 1-13
1.3.5 GP-3600/3700 Series 1-15
1.3.6 LT 3000 Series 1-18
1.3.7 IPC Series (PC/AT) 1-20

Chapter 2 Using GP-Pro EX

2.1 Compatibility with Pro-face® Software 2-2
2.1.1 Compatible Software Versions 2-2
2.1.2 Model Names Before and After Conversion 2-2
2.1.3 Devices before and after Conversion 2-6
2.1.4 Using the Project Converter 2-11
2.1.5 Setting up the Project Converter 2-15
2.1.6 Error Messages 2-17
2.2 How to Update Software 2-21
2.2.1 Working with Online Update 2-21

Chapter 3 Environment

3.1 Package Content 3-2
3.2 Operating Environment 3-3
3.2.1 GP-Pro EX Operating Environment Requirements 3-3
3.2.2 Transfer Tool Installation Requirements 3-5

3.3 Supported Model List 3-6
3.3.1 GP3000 Series 3-6
3.3.2 LT3000 Series 3-8
3.3.3 IPC Series (PC/AT) 3-8

Chapter 4 Development Process

4.1 Creating HMI Displays 4-2
4.2 Creating HMI Displays and Logic Programs 4-3

Chapter 5 Start to Finish

5.1 Settings Menu 5-2
5.2 Starting/Creating/Saving/Finishing 5-9
5.2.1 Introduction 5-9
5.2.2 Setup Procedure 5-10
5.3 Backing Up a Project File 5-23
5.3.1 Introduction 5-23
5.3.2 Setup Procedure 5-24
5.4 Entering a Password in a Project File 5-27
5.4.1 Introduction 5-27
5.4.2 Setup Procedure 5-28
5.5 Confirming the Address List Used in a Project File 5-31
5.5.1 Introduction 5-31
5.5.2 Setup Procedure 5-32
5.6 Converting Multiple Addresses 5-40
5.6.1 Introduction 5-40
5.6.2 Setup Procedure 5-41
5.7 Viewing the Project Information 5-44
5.7.1 Introduction 5-44
5.7.2 Setup Procedure 5-45
5.8 Copying a Screen from Another Project 5-48
5.8.1 Introduction 5-48
5.8.2 Setup Procedure 5-49
5.9 Registering Addresses with Comprehensive Names 5-52
5.9.1 Introduction 5-52
5.9.2 Setup Procedure 5-53
5.10 Using Headers and Footers on a Screen 5-61
5.10.1 Introduction 5-61
5.10.2 Setup Procedure 5-62
5.11 Changing the Screen Number/Title/Screen Color 5-67
5.11.1 Introduction 5-67
5.11.2 Setup Procedure 5-68
5.12 Copying/Deleting a Screen 5-70

5.12.1 Introduction 5-70
5.12.2 Setup Procedure 5-71
5.13 Searching/Replacing Parts Addresses, Labels, and Comments 5-74
5.13.1 Introduction 5-74
5.13.2 Setup Procedure 5-75
5.14 Changing Attributes of Parts in block 5-78
5.14.1 Details 5-78
5.14.2 Procedure 5-79
5.15 Settings Guide 5-85
5.15.1 Main Window Part Names 5-85
5.15.2 [New] Settings Guide 5-89
5.15.3 [Properties] Settings Guide 5-91
5.15.4 [Utility] Settings Guide 5-101
5.15.5 [Work Space] Settings Guide 5-109
5.15.6 [System Settings] Setting Guide 5-128
5.15.7 [Preferences] Settings Guide 5-166
5.15.8 [Common Settings] Setting Guide 5-175
5.15.9 [Screen] Settings Guide 5-179
5.16 Restrictions 5-184
5.16.1 Restrictions for Creating Screens 5-184
5.16.2 Restrictions on Saving Data 5-189

Chapter 6 Font

6.1 Font Types 6-2
6.2 Defining Stroke Font and Standard Font 6-3
6.2.1 Introduction 6-3
6.2.2 Setup Procedure 6-11
6.3 Image Font 6-14
6.3.1 Introduction 6-14
6.3.2 Setup Procedure 6-15
6.4 [Font] Settings Guide 6-18
6.5 Restrictions 6-19
6.5.1 Restrictions for Standard Font 6-19
6.5.2 Restrictions for Image Font 6-19

Chapter 7 Communicating with Multiple Devices/PLCs

7.1 Settings Menu 7-2
7.2 Connecting to Multiple Device/PLCs 7-3
7.2.1 Introduction 7-3
7.2.2 Setup Procedure 7-4
7.2.3 Structure 7-8
7.3 Disconnecting Multiple Connected Devices/PLCs 7-12

7.3.1 Introduction 7-12
7.3.2 Setup Procedure 7-12
7.4 Changing a Device/PLC 7-18
7.4.1 Introduction 7-18
7.4.2 Setup Procedure 7-19
7.5 Settings Guide 7-29
7.5.1 [Change Device/PLC] Settings Guide 7-29
7.5.2 [Address Conversion Method Specification] Settings Guide 7-31
7.6 Restrictions 7-35

Chapter 8 Draw (Figures/Text)

8.1 Settings Menu 8-2
8.2 Drawing Pictures 8-6
8.2.1 Drawing Picture Lists 8-6
8.2.2 Drawing by Pixels 8-7
8.2.3 Drawing Line/Polyline 8-8
8.2.4 Drawing Rectangles 8-10
8.2.5 Drawing Circles/Ovals 8-13
8.2.6 Drawing Arcs/Pies 8-16
8.2.7 Drawing Polygons 8-18
8.2.8 Drawing Scales 8-20
8.2.9 Drawing Tables 8-23
8.3 Writing Text 8-26
8.3.1 Setup Procedure 8-26
8.4 Editing Objects 8-29
8.4.1 Introducing Edit Tools 8-29
8.4.2 Selection Method 8-30
8.4.3 Enlarging and Reducing the Size 8-31
8.4.4 Moving Objects 8-31
8.4.5 Duplicate 8-32
8.4.6 Changing Attributes 8-34
8.4.7 Grouping (Ungrouping) 8-35
8.4.8 Order 8-36
8.4.9 Aligning 8-37
8.4.10 Rotating Right or Left 8-38
8.4.11 Reversing X-Axis (Vertical)/Y-Axis (Horizontal) 8-39
8.4.12 Changing Coordinates 8-40
8.4.13 Protecting Objects That You do not Want to Edit 8-41
8.5 Changing Colors, Line Types and Patterns 8-42
8.5.1 Setting Colors 8-42
8.5.2 Setting Blinks 8-49

8.5.3 Setting Line Types 8-50
8.5.4 Setting Patterns 8-51
8.6 Editing a Part 8-52
8.6.1 Editing Parts 8-52
8.6.2 Creating Your Own Parts 8-59
8.6.3 Registering Frequently Used Parts as Your Favorites 8-63
8.7 Using a Screen Multiple Times 8-65
8.7.1 Setup Procedure 8-65
8.8 Editing a Picture on Another Screen 8-68
8.8.1 Placing Pictures Registered in the Package 8-68
8.8.2 Registering Pictures in the Package 8-70
8.9 Creating a Screen from a Template 8-72
8.9.1 Setting up Grids 8-72
8.9.2 Selecting a Screen from Template 8-75
8.10 Pasting an Image 8-78
8.10.1 Target Image 8-78
8.10.2 Pasting BMP/JPEG Procedure 8-79
8.11 Drawing a Detailed Picture 8-85
8.11.1 Drawing a Valve 8-85
8.11.2 Displaying a Character External to the Character Code 8-91
8.12 Settings Guide 8-97
8.12.1 Text Settings Guide 8-97
8.12.2 Package List Setup Guide 8-99
8.12.3 Preferences (Screen Edit Style) Setup Guide 8-101
8.12.4 Common (Mark Registration) Settings Guide 8-104
8.13 Restrictions 8-106
8.13.1 Restrictions for Drawing (Text) 8-106
8.13.2 Restrictions for Pasting BMP/JPEG 8-106
8.13.3 Package Registration Restrictions 8-107
8.13.4 Restrictions on Marks 8-107
8.13.5 Restrictions for Screen Display 8-107

Chapter 9 Displaying Pictures

9.1 Settings Menu 9-2
9.2 Changing a Picture with Bit ON/OFF 9-4
9.2.1 Introduction 9-4
9.2.2 Setup Procedure 9-5
9.3 Displaying Alternate Pictures 9-10
9.3.1 Introduction 9-10
9.3.2 Procedure 9-10
9.4 Moving a Picture 9-15

9.4.1 Introduction 9-15
9.4.2 Setup Procedure 9-15
9.5 Settings Guide 9-20
9.5.1 Common (Image Registration) Settings Guide 9-20
9.5.2 Picture Display Settings Guide 9-22
9.6 Restrictions 9-47
9.6.1 Restrictions for Picture Display (ON/OFF Display) 9-47
9.6.2 Restrictions for Picture Display (State Display) 9-52
9.6.3 Restrictions for Picture Display (Move Display) 9-53
9.6.4 Restrictions for Picture Display (CF Image Display) 9-55

Chapter 10 Switches

10.1 Settings Menu 10-2
10.2 Creating a Bit Switch 10-4
10.2.1 Introduction 10-4
10.2.2 Setup Procedure 10-5
10.3 Inverting a Bit ON/OFF 10-7
10.3.1 Introduction 10-7
10.3.2 Setup Procedure 10-8
10.4 Writing a Value 10-10
10.4.1 Introduction 10-10
10.4.2 Setup Procedure 10-11
10.5 Increasing/Decreasing a Value 10-13
10.5.1 Introduction 10-13
10.5.2 Setup Procedure 10-14
10.6 Conditionally ON Bit Switches (Comparison) 10-16
10.6.1 Introduction 10-16
10.6.2 Setup Procedure 10-17
10.7 Using Interlock to Prevent Malfunctions 10-19
10.7.1 Introduction 10-19
10.7.2 Setup Procedure 10-20
10.8 Creating a Delayed Operation Switch 10-22
10.8.1 Introduction 10-22
10.8.2 Setup Procedure 10-23
10.9 Setting a Delay Time for Switch OFF 10-25
10.9.1 Introduction 10-25
10.9.2 Setup Procedure 10-26
10.10 Confirming Before Turning a Switch ON (Double Touch) 10-28
10.10.1 Introduction 10-28
10.10.2 Setup Procedure 10-29
10.11 Creating a Color-Changing Switch 10-31
10.11.1 Introduction 10-31

10.11.2 Setup Procedure 10-32
10.12 Performing Multiple Functions with One Switch 10-34
10.12.1 Introduction 10-34
10.12.2 Setup Procedure 10-35
10.13 Creating a Radio Switch 10-38
10.13.1 Introduction 10-38
10.13.2 Setup Procedure 10-39
10.14 Switch Lamp Parts Settings Guide 10-42
10.14.1 Bit Switch 10-45
10.14.2 Word Switch 10-59
10.14.3 Change Screen Switch 10-63
10.14.4 Special Switch 10-64
10.14.5 Selector Switch 10-74
10.15 Restrictions for Switches 10-75
10.15.1 Restrictions on the Delay Feature 10-76
10.15.2 Restrictions on the Multifunction Feature 10-77
10.15.3 Group Function Limitations 10-77

Chapter 11 Changing and Saving Screens

11.1 Settings Menu 11-2
11.2 Changing Screens by Touch 11-4
11.2.1 Introduction 11-4
11.2.2 Setup Procedure 11-5
11.3 Choosing the Screen to Display when the GP Turns on 11-7
11.3.1 Introduction 11-7
11.3.2 Setup Procedure 11-8
11.4 Changing Screens from a Device/PLC 11-10
11.4.1 Introduction 11-10
11.4.2 Setup Procedure 11-11
11.5 Changing the Displayed Screen from both Touch and a Device/PLC 11-13
11.5.1 Introduction 11-13
11.5.2 Setup Procedure 11-14
11.6 Saving the Displayed Screen 11-18
11.6.1 Introduction 11-18
11.6.2 Setup Procedure 11-19
11.7 Changing the Displayed Screen by Hierarchical Structure 11-21
11.7.1 Introduction 11-21
11.7.2 Setup Procedure 11-22
11.8 Restrictions 11-25
11.8.1 Restrictions for Screen Change 11-25
11.8.2 Restrictions for Screen Capture 11-26

Chapter 12 Windows

12.1 Settings Menu 12-2
12.2 Creating Windows 12-4
12.2.1 Introduction 12-4
12.2.2 Setup Procedure 12-5
12.3 Displaying Windows 12-7
12.3.1 Introduction 12-7
12.3.2 Setup Procedure 12-8
12.4 Changing the Displayed Window 12-11
12.4.1 Introduction 12-11
12.4.2 Setup Procedure 12-12
12.5 Displaying the Same Window on All Screens 12-14
12.5.1 Introduction 12-14
12.5.2 Setup Procedure 12-15
12.6 Changing the Displayed Window on All Screens 12-17
12.6.1 Introduction 12-17
12.6.2 Setup Procedure 12-18
12.7 Window Part Settings Guide 12-21
12.7.1 Bit Action 12-22
12.7.2 Word Action 12-23
12.7.3 Activate Switch 12-26
12.8 Restrictions for Windows 12-29
12.8.1 Restrictions for Window Screens 12-29
12.8.2 Restrictions for Window Screens 12-30

Chapter 13 Using Lamps

13.1 Settings Menu 13-2
13.2 Turning the Lamp ON/OFF with the ON/OFF Bit 13-4
13.2.1 Introduction 13-4
13.2.2 Setup Procedure 13-5
13.3 Switching by Turning Multiple Bits ON/OFF (Up to 5 States) 13-8
13.3.1 Introduction 13-8
13.3.2 Setup Procedure 13-9
13.4 Switching by a Combination of Multiple Bits (Up to 16 States) 13-13
13.4.1 Introduction 13-13
13.4.2 Setup Procedure 13-14
13.5 Switching by the Word Address Bit Change (Bit Settings) 13-19
13.5.1 Introduction 13-19
13.5.2 Setup Procedure 13-20
13.6 Change When Word Address Value Changes 13-25
13.6.1 Introduction 13-25
13.6.2 Setup Procedure 13-26

13.7 Procedure for Creating a Lamp 13-31
13.8 Lamp Settings Guide 13-33
13.8.1 Common to All Parts 13-33
13.8.2 Lamp Feature 13-35
13.8.3 Color 13-38
13.8.4 Label 13-39

Chapter 14 Data Display and Data Input

14.1 Settings Menu 14-2
14.2 Displaying/Inputting Numeric Data 14-5
14.2.1 Introduction 14-5
14.2.2 Setup Procedure 14-6
14.3 Displaying/Inputting Text Data 14-8
14.3.1 Introduction 14-8
14.3.2 Setup Procedure 14-9
14.4 Displaying Numerical Data as an Alarm 14-12
14.4.1 Introduction 14-12
14.4.2 Setup Procedure 14-12
14.5 Color-coding and Displaying Multiple Ranges 14-16
14.5.1 Introduction 14-16
14.5.2 Setup Procedure 14-17
14.6 Displaying the Date and Time 14-22
14.6.1 Introduction 14-22
14.6.2 Setup Procedure 14-22
14.7 Preventing Operational Errors By Using Interlock 14-24
14.7.1 Introduction 14-24
14.7.2 Setup Procedure 14-25
14.8 Prevent Entering Data Outside the Allowed Range 14-28
14.8.1 Introduction 14-28
14.8.2 Setup Procedure 14-28
14.9 8 x16 Dots Sequential Input 14-31
14.9.1 Introduction 14-31
14.9.2 Setup Procedure 14-31
14.10 Changing Values by Adding/Subtracting 14-34
14.10.1 Introduction 14-34
14.10.2 Setup Procedure 14-34
14.11 Data Display Settings Guide 14-39
14.11.1 Numeric Display 14-41
14.11.2 Text Display 14-81
14.11.3 Date/Time Display 14-97
14.11.4 Statistical Data Display 14-100
14.11.5 Show Limit Value 14-105

14.12 Restrictions 14-107
14.12.1 Text Display Restrictions 14-107
14.12.2 Limitations of Time-Base Function 14-109
14.13 How Data Input Order Works 14-110
14.13.1 Set Input Order 14-110
14.13.2 Set Input Order by Group 14-111

Chapter 15 Keypad Input

15.1 Settings Menu 15-2
15.2 Popup Keypad Display 15-3
15.2.1 Introduction 15-3
15.2.2 Setup Procedure 15-3
15.3 Constant Keypad Display 15-6
15.3.1 Introduction 15-6
15.3.2 Setup Procedure 15-6
15.4 Customizing the Keypad Layout 15-9
15.4.1 Introduction 15-9
15.4.2 Setup Procedure 15-9
15.5 Setup Guide 15-21
15.5.1 Keypad Settings Guide 15-21
15.5.2 Common (Keypad Registration) Settings Guide 15-24
15.5.3 Key Part Settings Guide 15-28
15.6 Restrictions 15-38
15.6.1 Restrictions for Popup Keypad 15-38
15.6.2 Restrictions for Keypad Direct Placement 15-39
15.6.3 Restrictions for Keypad Customization 15-39
15.6.4 Restrictions for Clear Area 15-40
15.6.5 Restrictions for Japanese FEP 15-41

Chapter 16 Bar Code/USB Keyboard Inputs

16.1 Settings Menu 16-2
16.2 Connecting a Barcode/Two-dimensional Code Reader 16-4
16.2.1 Introduction 16-4
16.2.2 Setup Procedure 16-5
16.2.3 Barcode Inputs 16-16
16.3 Display USB Keyboard Inputs 16-19
16.3.1 Details 16-19
16.3.2 Setup Procedure 16-20
16.4 Settings Guide 16-24
16.4.1 [Input Equipment Settings] Settings Guide 16-24
16.5 Restrictions 16-30
16.5.1 Bar Code Restrictions 16-30

16.5.2 USB Keyboard Restrictions 16-31

Chapter 17 Displaying and Changing Text

17.1 Settings Menu 17-2
17.2 Changing and Displaying Messages (Text) 17-4
17.2.1 Introduction 17-4
17.2.2 Setup Procedure 17-5
17.3 Changing the Displayed Text 17-8
17.3.1 Introduction 17-8
17.3.2 Setup Procedure 17-9
17.4 Changing Languages (Multilanguage) 17-16
17.4.1 Introduction 17-16
17.4.2 Setup Procedure 17-17
17.5 Changing a Text's Language (Multilanguage) 17-25
17.5.1 Introduction 17-25
17.5.2 Setup Procedure 17-26
17.6 Importing/Exporting Registered Text Tables for Use in Different Projects 17-33
17.6.1 Introduction 17-33
17.6.2 Setup Procedure 17-34
17.6.3 Text Table File Format 17-38
17.7 Settings Guide 17-39
17.7.1 Message Display Settings Guide 17-39
17.7.2 Common (Text Registration) Settings Guide 17-52
17.7.3 Text Table Settings Guide 17-54
17.7.4 Switch/Lamp - Label (Enable Text Table) Settings Guide 17-59
17.7.5 Drawing Text (Using the Text Table) Settings Guide 17-61
17.7.6 Alarm Part - Item/Details (Text Table) Settings Guide 17-63
17.7.7 Alarm (Enable Text Table) Settings Guide 17-64
17.7.8 Placing Text When Using Text Tables 17-65
17.8 Restrictions 17-69
17.8.1 Restrictions on Message Display 17-69
17.8.2 Language Change (Multilanguage) Restrictions 17-69
17.8.3 Restrictions on Text Table Converter 17-71

Chapter 18 Graph Display

18.1 Settings Menu 18-2
18.2 Displaying the Current Value in a Bar/Circle/Tank Graph 18-4
18.2.1 Introduction 18-4
18.2.2 Procedure 18-5
18.3 Displaying Alarms in a Bar/Circle/Tank Graph 18-7
18.3.1 Introduction 18-7
18.3.2 Procedure 18-8

18.4 Using Line Charts 18-11
18.4.1 Introduction 18-11
18.4.2 Procedure 18-12
18.5 Using a Line Chart to View Historic Data 18-15
18.5.1 Introduction 18-15
18.5.2 Procedure 18-16
18.5.3 Operating Procedure 18-19
18.6 Displaying Multiple Addresses Concurrently (Block Display) 18-25
18.6.1 Introduction 18-25
18.6.2 Procedure 18-26
18.6.3 Displaying/Clearing a Data Block Display Graph 18-28
18.7 Settings Guide 18-30
18.7.1 Graph Part Settings Guide 18-30
18.7.2 Historical Trend Graph Settings Guide 18-46
18.7.3 Data Block Display Graph Settings Guide 18-68
18.8 Restrictions 18-84
18.8.1 Restrictions for Graphs 18-84
18.8.2 Restrictions for Historical Trend Graphs 18-84
18.8.3 Data Block Display Graph Restrictions 18-88

Chapter 19 Alarm

19.1 Settings Menu 19-2
19.2 Scrolling Alarm Messages 19-8
19.2.1 Introduction 19-8
19.2.2 Setup Procedure 19-12
19.3 Viewing Active Alarms in a List 19-15
19.3.1 Introduction 19-15
19.3.2 Setup Procedure 19-16
19.4 Acknowledging the Alarm History 19-21
19.4.1 Introduction 19-21
19.4.2 Setup Procedure 19-22
19.5 Working with Alarm History 19-32
19.5.1 Introduction 19-32
19.5.2 Setup Procedure 19-33
19.6 Displaying Help (Sub Display) 19-36
19.6.1 Introduction 19-36
19.6.2 Setup Procedure 19-37
19.7 Viewing Alarms by Line 19-50
19.7.1 Introduction 19-50
19.7.2 Setup Procedure 19-51
19.8 Storing Alarm Messages in the CF Card or USB Storage Device 19-56
19.8.1 Details 19-56

19.8.2 Setup Procedure 19-57
19.8.3 Structure 19-59
19.9 Read data when Alarms occur 19-64
19.9.1 Details 19-64
19.9.2 Setting Procedure 19-65
19.10 Settings Guide 19-72
19.10.1 Common (Alarm) Settings Guide 19-72
19.10.2 Alarm Parts Settings Guide 19-105
19.10.3 Text Alarm Part Settings Guide 19-144
19.11 Restrictions 19-160
19.11.1 Restrictions for Printing Alarm History 19-160
19.11.2 Restrictions for Sub Display/Details 19-161
19.11.3 Restrictions for Running External Operations from Multiple Display Units 19-163
19.11.4 Text Alarm Part Restrictions 19-165
19.12 Alarm Feature List 19-166

Chapter 20 Using Scripts (Programming without Parts)

20.1 Settings Menu 20-2
20.2 Conditional Operations 20-5
20.3 Copying Data in Blocks 20-12
20.4 Displaying an Alarm When an Error Occurs 20-17
20.5 Communicating with Unsupported Peripheral Devices 20-21
20.6 Procedure for Creating Scripts 20-39
20.6.1 Procedure for Creating D-Scripts/Global D-Scripts 20-39
20.6.2 Procedure for Creating Extended Scripts 20-41
20.6.3 Setting Up User-Defined Functions 20-42
20.7 Triggered Condition Setup 20-44
20.7.1 Continuous Action 20-44
20.7.2 Timer 20-44
20.7.3 Bit 20-45
20.7.4 Condition Expression 20-46
20.8 Settings Guide 20-51
20.8.1 D-Script/Common [Global D-Script] Settings Guide 20-51
20.8.2 User-Defined Functions Settings Guide 20-56
20.9 Restrictions 20-57
20.9.1 D-Script/Global D-Script Restrictions 20-57
20.9.2 Extended Script Restrictions 20-61
20.9.3 Restrictions on User-Defined Functions 20-63
20.9.4 Notes on Operation Results 20-64
20.9.5 Errors 20-65
20.10 Program Instructions/Conditional Expressions 20-66

20.10.1 Bit Operation 20-71
20.10.2 Draw 20-72
20.10.3 Memory Operation 20-76
20.10.4 SIO Port Operation 20-97
20.10.5 CF File Operation/USB File Operation 20-107
20.10.6 Printer Operation 20-133
20.10.7 Others 20-139
20.10.8 Conditional Expressions 20-144
20.10.9 Comparison 20-148
20.10.10 Operator 20-150
20.10.11 Text Operation 20-154
20.10.12 Operation Example 20-170

Chapter 21 Enhancing Security

21.1 Settings Menu 21-2
21.2 Creating Limited Access Screens 21-4
21.2.1 Setup Procedure 21-4
21.3 Limiting Screen Access by Authority 21-7
21.3.1 Setup Procedure 21-7
21.4 Disable All Touch Operations for the Timing 21-10
21.4.1 Detail 21-10
21.4.2 Procedure 21-11
21.5 Save Operation History 21-12
21.5.1 Detail 21-12
21.5.2 Procedure 21-13
21.6 Password/User ID Input Window 21-16
21.6.1 Introduction to "Level Mode" and "User ID Mode" 21-16
21.7 Settings Guide 21-19
21.7.1 Common (Security Settings) Settings Guide 21-19
21.7.2 Common Settings (Operation Log Settings) Guide 21-29
21.8 Restrictions 21-54
21.8.1 Restrictions on Passwords and IDs 21-54
21.8.2 Restrictions on the global interlock 21-56
21.8.3 Restrictions on the operation log 21-57

Chapter 22 Scheduling Operations

22.1 Settings Menu 22-2
22.2 Turning ON/OFF a Motor at the Designated Time 22-3
22.2.1 Setup Procedure 22-3
22.3 Changing the Temperature at the Designated Time 22-7
22.3.1 Setup Procedure 22-7
22.4 Common Time Schedule Settings Guide 22-11

22.4.1 Time Schedule Tab 22-11
22.4.2 [Time Schedule] Dialog Box Settings Guide 22-12
22.5 Restrictions 22-22

Chapter 23 Data Sampling

23.1 An Introduction to the Sampling Feature 23-2
23.1.1 What is the Sampling Feature? 23-2
23.2 Settings Menu 23-3
23.3 Sampling Data at Constant Intervals 23-5
23.3.1 Introduction 23-5
23.3.2 Setup Procedure 23-6
23.4 Sampling Data at Specific Periods 23-10
23.4.1 Introduction 23-10
23.4.2 Setup Procedure 23-11
23.5 Displaying Sampled Data 23-14
23.5.1 Introduction 23-14
23.5.2 Setup Procedure 23-15
23.6 Saving Sampling Data to CF Card/USB storage 23-20
23.6.1 Introduction 23-20
23.6.2 Setup Procedure 23-21
23.6.3 CF Card/USB Storage Save Operation 23-23
23.7 Display/Save Sampled Data in CSV with a Custom Format 23-30
23.7.1 Introduction 23-30
23.7.2 Setup Procedure 23-31
23.8 Settings Guide 23-37
23.8.1 Common (Sampling) Settings Guide 23-37
23.8.2 Sampling Data Display Guide 23-104
23.9 Sampling Structure 23-110
23.9.1 Summary 23-110
23.9.2 The Sampling Action 23-115
23.9.3 About Sampling Data Display 23-126
23.9.4 About Save in CF Card/USB Storage 23-131
23.9.5 Printing 23-134
23.9.6 Writing to the Internal Device 23-140
23.10 Restrictions 23-144
23.10.1 Data Sampling Restrictions 23-144
23.10.2 Display Restrictions 23-146
23.10.3 Restrictions on CF Card/USB Storage Save 23-147
23.10.4 Restrictions on Printing 23-149

Chapter 24 Setting Recipes

24.1 Recipes 24-2

24.1.1 What are Recipes? 24-2
24.1.2 Types of Recipes 24-3
24.2 Settings Menu 24-6
24.3 Creating CSV Data Recipes 24-10
24.3.1 Introduction 24-10
24.3.2 Setup Procedure 24-11
24.4 Transferring CSV Data Recipes Using Touch 24-18
24.4.1 Introduction 24-18
24.4.2 Setup Procedure 24-19
24.4.3 Transfer Process 24-24
24.5 Transferring CSV Data Recipes from the Device 24-26
24.5.1 Introduction 24-26
24.5.2 Setup Procedure 24-27
24.5.3 Transfer Process 24-30
24.6 Displaying/Editing CSV data on the Screen 24-31
24.6.1 Introduction 24-31
24.6.2 Setup Procedure 24-32
24.6.3 Operating Procedure 24-37
24.7 Creating Filing Data Recipes 24-43
24.7.1 Introduction 24-43
24.7.2 Setup Procedure 24-44
24.8 Transferring Recipes (Filing Data) Using Manual Transfer 24-47
24.8.1 Introduction 24-47
24.8.2 Setup Procedure 24-48
24.8.3 Transfer Process 24-52
24.9 Transferring Recipes (Filing Data) Using Automatic Transfer 24-53
24.9.1 Introduction 24-53
24.9.2 Setup Procedure 24-54
24.9.3 Transfer Process 24-56
24.10 Settings Guide 24-57
24.10.1 Common [Recipe] Setup Guide 24-57
24.10.2 [Special Data Display] Settings Guide 24-72
24.11 Mechanism of Transfer CSV Data Setup 24-91
24.11.1 How to Transfer CSV Data 24-91
24.11.2 Control Word Address 24-93
24.11.3 About Condition Name Search Feature 24-101
24.11.4 About Automatic Numbering 24-107
24.12 Mechanism of Filing Data Transfer 24-109
24.12.1 Filing Data Structure 24-109
24.12.2 Transferring Item Name and Block Number 24-112
24.12.3 Manual Transfer Via the Internal Device 24-114
24.13 Restrictions 24-117
24.13.1 Restrictions on Transferring CSV Data 24-117

24.13.2 Restrictions on Displaying/Editing/Printing CSV Data 24-121
24.13.3 Restrictions on Transferring Filing Data 24-124

Chapter 25 Using Audio Notifications

25.1 Settings Menu 25-2
25.2 Announcing Alarms with Sound 25-3
25.2.1 Introduction 25-3
25.2.2 Setup Procedure 25-4
25.3 Sounding the GP Buzzer from a Device/PLC 25-7
25.3.1 Introduction 25-7
25.3.2 Setup Procedure 25-8
25.4 Triggering a Buzzer Sound from the GP 25-10
25.4.1 Introduction 25-10
25.4.2 Setup Procedure 25-11
25.5 Settings Guide 25-13
25.5.1 Common (Sound) Settings Guide 25-13
25.6 Restrictions 25-16

Chapter 26 Recording and Playing Video

26.1 Settings Menu 26-2
26.2 Displaying Video Camera Output 26-8
26.2.1 Introduction 26-8
26.2.2 Setup Procedure 26-9
26.3 Recording Video 26-12
26.3.1 Introduction 26-12
26.3.2 Setup Procedure 26-13
26.4 Recording Video Before and After a Malfunction 26-20
26.4.1 Introduction 26-20
26.4.2 Setup Procedure 26-21
26.5 Playing Movies 26-25
26.5.1 Introduction 26-25
26.5.2 Setup Procedure 26-26
26.5.3 Converting Movie Files 26-41
26.6 Displaying Multiple Video Camera Outputs Simultaneously 26-50
26.6.1 Introduction 26-50
26.6.2 Setup Procedure 26-51
26.7 Displaying PC Screen 26-59
26.7.1 Introduction 26-59
26.7.2 Setup Procedure 26-60
26.8 Saving Video Output as Still Images 26-65
26.8.1 Introduction 26-65
26.8.2 Setup Procedure 26-66

26.9 Settings Guide 26-74
26.9.1 [Video/Movie] Settings Guide 26-74
26.9.2 [FTP Server] Settings Guide 26-94
26.9.3 Common [Movie] Settings Guide 26-96
26.9.4 [Movie Player] Settings Guide 26-98
26.9.5 Common [Video Module] Settings Guide 26-118
26.9.6 [Video Module] Settings Guide 26-127
26.9.7 Video Module Display Settings Guide 26-142
26.10 Restrictions 26-145
26.10.1 Restrictions on Movie Features 26-146
26.10.2 Restrictions on Video Module Features 26-149

Chapter 27 Using Logic Functions

27.1 Setup Menu 27-2
27.2 Switching Screens Using a Logic Program 27-4
27.2.1 Detail 27-4
27.3 Generating a Pulse at One Second Intervals 27-5
27.3.1 Detail 27-5
27.4 Entering the Timer Value on the Screen 27-6
27.4.1 Detail 27-6
27.5 Moving Data Between Connection Devices 27-7
27.5.1 Detail 27-7

Chapter 28 Logic Programming

28.1 Logic Programming Steps 28-2
28.2 Preparing to Create Logic Programs 28-3
28.2.1 Use Logic Feature 28-3
28.2.2 Logic Type 28-3
28.2.3 Logic Screen Logic Screen Part Name 28-5
28.2.4 Customizing the Toolbar 28-6
28.3 Registering Addresses 28-13
28.3.1 Usable Addresses 28-13
28.3.2 To use addresses with flexible names (Variable Format) 28-20
28.3.3 To use prepared addresses (Address Format) 28-32
28.3.4 Using External Addresses 28-37
28.3.5 Using Internal Addresses 28-39
28.3.6 System Variable 28-41
28.4 Inserting Rungs and Branches 28-42
28.4.1 Editing Rungs 28-42
28.4.2 Inserting and Deleting Branches 28-49
28.5 Insert Ladder Instructions 28-51
28.5.1 Editing Instructions 28-51

28.5.2 Subroutines and Labels 28-59
28.6 Allocating Addresses to Instructions 28-66
28.6.1 Operand Settings 28-66
28.7 Input Comments 28-72
28.7.1 Adding Titles 28-72
28.7.2 Adding Rung Comments 28-74
28.7.3 Symbol Variable Comments 28-76
28.7.4 [Comment List] Window 28-78
28.8 Logic Operations with Power ON 28-81
28.9 Transferring Logic Programs 28-84
28.10 Correcting Logic Program Errors 28-86
28.11 To monitor logic programs on the computer (Online Monitor) 28-88
28.11.1 Online Monitoring Procedures 28-89
28.11.2 Monitor/Change the Current Value of Symbol Variables 28-90
28.11.3 Adjusting the Setting Values for the PID Instruction 28-93
28.11.4 To edit logic programs that are being monitored (Online Edit) 28-95
28.12 To monitor logic programs on the GP (Logic Monitor) 28-99
28.12.1 Starting and Ending the Logic Monitor 28-100
28.12.2 Logic Monitor Functions 28-102
28.13 Convenient features to create/edit logic 28-109
28.13.1 Replacing Parts in Instructions and Instructions in Parts 28-109
28.13.2 Checking the Size for Creating Programs 28-123
28.13.3 Logic To adjust Scan Time 28-128
28.13.4 To enhance security 28-138
28.13.5 Using Reference Features to Search Logic Programs 28-140
28.13.6 Using Previously Created Logic Programs 28-144
28.13.7 To delete unused symbol variables at once 28-152
28.14 Settings Guide 28-154
28.14.1 [Logic Programs] Setting Guide 28-154
28.14.2 [Work Space] Settings Guide 28-155
28.15 Restrictions 28-161
28.15.1 Delay of Scan Time 28-161
28.15.2 Restriction of Online Monitor 28-163
28.15.3 Restriction of Logic Monitor 28-164
28.15.4 Restriction of Logic Action when the power is ON 28-164

Chapter 29 Ladder Instructions

29.1 Instructions 29-2
29.2 Instruction Notation List 29-6
29.2.1 Basic Instructions 29-6
29.2.2 Timer Instruction 29-8
29.2.3 Counter Instruction 29-8

29.2.4 R/W Instructions 29-10
29.2.5 Arithmetic Operation 29-11
29.2.6 Time Operation 29-13
29.2.7 Logical Operation 29-14
29.2.8 Transfer Instructions 29-16
29.2.9 Shift Instructions 29-17
29.2.10 Rotation Instructions 29-19
29.2.11 Function Operations 29-21
29.2.12 Trigonometric Function 29-23
29.2.13 Other Functions 29-25
29.2.14 Arithmetic Compare 29-26
29.2.15 Time Compare 29-27
29.2.16 Date Compare 29-28
29.2.17 Data Conversion Instructions 29-29
29.2.18 Type Conversion Instructions 29-31
29.2.19 I/O Driver 29-33
29.3 About Addresses You can Set up as Operands 29-34
29.3.1 Connection Device Address 29-34
29.3.2 Symbol 29-34
29.3.3 LS Address 29-35
29.3.4 USR area 29-36
29.3.5 System Variable 29-37
29.3.6 Variable 29-38
29.3.7 Logic Device when using the Address Format 29-41
29.4 Number of Steps Per Instruction 29-42
29.5 Instruction Descriptions 29-43
29.5.1 Bit Instructions 29-43
29.5.2 Pulse Instruction 29-57
29.5.3 Program Control 29-61
29.5.4 Timer Instruction 29-81
29.5.5 Counter Instruction 29-94
29.5.6 R/W Instructions 29-101
29.5.7 Operation (Arithmetic) 29-110
29.5.8 Operation (Time) 29-160
29.5.9 Operation (Logical) 29-170
29.5.10 Operation (Transfer) 29-201
29.5.11 Calculation Instruction (Shift Instruction) 29-232
29.5.12 Operation (Rotation Instruction) 29-270
29.5.13 Function Instruction 29-310
29.5.14 Function Instruction 29-354
29.5.15 Compare Instruction (Arithmetic) 29-405
29.5.16 Compare (Time) 29-435
29.5.17 Compare (Date) 29-459

29.5.18 Convert (Data) 29-483
29.5.19 Convert Type 29-519
29.5.20 I/O Driver Instructions 29-573

Chapter 30 Controlling External I/O

30.1 Controlling External I/O 30-2
30.1.1 Summary 30-2
30.1.2 Mapping Addresses (variables) to I/O Terminals 30-3
30.2 Settings Guide 30-8
30.2.1 I/O Screen Settings Guide 30-8
30.3 Controlling GP External I/O 30-9
30.3.1 Detail 30-9
30.3.2 Setup Procedure 30-9
30.3.3 [I/O Driver Settings] Setting Guide 30-12
30.4 Using FlexNetwork External I/O 30-13
30.4.1 Detail 30-13
30.4.2 Procedure 30-15
30.4.3 I/O Terminal Operations 30-18
30.4.4 [I/O Driver] Settings Guide 30-19
30.5 Controlling External I/O in LT 30-24
30.5.1 Summary 30-24
30.5.2 Mapping I/O (Common) 30-26
30.5.3 Interface Specification 30-46
30.5.4 Standard Input 30-49
30.5.5 Standard Output 30-52
30.5.6 High Speed Counter (Common) 30-54
30.5.7 High Speed Counter (Single-phase Settings) 30-56
30.5.8 High speed counter (2-phase settings) 30-81
30.5.9 PWM Output 30-88
30.5.10 Normal Pulse Output 30-97
30.5.11 Acceleration/Deceleration Pulse Output 30-105
30.5.12 Pulse Catch 30-121
30.5.13 Error information 30-123
30.5.14 Restrictions 30-126
30.6 Controlling I/O in LT and EX Modules 30-127
30.6.1 Detail 30-127
30.6.2 Setup Procedure 30-129
30.6.3 I/O Driver's [External Driver] Settings Guide 30-131
30.6.4 Error information 30-139
30.6.5 Restrictions 30-145
30.7 Controlling External I/O by Using HTB 30-146
30.7.1 Summary 30-146

30.7.2 Setting Procedure 30-148
30.7.3 Allocating I/O (Common) 30-152
30.7.4 Standard I/O 30-155
30.7.5 Expanding I/O Using EX Module 30-161
30.7.6 Using I/O Driver Instructions 30-180
30.7.7 [I/O Driver] Settings Guide 30-188
30.7.8 Error information 30-205
30.7.9 Restrictions 30-210
30.7.10 List of HTB Objects 30-211

Chapter 31 Simulation

31.1 Settings Menu 31-2
31.2 Checking the Display operation on the PC. 31-3
31.2.1 Details 31-3
31.2.2 Procedure 31-4
31.3 Checking the operation of the I/O driver on the PC 31-8
31.3.1 Details 31-8
31.3.2 Procedure 31-9
31.4 Settings Guide 31-14
31.4.1 Setting Guide for [GP-Pro EX Simulation] 31-14
31.4.2 [Address View] Settings Guide 31-18
31.4.3 [I/O View] Settings Guide 31-21
31.5 Restrictions 31-23

Chapter 32 Transferring Projects and Data

32.1 Settings Menu 32-2
32.2 Transferring Project Files via USB Cable Transfer 32-5
32.2.1 Introduction 32-5
32.2.2 Transfer Process 32-6
32.3 Transferring Project Files via Ethernet (LAN) 32-12
32.3.1 Introduction 32-12
32.3.2 Transfer Process 32-13
32.4 Comparing Project Changes Prior to Transfer 32-25
32.4.1 Introduction 32-25
32.4.2 Comparison Procedure 32-26
32.5 Transferring Data Only to a CF Card 32-28
32.5.1 Introduction 32-28
32.5.2 Transfer Process 32-29
32.6 Transferring with Passwords 32-31
32.6.1 Introduction 32-31
32.6.2 Setup Procedure 32-32
32.6.3 Remove/Change Transfer Password 32-34

32.7 Transferring project files using a CF Card or USB storage 32-36
32.7.1 Introduction 32-36
32.7.2 Transfer Process 32-37
32.8 Updating Remote Screen Data via Modem 32-48
32.8.1 Introduction 32-48
32.8.2 Transfer Process 32-49
32.9 Checking Errors 32-53
32.9.1 Introduction 32-53
32.9.2 Setup Procedure 32-54
32.10 Setting Up Transfer Tool 32-56
32.10.1 [Transfer Settings] Settings Guide 32-59
32.10.2 [Modem] Settings Guide 32-65
32.10.3 How Sending Data Works 32-66
32.10.4 How Receive Works 32-67
32.10.5 Installing the Transfer Tool 32-68
32.11 Restrictions 32-70
32.11.1 Transfer Restrictions 32-70
32.11.2 Restrictions for Transfer Using Ethernet 32-70
32.11.3 Restrictions on Transfer Using a COM Port 32-71
32.11.4 Restrictions on CF Card Connection 32-71
32.11.5 Restrictions on Modem Transfer 32-71
32.11.6 Restrictions on Memory Loader 32-72

Chapter 33 Print

33.1 Settings Menu 33-2
33.2 Printing the Project Settings 33-4
33.2.1 Detail 33-4
33.2.2 Setup Procedure 33-5
33.2.3 Print Layout 33-8
33.3 Printing GP data 33-9
33.3.1 Details 33-9
33.3.2 Printer Setup Procedure 33-14
33.4 Printing the Current Screen 33-20
33.4.1 Details 33-20
33.4.2 Operation Method 33-21
33.4.3 Setup Procedure 33-23
33.5 Cancel Printing 33-30
33.5.1 Details 33-30
33.5.2 How to Cancel Printing 33-31
33.5.3 Setup Procedure 33-33
33.6 Settings Guide 33-40
33.6.1 Print Settings Guide 33-40

33.6.2 System Settings [Printer] Settings Guide 33-55
33.7 Restrictions 33-60
33.7.1 Restrictions for Printing from the GP 33-60
33.7.2 Restrictions of GP Remote Printer Server 33-62

Chapter 34 Adjusting the Time and Screen Saver

34.1 Settings Menu 34-2
34.2 Adjusting the Time 34-4
34.2.1 Detail 34-4
34.2.2 Setup Procedure 34-5
34.3 Using the Screen Saver 34-8
34.3.1 Turning off the Screen When Not in Use 34-8
34.3.2 Turning OFF the Screen from a Device/PLC 34-10
34.4 Restrictions 34-12
34.4.1 Restrictions for Adjusting the Clock 34-12
34.4.2 Restrictions for Turning OFF the Screen 34-12

Chapter 35 Display or Operate a Computer from the GP

35.1 Action Environment 35-2
35.1.1 Summary 35-2
35.1.2 VNC Server 35-2
35.2 Settings Menu 35-3
35.3 Display/Operate the computer screen on the GP 35-4
35.3.1 Introduction 35-4
35.3.2 Procedure 35-6
35.3.3 Operating Procedure 35-22
35.4 Settings Guide 35-23
35.4.1 Remote PC Access Window Display Settings Guide 35-23
35.4.2 System Settings [Input Equipment Settings] - [Remote PC Access Input] Settings Guide 35-29
35.4.3 Remote PC Access Window Display Setting Guide 35-30
35.5 Restrictions 35-31
35.5.1 Remote PC Access Window Display Unit Restrictions 35-31
35.5.2 Remote PC Access Window Restrictions 35-32
35.5.3 Server Computer Connection Restrictions 35-33
35.5.4 RPA Popup Keypad Restrictions 35-34
35.5.5 USB Keyboard for RPA Restrictions 35-34
35.5.6 USB mouse for RPA Restrictions 35-35

Chapter 36 Use the Computer to Display and Operate GP Data

36.1 What are GP-Viewer EX and Web Server? 36-2

36.1.1 GP-Viewer EX 36-3
36.1.2 Web Server 36-5
36.2 GP-Viewer EX Operation Environment and Development Flow 36-6
36.2.1 Target models 36-6
36.2.2 Development Process 36-13
36.3 Web Server Operation Environment and Development Flow 36-14
36.3.1 Target models 36-14
36.3.2 Supported Features 36-16
36.3.3 Development Process 36-17
36.4 Settings Menu 36-18
36.4.1 Setting Up GP-Viewer EX 36-18
36.4.2 Web Server Settings 36-19
36.5 Using GP-Viewer EX to Display and Operate with Data from Display Units 36-22
36.5.1 Introduction 36-22
36.5.2 Procedure 36-23
36.6 Restricting Access to GP-Viewer EX 36-30
36.6.1 Introduction 36-30
36.6.2 Procedure 36-31
36.7 Displaying Addresses on the Web Server and Changing Address Values 36-35
36.7.1 Introduction 36-35
36.7.2 Procedure 36-36
36.7.3 Operating Procedure 36-42
36.8 Displaying Alarm information on the Web Server 36-48
36.8.1 Introduction 36-48
36.8.2 Operating Procedure 36-49
36.9 Displaying Alarm Information as RSS Data on the Web Server 36-50
36.9.1 Introduction 36-50
36.9.2 Setup Procedure 36-51
36.10 Using the Web Server to Transfer Files to the CF Card or USB Storage 36-53
36.10.1 Introduction 36-53
36.10.2 Setup Procedure 36-54
36.10.3 Operating Procedure 36-58
36.11 Restricting Access to the Web Server 36-60
36.11.1 Introduction 36-60
36.11.2 Setup Procedure 36-61
36.11.3 Operating Procedure 36-66
36.12 Settings Guide 36-67
36.12.1 Standard Template HTML Setting Guide 36-67
36.12.2 System Settings [Display Unit] - [Remote Viewer] Settings Guide 36-74
36.13 Using Synchronous and Asynchronous Modes with GP-Viewer EX 36-78
36.13.1 Screen Mode 36-78
36.13.2 On GP-Viewer EX Startup 36-78
36.13.3 When Changing Screens 36-79

36.13.4 When Running Screen Operations 36-84
36.14 Restrictions 36-86
36.14.1 GP-Viewer EX Restrictions 36-86
36.14.2 Web Server Restrictions 36-87

Chapter 37 WinGP (GP Operations on IPC Series)

37.1 WinGP Overview 37-2
37.1.1 What is WinGP? 37-2
37.1.2 Full Configuration 37-3
37.1.3 Differences between IPC and GP 37-4
37.2 Operation Environment 37-6
37.2.1 Supporting Models 37-6
37.2.2 Supported Protocols 37-7
37.2.3 Model Environment 37-9
37.2.4 Application Development Environment 37-9
37.3 Development Process 37-10
37.3.1 Development Process 37-10
37.3.2 Setup Procedure 37-11
37.4 Settings Menu 37-33
37.5 Retrieve WinGP information or Operate WinGP from user application 37-34
37.5.1 Introduction 37-34
37.5.2 Procedure 37-35
37.5.3 Samples of Read/Write data (device access API) 37-38
37.5.4 Sample to retrieve the WinGP status and change the settings (Handling API) 37-56
37.6 Running the Application from WinGP 37-71
37.6.1 Introduction 37-71
37.6.2 Switch Startup Settings 37-72
37.6.3 D-Script startup settings 37-75
37.7 Keep History of Error Messages Displayed in WinGP 37-77
37.7.1 Detail 37-77
37.7.2 Setup Procedure 37-78
37.8 API Function List 37-79
37.8.1 Handling API 37-79
37.8.2 Device Access API 37-89
37.9 Settings Guide 37-156
37.9.1 System Settings [Display Unit Settings] [IPC Settings] Settings Guide 37-156
37.9.2 Window Frame Settings Guide 37-164
37.9.3 ProjectCopy (Copy Tool) Settings Guide 37-166
37.10 Restrictions 37-167
37.10.1 Restrictions On Install 37-169
37.10.2 Restrictions on Window Frames 37-171
37.10.3 Restrictions on using Windows XP Embedded 37-173

37.10.4 Restriction on AP Communication 37-173
37.10.5 Transfer Restrictions 37-174
37.10.6 Restrictions on error logs 37-174

Appendix

A.1 Communication A-2
A.1.1 Settings Menu A-2
A.1.2 Communicating with a Device/PLC Using the Direct Access Method A-4
A.1.2.1 Details A-4
A.1.3 Using the Memory Link Method with Unsupported Devices/PLCs A-7
A.1.3.1 Details A-7
A.1.4 LS Area (Direct Access Method) A-9
A.1.4.1 LS Area List A-9
A.1.4.2 System Data Area A-11
A.1.4.3 Special Relay A-23
A.1.4.4 Device/PLC System Data Area Allocation Procedure A-26
A.1.5 System Area (Memory Link Area) A-29
A.1.5.1 System Area List A-29
A.1.5.2 System Data Area A-31
A.1.5.3 Special Relay A-39
A.1.6 Restrictions A-42
A.1.6.1 GP Internal Device Restrictions A-42
A.1.6.2 Special Relay Restrictions A-42
A.1.6.3 Restrictions when Using Direct Access and Memory Link Together A-43
A.1.6.4 Restrictions when Using the USR Area A-46
A.2 Monitoring the Value of Device Addresses (Device monitor) A-47
A.2.1 Detail A-47
A.2.2 Setup Procedure A-50
A.2.3 Operating Procedure A-51
A.2.4 Restrictions A-60
A.3 Executing Multiple Actions (Programs) with a Switch Operation A-61
A.3.1 Trigger Action Parts Settings Guide A-61
A.3.2 Triggered Action Restrictions A-78
A.4 Drawing Using Other Languages A-79
A.4.1 Details A-79
A.4.2 Setup Procedure A-80
A.5 Transferring Data Between a CF Card and a USB Memory Device A-90
A.5.1 Detail A-90
A.5.2 Setup Procedure A-91
A.5.3 Operating Procedure A-93
A.6 System Variables A-96
A.6.1 Logic System Variables (#L System Variables) A-97
A.6.2 HMI system variables (#H system variables) A-116

Chapter Using ST3000 Series

1. Supported Models 1-2

2. Pro-face® Software Compatibility 1-2
3. Features Supported 1-3
4. Differences with the GP 1-6