# PLC modernization and competitive migration

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# General contents

*Dedicated service offers for your installed base*

# Dedicated service offers for your installed base

Schneider Electric, with its experts, products, and dedicated tools, provides services such as system design, consultancy, maintenance contracts, modernization of facilities, and project delivery.

The Schneider Electric services offer is structured around several key areas:
- Maintenance and support services:
  - A set of services to help maintain reliability and availability of automated control systems. These services may be the subject of a bespoke maintenance contract to meet your requirements more closely.
- Consultancy services:
  - Diagnostics of the installed base
- Modernization solutions:
  - Migration solutions including consultancy, expertise, tools, and technical support to help ensure a smooth transition to newer technology while retaining the wiring and encoding in most cases.

Customization services are also available to accommodate specific requirements. For more information, please consult the specific pages on our website https://www.se.com/ww/en/work/services/field-services/industrial-automation/.

## Maintenance and support services

| Spare parts, exchanges, and repairs | *Everything you need to get equipment working again as quickly as possible* |
| --- | --- |

Solutions to respond very quickly to requests for spare parts, exchanges, and repairs to your installed automation equipment (automation platforms, Human Machine Interfaces, drives, distributed I/O):
- Spare parts management:
  - Identification of critical parts
  - Stock of spare parts: a Schneider Electric owned stock of spare parts, on your site or in one of our warehouses, with immediate availability on site or a contractually agreed delivery time if stored off site
  - Testing of spare parts stored on site
  - Automatic stock filling
- Repairs:
  - Products that have broken down are repaired in a network of worldwide repair centers. For each repaired product, our experts provide a detailed report.
- On-site repair:
  - Our experts' knowledge and expertise
  - Monitoring of specific repair procedures
  - Availability of our teams to respond 24/7
- Exchanges:
  - With standard replacements, receive a new or reconditioned product before the product that has broken down has even been sent back
  - Fast exchanges offer the option to receive the replacement product within 24 hours (in Europe)

| Preventive maintenance | *Improving and helping to ensure the long-term reliability and performance of your installations* |
| --- | --- |

Schneider Electric's preventive maintenance expert assesses your site and the equipment to be managed and sets up a maintenance program to accommodate your specific requirements. A list is provided of the tasks to be performed and their frequency, including site-specific tasks, describing how preventive maintenance is to be managed.

| Extended warranty | *An additional manufacturer warranty covering replacement or repair of the equipment* |
| --- | --- |

The extended warranty offers the option to take out a 3-year warranty. The warranty period can vary according to the geographical area (please contact our Customer Care Center for more information).

| Online support | *Access to dedicated experts* |
| --- | --- |

Priority access to experts who can answer technical questions promptly concerning equipment and software both on sale and no longer commercially available.

| Software subscription | *Access to software upgrades and new features* |
| --- | --- |

By subscribing to software updates, users are able to:
- Purchase licences
- Receive updates, upgrades, software migrations, and transitions
- Download software from Schneider Electric's software library

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## Consultancy services

**M2C (Maintenance and Modernization Consultancy)** — *Professional tools and methods, proven experience of managing obsolescence and updating installed bases, helping to reduce downtime and improve performance*

With our maintenance and modernization consultancy offer, Schneider Electric will help you check the state of your installed base by:
- Defining the scope and depth of the analysis in collaboration with you
- Collecting the technical data without shutting down production
- Analyzing and identifying avenues for improvement
- Producing a recommendation plan

Customer benefits:
- Learning about the components that make up the installed base and what their life cycle state is (i.e. commercialized or obsolete)
- Better downtime anticipation
- Expert advice designed to improve performance

## Modernization solutions

**Migration to EcoStruxure** — *Proven expertise, tools, and methods to give you a clear vision of the improvement opportunities and guide you towards a successful modernization project*

*Find out more about EcoStruxure architectures on our website www.se.com*

Schneider Electric offers gradual solutions of modernization through a set of products, tools, and services that allow you to upgrade your installations with our latest technologies. Our solutions offer you the choice to plan your modernization:
- Partial modernization: replacement of an old set of components with a new one
- Step-by-step modernization: gradual incorporation of new solutions or offers in the system
- Complete modernization: total renovation of the system

The table below lists our various migration offers:

| Wide range of migration offers | | Moving to M580/M340/X80 platform | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Solution | | Solution type | | | Tools | Solution services | | |
| | | Change the CPU and retain the I/O racks and wiring | Change the CPU and the I/O racks and retain I/O field wiring with wiring system | Change the CPU, the I/O racks, and the I/O wiring | SoftWare application conversion tool | Modernization/ migration service | Manage your project | Execute your project |
| **Platform** | Premium | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ |
| | TSX47 to TSX107 | | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ |
| | Quantum | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ |
| | Modicon 984 & 800 Series I/O | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ |
| | Modicon Compact | | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ |
| | Symax | ☑ | (1) | ☑ | ☑ | ☑ | ☑ | ☑ |
| | April Series 1000 | | (2) | ☑ | ☑ | ☑ | ☑ | ☑ |
| | April SMC | | | ☑ | ☑ | ☑ | ☑ | ☑ |
| | Merlin Gerin PB | | | ☑ | | ☑ | ☑ | ☑ |
| | AEG | | (1) | ☑ | | ☑ | ☑ | ☑ |
| | Rockwell SLC500 | | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ |
| | Rockwell PLC 5 | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ |
| | Siemens S5 and S7 | | | ☑ | ☑ | ☑ | ☑ | ☑ |

| ☑ | Service available |
|---|---|

*(1) Consult Schneider Services - project-specific solution is possible*
*(2) For April Series 1000 (April 5000-7000 and April 2000-3000)*
*    Consult Schneider Services - project-specific solution is possible*

## Customization services

Schneider Electric is able to meet your specific requirements and provide you with adapted products:
- Protective coating for HMIs, automation platforms, and distributed I/O modules for use in harsh environments
- Customized cable lengths to match your specific needs
- Customized front panels for HMIs
- The multi-use flying lead I/O adapter can be prepared in the factory before use on request.

*Note: To check availability of services required, please contact our Customer Care Center.*

# Contents

# 1 - Application conversion

**1**

# PLC modernization and competitive migration
## Unity M580 Application Converter

**1**


*Unity M580 Application Converter*

## Offer Description

### Introduction

Unity M580 Application Converter V3.1 (UMAC V3.1) is a software tool. Its purpose is to convert Unity Quantum and Unity Premium applications to EcoStruxure Control Expert applications.

UMAC is part of the service offer for PLC modernization.
The PLC modernization offer comprises service tools, service products, and service methods to support retrofit and upgrade projects that modernize legacy Schneider PLCs with new M580 systems.

The main elements of a PLC modernization service offer are as follows:
■ PLC application conversion
■ PLC hardware renewal
■ Quick wiring offer for hardware modernization
■ Methods and procedures for typical configurations

UMAC Standard version is available to:
■ End users with services contracts
■ System integrators who are members of the Schneider SI Alliance program
■ Schneider support teams

UMAC Lite version is available to all.

### Value proposition and benefits

■ **During the estimation phase**:
□ The tool provides the means for a rapid assessment and accurate estimation of the application to be converted

■ **During the engineering phase**:
□ The tool makes a fast and accurate conversion – code translation templates and delivered DFB types have been tested in Unity
□ Reduced time to perform the application conversion
□ A simple-to-understand adaptation of the Unity application, preserving its readability
□ A conversion report to keep track of the modifications done on the application

■ **During the installation and commissioning phase:**
□ Less time required due to a high level of consistency

### Benefits in short

Generally speaking, the tools help provide low risk, low cost, efficient, and high quality PLC modernization for our customers.

With the converter, you get:
■ Minimized engineering time on application conversions to Unity M580
■ Less risk of human error: all targeted changes completed
■ Better quality, less testing, and shorter commissioning time

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*Unity M580 Application Converter tool*

**1**

## Tool overview

### Role

The tool automates the upgrading of Unity applications from Premium and Quantum to EcoStruxure Control Expert with the following benefits:
■ Shorter programming and testing time
■ Reduced cost of application conversion
■ Better quality of converted applications
■ Faster availability of a fully functional application inside M580

Premium PL7 and Quantum LL984 or IEC (Modsoft, ProWORX, Concept) applications can also be managed.

The conversion involves two steps:
■ Use of the Unity embedded converters to upgrade Premium PL7 to Premium Unity or Quantum LL984/IEC (Modsoft, ProWORX, Concept) to Quantum Unity
■ Use of this UMAC tool to upgrade from Premium or Quantum Unity to M580 Unity

### Environment

Unity M580 Application Converter is a standalone software tool that can be installed on a Windows PC. The complete conversion process relies on the use of Unity Pro.

### Compatibility

Please note that UMAC V3.1 requires installing Unity Pro XL 12.0 or later, or EcoStruxure Control Expert on the same PC. It is compatible with Unity Pro V13.1 and EcoStruxure Control Expert V14.

# PLC modernization and competitive migration
## Unity M580 Application Converter

**1**

## Tool overview (continued)

### Unity M580 Application Converter

| Version | Main capabilities | Registration *(1)* | Activation *(2)* |
|---|---|---|---|
| **LITE** | Retain existing application | Required<br>The Lite tool is available immediately after user Registration | No activation |
| **STANDARD** | Retain existing application and adapt its logic to M580 | Required<br>Lite features are available immediately user Registration | Required<br>The Standard tool is available after user Registration and entry of Activation ID. Activation is valid for one year and is renewable |

| Features | LITE | STANDARD |
|---|---|---|
| Retain application program logic | Yes | Yes |
| Retain Premium I/O configuration | Yes | Yes |
| Retain Quantum Local I/O and S908 RIO configuration | Yes | Yes |
| Retain Quantum Redundant S908 RIO configuration | Yes | Yes |
| Retain Quantum Local I/O and Ethernet I/O HW configuration | Yes | Yes |
| Upgrade Quantum S908 RIO to Ethernet I/O configuration | Yes | Yes |
| Choice of M580 CPU selection | Yes | Yes |
| Choice of Mast task | Yes | Yes |
| System Bits and Words identification | Yes | Yes |
| Summary report | Yes | Yes |
| Benefit estimation | Yes | Yes |
| **Premium** | – | Yes |
| Replace Premium I/O with X80 I/O modules in V3.1 | – | Yes |
| Replace missing functions | – | Yes |
| Correct invalid Variable Descriptors | – | Yes |
| Replace ADDR with ADDM functions | – | Yes |
| **Premium and Quantum** | – | Yes |
| Correct 32-bit address alignment | – | Yes |
| Correct alignment for variables and 2-dimension arrays | – | Yes |
| Correct animation tables | – | Yes |
| Correct Operator Screens | – | Yes |
| Replace Ethernet I/O scanner (CPU) with M580 CPU | – | Yes |
| Replace Ethernet I/O scanner (ETY/NOE) with M580 NOC | – | Yes |
| Retain and replace Ethernet I/O Scanner – maintain located addresses | – | Yes |
| Retain and replace Ethernet I/O Scanner health and control | – | Yes |
| Choice of M580 NOC selection | – | Yes |
| Library for IEC missing functionality enhanced in V3.0 | – | Yes |
| Compatibility with legacy Modbus addressing | – | Yes |
| Retain Initial Values | – | Yes |
| Adjust memory buffer | – | Yes |
| **Quantum** | – | – |
| Replace Quantum I/O with X80 I/O modules in V3.0 | – | Yes |
| Replace 800 Series I/O with X80 I/O modules in V3.0 | – | Yes |

*(1) "Registration" here relates to the registration of the tool by the user: a software End User License is granted to someone identified by an email address through the "Registration" process.*

*(2) "Activation" here relates to unlocking/making the tool available under the conditions of its End User License Agreement (set of available features, duration, number of simultaneous users, etc.)*

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# PLC modernization and competitive migration
## Unity M580 Application Converter



*License information dialog box*



*Registration process*



*Activation process*

## Tool overview (continued)

### Tool access and licensing model

There is only one installation file for both the Lite and Standard versions.

■ Registration: Before using the Lite version, you will be asked to enter your email address. The Lite tool is available with no time limit.

■ Activation: An Activation ID is needed to use the Standard version of the tool. Once activated, the tool is accessible for one year, then it falls back to its original "Lite" state until it receives a new Activation ID for a Standard version. An Activation ID is valid for one "seat" (software activated on one PC at a time).

### Registration process

A user needs to install and register the software before they can use the Lite tool. The installation and Registration process is as follows:

■ Step 1: Download the tool
An installation file may be downloaded from our website (https://www.se.com/ww/en/download/document/UMAC_Application/)

■ Step 2: Install and launch
Install the tool and launch it. On the first run, the user will be prompted to complete the Registration procedure.

■ Step 3: Register
Complete the Registration procedure required in Step 2 to unlock the tool. The user is requested to provide their name and email address. The Lite version will be unlocked with no time limit.

### Activation process

The Activation process concerns the Standard tool only. A user needs to activate the software with an Activation ID before using it.

Open the "About" window and click on the "Upgrade Product" button. At this stage, the user is requested to provide an Activation ID to activate the tool:

■ For Alliance System integrators, the Activation ID is part of the SI Alliance pack

■ For End users, the Activation ID can be obtained from the Customer Care Center that provides a support contract.

The tool will be unlocked for one year.

## References

| Description | Reference | Weight kg/*lb* |
|---|---|---|
| LITE Unity M580 Application Converter | **1MMCNVXZZSPAZZ** *(1)* | – |
| STANDARD Unity M580 Application Converter | **1MMCSVCZMSXMZZ** *(2)* | – |
| STANDARD email Unity M580 Application Converter | **1MMCSVCZMSXAZZ** *(3)* | – |

*(1) The Lite tool is free and downloadable from our website  www.se.com*
*(2) The Standard tool reference is only available for sales within the Software Alliance Pack.*
*(3) The Standard tool reference is only available for sales within a Service Contract.*

2

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# Contents

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# PLC modernization and competitive migration
## Modernization solutions
TSX Premium to Modicon X80 modules platform

**2**



*TSX Premium PLC*
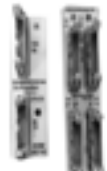


*TSX Premium to X80 multi-use adapter*      *TSX Premium to X80 multi-use adapter*      *Front-mount wiring adapter*

## Presentation

The TSX Premium to Modicon X80 modernization solution consists of various I/O adapters, dedicated chassis, and mounting plates. It is used to simplify the replacement of TSX Premium PLCs with Modicon M580/M340 PLCs and Modicon X80 modules platform; existing TSX Premium field wiring will be retained.

### Adapters

There are three types of wiring adapters:
■ **Dedicated wiring adapters** are designed to mate specific TSX Premium I/O modules to specific X80 I/O modules. Fully pre-wired cables are included to make installation quick and easy.
■ **Multi-use flying-lead adapters** are designed to be used with fixed sets of I/O module pairs. There are 7 references of flying-lead adapters: for each of them, a wiring guide is included within the Premium to X80 I/O Modernization Instruction Sheet. The flying-lead cables shipped with the multi-use adapters are not fully pre-wired; the X80 connectors will be wired in the field based on the selected module pairs.
■ **Front-mount wiring adapters** are used for high-density I/O modules (32 and 64 I/O points). They allow field wiring terminal blocks to be removed from the TSX Premium PLC and plugged directly onto the X80 I/O module (no need for a dedicated chassis).

### Chassis

The chassis is one of the two types of mechanical assemblies designed to support the backplanes. A chassis will accept both M580 or M340 backplanes (purchased separately) and new X80 I/O modules. A chassis can receive one X80 backplane. Different sizes are available depending on the size of the existing Premium backplane.



*Chassis for TSX Premium PLC modernization*

### Mounting plate

The mounting plate, very low compared to a chassis, is designed for the front-mount I/O adapters (high-density 32 or 64 I/O point modules). When only these high-density modules are used, a chassis is not needed to replace a TSX Premium I/O rack (the chassis is only required when dedicated or multi-use I/O adapters are used). Note that the mounting plate can also be used when the customer is rewiring the terminal blocks to simplify the mounting of the X80 backplanes into the control panel.

The offer provides three chassis and three mounting plates together with two front-mount I/O adapters and 25 wiring adapters (including 7 multi-use flying-lead adapters) that cover most modernization needs between TSX Premium I/O modules and X80 I/O modules. Cables are available in either 0.4 m/*1 ft* or 1.63 m/*5 ft* lengths (except for multi-use BMXFCW301S cable that is available in 3 m/*10 ft* length).



*Mounting plate for TSX Premium PLC modernization*

## Description of the solution

### Solution with a chassis

A chassis allows you to replace a TSX Premium I/O rack with an X80 I/O rack (M340 or M580) in the same physical location and with the same footprint as the current system:
■ The TSX Premium I/O rack is removed and replaced with a metal chassis that supports an X80 backplane and the selected I/O wiring adapters.
■ The backplane (purchased separately) is mounted on the chassis door, and accommodates the new PLC and its X80 I/O modules.
■ Appropriate wiring adapters will be installed in the lower section of the chassis. These quick wiring adapters allow the TSX Premium wiring of the existing installation to be connected to the X80 I/O modules of the new PLC configuration, which means there is no need for on-site machine rewiring. The original TSX Premium connectors are retained. The chassis door can be opened to allow access to the wiring adapters during commissioning and maintenance.



*TSX Premium PLC to Modicon X80 (with chassis)*

■ Replacement cables are also available as spare parts (see Note that the replacement flying-lead cables do not include the X80 I/O terminal blocks.

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# PLC modernization and competitive migration
## Modernization solutions
### TSX Premium to Modicon X80 modules platform



*QGH16342*



*Upgrade your TSX Premium PLC to Modicon M580.*
*Click to open video (7 min 9 s)*

## Description of the solution (continued)

### Solution with a mounting plate

A mounting plate has the same functionality as a chassis when only high-density TSX Premium I/O are installed on the backplane. The benefit of this solution is a much smaller depth compared to the use of a dedicated chassis.

### Adapters

The most commonly used cables are 0.4 m/*1 ft* long, but 1.5 m/*5 ft* cables are also available for specific needs, for example, to merge two TSX Premium I/O racks into one X80 rack, or vice versa. Cables and connectors are provided with the I/O adapters. Replacement cables are also available as spare parts (see

Note that Telefast ABE7 systems are compatible with both Premium I/O modules and X80 modules platform ranges. In this case, refer to our Premium to X80 Telefast block cross-reference table in the Premium to X80 I/O Modernization Instruction sheet.

## Benefits of the solution

The customer benefits are reduced risk and cost of modernization from a TSX Premium PLC:
■ Minimal production downtime with about 1 hour setup time per rack.
■ Cost reduction by keeping all sensor/actuator wiring inside existing cabinets, leading to savings in wiring, testing and commissioning, and wiring diagram updates: no electrician or wiring contractor needed.
■ Unlike manual rewiring, ordinary production stops can be used for the changeover.
■ Due to minimal changes, installations can be restarted within the allotted time with the ability to roll back in the event of any unforseen matters arising.
■ Better reliability brought by dedicated solutions designed by the manufacturer.
■ Simple solution that makes modernization easy and provides the lowest risk option.

This modernization solution is part of a larger modernization and migration offer that includes methods, specific migration devices, and dedicated tools for various legacy PLCs from Schneider Electric and the competition as well.
Modernization and migration can be implemented with help from our Schneider Electric services experts

## Equivalence table

The cross-reference table hereafter (see shows the possible equivalences between TSX Premium and X80 modules. Some differences in terminal strips, modularity, common or power connections may have to be addressed: it is recommended that you verify compatibility with our Schneider Electric service representatives.
The customer benefits are reduced risk and cost of modernization from a TSX Premium PLC:

Before selecting your product, please note:
■ Installers of multi-use flying-leads I/O adapters are strongly advised to pre-wire each multi-use I/O adapter before entering the site where the adapter is to be installed. Pre-wiring can be performed on request in the factory. Failure to complete the wiring of each multi-use I/O adapter before entering the job site will result in unwanted delay in completing the X80 platform mounting task.

■ Installers are informed that multi-use flying-lead adapters do not contain fuses nor any other devices to help protect against external events such as circuit overload, short circuit, or sensor/pre-actuator voltage errors. Check that sufficient module protection devices are in place.

■ The new system including migration chassis or mounting plate + I/O modules and CPU may be deeper than the original Premium:
□ System depth with migration chassis and 990ADPREX80109 I/O adapter is 295 mm/*11.6 in.* (including terminal block).
□ System depth with mounting plate and 990ADPREX80109 I/O adapter is 205 mm/*8.1 in.* (including terminal block).

# PLC modernization and competitive migration
## Modernization solutions
### TSX Premium to Modicon X80 modules platform

## Equivalence table: TSX Premium – X80 modules platform

| Type of module | Premium I/O module | | X80 modules platform | | I/O adapter – Chassis – Backplane mounting plate | | |
|---|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Type | Description | | Reference |
| Rack to chassis | TSXRKY4EX | 4-slot external rack | BMXXBP0600 | Chassis | TSXRKY6 to BM●XBP0600 chassis - W/O backplane | | 990CHPREX80060 |
| | TSXRKY6 | 6-slot rack | | | | | |
| | TSXRKY6EX | 6-slot external rack | | | | | |
| | TSXRKY8 | 8-slot rack | BME/XXBP0800 | Chassis | TSXRKY8 to BM●XBP0800 chassis - W/O backplane | | 990CHPREX80080 |
| | TSXRKY8EX | 8-slot external rack | | | | | |
| | TSXRKY12 | 12-slot rack | BME/XXBP1200 | Chassis | TSXRKY12 to BM●XBP1200 chassis - W/O backplane | | 990CHPREX80120 |
| | TSXRKY12EX | 12-slot external rack | | | | | |
| Rack to mounting plate | TSXRKY4EX | 4-slot external rack | BMXXBP0600 | Mounting plate | TSXRKY6 to BM●XBP0600 mounting plate - W/O backplane | | 990CHPREX80061 |
| | TSXRKY6 | 6-slot rack | | | | | |
| | TSXRKY6EX | 6-slot external rack | | | | | |
| | TSXRKY8 | 8-slot rack | BME/XXBP0800 | Mounting plate | TSXRKY8 to BM●XBP0800 mounting plate - W/O backplane | | 990CHPREX80081 |
| | TSXRKY8EX | 8-slot external rack | | | | | |
| | TSXRKY12 | 12-slot rack | BME/XXBP1200 | Mounting plate | TSXRKY12 to BM●XBP1200 mounting plate - W/O backplane | | 990CHPREX80121 |
| | TSXRKY12EX | 12-slot external rack | | | | | |
| Digital input | TSXDEY08D2 | 8I 24 VDC sink terminal block | BMXDDI1602 | Dedicated | TSXD●Y08/16pp to BMXD●I/DpO160● (0.4 m/*1 ft*) TSXD●Y08/16pp to BMXD●I/DpO160● (1.63 m/*5 ft*) | | 990ADPREX80104 990ADPREX80105 |
| | TSXDEY16A2 | 16I 24 VAC terminal block | BMXDAI1602 | | | | |
| | TSXDEY16A3 | 16I 48 VAC terminal block | BMXDAI1603 | | | | |
| | TSXDEY16A4 | 16I 110/120 VAC terminal block | BMXDAI1604 | | | | |
| | TSXDEY16A5 | 16I 220/240 VAC terminal block | (2x) BMXDAI0805 | | – | | (1) |
| | TSXDEY16D2 | 16I 24 VDC sink terminal block | BMXDDI1602 | Dedicated | TSXD●Y08/16●● to BMXD●I/D●O160● (0.4 m/*1 ft*) | | 990ADPREX80104 |
| | TSXDEY16D3 | 16I 48VDC sink terminal block | BMXDDI1603 | | TSXD●Y08/16p● to BMXD●I/D●O160● (1.63 m/*5 ft*) | | 990ADPREX80105 |
| | TSXDEY16FK | 16I FAST 24 VDC sink connection | – | | – | | – |
| | TSXDEY32D2K | 32I 24 VDC sink connection | BMXDDI3202 | Front mount | TSXDEY/DSY32●2 to BMXDDI/DDO3202 | | 990ADPREX80108 |
| | TSXDEY32D3K | 32I 48VDC sink connection | – | | – | | – |
| | TSXDEY64D2K | 64I 24 VDC sink connection | BMXDDI6402 | Front mount | TSXDEY/DSY64●2 to BMXDDI/DDO6402 | | 990ADPREX80109 |
| Digital output | TSXDSY08R4D | 8Q DC relay terminal block | – | | – | | – |
| | TSXDSY08R5 | 8Q relay 50 VA terminal block | BMXDRA1605 | Dedicated | TSXDSY16R5 to BMXDRA1605 (0.4 m/*1 ft*) | | 990ADPREX80106 |
| | | | | | TSXDSY16R5 to BMXDRA1605 (1.63 m/*5 ft*) | | 990ADPREX80107 |
| | | | BMXDRA0805 | Multi-use flying-lead | TSXD●Y08/16●● to BMXD●●08/160● pigtail (0.4 m/*1 ft*) | | 990ADPREX80120 |
| | | | | | TSXD●Y08/16●● to BMXD●●08/160● pigtail (1.63 m/*5 ft*) | | 990ADPREX80121 |
| | TSXDSY08R5A | 8Q relay 100 VA terminal block | – | | – | | – |
| | TSXDSY08S5 | 8Q TRIAC 48-240 VAC 2 A | BMXDAO1605 or BMXDRA0805 | Multi-use flying-lead | TSXD●Y08/16●● to BMXD●●08/160● pigtail (0.4 m/*1 ft*) | | 990ADPREX80120 |
| | | | | | TSXD●Y08/16●● to BMXD●●08/160● pigtail (1.63 m/*5 ft*) | | 990ADPREX80121 |
| | TSXDSY08T2 | 8Q 24 VDC 0.5 A source terminal block | BMXDDO1602 | Dedicated | TSXD●Y08/16●● to BMXD●I/D●O160● (0.4 m/*1 ft*) | | 990ADPREX80104 |
| | | | | | TSXD●Y08/16●● to BMXD●I/D●O160● (1.63 m/*5 ft*) | | 990ADPREX80105 |
| | TSXDSY08T22 | 8Q 24 VDC 2 A source terminal block | – | | – | | – |
| | TSXDSY08T31 | 8Q 48 VDC 1 A source terminal block | – | | – | | – |
| | TSXDSY16R5 | 16Q relay 50 VA terminal block | BMXDRA1605 | Dedicated | TSXDSY16R5 to BMXDRA1605 (0.4 m/*1 ft*) | | 990ADPREX80106 |
| | | | | | TSXDSY16R5 to BMXDRA1605 (1.63 m/*5 ft*) | | 990ADPREX80107 |
| | TSXDSY16S4 | 16Q TRIAC 24/127 VAC 1 A | BMXDAO1605 | Dedicated | | | |
| | TSXDSY16S5 | 16Q TRIAC 48-220 VAC 1 A | | | TSXD●Y08/16●● to BMXD●I/D●O160● (0.4 m/*1 ft*) | | 990ADPREX80104 |
| | TSXDSY16T2 | 16Q 24 VDC 0.5 A source terminal block | BMXDDO1602 | | TSXD●Y08/16●● to BMXD●I/D●O160● (1.63 m/*5 ft*) | | 990ADPREX80105 |
| | TSXDSY16T3 | 16Q 48 VDC 0.25 A terminal block | – | | – | | – |
| | TSXDSY32T2K | 32Q 24 VDC 0.1 A terminal block | BMXDDO3202K | Front mount | TSXDEY/DSY32●2 to BMXDDI/DDO3202 | | 990ADPREX80108 |
| | TSXDSY64T2K | 64Q 24 VDC 0.1 A terminal block | BMXDDO6402K | Front mount | TSXDEY/DSY64●2 to BMXDDI/DDO6402 | | 990ADPREX80109 |

*(1) Please contact Schneider Electric at ModiconMigrations@schneider-electric.com for information*

# PLC modernization and competitive migration
## Modernization solutions
### TSX Premium to Modicon X80 modules platform

## Equivalence table: TSX Premium – X80 modules platform

| Type of module | Premium I/O module | | X80 modules platform | | I/O adapter – Chassis – Backplane mounting plate | |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Type | Description | Reference |
| Digital mixed | TSXDMY28FK | 16I/12Q 24VCC 0.5 A sink connection | – | | – | – |
| | TSXDMY28RFK | Reflex 16I/12Q sink connection | – | | – | – |
| Analog input | TSXAEY414 | 4I analog multirange | BMXART0414 | *Multi-use flying-lead* | TSXAEY414 to BMXART0414 W/FCW pigtail (3 m/*10 ft*) | 990ADPREX80110 |
| | TSXAEY420 | 4I FAST analog high-level | BMXAMI0410 | *Multi-use flying-lead* | TSXAEY420 to BMXAMI0410 pigtail (0.4 m/*1 ft*) | 990ADPREX80116 |
| | | | | | TSXAEY420 to BMXAMI0410 pigtail (1.63 m/*5 ft*) | 990ADPREX80117 |
| | TSXAEY800 | 8I analog high-level | BMXAMI0800 | *Dedicated* | TSXAEY800/810 to BMXAMI0800/0810 (0.4 m/*1 ft*) | 990ADPREX80100 |
| | TSXAEY810 | 8I analog high-level | BMXAMI0810 | | TSXAEY800/810 to BMXAMI0800/0810 (1.63 m/*5 ft*) | 990ADPREX80101 |
| | TSXAEY800 | 8I analog high-level | BMXAMI0800 | *Dedicated* | TSXAEY8●0 to BMXAMI08●0 current mode (0.4 m/*1 ft*) | 990ADPREX80114 |
| | TSXAEY810 | 8I analog high-level | BMXAMI0810 | | TSXAEY8●0 to BMXAMI08●0 current mode (1.63 m/*5 ft*) | 990ADPREX80115 |
| | TSXAEY1600 | 16I analog high-level | (2x) BMXAMI0800 | *Dedicated* | TSXAEY1600 to (2) BMXAMI0800 (0.4 m/*1 ft*) | 990ADPREX80214 |
| | | | | | TSXAEY1600 to (2) BMXAMI0800 (1.63 m/*5 ft*) | 990ADPREX80215 |
| | TSXAEY1600 | 16I analog high-level | (2x) BMXAMI0800 | *Dedicated* | TSXAEY1600 to (2)BMXAMI0800 current mode (0.4 m/*1 ft*) | 990ADPREX80220 |
| | | | | | TSXAEY1600 to (2)BMXAMI0800 current mode (1.63 m/*5 ft*) | 990ADPREX80221 |
| | TSXAEY1614 | 16I analog thermocouple | – | | – | – |
| Analog output | TSXASY410 | 4Q analog high-level, insulated | BMXAMO0410 | *Dedicated* | TSXASY410 to BMXAMO0410 (0.4 m/*1 ft*) | 990ADPREX80102 |
| | | | | | TSXASY410 to BMXAMO0410 (1.63 m/*5 ft*) | 990ADPREX80103 |
| | TSXASY800 | 8Q analog high-level, non-insulated | BMXAMO0802 | *Dedicated* | TSXASY800 to BMXAMO0802 (0.4 m/*1 ft*) | 990ADPREX80112 |
| | | | | | TSXASY800 to BMXAMO0802 (1.63 m/*5 ft*) | 990ADPREX80113 |
| | | | (2x) BMXAMO0410 | *Multi-use flying-lead* | TSXASY800 to (2) BMXAMO0410 pigtail (0.4 m/*1 ft*) | 990ADPREX80218 |
| | | | | | TSXASY800 to (2) BMXAMO0410 pigtail (1.63 m/*5 ft*) | 990ADPREX80219 |

*(1) Please contact Schneider Electric at ModiconMigrations@schneider-electric.com for information*

## Replacement cables

| Type of module | Premium I/O module | | X80 modules platform | | I/O adapter – Chassis – Backplane mounting plate | |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Type | Description | Reference |
| Repla-cement cables | – | – | – | *High-power* | Replacement X80 cable high-power 116 (0.4 m/*1 ft*) | 990X80CABLE116 |
| | | | | *High-power* | Replacement X80 cable high-power 516 (1.63 m/*5 ft*) | 990X80CABLE516 |
| | | | | *High-density* | Replacement X80 cable high-density 117 (0.4 m/*1 ft*) | 990X80CABLE117 |
| | | | | *High-density* | Replacement X80 cable high-density 517 (1.63 m/*5 ft*) | 990X80CABLE517 |
| | | | | *Analog* | Replacement X80 cable analog 118 (0.4 m/*1 ft*) | 990X80CABLE118 |
| | | | | *Analog* | Replacement X80 cable analog 518 (1.63 m/*5 ft*) | 990X80CABLE518 |
| | | | | *Analog* | Replacement X80 cable 28-pin analog AN128 (0.4 m/*1 ft*) | 990X80CABL119 |
| | | | | *Analog* | Replacement X80 cable 28-pin analog AN528 (1.63 m/*5 ft*) | 990X80CABL519 |
| | | | | *Multi-use flying-lead* | Replacement X80 cable high-power pigtail 116 (0.4 m/*1 ft*) | 990X80CABL116PT |
| | | | | *Multi-use flying-lead* | Replacement X80 cable high-density pigtail 117 (0.4 m/*1 ft*) | 990X80CABL117PT |
| | | | | *Multi-use flying-lead* | Replacement X80 cable analog pigtail 118 (0.4 m/*1 ft*) | 990X80CABL118PT |
| | | | | *Multi-use flying-lead* | Replacement X80 cable high-power pigtail 516 (1.63 m/*5 ft*) | 990X80CABL516PT |
| | | | | *Multi-use flying-lead* | Replacement X80 cable high-density pigtail 517 (1.63 m/*5 ft*) | 990X80CABL517PT |
| | | | | *Multi-use flying-lead* | Replacement X80 cable analog pigtail 518 (1.63 m/*5 ft*) | 990X80CABL518PT |
| | | | | *Multi-use flying-lead* | Shielded cable, FCN connection 40-pin pigtail (3 m/*10 ft*) | BMXFCW301S |

# PLC modernization and competitive migration
Modernization solutions
TSX7 PLCs to Modicon X80 modules platform

**2**


*TSX7 PLC example*


*TSX7 to X80 dedicated wiring adapter*


*TSX7 to X80 chassis with backplane*


*TSX7 to X80 assembly*

## Presentation

The TSX7 PLC to Modicon X80 platform modernization solution consists of various pre-wired I/O adapters and racks. The I/O adapters include a set of connectors designed to simplify the replacement of legacy TSX7 PLCs by Modicon M580/M340 PLCs and Modicon X80 modules platform; existing TSX7 field wiring will be retained.

### Dedicated adapters

The dedicated adapters are designed to mate a specific TSX7 I/O module to a specific equivalent Modicon I/O module. The adapters enable the installed TSX7 module I/O terminal blocks to be matched to the equivalent Modicon X80 modules by using a corresponding pre-wired cable assembly. These dedicated and fully pre-wired adapters make installation quick and easy.

### Chassis

The chassis is designed to support the M340/M580 backplane which is pre-mounted and sold with the chassis. Two sizes are available for each M340 and M580 range (8 slots and 12 slots respectively). Note that for M580 you need to use the chassis or support with Ethernet rack or backplane.

The four chassis and 28 I/O adapters available cover the main requirements to modernize TSX7 I/O modules into Modicon X80 modules. They conform to the specifications of both the Modicon M340 and M580 ranges.

## Description of the solution

The electromechanical modernization solution comprises a chassis equipped with a hinged door on which the Modicon X80 backplane is fixed, combined with a set of I/O adapters.
■ The rear of the chassis replaces the TSX7 rack in the same footprint and uses the same mounting pattern for fixing in the control panel. It is designed to accommodate the adapters according to the modules present in the original TSX7 rack.
■ The existing TSX7 wiring terminal block is mounted on the matching adapter attached to the rack support behind the hinged door. The other end of the adapter cable is connected to the corresponding I/O module of the Modicon X80 platform.
■ The M340 PLC or the M580 PLC is mounted at the front on the hinged door.
■ The adapters transmit the same control signals to the installations W/O any changes to the wiring.

## Benefits of the solution

The customer benefits are reduced risk and cost of modernization from a TSX7 PLC:
■ Minimal production downtime with about 1 hour setup time per rack.
■ Cost reduction by keeping all sensor/actuator wiring inside existing cabinets, leading to savings in wiring, testing and commissioning, and wiring diagram updates: no electrician or wiring contractor needed.
■ Unlike manual rewiring, ordinary production stops can be used for the changeover.
■ Due to minimal changes, installations can be restarted within the allotted time with the ability to roll back in the event of any unforeseen matters arising.
■ Better reliability brought by dedicated solutions designed by the manufacturer.
■ Simple solution that makes modernization easy and provides the lowest risk option.

This modernization solution is part of a larger modernization and migration offer that includes methods, specific migration devices, and dedicated tools for various legacy PLCs from Schneider Electric and the competition as well.
Modernization and migration can be implemented with help from our Schneider Electric services experts.

## Equivalence table

The cross-reference table hereafter shows the possible equivalences between TSX7 I/O and X80 I/O modules. Some differences in terminal strips, modularity, common or power connections may exist: it is recommended that you verify compatibility with our Schneider Electric service representatives.

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*Compatibility*

# PLC modernization and competitive migration
## Modernization solutions
TSX7 PLCs to Modicon X80 modules platform

## Equivalence table: TSX7 - X80 modules platform

| Type of module | TSX7 modules | | X80 modules | Quick wiring adapters | |
| --- | --- | --- | --- | --- | --- |
| | Reference | Description | Reference | Description | Reference |
| **Rack** | TSXRKN8/RKS8 | 8-slot rack | BMEXBP0800 | Support an 8-slot Ethernet rack | **TSX7SWAEBP0800** |
| | TSXRKN8/RKS8 | 8-slot rack | BMEXBP1200 | Support a 12-slot Ethernet rack | **TSX7SWAEBP1200** |
| | TSXRKN8/RKS8 | 8-slot rack | BMXXBP0800 | Support an 8-slot rack | **TSX7SWAXBP0800** |
| | TSXRKN8/RKS8 | 8-slot rack | BMXXBP1200 | Support a 12-slot rack | **TSX7SWAXBP1200** |
| **Discrete input** | TSXDET802 | 8-point 24 VAC input | BMXDAI1602 | Adapter (0.4 m/*1.31 ft*) between: - TSXDET8•• - and BMXDAI16•• or BMXDDI16•• | **DET08XXDXI160X** |
| | TSXDET803 | 8-point 48 VAC input | BMXDAI1603 | | |
| | TSXDET812 | 8-point 24 VDC input | BMXDDI1602 | | |
| | TSXDET813 | 8-point 48 VDC input | BMXDDI1603 | | |
| | TSXDET814 | 8-point 130 VDC input | BMXDDI1604T | | |
| | TSXDET824 | 8-point 110 VDC/115 VAC input | BMXDAI1604 | | |
| | TSXDET1603 | 16-point 48 VAC input | BMXDAI1603 | Adapter (0.4 m/*1.31 ft*) between: - TSXDET16•• - and BMXDAI16•• or BMXDDI16•• | **DET16XXDXI160X** |
| | TSXDET1604 | 16-point 110...120 VAC input | BMXDAI1604 | | |
| | TSXDET1612 | 16-point 24 VDC input | BMXDDI1602 | | |
| | TSXDET1613 | 16-point 48 VDC input | BMXDDI1603 | | |
| | TSXDET1633 | 16-point 48 VDC input | BMXDDI1603 | | |
| | TSXDET3212 | 32-point 24 VDC input | BMXDDI3202K | Adapter (1 m/*3.28 ft*) between: - TSXDET32•2 - and BMXDDI3202K | **DET32X2DDI3202K** |
| | TSXDET3232 | 32-point 24 VDC input | BMXDDI3202K | | |
| | TSXDET3242 | 32-point 24 VDC input | BMXDDI3202K | | |
| | TSXDET3252 | 32-point 24 VDC input | BMXDDI3202K | | |

**2**

# PLC modernization and competitive migration
Modernization solutions
TSX7 PLCs to Modicon X80 modules platform

**2**

## Equivalence table: TSX7 - X80 modules platform

| Type of module | TSX7 modules | | X80 modules | Quick wiring adapters | |
|---|---|---|---|---|---|
| | Reference | Description | Reference | Description | Reference |
| **Discrete output** | TSXDST835 | 8-point 24 VDC/24...240 VAC relay outputs | BMXDRA0805 | Adapter (0.4 m/*1.31 ft)* between TSXDST835 (24 VDC/24...240 VAC/relay) and BMXDRA0805 | **DST835DRA0805** |
| | TSXDST0804 | 8-point 110/127 VAC 2 A outputs | BMXDRA0805 | Adapter (0.4 m/*1.31 ft)* between TSXDST0804 (24 VDC/24...240 VAC/relay) and BMXDRA0805 | TSXDST0804DRA0805 *(1)* |
| | TSXDST1604 | 16-point 110/127 VAC 0.5 A solid state outputs | BMXDRA1605 | Adapter (0.4 m/*1.31 ft)* between TSXDST1604 (24 VDC/24...240 VAC/relay) and BMXDRA0805 | TSXDST1604DRA1605 *(1)* |
| | TSXDST1612 | 16-point 24 VDC outputs | BMXDDO1612 | Adapter (0.4 m/*1.31 ft)* between TSXDST1612 (24 VDC) and BMXDDO1612 | **DST1612DDO1612** |
| | TSXDST1632 | 16-point 24 VDC outputs | BMXDDO1602 | Adapter (0.4 m/*1.31 ft)* between TSXDST1632 (24 VDC) and BMXDDO1602 | **DST1632DDO1602** |
| | TSXDST1632 | 16-point 24 VDC outputs | BMXDRA1605 | Adapter (0.4 m/*1.31 ft)* between TSXDST1632 (24 VDC/relay) and BMXDRA1605 | **DST1632DRA1605** |
| | TSXDST1633 | 16-point 24...240 VAC outputs | BMXDRA1605 | Adapter (0.4 m/*1.31 ft)* between TSXDST1633 (24...240 VAC/relay) and BMXDRA1605 | **DST1633DRA1605** |
| | TSXDST1634 | 16-point 48...130 VDC outputs | (2x) BMXDRA0804T | Adapter (0.4 m/*1.31 ft)* between 1 TSXDST1634 (125 VDC) and 2 BMXDRA0804T | **DST1634DRA0804T** |
| | TSXDST1635 | 16-point 24...240 VAC outputs | BMXDAO1605 | Adapter (0.4 m/*1.31 ft)* between TSXDST1635 (24...240 VAC/triac) and BMXDAO1605 | **DST1635DAO1605** |
| | TSXDST1635 | 16-point 24...240 VAC outputs | BMXDRA1605 | Adapter (0.4 m/*1.31 ft)* between TSXDST1635 (48...240 VAC/relay) and BMXDRA1605 | **DST1635DRA1605** |
| | TSXDST1682 | 16-point 24 VDC outputs | BMXDDO1602 | Adapter (0.4 m/*1.31 ft)* between TSXDST1682 (24 VDC) and BMXDDO1602 | **DST1682DDO1602** |
| | TSXDST2472 | 24-point 24 VDC outputs | (2x) BMXDDO1602 | Adapter (0.5 m/*1.64 ft)* between 1 TSXDST24•2 (24 VDC) and 2 BMXDDO1602 | **DST24X22DDO1602** |
| | TSXDST2482 | 24-point 24 VDC outputs | (2x) BMXDDO1602 | | |
| | TSXDST2472 | 24-point 24 VDC outputs | BMXDDO3202K | Adapter (0.5 m/*1.64 ft)* between TSXDST24•2 (24 VDC) and BMXDDO3202K | **DST24X2DDO3202K** |
| | TSXDST2482 | 24-point 24 VDC outputs | BMXDDO3202K | | |
| | TSXDST3292 | 32-point 24 VDC outputs | BMXDDO3202K | Adapter (1 m/*3.28 ft)* between TSXDST3292 (24 VDC) and BMXDDO3202K | **DST3292DDO3202K** |

*(1) Product on request, due to its rarity. Please contact Schneider Electric at ModiconMigrations@schneider-electric.com*

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Compatibility
(continued)

# PLC modernization and competitive migration
Modernization solutions
TSX7 PLCs to Modicon X80 modules platform

**2**

## Equivalence table: TSX7 - X80 modules platform

| Type of module | TSX7 modules | | X80 modules | Quick wiring adapters | |
|---|---|---|---|---|---|
| | Reference | Description | Reference | Description | Reference |
| **Analog input** | TSXAEM411 | 4-channel voltage/current inputs | BMXAMI0410 | Adapter (0.4 m/*1.31 ft*) between TSXAEM411 and BMXAMI0410 (Current type) | AEM0411AMI0410C |
| | TSXAEM411 | 4-channel voltage/current inputs | BMXAMI0410 | Adapter (0.4 m/*1.31 ft*) between TSXAEM411 and BMXAMI0410 (Voltage type) | AEM0411AMI0410V |
| | TSXAEM413 | 4-channel Pt 100 inputs 3- or 4-wire | BMXART0414 | Adapter (0.4 m/*1.31 ft*) between TSXAEM413 and BMXAMI0414 (RTD type) | AEM0413ART0414 |
| | TSXAEM811 | 8-channel voltage/current inputs | BMXAMI0810 | Adapter (0.4 m/*1.31 ft*) between TSXAEM811 and BMXAMI0810 (Current type) | AEM0811AMI0810C |
| | TSXAEM811 | 8-channel voltage/current inputs | BMXAMI0810 | Adapter (0.4 m/*1.31 ft*) between TSXAEM811 and BMXAMI0810 (Voltage type) | AEM0811AMI0810V |
| | TSXAEM821 | 8-channel voltage/current inputs | BMXAMI0800 | Adapter (0.4 m/*1.31 ft*) between TSXAEM821 and BMXAMI0800 (Current type) | AEM0821AMI0800C |
| | TSXAEM821 | 8-channel voltage/current inputs | BMXAMI0800 | Adapter (0.4 m/*1.31 ft*) between TSXAEM821 and BMXAMI0800 (Voltage type) | AEM0821AMI0800V |
| | TSXAEM1601 | 16-channel inputs | (2x) BMXAMI0800 | Adapter (0.5 m/*1.64 ft*) between 1 TSXAEM1601 and 2 BMXAMI0800 (Voltage type) | AEM1601AMI0800V |
| | TSXAEM1602 | 16-channel inputs | (2x) BMXAMI0800 | Adapter (0.5 m/*1.64 ft*) between 1 TSXAEM1602 and 2 BMXAMI0800 (Current type) | AEM1602AMI0800C |
| **Analog output** | TSXASR200 | 2-channel voltage/current output | BMXAMO0210 | Adapter (0.5 m/*1.64 ft*) between TSXASR200 and BMXAMO0210 | ASR0200AMO0210 |
| | (2x) TSXASR200 | (2x) 2-channel voltage/current outputs | BMXAMO0410 | Adapter (0.5 m/*1.64 ft*) between 2 TSXASR200 and 1 BMXAMO0410 | 2ASR0200AMO0410 |
| | TSXASR0401 | 4-channel voltage output | BMXAMO0410 | Adapter (0.4 m/*1.31 ft*) between TSXASR040* and BMXAMO0410 | ASR040XAMO0410 |
| | TSXASR0402 | 4-channel current output | BMXAMO0410 | | |
| | TSXASR0403 | 4-channel current output | BMXAMO0410 | | |
| | TSXAST200 | 2-channel voltage/current output | BMXAMO0210 | Adapter (0.4 m/*1.31 ft*) between TSXAST200 and BMXAMO0210 | AST0200AMO0210 |

# PLC modernization and competitive migration
## Modernization solutions
### 984-800 I/O to Modicon X80 I/O platform
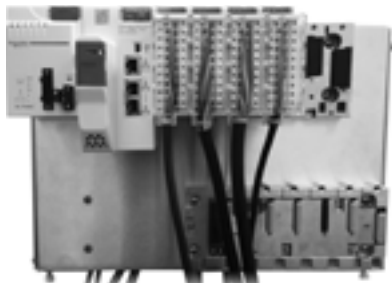

*984-800 PLC*

*Dedicated adapter*    *Multi-use flying-lead adapter*


*NVE4301901*


*Chassis for 984-800 modernization*


*984-800 to X80 solution*

## Presentation

The Modicon 984-800 I/O to Modicon X80 I/O modernization solution consists of various pre-wired I/O adapters and racks. They are used to simplify the replacement of 984-800 PLCs with Modicon M580/M340 PLCs and Modicon X80 modules platform; existing B800 I/O field wiring will be retained.

## Adapters

There are three types of wiring adapters:
- **Dedicated wiring adapters** (27 available references for each of the two possible lengths) are designed to mate specific Modicon 984-800 I/O modules to specific X80 I/O modules. Fully pre-wired cables are included to make installation quick and easy.
- **Multi-use flying-lead adapters** (8 types available) are designed to be used with fixed sets of I/O module pairs. The cables shipped with the multi-use adapters (flying-lead cables) are not ready-to-use: the flying leads will have to be wired before commissioning, on site, depending on the mating of the specific 984-800 and X80 I/O modules. The B800 to X80 Instruction Sheet contains wiring guides for each of the 7 types of multi-use flying-lead adapters (27 wiring guides in total).
- **Pre-wired adapters** (27 available references for each of the two possible lengths) are made from the multi-use flying-lead adapters. The wiring workload which could also be carried out by the user before installation on site is in fact carried out beforehand in the factory by ordering specific references.The pre-wired adapters also mate specific B800 I/O modules to specific X80 I/O modules and make installation quick and easy. They do not require installer wiring.

All cables are available in either 0.56 m/*2 ft* or 1.63 m/*5 ft* lengths, including our selection of eight replacement cables (see

## Chassis

The chassis is used to simplify the replacement of legacy 984 PLCs and their B800 I/O modules with M580/M340 PLCs and X80 I/O modules. Two sizes are available depending on the size of the existing Modicon 984-800 backplane (19 or 27 in.). The evolution chassis will accept both M580 or M340 backplanes (purchased separately) and the Modicon X80 modules platform.
Two backplanes may be mounted on the same chassis depending on the number of I/O required replacing the legacy I/O.

This modernization solution provides 2 chassis and 62 wiring adapters (including 8 multi-use flying-lead adapters) that cover most modernization needs between 984-B800 I/O modules and X80 I/O modules.

Cable management kits are used to guide the adapters smoothly under the chassis inside the control panels. Each of the four possible X80 backplane sizes has a dedicated reference.

## Description of the solution

An evolution PLC-I/O chassis allows the replacement of a B800 I/O rack with an X80 I/O rack (M340 or M580) in the same physical location and with the same footprint and mouting pattern as the current system:
- The B800 I/O rack is removed and replaced with a metal chassis that contains an X80 backplane and selected I/O wiring adapters.
- The backplanes (2 backplanes maximum, purchased separately) are mounted on the chassis front plate, and accommodate the new PLC and X80 modules. The upper backplane is left-aligned on the front plate and the lower backplane is right-aligned on the front plate.
- The appropriate wiring adapters will be installed in the lower section of the chassis. These adapters allow the existing B800 field wiring to be connected to the mated X80 I/O modules of the new PLC configuration, which means that no on-site rewiring is needed. The original B800 terminal blocks of the installation are retained.

The chassis door can be opened to allow access to the wiring adapters during commissioning and maintenance.

The most commonly used cables are 0.56 m/*2 ft* but 1.63 m/*5 ft* cables are also available for specific customer applications, such as to merge two B800 I/O racks into one X80 rack.
Cables and terminal blocks are included with the I/O adapters. Replacement cables are also available as spare parts (see page 44033/11). Note that the replacement flying-lead cables do not include the X80 I/O terminal blocks.

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# PLC modernization and competitive migration
Modernization solutions
984-800 I/O to Modicon X80 I/O platform



*Upgrade your 984-800 PLC to Modicon M580. Click to open video (2 min 55 s)*

## Benefits of the solution

The customer benefits are reduced downtime, risk, and cost of modernization from a 984/800 I/O PLC:
- Minimal production downtime with about 1 hour setup time per rack.
- Cost reduction by keeping all sensor/actuator wiring inside existing cabinets, leading to savings in wiring, testing and commissioning, and wiring diagram updates: no electrician or wiring contractor needed.
- Unlike manual rewiring, ordinary production stops can be used for the changeover.
- Due to minimal changes, installations can be restarted within the allotted time with the ability to roll back in the event of any unforeseen matters arising.
- Better reliability brought by dedicated solutions designed by the manufacturer.
- Simple solution that makes modernization easy and provides the lowest risk option.

This modernization solution is part of a larger modernization and migration offer that includes methods, specific migration devices, and dedicated tools for various legacy PLCs from Schneider Electric and the competition as well. Modernizations and migrations can be implemented with help from our Schneider Electric services experts.

## Equivalence table

The cross-reference table hereafter shows the possible equivalences between B800 I/O modules and X80 I/O modules. Some differences in terminal strips, modularity, common or power connections may have to be addressed: it is recommended that you verify compatibility with our Schneider Electric service representatives.

Note that for I/O adapter assembly information, the column "Type" describes the type of adapter as:
- **Dedicated**: Dedicated adapter assemblies contain a PCB that performs the wiring translations from Quantum to X80 connector pins. These assemblies use the dedicated cables.
- **Multi-use flying-lead**: Multi-use flying-lead adapter assemblies contain a PCB that does not perform the wiring translation. The signal translation is performed by the cable wiring at the X80 field terminal block per the "B800 to X80 Instruction sheet" wiring guide corresponding to the multi-use flying-lead adapter reference also called "generic adapter". This wiring is done by the user before commissioning.
- **Pre-wired adapter assemblies** are multi-use flying-lead adapters that have their wiring done at the factory with an additional cost and extended delivery time. The pre-wired adapter also contains a PCB that does not perform the wiring translation and the signal translation is carried out by the cable wiring at the X80 field terminal block as per the "B800 to X80 Instruction sheet" wiring guide corresponding to the pre-wired adapter reference (also called "generic pre-wired").

## Equivalence table: 984-800 – X80 modules platform

| Type of device | B800 I/O module | | X80 modules platform | Chassis | | |
| --- | --- | --- | --- | --- | --- | --- |
| | Reference | Description | Reference | Type | Description | Reference |
| Racks | H819 | 7 slots, 19" | Without X80 backplane | *Chassis* | Evolution chassis B800 H819/7 POS - W/O X80 backplane | **990CHB80X80819** |
| | H827 | 11 slots, 27" | Without X80 backplane | *Chassis* | Evolution chassis B800 H827/11 POS - W/O X80 backplane | **990CHB80X80827** |
| Cable management kits | – | – | BMX/BMEXBP1200 | *Accessory* | Cable management kit for BMX/BMEXBP1200 | **990CMQUAX80120** |
| | | | BMX/BMEXBP0800 | *Accessory* | Cable management kit for BMX/BMEXBP0800 | **990CMQUAX80080** |
| | | | BMX/BMEXBP0600 | *Accessory* | Cable management kit for BMX/BMEXBP0600 | **990CMQUAX80060** |
| | | | BMX/BMEXBP0400 | *Accessory* | Cable management kit for BMX/BMEXBP0400 | **990CMQUAX80040** |

**2**

# PLC modernization and competitive migration
## Modernization solutions
984-800 I/O to Modicon X80 I/O platform

**2**

## Equivalence table: 984-800–X80 modules platform

| Type of device | B800 I/O module | | X80 modules platform | I/O adapter assembly information | | |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Type | Description | Reference |
| **Digital input** | AS-B803-008 | 115 VAC 8-point input | BMXDAI0814 | *Multi-use flying-lead* | Evolution I/O adapter, Generic1 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic1 (1.63 m/*5 ft*) | 990ADB80X80198<br>990ADB80X80199 |
| | | | | *Pre-wired* | Evolution I/O adapter B803008-DAI0814, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B803008-DAI0814, pre-wired (1.63 m/*5 ft*) | 990ADB80X80104<br><br>990ADB80X80105 |
| | AS-B805-016 | 115 VAC 16-point input | BMXDAI1604 | *Dedicated* | Evolution I/O adapter B8●●016-X80 multi-use (0.56 m/*2 ft*)<br>Evolution I/O adapter B8●●016-X80 multi-use (1.63 m/*5 ft*) | 990ADB80X80324 *(3)*<br>990ADB80X80325 *(3)* |
| | AS-B807-x32 | 115 VAC 32-point input | (2x) BMXDAI1604 | *Dedicated* | Evolution I/O adapter B807132-(2)DAI1604 (0.56 m/*2 ft*)<br>Evolution I/O adapter B807132-(2)DAI1604 (1.63 m/*5 ft*) | 990ADB80X80428 *(3)*<br>990ADB80X80429 *(3)* |
| | AS-B809-016 | 230 VAC 16-point input | BMXDAI1615 | *Dedicated* | Evolution I/O adapter B809016-DAI1615 (0.56 m/*2 ft*)<br>Evolution I/O adapter B809016-DAI1615 (1.63 m/*5 ft*) | 990ADB80X80330 *(3)*<br>990ADB80X80331 |
| | | | (2x) BMXDAI0805 *(1)* | *Multi-use flying-lead* | Evolution I/O adapter, Generic1 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic1 (1.63 m/*5 ft*) | 990ADB80X80198<br>990ADB80X80199 |
| | | | | *Pre-wired* | Evolution I/O adapter B809016-(2)DAI0805, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B809016-(2)DAI0805, pre-wired (1.63 m/*5 ft*) | 990ADB80X80228<br><br>990ADB80X80229 |
| | AS-B817-116 | 115 VAC 16-point isolated input | BMXDAI1614 | *Dedicated* | Evolution I/O adapter B817●16-DAI161● (0.56 m/*2 ft*)<br>Evolution I/O adapter B817●16-DAI161● (1.63 m/*5 ft*) | 990ADB80X80336<br>990ADB80X80337 |
| | | | (2x) BMXDAI0814 | *Multi-use flying-lead* | Evolution I/O adapter, Generic2 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic2 (1.63 m/*5 ft*) | 990ADB80X80296<br>990ADB80X80297 |
| | | | | *Pre-wired* | Evolution I/O adapter B817116-(2)DAI0814, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B817116-(2)DAI0814, pre-wired (1.63 m/*5 ft*) | 990ADB80X80236<br><br>990ADB80X80237 |
| | AS-B817-216 | 230 VAC 16-point isolated input | BMXDAI1615 | *Dedicated* | Evolution I/O adapter B817●16-DAI161● (0.56 m/*2 ft*)<br>Evolution I/O adapter B817●16-DAI161● (1.63 m/*5 ft*) | 990ADB80X80336<br>990ADB80X80337 |
| | | | (2x) BMXDAI0805 | *Multi-use flying-lead* | Evolution I/O adapter, Generic2 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic2 (1.63 m/*5 ft*) | 990ADB80X80296<br>990ADB80X80297 |
| | | | | *Pre-wired* | Evolution I/O adapter B817216-(2)DAI0805, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B817216-(2)DAI0805, pre-wired (1.63 m/*5 ft*) | 990ADB80X80238<br><br>990ADB80X80239 |
| | AS-B821-108 | 10-60 VDC 8-point input (True High) | No equivalent module | – | – | **–** |
| | AS-B825-016 | 24 VDC 16-point input (True High) | BMXDDI1602 | *Dedicated* | Evolution I/O adapter B825016-DDI1602 (0.56 m/*2 ft*)<br>Evolution I/O adapter B825016-DDI1602 (1.63 m/*5 ft*) | 990ADB80X80338 *(3)*<br>990ADB80X80339 *(3)* |
| | AS-B827-032 | 24 VDC 32-point input (True High) | (2x) BMXDDI1602 | *Dedicated* | Evolution I/O adapter B827032-(2)BMXDDI1602 (0.56 m/*2 ft*)<br>Evolution I/O adapter B827032-(2)BMXDDI1602 (1.63 m/*5 ft*) | 990ADB80X80206<br><br>990ADB80X80207 |
| | AS-B829-116 | 5V TTL 16-point input (Fast Response) | No equivalent module | – | – | **–** |
| | AS-B833-016 | 24 VDC 16-point input (True Low) | BMXDAI1602 | *Dedicated* | Evolution I/O adapter B833016-DAI1602 (0.56 m/*2 ft*)<br>Evolution I/O adapter B833016-DAI1602 (1.63 m/*5 ft*) | 990ADB80X80340 *(3)*<br>990ADB80X80341 *(3)* |
| | AS-B837-016 | 24 VAC/VDC 16-point input (True High) | BMXDDI1602 (VDC) | *Dedicated* | Evolution I/O adapter B8●●016-X80 multi-use (0.56 m/*2 ft*)<br>Evolution I/O adapter B8●●016-X80 multi-use (1.63 m/*5 ft*) | 990ADB80X80324 *(3)*<br>990ADB80X80325 *(3)* |
| | | | BMXDAI1602 (VAC) | *Dedicated* | Evolution I/O adapter B8●●016-X80 multi-use (0.56 m/*2 ft*)<br>Evolution I/O adapter B8●●016-X80 multi-use (1.63 m/*5 ft*) | 990ADB80X80324 *(3)*<br>990ADB80X80325 *(3)* |
| | AS-B849-016 | 48 VAC/DC 16-point input | BMXDDI1603 (VDC) | *Dedicated* | Evolution I/O adapter B8●●016-X80 multi-use (0.56 m/*2 ft*)<br>Evolution I/O adapter B8●●016-X80 multi-use (1.63 m/*5 ft*) | 990ADB80X80324 *(3)*<br>990ADB80X80325 *(3)* |
| | | | BMXDAI1603 (VAC) | *Dedicated* | Evolution I/O adapter B8●●016-X80 multi-use (0.56 m/*2 ft*)<br>Evolution I/O adapter B8●●016-X80 multi-use (1.63 m/*5 ft*) | 990ADB80X80324 *(3)*<br>990ADB80X80325 *(3)* |

*(1) If modernizing the AS-B809-016 module to (x2) BMXDAI0805's, contact Schneider Electric at modicon.migrations@schneider-electric.com.for additional information.*
*(3) The dedicated adapter replaces a generic factory pre-wired adapter assembly.*

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# PLC modernization and competitive migration
## Modernization solutions
984-800 I/O to Modicon X80 I/O platform

## Equivalence table: 984-800–X80 modules platform

| Type of device | B800 I/O module | | X80 modules platform | I/O adapter assembly information | | |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Type | Description | Reference |
| Discrete output | AS-B881-508 | 125 VDC 8-point output (True High) | BMXDRA0804T or BMXDRA0815 | Multi-use flying-lead | Evolution I/O adapter, Generic2 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic2 (1.63 m/*5 ft*) | 990ADB80X80296<br>990ADB80X80297 |
| | | | | Pre-wired | Evolution I/O adapter B881508-DRA0804T, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B881508-DRA0804T, pre-wired (1.63 m/*5 ft*) | 990ADB80X80316<br><br>990ADB80X80317 |
| | AS-B882-032 | 24 VDC 32-point discrete output (with point diagnostics) | No equivalent module | – | – | – |
| | AS-B802-008 | 115 VAC 8-point output | BMXDRA805 or BMXDRA815 | Dedicated | Evolution I/O adapter B802008/B820008-DRA08●5 (0.56 m/*2 ft*)<br>Evolution I/O adapter B802008/B820008-DRA08●5 (1.63 m/*5 ft*) | 990ADB80X80318 *(3)*<br><br>990ADB80X80319 *(3)* |
| | AS-B804-x16 | 115 VAC 16-point output | BMXDAO1615 | Dedicated | Evolution I/O adapter B804●16-(2)DA01615 (0.56 m/*2 ft*)<br>Evolution I/O adapter B804●16-(2)DAO1615 (1.63 m/*5 ft*) | 990ADB80X80320<br>990ADB80X80321 |
| | | | BMXDAO1605 | Dedicated | Evolution I/O adapter B804/808●16-DAO1605 (0.56 m/*2 ft*)<br>Evolution I/O adapter B804/808●16-DAO1605 (1.63 m/*5 ft*) | 990ADB80X80322 *(3)*<br>990ADB80X80323 *(3)* |
| | | | BMXDRA1605 | Multi-use flying-lead | Evolution I/O adapter, Generic1 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic1 (1.63 m/*5 ft*) | 990ADB80X80198<br>990ADB80X80199 |
| | | | | Pre-wired | Evolution I/O adapter B804016-DRA1605, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B804016-DRA1605, pre-wired (1.63 m/*5 ft*) | 990ADB80X80108<br><br>990ADB80X80109 |
| | AS-B804-148 | 48 VAC 2 A 16-point output | No equivalent module | – | – | – |
| | AS-B806-032 | 115 VAC 32-point output | (2x) BMXDAO1605 | Dedicated | Evolution I/O adapter B806032-(2)DAO1605 (0.56 m/*2 ft*)<br>Evolution I/O adapter B806032-(2)DAO1605 (1.63 m/*5 ft*) | 990ADB80X80426 *(3)*<br>990ADB80X80427 *(3)* |
| | | | (2x) BMXDRA1605 | Multi-use flying-lead | Evolution I/O adapter, Generic2 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic2 (1.63 m/*5 ft*) | 990ADB80X80296<br>990ADB80X80297 |
| | | | | Pre-wired | Evolution I/O adapter B806032-(2)DRA1605, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B806032-(2)DRA1605, pre-wired (1.63 m/*5 ft*) | 990ADB80X80216<br><br>990ADB80X80217 |
| | AS-B806-124 | 24 VAC 32-point output | No equivalent module | – | – | – |
| | AS-B808-016 | 230 VAC 16-point output | BMXDAO1605 | Dedicated | Evolution I/O adapter B804/808●16-DAO1605 (0.56 m/*2 ft*)<br>Evolution I/O adapter B804/808●16-DAO1605 (1.63 m/*5 ft*) | 990ADB80X80322 *(3)*<br>990ADB80X80323 *(3)* |
| | | | BMXDRA1605 | Multi-use flying-lead | Evolution I/O adapter, Generic1 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic1 (1.63 m/*5 ft*) | 990ADB80X80198<br>990ADB80X80199 |
| | | | | Pre-wired | Evolution I/O adapter B808016-DRA1605, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B808016-DRA1605, pre-wired (1.63 m/*5 ft*) | 990ADB80X80126<br><br>990ADB80X80127 |
| | AS-B810-008 | 115 VAC 8-point Isolated output | BMXDRA0805 | Dedicated | Evolution I/O adapter B810008-DRA0805 (0.56 m/*2 ft*)<br>Evolution I/O adapter B810008-DRA0805 (1.63 m/*5 ft*) | 990ADB80X80130 *(3)*<br>990ADB80X80131 *(3)* |
| | | | BMXDAO1615 | Dedicated | Evolution I/O adapter B810008-DAO1615 (0.56 m/*2 ft*)<br>Evolution I/O adapter B810008-DAO1615 (1.63 m/*5 ft*) | 990ADB80X80332<br>990ADB80X80333 |
| | AS-B814-108 | NO/NC Power Relay 8-point output | BMXDRC0805 | Dedicated (2) | Evolution I/O adapter B814108/B840108-DRC0805 (0.56 m/*2 ft*)<br>Evolution I/O adapter B814108/B840108-DRC0805 (1.63 m/*5 ft*) | 990ADB80X80334<br><br>990ADB80X80335 |
| | | | BMXDRA0805 | Multi-use flying-lead | Evolution I/O adapter, Generic1 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic1 (1.63 m/*5 ft*) | 990ADB80X80198<br>990ADB80X80199 |
| | | | | Pre-wired | Evolution I/O adapter B814108-DRA0805, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B814108-DRA0805, pre-wired (1.63 m/*5 ft*) | 990ADB80X80134<br><br>990ADB80X80135 |

*(2) The DRC module relay contact type (NO or NC) is determined by how it is wired at the X80 field connector. This wiring is done by the user to select the correct relay contact type.*
*(3) The dedicated adapter replaces a generic factory pre-wired adapter assembly.*

# PLC modernization and competitive migration
Modernization solutions
984-800 I/O to Modicon X80 I/O platform

## Equivalence table: 984-800–X80 modules platform

| Type of device | B800 I/O module | | X80 modules platform | I/O adapter assembly information | | |
|---|---|---|---|---|---|---|
| | **Reference** | **Description** | **Reference** | **Type** | **Description** | **Reference** |
| **Discrete output** | **AS-B820-008** | 10-60 VDC 8-point output (True High) | BMXDRA0815 | *Dedicated* | Evolution I/O adapter B802008/B820008-DRA08●5 (0.56 m/*2 ft*)<br>Evolution I/O adapter B802008/B820008-DRA08●5 (1.63 m/*5 ft*) | **990ADB80X80318**<br>**990ADB80X80319** |
| | **AS-B824-016** | 24 VDC 16-point output (True High) | BMXDDO1602 | *Multi-use flying-lead* | Evolution I/O adapter, Generic1 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic1 (1.63 m/*5 ft*) | **990ADB80X80198**<br>**990ADB80X80199** |
| | | | | *Pre-wired* | Evolution I/O adapter B824016-DDO1602, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B824016-DDO1602, pre-wired (1.63 m/*5 ft*) | **990ADB80X80144**<br><br>**990ADB80X80145** |
| | **AS-B826-032** | 24 VDC 32-point output (True High) | (2x) BMXDDO1602 | *Multi-use flying-lead* | Evolution I/O adapter, Generic2 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic2 (1.63 m/*5 ft*) | **990ADB80X80296**<br>**990ADB80X80297** |
| | | | | *Pre-wired* | Evolution I/O adapter B826032-(2)DDO1602, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B826032-(2)DDO1602, pre-wired (1.63 m/*5 ft*) | **990ADB80X80248**<br>**990ADB80X80249** |
| | **AS-B828-016** | 5 V TTL 16-point output (sink) | **No equivalent module** | – | – | **–** |
| | **AS-B832-016** | 24 VDC 16-point output (True Low) | BMXDDO1612 | *Dedicated* | Evolution I/O adapter B832016-DDO1612 (0.56 m/*2 ft*)<br>Evolution I/O adapter B832016-DDO1612 (1.63 m/*5 ft*) | **990ADB80X80344** *(3)*<br>**990ADB80X80345** *(3)* |
| | **AS-B836-016** | 24 - 250 VDC 16-point outputs isolated | (2x) BMXDRA0815 | *Dedicated* | Evolution I/O adapter B836016-(2)DRA0815 (0.56 m/*2 ft*)<br>Evolution I/O adapter B836016-(2)DRA0815 (1.63 m/*5 ft*) | **990ADB80X80442** *(3)*<br>**990ADB80X80443** *(3)* |
| | **AS-B838-032** | 24 VDC 32-point output (True High) | (2x) BMXDDO1602 | *Dedicated* | Evolution I/O adapter B838032-(2)BMXDDO1602 (0.56 m/*2 ft*)<br>Evolution I/O adapter B838032-(2)BMXDDO1602 (1.63 m/*5 ft*) | **990ADB80X80212**<br>**990ADB80X80213** |
| | **AS-B840-108** | NO/NC Reed relay 8-point output | BMXDRC0805 | *Dedicated (2)* | Evolution I/O adapter B814108/B840108-DRC0805 (0.56 m/*2 ft*)<br>Evolution I/O adapter B814108/B840108-DRC0805 (1.63 m/*5 ft*) | **990ADB80X80334**<br>**990ADB80X80335** |
| | | | BMXDRA0805 | *Multi-use flying-lead* | Evolution I/O adapter, Generic1 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic1 (1.63 m/*5 ft*) | **990ADB80X80198**<br>**990ADB80X80199** |
| | | | | *Pre-wired* | Evolution I/O adapter B840108-DRA0805, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B840108-DRA0805, pre-wired (1.63 m/*5 ft*) | **990ADB80X80162**<br>**990ADB80X80163** |
| | | | BMXDRA0804T | *Multi-use flying-lead* | Evolution I/O adapter, Generic1 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic1 (1.63 m/*5 ft*) | **990ADB80X80198**<br>**990ADB80X80199** |
| | | | | *Pre-wired* | Evolution I/O adapter B840108-DRA0804T, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B840108-DRA0804T, pre-wired (1.63 m/*5 ft*) | **990ADB80X80164**<br>**990ADB80X80165** |
| | **AS-B882-116** | 16-point discrete outputs | **No equivalent module** | – | – | – |

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# PLC modernization and competitive migration
## Modernization solutions
984-800 I/O to Modicon X80 I/O platform

## Equivalence table: 984-800–X80 modules platform

| Type of device | B800 I/O module | | X80 modules platform | I/O adapter assembly information | | |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Type | Description | Reference |
| **Analog input** | AS-B846-001 | Analog MUX (16-point voltage to one output) | (2x) BMXAMI0810 | *Multi-use flying-lead* | Evolution I/O adapter, Generic4 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic4 (1.63 m/*5 ft*) | **990ADB80X80292**<br>**990ADB80X80293** |
| | | | | *Pre-wired* | Evolution I/O adapter B846001-(2)AMI0810, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B846001-(2)AMI0810, pre-wired (1.63 m/*5 ft*) | **990ADB80X80166**<br>**990ADB80X80167** |
| | AS-B846-002 | Analog MUX (16-point current to one output) | (2x) BMXAMI0810 | *Multi-use flying-lead* | Evolution I/O adapter, Generic4 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic4 (1.63 m/*5 ft*) | **990ADB80X80292**<br>**990ADB80X80293** |
| | | | | *Pre-wired* | Evolution I/O adapter B846002-(2)AMI0810, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B846002-(2)AMI0810, pre-wired (1.63 m/*5 ft*) | **990ADB80X80168**<br>**990ADB80X80169** |
| | AS-B873-001 | 4-20 mA,1-5 V 4-channel analog input | BMXAMI0410 | *Multi-use flying-lead* | Evolution I/O adapter, Generic5 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic5 (1.63 m/*5 ft*) | **990ADB80X80190**<br>**990ADB80X80191** |
| | | | | *Pre-wired* | Evolution I/O adapter B873001-AMI0410, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B873001-AMI0410, pre-wired (1.63 m/*5 ft*) | **990ADB80X80182**<br>**990ADB80X80183** |
| | AS-B873-002 | 4-20 mA,1-5 V 4-channel analog input | BMXAMI0410 | *Multi-use flying-lead* | Evolution I/O adapter, Generic5 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic5 (1.63 m/*5 ft*) | **990ADB80X80190**<br>**990ADB80X80191** |
| | | | | *Pre-wired* | Evolution I/O adapter B873002-AMI0410, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B873002-AMI0410, pre-wired (1.63 m/*5 ft*) | **990ADB80X80184**<br>**990ADB80X80185** |
| | AS-B873-011 | -10 V to +10 V 4-channel analog input | BMXAMI0410 | *Multi-use flying-lead* | Evolution I/O adapter, Generic5 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic5 (1.63 m/*5 ft*) | **990ADB80X80190**<br>**990ADB80X80191** |
| | | | | *Pre-wired* | Evolution I/O adapter B873011-AMI0410, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B873011-AMI0410, pre-wired (1.63 m/*5 ft*) | **990ADB80X80186**<br>**990ADB80X80187** |
| | AS-B873-012 | -10 V to +10 V 4-channel analog input | BMXAMI0410 | *Multi-use flying-lead* | Evolution I/O adapter, Generic5 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic5 (1.63 m/*5 ft*) | **990ADB80X80190**<br>**990ADB80X80191** |
| | | | | *Pre-wired* | Evolution I/O adapter B873012-AMI0410, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B873012-AMI0410, pre-wired (1.63 m/*5 ft*) | **990ADB80X80188**<br>**990ADB80X80189** |
| | AS-B875-001 | 4-20 mA,1-5 V 8-channel analog input | BMXAMI0810 | *Multi-use flying-lead* | Evolution I/O adapter, Generic7 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic7 (1.63 m/*5 ft*) | **990ADB80X80286**<br>**990ADB80X80287** |
| | | | | *Pre-wired* | Evolution I/O adapter B875001-AMI0810, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B875001-AMI0810, pre-wired (1.63 m/*5 ft*) | **990ADB80X80300**<br>**990ADB80X80301** |
| | AS-B875-002 | 4-20 mA,1-5 V 8-channel analog input | BMXAMI0810 | *Multi-use flying-lead* | Evolution I/O adapter, Generic7 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic7 (1.63 m/*5 ft*) | **990ADB80X80286**<br>**990ADB80X80287** |
| | | | | *Pre-wired* | Evolution I/O adapter B875002-AMI0810, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B875002-AMI0810, pre-wired (1.63 m/*5 ft*) | **990ADB80X80302**<br>**990ADB80X80303** |
| | AS-B875-011 | Selectable 8-channel differential input | BMXAMI0810 | *Multi-use flying-lead* | Evolution I/O adapter, Generic7 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic7 (1.63 m/*5 ft*) | **990ADB80X80286**<br>**990ADB80X80287** |
| | | | | *Pre-wired* | Evolution I/O adapter B875011-AMI0810, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B875011-AMI0810, pre-wired (1.63 m/*5 ft*) | **990ADB80X80304**<br>**990ADB80X80305** |
| | AS-B875-012 | Selectable 8-channel differential input | BMXAMI0810 | *Multi-use flying-lead* | Evolution I/O adapter, Generic7 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic7 (1.63 m/*5 ft*) | **990ADB80X80286**<br>**990ADB80X80287** |
| | | | | *Pre-wired* | Evolution I/O adapter B875012-AMI0810, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B875012-AMI0810, pre-wired (1.63 m/*5 ft*) | **990ADB80X80306**<br>**990ADB80X80307** |
| | AS-B875-101 | Fast selectable 8-channel analog input | BMXAMI0810 | *Multi-use flying-lead* | Evolution I/O adapter, Generic8 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic8 (1.63 m/*5 ft*) | **990ADB80X80284**<br>**990ADB80X80285** |
| | | | | *Pre-wired* | Evolution I/O adapter B875101-AMI0810, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B875101-AMI0810, pre-wired (1.63 m/*5 ft*) | **990ADB80X80308**<br>**990ADB80X80309** |
| | AS-B875-102 | Fast selectable 8-channel analog input | BMXAMI0810 | *Multi-use flying-lead* | Evolution I/O adapter, Generic8 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic8 (1.63 m/*5 ft*) | **990ADB80X80284**<br>**990ADB80X80285** |
| | | | | *Pre-wired* | Evolution I/O adapter B875102-AMI0810, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B875102-AMI0810, pre-wired (1.63 m/*5 ft*) | **990ADB80X80310**<br>**990ADB80X80311** |
| | AS-B875-111 | Selectable 8 diff./16 single channel input | BMXAMI0810 | *Dedicated* | Evolution I/O adapter B875111-AMI0810 W/ AN28 (0.56 m/*2 ft*)<br>Evolution I/O adapter B875111-AMI0810 W/ AN28 (1.63 m/*5 ft*) | **990ADB80X80120**<br>**990ADB80X80121** |
| | AS-B877-111 | Selectable 16-channel single-ended input | (2x) BMXAMI0810 | *Multi-use flying-lead* | Evolution I/O adapter, Generic4 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic4 (1.63 m/*5 ft*) | **990ADB80X80292**<br>**990ADB80X80293** |
| | | | (2x) BMXAMI0810 (voltage) | *Pre-wired* | Evolution I/O adapter B877111-(2)AMI0810, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B877111-(2)AMI0810, pre-wired (1.63 m/*5 ft*) | **990ADB80X80412**<br>**990ADB80X80413** |
| | | | (2x) BMXAMI0810 (current) | *Pre-wired* | Evolution I/O adapter B877111-(2)AMI0810, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B877111-(2)AMI0810, pre-wired (1.63 m/*5 ft*) | **990ADB80X80414**<br>**990ADB80X80415** |
| | AS-B883-201 | 8 RTD input | BMXART0814 | – | – | – |

*(2) The DRC module's relay contact type (NO or NC) is determined by how it is wired at the X80 field connector. This wiring is done by the user to select the correct relay contact type.*

*(3) The dedicated adapter replaces a generic factory pre-wired adapter assembly.*

# PLC modernization and competitive migration
## Modernization solutions
984-800 I/O to Modicon X80 I/O platform

**2**

| Equivalence table: 984-800–X80 modules platform | | | | | | |
|---|---|---|---|---|---|---|
| **Type of device** | **B800 I/O module** | | **X80 modules platform** | **I/O adapter assembly information** | | |
| | **Reference** | **Description** | **Reference** | **Type** | **Description** | **Reference** |
| Analog output | AS-B872-002 | 4-20 mA,1-5 V 4-channel analog output | BMXAMO0410 | – | – | – |
| | AS-B872-011 | Selectable 4-channel voltage output | BMXAMO0410 | *No wiring adapter* | – | – |
| | AS-B872-100 | 4-20 mA 4-channel current output | BMXAMO0410 | *Dedicated* | Evolution I/O adapter B872100-AMO0410 (0.56 m/*2 ft*)<br>Evolution I/O adapter B872100-AMO0410 (0.56 m/*2 ft*) | **990ADB80X80346** *(3) (4)*<br>**990ADB80X80347** *(3) (4)* |
| | AS-B872-200 | Selectable 4-channel voltage output | BMXAMO0410 | *Multi-use flying-lead* | Evolution I/O adapter, Generic6 (0.56 m/*2 ft*)<br>Evolution I/O adapter, Generic6 (1.63 m/*5 ft*) | **990ADB80X80288**<br>**990ADB80X80289** |
| | | | | *Pre-wired* | Evolution I/O adapter B872200-AMO0410, pre-wired (0.56 m/*2 ft*)<br>Evolution I/O adapter B872200-AMO0410, pre-wired (1.63 m/*5 ft*) | **990ADB80X80180**<br>**990ADB80X80181** |
| Misc | AS-B882-239 | 2-channel high-speed counter | BMXECH0200 | No wiring adapter | – | – |
| | AS-B883-001 | | | | | |
| | AS-B883-101 | CAM Emulator | **No equivalent module** | No replace-ment | – | – |
| | AS-B883-111 | | | | | |
| | AS-B883-200 | 10 RTD input | (2x) BMXART0414 | No wiring adapter | – | – |
| | | | BMXART0814 | | | |
| | AS-B883-201 | 8 RTD input | BMXART0814 | No wiring adapter | – | – |
| | AS-B884-002 | PID - 2 loops | **No equivalent module** | – | – | – |
| | AS-B885-002 | ASCII Basic - 2 serial ports | | | | |
| | AS-B885-101 | Motion - Single Axis, Resolver | | | | |
| | AS-B885-111 | Motion - Single Axis, Encoder/Resolver | | | | |
| | AS-B984-100 | High-speed logic solver, 16 inputs - 8 outputs | | | | |
| | AS-B984-101 | High-speed logic solver, 16 inputs - 8 outputs | | | | |

*(3) The dedicated adapter replaces a generic factory pre-wired adapter assembly.*
*(4) The AS-B872-100 analog output channels are current mode only and required external loop power supplies to operate. The X80 analog output module channels, when configured for current operation, are self-powered and do not require any external supplies. Disconnect each of the analog output channel wires from its loop power supply, then connect the individual channel wires together.*

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# PLC modernization and competitive migration
Modernization solutions
984-800 I/O to Modicon X80 I/O platform

**2**

## Equivalence table: 984-800–X80 modules platform

| Type of device | B800 I/O module | | X80 modules platform | I/O adapter assembly information | | |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Type | Description | Reference |
| Multi-use flying-lead adapter | – | – | – | *Multi-use flying-lead* | Evolution I/O adapter B800 GNRIC01 LD/HP-PT (0.56 m/*2 ft*) | **990ADB80X80198** |
| | | | | *Multi-use flying-lead* | Evolution I/O adapter B800 GNRIC01 LD/HP-PT (1.63 m/*5 ft*) | **990ADB80X80199** |
| | | | | *Multi-use flying-lead* | Evolution I/O adapter B800 GNRIC02 HD/HP-PTx2 (0.56 m/*2 ft*) | **990ADB80X80296** |
| | | | | *Multi-use flying-lead* | Evolution I/O adapter B800 GNRIC02 HD/HP-PTx2 (1.63 m/*5 ft*) | **990ADB80X80297** |
| | | | | *Multi-use flying-lead* | Evolution I/O adapter B800 GNRIC03 LD/HD-PT (0.56 m/*2 ft*) | **990ADB80X80194** |
| | | | | *Multi-use flying-lead* | Evolution I/O adapter B800 GNRIC03 LD/HD-PT (1.63 m/*5 ft*) | **990ADB80X80195** |
| | | | | *Multi-use flying-lead* | Evolution I/O adapter B800 GNRIC04 HD/AN-PTx2 (0.56 m/*2 ft*) | **990ADB80X80292** |
| | | | | *Multi-use flying-lead* | Evolution I/O adapter B800 GNRIC04 HD/AN-PTx2 (1.63 m/*5 ft*) | **990ADB80X80293** |
| | | | | *Multi-use flying-lead* | Evolution I/O adapter B800 GNRIC05 AN/AN-PT (0.56 m/*2 ft*) | **990ADB80X80190** |
| | | | | *Multi-use flying-lead* | Evolution I/O adapter B800 GNRIC05 AN/AN-PT (1.63 m/*5 ft*) | **990ADB80X80191** |
| | | | | *Multi-use flying-lead* | Evolution I/O adapter B800 GNRIC06 HD/AN-PTx2 (0.56 m/*2 ft*) | **990ADB80X80288** |
| | | | | *Multi-use flying-lead* | Evolution I/O adapter B800 GNRIC06 HD/AN-PTx2 (1.63 m/*5 ft*) | **990ADB80X80289** |
| | | | | *Multi-use flying-lead* | Evolution I/O adapter B800 GNRIC07 AN/AN-PTx2 (0.56 m/*2 ft*) | **990ADB80X80286** |
| | | | | *Multi-use flying-lead* | Evolution I/O adapter B800 GNRIC07 AN/AN-PTx2 (1.63 m/*5 ft*) | **990ADB80X80287** |

## Replacement cables

| Type of device | B800 I/O module | | X80 modules platform | I/O adapter assembly information | | |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Type | Description | Reference |
| Repla-cement cables | – | – | – | *High-power* | Replacement X80 cable high-power 016 (0.56 m/*2 ft*) | **990X80CABLE016** |
| | | | | *High-power* | Replacement X80 cable high-power 516 (1.63 m/*5 ft*) | **990X80CABLE516** |
| | | | | *High-power* | Replacement X80 cable 40-PIN high-power 021 (0.56 m/*2 ft*) | **990X80CABL021** |
| | | | | *High-power* | Replacement X80 cable 40-PIN high-power 521 (1.63 m/*5 ft*) | **990X80CABL521** |
| | | | | *High-density* | Replacement X80 cable high-density 017 (0.56 m/*2 ft*) | **990X80CABLE017** |
| | | | | *High-density* | Replacement X80 cable high-density 517 (1.63 m/*5 ft*) | **990X80CABLE517** |
| | | | | *Analog* | Replacement X80 cable 20-PIN analog 018 (0.56 m/*2 ft*) | **990X80CABLE018** |
| | | | | *Analog* | Replacement X80 cable 20-PIN analog 518 (1.63 m/*5 ft*) | **990X80CABLE518** |
| | | | | *Analog* | Replacement X80 cable 28-PIN analog AN028 (0.56 m/*2 ft*) | **990X80CABL019** |
| | | | | *Analog* | Replacement X80 cable 28-PIN analog AN528 (1.63 m/*5 ft*) | **990X80CABL519** |
| | | | | *Multi-use flying-lead* | Replacement X80 cable high-power PIGTAIL 016 (0.56 m/*2 ft*) | **990X80CABL016PT** |
| | | | | *Multi-use flying-lead* | Replacement X80 cable high-density PIGTAIL 017 (0.56 m/*2 ft*) | **990X80CABL017PT** |
| | | | | *Multi-use flying-lead* | Replacement X80 cable analog PIGTAIL 018 (0.56 m/*2 ft*) | **990X80CABL018PT** |
| | | | | *Multi-use flying-lead* | Replacement X80 cable high-power PIGTAIL 516 (1.63 m/*5 ft*) | **990X80CABL516PT** |
| | | | | *Multi-use flying-lead* | Replacement X80 cable high-density PIGTAIL 517 (1.63 m/*5 ft*) | **990X80CABL517PT** |
| | | | | *Multi-use flying-lead* | Replacement X80 cable analog PIGTAIL 518 (1.63 m/*5 ft*) | **990X80CABL518PT** |

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# PLC modernization and competitive migration
Modernization solutions
Quantum I/O to X80 modules platform

**2**

*Quantum PLC*

*Quantum to X80 dedicated wiring adapter*

*Quantum to X80 multi-use flying-lead adapter*

*Front-mount wiring adapter*

*Quantum to X80 chassis*

*Quantum to X80 mounting plate*

*Quantum to X80 assembly*

## Presentation

The Modicon Quantum to Modicon X80 modernization solution consists of various I/O adapters, dedicated chassis, and mounting plates. It is used to simplify the replacement of Modicon Quantum PLCs with Modicon M580/M340 PLCs and X80 I/O; existing Modicon Quantum field wiring will be retained.

### Adapters

There are three types of wiring adapters:
■ **Dedicated wiring adapters** are designed to mate specific Modicon Quantum I/O modules to specific X80 I/O modules. Fully pre-wired cables are included to make installation quick and easy. 18 references are available in both 0.56 m/*2 ft* and 1.63 m/*5 ft* lengths, plus one in one length.
■ **Multi-use flying-lead adapters** (10 types available) are designed to be used with fixed sets of I/O module pairs. The cables shipped with the multi-use adapters (flying-lead cables) are not ready-to-use: the flying leads will have to be wired before the commissioning on site, depending on the mating of the concerned Quantum and X80 I/O modules. The Quantum to X80 Instruction sheet contains wiring guides for each of the ten types of multi-use flying-lead adapters.The multi-use flying-lead adapters are also available in both 0.56 m/*2 ft* and 1.63 m/*5 ft* lengths.
■ **Front-mount wiring adapters** are used for high-density I/O modules (32 and 96 I/O points). They allow field wiring terminal blocks to be removed from the Quantum PLC and plugged directly onto the X80 I/O module (no need for a dedicated chassis).

### Backplanes assemblies

There are two types of assemblies:
■ **Chassis** will support both the M580 or M340 backplanes (purchased separately) and new X80 I/O. A chassis can receive one or two X80 backplanes. Different sizes are available depending on the size of the existing Quantum backplane. The chassis is required when dedicated or multi-use I/O adapters are used.
■ **Mounting plates** are designed for use with the CableFast cabling system. With CableFast, there is no need to have a chassis  assembly to replace a Modicon Quantum I/O rack (the chassis is only required when Modicon Quantum terminal blocks are directly connected to field wiring). The same solution may be used with the Telefast wiring system. The mounting plate, very low compared to the chassis, is also designed for the high-density 32 or 96 I/O modules with front mount wiring adapters. Note that the mounting plate can also be used when the customer is rewiring the terminal blocks to simplify the mounting of X80 backplanes into the control panel.

The offer provides three chassis and three mounting plates together with 29 wiring adapters (including 10 multi-use adapters) that cover most modernization needs between Modicon Quantum I/O modules and X80 I/O modules. All adapters are available in either 0.56 m/*2 ft* or 1.63 m/*5 ft* lengths (except for the multi-use BMXFCW301S cable that is available in a 3 m/*10 ft* length).

**Cable management kits** are used to guide the adapters smoothly under the chassis inside the control panels. Each of the four possible X80 backplane sizes has a dedicated reference.

## Description of the solution

A chassis allows the replacement of a Modicon Quantum I/O rack with an X80 rack (M340 or M580) in the same physical location and with the same footprint as the current system:
■ The Modicon Quantum I/O rack is removed and replaced with the chassis metallic base plate that contains an X80 backplane and the selected I/O wiring adapters.
■ The backplanes (2 backplanes maximum, purchased separately) are mounted on the chassis front plate, and accommodate the new PLC and X80 modules. The upper backplane is left-aligned on the front plate and the lower backplane is right-aligned on the front plate.
■ The appropriate wiring adapters are installed in the lower section of the chassis. These quick wiring adapters allow the existing Modicon Quantum terminal block of the existing installation to be connected to new X80 platform of the new PLC configuration, which means there is no need for on-site rewiring. The original Modicon Quantum connectors are retained. The chassis door can be opened to allow access to the wiring adapters during commissioning and maintenance.

A mounting plate has the same functionality as a chassis when using the CableFast cabling system or only high-density modules.

The most commonly used cables are 0.56 m/*2 ft* or 1.63 m/*5 ft*, but 1.63 m/*5 ft* cables are also available for specific needs, for instance to merge two Modicon Quantum I/O racks into one X80 rack. Cables and terminal blocks are included with the I/O adapters. Replacement cables are also available as spare parts (see page 44035/9). Note that the replacement flying-lead adapters do not include X80 I/O terminal blocks.

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# PLC modernization and competitive migration
Modernization solutions
Quantum I/O to X80 modules platform



*Upgrade your Quantum PLC to Modicon M580*
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MFR38559

## Benefits of the solution

The customer benefits are reduced risk and cost of modernization from a Quantum I/O PLC:
- Minimal production downtime with about 1 hour setup time per rack.
- Cost reduction by keeping all sensor/actuator wiring inside existing cabinets, leading to savings in wiring, testing and commissioning, and wiring diagram updates: no electrician or wiring contractor needed.
- Unlike manual rewiring, ordinary production stops can be used for the changeover.
- Due to minimal changes, installations can be restarted within the allotted time with the ability to roll back in the event of any unforeseen matters arising.
- Better reliability brought by dedicated solutions designed by the manufacturer.
- Simple solution that makes modernization easy and provides the lowest risk option.

This modernization solution is part of a larger modernization and migration offer that includes methods, specific migration devices, and dedicated tools for various legacy PLCs from Schneider Electric and the competition as well.
Modernization and migration can be implemented with help from our Schneider Electric services experts

## Equivalence table

The cross-reference table hereafter shows the possible equivalences between Quantum and X80 I/O modules. Some differences in terminal strips, modularity, common or power connections may have to be addressed: it is recommended that you verify compatibility with our Schneider Electric service representatives.

Before selecting your product, please note:
- Installers of multi-use flying-leads I/O adapters are strongly advised to pre-wire each multi-use I/O adapter before entering the site where the adapter is to be installed. Pre-wiring can be performed on request in the factory. Failure to complete the wiring of each multi-use I/O adapter before entering the job site will result in unwanted delay in completing the task of mounting the X80 modules platform.
- Installers are informed that multi-use flying lead adapters do not contain fuses nor any other devices to help protect against external events such as circuit overload, short circuit, or sensor/pre-actuator voltage errors. Check that sufficient module protection devices are in place.
- The new system (migration chassis or mounting plate + I/O modules and CPU) is deeper than the original Modicon Quantum:
  □ Original Modicon Quantum system is 125 mm/*4.92 in.* deep
  □ System depth with migration chassis and 990ADQUAX80●●● I/O adapter is 275 mm/*10.8 in.* (including terminal block) +150 mm/+~*6 in.*
  □ System depth with mounting plate and CableFast wiring offer is 153 mm/*6 in.* (including terminal block).
  □ System depth with migration chassis and 990ADPREX80109 I/O adapter is 295 mm/*11.6 in.* (including terminal block).
- In some cases, the BMXART0814 X80 module may be a suitable replacement for 140ATI03000. The cold junction differences must be evaluated prior to modernization. If the user determines that the BMXART0814 is an acceptable replacement for the installation, they can use 990ADQUAX80102 for the modernization. The user will need to determine the appropiate wiring for the installation.
- The Quantum 140AMM09000 analog channels are differential, whereas the X80 BMXAMM0600 analog channels are single-ended. In some cases, the BMXAMM0600 will not be a suitable replacement for the 140AMM09000. In these cases, individual X80 analog input and output modules can be substituted for the BMXAMM0600 mixed module.
- Quantum current analog output modules 140AMM09000, 140ACO02000, and 140ACO13000 required external loop power supplies to operate. The X80 analog output modules used in current mode are self-powered and do not require external power supplies. Disconnect each of the analog output channel wires from its loop power supply, then connect the individual channel wires together.

2

*Compatibility (continued)*

# PLC modernization and competitive migration
Modernization solutions
Quantum I/O to X80 modules platform

**2**

## Equivalence table: Quantum I/O — X80 modules platform

| Type of device | Quantum I/O | | X80 modules platform | | I/O adapter - PLC I/O chassis - backplane mounting plate | |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Type | Description | Reference |
| Rack to chassis | 140XBP00600 | Backplane 6-slot, 265 x 290 mm/ *10.4 x 11.4 in.* | (2x) BMX/ BMEXBP0400 | *Chassis* | 140XBP00600 to BM•XBP chassis - W/O backplane | **990CHQUAX80060** |
| | 140XBP01000 | Backplane 10-slot, 428 x 290 mm/ *16.8 x 11.4 in.* | (2x)BMX/ BMEXBP•••• (up to & including 0800) | *Chassis* | 140XBP01000 to BM•XBP chassis - W/O backplane | **990CHQUAX80100** |
| | 140XBP01600 | Backplane 16-slot, 671 x 290 mm/ *26.4 x 11.4 in.* | (2x) BMX/ BMEXBP•••• (up to & including 1200) | *Chassis* | 140XBP01600 to BM•XBP chassis - W/O backplane | **990CHQUAX80160** |
| Rack to mounting plate | 140XBP00600 | Backplane 6-slot, 265 x 290 mm/ *10.4 x 11.4 in.* | BMX/BMEXBP0400 | *Mounting plate* | 140XBP00600 to BM•XBP mounting plate - W/O backplane | **990CHQUAX80061** |
| | 140XBP01000 | Backplane 10-slot, 428 x 290 mm/ *16.8 x 11.4 in.* | BMX/BMEXBP•••• (up to & including 0800) | *Mounting plate* | 140XBP01000 to BM•XBP mounting plate - W/O backplane | **990CHQUAX80101** |
| | 140XBP01600 | Backplane 16-slot, 671 x 290 mm/ *26.4 x 11.4 in.* | (2x) BMX/ BMEXBP•••• (up to & including 1200) | *Mounting plate* | 140XBP01600 to BM•XBP mounting plate - W/O backplane | **990CHQUAX80161** |
| Cable management kits | — | — | BMX/BMEXBP1200 | *Accessory* | Cable management kit for BMX/BMEXBP1200 | **990CMQUAX80120** |
| | | | BMX/BMEXBP0800 | *Accessory* | Cable management kit for BMX/BMEXBP0800 | **990CMQUAX80080** |
| | | | BMX/BMEXBP0600 | *Accessory* | Cable management kit for BMX/BMEXBP0600 | **990CMQUAX80060** |
| | | | BMX/BMEXBP0400 | *Accessory* | Cable management kit for BMX/BMEXBP0400 | **990CMQUAX80040** |

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# PLC modernization and competitive migration
Modernization solutions
Quantum I/O to X80 modules platform

**2**

## Equivalence table: Quantum I/O — X80 modules platform

| Type of device | Quantum I/O | | X80 modules platform | | I/O adapter - PLC I/O chassis - backplane mounting plate | |
|---|---|---|---|---|---|---|
| | **Reference** | **Description** | **Reference** | **Type** | **Description** | **Reference** |
| **Digital input** | **140DAI35300** | Digital input 24 VAC 32-point (4 groups x 8 points) | **(2x) BMXDAI1602** | *Dedicated* | 140DAI/DDI●5300 to (2x) BMXDAI/DDI160● (0.56 *m/2 ft*) | **990ADQUAX80100** |
| | **140DAI45300** | Digital input 48 VAC 32-point (4 groups x 8 points) | **(2x) BMXDAI1603** | | 140DAI/DDI●5300 to (2x) BMXDAI/DDI160● (1.63 *m/5 ft*) | **990ADQUAX80101** |
| | **140DDI35300** | Digital input 24 VDC 32-point (4 groups x 8 points), sink | **(2x) BMXDDI1602** | | | |
| | **140DDI85300** | Digital input 10-60 VDC 32-point (4 groups x 8 points), sink | **(2x) BMXDDI1602 or (2x) BMXDDI1603** | | | |
| | **140DAI55300** | Digital input 115 VAC 32-point (4 groups x 8 points) | **(2x) BMXDAI1604** | *Dedicated* | 140DAI55300 to (2x) BMXDAI1604 (0.56 *m/2 ft*) 140DAI55300 to (2x) BMXDAI1604 (1.63 *m/5 ft*) | **990ADQUAX80204** **990ADQUAX80205** |
| | **140DAI54000** | Digital input 115 VAC 16-point Isolated | **BMXDAI1614** | *Dedicated* | 140DAI54/74000 to BMXDAI1614/1615 (0.56 *m/2 ft*) 140DAI54/74000 to BMXDAI1614/1615 (1.63 *m/5 ft*) | **990ADQUAX80110** **990ADQUAX80111** |
| | **140DAI74000** | Digital input 230 VAC 16-point Isolated | **BMXDAI1615** | | | |
| | **140DDI35300** | Digital input 24 VDC 32-point (4 groups x 8 points), sink | **BMXDDI3202K** | *Dedicated* | 140DDI35300 to BMXDDI3202K with CDP102 (1 m/*3.28 ft*) 140DDI35300 to BMXDDI3202K with CDP202 (2 m/*6.56 ft*) | **990ADQUAX80120** **990ADQUAX80121** |
| | **140DAI34000** | Digital input 24 VAC 16-point Isolated | **BMXDAI1602** | *Dedicated* | 140DAI34000/44000 to BMXDAI1602/1603 (0.56 *m/2 ft*) 140DAI34000/44000 to BMXDAI1602/1603 (1.63 *m/5 ft*) | **990ADQUAX80130** **990ADQUAX80131** |
| | **140DAI44000** | Digital input 48 VAC 16-point | **BMXDAI1603** | *Dedicated* | 140DAI34000/44000 to BMXDAI1602/1603 (0.56 *m/2 ft*) 140DAI34000/44000 to BMXDAI1602/1603 (1.63 *m/5 ft*) | **990ADQUAX80130** **990ADQUAX80131** |
| | **140DDI84100** | Digital input 10-60 VDC 16-point (8 groups x 2 points), sink | **BMXDDI1602 or BMXDDI1603** | *Dedicated* | 140DDI84100 to BMXDDI1602/1603 (0.56 *m/2 ft*) 140DDI84100 to BMXDDI1602/1603 (1.63 *m/5 ft*) | **990ADQUAX80132** **990ADQUAX80133** |
| | **140DAI54300** | Digital input 115 VAC 16-point (2 groups x 8 points) | **BMXDAI1614** | *Dedicated* | 140DAI54300 to BMXDAI1614 (0.56 *m/2 ft*) 140DAI54300 to BMXDAI1614 (1.63 *m/5 ft*) | **990ADQUAX80136** **990ADQUAX80137** |
| | **140DAI75300** | Digital input 230 VAC 32-point (4 groups x 8 points) | **(2x) BMXDAI1615** | *Dedicated* | 140●●● to BMX●●● high-power with 2x 40-pigtail (0.56 *m/2 ft*) 140●●● to BMX●●● high-power with 2x 40-pigtail (1.63 *m/5 ft*) | **990ADQUAX80218** **990ADQUAX80219** |
| | **140DDI35310** | Digital input 24 VDC (True Low) 32-point (4 groups x 8 points) | **(2x) BMXDAI1602** | *Multi-use flying-lead* | 140●●● to (2x) BMX●●● high-density with 2x 20-pigtail (0.56 *m/2 ft*) 140●●● to (2x) BMX●●● high-density with 2x 20-pigtail (1.63 *m/5 ft*) | **990ADQUAX80224** **990ADQUAX80225** |
| | **140DDI67300** | Digital input 125 VDC (True High) | **(2x) BMXDDI1604T** | *Multi-use flying-lead* | 140●●● to (2x) BMX●●● high-power with 2x 20-pigtail (0.56 *m/2 ft*) 140●●● to (2x) BMX●●● high-power with 2x 20-pigtail (1.63 *m/5 ft*) | **990ADQUAX80216** **990ADQUAX80217** |
| | **140DDI36400** | Telefast digital input 24 VDC 6 groups x 16-point (True High) | **BMXDDI3202K and BMXDDI6402K** | *Front mount* | 140DD●36400 to BMXDD●3202K AND DD●6402K | **990ADQUAX80246** |

# PLC modernization and competitive migration
Modernization solutions
Quantum I/O to X80 modules platform

**2**

## Equivalence table: Quantum I/O — X80 modules platform

| Type of device | Quantum I/O | | X80 modules platform | | I/O adapter - PLC I/O chassis - backplane mounting plate | |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Type | Description | Reference |
| Digital output | 140DDO35300 | Digital output 24 VDC 32-point (4 groups x 8 points), source | (2x) BMXDDO1602 | Dedicated | 140DDO3530●/35310 to (2x) BMXDDO16●2 (0.56 *m/2 ft*)<br>140DDO3530●/35310 to (2x) BMXDDO16●2 (1.63 *m/5 ft*) | 990ADQUAX80206<br>990ADQUAX80207 |
| | 140DDO35301 | Digital output 24 VDC 32-point (4 groups x 8 points), source | | | | |
| | 140DDO35310 | Digital output 24 VDC 32-point (4 groups x 8 points), sink | (2X) BMXDDO1612 | Dedicated | 140DDO3530●/35310 to (2x) BMXDDO16●2 (0.56 *m/2 ft*)<br>140DDO3530●/35310 to (2x) BMXDDO16●2 (1.63 *m/5 ft*) | 990ADQUAX80206<br>990ADQUAX80207 |
| | 140DAO84000 | Digital output 24-230 VAC 16-point isolated | BMXDAO1615 | Dedicated | 140DAO84000/84010 to BMXDAO1615 (0.56 *m/2 ft*)<br>140DAO84000/84010 to BMXDAO1615 (1.63 *m/5 ft*) | 990ADQUAX80108<br>990ADQUAX80109 |
| | 140DAO84010 | Digital output 24-115 VAC 16-point isolated | | | | |
| | 140DAO84210 | Digital output 100-115 VAC 16-point (4 groups x 4 points) | BMXDAO1615 | Dedicated | 140DAO84210/84220 to BMXDAO1615 (0.56 *m/2 ft*)<br>140DAO84210/84220 to BMXDAO1615 (1.63 *m/5 ft*) | 990ADQUAX80140<br>990ADQUAX80141 |
| | 140DAO84220 | Digital output 24-48 VAC 16-point (4 groups x 4 points) | | | | |
| | 140DAO85300 | Digital output 24-240 VAC 32-point (4 groups x 8 points) | (2x) BMXDAO1605 | Dedicated | 140DAO85300 to (2x) BMXDAO1605 (0.56 *m/2 ft*)<br>140DAO85300 to (2x) BMXDAO1605 (1.63 *m/5 ft*) | 990ADQUAX80214<br>990ADQUAX80215 |
| | 140DRA84000 | Relay output 16-point NO 2 A/pt | (2x) BMXDRA0815 | Dedicated | 140DRA84000 to (2x) BMXDRA0815 (0.56 *m/2 ft*)<br>140DRA84000 to (2x) BMXDRA0815 (1.63 *m/5 ft*) | 990ADQUAX80228<br>990ADQUAX80229 |
| | 140DRC83000 | Relay output 8-point NO/NC 5 A/pt | BMXDRC0805 | Dedicated | 140DRC83000 to BMXDRC0805 (0.56 *m/2 ft*)<br>140DRC83000 to BMXDRC0805 (1.63 *m/5 ft*) | 990ADQUAX80134<br>990ADQUAX80135 |
| | 140DDO84300 | Digital output 10...60 VDC 2 groups x 8 points, source module | BMXDDO1602 | Multi-use flying-lead | 140●●● to BMX●●● high-power with 20-pigtail (0.56 *m/2 ft*)<br>140●●● to BMX●●● high-power with 20-pigtail (1.63 *m/5 ft*) | 990ADQUAX80116<br>990ADQUAX80117 |
| | | | (2x) BMXDRA0815 | Multi-use flying-lead | 140●●● to (2x) BMX●●● high-power with 2x 20-pigtail (0.56 *m/2 ft*)<br>140●●● to (2x) BMX●●● high-power with 2x 20-pigtail (1.63 *m/5 ft*) | 990ADQUAX80216<br>990ADQUAX80217 |
| | 140DDO88500 | Digital output 25...125 VDC 2 groups x 6 points (True High) | (2x) BMXDRA0815 | Multi-use flying-lead | 140●●● to (2x) BMX●●● high-power with 2x 20-pigtail (0.56 *m/2 ft*)<br>140●●● to (2x) BMX●●● high-power with 2x 20-pigtail (1.63 *m/5 ft*) | 990ADQUAX80216<br>990ADQUAX80217 |
| | 140DDO36400 | Telefast digital input 24 VDC 6 groups x 6 points (True High) | BMXDDO3202K and BMXDDO6402K | Front mount | 140DD●36400 to BMXDD●3202K AND DD●6402K | 990ADQUAX80246 |
| Mixed digital input output | 140DDM39000 | Mixed (2x8 inputs, 2x4 outputs), 24 VDC | (2x) BMXDDM16022 | Multi-use flying-lead | 140●●● to (2x) BMX●●● high-density with 2x 20-pigtail (0.56 *m/2 ft*)<br>140●●● to (2x) BMX●●● high-density with 2x 20-pigtail (1.63 *m/5 ft*) | 990ADQUAX80224<br>990ADQUAX80225 |

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# PLC modernization and competitive migration
Modernization solutions
Quantum I/O to X80 modules platform

## Equivalence table: Quantum I/O — X80 modules platform

| Type of device | Quantum I/O | | X80 modules platform | | I/O adapter - PLC I/O chassis - backplane mounting plate | |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Type | Description | Reference |
| Analog input | 140ACI03000 | Analog input 8-channel unipolar high-speed C/V | BMXAMI0810 or BMXAMI0800 | *Dedicated* | 140ACI/AVI03000 to BMXAMI0800/0810 (0.56 *m/2 ft*)<br>140ACI/AVI03000 to BMXAMI0800/0810 (1.63 m/5 ft) | **990ADQUAX80112**<br>**990ADQUAX80113** |
| | 140AVI03000 | Analog input 8-channel bipolar multirange | BMXAMI0810 | *Dedicated* | 140ACI/AVI03000 to BMXAMI0800/0810 (0.56 *m/2 ft*)<br>140ACI/AVI03000 to BMXAMI0800/0810 (1.63 m/5 ft) | **990ADQUAX80112**<br>**990ADQUAX80113** |
| | 140ACI04000 | Analog input 16-channel current | (2x) BMXAMI0800 or (2x) BMXAMI0810 | *Dedicated* | 140ACI04000 to BMXAMI0800/0810 (0.56 *m/2 ft*)<br>140ACI04000 to BMXAMI0800/0810 (1.63 m/5 ft) | **990ADQUAX80226**<br>**990ADQUAX80227** |
| | 140ARI03010 | Analog input 8-channel RTD input 2-, 3-, or 4-wire | BMXART0814 | *Dedicated* | 140ARI03010/140ATI03000 to BMXART0814 (0.56 *m/2 ft*) | **990ADQUAX80102** |
| | 140ATI03000 | Analog input 8-channel thermocouple, J,K,E,T,S,R,B | BMXART0814 | | | |
| Analog output | 140ACO02000 | Analog output 4-channel current | BMXAMO0410 *(6)* | *Dedicated* | 140ACO02000 to BMXAMO0410 (0.56 *m/2 ft*)<br>140ACO02000 to BMXAMO0410 (1.63 *m/5 ft*) | **990ADQUAX80122**<br>**990ADQUAX80123** |
| | 140ACO13000 | Analog output 8-channel current | BMXAMO0802 *(6)* | *Dedicated* | 140ACO13000 to BMXAMO0802 (0.56 *m/2 ft*)<br>140ACO13000 to BMXAMO0802 (1.63 *m/5 ft*) | **990ADQUAX80138**<br>**990ADQUAX80139** |
| | 140AVO02000 | Analog output 4-channel bi-polar, V only | BMXAMO0410 | *Multi-use flying-lead* | 140●●● to BMX●●● analog with 20-pigtail (0.56 *m/2 ft*)<br>140●●● to BMX●●● analog with 20-pigtail (1.63 *m/5 ft*) | **990ADQUAX80142**<br>**990ADQUAX80143** |
| Mixed analog input output | 140AMM09000 | Mixed analog input 4-channel, output 2-channel isolated, bi-polar I & V | BMXAMM0600 *(5)* *(6)* | *Multi-use flying-lead* | 140●●● to BMX●●● analog with 20-pigtail (0.56 *m/2 ft*)<br>140●●● to BMX●●● analog with 20-pigtail (1.63 *m/5 ft*) | **990ADQUAX80142**<br>**990ADQUAX80143** |

*(5) The Quantum 140AMM09000 analog channels are differential, whereas the X80 BMXAMM0600 analog channels are single-ended. In some cases, the BMXAMM0600 will not be a suitable replacement for the 140AMM09000. In these cases, individual X80 analog input and output modules can be substituted for the BMXAMM0600 mixed module.*

*(6) Quantum current analog output modules 140AMM09000, 140ACO02000, and 140ACO13000 required external loop power supplies to operate. The X80 analog output modules used in current mode are self-powered and do not require external power supplies. Disconnect each of the analog output channel wires from its loop power supply, then connect the individual channel wires together.*

*Compatibility (continued)*

# PLC modernization and competitive migration
Modernization solutions
Quantum I/O to X80 modules platform

## Equivalence table: Quantum I/O — X80 modules platform

| Type of device | Quantum I/O | | X80 modules platform | | I/O adapter - PLC I/O chassis - backplane mounting plate | |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Type | Description | Reference |
| Multi-use flying-lead | Not applicable | Not applicable | 1 loose 20-pin X80 terminal block and 1 high-density pig-tail cable | *Multi-use flying-lead* | 140●●● to BMX●●● high-density with 20-pigtail (0.56 m/*2 ft*)<br>140●●● to BMX●●● high-density with 20-pigtail (1.63 m/*5 ft*) | **990ADQUAX80124**<br>**990ADQUAX80125** |
| | | | 1 loose 40-pin X80 terminal block and 1 high-density pig-tail cable | *Multi-use flying-lead* | 140●●● to BMX●●● high-density with 40 pigtail (0.56 m/*2 ft*)<br>140●●● to BMX●●● high-density with 40 pigtail (1.63 m/*5 ft*) | **990ADQUAX80146**<br>**990ADQUAX80147** |
| | | | 1 loose 40-pin X80 terminal block and 1 high-power pig-tail cable | *Multi-use flying-lead* | 140●●● to BMX●●● high-power with 40-pigtail (0.56 m/*2 ft*)<br>140●●● to BMX●●● high-power with 40-pigtail (1.63 m/*5 ft*) | **990ADQUAX80118**<br>**990ADQUAX80119** |
| | | | 1 loose 20-pin X80 terminal block and 1 analog pig-tail cable (with shield) | *Multi-use flying-lead* | 140●●● to BMX●●● analog with 20-pigtail (0.56 m/*2 ft*)<br>140●●● to BMX●●● analog with 20-pigtail (1.63 m/*5 ft*) | **990ADQUAX80142**<br>**990ADQUAX80143** |
| | | | 2 loose 20-pin X80 terminal blocks and 2 analog pig-tail cables (with shields) | *Multi-use flying-lead* | 140●●● to (2x) BMX●●● analog with 2x 20-pigtail (0.56 m/*2 ft*)<br>140●●● to (2x) BMX●●● analog with 2x 20-pigtail (1.63 m/*5 ft*) | **990ADQUAX80242**<br>**990ADQUAX80243** |
| | | | 1 loose 28-pin X80 terminal block and 1 analog pig-tail cable (with shield) | *Multi-use flying-lead* | 140●●● to BMX●●● analog with 28-pigtail (0.56 m/*2 ft*)<br>140●●● to BMX●●● analog with 28-pigtail (1.63 m/*5 ft*) | **990ADQUAX80144**<br>**990ADQUAX80145** |
| | | | 2 loose 28-pin X80 terminal blocks and 2 analog pig-tail cables (with shields) | *Multi-use flying-lead* | 140●●● to (2x) BMX●●● analog with 2x 28-pigtail (0.56 m/*2 ft*)<br>140●●● to (2x) BMX●●● analog with 2x 28-pigtail (1.63 m/*5 ft*) | **990ADQUAX80244**<br>**990ADQUAX80245** |

**2**

*Replacement parts*

# PLC modernization and competitive migration
## Modernization solutions
Quantum I/O to X80 modules platform

## Replacement cables

| Type of device | Quantum I/O | | X80 modules platform | | I/O adapter - PLC I/O chassis - backplane mounting plate | |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Type | Description | Reference |
| Repla-cement cables | — | — | — | *High-power* | Replacement X80 cable 40-pin high-power (0.56 m/*2 ft*) | **990X80CABLE021** |
| | | | | *High-power* | Replacement X80 cable 40-pin high-power (1.63 m/*5 ft*) | **990X80CABLE521** |
| | | | | *High-power* | Replacement X80 cable high-power 116 (0.4 m/*1 ft*) | **990X80CABLE116** |
| | | | | *High-density* | Replacement X80 cable high-density 117 (0.4 m/*1 ft*) | **990X80CABLE117** |
| | | | | *High-density* | Replacement X80 cable high-density 517 (1.63 m/*5 ft*) | **990X80CABLE517** |
| | | | | *Analog* | Replacement X80 cable analog 118 (0.4 m/*1 ft*) | **990X80CABLE118** |
| | | | | *Analog* | Replacement X80 cable 28-pin analog AN128 (0.4 m/*1 ft*) | **990X80CABL119** |
| | | | | *Analog* | Replacement X80 cable analog 518 (1.63 m/5 ft) | **990X80CABLE518** |
| | | | | *Analog* | Replacement X80 cable 28-pin analog AN528 (1.63 m/*5 ft*) | **990X80CABL519** |
| | | | | *Multi-use flying-lead* | Replacement X80 cable high-power pigtail 116 (0.4 m/*1 ft*) | **990X80CABL116PT** |
| | | | | *Multi-use flying-lead* | Replacement X80 cable high-density pigtail 117 (0.4 m/*1 ft*) | **990X80CABL117PT** |
| | | | | *Multi-use flying-lead* | Replacement X80 cable analog pigtail 118 (0.4 m/*1 ft*) | **990X80CABL118PT** |
| | | | | *Multi-use flying-lead* | Replacement X80 cable high-power pigtail 516 (1.63 m/*5 ft*) | **990X80CABL516PT** |
| | | | | *Multi-use flying-lead* | Replacement X80 cable high-density pigtail 517 (1.63 m/*5 ft*) | **990X80CABL517PT** |
| | | | | *Multi-use flying-lead* | Replacement X80 cable analog pigtail 518 (1.63 m/*5 ft*) | **990X80CABL518PT** |
| | | | | *Multi-use flying-lead* | Shielded cable, FCN connection 40-pin pigtail (3 m/*10 ft*) | **BMXFCW301S** |

**2**

# PLC modernization and competitive migration
## Modernization solutions
## Modicon Compact PLCs to Modicon X80 modules platform

**2**


*Modicon Compact PLC*


*Quick wiring adapter*


*Compact and X80 assembly*

## Presentation

The Modicon Compact to Modicon X80 modernization solution consists of various quick wiring adapters comprising a set of connectors designed to simplify the replacement of legacy Modicon Compact PLCs with Modicon M580 or M340 PLCs and Modicon X80 modules platform; existing Modicon Compact field wiring will be retained.

### Adapters

The adapters enable the I/O field connectors of the Compact PLC in an existing installation to be matched to the equivalent I/O modules of the X80 modules platform.

Thirteen references provide the wiring translations between the I/O modules of Compact PLCs and those of the Modicon X80 modules platform. They fully meet the mechanical and environmental specifications of the X80 PLC system.

## Description of the solution

The quick wiring adapters have the same look and feel as the standard I/O module terminal block of the X80 platform, except that the new connectors increase the depth and extend below the X80 I/O module.
- The quick wiring adapters use the same mounting/retaining screws for attaching the adapter to the X80 platform module.
- The sockets of the adapters accept the two field wiring connectors of the Compact I/O module.
- A clear protective cover is sized to retain the wiring harness.
- The cover also has a provision for attaching the wiring label that was used on the Compact module.

## Benefits of the solution

The customer benefits are reduced risk and cost of modernization from a Modicon Compact PLC:
- Minimal production downtime with about 1 hour setup time per rack.
- Cost reduction by keeping all sensor/actuator wiring inside existing cabinets, leading to savings in wiring, testing and commissioning, and wiring diagram updates: no electrician or wiring contractor needed.
- Unlike manual rewiring, ordinary production stops can be used for the changeover.
- Due to minimal changes, installations can be restarted within the allotted time with the ability to roll back in the event of any unforseen matters arising.
- Better reliability brought by dedicated solutions designed by the manufacturer.
- Simple solution that makes modernization easy and provides the lowest risk option.

This modernization solution is part of a larger modernization and migration offer that includes methods, specific migration devices, and dedicated tools for various legacy PLCs from Schneider Electric and the competition as well.
Modernization and migration can be implemented with help from our Schneider Electric services experts..

## Equivalence table

The cross-reference table hereafter shows the possible equivalences between Modicon Compact PLCs and X80 I/O modules. However, some differences in terminal strips, modularity, common or power connections may have to be addressed.Therefore, it is recommended that you verify compatibility with our Schneider Electric service representatives.

Note:
- Extended temperature modules for the X80 I/O platform are distinguished by having the suffix H added to the reference.
- The Modicon Compact range of PLCs had an extended temperature range of -40 to +70 °C/*-40 to +158 °F*. The extended temperature range of the X80 modules platform is 25 to +70 °C/*13 °F to 158 °F*. Derating the temperature may impose limits on some applications.
- As with any PLC migration, even an exact module-to-module replacement might not provide identical results (due to scan time, etc.).
- The meaning of the color code used in the "Compact module – X80 platform compatibility" column is as follows:

| |
|---|
| Green background with no comments indicates full functional equivalent between the X80 I/O platform module and the Compact module. |
| Green background with comments indicates functional equivalent with differences noted. Check with your application |
| Orange background indicates that, in most cases, the inputs of the X80 I/O platform fully replace those of the Compact module but differences are noted. For example, maximum current per point. Check with your application |
| Red background indicates that there are no direct replacements but other solutions exist. Please consult Schneider Electric. |

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# PLC modernization and competitive migration
Modernization solutions
Modicon Compact PLCs to Modicon X80 modules platform

## Equivalence table: Compact module – X80 modules platform

| Type of module | Compact module | | X80 platform | | Compact module ➞ X80 platform compatibility | Quick wiring adapter reference |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Description | | |
| Discrete input | AS-BDEO216 | 16-point 24 VDC input | BMXDDI1602 | 16-point 24 VDC sink input | OK | 990XSM00206 |
| | AS-BDEP208 | 8-point 230 VAC input | BMXDAI0805 | 8-point 200 to 240 VAC input | OK | 990XSM00201 |
| | AS-BDEP209 | 8-point 120 VAC input | BMXDAI1604 | 16-point 110 VAC input | OK | 990XSM00213 |
| | AS-BDEP210 | 8-point 115 VAC input | BMXDAI1604 | 16-point 110 VAC input | OK | 990XSM00213 |
| | AS-BDEP211 | 8-point 115 VAC input | BMXDAI1604 | 16-point 110 VAC input | OK | None |
| | AS-BDEP214 | 16-point 12-60 VDC input | BMXDDI1602 | 16-point 24 VDC input | For the 24 VDC module check that the input current threshold at switch on is compatible with the application. The input voltage threshold of BMXDDI1603 is 34 V compared with 12 V for AS-BDEP214. No replacement for 12 VDC and 60 VDC. | 990XSM00206 |
| | | | BMXDDI1603 | 16-point 48 VDC input | | |
| | AS-BDEP215 | 16-point 5 VDC TTL input | – | – | No exact replacement but can be replaced with HMI functionality. | None |
| | AS-BDEP216 | 16-point 24 VDC input | BMXDDI1602 | 16-point 24 VDC sink input | OK | 990XSM00206 |
| | AS-BDEP217 | 16-point 24 VDC input | BMXDAI1602 | 16-point 24 VDC sink input | OK but requires negative logic. | 990XSM00201 |
| | AS-BDEP218 | 16-point 115 VAC input | BMXDAI1604 | 16-point 110 VAC input | OK | 990XSM00201 |
| | AS-BDEP220 | 16-point 24 VDC fast input | – | – | Response time is a deciding factor when selecting replacement modules. | None |
| | AS-BDEP254 | 16-point 12-60 VDC input | BMXDDI1602H BMXDDI1603H | 16-point 24 VDC input 16-point 48 VDC input | For the 24 VDC module check that the input current threshold at switch on is compatible with the application. The input voltage threshold of BMXDDI1603 is 34 V compared with 12 V for AS-BDEP254. The temperature range for BMXDDI1603 is 0 to 60 °C compared with –40 °C to +70 °C for ASBDEP254. No replacement for 12 VDC and 60 VDC. | 990XSM00206 |
| | AS-BDEP254C | 16-point 12-60 VDC input module, extended temperature + coating | BMXDDI1602H BMXDDI1603H | 16-point 24 VDC input 16-point 48 VDC input | For the 24 VDC module check that the input current threshold at switch on is compatible with the application. The input voltage threshold of BMXDDI1603 is 34 V compared with 12 V for AS-BDEP254. The temperature range for BMXDDI1603 is 0 to +60 °C compared with –40 °C to +70 °C for ASBDEP254. No replacement for 12 VDC and 60 VDC. | 990XSM00206 |
| | AS-BDEP256 | 16-point 24 VDC input module | BMXDDI1602H | 16-point 24 VDC sink input | The nominal temperature range of BMXDDI1602 is only 0 to +60 °C compared with –40 to +70 °C for AS-BDEP256. | 990XSM00206 |
| | AS-BDEP256C | 16-point 24 VDC input module, extended temperature + coating | BMXDDI1602H | 16-point 24 VDC sink input | The nominal temperature range of BMXDDI1602 is only 0 to +60 °C compared with –40 to +70 °C for AS-BDEP256C. | 990XSM00206 |
| | AS-BDEP257 | 16-point 110 VDC inputs, extended temperature | BMXDDI1604T | 16-point 125 VDC input | Nominal input voltage for BMXDDI1604T is 100 to 150 VDC compared with 55 to 170 VDC for AS-BDEP257. Response time for BMXDDI1604T is 9 ms compared with 6 ms for AS-BDEP257. Temperature range for BMXDAI1604 from -25 to +70 °C compared with -40 to +70 °C. | 990XSM00206 |
| | AS-BDEP257C | 16-point 110 VDC input, extended temperature + coating | BMXDDI1604T | 16-point 125 VDC input | Nominal input voltage for BMXDDI1604T is 100 to 150 VDC compared with 55 to 170 VDC for AS-BDEP257. Response time for BMXDDI1604T is 9 ms compared with 6 ms for AS-BDEP257. Temperature range for BMXDDI1604T from -25 to +70 °C compared with -40 to +70 °C. No conformal coating available. | 990XSM00206 |
| | AS-BDEP296 | 16-point 60 VDC inputs | – | – | No replacement | – |
| | AS-BDEP297 | 16-point 48 VDC inputs | BMXDDI1603 | 16-point 48 VDC input | OK | 990XSM00206 |

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# PLC modernization and competitive migration
## Modernization solutions
Modicon Compact PLCs to Modicon X80 modules platform

## Equivalence table: Compact module – X80 modules platform

| Type of module | Compact module | | X80 platform | | Compact module ➡ X80 platform compatibility | Quick wiring adapter reference |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Description | | |
| Discrete output | AS-BDAO216 | 16-point 24 VDC output module | BMXDDO1602 | 16-point 24 VDC output | OK, but with slightly slower response time. BMXDDO1602 response time of 1.2 ms compared with < 1 ms for AS-BDAO216. | 990XSM00206 |
| | AS-BDAP204 | 4-point relay (NO) module | BMXDRA0805 | 8-point relay outputs | OK, 4 relays on Compact, 8 on X80 I/O. | 990XSM00203 |
| | AS-BDAP204 | 4-point relay (NO) module | BMXDRA0804T | 8-point 125 VDC output relay | OK, 4 relays on Compact, 8 on X80 I/O. | 990XSM00203 |
| | AS-BDAP208 | 8-point relay (NO) module | BMXDRA0805 | 8-point relay outputs | OK | 990XSM00206 |
| | AS-BDAP258 | 8-point relay (NO) module | BMXDRA0805H | 8-point relay outputs | OK, but different extended temperatures. | 990XSM00206 |
| | AS-BDAP258C | 8-point 24 VDC relay (NO) module, extended temperature + coating | BMXDRA0805H | 8-point relay outputs | OK. Temperature between 0 and +60°C compared with -40 to +70°C for BMXDRA0805H. | 990XSM00206 |
| | AS-BDAP209 | 8-point, 1 A, 120 VAC output module | BMXDAO1605 | 16-point 110 VAC to 230 VAC output | Lower current availability. BMXDAO1605 is limited to 600 mA compared with 1 A for AS-BDAP210. For AS-BDAP210, the nominal voltage goes down to 85 V compared with 100 V for BMXDAO1605. | 990XSM00204 |
| | AS-BDAP210 | 8-point, 24-230 VAC output module | BMXDAO1605 | 16-point 110 VAC to 230 VAC output | Lower current availability. BMXDAO1605 is limited to 600 mA compared with 1 A for AS-BDAP210. For AS-BDAP210, the nominal voltage goes down to 85 V compared with 100 V for BMXDAO1605. | 990XSM00204 |
| | AS-BDAP212 | 8-point 24 VDC input/4-point 2 A output | BMXDDM16025 | 8-point 24 VDC input + 8-point relay output | Compact: 2 groups of 2 outputs; X80 I/O: 1 group of 8. Consequently, different input isolation. | 990XSM00205 |
| | AS-BDAP252 | 8-point 24 VDC input/4-point 2 A output | BMXDDM16025H | 8-point 24 VDC input + 8-point relay output | Compact: 2 groups of 2 outputs; X80 I/O: 1 group of 8. Consequently, different input isolation. Different extended temperatures. | 990XSM00205 |
| | AS-BDAP216 | 16-point 24 VDC output module | BMXDDO1602 | 16-point 24 VDC output | Compact: 2 groups of 8; X80 I/O: 1 group of 16. Consequently, different input isolation. | 990XSM00206 |
| | AS-BDAP256 | 16-point 24 VDC output module | BMXDDO1602H | 16-point 24 VDC output | Compact: 2 groups of 8; X80 I/O: 1 group of 16. Consequently, different input isolation. Different extended temperatures. | 990XSM00206 |
| | AS-BDAP217 | 16-point 5-24 VDC output module | BMXDDO1612 | 16-point 24 VDC sink output | Slightly slower response time. BMXDDO1612 response time of 1.2 ms compared with < 1 ms for AS-BDAP217. Also, Compact: 2 groups of 8; X80 I/O: 1 group of 16. | 990XSM00206 |
| | AS-BDAP218 | 16-point 24-240 VAC output module | BMXDAO1605 | 16-point 110 VAC to 230 VAC | Lower current availability. BMXDAO1605 is limited to 600 mA compared with 1 A for AS-BDAP210. For AS-BDAP210, the nominal voltage goes down to 24 V compared with 100 V for BMXDAO1605. If 24 V is required, select a different module. | 990XSM00202 |
| | AS-BDAP211 | Combined press and stamp module, 120 VAC, inputs controlling the outputs | – | – | None | None |

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# PLC modernization and competitive migration
## Modernization solutions
Modicon Compact PLCs to Modicon X80 modules platform

## Equivalence table: Compact module – X80 modules platform

| Type of module | Compact module | | X80 platform | | Compact module ➡ X80 platform compatibility | Quick wiring adapter reference |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Description | | |
| Discrete input/ output | AS-BDAP220 | 8-point 24 VDC, 2 A, input/output module | BMXDDM16022 | 8-point 24 VDC input + 8-point 24 VDC output | BMXDDM16022 is limited to 0.625 A per channel compared with 2 A for AS-BDAP220. Also, the response time is 1.2 ms compared with < 1 ms for AS-BDAP220. | 990XSM00207 |
| | AS-BDAP250 | 8-point, 24 VDC, input/ output module | BMXDDM16022H | 8-point 24 VDC input + 8-point 24 VDC output | BMXDDM16022 is limited to 0.625 A per channel compared with 2 A for AS-BDAP220 and is not conformally coated. Also, the response time is 1.2 ms compared with < 1 ms for AS-BDAP220. BMXDDM16022 temperature range of 0 to +60 °C compared with -40 to +70 °C for AS-BDAP250C. | 990XSM00207 |
| | AS-BDAP250C | 8-point, 24 VDC, input/ output module, extended temperature + coating | BMXDDM16022H | 8-point 24 VDC input + 8-point 24 VDC output | BMXDDM16022 is limited to per channel compared with 2 A for AS-BDAP250. Also, the response time is 1.2 ms compared with < 1 ms for AS-bDaP220. DDM16022 temperature range of 0 to +60 °C compared with -40 to +70 °C for AS-BDAP250C. | 990XSM00207 |
| | AS-BDAP212 | 8 inputs, 4 outputs, 24 VDC | BMXDDM16025 | 8-point 24 VDC input + 8-point relay output | Compact: 2 groups of 2 outputs; X80 I/O: 1 group of 8. Consequently, different input isolation. | 990XSM00205 |
| | AS-BDAP252 | 8 inputs, 4 outputs, 24 VDC | BMXDDM16025H | 8-point 24 VDC input + 8-point relay output | BMXDDM16025 temperature range of 0 to +60 °C compared with -40 to +70 °C. Compact: 2 groups of 2 outputs; X80 I/O: 1 group of 8. Consequently, different input isolation. | 990XSM00205 |
| | AS-BDAP252C | 8 inputs, 4 outputs, 24 VDC, extended temperature + coating | BMXDDM16025H | 8-point 24 VDC input + 8-point relay output | BMXDDM16025 temperature range of 0 to +60 °C compared with -40 to +70 °C. Compact: 2 groups of 2 outputs; X80 I/O: 1 group of 8. Consequently, different input isolation. | 990XSM00205 |
| | AS-BDAP253 | 8 inputs, 4 outputs, 110 VDC | BMXDDM16025H | 8-point 24 VDC input + 8-point relay output | 1) Compact inputs: 110 VDC; X80 I/O: 24 VDC. 2) Compact outputs: 2 groups of 2 outputs; X80 I/O: 1 group of 8. a) Different isolation b) 4 unused references | None |
| | AS-BDAP253C | 8 inputs, 4 outputs, 110 VDC, extended temperature + coating | BMXDDM16025H | 8-point 24 VDC input + 8-point relay output | 1) Compact inputs: 110 VDC; X80 I/O: 24 VDC. 2) Compact outputs: 2 groups of 2 outputs; X80 I/O: 1 group of 8. a) Different isolation b) 4 unused references | None |
| | AS-BDAP292 | 8 inputs, 4 outputs, 60 VDC | – | – | No exact replacement. Please consult Schneider Electric for a solution. | None |

**2**

# PLC modernization and competitive migration
## Modernization solutions
### Modicon Compact PLCs to Modicon X80 modules platform

**2**

| Equivalence table: Compact module – X80 modules platform | | | | | |
|---|---|---|---|---|---|
| Type of module | Compact module | | X80 platform | | Compact module ➞ X80 platform compatibility | Quick wiring adapter reference |
| | Reference | Description | Reference | Description | | |
| Analog input | AS-BADU204 | 4-channel ± 0.5 V register, PT100, 11-bit | BMXART0414 | 4-channel TC/RTD, isolated, analog inputs | OK, but ± 0.5 V missing. Also, X80 I/O has channel-to-channel and channel-to-bus isolation. | None |
| | AS-BADU205 | 4-channel register input | BMXAMI0410 | 4-channel, isolated, analog current/voltage input | OK, scaling differences. | 990XSM00208 |
| | AS-BADU205 | 4-channel register input | BMXAMM0600 | 4-channel, non-isolated, analog current/voltage input and 2-channel, non-isolated, 2-channel current/voltage output | OK, scaling differences. | 990XSM00209 |
| | AS-BADU206 | 4-channel, isolated, register input | BMXAMI0410 | 4-channel, isolated, analog current/voltage input | OK, but X80 I/O does not have ± 1 V range. | 990XSM00210 |
| | AS-BADU206 | 4-channel, isolated, register input | BMXAMM0600 | 4-channel, non-isolated, analog current/voltage input and 2-channel, non-isolated, 2-channel current/voltage output | OK, but X80 I/O does not have ± 1 V range. No isolation. | 990XSM00211 |
| | AS-BADU210 | 4-channel, isolated, analog voltage/current input | BMXAMI0410 | 4-channel, isolated, analog current/voltage input | OK, scaling differences. X80 I/O does not have all the corresponding voltage ranges. | 990XSM00210 |
| | AS-BADU210 | 4-channel, isolated, analog voltage/current input | BMXAMM0600 | 4-channel, non-isolated, analog current/voltage input and 2-channel, non-isolated, 2-channel current/voltage output | OK, scaling differences. X80 I/O does not have all the corresponding voltage ranges. No isolation. | 990XSM00211 |
| | AS-BADU211 | 8-channel analog input thermal module | BMXART0814 | 8-channel TC/RTD, isolated, analog inputs | OK, X80 I/O does not have 2, 5, or 10 V inputs nor 4-20 mA, ± 20 mA, nor the 24 V external voltage. | None |
| | AS-BADU212 | 8-channel analog input thermal module | BMXART0814 | 8-channel TC/RTD, isolated, analog inputs | OK, X80 I/O does not have 2, 5, or 10 V inputs nor 4-20 mA, ± 20 mA, nor the 24 V external voltage. | None |
| | AS-BADU214 | 4/8-channel multi-range analog/discrete inputs | BMXART0414 | 4-channel TC/RTD, isolated, analog inputs | X80 I/O has no 0-10 V, 1-5 V, or 2-10 V voltage ranges nor loop capability. | None |
| | AS-BADU216 | 4/8-channel, isolated, thermocouple | BMXART0814 | 8-channel TC/RTD, isolated, analog inputs | OK | None |
| | AS-BADU254 | 4-channel register input | BMXAMI0410H | 4-channel, isolated, analog current/voltage input | OK, X80 I/O has CAN/CAN and CAN/bus isolation whereas Compact has none. Different extended temperatures. | None |
| | AS-BADU254 | 4-channel register input | BMXAMM0600H | 4-channel analog current/voltage input and 2-channel current/voltage output | OK, X80 I/O has 4 inputs and 2 outputs. Different extended temperatures. | None |
| | AS-BADU254C | 4-channel register input, extended temperature + coating | BMXAMI0410H | 4-channel, isolated, analog current/voltage input | OK, X80 I/O has CAN/CAN and CAN/bus isolation whereas Compact has none. Different extended temperatures. | None |
| | AS-BADU254C | 4-channel register input, extended temperature + coating | BMXAMM0600H | 4-channel analog current/voltage input and 2-channel current/voltage output | OK, X80 I/O has 4 inputs and 2 outputs. No isolation. Different extended temperatures. | None |
| | AS-BADU256 | 4-channel, isolated, register input | BMXAMI0410H | 4-channel, isolated, analog current/voltage input | OK, but different extended temperatures. | None |
| | AS-BADU256 | 4-channel, isolated, register input | BMXAMM0600H | 4-channel analog current/voltage input and 2-channel current/voltage output | OK, X80 I/O has 4 inputs and 2 outputs. No isolation. Different extended temperatures. | None |

# PLC modernization and competitive migration
## Modernization solutions
### Modicon Compact PLCs to Modicon X80 modules platform

| Equivalence table: Compact module – X80 modules platform | | | | | |
|---|---|---|---|---|---|
| Type of module | Compact module | | X80 platform | | Compact module ► X80 platform compatibility | Quick wiring adapter reference |
| | Reference | Description | Reference | Description | | |
| Analog input | AS-BADU256C | 4-channel, isolated, register input, extended temperature + coating | BMXAMI0410H | 4-channel, isolated, analog current/ voltage input | OK, but different extended temperatures. | 990XSM00210 |
| | AS-BADU256C | 4-channel, isolated, register input, extended temperature + coating | BMXAMM0600H | 4-channel analog current/voltage input and 2-channel current/ voltage output | OK, X80 I/O has 4 inputs and 2 outputs without isolation. | 990XSM00211 |
| | AS-BADU257 | 8-channel thermocouple | BMXART0814H | 8-channel TC/RTD, isolated, analog inputs | OK, but different extended temperatures. | None |
| | AS-BADU257C | 8-channel thermocouple, extended temperature + coating | BMXART0814H | 8-channel TC/RTD, isolated, analog inputs | OK, but different extended temperatures. | None |
| Analog output | AS-BDAU202 | 2-point analog outputs, ± 10 V, ± 20 mA | BMXAMO0210 | 2-channel, isolated, analog current/ voltage output | X80 I/O has no negative 20 mA capability. | 990XSM00212 |
| | AS-BDAU204 | 4-channel, opto-isolated, analog output | BMXAMO0210 | 2-channel, isolated, analog current/ voltage output | X80 I/O does not support 0 to 1 V, 0 to 5 V, ± 1 V ranges. ± 5 V. | None |
| | AS-BDAU204 | 4-channel, opto-isolated, analog output | BMXAMO0410 | 4-channel, isolated, analog current/ voltage output | X80 I/O does not support 0 to 1 V, 0 to 5 V, ± 1 V ranges. ± 5 V. | 990XSM00214 |
| | AS-BDAU208 | 8-channel register output | – | – | No 8-point analog output. Two modules need to be used. | None |
| | AS-BDAU252 | 2-point analog outputs, ± 10 V, ± 20 mA, extended temperature | BMXAMO0210H | 2-channel, isolated, analog current/ voltage output | X80 I/O has no negative 20 mA capability. Different extended temperatures. | 990XSM00212 |
| | AS-BDAU252C | 2-point analog outputs, ± 10 V, ± 20 mA, extended temperature + coating | BMXAMO0210H | 2-channel, isolated, analog current/ voltage output | X80 I/O has no negative 20 mA capability. Different extended temperatures. | 990XSM00212 |

# PLC modernization and competitive migration
## Modernization solutions
Modicon Compact PLCs to Modicon X80 modules platform

| Equivalence table: Compact module – X80 modules platform | | | | | | |
|---|---|---|---|---|---|---|
| Type of module | Compact module | | X80 platform | | Compact module ► X80 platform compatibility | Quick wiring adapter reference |
| | Reference | Description | Reference | Description | | |
| Commu-nication | AS-BBKF202 | Interbus-S slave | – | – | No replacement | None |
| | AS-BBKF201-16 | 16-word Interbus-S master | – | – | No replacement | None |
| | AS-BBKF201-64 | 64-word Interbus-S master | – | – | No replacement | None |
| | CM900 | Auto interface | – | – | No replacement | None |
| Service commu-nication | AS-BKOS260-24 | 24-word universal communication | – | – | Please consult Schneider Electric for assistance in finding the optimum solution. READ_VAR functionality could be a replacement solution. | None |
| | AS-BKOS260-64 | 64-word universal communication | – | – | Please consult Schneider Electric for assistance in finding the optimum solution. READ_VAR functionality could be a replacement solution. | None |
| | M7251 | Programmable limit switch | – | – | No replacement, no movement | None |
| | M7350 | Resolver-decoder | – | – | No replacement, no movement | None |
| Motion | AS-BMOT201 | Axis motion control encoder | – | – | Please consult Schneider Electric for assistance in finding the optimum solution. | None |
| | AS-BMOT202 | Axis motion control resolver/encoder | – | – | Please consult Schneider Electric for assistance in finding the optimum solution. | None |

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# PLC modernization and competitive migration
## Modernization solutions
Modicon Compact PLCs to Modicon X80 modules platform

## Equivalence table: Compact module – X80 modules platform

| Type of module | Compact module | | X80 platform | | Compact module ─ X80 platform compatibility | Quick wiring adapter reference |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Description | | |
| Counter | AS-BFRQ204 | 4-point frequency | BMXEHC0200 | 2-channel high-speed counter | No 5 V input. Please consult Schneider Electric for the exact replacement. | None |
| | AS-BFRQ254C | 4-channel frequency , extended temperature + coating | BMXEHC0200H | 2-channel high-speed counter | No 5 V input. Please consult Schneider Electric for the exact replacement. | None |
| | AS-BVIC200 VRC200 | 4 high-speed pulse or 4 VRC inputs | – | – | Please consult Schneider Electric for assistance in finding the optimum solution. | None |
| | AS-BVIC205 CTR205 | 4 high-speed pulse or 4 x 5 V TTL inputs | – | – | Please consult Schneider Electric for assistance in finding the optimum solution. | None |
| | AS-BVIC212 CTR212 | 4 high-speed pulse or 12 VDC inputs | – | – | Please consult Schneider Electric for assistance in finding the optimum solution. | None |
| | AS-BVIC224 CTR224 | 4 high-speed pulse or 24 VDC inputs | BMXEHC0800 | 8-channel high-speed counter | Please consult Schneider Electric for assistance in finding the optimum solution. | None |
| | AS-BZAE201 | High-speed counter/ positioner (2 relays) | BMXEHC0200 | 2-channel high-speed counter | 12 V counter OK, no relay outputs, no 5 V, no positioning. | None |
| | AS-BZAE204 | 4-channel high-speed counter/positioner | BMXEHC0800 | 8-channel high-speed counter | OK. No outputs. | None |
| CPU | AS-B984-A145 up to E984-285 | – | BMXP342020 + BMXCPS3020 | – | Only 1 Modbus port on CPU, 2-port NOM serial module available. | None |
| | AS-P120000 | 105...240 VAC inputs, 24 VDC 1.0 A outputs | BMXCPS2000/ BMXCPS3500 | – | – | None |

# PLC modernization and competitive migration
## Migration solutions
## Rockwell SLC500 I/O to Modicon X80 modules platform


*Rockwell SLC500 PLC assembly*


*Quick wiring adapter*

## Presentation

Rockwell SLC500 to Modicon X80 migration solution consists of various wiring adapters comprising a set of connectors designed to simplify the replacement of legacy Rockwell SLC500 PLCs with M340 or M580 PLCs integrating the Modicon X80 modules platform; existing Rockwell SLC 500 field wiring will be retained.

### Adapters

The adapters enable the existing ROCKWELL SLC500 I/O field connectors in an existing installation to be matched to the equivalent I/O modules of the X80 modules platform.
Ten references provide the wiring translations between the I/O modules of Rockwell SLC500 and those of the Modicon X80 modules platform. They fully meet the mechanical and environmental specifications of the X80 PLC system.

## Description of the solution

The quick wiring adapters have the same look and feel as the standard X80 module terminal block, except that the new connectors increase the depth and extend below the I/O module.
■ The quick wiring adapters use the same mounting/retaining screws for attaching the adapter to the X80 module.
■ A clear cover is sized to retain the wiring harness.
■ The cover also has enough room for attaching the wiring label that was used on the Rockwell SLC500 module.

## Benefits of the solution

The customer benefits are reduced risk and cost of modernization from a Rockwell SLC500 I/O to the X80 platform:
■ Minimal production downtime with about 1 hour setup time per rack.
■ Cost reduction by keeping all sensor/actuator wiring inside existing cabinets, leading to savings in wiring, testing and commissioning, and wiring diagram updates: no electrician nor wiring contractor needed.
■ Unlike manual rewiring, ordinary production stops can be used for the changeover.
■ Due to minimal changes, installations can be restarted within the allotted time with the ability to roll back in the event of any unforseen matters arising.
■ Better reliability brought by dedicated solutions designed by the manufacturer.
■ Simple solution that makes modernization easy and provides the lowest risk option.

This migration solution is part of a larger modernization and migration offer that includes methods, specific migration devices, and dedicated tools for various legacy PLCs from Schneider Electric and the competition as well.
Modernization and migration can be implemented with help from our Schneider Electric services experts.


*Migrate your Rockwell SLC500 to Modicon M580. Click to open video (7 min 31 s)*

## Equivalence table

The cross-reference table hereafter shows the possible equivalences between Rockwell SLC500 I/O modules and X80 modules. However, some differences in terminal strips, modularity, common or power connections may have to be addressed: it is recommended that you verify compatibility with our Schneider Electric service representatives.

If there are questions on the applications, please review each of the technical documents.
Note:
■ Extended temperature modules for M340 have an H or T suffix at the end of the part number. The hardened modules have H suffix (conformal coating).
■ The SLC500 line had a temperature range of 0 to +60 °C/*32 to 140 °F*. The M340 range has a temperature range 0 to +60 °C/*32 to 140 °F* and an extended temperature of -25 to +70 °C/*-13 to +158 °F* (H or T suffix part number modules only). Derating of temperature might apply in certain applications (consult individual module user documentation for specifics).
■ As with any PLC migration even an exact module-to-module replacement might not yield the same results (due to scan time, etc.).


*35012474K01000 for discrete I/O*


*35011978K01000 for analog I/O*

Refer to related manuals for specific module installation and protection requirements (fuses, snubbers, etc.).

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# PLC modernization and competitive migration
## Migration solutions
Rockwell SLC500 I/O to Modicon X80 modules platform

## Equivalence table: SLC500 I/O module — X80 module platform

| Type of module | SLC500 I/O modules | | X80 modules platform | | Quick wiring adapters | |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Description | X80 compatibility | Reference |
| **AC discrete input** | 1746-IA4 | 4-channel 120 VAC discrete input module | BMXDAI1604 | 120 VAC discrete input module, 16-channel/1 group | OK, good module compatibility, but M340 is faster than the SLC500, check that this is OK for application. | None. Must be rewired. |
| | 1746-IA8 | 8-channel 120 VAC discrete input module | BMXDAI1604 | 120 VAC discrete input module, 16-channel/1 group | OK, good module compatibility, but M340 is faster than the SLC500, check that this is OK for application. | None. Must be rewired. |
| | 1746-IA16 | 120 VAC discrete input module,16-channel/1 group | BMXDAI1604 | 120 VAC discrete input module, 16-channel/1 group | OK, good module compatibility, but M340 is faster than the SLC500, check that this is OK for application. NOTE: If using QWA, if any field wiring is present on the terminal block lower right pin, move it to the lower left pin, then wire input power to lower right pin. | 990SLC00102 |
| | 1746-IM4 | 4-channel 220/240 VAC discrete input module | BMXDAI0805 | 200...240 VAC 8-channel/1 group discrete input module | OK, good cross-reference. Check turn on/off voltage/current thresholds and signal delays | None. Must be rewired. |
| | 1746-IM8 | 8-channel 220/240 VAC discrete input module | BMXDAI0805 | 200...240 VAC 8-channel/1 group discrete input module | OK, good cross-reference. Check turn on/off voltage/current thresholds and signal delays. | None. Must be rewired. |
| | 1746-IM16 | 220/240 VAC discrete input 16-channel/1 group | (2x) BMXDAI0805 | 200...240 VAC 8-channel/1 group discrete input module | As of Jan 2013, M340 does not have a 16-channel 220 VAC input module. Therefore, can manually wire to 2x DAI0805 (8-channel). NOTE: QWA does not exist for this. | None. Must be rewired. |
| | 1746-IN16 | Discrete input 24 VAC/VDC sinking, 16-channel/1 group | BMXDAI1602 | Discrete input 24 VAC/VDC, 16-channel/1 group sinking or sourcing | OK, good module compatibility, but the turn on/off thresholds should be evaluated versus application requirements for acceptability. NOTE: If any field wiring is present on the lower right pin, move it to the lower left pin, then wire input power to lower right pin. | 990SLC00102 |

Green: Generally, a good module cross-reference SLC500 to M340, with minimal differences noted

Orange: An acceptable module cross-reference with differences noted to be verified against application requirements for compatibility.

Red: Generally, not a good cross-reference, however there may be a possibility of compatibility if application verified. Consult factory for possible workarounds.

*Compatibility (continued)*

# PLC modernization and competitive migration
Migration solutions
Rockwell SLC500 I/O to Modicon X80 modules platform

**2**

## Equivalence table: SLC500 I/O module — X80 module platform

| Type of module | SLC500 I/O modules | | X80 modules platform | | Quick wiring adapters | |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Description | X80 compatibility | Reference |
| DC discrete input | 1746-IG16 | 16-channel 5 VDC TTL discrete input module | — | — | As of Jan 2013, M340 does not have a 5 VDC TTL module. | None. Must be rewired. |
| | 1746-IB8 | 8-channel 24 VDC discrete input module | BMXDDI1602 | Discrete 24 VDC input, 16-channel/1 group | OK, good module compatibility. | None. Must be rewired. |
| | 1746-IB16 | 16-channel 24 VDC discrete input module | BMXDDI1602 | Discrete 24 VDC input, 16-channel/1 group | OK, good module compatibility. NOTE: If using QWA, if any field wiring is present on the lower right pin, move it to the lower left pin, then wire input power to lower right pin. | 990SLC00102 |
| | 1746-IV8 | 8-channel 24 VDC discrete input module | BMXDAI1602 | Discrete input 24 VDC sourcing (True Low/ negative logic/sourcing), 16-channel/1group | Off-state voltage threshold difference. | None. Must be rewired. |
| | 1746-IV16 | Discrete input 24 VDC sourcing (True Low), 16-channel/1group | BMX AI1602 | Discrete input 24 VDC sourcing (True Low/ negative logic/sourcing), 16-channel/ 1 group | Off-state voltage threshold difference. NOTE: If any field wiring is present on the lower right pin, move it to the lower left pin, then wire dc return (common) to lower right pin. | 990SLC00102 |
| | 1746-ITV16 | Discrete input 24 VDC FAST sourcing (True Low), 16-channel/1group | BMXDAI1602 | Discrete input 24 VDC sourcing (True Low), 16-channel/1group | As of Jan 2013, M340 does not have equivalent 24 VDC Sourcing Fast input module. SLC500 has higher off-state current. Can use QWA: 990SLC00102 if module is deemed acceptable for application. NOTE: If using QWA, if any field wiring is present on the lower right pin, move it to the lower left pin, then wire dc return (common) to lower right pin. | 990SLC00102 |
| | 1746-ITB16 | Fast 24 VDC discrete input, 16-channel/1 group | BMXDDI1602 | Discrete 24 VDC input, 16-channel/1 group | As of Jan 2013, M340 does not have equivalent 24 VDC Fast input module. SLC500 has higher off-state current. Can use QWA: 990SLC00102 if module is acceptable for application. NOTE: If using QWA, if any field wiring is present on the lower right pin, move it to the lower left pin, then wire input power to lower right pin. | 990SLC00102 |

Green: Generally, a good module cross-reference SLC500 to M340, with minimal differences noted

Orange: An acceptable module cross-reference with differences noted to be verified against application requirements for compatibility.

Red: Generally, not a good cross-reference, however there may be a possibility of compatibility if application verified. Consult factory for possible workarounds.

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# PLC modernization and competitive migration
## Migration solutions
### Rockwell SLC500 I/O to Modicon X80 modules platform

## Equivalence table: SLC500 I/O module — X80 module platform

| Type of module | SLC500 I/O modules | | X80 modules platform | | Quick wiring adapters | |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Description | X80 compatibility | Reference |
| DC discrete input | 1746-IB32 | 32-channel/4 groups 24 VDC discrete input module | BMXDDI3202K | 32-channel/2 groups 24 VDC discrete input module | Generally, a good cross-reference. Must combine 4 groups into 2 groups. Check that slower M340 max. speed-of-response is acceptable for application. | None. Must be rewired. |
| | 1746-IV32 | 32-channel 24 VDC discrete input module | — | — | As of Jan 2013, M340 does not have an equivalent 32 channel negative logic module. | None. Must be rewired. |
| | 1746-IC16 | Discrete 48 VDC input, 16-channel/1 group | BMXDDI1603 | Discrete 48 VDC input, 16-channel/1 group | Type 1 inputs (<0.5 mA off-state current) - verify acceptable for application. NOTE: If any field wiring is present on the lower right pin, move it to the lower left pin, then wire input power to lower right pin. | 990SLC00102 |
| | 1746-IH16 | Discrete input 125 VDC, 16-channel/1group | BMXDDI1604T | Discrete input 125 VDC, 16-channel/1group | OK, good module compatibility. Review module "Maximum points ON versus Temperature" for any de-rate effects for application in M340 manual 35012474. Check that M340 lower OFF-state current is acceptable for application. NOTE: If any field wiring is present on the lower right pin, move it to the lower left pin, then wire input power to lower right pin. | 990SLC00102 |
| | 1746-OA8 | 8-channel 120/240 VAC discrete output module | BMXDAO1605 | 16-channel/4 groups 100...240 VAC | M340 module has lower maximum current rating. Please check against the application requirements. | None. Must be rewired. |
| | 1746-OA16 | 16-channel/2 groups 120/240 VAC | BMXDAO1605 | 16-channel/4 groups 100...240 VAC | OK, good module compatibility. | 990SLC00109 |
| | 1746-OAP12 | 12-channel 120/240 VAC high-current discrete output module | BMXDAO1605 BMXDRA1605 | 16-channel/4 groups 100...240 VAC | As of Jan 2013, M340 does not have an equivalent high output triac module. Choices are BMXDAO1605 (lower output current) or relay module BMXDRA1605. Note that the M340 modules do not have internal group protection fuses and external fusing methods must be done in accordance with the appropriate M340 module user documentation. | None. Must be rewired. |

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Orange: An acceptable module cross-reference with differences noted to be verified against application requirements for compatibility.

Red: Generally, not a good cross-reference, however there may be a possibility of compatibility if application verified. Consult factory for possible workarounds.

**2**

# PLC modernization and competitive migration
## Migration solutions
### Rockwell SLC500 I/O to Modicon X80 modules platform

**2**

## Equivalence table: SLC500 I/O module — X80 module platform

| Type of module | SLC500 I/O modules | | X80 modules platform | | Quick wiring adapters | |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Description | X80 compatibility | Reference |
| DC discrete & relay output | 1746-OB8 | 8-channel 24 VDC discrete output module | BMX DDO 1602 | 24 VDC discrete output, 16-channel/1 group | M340 lower operating voltage range and lower output current capability. Verify module is acceptable for application. | None. Must be rewired |
| | 1746-OB6EI | 6-channel 24 VDC discrete output module, individually isolated electronically fused | BMXDRA0805 | 8-channel individual relay 24 VDC (24...240 VAC) | As of Jan 2013, there is not an individually point-isolated 24 VDC discrete output module. Check to see if relay module BMxDrA0805 can work in application. M340 needs external fusing added (see user documentation). Significantly slower speed of response. | None. Must be rewired |
| | 1746-OV8 | 8-channel 24 VDC discrete output module, operating voltage 10...50 VDC sink | BMXDDO1612 | Discrete output, 16-channel/1 group, operating voltage range: 19...30 VDC negative logic | M340 module less voltage operation range. M340 higher on/off signal delays. Verify acceptable for application. M340 max. current 0.5 A. | None. Must be rewired |
| | 1746-OB16 | Discrete output, 6-channel/1 group 10...50 VDC | BMXDDO1602 | Discrete output, 16-channel/1 group, operating voltage range: 19...30 VDC | M340 module less voltage operation range. M340 higher on/off signal delays. Verify acceptable for application. | 990SLC00104 |
| | 1746-OB16E | Discrete output, 16-channel/1 group 10...30 VDC | BMXDDO1602 | Discrete output, 16-channel/1 group 19...30 VDC | SLC500 module lower voltage operation range. M340 higher on/off signal delays. Verify acceptable for application. | 990SLC00104 |
| | 1746-OV16 | Discrete output, Sinking (neg. logic), 16-channel/1 group, operating voltage: 10...50 VDC | BMXDDO1612 | Discrete output, Sinking (neg. logic) 16-channel/1 group, operating voltage range: 19...30 VDC | SLC500 module lower voltage operation range. M340 higher on/off signal delays. Verify acceptable for application. | 990SLC00104 |
| | 1746-OBP8 | 8-channel 24 VDC high-current discrete output module | BMXDDO1602 | Discrete output, 16-channel/1 group, operating voltage range: 19...30 VDC | SLC500 module lower voltage operation range. M340 higher on/off signal delays. SLC500 has higher point max. current up to 30 °C. Verify acceptable for application. | None. Must be rewired. |
| | 1746-OBP16 | Discrete output, 16-channel/1 group 10...30 VDC | BMXDDO1602 | Discrete output, 16-channel/1 group, operating voltage range: 19...30 VDC | M340 higher on/off signal delays. SLC500 has higher point max. current up to 30 °C. Verify acceptable for application. | 990SLC00104 |
| | 1746-OVP16 | Discrete output, 16-channel/1 group, operating voltage: 20.4...25.4 VDC | BMXDDO1612 | Discrete output, sinking (neg. logic) 16-channel/1 group, operating voltage range: 19...30 VDC | M340 higher on/off signal delays. M340 lower max. current rating. Verify acceptable for application. | None. Must be rewired. |
| | 1746-OG16 | 16-channel 5 VDC Sinking discrete output module, operating voltage 5 VDC sink | — | — | As of Jan 2013, M340 does not have an equivalent 5 VDC sinking discrete module. | None. Must be rewired. |
| | 1746-OB32 (D and E) | 32-channel/2 groups 24 VDC discrete output module | BMXDDO3202K | 32-channel/2 groups 24 VDC discrete output module | M340 has significantly lower output current. Verify against application requirements. | None. Must be rewired. |
| | 1746-OV32 | 32-channel 24 VDC Sinking discrete output module, operating voltage 5...50 VDC sink | (2x) BMXDDO1612 | Discrete output, 16-channel/1 group, operating voltage range: 19...30 VDC | As of Jan 2013, M340 does not have an equivalent 32 channel negative logic module. Possible workaround 2x BMXDDO1612 | None. Must be rewired. |
| | 1746-OX8 | 8-channel, individually isolated high-current relay contact outputs., operating voltage 5...125 VDC | BMXDRA0805 BMXDRA0804T | DRA0805: 8-channel individual relay 24 VDC (24...240 VAC) (consult user guide for higher currents versus reduced switching cycle curves) DRA0804T: 8-channel individual relay 125 VDC @ 0.3 A max. | Verify the M340 relay module has the required application load requirements (consult the module user documentation). If high voltage DC is required, can substitute the BMXDRA0804T at reduced current levels. Compare against application needs. | 990SLC00110 |

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**Schneider** *Electric*

# PLC modernization and competitive migration
## Migration solutions
### Rockwell SLC500 I/O to Modicon X80 modules platform

## Equivalence table: SLC500 I/O module — X80 module platform

| Type of module | SLC500 I/O modules | | X80 modules platform | | Quick wiring adapters | |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Description | X80 compatibility | Reference |
| DC discrete & relay output | 1746-OW4 | 4-channel, relay contact outputs, operating voltage 5...125 VDC, 5...265 VAC | BMXDRA1605 | Relay outputs, 16-channel/2 groups. 24 VAC...240 VAC, 24 VDC (5...125 VDC) | OK, good module compatibility. M340 module BMXDRA1605 is capable of 12 A/ group. | None. Must be rewired. |
| | 1746-OW8 | 8-channel, relay contact outputs, operating voltage 5...125 VDC, 5...265 VAC. 2 groups of 4 outputs | BMXDRA1605 | Relay outputs, 16-channel/2 groups. 24 VAC...240 VAC, 24 VDC (5...125 VDC) | OK, good module compatibility. M340 module BMXDRA1605 is capable of 12 A/ group. (1) | None. Must be rewired. |
| | 1746-OW16 | Relay outputs, 16-channel/2 groups. 120/220 VAC, 125 VDC, 24 VDC | BMXDRA1605 | Relay outputs, 16-channel/2 groups. 24 VAC...240 VAC, 24 VDC (5...125 VDC) | OK, good module compatibility. M340 module BMXDRA1605 is capable of 12 A/ group. The QWA is limited to 8 A/ group maximum, which is consistent with SLC500 1746-OW16. If need to exceed 8A/group, do not use the QWA, and hand wire the BMXDRA1605. (1) | None. Must be rewired. |
| | 1746-OW16 | Relay outputs, 16-channel/2 groups. 120/220 VAC, 125 VDC, 24 VDC | BMXDRA1605 | Relay outputs, 16-channel/2 groups. 24 VAC...240 VAC, 24 VDC (5...125 VDC) | OK, good module compatibility. M340 module BMXDRA1605 is capable of 12 A/ group. The QWA is limited to 8 A/ group maximum, which is consistent with SLC500 1746-OW16. If need to exceed 8 A/group, do not use the QWA, and hand wire the BMXDRA1605. (1) | 990SLC00101 |
| Discrete mixed I/O | 1746-IO4 | Combination of 120 VAC inputs (2) and relay contact outputs (2). Input, operating voltage 85...132 VAC, outputs, operating voltage 5...125 VDC, 5...265 VAC. Current per output (max.): 1.5 A at 120 VAC, 1.2 A at 24 VDC | — | — | As of Jan 2013, M340 does not have mixed AC input modules with relays. Workaround to utilize individual modules: 120 VAC input DAI1604 and relay module DRA0804T, DRA0805, or DRA1605 (choice depending on best fit to application requirements). | None. Must be rewired. |
| | 1746-IO8 | Combination of 120 VAC inputs (4) and relay contact outputs (4). Input, operating voltage 85...132 VAC, outputs, operating voltage 5...125 VDC, 5...265 VAC. Current per output (max.): 1.5 A at 120 VAC, 1.2 A at 24 VDC | — | — | As of Jan 2013, M340 does not have mixed AC input modules with relays. Workaround to utilize individual modules: 120 VAC input DAI1604 and relay module DRA0804T, DRA0805, or DRA1605 (choice depending on best fit to application requirements). | None. Must be rewired. |
| | 1746-IO12 | Combination of 120 VAC inputs (6) and relay contact outputs (6). Input, operating voltage 85...132 VAC, outputs, operating voltage 5...125 VDC, 5...265 VAC. Current per output (max.): 1.5 A at 120 VAC, 1.2 A at 24 VDC | — | — | As of Jan 2013, M340 does not have mixed AC input modules with relays. Workaround to utilize individual modules: 120 VAC input DAI1604 and relay module DRA0804T, DRA0805, or DRA1605 (choice depending on best fit to application requirements). | None. Must be rewired. |
| | 1746-IO12DC | Combination of 24 VDC inputs (6) and relay contact outputs (6). Input, operating voltage 10...30 VDC, outputs, operating voltage 5...125 VDC, 5...265 VAC. Current per output (max.): 1.5 A at 120 VAC, 1.2 A at 24 VDC | BMXDDM16025 | Combination module: 8-channel 24 VDC discrete inputs/1 group 8-channel relays/1 group. Max. switching load: 264 VAC/125 VDC 1.5 A (see user guide for current versus cycle time) | OK | 990SLC00103 |

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2

# PLC modernization and competitive migration
## Migration solutions
### Rockwell SLC500 I/O to Modicon X80 modules platform

**2**

## Equivalence table: SLC500 I/O module — X80 module platform

| Type of module | SLC500 I/O modules | | X80 modules platform | | Quick wiring adapters | |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Description | X80 compatibility | Reference |
| Analog input | 1746-NI4 (V) | 4-channel analog input module. Per point selectable voltage/current -10 VDC...+10 VDC; 0...10 VDC; 0...5 VDC; 1...5 VDC; -20...+20 mA; 0...20 mA; 4...20 mA | BMXAMI0410 | 4-channel isolated analog input module -10 VDC...+10 VDC; 0...10 VDC; 0...5 VDC; 1...5 VDC; -20...+20 mA; 0...20 mA; 4...20 mA | QWA is pre-wired for voltage mode. If need individual channel(s) current mode, install 250-ohm resistor at channel. If need current-mode for all four channels, use QWA: 990SLC00106. To run channels single-ended, the Rockwell channel-common shorting convention (ANL COM) is maintained. | 990SLC00105 |
| | 1746-NI4 (C) | 4-channel analog input module. Per point selectable voltage/current -10 VDC...+10 VDC; 0...10 VDC; 0...5 VDC; 1...5 VDC; -20...+20 mA; 0...20 mA; 4...20 mA | BMXAMI0410 | 4-channel isolated analog input module -10 VDC...+10 VDC; 0...10 VDC; 0...5 VDC; 1...5 VDC; -20...+20 mA; 0...20 mA; 4...20 mA | QWA is pre-wired for current mode for all channels. If need mixed voltage/current mode at channels (Rockwell was selectable), use the voltage-mode QWA: 990SLC00105 and install 250-ohm resistors at desired current-mode channels. To run channels single-ended, the Rockwell channel-common shorting convention (ANL COM) is maintained. | 990SLC00106 |
| | 1746-NI8 | 8-channel analog input module. Per point selectable voltage/current -10 VDC...+10 VDC; 0...10 VDC; 0...5 VDC; 1...5 VDC; -20...+20 mA; 0...20 mA; 4...20 mA | BMXAMI0800 | 8-channel analog input module with no channel-to-channel isolation, +/-5 V, +/-10 V, 0...5 V, 0...10 V, 1...5 V, +/-20 mA,0...20 mA, 4...20 mA | Must configure analog inputs as current or voltage mode to match the replacement module's function. Verify error budget and module resolutions are acceptable for the application. | None. Must be rewired. |
| | 1746-NI16I | 16-channel analog current input module. Per point selectable current (±20 mA, 4...20 mA, 0...1 mA, or 0...20 mA) | (2x) BMXAMI0800 | 8-channel analog input module with no channel-to-channel isolation, +/-5 V, +/-10 V, 0...5 V, 0...10 V, 1...5 V, +/-20 mA,0...20 mA, 4...20 mA | As of Jan 2013, M340 does not have a 16-channel analog input module. Can utilize 2x BMXAMI0800 wired for current-mode. Verify error budget and module resolutions are acceptable for the application. | None. Must be rewired. |
| | 1746-NI16 V | 16-channel analog voltage input module. Per point selectable voltage (±10 VDC, 1...5 VDC, 0...5 VDC, or 0...10 VDC) | (2x) BMXAMI0800 | 8-channel analog input module with no channel-to-channel isolation, +/-5 V, +/-10 V, 0...5 V, 0...10 V, 1...5 V, +/-20 mA, 0...20 mA, 4...20 mA | As of Jan 2013, M340 does not have a 16-channel analog input module. Can utilize 2x BMXAMI0800 wired for voltage-mode. Verify error budget and module resolutions are acceptable for the application. | None. Must be rewired. |
| Analog output | 1746-NO4I | 4-channel analog output module, current-mode 0...20 mA | BMXAMO0410 | 4-channel analog output module -10...+10 V; 0...20 mA, 4...20 mA | Must configure analog outputs as current or voltage mode to match the replacement module's function. Verify error budget and module resolutions are acceptable for the application. Note that the QWA has a dummy connection point for the external power supply 2-wire terminal but has no function as M340 does not have external supply option. | 990SLC00107 |
| | 1746-NO4 V | 4-channel analog output module Voltage-mode ±10 VDC | BMXAMO0410 | 4-channel analog output module -10...+10 V; 0...20 mA, 4...20 mA | Must configure analog outputs as current or voltage mode to match the replacement module's function. Verify error budget and module resolutions are acceptable for the application. Note that the QWA has a dummy connection point for the external power supply 2-wire terminal but has no function as M340 does not have external supply option. | 990SLC00107 |
| | 1746-NO8I | 8-channel analog output module, current-mode | (2x) BMXAMO0410 | 4-channel analog output module -10...+10 V; 0...20 mA, 4...20 mA | Must configure analog outputs as current or voltage mode to match the replacement module's function. Verify error budget and module resolutions are acceptable for the application. | None. Must be rewired. |
| | 1746-NO8V | 8-channel analog output module, current-mode ±10 VDC | (2x) BMXAMO0410 | 4-channel analog output module -10...+10 V; 0...20 mA, 4...20 mA | Must configure analog outputs as current or voltage mode to match the replacement module's function. Verify error budget and module resolutions are acceptable for the application. | None. Must be rewired. |

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*Compatibility (continued)*

# PLC modernization and competitive migration
## Migration solutions
Rockwell SLC500 I/O to Modicon X80 modules platform

**2**

## Equivalence table: SLC500 I/O module — X80 module platform

| Type of module | SLC500 I/O modules | | X80 modules platform | | Quick wiring adapters | |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Description | X80 compatibility | Reference |
| Analog mixed I/O | 1746-NIO4I | 2-channel differential voltage/current (selectable) inputs 2-channel current outputs (non-isolated) 0...20 mA; 4...20 mA | BMXAMM0600 | 4-channel non-isolated analog inputs -10...+10 V; 0...10 V; 0...5 V; 1...5 V; 0...20 mA; 4...20 mA 2 non-isolated analog outputs -10...+10 V; 0...20 mA; 4...20 mA | M340 lower resolution 12-bit versus 14-bit. Verify error budget and module resolutions are acceptable for the application | 990SLC00108 *(1)* |
| | 1746-NIO4 V | 2-channel differential voltage/current (selectable) inputs, 2-channel voltage outputs (non-isolated) | BMXAMM0600 | 4-channel non-isolated analog inputs -10...+10 V; 0...10 V; 0...5 V; 1...5 V; 0...20 mA; 4...20 mA 2 non-isolated analog outputs -10...+10 V; 0...20 mA; 4...20 mA | Analog output does not have 0...10 V (has +/-10 V). M340 lower resolution 12-bit versus 14-bit. Verify error budget and module resolutions are acceptable for the application. | 990SLC00108 *(1)* |
| | 1746-FIO4I | 2-channel Fast differential voltage/current (selectable) inputs (differential, 0...10 VDC, 0...20 mA) 2-channel current outputs (non-isolated) 2 outputs (0...20 mA) | BMXAMM0600 | 4-channel non-isolated analog inputs -10...+10 V; 0...10 V; 0...5 V; 1...5 V; 0...20 mA; 4...20 mA 2 non-isolated analog outputs -10...+10 V; 0...20 mA; 4...20 mA | Slower speed of response for M340 module. On AMM0600 can reduce the ON channels from 4 to 2 for a faster input response of analog inputs (3 m/*10 ft*). Check application requirements to see if AMM0600 is acceptable. M340 lower resolution 12-bit versus 14-bit. | 990SLC00108 *(1)* |
| | 1746-FIO4 V | 2-channel Fast differential voltage/current (selectable) inputs (differential, 0...10 VDC, 0...20 mA), 2-channel voltage outputs (non-isolated) (±10 VDC) | BMXAMM0600 | 4-channel non-isolated analog inputs -10...+10 V; 0...10 V; 0...5 V; 1...5 V; 0...20 mA; 4...20 mA 2 non-isolated analog outputs -10...+10 V; 0...20 mA; 4...20 mA | Slower speed of response for M340 module. On AMM0600 can reduce the ON channels from 4 to 2 for a faster input response of analog inputs (3 m/*10 ft*). Check application requirements to see if AMM0600 is acceptable. M340 lower resolution 12-bit versus 14-bit. | 990SLC00108 *(1)* |

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*(1) For current-mode install jumpers: pins 0 to 6, and 3 to 9.*

Compatibility *(continued)*

# PLC modernization and competitive migration
## Migration solutions
### Rockwell SLC500 I/O to Modicon X80 modules platform

**2**

## Equivalence table: SLC500 I/O module — X80 module platform

| Type of module | SLC500 I/O modules | | X80 modules platform | | Quick wiring adapters | |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Description | X80 compatibility | Reference |
| Analog RTD & thermo-couple | 1746-NR4 | 4 RTD/resistance inputs 100 ohms, 200 ohms, 500 ohms Platinum 120 ohms Nickel 604 ohms Nickel/Iron 10 ohms Copper 150 ohms, 500 ohms, 1000 ohms, 3000 ohms direct resistance | BMXART0414 | RTD, thermocouple, and voltage input, isolated 4-channel RTD IEC Pt100/Pt1000, US/JIS Pt100/pt1000, Cu10, Ni100/ Ni1000, in 2-, 3-, or 4-wire. Input ranges: +/-40 mV, +/-80 mV, +/-160 mV, +/-320 mV, +/-640 mV, 1.28V CJC: internal compensation use Telefast ABE-7CPA412, external: channel 0 2-/3-wire Pt100 Thermocouple: B, E, J, K, L, N, R, S, T, U (see the M340 module user documentation for further specifications) | Consult M340 user documentation and verify the M340 module specifications against the application requirements for compatibility. | None. Must be rewired. |
| | 1746-NR8 | 8 RTD/resistance inputs 100 ohms, 200 ohms, 500 ohms Platinum 120 ohms Nickel 604 ohms Nickel/Iron 10 ohms Copper 150 ohms, 500 ohms, 1000 ohms, 3000 ohms direct resistance | BMXART0814 | RTD, thermocouple, and voltage input, isolated 8-channel RTD IEC Pt100/Pt1000, US/JIS Pt100/pt1000, Cu10, Ni100/ Ni1000, in 2-, 3-, or 4-wire. CJC: internal compensation use Telefast ABE-7CPA412, external: channel 0 2-/3-wire Pt100 Thermocouple: B, E, J, K, L, N, R, S, T, U (see the M340 module user documentation for further specifications) | Consult M340 user documentation and verify the M340 module specifications against the application requirements for compatibility. | None. Must be rewired. |
| | 1746-NT4 | 4 thermocouple/mV inputs B, E, J, K, N, R, S, T Thermocouple and ±50 mV or ±100 mV | BMXART0414 | RTD, thermocouple, and voltage input, isolated 4-channel RTD IEC Pt100/Pt1000, US/JIS Pt100/pt1000, Cu10, Ni100/ Ni1000, 2-, 3-, or 4-wire. Input ranges: +/-40 mV, +/-80 mV, +/-160 mV, +/-320 mV, +/-640 mV,1.28V CJC: internal compensation use Telefast ABE-7CPA412, external: channel 0 2-/3-wire Pt100 Thermocouple: B, E, J, K, L, N, R, S, T, U (see the M340 module user documentation for further specifications) | Consult M340 user documentation and verify the M340 module specifications against the application requirements for compatibility. | None. Must be rewired. |
| | 1746-NT8 | 8 thermocouple inputs B, E, J, K, N, R, S, T Thermocouple and ±50 mV or ±100 mV | BMXART0814 | RTD, thermocouple, and voltage input, isolated 8-channel RTD IEC Pt100/Pt1000, US/JIS Pt100/pt1000, Cu10, Ni100/ Ni1000, in 2-, 3-, or 4-wire. Input ranges: +/-40 mV, +/-+/-80 mV, +/-160 mV, +/-320 mV, +/-640 mV,1.28V CJC: internal compensation use Telefast ABE-7CPA412, external: channel 0 2-/3-wire Pt100 Thermocouple: B, E, J, K, L, N, R, S, T, U (see the M340 module user documentation for further specifications) | Consult M340 user documentation and verify the M340 module specifications against the application requirements for compatibility. | None. Must be rewired. |

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*Compatibility (continued)*

# PLC modernization and competitive migration
## Migration solutions
### Rockwell SLC500 I/O to Modicon X80 modules platform

## Equivalence table: SLC500 I/O module — X80 module platform

| Type of module | SLC500 I/O modules | | X80 modules platform | | Quick wiring adapters | |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Description | X80 compatibility | Reference |
| Analog RTD & thermo-couple | 1746-INT4 | 4 isolated thermocouple/mV inputs B, C, D, E, J, K, N, R, S, T Thermocouple and ±50 mV or ±100 mV | BMXART0414 | RTD, thermocouple, and voltage input, isolated 4-channel RTD IEC Pt100/Pt1000, US/JIS Pt100/pt1000, Cu10, Ni100/ Ni1000, in 2-, 3-, or 4-wire. CJC: internal compensation use Telefast ABE-7CPA412, external: channel 0 2-/3- wire Pt100 Thermocouple: B, E, J, K, L, N, R, S, T, U (see the M340 module user documentation for further specifications) | Consult M340 user documentation and verify the M340 module specifications against the application requirements for compatibility. | None. Must be rewired. |
| Special | 1746-BTM | Barrel temperature control module | None | — | No direct replacement. Contact for a possible workaround. | None. Must be rewired. |
| | 1746-HSCE | High-speed counter module | None | — | No direct replacement. Contact for a possible workaround. | None. Must be rewired. |
| | 1746-HSCE2 | High-speed counter module | None | — | No direct replacement. Contact for a possible workaround. | None. Must be rewired. |
| | 1746-HSTP1 | SLC stepper controller module | None | — | No direct replacement. Contact for a possible workaround. | None. Must be rewired. |
| | 1746-QS | Synchronized axis control module | None | — | No direct replacement. Contact for a possible workaround. | None. Must be rewired. |
| | 1746-QV | Open-loop velocity control module | None | — | No direct replacement. Contact for a possible workaround. | None. Must be rewired. |
| Networking | 1746-BAS | SLC BASIC module | None | — | No direct replacement. Contact for a possible workaround. | None. Must be rewired. |
| | 1746-BAS-T | SLC BASIC-T module | None | — | No direct replacement. Contact for a possible workaround. | None. Must be rewired. |
| | 1747-KE | DH-485/DF1 Interface module | None | — | No direct replacement. Contact for a possible workaround. | None. Must be rewired. |
| | 1747-KFC15 | ControlNet RS-232 | None | — | No direct replacement. Contact for a possible workaround. | None. Must be rewired. |
| | 1747-DCM | Direct Communication module | None | — | No direct replacement. Contact for a possible workaround. | None. Must be rewired. |
| | 1747-SCNR | ControlNet scanner module | None | — | No direct replacement. Contact for a possible workaround. | None. Must be rewired. |
| | 1747-SDN | Device Net scanner module | None | — | No direct replacement. Contact for a possible workaround. | None. Must be rewired. |
| | 1747-SN | Remote I/O scanner module | None | — | No direct replacement. Contact for a possible workaround. | None. Must be rewired. |
| | 1747-BSN | Backup scanner module | None | — | No direct replacement. Contact for a possible workaround. | None. Must be rewired. |
| | 1203-SM1 | SCAN port communication module | None | — | No direct replacement. Contact for a possible workaround. | None. Must be rewired. |

Green: Generally, a good module cross-reference SLC500 to M340, with minimal differences noted

Orange: An acceptable module cross-reference with differences noted to be verified against application requirements for compatibility.

Red: Generally, not a good cross-reference, however there may be a possibility of compatibility if application verified. Consult factory for possible workarounds.

**2**

# PLC modernization and competitive migration
## Migration solutions
Rockwell PLC5 1771 I/O to Modicon X80 modules platform

*PLC5 to X80 migration solution with chassis*

*Dedicated adapter for PLC5*
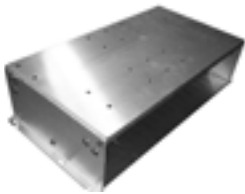
*Chassis for Rockwell PLC5 migration solution*

*QGH66818*

## Presentation

The Rockwell PLC5 to Modicon X80 migration solution consists of various I/O adapters and dedicated chassis. It is used to simplify the replacement of Rockwell PLC5 PLCs with Modicon M580/M340 PLCs and the Modicon X80 modules platform; existing Rockwell PLC5 field wiring will be retained.

The offer provides 31 wiring adapters (including 6 multi-use flying-lead adapters) and two chassis that cover most modernization needs between Rockwell PLC5 1771 I/O modules and X80 I/O modules.

### Adapters

There are two types of adapters :
- **Dedicated wiring adapters** (25 available references for both possible lengths) are designed to mate specific Rockwell PLC5 I/O modules to specific X80 I/O modules. Fully pre-wired cables are included to make installation quick and easy.
- **Multi-use flying-lead adapters** (five types available for both possible lengths plus one in one length) are designed to be used with fixed sets of I/O module pairs. The cables shipped with the multi-use adapters (Flying Lead cables) are not ready-to-use. The flying leads will have to be wired before the commissioning on site, depending on the mating of the concerned Rockwell PLC5 and X80 I/O modules.
  The Rockwell PLC5 to X80 Instruction Sheet contains wiring guides for each of the six types of multi-use flying-lead adapters.

All cables are available in either 0.8 m/*2 ft* or 1.63 m/*5 ft* lengths (except for the multi-use BMXFCW301S i cable that is available in a 3 m/*10 ft* length).

### Chassis

The chassis accepts both the M580 or M340 backplanes (purchased separately) and the new X80 I/O modules. Two sizes are available depending on the size of the replaced Rockwell PLC5 backplane.

## Description of the solution

A chassis allows the replacement of a Rockwell PLC5 1771 I/O with an X80 I/O rack (M340 or M580) in the same physical location and with the same footprint as the current system:

- The Rockwell PLC5 I/O rack is removed and replaced by the metal base plate of the chassis that contains one or two X80 backplane(s) and the selected I/O wiring adapters.
  To define the combination between the chassis and the X80 backplanes, refer to the Equivalence table below or the Rockwell PLC5 to X80 Migration Instruction sheet.
- The backplane(s), purchased separately, is (are) mounted on the front plate of the chassis and accommodate(s) the new PLC and X80 I/O modules.
- The appropriate wiring adapters will be installed in the lower section of the chassis. These quick wiring adapters allow the Rockwell PLC5 wiring of the existing installation to be connected to the X80 I/O module of the new PLC configuration, which means there is no need for on-site rewiring. The original Rockwell PLC5 connectors are retained. The chassis door can be opened to allow access to the wiring adapters during commissioning and maintenance.

Note that the new system (migration chassis + I/O modules and CPU) is deeper than the original Rockwell PLC5:
- Depth:
- □ with BMEP58●●●● processor : 296 mm/*11.66 in.*
- □ with 990ADPC5X80●●● I/O adapter : 291 mm/*11.45 in.* (including X80 terminal block)
- Width:
- □ 483 mm/*19.01 in.* with a 12-position chassis
- □ 610 mm/*24.01 in.* with a 16-position chassis
- Height : 315.3 mm/*12.41 in.*

The most commonly used cables are 0.8 cm/*2 ft* long, but 1.63 m/*5 ft* cables are also available for specific needs, such as to merge two Rockwell PLC5 I/O racks into one X80 rack. Cables and terminal blocks are included with the I/O adapters. Replacement cables are also available as spare parts (see

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# PLC modernization and competitive migration
## Migration solutions
### Rockwell PLC5 1771 I/O to Modicon X80 modules platform



*Migrate your Rockwell PLC5 to Modicon M580*
*Click to open video (1min 45)*

## Benefits of the solution

The customer benefits are reduced risk and cost of migration from a Rockwell PLC5:

- Minimal production downtime with setup time of about one hour per rack
- Cost savings through the retention of all wiring to sensors/actuators inside the existing cabinets (savings in wiring, testing and commissioning, update of wiring diagrams). Typically, no electrician or wiring contractor is needed.
- Unlike manual rewiring, ordinary production stops can be used for the changeover.
- Due to minimal changes, installations can be restarted within the allotted time with the ability to roll back in the event of any unforseen matters arising.
- Better reliability brought by dedicated solutions designed by the manufacturer.
- Simple solution that makes modernization easy and provides the lowest risk option.

This migration solution is part of a larger modernization and migration offer that includes methods, specific migration devices, and dedicated tools for various legacy PLCs from Schneider Electric and the competition as well.
Modernizations and migrations can be implemented with help from our Schneider Electric services experts.

## Equivalence table

The cross-reference table hereafter shows the possible equivalences between Rockwell PLC5 1771 I/O modules and X80 I/O modules. Some differences in terminal strips, modularity, common or power connections may have to be addressed: it is recommended that you verify compatibility with our Schneider Electric service representatives.

Note that for I/O adapter assembly information, the column "Type" describes the type of adapter as:

- **Dedicated**: Dedicated adapter assemblies contain a PCB that performs the wiring translations from PLC5 1771I/O to X80 connector pins. These assemblies use dedicated cables.
- **Multi-use flying-lead**: Multi-use flying-lead adapter assemblies contain a PCB that does not perform the wiring translation. The signal translation is performed by the cable wiring at the X80 field terminal block as per the Rockwell PLC5 to X80 I/O Migration Instruction Sheet wiring guide corresponding to the multi-use flying-lead adapter reference also called "generic adapter". This wiring is done by the user before commissioning.

### Equivalence table: PLC5 1771 I/O module – X80 modules platform

| Type of device | PLC5 1771 I/O module | | X80 modules platform | | | |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Type | Description | Reference |
| Racks | 1771-AxB | I/O chassis (supports up to 2 each of 4-, 6-, 8-slot racks, see note) | BM●XBP●●●●(H) | Chassis | PLC evolution chassis W/O XBP 12-slot | **990CHPC5X80120** |
| | 1771-AxB | I/O chassis (supports up to 2 each of 4-, 6-, 8-, 12-slot racks, see note) | BM●XBP●●●●(H) | Chassis | PLC evolution chassis W/O XBP 16-slot | **990CHPC5X80160** |

**Note**: X80 racks are available in standard or industrially hardened versions. A hardened version has the suffix H at the end of the reference. The table below shows the number of available slots for the power supply modules (CPS) and modules (CPU and Modicon X80 modules) for each rack reference.

#### Number of slots in X80 racks

| References | | CPS slots | Module slots | | |
|---|---|---|---|---|---|
| | | | Total | Ethernet and Bus X | Bus X (only) |
| Bus X racks | BMXXBP0400 (H) | 1 | 4 | - | 4 |
| | BMXXBP0600 (H) | 1 | 6 | - | 6 |
| | BMXXBP0800 (H) | 1 | 8 | - | 8 |
| | BMXXBP1200 (H) | 1 | 12 | - | 12 |
| Dual Ethernet and Bus X racks | BMEXBP0400 (H) | 1 | 4 | 4 | 0 |
| | BMEXBP0800 (H) | 1 | 8 | 8 | 0 |
| | BMEXBP1200 (H) | 1 | 12 | 8 | 4 *(1)* |
| Redundant power supply racks | BMEXBP0602(H) | 2 | 6 | 6 | 0 |
| | BMEXBP1002(H) | 2 | 10 | 8 | 2 *(2)* |

*(1) Bus X connector only for module slot number 02, 08, 10, and 11.*
*(2) Bus X connector only for module slot number 02 and 08.*

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# PLC modernization and competitive migration
## Migration solutions
Rockwell PLC5 1771 I/O to Modicon X80 modules platform

## Equivalence table: PLC5 I/O module — X80 module platform

| Type of device | PLC5 1771 I/O | | X80 modules platform | Evolution I/O adapter - PLC I/O chassis | | |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Type | Description | Reference |
| **Digital input** | **1771-IM** | AC input 8-channel | BMXDAI0805 | *Dedicated* | 1771-IM to BMXDAI0805 (0.8 m/*2 ft*) | **990ADPC5X80102** |
| | | | | | 1771-IM to BMXDAI0805 (1.63 m/*5 ft*) | **990ADPC5X80103** |
| | **1771-IAD** | AC/DC input 16-channel | BMXDAI1604 (AC) | *Dedicated* | Evolution I/O adapter 1771-I●D to BMXD●I160●, unfused (0.8 m/*2 ft*) | **990ADPC5X80104** |
| | | | BMXDDI1604T (DC) | | Evolution I/O adapter 1771-I●D to BMXD●I160●, unfused (1.63 m/*5 ft*) | |
| | **1771-IBD** | Digital 16-channel 10-30 VDC input | BMXDDI1602 | | | **990ADPC5X80105** |
| | **1771-ID** | AC/DC input 6-channel | BMXDAI0814 | *Dedicated* | 1771-ID (AC) to BMXDAI0814 (0.8 m/*2 ft*) | **990ADPC5X80110** |
| | | | | | 1771-ID (AC) to BMXDAI0814 (1.63 m/*5 ft*) | **990ADPC5X80111** |
| | | | BMXDDI1604T | *Dedicated* | 1771-ID (DC) to BMXDDI1604T (0.8 m/*2 ft*) | **990ADPC5X80122** |
| | | | | | 1771-ID (DC) to BMXDDI1604T (1.63 m/*5 ft*) | **990ADPC5X80123** |
| | **1771-IBD** | DC input 16-channel | BMXDDI1602 | *Dedicated* | 1771-IBD to BMXD●●160●, fused (0.8 m/*2 ft*) | **990ADPC5X80128** |
| | **1771-ICD** | DC input 16-channel | BMXDDI1603 | | 1771-IBD to BMXD●●160●, fused (1.63 m/*5 ft*) | **990ADPC5X80129** |
| | **1771-IAD** | AC/DC input 16-channel used in AC | BMXDAI1604 | | | |
| | **1771-IAD** | AC/DC input 16-channel used in DC | BMXDDI1604T | | | |
| | **1771-IND** | AC/DC input 16-channel used in AC | BMXDAI1602 | | | |
| | **1771-IND** | AC/DC input 16-channel used in DC | | | | |
| | **1771-IMD** | AC/DC input 16-channel | BMXDAI1615 | *Dedicated* | 1771-I●N to (2) BMXD●I160● (0.8 m/*2 ft*) | **990ADPC5X80130** |
| | | | | | 1771-I●N to (2) BMXD●I160● (1.63 m/*5 ft*) | **990ADPC5X80131** |
| | **1771-IBN** | DC input 32-channel | (2x) BMXDDI1602 | *Dedicated* | 1771-I●N to (2) BMXD●I160● (0.8 m/*2 ft*) | **990ADPC5X80200** |
| | **1771-IAN** | AC input 32-channel | (2x) BMXDAI1604 | | 1771-I●N to (2) BMXD●I160● (1.63 m/*5 ft*) | **990ADPC5X80201** |
| | **1771-IQ16 (pos)** | DC input 16-channel | BMXDDI1602 | *Dedicated* | 1771-I●16 to BMXDDI160● (0.8 m/*2 ft*) | **990ADPC5X80134** |
| | **1771-ID16** | AC/DC input 16-channel used in DC | BMXDDI1604T | | 1771-I●16 to BMXDDI160● (1.63 m/*5 ft*) | **990ADPC5X80135** |
| | **1771-IVN** | DC input 32-channel | (2x) BMXDAI1602 | *Dedicated* | 1771-IVN to (2) BMXDAI1602 (0.8 m/*2 ft*) | **990ADPC5X80202** |
| | | | | | 1771-IVN to (2) BMXDAI1602 (1.63 m/*5 ft*) | **990ADPC5X80203** |
| | **1771-IV** | DC input 8-channel | BMXDAI1602 | *Multi-use flying-lead* | GEN1 WA to (1) HP-PT 20/40-pin X80 (0.8 m/*2 ft*) | **990ADPC5X80300** |
| | | | | | GEN1 WA to (1) HP-PT 20/40-pin X80 (1.63 m/*5 ft*) | **990ADPC5X80301** |
| | **1771-IQ16 (neg)** | DC input 16-channel | BMXDAI1602 | *Multi-use flying-lead* | GEN5 WN to (2) HP-PT 20-pin X80 (0.8 m/*2 ft*) | **990ADPC5X80310** |
| | | | | | GEN5 WN to (2) HP-PT 20-pin X80 (1.63 m/*5 ft*) | **990ADPC5X80311** |
| | **1771-IA/IA2** | AC input 8-channel | BMXDAI1604 | *Dedicated* | Evolution I/O adapter 1771-I● to BMXD●I160● (0.8 m/*2 ft*) | **990ADPC5X80140** |
| | | DC input 8-channel | BMXDAI1604T | | | |
| | **1771-IB** | DC input 8-channel | BMXDDI1602 | | | |
| | **1771-IC** | DC input 8-channel | BMXDDI1603 | | Evolution I/O adapter 1771-I● to BMXD●I160● (1.63 m/*5 ft*) | **990ADPC5X80141** |
| | **1771-IH** | DC input 8-channel (48VDC) | BMXDDI1603 | | | |
| | **1771-IN** | AC input 8-channel | BMXDAI1602 | | | |
| | **1771-IQ (pos)** | DC input 8-channel | BMXDDI1602 | | | |
| | **1771-IQ (neg)** | DC input 8-channel | BMXDAI1602 | | | |
| | **1771-IT** | DC input 8-channel | BMXDDI1602 | | | |

# PLC modernization and competitive migration
## Migration solutions
Rockwell PLC5 1771 I/O to Modicon X80 modules platform

## Equivalence table: PLC5 I/O module — X80 module platform

| Type of device | PLC5 1771 I/O | | X80 modules platform | Evolution I/O adapter - PLC I/O chassis | | |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Type | Description | Reference |
| **Digital output** | 1771-OB | Digital 8-channel DC 10-27V output | BMXDDO1602 | *Dedicated* | Evolution I/O adapter 1771-OB to BMXDDO1602 (0.8 m/*2 ft*) | 990ADPC5X80100 |
| | | | | | Evolution I/O adapter 1771-OB to BMXDDO1602 (1.63 m/*5 ft*) | 990ADPC5X80101 |
| | (2x) 1771-OB | Digital 8-channel DC 10-27V output | BMXDDO1602 | *Multi-use flying-lead* | Evolution I/O adapter (2)1771-OB to BMXDDO1602 (0.8 m/*2 ft*) | 990ADPC5X80302 |
| | | | | | Evolution I/O adapter (2)1771-OB to BMXDDO1602 (1.63 m/*5 ft*) | 990ADPC5X80303 |
| | 1771-OW16 | Digital Contact 16-channel output with WN wiring arm | BMXDRA1605 | *Dedicated* | Evolution I/O adapter 1771-OW16 to BMXDRA1605 (0.8 m/*2 ft*) | 990ADPC5X80106 |
| | | | | | Evolution I/O adapter 1771-OW16 to BMXDRA1605 (1.63 m/*5 ft*) | 990ADPC5X80107 |
| | | | (2x) BMXDRA0805 | *Dedicated* | Evolution I/O adapter 1771-OW16 to (2)DRA0805 (0.8 m/*2 ft*) | 990ADPC5X80208 |
| | | | | | Evolution I/O adapter 1771-OW16 to (2)DRA0805 (1.63 m/*5 ft*) | 990ADPC5X80209 |
| | 1771-OAD | Digital 16-channel 120 VAC output | BMXDAO1605 | *Dedicated* | Evolution I/O adapter 1771-OAD to BMXDAO1605 (0.8 m/*2 ft*) | 990ADPC5X80112 |
| | | | | | Evolution I/O adapter 1771-OAD to BMXDAO1605 (1.63 m/*5 ft*) | 990ADPC5X80113 |
| | 1771-OBD | 10-60 VDC 16-point output | BMXDDO1602 | *Dedicated* | Evolution I/O adapter 1771-OBD to BMXDDO1602 (0.8 m/*2 ft*) | 990ADPC5X80114 |
| | | | | | Evolution I/O adapter 1771-OBD to BMXDDO1602 (1.63 m/*5 ft*) | 990ADPC5X80115 |
| | 1771-OQ | DC output 8-channel | BMXDDO1602 | *Dedicated* | 1771-OQ to BMXDDO1602 (0.8 m/*2 ft*) | 990ADPC5X80124 |
| | | | | | 1771-OQ to BMXDDO1602 (1.63 m/*5 ft*) | 990ADPC5X80125 |
| | 1771-OP | AC output 4-channel | BMXDAO1605 | *Multi-use flying-lead* | GEN5 WN to (2) HP-PT 20-pin X80 (0.8 m/*2 ft*) | 990ADPC5X80300 |
| | 1771-OX | Relay output 4-channel | BMXDRC0805 | | GEN5 WN to (2) HP-PT 20-pin X80 (1.63 m/*5 ft*) | 990ADPC5X80301 |
| | 1771-OBN | DC ouput 32-channel | (2x) BMXDDO1602 | *Multi-use flying-lead* | GEN5 WN to (2) HP-PT 20-pin X80 (0.8 m/*2 ft*) GEN5 WN to (2) HP-PT 20-pin X80 (1.63 m/*5 ft*) | 990ADPC5X80310 990ADPC5X80311 |
| | 1771-OVN | DC ouput 32-channel | (2x) BMXDDO1612 | | | |
| | 1771-OQ16 | DC output 16-channel | BMXDDO1612 | | | |
| | 1771-OAN | AC output 32-channel | (2x) BMXDAO1605 | | | |
| | 1771-OWN | Relay output 32-channel | (2x) BMXDRA1605 | | | |
| | 1771-OWNA | Relay output 32-channel | | | | |
| | 1771-OD | AC output 6-channel isolated | BMXDAO1615 | *Multi-use flying-lead* | GEN2 WD to (1) HP-PT 20/40-pin X80 (0.8 m/*2 ft*) GEN2 WD to (1) HP-PT 20/40-pin X80 (1.63 m/*5 ft*) | 990ADPC5X80304 990ADPC5X80305 |
| | 1771-OR | AC output 6-channel isolated | | | | |
| | 1771-ODZ | AC output 8-channel isolated | | | | |
| | 1771-OW | Relay output 8-channel NO/NC | BMXDRC0805 | | | |
| | 1771-OYL | Relay output 8-channel NO/NC | | | | |
| | 1771-OZL | Relay output 8-channel NO | BMXDRA0815 | | | |
| | 1771-OND | AC output 16-channel | BMXDAO1615 | *Multi-use flying-lead* | GEN4 WH to (1) HP-PT 40-pin X80 (0.8 m/*2 ft*) GEN4 WH to (1) HP-PT 40-pin X80 (1.63 m/*5 ft*) | 990ADPC5X80308 990ADPC5X80309 |
| | 1771-OA | AC output 8-channel | BMXDAO1615 | *Dedicated* | 1771-OA/-OM/-ON to BMXDAO1615 (0.8 m/*2 ft*) 1771-OA/-OM/-ON to BMXDAO1615 (1.63 m/*5 ft*) | 990ADPC5X80116 990ADPC5X80117 |
| | 1771-OM | AC output 8-channel | | | | |
| | 1771-ON | AC output 8-channel | | | | |
| | (2x) 1771-OA | AC output 8-channel | BMXDAO1615 | *Dedicated* | 2x 1771-OA/-OM/-ON to BMXDAO1615 (0.8 m/*2 ft*) 2x 1771-OA/-OM/-ON to BMXDAO1615 (1.63 m/*5 ft*) | 990ADPC5X80216 990ADPC5X80217 |
| | (2x) 1771-OM | AC output 8-channel | | | | |
| | (2x) 1771-ON | AC output 8-channel | | | | |
| | 1771-OD16 | AC output 16-channel | BMXDAO1615 | *Dedicated* | 1771-OD16/1771-ODD to BMXDAO1615 (0.8 m/*2 ft*) 1771-OD16/1771-ODD to BMXDAO1615 (1.63 m/*5 ft*) | 990ADPC5X80118 990ADPC5X80119 |
| | 1771-ODD | AC output 16-channel | | | | |
| | 1771-OD | AC output 6-channel isolated | BMXDAO1615 | *Dedicated* | 1771-OD/-ODC/-OR to BMXDAO1615 (0.8 m/*2 ft*) 1771-OD/-ODC/-OR to BMXDAO1615 (1.63 m/*5 ft*) | 990ADPC5X80120 990ADPC5X80121 |
| | 1771-ODC | AC output 6-channel isolated | | | | |
| | 1771-OR | AC output 6-channel isolated | | | | |
| | (2x) 1771-OD | AC output 6-channel isolated | | *Dedicated* | (2x)1771-OD/-ODC/-OR to BMXDAO1615 (0.8 m/*2 ft*) (2x)1771-OD/-ODC/-OR to BMXDAO1615 (1.63 m/*5 ft*) | 990ADPC5X80220 990ADPC5X80221 |
| | (2x) 1771-ODC | AC output 6-channel isolated | | | | |
| | (2x) 1771-OR | AC output 6-channel isolated | | | | |

# PLC modernization and competitive migration
## Migration solutions
Rockwell PLC5 1771 I/O to Modicon X80 modules platform

### Equivalence table: PLC5 I/O module — X80 module platform

| Type of device | PLC5 1771 I/O | | X80 modules platform | Evolution I/O adapter - PLC I/O chassis | | |
|---|---|---|---|---|---|---|
| | Reference | Description | Reference | Type | Description | Reference |
| **Analog input** | 1771-IFE/A/B/C | Analog 8 differential inputs 12-bit | (2x) BMXAMI0800 | Dedicated | Evolution I/O adapter 1771-IFE to (2x) AMI0800 (0.8 m/*2 ft*) | 990ADPC5X80210 |
| | | Analog 16 single-ended inputs 12-bit | | | Evolution I/O adapter 1771-IFE to (2x) AMI0800 (1.63 m/*5 ft*) | 990ADPC5X80211 |
| | 1771-IL | Analog input 8-channel | BMXAMI0810 | Dedicated | 1771-IL to BMXAMI0810 (0.8 m/*2 ft*) | 990ADPC5X80126 |
| | | | | | 1771-IL to BMXAMI0810 (1.63 m/*5 ft*) | 990ADPC5X80127 |
| | 1771-IFE | Analog input 8-channel | BMXAMI0810 | Dedicated | 1771-IF• to BMXAMI0810 (0.8 m/*2 ft*) | 990ADPC5X80132 |
| | 1771-IFF | | | | 1771-IF• to BMXAMI0810 (1.63 m/*5 ft*) | 990ADPC5X80133 |
| | 1771-IE | Analog input 8-channel | BMXAMI0800 | Dedicated | 1771-IE to BMXAMI0800 (0.8 m/*2 ft*) | 990ADPC5X80136 |
| | | | | | 1771-IE to BMXAMI0800 (1.63 m/*5 ft*) | 990ADPC5X80137 |
| | 1771-IR | RTD 8-channel | BMXART0814 | Multi-use flying-lead | GEN3 WF/WI to (2) 40-pin FCN X80 (3 m/*10 ft*) | 990ADPC5X80306 |
| | 1771-IXE | Thermocouple 8-channel | | | | |
| | 1771-IXHR | Thermocouple 8-channel | | | | |
| **Analog output** | 1771-OFE1/2 | Analog output 4-channel | BMXAMO410 | Dedicated | 1771-OFE1/-OFE2 to BMXAMO0410 (0.8 m/*2 ft*) | 990ADPC5X80108 |
| | | | | | 1771-OFE1/-OFE2 to BMXAMO0410 (1.63 m/*5 ft*) | 990ADPC5X80109 |

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*Compatibility (continued)*

# PLC modernization and competitive migration
## Migration solutions
Rockwell PLC5 1771 I/O to Modicon X80 modules platform

| Equivalence table: PLC5 I/O module — X80 module platform | | | | | | |
|---|---|---|---|---|---|---|
| Type of device | PLC5 1771 I/O | | X80 modules platform | Evolution I/O adapter - PLC I/O chassis | | |
| | Reference | Description | Reference | Type | Description | Reference |
| Replace-ment cables | | | | | Replacement X80 cable high-power 016 (0.8 m/*2 ft*) | **990X80CABLE016** |
| | | | | | Replacement X80 cable high-power 516 (1.63 m/*5 ft*) | **990X80CABLE516** |
| | | | | | Replacement X80 cable 28-pin analog AN028 (0.8 m/*2 ft*) | **990X80CABL019** |
| | | | | | Replacement X80 cable 28-pin analog AN528 (1.63 m/*5 ft*) | **990X80CABL519** |

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# PLC modernization and competitive migration
## Modernization solutions
### 984-800 I/O to Modicon Quantum I/O platform

## Presentation

The Modicon 984-800 I/O to Modicon Quantum I/O modernization solution consists of various wiring adapters and a chassis. The chassis is used to simplify the replacement of legacy 984 PLCs using B800 I/O modules with Quantum I/O; existing field wiring will be retained.

The chassis will receive the new Quantum I/O modules while retaining connectors from existing B800 I/O modules.
Specific wiring adapters will allow connectors from existing B800 I/O modules to be easily rewired to their mating Quantum I/O modules.

Two chassis and various wiring adaptors cover the main modernization needs between B800 I/O modules and Modicon Quantum I/O. There are also six replacement cables. All cables are available in 0.56 m/*2 ft* and 1.63 m/*5 ft* lengths.

## Description of the solution

A chassis allows the replacement of a B800 I/O rack with a Quantum I/O rack in the same physical location and with the same footprints and mounting pattern as the current system.

It is an articulated mechanical assembly made of two plates:
- A back plate installed in place of the B800 I/O rack. This is used as a mounting bracket for the quick wiring adapters.
- A front plate that supports a pre-mounted Quantum backplane. The new Quantum I/O rack will be installed on this front plate. The appropriate wiring adapters will be connected from the back plate onto their mating Quantum I/O modules on the front plate.

For maintenance purposes, the front plate is articulated so that the assembly can be tilted to access the connections mounted on the back plate.

The quick wiring adapters allow the existing installation wiring to be retained. They allow the B800 I/O field wiring of the existing installation to be connected and mated to the Quantum I/O modules of the new PLC configuration.

The most commonly used cables are 0.56 m/*2 ft* long, but 1.63 m/*5 ft* cables are used when merging 2 B800 I/O racks into only Quantum rack.
The I/O adapter assemblies route the existing field wiring control signals to the new I/O module without requiring rewiring of the existing installation.
Replacement cables without end connectors are also available as spare parts in case they need to be replaced in possible unusual situations.

## Benefits of the solution

The customer benefits are reduced risk and cost of modernization from a 984/800 I/O PLC:
- Minimal production downtime with setup time of about one hour per rack
- Cost savings through the retention of all wiring to sensors/actuators inside the existing cabinets (savings in wiring, testing and commissioning, update of wiring diagrams); Typically, no electrician or wiring contractor is needed.
- Unlike manual rewiring, ordinary production stops can be used for the changeover
- Due to minimal changes, installations can be restarted within the allotted time with the ability to roll back in the event of any unforseen matters arising.
- Better reliability brought by dedicated solutions designed by the manufacturer.
- Simple solution that makes modernization easy and provides the lowest risk option

This modernization solution is part of a larger modernization and migration offer that includes methods, specific migration devices, and dedicated tools for various legacy PLCs from Schneider Electric and the competition as well.
Modernization and migration can be implemented with help from our Schneider Electric services experts.

## Equivalence table

The cross-reference table hereafter shows the possible equivalences between B800 I/O modules and Quantum I/O modules. Some differences in terminal strips, modularity, common or power connections may have to be addressed: it is recommended that you verify compatibility with our Schneider Electric service representatives.

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# PLC modernization and competitive migration
## Modernization solutions
### 984-800 I/O to Modicon Quantum I/O platform

## Equivalence table: B800 I/O module — Quantum I/O module

| Type of module | B800 I/O module | | Quantum I/O | Chassis | |
|---|---|---|---|---|---|
| | Reference | Description | Reference | Description | Reference |
| **Racks** | H819 | 7 slots, 19" | 140XBP01000 | Evolution PLC chassis with Quantum XBP 10-slot | 990CHB80QUA100 |
| | | | 140XBP01000C | Evolution PLC chassis with Quantum XBP 10-slot, coated | 990CHB80QUA100C |
| | H827 | 11 slots, 27" | 140XBP01600 | Evolution PLC chassis with Quantum XBP 16-slot | 990CHB80QUA160 |
| | | | 140XBP01600C | Evolution PLC chassis with Quantum XBP 16-slot, coated | 990CHB80QUA160C |

| Type of module | Reference | Description | Quantum I/O platform | Pre-wired adapter | |
|---|---|---|---|---|---|
| **I/O modules** | AS-B802-008 | 115 VAC 8-point output | 140DAO84010 | B802008-DAO84010 quick-fit cable (0.8 m/2 ft) | 802008AO84012 |
| | | | | B802008-DAO84010 quick-fit cable (1.5 m/5 ft) | 802008AO84015 |
| | 2x | | | 2x B802008-DAO84010 quick-fit cable (0.8 m/2 ft) | 2802008AO84012 |
| | | | | 2x B802008-DAO84010 quick-fit cable (1.5 m/5 ft) | 2802008AO84015 |
| | AS-B802-008 | 115 VAC 8-point output | 140DAO84010 | B802008-DAO84010 quick-fit, fused (0.8 m/2 ft) | 802008AO84012F |
| | | | | B802008-DAO84010 quick-fit, fused (1.5 m/5 ft) | 802008AO84015F |
| | 2x | | | 2x B802008-DAO84010 quick-fit, fused (0.8 m/2 ft) | 2802008AO84012F |
| | | | | 2x B802008-DAO84010 quick-fit, fused (1.5 m/5 ft) | 2802008AO84015F |
| | AS-B803-008 | 115 VAC 8-point input | 140DAI54000 | B803008-DAI54000 quick-fit cable (0.8 m/2 ft) | 803008AI54002 |
| | | | | B803008-DAI54000 quick-fit cable (1.5 m/5 ft) | 803008AI54005 |
| | 2x | | | 2x B803008-DAI54000 quick-fit cable (0.8 m/2 ft) | 2803008AI54002 |
| | | | | 2x B803008-DAI54000 quick-fit cable (1.5 m/5 ft) | 2803008AI54005 |
| | AS-B804-016 AS-B804-116 | 115 VAC 16-point output | 140DAO84210 | Evolution I/O adapter B804x16-DAO84210 (0.8 m/2 ft) | 990ADB80QUA100 |
| | | | | Evolution I/O adapter B804x16-DAO84210 (1.5 m/5 ft) | 990ADB80QUA101 |
| | AS-B804-148 | | 140DAO84220 | B804148-DAO84220 quick-fit cable (0.8 m/2 ft) | 804148AO84222 |
| | | | | B804148-DAO84220 quick-fit cable (1.5 m/5 ft) | 804148AO84225 |
| | AS-B805-016 | 115 VAC 16-point input | 140DAI54300 | Evolution I/O adapter B805016-DAI54300 (0.8 m/2 ft) | 990ADB80QUA100 |
| | | | | Evolution I/O adapter B805016-DAI54300 (1.5 m/5 ft) | 990ADB80QUA101 |
| | 2x | | 140DAI55300 | 2x B805016-DAI55300 quick-fit cable (0.8 m/2 ft) | 2805016AI55302 |
| | | | | 2x B805016-DAI55300 quick-fit cable (1.5 m/5 ft) | 2805016AI55305 |
| | AS-B806-032 | 115 VAC 32-point output | 140DAO85300 | Evolution I/O adapter B806032-DAO85300 (0.8 m/2 ft) | 990ADB80QUA122 |
| | | | | Evolution I/O adapter B806032-DAO85300 (1.5 m/5 ft) | 990ADB80QUA123 |
| | AS-B806-124 | 24 VAC 32-point output | 140DAO85300 | Evolution I/O adapter B806124-DAO85300 (0.8 m/2 ft) | 990ADB80QUA122 |
| | | | | Evolution I/O adapter B806124-DAO85300 (1.5 m/5 ft) | 990ADB80QUA123 |
| | AS-B807-132 | 115 VAC 32-point input | 140DAI55300 | Evolution I/O adapter B807132-DAI55300 (0.8 m/2 ft) | 990ADB80QUA124 |
| | | | | Evolution I/O adapter B807132-DAI55300 (1.5 m/5 ft) | 990ADB80QUA125 |
| | AS-B808-016 | 230 VAC 16-point output | 140DAO84000 | Evolution I/O adapter B808016-DAO84000, fused (0.8 m/2 ft) | 990ADB80QUA128 |
| | | | | Evolution I/O adapter B808016-DAO84000, fused (1.5 m/5 ft) | 990ADB80QUA129 |
| | AS-B809-016 | 230 VAC 16-point input | 140DAI74000 | B809016-DAI74000 quick-fit cable (0.8 m/2 ft) | 809016AI74002 |
| | | | | B809016-DAI74000 quick-fit cable (1.5 m/5 ft) | 809016AI74005 |
| | AS-B810-008 | 115 VAC 8-point isolated output | 140DAO84000 | Evolution I/O adapter B810008-DAO84000 (0.8 m/2 ft), fused | 990ADB80QUA130 |
| | | | | Evolution I/O adapter B810008-DAO84000 (1.5 m/5 ft), fused | 990ADB80QUA131 |
| | 2x | | | 2x B810008-DAO84000 quick-fit cable (0.8 m/2 ft) | 2810008AO84002 |
| | | | | 2x B810008-DAO84000 quick-fit cable (1.5 m/5 ft) | 2810008AO84005 |
| | | | | 2x B810008-DAO84000 quick-fit (0.8 m/2 ft), fused | 2810008AO84002F |
| | | | | 2x B810008-DAO84000 quick-fit (1.5 m/5 ft), fused | 2810008AO84005F |
| | AS-B814-108 | NO/NC power relay 8-point output | 140DRC83000 | Evolution I/O adapter B814108-DRC830, fused (0.8 m/2 ft) | 990ADB80QUA112 |
| | | | | Evolution I/O adapter B814108-DRC830, fused (1.5 m/5 ft) | 990ADB80QUA113 |
| | AS-B817-116 | 115 VAC 16-point isolated input | 140DAI54000 | Evolution I/O adapter B817116-DAI54000 (0.8 m/2 ft) | 990ADB80QUA114 |
| | | | | Evolution I/O adapter B817116-DAI54000 (1.5 m/5 ft) | 990ADB80QUA115 |
| | AS-B817-216 | 230 VAC 16-point isolated input | 140DAI74000 | Evolution I/O adapter B817216-DAI74000 (0.8 m/2 ft) | 990ADB80QUA114 |
| | | | | Evolution I/O adapter B817216-DAI74000 (1.5 m/5 ft) | 990ADB80QUA115 |
| | AS-B820-008 | 10-60 VDC 8-point output (True High) | 140DDO84300 | B820008-DDO84300 quick-fit cable (0.8 m/2 ft) | 820008DO84302 |
| | | | | B820008-DDO84300 quick-fit cable (1.5 m/5 ft) | 820008DO84305 |
| | 2x | | | 2x B820008-DDO84300 quick-fit cable (0.8 m/2 ft) | 2820008DO84302 |
| | | | | 2x B820008-DDO84300 quick-fit cable (1.5 m/5 ft) | 2820008DO84305 |

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# PLC modernization and competitive migration
Modernization solutions
984-800 I/O to Modicon Quantum I/O platform

## Equivalence table: B800 I/O module — Quantum I/O module

| Type of module | B800 I/O module | | Quantum I/O | Chassis | |
|---|---|---|---|---|---|
| | Reference | Description | Reference | Description | Reference |
| I/O modules | AS-B821-108 | 10-60 VDC 8-point input (True High) | 140DDI84100 | B821108-DDI84100 quick-fit cable (0.8 m/*2 ft*) | **821108DI84102** |
| | | | | B821108-DDI84100 quick-fit cable (1.5 m/*5 ft*) | **821108DI84105** |
| | **2x** | | | 2x B821108-DDI84100 quick-fit cable (0.8 m/*2 ft*) | **2821108DI84102** |
| | | | | 2x B821108-DDI84100 quick-fit cable (1.5 m/*5 ft*) | **2821108DI84105** |
| | AS-B824-016 | 24 VDC 16-point output (True High) | 140DDO84300 | B824016-DDO84300 quick-fit cable (0.8 m/*2 ft*) | **824016DO84302** |
| | | | | B824016-DDO84300 quick-fit cable (1.5 m/*5 ft*) | **824016DO84305** |
| | AS-B825-016 | 24 VDC 16-point input (True High) | 140DDI84100 | Evolution I/O adapter B825016-DDI84100 (0.8 m/*2 ft*) | **990ADB80QUA116** |
| | | | | Evolution I/O adapter B825016-DDI84100 (1.5 m/*5 ft*) | **990ADB80QUA117** |
| | AS-B826-032 | 24 VDC 32-point output (True High) | 140DDO35300 | B826032-DDO35300 quick-fit cable (0.8 m/*2 ft*) | **826032DO35302** |
| | | | | B826032-DDO35300 quick-fit cable (1.5 m/*5 ft*) | **826032DO35305** |
| | AS-B827-032 | 24 VDC 32-point input (True High) | 140DDI35300 | Evolution I/O adapter B827032-DDI35300 (0.8 m/*2 ft*) | **990ADB80QUA106** |
| | | | | Evolution I/O adapter B827032-DDI35300 (1.5 m/*5 ft*) | **990ADB80QUA107** |
| | AS-B829-116 | 5V TTL 16-point input (Fast Response) | 140DDI15310 | B829116-DDI15310 quick-fit cable (0.8 m/*2 ft*) | **829116DI15312** |
| | | | | B829116-DDI15310 quick-fit cable (1.5 m/*5 ft*) | **829116DI15315** |
| | AS-B832-016 | 24 VDC 16-point output (True Low) | 140DDO35310 | B832016-DDO35310 quick-fit cable (0.8 m/*2 ft*) | **832016DO35312** |
| | | | | B832016-DDO35310 quick-fit cable (1.5 m/*5 ft*) | **832016DO35315** |
| | **2x** | | | 2x B832016-DDO35310 quick-fit cable (0.8 m/*2 ft*) | **2832016DO35312** |
| | | | | 2x B832016-DDO35310 quick-fit cable (1.5 m/*5 ft*) | **2832016DO35315** |
| | AS-B833-016 | 24 VDC 16-point input (True Low) | 140DDI35310 | B833016-DDI3531 quick-fit cable (0.8 m/*2 ft*) | **833016DI35312** |
| | | | | B833016-DDI3531 quick-fit cable (1.5 m/*5 ft*) | **833016DI35315** |
| | **2x** | | | 2x B833016-DDI3531 quick-fit cable (0.8 m/*2 ft*) | **2833016DI35312** |
| | | | | 2x B833016-DDI3531 quick-fit cable (1.5 m/*5 ft*) | **2833016DI35315** |
| | AS-B837-016 | 24 VAC/DC 16-point input (True High) | 140DDI35300 | B837016-DDI3530 quick-fit cable (0.8 m/*2 ft*) | **837016DI35302** |
| | | | | B837016-DDI3530 quick-fit cable (1.5 m/*5 ft*) | **837016DI35305** |
| | **2x** | | | 2x B837016-DDI3530 quick-fit cable (0.8 m/*2 ft*) | **2837016DI35302** |
| | | | | 2x B837016-DDI3530 quick-fit cable (1.5 m/*5 ft*) | **2837016DI35305** |
| | AS-B838-032 | 24 VDC 32-point output (True High) | 140DDO35300 | Evolution I/O adapter B838032-DDO35300 (0.8 m/*2 ft*) | **990ADB80QUA108** |
| | | | | Evolution I/O adapter B838032-DDO35300 (1.5 m/*5 ft*) | **990ADB80QUA108** |
| | AS-B840-108 | NO/NC reed relay 8-point output | 140DRC83000 | Evolution I/O adapter B840108-DRC830, fused (0.8 m/*2 ft*) | **990ADB80QUA112** |
| | | | | Evolution I/O adapter B840108-DRC830, fused (1.5 m/*5 ft*) | **990ADB80QUA113** |
| | AS-B846-001 | Analog MUX (16 voltage to one output) | (2x) 140AVI03000 | B846001 -2x AVI03000 quick-fit cable (0.8 m/*2 ft*) | **28460012VI03002** |
| | | | | B846001 -2x AVI03000 quick-fit cable (1.5 m/*5 ft*) | **28460012VI03005** |
| | AS-B846-002 | Analog MUX (16 current to one output) | 140ACI04000 | B846002-ACI04000 quick-fit cable (0.8 m/*2 ft*) | **846002CI040002** |
| | | | | B846002-ACI04000 quick-fit cable (1.5 m/*5 ft*) | **846002CI040005** |
| | | | (2x) 140AVI03000 | B846002 -2x AVI03000 quick-fit cable (0.8 m/*2 ft*) | **28460022VI03002** |
| | | | | B846002 -2x AVI03000 quick-fit cable (1.5 m/*5 ft*) | **28460022VI03005** |
| | AS-B849-016 | 48 VAC/DC 16-point input | 140DDI84100 | B849016-DDI8410 quick-fit cable (0.8 m/*2 ft*) | **849016DI84102** |
| | | | | B849016-DDI8410 quick-fit cable (1.5 m/*5 ft*) | **849016DI84105** |
| | AS-B872-002 | 4-20 mA, 1-5 V 4-channel analog output | 140ACO02000 | Evolution I/O adapter B872002-ACO0200 (0.8 m/*2 ft*) | **990ADB80QUA126** |
| | | | | Evolution I/O adapter B872002-ACO0200 (1.5 m/*5 ft*) | **990ADB80QUA127** |
| | AS-B872-011 | Selectable 4-channel voltage output | 140AVO02000 | Evolution I/O adapter B872011-AVO0200 (0.8 m/*2 ft*) | **990ADB80QUA110** |
| | | | | Evolution I/O adapter B872011-AVO0200 (1.5 m/*5 ft*) | **990ADB80QUA111** |
| | AS-B872-100 | 4-20 mA 4-channel current output | 140ACO02000 | Evolution I/O adapter B872100-ACO0200 (0.8 m/*2 ft*) | **990ADB80QUA120** |
| | | | | Evolution I/O adapter B872100-ACO0200 (1.5 m/*5 ft*) | **990ADB80QUA121** |
| | AS-B872-200 | Selectable 4-channel voltage output | 140AVO02000 | B872200-AVO0200 quick-fit cable (0.8 m/*2 ft*) | **872200VO02002** |
| | | | | B872200-AVO0200 quick-fit cable (1.5 m/*5 ft*) | **872200VO02005** |
| | AS-B873-001 | | 140AVI03000 | Evolution I/O adapter B87300x-AxI03000 (0.8 m/*2 ft*) | **990ADB80QUA102** |
| | | | | Evolution I/O adapter B87300x-AxI03000 (1.5 m/*5 ft*) | **990ADB80QUA103** |
| | AS-B873-002 | 4-20 mA, 1-5 V 4-channel analog input | 140ACI03000 | Evolution I/O adapter B87300x-AxI03000 (0.8 m/*2 ft*) | **990ADB80QUA102** |
| | | | | Evolution I/O adapter B87300x-AxI03000 (1.5 m/*5 ft*) | **990ADB80QUA103** |
| | **2x** | | 140ACI03000 | Evolution I/O adapter 2x B87300x-ACI03000 (0.8 m/*2 ft*) | **990ADB80QUA104** |
| | | | | Evolution I/O adapter 2x B87300x-ACI03000 (1.5 m/*5 ft*) | **990ADB80QUA105** |
| | AS-B873-011 | -10 V to +10 V 4-channel analog input | 140AVI03000 | Evolution I/O adapter B87301x-AVI03000 (0.8 m/*2 ft*) | **990ADB80QUA102** |
| | AS-B873-012 | | | Evolution I/O adapter B87301x-AVI03000 (1.5 m/*5 ft*) | **990ADB80QUA103** |

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# PLC modernization and competitive migration
## Modernization solutions
984-800 I/O to Modicon Quantum I/O platform

## Equivalence table: B800 I/O module — Quantum I/O module

| Type of module | B800 I/O module | | Quantum I/O | Chassis | |
| --- | --- | --- | --- | --- | --- |
| | Reference | Description | Reference | Description | Reference |
| I/O modules | AS-B875-001 | 4-20 mA, 1-5 V 8-channel analog input | 140AVI03000 | Evolution I/O adapter B87500x-AxI03000 (0.8 m/*2 ft*) | **990ADB80QUA102** |
| | | | | Evolution I/O adapter B87500x-AxI03000 (1.5 m/*5 ft*) | **990ADB80QUA103** |
| | AS-B875-002 | | 140ACI03000 | Evolution I/O adapter B87500x-AxI03000 (0.8 m/*2 ft*) | **990ADB80QUA102** |
| | | | | Evolution I/O adapter B87500x-AxI03000 (1.5 m/*5 ft*) | **990ADB80QUA103** |
| | AS-B875-011 | Selectable 8-channel differential input | 140AVI03000 | B875-011 or -012-AVI03000 quick-fit cable (0.8 m/*2 ft*) | **87501XVI030002** |
| | AS-B875-012 | | | B875-011 or -012-AVI03000 quick-fit cable (1.5 m/*5 ft*) | **87501XVI030005** |
| | AS-B875-101 | Fast selectable 8-channel analog input | 140AVI03000 | B875-101 or -102-AVI03000 quick-fit cable (0.8 m/*2 ft*) | **87510XVI030002** |
| | | | | B875-101 or -102-AVI03000 quick-fit cable (1.5 m/*5 ft*) | **87510XVI030005** |
| | AS-B875-102 | | 140ACI03000 | B875-101 or -102-ACI03000 quick-fit cable (0.8 m/*2 ft*) | **87510XCI030002** |
| | | | | B875-101 or -102-ACI03000 quick-fit cable (1.5 m/*5 ft*) | **87510XCI030005** |
| | AS-B875-111 | Selectable 16-channel single-ended input | 140ACI03000 | Evolution I/O adapter B875111-ACI03000 (0.8 m/*2 ft*) | **990ADB80QUA118** |
| | | | | Evolution I/O adapter B875111-ACI03000 (1.5 m/*5 ft*) | **990ADB80QUA119** |
| | | | 140AVI04000 | Evolution I/O adapter B875111-AVI03000 (0.8 m/*2 ft*) | **990ADB80QUA118** |
| | | | | Evolution I/O adapter B875111-AVI03000 (1.5 m/*5 ft*) | **990ADB80QUA119** |
| | | | 140ACI04000 | B875111-ACI04000 quick-fit cable (0.8 m/*2 ft*) | **875111CI040002** |
| | | | | B875111-ACI04000 quick-fit cable (1.5 m/*5 ft*) | **875111CI040005** |
| | AS-B877-111 | Selectable 16-channel single-ended input | 140ACI04000 | B877111-140ACI0400 quick-fit cable (0.8 m/*2 ft*) | **877111CI040002** |
| | | | | B877111-140ACI0400 quick-fit cable (1.5 m/*5 ft*) | **877111CI040005** |
| | AS-B883-201 | 8 RTD input | 140ARI03010 | B883201-ARI03010 quick-fit cable (0.8 m/*2 ft*) | **883201RI030102** |
| | | | | B883201-ARI03010 quick-fit cable (1.5 m/*5 ft*) | **883201RI030105** |
| Replacement cables | — | — | — | Replacement Quantum cable high-power 013 (0.8 m/*2 ft*) | **990QUANCABL013** |
| | | | | Replacement Quantum cable high-density 014 (0.8 m/*2 ft*) | **990QUANCABL014** |
| | | | | Replacement Quantum cable analog 015 (0.8 m/*2 ft*) | **990QUANCABL015** |
| | | | | Replacement Quantum cable high-power 513 (1.5 m/*5 ft*) | **990QUANCABL513** |
| | | | | Replacement Quantum cable high-density 514 (1.5 m/*5 ft*) | **990QUANCABL514** |
| | | | | Replacement Quantum cable analog 515 (1.5 m/*5 ft*) | **990QUANCABL515** |

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