



TABLE OF CONTENTS

Introduction

BRX Introduction.....	ii
Conventions Used.....	iii
BRX Overview.....	iv
BRX Platform.....	v

Chapter 1: General Installation and Wiring Guidelines

Safety Guidelines.....	1-2
Introduction to the BRX Mechanical Design	1-5
Dimensions and Installation.....	1-6
Mounting Guidelines	1-10
Wiring Guidelines	1-15
I/O Module Wiring Options.....	1-24
System Wiring Strategies	1-26

Chapter 2: BX ME Wiring

BX ME Micro PLC Unit (MPU) Overview	2-2
BX-DM1E-M Wiring	2-4
BX-DM1E-M-D Wiring	2-6

Chapter 3: BX 10/10E Wiring

BX 10/10E Micro PLC Unit (MPU) Overview	3-2
BX 10 Micro PLC Units (MPUs)	3-8
BX 10E Micro PLC Units (MPUs).....	3-31

Chapter 4: BX 18/18E Wiring

BX 18/18E Micro PLC Units (MPUs) Overview	4-2
BX 18 Micro PLC Units (MPUs)	4-9
BX 18E Micro PLC Units (MPUs).....	4-50

Chapter 5: BX 36/36E Wiring

BX 36/36E Micro PLC Units (MPUs) Overview	5-2
BX 36 Micro PLC Units (MPUs)	5-9
BX 36E Micro PLC Units (MPUs).....	5-50

Table of Contents

Chapter 6: BRX Pluggable Option Module (POM)

Overview.....	6-2
BX-P-SER2-TERM	6-4
BX-P-SER2-TERMF C	6-5
BX-P-SER422-TERM	6-6
BX-P-SER4-TERM	6-7
BX-P-SER2-RJ12	6-8
BX-P-ECOMLT	6-9
BX-P-ECOMEX	6-10
BX-P-USB-B	6-11

Chapter 7: BRX Digital I/O Expansion Modules

Overview.....	7-2
Module Types.....	7-3
Wiring Termination Options.....	7-5
General Specifications	7-8
Module Installation	7-8
BX-xxNF3 Sinking/Sourcing 3–5 VDC Input	7-9
BX-xxND3 Sinking/Sourcing 12–24 VDC Input.....	7-10
BX-xxNB 12–24 VAC Input	7-13
BX-xxNA 120–240 VAC Input	7-15
BX-08SIM Simulator Input	7-17
BX-xxTD1 Sinking 12–24 VDC Output	7-18
BX-xxTD2 Sourcing 12–24 VDC Output	7-21
BX-16TF2 Sourcing 3–5 VDC Output	7-24
BX-xxTR Relay Output	7-25
BX-xxTRZ Relay Output	7-27
BX-05TRS Relay Output	7-28
BX-05TRS-1 Relay Output	7-29
BX-xxTA 120–240 VAC Output	7-30
BX-08CD3R Combination DC Input/Relay Output.....	7-32
BX-xxCD3D1 Combination DC Input/Sinking DC Output.....	7-34
BX-xxCD3D2 Combination DC Input/Sourcing DC Output.....	7-37
BX-16CF3F2 Combination DC Input/DC Sourcing Output.....	7-40

Chapter 8: BRX Analog I/O Expansion Modules

Overview.....	8-2
Module Types.....	8-2
Wiring Termination Options.....	8-5
General Specifications	8-8
Dimensional Information.....	8-9

Module Installation	8-9
Module Configuration.....	8-10
Analog Tips and Troubleshooting	8-11
BX-04ADM-1 Analog Current Sinking Input	8-18
BX-xxAD-1 Analog Current Sinking Input	8-23
BX-xxAD-2B Analog Voltage Input	8-30
BX-xxAD-3 Universal Analog Input	8-37
BX-xxTHM Thermocouple Input	8-41
BX-06RTD Resistance Temperature Detector Input	8-47
BX-08NTC Thermistor Input	8-53
BX-xxUT Universal Temperature Input	8-58
BX-xxDA-1 Analog Current Source Output	8-64
BX-xxDA-2B Analog Voltage Output	8-69
BX-xxDA-3 Universal Analog Output	8-74
BX-xADxDA-1 Combination Analog Current Input/Output	8-77
BX-xADxDA-2B Combination Analog Voltage Input/Output	8-81
BX-xADxDA-3 Universal Combination Analog Input/Output	8-85
BX-4RTD4DA-1 Combination RTD Input/Current Output.....	8-91
BX-4THM4DA-1 Combination Thermocouple Input/Current Output.....	8-96
BX-4UT4DA-3 Universal Temperature Input/Analog Output	8-101
BX-4UT4TD1 Universal Temperature Input/ DC Sinking Output	8-109
BX-4UT4TD2 Universal Temperature Input/ DC Sourcing Output	8-116
BX-4UT4TR Universal Temperature Input/ Relay Output	8-123

Chapter 9: BRX Motion Control, Communications & Specialty Modules

Overview.....	9-2
Module Types.....	9-2
Wiring Termination Options.....	9-4
General Specifications.....	9-6
Dimensional Information.....	9-6
Module Installation	9-7
Module Configuration.....	9-8
BX-HSIO1 and BX-HSIO2 High Speed Input/Output Modules	9-9
BX-HSIO4 High Speed Input/Output Module.....	9-11
BX-HSIOx High Speed I/O Modules Setup.....	9-16
BX-SERIO Serial Communications Module	9-17
BX-SERIO-2 Serial Communications Module	9-20
BX-SERIO-4 Serial Communications Module	9-23
BX-APAD Active Filling Module	9-26

Chapter 10: BRX Do-more! CPU Specifications

The BRX Platform	10-2
Do-more! Designer Software	10-3
BRX Do-more! CPU Common Specifications.....	10-3
Battery Replacement.....	10-10
microSD Slot	10-11
Customizing the Logo Window	10-12
Replacing Access Covers.....	10-13
RS-232/485 Port Specifications.....	10-14
Ethernet Port Specifications.....	10-16
POM Slot.....	10-16

Chapter 11: BRX Do-more! Motion Control and High-speed I/O

Overview.....	11-2
BRX Wiring Examples: High-Speed Inputs	11-5
BRX Wiring Examples: High-speed Outputs	11-10
Available High-Speed Input and Output Features.....	11-18
Access Setup High Speed I/O page	11-19
BRX High-Speed Examples	11-50
BRX High-speed Instructions	11-69

Chapter 12: BRX Do-more! Serial Communications

Overview.....	12-2
Troubleshooting Serial Communications	12-4
Communications Design.....	12-5
USB Communications	12-9
Serial Communications	12-9
General Serial Specifications	12-10
Serial Port Setup and Programming.....	12-17
Serial Protocols	12-20

Chapter 13: BRX Do-more! Ethernet Communications

Overview.....	13-2
Troubleshooting Ethernet Communications.....	13-6
Communications Design.....	13-8
Ethernet	13-13
Ethernet Protocols	13-23

Chapter 14: BRX Remote I/O: BX-DMIO, BX-EBC100 & GS-EDRV100

What it is.....	14-2
BX-DMIO & BX-EBC100 I/O Controllers	14-3
AC Power Wiring (BX-DMIO-M & BX-EBC100-M)	14-6

DC Power Wiring (BX-DMIO-M-D & BX-EBC100-M-D).....	14-7
Ethernet Communications	14-8
DIP Switch Specifications	14-8
Status Indicators.....	14-9
Supported Modules.....	14-10
Configuration	14-11
GS-EDRV100	14-21

Chapter 15: BX-MBIO Modbus I/O Controller

Overview.....	15-2
BX-MBIO I/O Controllers	15-3
Configuration	15-8
DIP Switch Specifications	15-8
Status Indicators.....	15-9
Modbus Protocol Function Codes Supported by BX-MBIO.....	15-10
Modbus Protocol Exception Responses	15-13
Modbus RTU, Serial Communications.....	15-15
Modbus TCP, Ethernet Communications	15-20
BX-MBIO Configuration.....	15-20
Troubleshooting with Modbus Poll	15-34
Additional BX-EBC100 and BX-MBIO Modbus Mapping Information.....	15-45

Appendix A: BRX Do-more! Maintenance and Troubleshooting

Hardware Maintenance	A-2
Diagnostics	A-3
CPU Indicators.....	A-5
PWR Indicator	A-6
RUN Indicator	A-7
ERR Indicator.....	A-7
Communications Problems.....	A-7
I/O Troubleshooting	A-8
Noise Troubleshooting	A-10

Appendix B: EU Directives (CE)

European Union (EU) Directives.....	B-2
Basic EMC Installation Guidelines.....	B-5

Appendix C: BRX MPU Power Budgeting

BRX MPU Power Budget.....	C-2
---------------------------	-----

Appendix D: Error Codes and System Locations

Do-more! Designer Errors and System Locations	D-2
---	-----

Table of Contents

Appendix E: NetEdit—Ethernet Setup Utility for HOST Automation Products

Basic Ethernet wiring and setup.....	E-2
NetEdit 3 Software	E-4

Appendix F: Tips & Tricks

Tips & Tricks	F-2
---------------------	-----

Appendix G: Online Resources

Online Resources.....	G-2
-----------------------	-----