Firmware Compatibility Rules

Modicon M580, Modicon Momentum, Modicon MC80, and Modicon X80 I/O Modules

Schneider Electric

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Safety Information

Important Information

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a "Danger" or "Warning" safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result** in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

Please Note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

Before You Begin

Do not use this product on machinery lacking effective point-of-operation guarding. Lack of effective point-of-operation guarding on a machine can result in serious injury to the operator of that machine.

> ## ⚠ WARNING
>
> **UNGUARDED EQUIPMENT**
>
> - Do not use this software and related automation equipment on equipment which does not have point-of-operation protection.
> - Do not reach into machinery during operation.
>
> **Failure to follow these instructions can result in death, serious injury, or equipment damage.**

This automation equipment and related software is used to control a variety of industrial processes. The type or model of automation equipment suitable for each application will vary depending on factors such as the control function required, degree of protection required, production methods, unusual conditions, government regulations, etc. In some applications, more than one processor may be required, as when backup redundancy is needed.

Only you, the user, machine builder or system integrator can be aware of all the conditions and factors present during setup, operation, and maintenance of the machine and, therefore, can determine the automation equipment and the related safeties and interlocks which can be properly used. When selecting automation and control equipment and related software for a particular application, you should refer to the applicable local and national standards and regulations. The National Safety Council's Accident Prevention Manual (nationally recognized in the United States of America) also provides much useful information.

In some applications, such as packaging machinery, additional operator protection such as point-of-operation guarding must be provided. This is necessary if the operator's hands and other parts of the body are free to enter the pinch points or other hazardous areas and

serious injury can occur. Software products alone cannot protect an operator from injury. For this reason the software cannot be substituted for or take the place of point-of-operation protection.

Ensure that appropriate safeties and mechanical/electrical interlocks related to point-of-operation protection have been installed and are operational before placing the equipment into service. All interlocks and safeties related to point-of-operation protection must be coordinated with the related automation equipment and software programming.

> **NOTE:** Coordination of safeties and mechanical/electrical interlocks for point-of-operation protection is outside the scope of the Function Block Library, System User Guide, or other implementation referenced in this documentation.

Start-up and Test

Before using electrical control and automation equipment for regular operation after installation, the system should be given a start-up test by qualified personnel to verify correct operation of the equipment. It is important that arrangements for such a check are made and that enough time is allowed to perform complete and satisfactory testing.

⚠ **WARNING**

EQUIPMENT OPERATION HAZARD

- Verify that all installation and set up procedures have been completed.
- Before operational tests are performed, remove all blocks or other temporary holding means used for shipment from all component devices.
- Remove tools, meters, and debris from equipment.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Follow all start-up tests recommended in the equipment documentation. Store all equipment documentation for future references.

Software testing must be done in both simulated and real environments.

Verify that the completed system is free from all short circuits and temporary grounds that are not installed according to local regulations (according to the National Electrical Code in the U.S.A, for instance). If high-potential voltage testing is necessary, follow recommendations in equipment documentation to prevent accidental equipment damage.

Before energizing equipment:

- Remove tools, meters, and debris from equipment.
- Close the equipment enclosure door.

- Remove all temporary grounds from incoming power lines.
- Perform all start-up tests recommended by the manufacturer.

Operation and Adjustments

The following precautions are from the NEMA Standards Publication ICS 7.1-1995:

(In case of divergence or contradiction between any translation and the English original, the original text in the English language will prevail.)

- Regardless of the care exercised in the design and manufacture of equipment or in the selection and ratings of components, there are hazards that can be encountered if such equipment is improperly operated.
- It is sometimes possible to misadjust the equipment and thus produce unsatisfactory or unsafe operation. Always use the manufacturer's instructions as a guide for functional adjustments. Personnel who have access to these adjustments should be familiar with the equipment manufacturer's instructions and the machinery used with the electrical equipment.
- Only those operational adjustments required by the operator should be accessible to the operator. Access to other controls should be restricted to prevent unauthorized changes in operating characteristics.

About the Book

Document Scope

This document addresses the firmware compatibility, exceptions, and guidelines for Modicon modules.

Validity Note

This documentation is valid for Unity Loader V12.0 and any subsequent supporting version (s), and for the product versions (PV) and software versions (SV) of products listed below.

For product compliance and environmental information (RoHS, REACH, PEP, EOLI, etc.), go to www.se.com/ww/en/work/support/green-premium/.

Available Languages of this Document

This document is available in these languages:

- Chinese (EIO0000004941)
- English (EIO0000002634)
- French (EIO0000004937)
- German (EIO0000004938)
- Italian (EIO0000004939)
- Spanish (EIO0000004940)

Product Related Information

⚡⚠ **DANGER**
HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH
• Disconnect all power from all equipment including connected devices prior to removing any covers or doors, or installing or removing any accessories, hardware, cables, or wires except under the specific conditions specified in the appropriate hardware guide for this equipment.
• Always use a properly rated voltage sensing device to confirm the power is off where and when indicated.
• Replace and secure all covers, accessories, hardware, cables, and wires and confirm that a proper ground connection exists before applying power to the unit.
• Use only the specified voltage when operating this equipment and any associated products.
Failure to follow these instructions will result in death or serious injury.

⚠WARNING

LOSS OF CONTROL

- Perform a Failure Mode and Effects Analysis (FMEA), or equivalent risk analysis, of your application, and apply preventive and detective controls before implementation.
- Provide a fallback state for undesired control events or sequences.
- Provide separate or redundant control paths wherever required.
- Supply appropriate parameters, particularly for limits.
- Review the implications of transmission delays and take actions to mitigate them.
- Review the implications of communication link interruptions and take actions to mitigate them.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and error conditions) according to your risk assessment, and applicable codes and regulations.
- Apply local accident prevention and safety regulations and guidelines.[1]
- Test each implementation of a system for proper operation before placing it into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

[1] For additional information, refer to NEMA ICS 1.1 (latest edition), *Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control* and to NEMA ICS 7.1 (latest edition), *Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems* or their equivalent governing your particular location.

⚠WARNING

UNINTENDED EQUIPMENT OPERATION

- Only use software approved by Schneider Electric for use with this equipment.
- Update your application program every time you change the physical hardware configuration.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

The examples in this manual are given for information only.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Adapt examples that are given in this manual to the specific functions and requirements of your industrial application before you implement them.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Terminology Derived from Standards

The technical terms, terminology, symbols and the corresponding descriptions in the information contained herein, or that appear in or on the products themselves, are generally derived from the terms or definitions of international standards.

In the area of functional safety systems, drives and general automation, this may include, but is not limited to, terms such as *safety*, *safety function*, *safe state*, *fault*, *fault reset*, *malfunction*, *failure*, *error*, *error message*, *dangerous*, etc.

Among others, these standards include:

Standard	Description
IEC 61131-2:2007	Programmable controllers, part 2: Equipment requirements and tests.
ISO 13849-1:2023	Safety of machinery: Safety related parts of control systems. General principles for design.
EN 61496-1:2013	Safety of machinery: Electro-sensitive protective equipment. Part 1: General requirements and tests.
ISO 12100:2010	Safety of machinery - General principles for design - Risk assessment and risk reduction
EN 60204-1:2006	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
ISO 14119:2013	Safety of machinery - Interlocking devices associated with guards - Principles for design and selection
ISO 13850:2015	Safety of machinery - Emergency stop - Principles for design
IEC 62061:2021	Safety of machinery - Functional safety of safety-related electrical, electronic, and electronic programmable control systems
IEC 61508-1:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: General requirements.
IEC 61508-2:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: Requirements for electrical/electronic/programmable electronic safety-related systems.
IEC 61508-3:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: Software requirements.
IEC 61784-3:2021	Industrial communication networks - Profiles - Part 3: Functional safety fieldbuses - General rules and profile definitions.
2006/42/EC	Machinery Directive
2014/30/EU	Electromagnetic Compatibility Directive
2014/35/EU	Low Voltage Directive

In addition, terms used in the present document may tangentially be used as they are derived from other standards such as:

Standard	Description
IEC 60034 series	Rotating electrical machines
IEC 61800 series	Adjustable speed electrical power drive systems
IEC 61158 series	Digital data communications for measurement and control – Fieldbus for use in industrial control systems

Finally, the term zone of operation may be used in conjunction with the description of specific hazards, and is defined as it is for a hazard zone or danger zone in the Machinery Directive (2006/42/EC) and ISO 12100:2010.

NOTE: The aforementioned standards may or may not apply to the specific products cited in the present documentation. For more information concerning the individual standards applicable to the products described herein, see the characteristics tables for those product references.

Information on Non-Inclusive or Insensitive Terminology

As a responsible, inclusive company, Schneider Electric is constantly updating its communications and products that contain non-inclusive or insensitive terminology. However, despite these efforts, our content may still contain terms that are deemed inappropriate by some customers.

Definitions

Abbreviations:

PV: product version

SV: software (firmware) version

Firmware Compatibility Rules and Regulations

Guidelines

Modicon modules are upward compatible. You can update a controller with a later firmware version. For those modules that are field upgradable, upgrade the module firmware to the latest available version. Do not downgrade a module firmware.

NOTICE
PRODUCT NO LONGER OPERATIONAL
For the products with indicated PV listed in the tables below, do not download firmware with a version SV earlier than the one mentioned in these tables.
Failure to follow these instructions can result in equipment damage.

Firmware Compatibility

This table presents the firmware compatibility:

Module	Description	PV (or subsequent supporting version(s))	Minimum SV
BMXNOE0100	Ethernet 10/100 RJ45	12	2.30
BMXNOE0100H	H Ethernet 10/100 RJ45	08	2.30
BMXNOE0110	M340 FactoryCast Module	09	5.71
BMXNOE0110H	H M340 FactoryCast Module	07	5.71
BMXNOM0200	Bus Module 2 RS485/232 Ports	06	1.40
BMXNOM0200H	H Bus Module 2 RS485/232 Ports	06	1.40
BMXNOR0200H	Harsh RTU (1 Ethernet Port, 1 Serial Port)	09	1.60
BMXP341000	CPU340-10 Modbus	13	2.30
BMXP341000H	H CPU340-10 Modbus	07	2.30
BMXP342000	CPU340-20 Modbus	09	2.30
BMXP3420102	CPU340-20 Modbus CANopen2	08	2.30
BMXP3420102CL	M340 20102 CPU - Cardless	04	2.30

Module	Description	PV (or subsequent supporting version(s))	Minimum SV
BMXP342020	CPU340-20 Modbus Ethernet	13	2.30
BMXP342020H	H CPU340-20 Modbus Ethernet	09	2.30
BMXP3420302	CPU340-20 Ethernet CANopen2	08	2.30
BMXP3420302CL	M340 20302 CPU - Cardless	04	2.30
BMXP3420302H	CPU340-20 Ethernet CANopen2	08	2.30
BMXP3420ITRB	CPU340-20 Data Center Mgt.	07	2.30
BMXPRA0100	Peripheral Remote I/O Adapter	07	2.30

Communication Adapter Modules

Firmware Compatibility

This table presents the firmware compatibility among Modicon 140CRA31200 and BM•CRA312•• adapter modules:

Module	Description	PV (or subsequent supporting version(s))	Minimum SV
140CRA31200	1-channel Quantum RIO drop EtherNet/IP adapter	05	2.30
140CRA31200C	1-channel Quantum RIO drop EtherNet/IP adapter coated	05	2.70
BMECRA31210	eX80 performance EIO adapter	09	2.70
BMECRA31210C	eX80 performance EIO adapter coated	09	2.70
BMXCRA31200	X80 standard EIO adapter	11	2.70
BMXCRA31210	X80 performance EIO adapter	11	2.70
BMXCRA31210C	X80 performance EIO adapter coated	11	2.70

Communication Modules

Firmware Compatibility

This table presents the firmware compatibility among Modicon BMENOC03•1 communication modules:

Module	Description	PV (or subsequent supporting version(s))	Minimum SV
BMENOC0301	M580 three-port Ethernet communication module	12	2.14
		13	2.15
BMENOC0301C	M580 coated three-port Ethernet communication module	12	2.14
		13	2.15
BMENOC0311	M580 three-port FactoryCast Ethernet communication module	13	2.14
		14	2.15
BMENOC0311C	M580 coated three-port FactoryCast Ethernet communication module	13	2.14
		14	2.15

Momentum Controllers

Firmware Compatibility

This table presents the firmware compatibility among Modicon Momentum M1 and M1E controllers:

Controller	Description	PV (or subsequent supporting version(s))	Minimum SV
171CBU78090	USB, I/OBUS, RS232/485 RS485	07	2.00
171CBU98090	USB, I/OBUS, RS232/485 10/100 Ethernet	07	2.00
171CBU98091	USB, I/OBUS, RS232/485 10/100 Ethernet GD	07	2.00

MC80 Controllers

Firmware Compatibility

This table presents the firmware compatibility among Modicon MC80 controllers:

Module	Description	PV (or subsequent supporting version(s))	Minimum SV
BMKC8020300	Controller, 8 DI, 8 DO, and 4 AI	04	1.50
BMKC8020301	Controller, 8 DI, 12 DO, and 4 AI	04	1.50
BMKC8020310	Controller, 8 DI, 8 DO, and 2 HSC	05	1.50
BMKC8030310	Controller, 8 DI, 8 DO, 2 HSC, and 4 AI	05	1.50
BMKC8030311	Controller, 8 DI, 12 DO, 2 HSC, and 4 AI	04	1.50

M580 Controllers

Firmware Compatibility

This table presents the firmware compatibility among Modicon M580 controllers.

Controller	Description	PV (or subsequent supporting version(s))	Minimum SV
BMEP581020	M580 Controller Level 1 for DIOs	09	2.50
		14	2.90
BMEP581020H	M580 Hardened Controller Level 1 for DIOs	09	2.50
		14	2.90
BMEP582020	M580 Controller Level 2 for DIOs	09	2.50
		14	2.90
BMEP582020H	M580 Hardened Controller Level 2 for DIOs	09	2.50
		14	2.90

Controller	Description	PV (or subsequent supporting version(s))	Minimum SV
BMEP582040	M580 Controller Level 2 for DIOs and RIOs	09	2.50
		14	2.90
BMEP582040H	M580 Hardened Controller Level 2 DIOs and RIOs	09	2.50
		14	2.90
BMEH582040	M580 HSBY Controller Level 2 for DIOs and RIOs	11	2.90
BMEH582040C	M580 Coated HSBY Controller Level 2 for DIOs and RIOs	10	2.90
BMEH582040K	Kit M580 HSBY Controller Level 2 for DIOs and RIOs	10	2.90
BMEP583020	M580 Controller Level 3 for DIOs	09	2.50
		14	2.90
BMEP583040	M580 Controller Level 3 for DIOs and RIOs	09	2.50
		15	2.90
BMEP584020	M580 Controller Level 4 for DIOs	09	2.50
		15	2.90
BMEP584040	M580 Controller Level 4 for DIOs and RIOs	09	2.50
		14	2.90
BMEH584040	M580 HSBY Controller Level 4 for DIOs and RIOs	11	2.90
BMEH584040C	M580 Coated HSBY Controller Level 4 for DIOs and RIOs	10	2.90
BMEH584040K	Kit M580 HSBY Controller Level 4 for DIOs and RIOs	10	2.90
BMEP585040	M580 Controller Level 5 for RIOs	03	2.50
		09	2.90
BMEP585040C	M580 Coated Controller Level 5 for RIOs	03	2.50
		08	2.90
BMEP586040	M580 Controller Level 6 for RIOs	03	2.50
		08	2.90
BMEP586040C	M580 Coated Controller Level 6 for RIOs	03	2.50
		08	2.90

Controller	Description	PV (or subsequent supporting version(s))	Minimum SV
BMEH586040	M580 HSBY Controller Level 6 for DIOs and RIOs	11	2.90
BMEH586040C	M580 Coated HSBY Controller Level 6 for DIOs and RIOs	10	2.90

M580 Safety-Related Controllers

Firmware Compatibility

> **NOTE:** Do not downgrade an M580 safety-related controller BMEP584040S from SV2.60 or subsequent comparable version(s) to SV2.40.

This table presents the firmware compatibility among Modicon M580 safety-related controllers:

Controller	Description	PV (or subsequent supporting version(s))	Minimum SV
BMEP582040S	M580 Controller SIL3 Level 2 for DIOs	01	2.60
BMEH582040S	M580 HSBY Controller SIL3 Level 2 for DIOs	01	2.80
BMEP584040S	M580 Controller SIL3 Level 4 for DIOs and RIOs	01	2.40
		02	2.60
BMEP586040S	M580 Controller SIL3 Level 6 for DIOs and RIOs	01	3.30
BMEH584040S	M580 HSBY Controller SIL3 Level 4 for DIOs and RIOs	01	2.80
BMEH586040S	M580 HSBY Controller SIL3 Level 6 for DIOs and RIOs	01	2.80

As standards, specifications, and design change from time to time, please ask for confirmation of the information given in this publication.

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