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

Chapter 6: BRX Pluggable Option Module (POM)

Overview....6-2
BX-P-SER2-TERM....6-4
BX-P-SER2-TERMFC....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 13-21

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

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